Agenda
for
7th TeST Meeting

Date: 23.12.2020
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 7TH TELECOMMUNICATION, SCADA AND TELEMETRY SUB-COMMITTEE MEETING TO BE HELD ON 23.12.2020 (WEDNESDAY) AT 10:30 HOURS

PART – A : CONFIRMATION OF MINUTES

ITEM NO. A.1: Confirmation of minutes of 6th TeST Sub-committee meeting held on 08.07.2020

The minutes of 6th TeST Sub-committee meeting held on 08.07.2020 circulated vide letter dated 03.08.2020.

Members may confirm the minutes of 6th TeST Sub-committee meeting.

PART – B: ITEMS FOR DISCUSSION

ITEM NO. B.1: Non availability of Standby Link for Central Sector RTU/SAS in Eastern Region--ERLDC

As per the designed RTU/SAS reporting architecture of Eastern Regional SCADA/EMS system, main as well as stand by link has to be provided by ULDC POWERGRID for Central Sector RTU/SAS reporting to RLDC. Main link has to be extended up to ERLDC MCC Kolkata and stand by link also to be extended up to ERLDC BCC (located at NLDC New Delhi). Accordingly, POWERGRID ULDC had provided main as well as stand by link for all RTU/SAS which reporting in IEC 104, and for old RTU/SAS, ULDC is working on replacement with new SAS/RTU with IEC 104 compatibility.

Presently, standby links provided for all RTU/SAS are not working since disruption of communication network in February 2020 and due to this redundancy, in data communication are getting affected in Eastern Region.

ERLDC may explain. Members may discuss.

ITEM NO. B.2: Unavailability of Sequence of Events of Important Central Sector Grid elements--ERLDC

Sequence of events (SOE) is very important for analysis of tripping of generating units and transmission elements. But during recording of SOE at ERLDC SCADA system it has been observed that SOEs pertaining to the tripping of several central sector Grid elements has not been captured in SCADA. Unavailability of Sequence of event of the important grid elements are undesirable as far real time grid operation is concerned. Availability of SOEs corresponding the Outage /Tripping of important Grid elements has to be made available in the interest of reliable system operation.

Tripping and restoration of various elements are not being recorded in SOE.

SOE data not available during GD/GI and tripping of transmission elements is as given below.

Date	Name of the Grid Elements under Shutdown/Tripping	Nature of outage (OCC/Non OCC/Emergency/Tripping/Hand Tripped/Voltage/Power Regulation)	Opening Time	SOE Status(During Opening)	Closing Time	SOE Status(During Closing)
3/12/2020	400KV/220KV 315 MVA ICT 5 AT MALDA	OCC	7:15	Not Reported	16:32	Not Reported
3/12/2020	220KV BUS COUPLER BAY AT RENGALI(PG)	OCC	9:25	Not Reported	NA	NA
3/12/2020	220KV/132KV 160 MVA ICT 1 AT BIRPARA	OCC	7:10	Not Reported	NA	NA
4/12/2020	220KV MAIN BAY OF 315MVA ICT-II AT RANCHI	OCC	11:03	Not Reported	NA	NA
4/12/2020	400KV MAIN BAY OF BIHARSARIFF-II AT PUSAULI(PG)	OCC	9:37	Not Reported	18:24	Not Reported
7/12/2020	400KV-ROURKELA-CHAIBASA-1	OCC	9:28	Not Reported	19:15	Not Reported
8/12/2020	400KV/220KV 500 MVA ICT 4 AT BIHARSARIFF (PG)	OCC	10:11	Not Reported	NA	NA
8/12/2020	400KV-KODERMA-BIHARSARIFF(PG)-2	OCC	8:25	Not reported	NA	NA
9/12/2020	400KV-PUSAULI(PG)-ALLAHABAD-1	OCC	9:33	Not Reported	17:32	Not Reported
19/11/20	400KV-ALIPURDUAR (PG)-BINAGURI-4	OCC	7:35	Not Reported	18:17	Reported
23/11/20	765KV-NEW RANCHI-MEDINIPUR-1	outage	9:20	Not Reported	NA	NA
23/11/20	765KV-NEW RANCHI-MEDINIPUR-2	outage	9:21	Not Reported	NA	NA
26/11/20	400KV-BIHARSARIFF(PG)-PUSAULI-1	Emergency	12:26	Not Reported	NA	NA
30/11/20	400KV-JAMSHEDPUR-MEJIA-1	OCC	8:47	Not Reported	NA	NA

ERLDC may explain. Members may discuss.

ITEM NO. B.3: Replacement of GPRS communication with optical fibre for AMR

In ER, approximately 80% meters are connected through Automated Meter Reading (AMR). At present the communication system used for data transfer from each location is GPRS. It has been observed that many locations are not communicating with AMR system due to poor/no GPRS signal. Many substations have their own optical fibre which is also used for the LAN network of respective stations.

In 40th CCM, Powergrid requested all the constituents to share the available optical fibre network connectivity details for further configuration to Optical connectivity to avoid communication problems through GPRS and for much more reliable transmission of SEM data to ERLDC server.

In 4th TeST meeting, Powergrid informed that they require 2 Mbps Ethernet communication link from respective station to nearest Powergrid node. ERLDC informed that all the AMR data pertaining to geographical boundary of constituents has to be configured through a separate VLAN and the same would be extended up to ERLDC so that data from all AMR should be made available at ERLDC for further needful.

ERPC asked all constituents to make assessment of the works required i.e. distance of AMR meter from communication Mux for laying the LAN cable between them.

Details were received from JUSNL and Bihar.

Members may update.

ITEM NO. B.4: Disruption in real time SCADA, URTDSM, VoIP communication in Eastern Region

On 10th February at 08:20 PM entire data communication in Eastern region got disrupted which leads to outage of SCADA data, URTDSM data and Voice communication. The matter was informed to Powergrid ULDC team immediately after occurrence of the event.

Powergrid ULDC team has taken prompt action and deployed communication expert towards restoration of communication links in Eastern region. At present, few SCADA, URTDSM and VoIP communication links are yet to be restored. Since data and voice communication are the basic needs for smooth operation of the real time grid, root cause of such unwanted event needed to be identified and addressed with proper remedies.

In 6th TeST Meeting, POWERGRID informed that they have submitted the report to ERPC as well as ERLDC through mail on 07th July 2020 regarding analysis on data outage on 10.02.2020 and 25.02.2020 which depicted that broadcasting from LDMS at Mejia A site of DVC control area caused data traffic congestion in the OPGW network in whole Eastern Region resulted in partial real time SCADA & URTDSM data and voice failure.

After detailed deliberation, it was decided that a technical committee comprising of the members from POWERGRID, ERPC, ERLDC, DVC, OPTCL, JUSNL, BSPTCL and Sikkim analyse the event and submit a detailed report in next TeST meeting.

The following members were nominated for the technical committee:

- *Shri J. G. Rao, EE (Power System) ERPC,*
- *Shri Biswajit Mondal, Manager (SCADA) ERLDC,*
- *Shri Santanu Rudrapal, Manager (ULDC) POWERGRID ERTS-2,*
- *Shri Shambhu Das, EE (Communication) DVC,*
- *Shri Rakesh Kumar, EEE BSPTCL*
- *Shri Rimil Topno, EEE JUSNL*
- *One member from WBSETCL, OPTCL & Sikkim*

TeST Committee advised all the constituents to avoid the usage of internet in the LDMS installed computer at site. All constituents agreed for the same.

Members may discuss.

ITEM NO. B.5: Guidelines regarding use of ULDC network for other purposes--Powergrid

Recently, disturbance of severe nature had occured for services (intermittant failure of PMU data, RTU/SAS data, VOIP etc.) leading to difficulty in smooth load-dispatching operation of the ER-Grid by ERLDC. Series of effort had been made during 18th and 19th September, 2020 to trace the root cause of the fault. Some of the services were stopped for checking the communication link healthiness. Though no issue was observed in the communication link, after inclusion of the services again, the system was found to be operating with high latency (delay) in some of the PMUs. Finally, it was observed that one particular machine was sending high amount of packets in the network leading to the caiuse of the latency in the network. The system was restored to normalcy when the particular machine was withdrawn.

Subsequently, as part of RCF analysis, ERLDC had been communicated to identify the user of that particular machine. However, the same could not be located in RLDC as well as SLDC system. This points towards the possibility of a non-authenicated system/ services being connected to the system for a short time.

In this regard, it is to intimate that certain services required only for the operation of the power system are to be used in the communication network (CEA Notification 27th February, 2020). The services identified for ISTS & State network are as follows:

1. SCADA (RTU/SAS Data)
2. Inter-Control Centre Communication Protocol(ICCP)
3. Phase Measurement Unit
4. Digital Protection used by Substation
5. Travelling Wave Fault Locator
6. Voce Over Intranet Phone
7. EPAX
8. Automatic (Energy) Meter Reading
9. Automatic Gain Control (of Gen. Stations)
10. Video Conferencing (between users)

Any services other than the above need permission of ERPC. Further, usage of the network for the purpose of internetting, which is a public network, will have a extremly high security threat to the power operation.

As the ISTS communication network of Central Sector is integrated with that of State Network, this type of breach of going beyond the envisaged usage of services by any one user may jeopardise the operation and security of entire national grid. Going by the sensitive nature of this issue, guideline may please be issued at earliest regarding the restricted usage of this network.

Further as per draft communication regulation, 2017 (Cl.10), ERPC is required to frame the procedure to conduct audit of communication system on annual basis. Pending finalisation of the regulation, it is requested to carry out this execise of identifying the services being used by all users (Including MAC ID and IPs) as a first step towards audit. Guideline to be used in this regard shall help in improving the uninterrupted availability of services.

Members may discuss.

ITEM NO. B.6: Issues related to SCADA/EMS System Installed in Eastern Region:

1. Software Related

Eastern Regional Utilities are facing followings software related issue in their SCADA/EMS system installed in Eastern Region: -

I. Improper modeling of TCSC, FSC & HVDC
II. Incorporation of STATCOM modeling
III. Non-functionality of STLF application since 13th April 2018
IV. Integration with WAMS

In 6th TeST Meeting, ERLDC informed that they have not observed any significant progress in software related issues like modelling of TCSC/FSC & HVDC, functioning of STLF and WAMS integration with EMS.

ERLDC further informed that M/s OSI has modelled the Kishanganj STATCOM device which is currently under observation with their study team for their comments and the same will be communicated to OSI once received. ERLDC again requested OSI to provide the write up of 2 – 3 pages for modelling of STATCOM device so that other STATCOM devices could be modelled by themself. OSI agreed for the same.

M/s OSI informed that TSCS/FSC modelling has been sent to ERLDC and requested ERLDC to share their observation in this regard. ERLDC agreed for the same.

M/s OSI explained that they are still working for HVDC modelling, STLF functioning and WAMS integration with EMS. OSI added that M/s Chemtrols need to complete key linking in EMS first for HVDC modelling. M/s Chemtrols agreed for the same.

M/s OSI further informed that they could be able to solve these software related issues by end of July 2020.

Members may discuss.

2. Software Licenses Related

Eastern Regional Utilities need getting the following licenses which are required to run the system smoothly: -

I. Cost implication of three (3) nos SCADA software licenses at ERLDC system
II. Cost implication of additional licenses of 8,000 analog & 12,000 status points in OPTCL SCADA system
III. Necessity of OSI software license (key) in spare server available at all Eastern Regional Control Centres at different locations: could not able to build the system in case of any hardware failure and / or the backup restoration testing could not be completed due to non-availability of necessary software license in the spare server.

In 4th TeST meeting, OSI informed that they had a Webex meeting with ERLDC and Chemtrols on 23rd December 2019 in which modeling related issues were discussed.

OSI further informed that they would complete one model each of TCSC and FSC in a week's time. Further, OSI informed that they would start modelling HVDC once TCSC and FSC modelling is done and the same would take around two weeks' time.

ERPC asked OSI to send the individual target dates by which all the software related works would be completed.

Chemtrols informed that they have sent the quotation for providing 3 nos. of SCADA licenses at ERLDC system. ERLDC raised concern about getting quote from Chemtrols instead of OSI.

Chemtrols submitted the quote of ₹ 2.48 Crores regarding additional 8000 analog and 12000 digital license points in OPTCL system. ERLDC informed that this price is quite high as compared with SCADA software license supplied under ER SCADA up-gradation package or NLDC up-gradation project. ERPC asked OSI to submit necessary justification to arrive at the cost of the same.

In 5th TeST Meeting, TeST committee advised M/s Chemtrols to submit the justification for quote submitted regarding additional 8000 analog and 12000 digital license points in OPTCL system.

M/s Chemtrols informed that they would send the justification for the same at the earliest.

ERLDC informed that they need justification for the price quoted by M/s Chemtrols for the three (3) nos SCADA software licenses at ERLDC system so that POWERGRID could able to process the matter at their end for procurement of three (3) nos SCADA software licenses at ERLDC system for their own use.

M/s. Chemtrols has given a presentation on cost justification and revised their rate from ₹ 2.48 Crores to ₹ 1.96 Crores (both exclusive of GST charge) regarding additional 8000 analog and 12000 digital license points in OPTCL system.

TeST forum was not satisfied with the justification given by Chemtrol and opined that considering the inflation and USD appreciation also, this price is quite high as compared with SCADA software license supplied under ER SCADA up-gradation package or NLDC up-gradation project and such high software price is not agreeable.

M/s Chemtrols was advised to rework on price part and send a justifiable quote. M/s Chemtrols agreed to submit it within 10 days.

OSI informed that they have already provided 1 (one) number of licenses for spare server available at ERLDC. ERLDC confirmed that they have received the required license but the same is to be tested at their end.

M/s Chemtrols, M/s OSI & Powergrid may update.

ITEM NO. B.7: Status of implementation of AGC for ISGS stations

In 2nd Test Meeting, NLDC informed that, as a part of pilot project of AGC, all generating stations' AGC data would be directly reporting to NLDC for first 3 years and the same would be diverted to respective RLDCs after SCADA upgradation.

NLDC informed that all generating stations must make arrangement for extending the AGC data signals to the nearest Powergrid node and Powergrid shall make available two Ethernet ports (main & its redundant) so that AGC signal from generating stations should reach to NLDC.

NLDC further informed that requirement for AGC implementation like list of signals, bandwidth requirement, hardware, software & cable requirement etc. are made available at POSOCO website (https://posoco.in/spinning-reserves/).

ERLDC suggested that firewalls should be available at both end i.e. at Generator end as well as NLDC end. NLDC informed that they have a firewall at their end in their system.

All generating stations agreed to install adequate level of firewall at their end for extending the AGC signals.

In 5th TeST Meeting members updated the status as follows:

Sl No	***Station***	***Status of Communication link from plant substation to PGCIL node***	***Status of communication system integration from unit to plant substation***	***Target date for implementation of AGC at plant***
1	*Farakka STPS - I & II*	*Both links established*	*Pending*	*June 2020*
2	*Kahalgaon STPS – II*	*Both links established*	*Pending*	*June 2020*
3	*Barh STPS*	*Both links established*	*Installed*	*Running since August 2019*
4	*NPGC, Nabinagar*	*Links from Gaya and Patna has been established.*	*NPGC, Nabinagar informed that OPGW is available but end equipment need to be procured and installed to establish communication link from their station to NLDC. NTPC further informed that they have place order for providing the end equipment.*	*June 2020*

5	*Maithon Power Limited*	*One link established. Other link, Ranchi-Maithon(RB) would complete by March, 2020.*	*In progess*	*February,2020*
6	*Talcher STPS – I*	*Both links established.*		*June 2020*
7	*Kahalgaon STPS – I*	*Both links established.*	*NTPC informed that they approaching CERC for exemption.*	
8	*Nabinagar Thermal Power Project – BRBCL*	*Only one link Sasaram-Nabinagar OPGW installation is pending. It would take two years for completion.*		*June 2020*
9	*Darlipalli STPS*	*Communication established.*	*Integration is in progress*	*June 2020*
10	*Teesta – V*	*One link established*		*June 2020*
11	*Farakka STPS – III*	*Link established*		*June 2020*
12	*MTPS Stage – II (Kanti)*	*Link established*		*June 2020*
13	*Rangit HPS*	*One link established*		*June 2020*

******** *OPGW from Barh to Gorakhpur is redundant path for all NR-ER connectivity which would be completed by March, 2020.*

In 6th TeST Meeting ,POWERGRID informed that the work of laying OPGW from Barh to Gorakhpur which is redundant path for all NR-ER connectivity got delayed due to ongoing Covid-19 situation. POWERGRID further informed that they are taking up the matter with vendor and the same would be completed by October 2020.

Members may update.

ITEM NO. B.8: Installation of OPGW in Teesta III -Kishanganj link

POWERGRID is implementing OPGW on Teesta-III-Kishanganj TL under Fiber Optic Expansion Package (Additional Requirement). Out of total 215 Km, 89 Km work has been completed. But following issues are causing hindrance to the completion of the work.

A. Non-availability of A/R in non-auto mode: Due to enforcement of Lockdown for Covid-19 pandemic situation, work was stopped since 24.03.2020. However, request of A/R in non-auto mode in 400KV TeestaIII-Kishanganj line was sought from 01.06.2020 onwards for resuming work after removal of lockdown, but approval was not accorded in Shutdown Meeting/OCC. Again ERLDC was requested vide letter dated 29.06.2020 for approval of A/R in non-auto mode for the month of July-2020, but again the request is declined by ERLDC (vide their letter dated 01.07.2020) due

to high hydro season. OPGW work is held up due to non-availability of above approval and the same is causing delay in completion of the work.

It is requested to re-consider the request and provide the permission of A/R in non-auto mode in 400KV TeestaIII-Kishanganj line so that work could be completed at the earliest.

B. ROW issues / Old compensation issues: Severe ROW issues are being faced during execution of the work hampering the work and causing delay to the work. During erection of OPGW, work has been stopped at various locations due to ROW issues/Old compensation issues. In all locations, local villagers are demanding payment of old pending compensation from TPTL. ROW issues occurred till date is detailed as under:

Sr	RoW Location/Drum no	ROW Since	Contact Person, site
I)	272/3 (Drum No: 42; T No. 270 to 273)	11.02.2020	Ganesh Kumar Roy Hatidoba,Kharibari, Ragali
II)	T No. 274 (Drum No: 43; T No 274/5 to 273)	06.11.2019	Appu Datta Buraganj, Darjeeling
III)	T No 290A/0 (Drum No 50- T No 290/3 to 294B)	19.10.2019	Tejabpur, Kishanganj
IV)	T No. 294B/1,294B/4,294B/5 (Drum No 51: T. No 294B to 294D/1)	03.12.2019	Md Ezaz Pothiya, Kishanganj
v)	T No 308,311/2 (Drum No 58; T No 305/1 to 311/5)	09.01.2020	Nur Ishlam, Umar Ali, Bhola Lahara, Kishanganj
vi)	316/1 (Drum No 59; T No 311/5,316/1)	27.02.2020	*Mansur Ali, Zamuruddin Rahaman, Afroj Alam* (Marwa Toli, Khirdoho), Kishanganj

TPTL shall take necessary action for resolving the issue.

In 6th TeST Meeting , POWERGRID requested ERLDC to provide the permission of A/R in non – auto mode in 400 KV Teesta III – Kishangunj line so that they could be able to install the balance OPGW at the earliest.

ERLDC informed that due to high hydro generation in Sikkim, it is not possible to allow A/R in non-auto mode and advised POWERGRID to apply for the same from September 2020 onwards. ERLDC further advised POWERGRID to bring the agenda in the shutdown meeting of September 2020. POWERGRID agreed for the same.

POWERGRID requested TPTL for their full cooperation for resolving the ROW issue at the earliest. TPTL agreed to support Powergrid in resolving the ROW issues.

Members may discuss.

ITEM NO. B.9: Replacement of old RTU in Eastern Region for reporting of RTU / SAS to back-up Control Centre

Present status of RTU/SAS replacement / up-gradation: -

Utility	Status	Deliberation in last TeST meeting	Target
POWERGRID	Pending	Powergrid informed that NIT would be floated by February, 2020. In 6th TeST Meeting, POWERGRID Informed that NIT for replacement / upgradation of RTUs/SAS has been floated on June 2020.	
Maithon Right bank (MPL)	RTU/SAS Upgraded	ERLDC informed that SAS system at MPL is upgraded but reporting to ERLDC BCC is yet to be done and hence, requested MPL to call their vendor so that configuration at their end could be done properly for its dual reporting. MPL informed that they have taken remote support from M/s ABB to resolve the same.	
NTPC, Farakka (Stage I & II)	Pending	NTPC informed that they would complete the work by April, 2020.	April, 2020
Talcher STPS	RTU Upgraded	NTPC would further send the latest update to ERPC at the earliest.	
Kahalgaon STPS	Pending	NTPC Kahalgaon informed that they would complete the work by February, 2020.	February, 2020
Chuzachen HEP	Pending	Chuzachen HEP informed that they have installed the panels and they would complete the work by February, 2020 but reporting of data over IEC 104 protocol would not be possible because of non-availability of OPGW network. Powergrid informed that OPGW between Chuzachen - Rangpo would take 6-7 months more to complete.	With the availability of OPGW between Chuzachen - Rangpo.
JITPL	Pending	Powergrid informed that OPGW communication links from JITPL to nearest Powergrid S/s would be completed by May 2020. In 6th TeST Meeting, POWERGRID informed that OPGW related work at GMR, JITPL will be completed by December 2020.	December 2020
GMR	Pending	Powergrid informed that OPGW communication links from GMR to nearest Powergrid S/s would be completed by May 2020.	December 2020

		In 6th TeST Meeting, POWERGRID informed that OPGW related work at GMR, JITPL will be completed by December 2020. .	
JUSNL	Pending	JUSNL informed that their RTU replacement of 21 Nos. of RTU would be completed by March 2020**.** In 6th TeST Meeting , JUSNL informed that RTU replacement work has already begun. Presently, RTUs of 220 KV Hatia and 132 KV Hatia is under replacement and entire RTU replacement work is to be completed by another 3 months i.e. October 2020.	October 2020
OPTCL	Pending	OPTCL informed that LOA for replacement / up-gradation of old RTUs (78Nos) would be awarded by December, 2019. In 6th TeST Meeting, OPTCL informed that they will be able to complete the work by March 2021.	March 2021
WBSETCL	Pending	WBSETCL informed that they are going to place the order shortly with an implementation schedule of 2 years (1809 km OPGW laying works & 35 Nos. of RTU replacement works). WBSETCL informed that tender for RTU would be given by February, 2020 and tender for OPGW is already given. In 6th TeST Meeting, WBSETCL intimated that RTU replacement work for WBPDCL has already commenced. However, RTU replacement of WBSETCL is still on tendering phase. NIT to be floated on or before 31st July,2020.	
NHPC (Teesta – V & Rangit)	Pending	Teesta-V informed that they are in process to finalize LoA.	June, 2020
DMTCL Motihari	Pending		OPGW not available
BRBCL Nabinagar	Pending		OPGW not available
Teesta – III	Pending		OPGW not available
Dikchu	Pending		OPGW not

			available
Jorethang	Pending		OPGW not available
New Farakka (Stage III)	Completed	---	---
APNRL	Completed	---	---
Barh	Completed	---	---

In 6th TeST Meeting, POWERGRID Informed that NIT for replacement / upgradation of RTUs/SAS has been floated on June 2020.

JUSNL informed that RTU replacement work has already begun. Presently, RTUs of 220 KV Hatia and 132 KV Hatia is under replacement and entire RTU replacement work is to be completed by another 3 months i.e. October 2020.

WBSETCL intimated that RTU replacement work for WBPDCL has already commenced. However, RTU replacement of WBSETCL is still on tendering phase. NIT to be floated on or before 31st July,2020.

OPTCL informed that they will be able to complete the work by March 2021.

POWERGRID informed that OPGW related work at GMR, JITPL will be completed by December 2020.

ERLDC informed that dual reporting work of MPL is completed.

Members may update the latest status.

ITEM NO. B.10: Redundancy of communication links for ICCP between control centres

Redundancy of ICCP communication links from all state control centre including their back-up to Main ERLDC are already implemented. Redundancy of ICCP communication links from all state control centers except DVC-MCC (Andul Road) & WBSETCL-BCC (Abhikshan Bhawan) to back-up ERLDC located at NLDC, New Delhi is yet to be provided.

In 6th TeST Meeting the updated status was .

S. No.	Link Path	Deliberation in the last TeST meeting	Deliberation in the 6th TeST meeting
1.	*DVC MCC located at Andul Road to ERLDC BCC at New Delhi* ***- DVC requested to include underground OFC in Howrah (WB) to Howrah (DVC) under the scope of upcoming project – 'Strengthening of Inter-regional & Intra-regional OPGW Communication Links***	Powergrid informed that provision for laying of OPGW communication link between DVC, Howrah and WBSETCL, Howrah is being created in upcoming project. Powergrid further informed that they require necessary help from WBSETCL to make provision of OPGW communication link up to WBSETCL, Abhikshan	*WBSETCL requested to submit all the communications held earlier so that they can take up the matter with their management for some useful solution. POWERGRID agreed to submit the same with 2 – 3 days.*

	for Strengthening of Eastern Region' and also requested WBSETCL to provide necessary permission & space for laying of Underground OFC and terminal equipment.	Bhawan. In 5th TeST Meeting , SLDC West Bengal informed that the space may be available at the Ground Floor for installation of necessary equipment for providing the communication link between DVC, Howrah and WBSETCL, Howrah. They suggested taking necessary approval from competent authority. TeST committee referred the issue to TCC meeting	
2.	*WBSETCL BCC Abhikshan Bhawan to ERLDC BCC located at New Delhi*	Powergrid requested ERLDC to provide space for installation of ULDC equipment at Backup ERLDC (NLDC) so that link may be configured in ULDC network. ERLDC informed that necessary space has been provided and installation work is in progress. In 5th TeST Meeting , Powergrid informed that necessary equipment has been installed and configured at backup ERLDC located at NLDC, New Delhi. ERLDC informed that they will carried out the testing for the same.	*POWERGRID informed that port detail is already shared with ERLDC and hence, requested POWERGRID to carried out the link healthiness test so that ICCP communication link could be established at the earliest. ERLDC agreed to do so with 10 days.*

3.	**Farakka to Jeerat -** Powergrid informed that presently, FO link connectivity is available between Farakka to Jeerat through Behrampur which doesn't have route diversity. Powergrid further informed that route diversity for redundancy would be available after commissioning of OPGW link from Farakka to Jeerat through Gokarna, Rajarhat & Subhashgram.	Powergrid reiterated that OPGW in Rajarhat-Farakka link would be completed along with the Gokarna-Rajarhat transmission line.	*POWERGRID informed that they have completed the work and subsequently testing also. ERLDC requested them to shift the data as the communication link is now ready. POWERGRID agreed to shift the data by 31st July 2020.*
4.	**Rourkela to Bhubaneswar SLDC -** Powergrid informed that presently, FO link connectivity between Rourkela to Bhubaneswar SLDC is available through TSTPS, Meeramundali & Mendhasal which doesn't have route diversity.	OPTCL informed that Jagatsinghpur to Paradeep OPGW is pending due to Tower shifting work, which is the requirement of Indian Railways. Once the tower shifting work will be completed by Indian Railways, OPTCL will start their work. OPTCL informed that 17 Nos. of towers are being diverted and same would expected to get completed by May, 2020.	*OPTCL informed that the OPGW work is not yet completed due to ongoing Covid-19 restriction. OPTCL further informed that the same will be completed by October 2020.*
5.	**Ranchi 400 kV (PG) to JUSNL SLDC (Kushai Colony)** - Powergrid informed that presently, FO link connectivity between Ranchi 400 kV (PG) to JUSNL SLDC is available through Hatia 220 kV which doesn't have route diversity.	JUSNL informed that they have received approval for PSDF funding for providing protection channel for redundancy between Chandil to JUSNL SLDC (Kushai Colony) and have received the cabinet approval but could not proceed further due to model code of conduct due to state assembly elections in their state. In 5th TeST Meeting, JUSNL informed that they would explore some other project to provide the redundant path from Ranchi 400 kV (PG) to JUSNL SLDC (Kushai Colony) as Chandil to JUSNL SLDC (Kushai Colony) link could not be completed.	*JUSNL informed that they are planned to take leased fibre for the said path and the same is under discussion stage and would be completed at the earliest.*

Members may update the latest status.

ITEM NO. B.11: URTDSM Project installed in Eastern Region

1. Issues related to analytics application:---ERLDC

The URTDSM project is installed and being used by ERLDC RTSD operators since January 2019. Few observations need to be attended for better utilization of the system: -

S. No.	*Issue*	*Deliberation in last TeST meeting*	*Latest Status*
1	**Powergrid analytics application** : Powergrid analytical application software, which was supposed to be installed under URTDSM project, is yet to be made functional at SLDCs.	ERLDC informed that one module is pending of the application and the rest is completed. In 6th TeST Meeting, POWERGRID Informed that the said module is already developed by IIT Mumbai but field testing for the same is pending due to ongoing Covid-19 restriction. POWERGRID further informed that IIT Mumbai is fully closed and hence, they couldn't proceed further. POWERGRID added that they are in contact with IIT Mumbai and the module would be supplied at the earliest.	

In 5th TeST Meeting, Powergrid informed that the above module of analytics application is under development stage and the same would be completed by June, 2020.

In 6th TeST Meeting , ERLDC informed that they are facing several issues while using URTDSM project and Analytic application in real time and these observations have been shared with POWERGRID. ERLDC further informed that no improvements are observed as far as rectification of these issues are concerned.

POWERGRID Informed that the said module is already developed by IIT Mumbai but field testing for the same is pending due to ongoing Covid-19 restriction. POWERGRID further informed that IIT Mumbai is fully closed and hence, they couldn't proceed further.

POWERGRID added that they are in contact with IIT Mumbai and the module would be supplied at the earliest.

Powergrid may update.

2. Non availability of PMUs data in URTDSM project and related Matters--ERLDC

URTDSM phase I project is already implemented in Eastern Region and presently, the same is under warranty. There are around 285 PMUs installed in Eastern Region but real time PMUs data

from 26 nos of PMUs are not reporting to ERLDC since long. Since PMU data is of utmost important for real time operation as well as post facto analysis, POWERGRID may please take up these matters with M/S GE for expeditious rectification. Apart from these few discrepancies, which have been observed during analysis of events using PMU data is tabulated below:

S no	Station Name	Observation
01	Ranchi	Discrepancies in PMU measurement at Ranchi during fault of 400 kV Ranchi Sipat – 2 on 15-06-2020 at 07:56 hrs PMU observation: • As per voltage plot at Ranchi: B Phase to earth fault • **As per current plot at Ranchi: Y and B phase to earth fault** • As per voltage plot at Rourkela: B phase to Earth fault DR recorded at Ranchi: • B phase to earth fault.
02	Barh STPS	Discrepancies in PMU measurement at Barh during fault of 400 kV Barh – Motihari – 2 on 20-05-2020 at 13:23 hrs PMU observation: • **As per line voltage plot at Barh of 400 kV Barh Kahalgaon - 2: B Phase to earth fault** • As per line voltage plot at Barh of 400 kV Barh Motihari - 2: R phase to earth fault DR recorded at Barh: • R phase to earth fault.

In 6th TeST Meeting , M/s GE informed that they are unable to go to the site because of restriction in the movement. M/s GE agreed to provide support remotely to resolve the issue, if Powergrid agreed to depute their engineers.

Powergrid agreed.

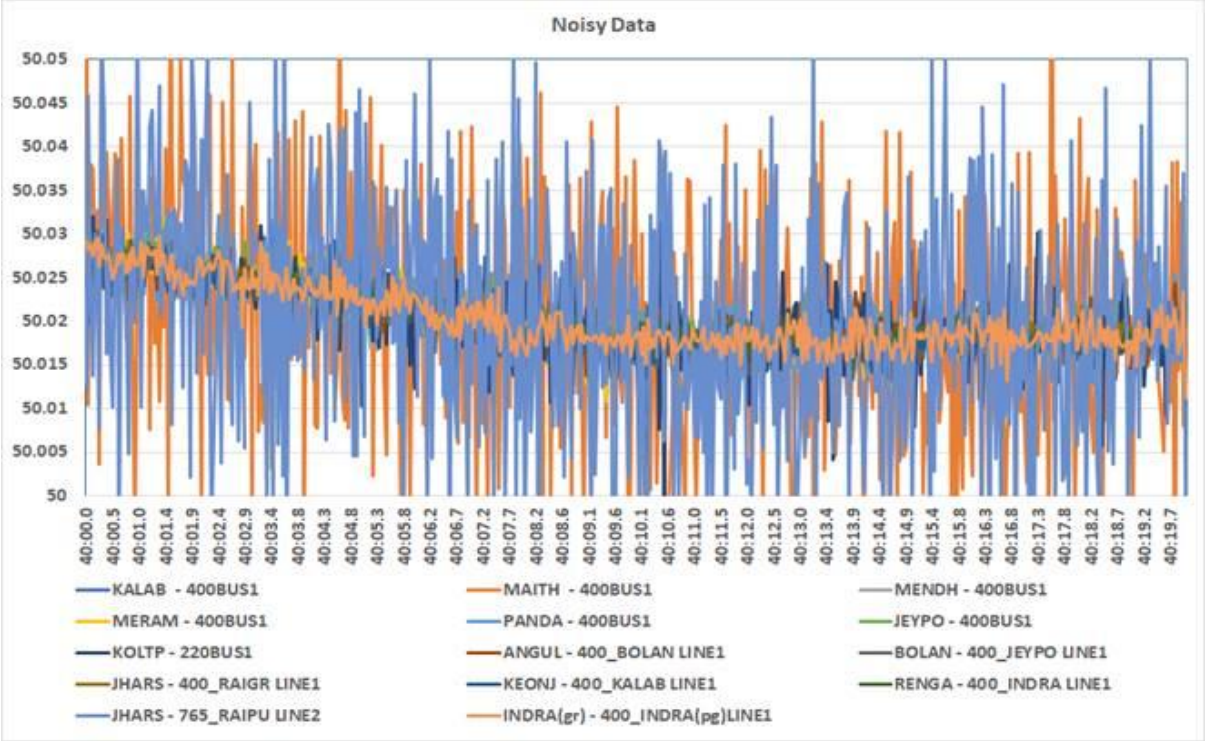
TeST Committee advised Powergrid to resolve the issues incoordination with M/s GE.

Powergrid may explain.

3. Severe Noise in PMU Data in Eastern Region---ERLDC

Eastern Region PMUs are facing the issue of Noise since the beginning. The issue of Noisy data in PMUs has been flagged earlier to GE. The severity of noise is quite high in data. Such noisy data will result in bad Analytics and poor performance and utilization and confidence in the system.

Frequency data for 25th June 2020 is shown below to showcase the issue of high noise in PMU.



From above plot it can be seen that very high noise is observed in PMU data of Kalbadia, Maithon, Mendhasal, Meramundali, Pandiabali, Jeypore, Kolaghat, Angul, Keonjhar, Bolangir, Jhasurguda, Indrawati substations.

In 6th TeST Meeting , M/s GE informed that they had submitted the details to their R & D team for detailed analysis. The issue would be resolved soon.

Powergrid may explain.

4. Mal-functioning of VADR (Detection of Vulnerable Distance Protection Relays)--ERLDC

VADR (Detection of Vulnerable Distance Protection Relays) has been commissioned at ERLDC under URTDSM project but while using this application in real time operator observed that some of the relays incorrectly appearing in the zone 3. However, when investigated it is found that there was no fault or abnormality in the nearby area.
Details has been mentioned in the **Annexure B11.4**.

In 6th TeST Meeting , Powergrid explained that if the relay settings are not correct then there are chances of maloperation of this module. Powergrid agreed to look into the issue and resolve.

Powergrid may explain.

5. SAT & SAVT of Backup NLDC under URTDSM Project (Phase-I) --Powergrid

The Work of Backup NLDC Control Center under URTDSM Project has been completed on 02.12.2020 after readiness of UPS room at ERLDC.

NLDC & ERLDC has been requested vide email dated 02.12.2020 for commencement of SAT from 04.12.2020. NLDC has intimated vide email dated 08.12.2020 that ERLDC will witness SAT. But SAT is not commenced till date.

Powergrid may explain.

6. Backup NLDC under URTDSM Project: Readiness of UPS Room--Powergrid

Backup NLDC Control Center under URTDSM Project could not be commissioned due to non-readiness of UPS room at ERLDC.

In 23rd SCADA O&M ERLDC intimated that the renovation work will be completed by July-2019. Further, ERLDC vide letter dated 30.05.2019 and in 24th SCADA O&M meeting held on 14.08.2019, intimated that the renovation work will be completed by November-2019.

In 1st Test Meeting, ERLDC intimated that the renovation work will take more time and expected to be completed by February, 2020 and Powergrid also requested for space at ERLDC/ERPC for charging of the battery bank without which their performance may be degraded. However, the space could not be allotted by ERLDC/ERPC.
In 2nd and 3rd Test Meeting, Powergrid proposed for short-closing of the contract considering non-availability of space for UPS and Battery after long wait time and repeated request.

In 3rd and 4th TeST meeting, ERLDC intimated that they site will be ready by March-2020.

Based on discussion with ERLDC, an alternate temporary space may be provisioned for setting up UPS and Battery system and commissioning of the system. After readiness of permanent allotted space, the UPS & Battery system will be re-commissioned. Due to non-provisioning of space by ERLDC, commissioning of Backup NLDC URTDSM system is held up and getting delayed.

In 5th TeST Meeting , ERLDC agreed to provide the temporary space at ERLDC for placing the battery till the permanent arrangement. ERLDC requested Powergrid to ensure safety and security while shifting and charging the battery.

Thereafter, POWERGRID informed that they proceeded for the execution after intimation of the estimated cost involvement to ERLDC/ERPC and with a request for provisioning of the cost under subject project vide letter dated 11.03.2020.

LOA for the said work has been placed on 16.06.2020 with total cost of Rs. 5,42,119.00 and the work is presently going on.

In 6th TeST Meeting , ERLDC informed that temporary space at ERLDC has been provided for charging the batteries.

Powergrid and ERLDC may update.

7. ***URTDSM Project Summary:*** *-*

Under URTDSM project, 12 nos. PMUs could not be commissioned due to various reason as mentioned below:

a. Bankruptcy/admin. issue : 2 PMUs (IPPs - Monnet & IndBharat)

b. Non-availability of communication link : 8 PMUs (GMR IPP & JITPL IPP)
: 2 PMUs at Tenughat

c. Substation not ready : 3 PMU at Patratu

Powergrid requested to consider for short-closing of the contract with as-is-where-is basis (excluding erection cost, wherever applicable).

In 42nd TCC/ERPC meeting, followings were decided -

- Short closing of URTDSM project shall be allowed only after integration of PMUs including its data transfer at GMR, JITPL & Tenughat.
- Since Patratu substation is not yet ready, 3 nos. of PMUs at Patratu station shall be kept as spare.
- 2 nos. of PMUs meant for Monnet and IND Bharat can't be commissioned due to bankruptcy issue.

Further, Powergrid informed that integration of PMUs at Tenughat would be completed by December, 2019 and the same for GMR and JITPL would be completed by June 2020.

In 4th TeST meeting, Powergrid informed that validation is pending for one PMU at Tenughat and installation in progress for the second PMU at Tenughat.

S. No.	PMU Issue	Deliberation in the last TeST meeting	Latest status
1.	Sterlite	OPTCL informed that they have assigned M/s GE to establish communication link and they have configured Sterlite-Lapanga-Merumundali link. Further, OPTCL informed that above work would be completed by February, 2020.	
2.	**Redundant communication link** - Considering the importance of PMUs data, Powergrid agreed to implement redundant communication link in URTDSM project in order to prevent PMUs data intermittency and repetitive failure between PDC-PDC communication between ERLDC and SLDCs.	Powergrid informed that the redundant communication link in URTDSM project has been provided with all constituents except DVC. Powergrid informed that no alternate path is there to provide redundant communication link for DVC system. ERLDC informed that alternate communication link may be provided using PowerTel network. Powergrid informed that they would discuss this issue separately with ERLDC.	

In 5th TeST Meeting, ERLDC requested to make provision of ticket raising facility for reporting of problems in URTDSM system. Powergrid agreed for the same.

In 6th TeST Meeting, Powergrid informed that integration of PMUs at GMR and JITPL would be completed by December 2020. The same at Tenughat would be completed by July 2020.

POWERGRID informed that provision of ticket raising facility is already shared with ERLDC. ERLDC confirmed that they have received the ticket raising facility shared by POWERGRID.

TeST Committee advised POWERGRID to share the details to concern constituents also.

POWERGRID agreed.

Powergrid and OPTCL may update.

ITEM NO. B.12: Finalization of list of PMUs to be considered for URTDSM Project (Phase-II) – Powergrid

CERC vide petition no-129/MP/2012 with I.A. 18/2012 has approved the implementation of URTDSM Project in 2 phases/stages as follows:

(a) In Phase-I, PMUs would be placed at those locations where fiber optic communication links are available or would be made available under MW frequency vacation programme and regional strengthening programme by the year 2014-15 alongwith installation of Phasor Data Concentrator (PDC) at SLDCs,RLDCs,NLDC,NTAMC,strategic location in States,etc.
(b) In Phase-II, PMUs would be installed at remaining locations along implementation of URTDSM Scheme in association with premier academic with communication links.

All the works (except minor pending works) under URTDSM Phase-I has been completed successfully.

POWERGRID has communicated ERLDC & all constituent the proposed list of PMUs to be implemented which was earlier approved under URTDSM Project Phase-II for any modification. ERLDC vide email dated 29.04.2020 & 03.06.2020 has provided the modified list of PMUs for Phase-II. The list is enclosed in **Annexure B12**.

List of PMUs in Annexure-II is submitted for approval for further implementation under URTDSM Project Phase-II in Eastern Region.

In 6th TeST Meeting, POWERGRID informed that list for implementation of PMUs under URTDSM Project Phase-II in Eastern Region is already shared, the same is prepared after getting inputs from ERLDC.

ERLDC requested POWERGRID that this list is to be verified by POWERGRID CTU also. POWERGRID agreed to get this validated from CTU.

ERLDC requested ER constituents also to give their inputs by 15th July 2020 so that POWERGRID could be able to proceed it further. All constituents agreed for the same.

Members may discuss.

ITEM NO. B.13: Non availability of SCADA in Eastern region

SCADA/EMS system has been installed at SLDC and RLDC and real time operator are performing grid management activity based on real time data available with this SCADA system. But, it is observed that several important stations under state SLDC jurisdiction in Eastern Region are not reporting to respective state SLDC (as shown in table below) and hence ERLDC is also not getting data through ICCP.

Area of Responsibility	No of station without data telemetry	No of station commissioned without data integration
OPTCL	08	08
WBSETCL	04	01
JUSNL	08	00
BSPTCL	04	00

Table: Area wise no of station without data telemetry.

Details of stations, which are not reporting or yet to be integrated at SLDC is shown below:

AOR	Station level (In kV)	Current Status	Deliberation in last TeST meeting	Comments
WBSETCL	Dharampur 220 Kv	Yet to be integrated.	WBSETCL informed that they have awarded the work to M/s Schneider.	
	Egra 220 kV	Yet to be integrated	WBSETCL informed that they have given this work to M/s Chemtrols.	
	Bantala 220kV	Not Available	WBSETCL informed that work related to Bantala 220 kV to be done by M/s Chemtrols. WBSETCL informed that the work related to M/s Chemtrols has been completed. In 6th TeST Meeting ,WBSETCL informed that problem of data reporting of Bantala 220 kV station is already resolved and hence requested ERLDC to check this at their end.	M/s Chemtrols informed that data is not available due to breakdown of their equipment.
	Alipurduar 220kV	Yet to be integrated	WBSETCL informed that Alipurduar 220 kV RTU data would be available by January, 2020. WBSETCL informed that the work is getting delayed to ROW issue.	
JUSNL	Hatia New 220 kV	Not Available	JUNSL informed that by March, 2020 they will make available all the data in their jurisdiction. In 6th TeST Meeting, JUSNL informed that new RTU installation is under progress and the same would be completed within 2 months.	
	Patratu 220 kV	Not available since Feb 2020		
	Tenughat 220kV	Not available since Feb 2020		
	Chandil 220 kV	Not available since Sept 2019		
	Jamtara 132kV	Not Available		
	Garwa 132kV	Yet to be integrated		
	Deoghar 132kV	Not Available		
	Kendposi 132 kV	Not Available		

OPTCL	Malkangiri 220 kV	Data integration and database creation not yet done.		
	Jaypatna 220			
	Kasipur 220			
	Damanjodi 220			
	Cuttack 220			
	Utkal Al 220			
	Narsingpur 220kV	Station commissioned at 220kV without data telemetry		
	Bargarh 220	Station commissioned at 220kV without data telemetry		
BSPTCL	Gopalganj 220	No available since July 2019		
	Samastipur New 220	Not available since 22-06-2020		
	Dehri 220	Not available since Jan 2020		
	Kishanganj 220	Not available since 14-02-2020		
DMTCL	Motihari 400 kV	Not available since Sept 2019	PLCC link between Barh and Motihari is not healthy.	

In 6th TeST Meeting, WBSETCL informed that problem of data reporting of Bantala 220 kV station is already resolved and hence requested ERLDC to check this at their end. ERLDC agreed for the same.

JUSNL informed that new RTU installation is under progress and the same would be completed within 2 months.

BSPTCL informed that problem of non-reporting will be resolved in one month.

ERLDC requested all the constituent to see the matter on urgent basis and as the list of non-availability is increasing day by day. Real time data reporting issue of important stations like Sagardighi also a matter of serious concern and hence, requested all the constituents to see the matter and resolve at the earliest.

All constituents agreed to look into the matter and resolve the issues at the earliest.

JUSNL, OPTCL, WBSETCL, BSPTCL and DMTCL may update.

ITEM NO. B.14: Large difference between Site, SCADA and PMU voltage of 400 kV Buses in Eastern Region.

An exercise has been carried out for comparing voltage as reported at ERLDC via SCADA or PMU with field voltage (collected over telephone). Through comparison following are observed at some location

1. Large difference between site and SCADA data

a. 400 kV Sasaram East Bus :- SCADA Voltage data is almost 7-8 kV more than the Site Voltage
b. 400 kV Jeypore :- 8/10 kV difference between Site and SCADA Voltage
c. 400 kV Indravati (PG) :- 6-7 kV difference between site and SCADA Voltage

2. Large Voltage difference between two phases
   a. 400 kV MPL:- 6 kV Voltage Difference between R-Y and B-R Phase Voltage at Site

b. 400 kV New Ranchi :- 5/6 kV Difference between R-Y and B-R Phase Voltage at site
c. 400 kV Chandwa :- 4 kV Difference between R-Y and B-R Phase Voltage
d. 400 kV Raghunathpur :- PMU Y-B Voltage 7/10 kV High in comparison to R-Y
e. 400 kV Meramandali :- PMU B-R voltage is 5 kV more than R-Y voltage
f. 400 kV Sagardighi:- 5 kV Voltage Difference between Y-B and B-R phase Voltage at Site

3. Large Voltage difference between two coupled buses at Substation
   a. 400 kV New Duburi :- 14 kV difference between Bus A and Bus B in SCADA
   b. 400 kV Angul :- 9/10 kV Voltage difference between Bus-1 and Bus-2 Voltage at Site

As you are aware that many real time operation decisions like, taking bus reactor in/out of service to control voltage, instruction to generators for injecting or absorbing MVAr as well as opening of line to control over voltage are taken with the help of SCADA data, however decision taken based on such inconsistent/incorrect data can severely impact the grid security.

Further the SCADA voltage data is also for providing operational feedback to the planners, on the basis of which requirement of additional shut capacity is studied.
Thus, such inaccuracy in voltage data is needs to be corrected at the earliest.

In 6th TeST Meeting, ERLDC deliberated that many real time operation decisions like, taking bus reactor in/out of service to control voltage, instruction to generators for injecting or absorbing MVAr as well as opening of line to control over voltage are taken with the help of SCADA data, however decision taken based on such inconsistent/incorrect data can severely impact the grid security. Further, the SCADA voltage data is also for providing operational feedback to the planners, based on which requirement of additional shunt capacity is studied and planned. Thus, such inaccuracy in voltage data is needs to be corrected at the earliest.

POWERGRID informed that due to old S-900 RTUs and associated MFTs at site voltage difference may be observed between the site and the control centre. POWERGRID further intimated that they will be deploying the maintenance team to the concerned sites soon to address the issue.

OPTCL informed that they will resolve voltage related discrepancy for OPTCL station within 15th July 2020. WBSETCL informed that they will take up these matters with respective site for rectification by end of this month i.e. July 2020.

POWERGRID, WBSETCL, DVC, GRIDCO & MPL may update.

ITEM NO. B.15: Poor visibility in VPS installed in ERLDC control room

Under SCADA/EMS project in ER (ERLDC portion), VPS has been installed at ERLDC control room and real time operator do all real time operations based on information displayed in VPS. Due to ageing of LENs of VPS panel entire VPS screen became dim. Due to this, operators are facing lots of difficulties in executing their real time grid management activities. Matter was informed to M/S Chemtrols for changing of LENs vide letter dated 13th February 2020. Matter is yet to be resolved.

In 6th TeST Meeting , ERLDC informed that due to problem in LENs visibility of VPS displays are very poor and M/s Chemtrols are not replacing these LENs even though ERLDC requested them to replace LENs on February 2020. M/s Chemtrols informed that they have initiated process of replacing all damaged LENs of VPS cube installed at ERLDC and the same will be completed by 31st July 2020.

M/S Chemtrols may update

ITEM NO. B.16: Replacement/repairing of 01 no. of faulty 12V battery charger of 125kVA DG set at ERLDC,POSOCO. --ERLDC

Work related to replacement / repairing of single faulty 12 V Battery charger of 125 kVA DG Set at ERLDC has been taken by M/s Chemtrol for repairing/replacement purpose since 7th October-2020 and till date material has not been received at ERLDC site after repeated communication from our end.

M/S Chemtrols may update.

ITEM NO. B.17: Issue with BSPTCL, Patna: M/S Chemtrols

The SCADA System of BSPTCL, Patna is under Annual Maintenance contract. In line with the Responsibility Matrix [Clause 4.10 of Section – 4 'Maintenance & Support Services"], M/S Chemtrols are obliged and solely responsible to its performance. Integration and Database work at Control Center end [RTU Integration / ICCP Integration] are one of M/S Chemtrols primary responsibilities. This modification is regularly being carried out by BSPTCL / 3rd party vendor of BSPTCL without any intimation / information to M/S Chemtrols. This may lead to some unwanted event / failure of the SCADA System for which M/S Chemtrols will not be held responsible.

Members may discuss.

ITEM NO. B.18: Integration of new bays in existing RTU & SCADA (JUSNL)

New bays have been constructed in the GSS of JUSNL already integrated with RTU supplied by M/s Chemtrols Industries Limited. These new bays need to be integrated with the RTU so that real time monitoring of these bay could be done at SLDC, Ranchi through SCADA.

M/s Chemtrols has been requested vide Letter No. 08 SLDC'Ranchi; dated 11.06.2020 of GM (SLDC), Ranchi to make necessary arrangement for integration of new bays (30 nos.) in RTU and SCADA in light of Contract Agreement No. CC-CS/326-ER2/EMS-1767/3/G4/CA-III/4637; dated 03.06.2016. However, integration process from M/s Chemtrols end has not been initiated.

In 6th TeST Meeting , JUSNL informed that integration of new bays in existing RTU and control centre as well is pending and advised M/s Chemtrols many times to integrate at the earliest.

M/s Chemtrols informed that they are in the process of issuing the purchase order for procurement of necessary materials. M/s Chemtrols further informed that they will be delivering the materials to sites after necessary procurement.

M/S Chemtrols may update.

ITEM NO. B.19: Issues Related to M/s Chemtrols (BSPTCL)

CRITICAL ISSUES

a) Cyber Security Audit: Cyber Security Audit of 2019 is pending..
b) One no. of battery and thermostat relay of DG set is required to be replaced.
c) One no. of SMPS of VCS is defective since 23.03.2020 is required to be replaced.
d) One no. of SMPS of VPS is defective since 09.02.2020 is required to be replaced.
e) Two no. of SAN of SCADA is defective since 13.01.2020 is required to be replaced.

In 6th TeST Meeting following deliberations were made :

a) BSPTCL informed that cyber security audit is pending since long and hence requested M/s Chemtrols to carried out the cyber security audit at the earliest.

M/s Chemtrols informed that cyber security audit was schedule to be conducted during March 2020 but the same could not be done due to outbreak of Covid-19. M/s Chemtrols further informed that they can still plan this activity through remote and requested all constituents including ERLDC (except OPTCL) to look into the matter and give necessary permission.

ERLDC informed that they will discuss this matter with M/s Chemtrols & NII (vendor conducting the cyber audit) and inform to all the ER constituents (except OPTCL) at the earliest.

b) Chemtrols informed that battery is under warranty, so they will be able to resolve the issue related to the DG by the end of July 2020.

c) Chemtrols informed that they already given the purchase order of new SMPS for VCS which will be delivered by next month.

d) Chemtrols informed that they already given the purchase order of new SMPS for VPS also which will be delivered by next month.

e) Chemtrols informed that they already given the purchase order of new hard disks for the defective SANs also which will be delivered by next month.

NON CRITICAL ISSUES

a. Integration of new bay:-
As per AMC contracts Chemtrols has to integrate 50 nos. of new bays in to RTU and the work is still pending since long.
b. The following materials are faulty which are required to be replaced at the earliest:
- MFT – 1 pc
- Node – 9 Pcs
- Decode Modem- 2 pcs
- DC to DC Convertor of GSS Mithapur

LDMS, RTU & UPS– 32 no. of LDMS, 6 no. of RTU and 13 no. of UPS are not working due to various issues. (Details sent to M/s Chemtrols)

In 6th TeST Meeting following deliberations were made :

a) *M/s Chemtrols informed that due to outbreak of COVID-19 pandemic they couldn't supply materials to the sites. M/s Chemtrols further informed that they will be delivering the materials to respective site soon. M/s Chemtrols further requested BSPTCL to provide accommodation to the site engineers who will be deployed for the integration of new bays. BSPTCL agreed for the same.*

b) *Chemtrols informed that they would be able to resolve the issues pertaining to MFT, Node, Decode Modem & DC to DC convertor of GSS Mithapur at the earliest.*

Chemtrols further intimated that they will make a schedule for the rectification of the issues related to LDMS, RTU and UPS and the same will be completed by August 2020.

NEW ISSUES

a) One no. of Hard Disk (300 GB) of Web Server is defective since 02.12.2020.
b) Three no. of SAN (900 GB) of SCADA is defective since 13.01.2020 is required to be replaced.
c) Ten no. of Server Fan is defective.

OTHER ISSUES

1)

a. Integration of new bay:-

As per AMC contracts Chemtrols has to integrate 50 nos. of new bays in to RTU and the work is still pending since long.

b. The following materials are faulty which are required to be replaced at the earliest:

- MFT – 06 pcs
- Node –09 Pcs
- Decode Modem- 10 pcs
- Mini DP to DVI Convertor- 02 Pcs

c. One no. of SCADA Workstation and one no. of DTS Workstation are defective since 05.11.2020.
d. KVM Monitor and switch of both the servers is out of service.
e. SCADA Data explorer showing error: "Not connected to Data Explorer Adaptor".

2) RTU-05 no. ofRTU of Darbhanga 220KV, SKMCH, KusheshwarAsthan, Dalsinghsarai and Kishanganj Old is not working.

3) LDMS– 43no. of LDMS is not working due to various issues.(Details sent to M/s Chemtrols)

M/S Chemtrols may update.

ITEM NO. B.20: Issues Related to M/s Fibcom executed by PGCIL(BSPTCL)

a) Saharsha node is not working since 30.04.2020.
b) Alarm is observed in 30 No. of cards of different sites on NMS
c) SDH of GSS MTPS, Chandauti, Motihari, Sultanganj and Sabour frequently gets out of service and its rectification takes one week.

In 6th TeST Meeting , POWERGRID informed that they have already taken up the matter with FIBCOM for deputation of Manpower as per contract and the same would be deployed at the earliest.

Powergrid may update.

ITEM NO. B.21: OPGW installation being executed by PGCIL through agency M/S PPCL (BSPTCL)

a) ROW in 220 KV MTPS-Gopalganj transmission line- A letter has been received from field office which states that ROW at the said location is persisting since construction of 220 KV MTPS-Gopalganj lines taken up by PGCIL. Intervention of PGCIL is required to resolve the issue of ROW.
b) SAT of OPGW - M/S PPCL has given the program of SAT nine months back. They have carried out SAT of 132 KV MTPS-Motihari & Motihari-Betia line. Losses found in said lines which are yet to be corrected as SAT of future line are pending since long.
c) Installation work of OPGW taken up for 132 KV Kahalgaon(BH)-Kahalgaon(NTPC) T/L and 132 KV Hathidah-Lakhisarai T/L – but not completed yet.

In 6th TeST Meeting following deliberatons were made -

a) POWERGRID informed that they have already written a letter to Director BSPTCL for offloading it of the two OPGW Links pending due to severe ROW.

b) POWERGRID informed that SAT may be started by July end, subject to COVID-19 movement guidelines and movement / mobilization by party.

c) POWERGRID informed that OPGW installation in Kahalgaon - Kahalgaon link may be taken up after mobilization by agency.

POWERGRID informed that BSPTCL must resolve the ROW issue of Railway in Hathidah - Lakhisarai link for completion of the same by PPCL.

Members may discuss.

ITEM NO. B.22: Agenda from DVC

1. DG set at DVC SLDC, Howrah is out of service from 20.05.2020. The problem has been reported to M/s Chemtrols immediately. But, the problem persists till time.
2. Charger equipment for UPS is faulty since long, matter has been already intimated to the Engineers of Chemtrols. But, the problem is not resolved.

In 6th TeST Meeting following deliberation took place.

1. *M/s. Chemtrols will coordinate with M/s. Garuda for necessary rectification of the problem at earliest as it is under their AMC contract now. M/s Chemtrols informed that it would be rectified by July 2020.*
2. *The charger equipment's are repaired but due to non-payment, the material is not received at site. The same will be provided within 10 days.*

M/S Chemtrols may update.

ITEM NO. B.23: Establishment of additional equipment connectivity with international countries--Powergrid

Communication system in eastern region has expanded after implementation of MW replacement projects and various system expansion projects. The connectivity with neighboring countries such as Bangladesh, Bhutan and Nepal has also been established and data & voice communication is being taking place.

Considering the security & reliability of internal communication network in the Indian portion/Eastern Region, it is proposed to integrate the communication links with other countries through a separate dedicated communication equipment (SDH) which will be connected with Indian communication network through electrical connectivity.

Apart from the above, it is to mention that presently voice communication with other countries are established as remote subscriber of the exchange of other countries. It is also proposed to consider 01 no. of separate Exchange/PABX at ERLDC dedicatedly for establishment of voice communication with other countries.

In Eastern Region, following will be required for implementation of the above proposed scheme:

1. Supply, erection & commissioning of 04 nos. SDH equipment each at Binaguri & Alipurduar (for Bhutan), Berhampore (for Bangladesh) & (for Nepal).
2. Inter-patching of above new SDH with existing SDH (on Indian network) with electrical connectivity and with SDH in other countries on fiber optic medium.
3. Supply, erection, commissioning & integration of 01 no. dedicated PABX at ERLDC for voice communication with neighboring countries.

Tentative cost for implementation of the above scheme is approx. 6 crs. Considering data security & importance of reliable communication with neighboring countries, it is proposed to approve the scheme under central sector and recovery of cost through tariff to be determined by CERC.

In 6th TeST Meeting , TeST Committee advised all the constituents to study the proposal and send their comments to ERPC and ERLDC.

It was decided that the proposal would be discussed in detail in next TeST meeting.

Members may discuss.

PART – C: ANY OTHER ITEMS

ITEM NO. C.1: FOLLOW-UP OF DECISIONS OF THE PREVIOUS Telecommunication SCADA & Telemetry (TeST) SUB-COMMITTEE MEETING(S)

The deliberations of previous TeST meetings which are to be updated are given at**.** Annexure C1.

Members may update the latest status.

ITEM NO. C.2: Issues related to M/s Chemtrols

List of issues faced by various constituents related to M/s Chemtrols in Eastern Region are given at Annexure C2.

M/s Chemtrols may update the latest status.

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Discrepancies observed in vulnerable relay and zone-3 protection Application

(1)Some of the relay appearing frequently in zone -3 for the reason of swing and load encroachment:

- **Relay 5,** (corresponding to line Binaguri –Tala 1) is abruptly coming in list of vulnerable relays which is not correct , sometimes cause is showing swing and sometimes load encroachment. Although the line is out of service since 06 feb still it is appearing as shown in below snapshot .As shown below it has appeared 378 times in 2 months . Many a times it is seen that within 1 minute this relay is appearing 5 to 6 times .

- Similarly **Relay 25** (Corresponding to **Biharshariff –sasaram** line) has also appeared 37 times for the same reason load encroachment or swing. It was checked for many instances of time stamping shown as swing but there was no fault or power oscillation during that period was found ,still it is coming .In Figure (2) power flow of same line is shown where no swing or abnormality was found .

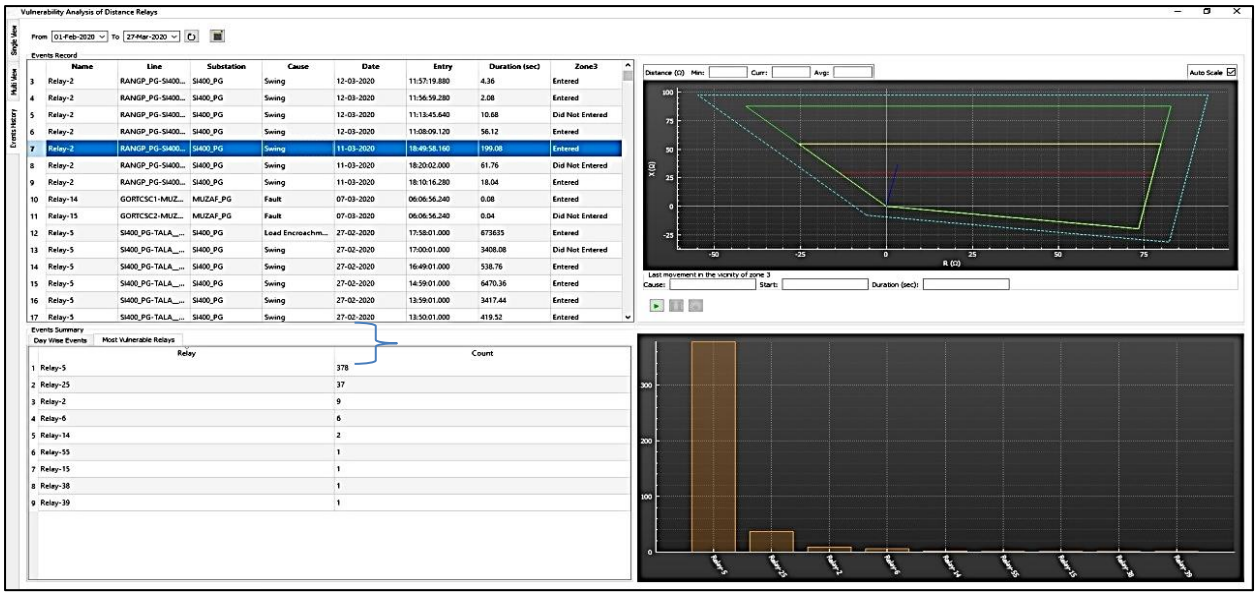


Figure 1: Summary of vulnerable relays.

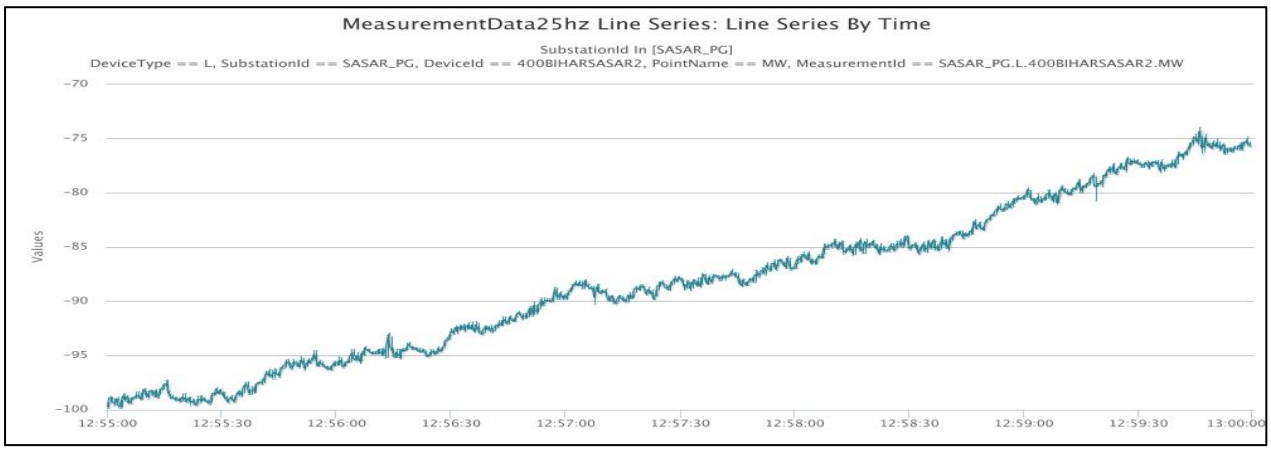
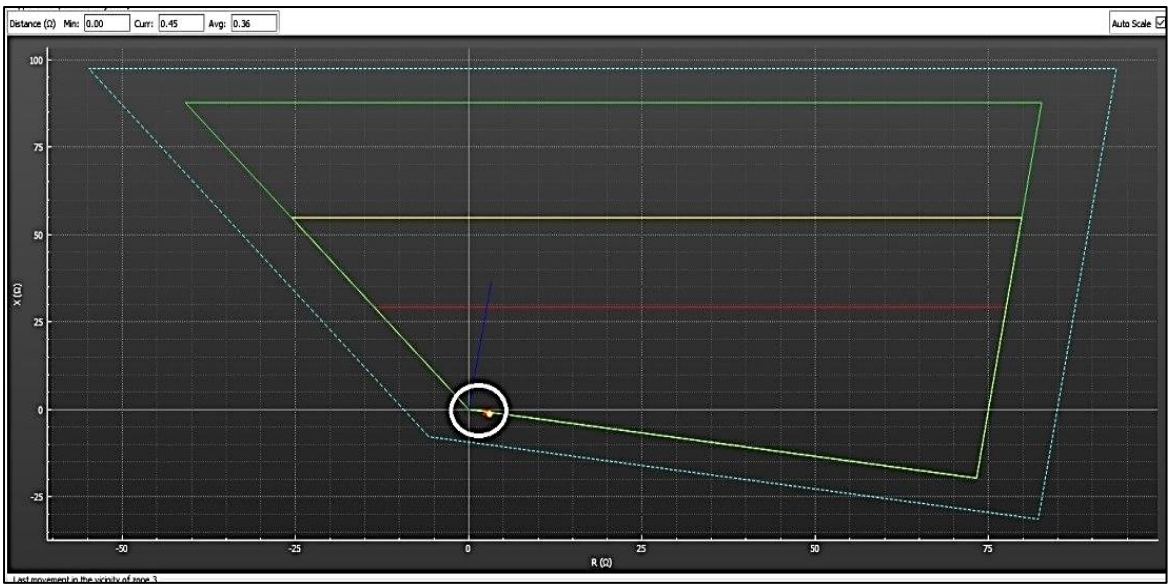


Figure (2)Powerflow of Biharshariff –sasaram line for a duration of one of the instances which appeared as swing .

- **Relay 2 corresponding to (400 Kv Binaguri - Rangpo)** has also appeared 9 times for the reason of swing ,fault trajectory of relay shows it in zone -3 but no such fault or any abnormality found in nearby area .Line is already out from past few months for re-conductoring work still it is appearing .



Figure(3) Relay 2 trajectory as shown by circle in above figure .

- **All the relay which are appearing as swing or load encroachments are not correct .**

- **Only in few cases when there is fault in any line relay of same line or nearby lines relays are picking up as per application which are correct .**

- **But in many fault cases although fault is encountered by the line but it is not getting registered neither by the Same line relay nor by the nearby relays.**

Trajectory of operating point is analyzed for some of the relays where line encountered fault but it did not entered in any zone of the relay characteristic although in reality there was a fault in line and it tripped due to that .

It was found in many cases where there was fault in line and due to that operating point moves but they are not entering in any zone . One of the instance is shown below:

CASE I :

There was a fault in **400 Kv Binaguri –Kishanganj** I on 05 FEB 15:11 hrs line tripped due to R-N fault **Relay 57** corresponding to (400 Kv Binaguri –Kishanganj I) relay operating point trajectory is shown below where it started moving towards relay characteristic but then did not entered and changed its direction and departs from a distance.

Operating point trajectory of fault is shown by Red color line in below figure.

Relay characteristic is shown by green color quadrilateral as encircled in below figure.

Relay setting for the line has been checked and found ok still it did not entered in any zone.

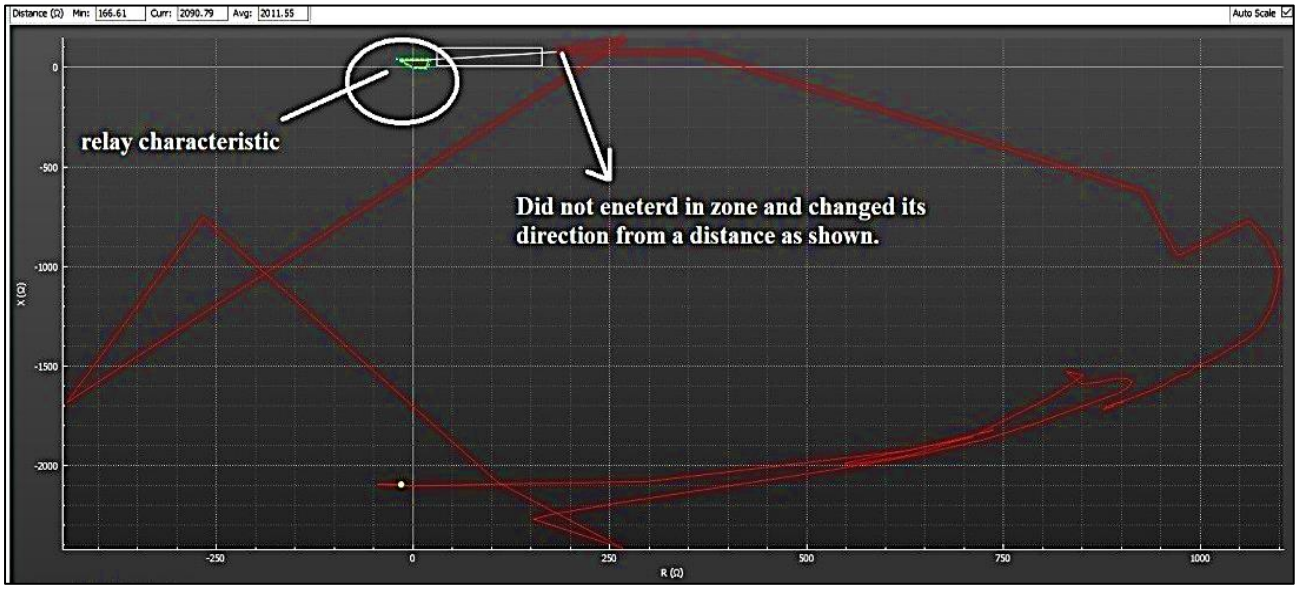
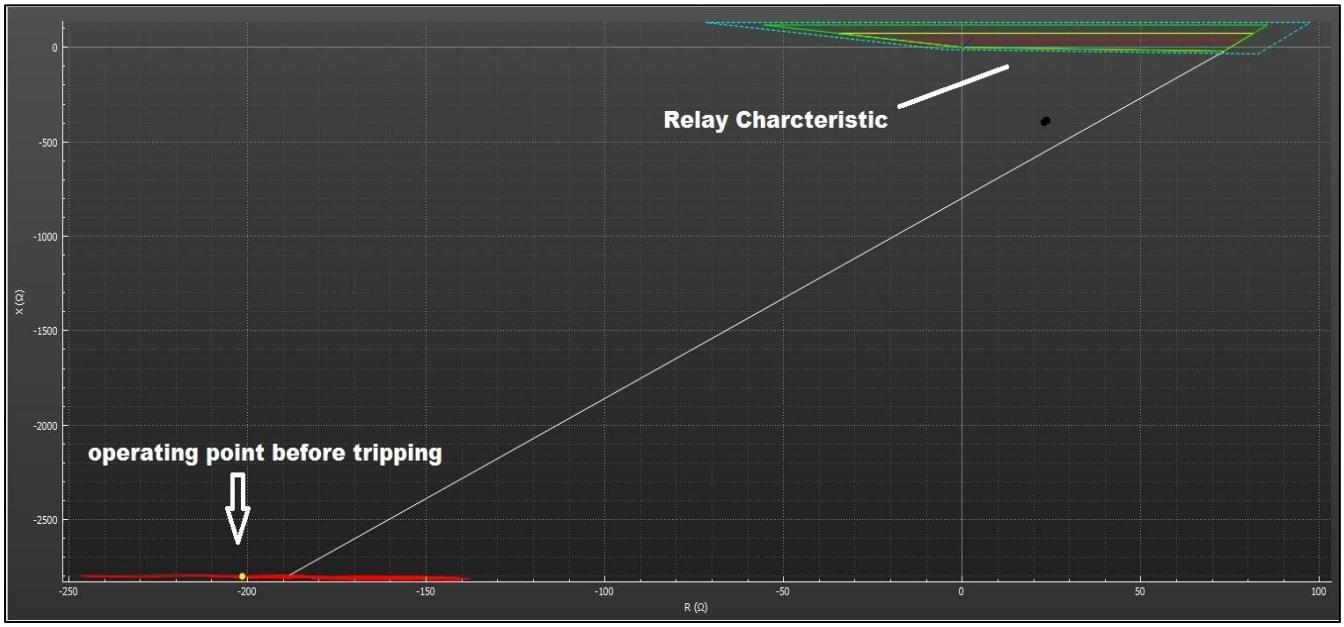


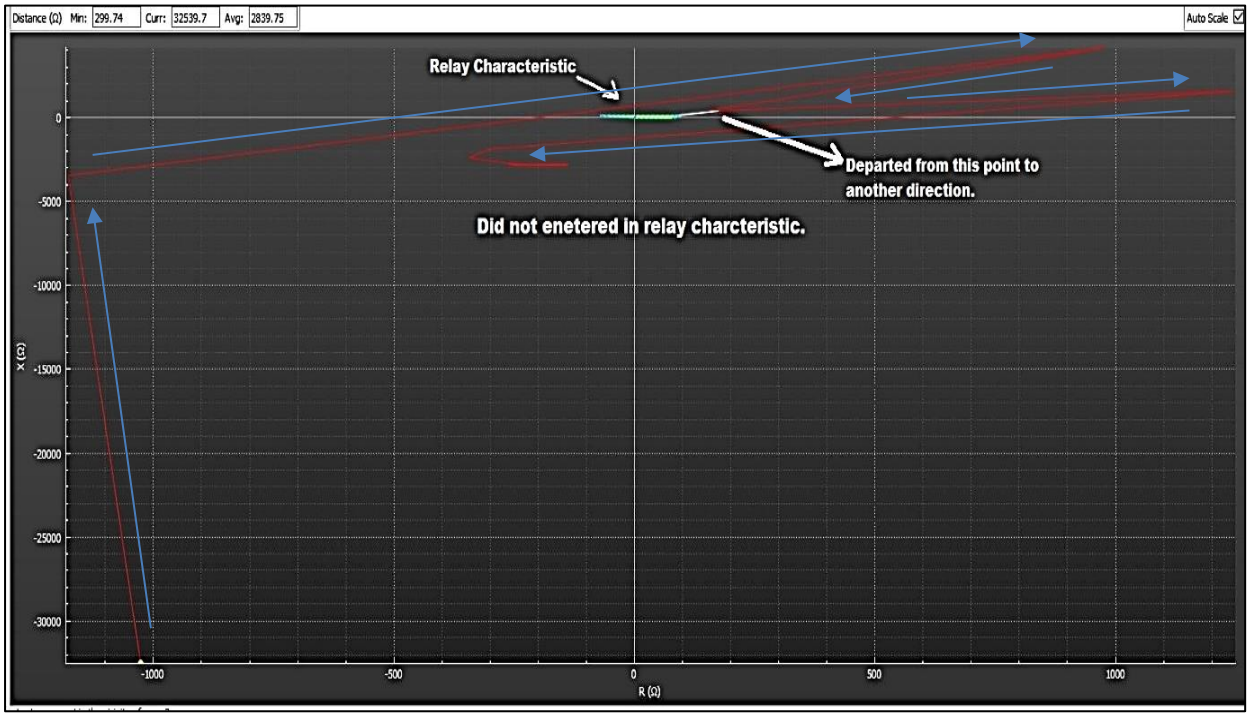
Figure (4) Relay 57 (Binaguri – Kishanganj line) trajectory as per application)

- **CASE II :** Similarly in recent tripping case of 400 Kv Patna –Kishanganj I at 19:37 Hrs due to B-N fault on 13 March. Relay 55 trajectory was observed prior to fault and during fault .As shown in below figure (5) prior to fault operating point was far away from relay characteristics zone .



Figure(5) prior to fault operating point .

Relay trajectory during fault is shown in figure (6) which shows that due to fault operating point moves towards relay characteristic but did not entered in any zone and departs from a distance which should not occur as in reality there was a B-N fault in the line and line tripped .



Figure(6)operating point trajectory during fault .

Red line is trajectory of fault and blue line is shown for direction of path travelled by operating point which shows it did not entered in relay characteristic and diverged from a point .

- State Estimator module also showing error it may be due to unavailability of digital status of some lines so the network checking will not be accurate and thus will show errors such as in case of 400 kv jeerat s/s,400 kv jeerat – Rajarhat line is showing open thus zero power flow .
- Line parameter estimation module is checked for some of the lines and found to be ok ,all lines parameters has not been checked yet .After checking this will also be intimated in detail.

URTDSM Project Phase-II

URTDSM Project Phase-II List of Substations under Eastern Region for PMU placement																
S.No	Project Phase	kV S/s	Name of Station	Owner Utility	No. of feeders	Name of Feeder	Phasor Quantities to be Measured by the PMUs							Substations having SAS with bay kiosk	Tentative no of PMUs
							3-Phase Voltage Phasors (Vr, Vy, Vb)	3-Phase Current Phasors (Ir, Iy, Ib)	Positive Sequence Voltage & Current	Digital Inputs (DIs)	Frequency	ROCOF	Analog Values (MW & MVAR)		
						No of signals ---------->	3	3	2	4	1	1	2		
1	W.B.-II	400	Sagar Dighi	West Bengal	10	Farakka 1 & 2, Subhashgram/Jeerat 1 & 2, Durgapur 1 &2, Gokarna 1 &2, Behrampur 1 & 2	30	30	20	40	1	1	20		5
2	W.B.-II	400	Gokarana	West Bengal	6	Sagardighi 1&2, Chanditala 1&2, Rajarhat 1, Purnea 1	18	18	12	24	1	1	12		3
3	W.B.-II	400	Chanditala	West Bengal	8	Gokarana 1&2, Kharagpur 1&2, Jeerat 1, Kolaghat 1, Arambag 1 and Bidhannagar 1	24	24	16	32	1	1	16		4
4	W.B.-II	400	Kharagpur	West Bengal	7	Baripada 1 , Kolaghat 1& 2, Chanditala 1&2, Uttara 1&2	21	21	14	28	1	1	14		4
5	W.B.-II	400	DPL(Durgapur Pvt.)	West Bengal	2	Bidhannagar 1&2	6	6	4	8	1	1	4		1
6	W.B.-II	220	Santaldih	West Bengal	5	New Bisanpur-1, Hura-1,Asansol-1&2,Chandil-1	15	15	10	20	1	1	10		3
7	W.B.-II	220	DPL	West Bengal	2	B'nagar-1&2	6	6	4	8	1	1	4		1
8	W.B.-II	220	Sagardighi	West Bengal	2	New Sagardghi 1 & 2	6	6	4	8	1	1	4		1
9	W.B.-I	400	KOLAGHAT	West Bengal	4	New Chanditala-1, Kharagpur 1 & 2, Arambag-1 (Was already in old BOQ),	12	12	8	16	1	1	8		2
9	W.B.-I	220	KOLAGHAT	West Bengal	4	New Haldia 1& 2, Howrah 1 & 2 (Was in old BOQ but not implemented)	12	12	8	16	1	1	8		2
10	W.B.-I	400	Bakreshwar	West Bengal	2	Jeerat 1 , Arambagh 1 (Was already in old BOQ),	6	6	4	8	1	1	4		1
10	W.B.-I	220	Bakreshwar	West Bengal		Sadaipur 1 & 2, Bidhannagar 1& 2, Satagachia 1 & 2 (Was in old BOQ but not implemented)									
11	DVC-I	220	Waria(DTPS)	DVC	3	Mejia-1&2,Bnagar 1 & 2, Parulia(DVC) 1 & 2 (Was already in old BOQ),	9	9	6	12	1	1	6		2
12	Orissa-II	400	Upper Indravati	Orissa	1	Indravati -1	3	3	2	4	1	1	2		1
13	Orissa-II	220	Indravati HEP	Orissa	4	Theruvali-1,2,3&4	12	12	8	16	1	1	8		2
13	Orissa-II	400	Lapanga	Orissa	4	Sterlite 1 & 2, OPGC 1 & 2	12	12	8	16	1	1	8		2
14	Orissa-II	220	IB Valley	Orissa	2	Budhipadar-1&2	6	6	4	8	1	1	4		1
15	Orissa-II	220	Nalco	Orissa	2	Meramundali 1 & 2	6	6	4	8	1	1	4		1
16	Central-I, ER	400	Jindal	IPP	2	400kV Angul 1&2	6	6	4	8	1	1	4		1
17	Central-I, ER	400	Lanco	IPP	4	400kV Angul 1,2,3 &4	12	12	8	16	1	1	8		2
18	Central-I, ER	400	Navbharat	IPP	2	400kV Angul 1&2	6	6	4	8	1	1	4		1
19	Central-I, ER	400	Strelite	IPP	4	400kV Jharsuguda 1& 2, Lapanga 1 & 2	12	12	8	16	1	1	8		2

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							3-Phase Voltage Phasors (Vr, Vy, Vb)	3-Phase Current Phasors (Ir, Iy, Ib)	Positive Sequence Voltage & Current	Digital Inputs (DIs)	Frequency	ROCOF	Analog Values (MW & MVAR)		
						No of signals ---------->	3	3	2	4	1	1	2		
20	Central-I, ER	400	Mangan	IPP	6	400kV Rangpo 1&2, Teesta III 1&2, Kishanjang 1&2	18	18	12	24	1	1	12		3
21	W.B.-II	400	Jeerat	West Bengal	2	Jerrat New 1 & 2	6	6	4	8	1	1	4		1
22	DVC-I	220	Bokaro	DVC	2	Ramgarh 1 & 2	6	6	4	8	1	1	4		1
23	Central-I, ER	765	Angul	Powergrid	4	Jharsuguda 3 & 4 and Srikakulam 1 & 2	12	12	8	16	1	1	8		2
24	Central-I, ER	400	Bahrampur	Powergrid	6	Farakka 1 & 2 , Sagardighi 1 & 2 , Bheramara 3 & 4	18	18	12	24	1	1	12		3
25	Central-I, ER	400	Binaguri	Powergrid	2	Alipurdwar 3 & 4	6	6	4	8	1	1	4		1
26	Central-I, ER	220	Birpara	Powergrid	2	Alipurdwar 1 & 2	6	6	4	8	1	1	4		1
27	W.B.-II	220	Alipurdwar	West Bengal	2	Alipurdwar 1 & 2	6	6	4	8	1	1	4		1
28	Central-I, ER	400	Chaibada	Powergrid	2	Kharagpur 1 & 2	6	6	4	8	1	1	4		1
29	Central-I, ER	400	Chandwa	Powergrid	2	North Karanpur 1 & 2 (Upcoming)	6	6	4	8	1	1	4		1
30	Central-I, ER	400	Farakka	NTPC	6	Bahrampur 1 & 2 , New Purnea 1, Rajarhat(Gokerno) 1,Sagardighi 1 & 2	18	18	12	24	1	1	12		3
31	Central-I, ER	765	Jharsuguda	Powergrid	8	Dharamjaigarh 3 &4, Darliplalli 1 & 2 , Raipur 1 & 2 , Angul 3 & 4	24	24	16	32	1	1	16		4
32	Central-I, ER	765	Jharsuguda	Powergrid	6	Rourkela 3 &4, Sterlite 1 & 2 , Raigharh 3 &4	18	18	12	24	1	1	12		3
33	Central-I, ER	400	Darbhanga	DMTCL	2	Kishanganj 1 & 2	6	6	4	8	1	1	4		1
34	Central-I, ER	400	Patna	Powergrid	2	NPGC 1 & 2	6	6	4	8	1	1	4		1
35	Central-I, ER	400	New Ranchi	Powergrid	2	New PPSP 1 & 2	6	6	4	8	1	1	4		1
36	Central-I, ER	765	New Ranchi	Powergrid	2	Medinipur 1 & 2	6	6	4	8	1	1	4		1
37	Central-I, ER	400	Talcher	NTPC	4	Talcher HVDC 1,2,3 & 4	12	12	8	16	1	1	8		2
38	Orissa-II	400	OPGC	Orissa	2	Jharsuguda 1 & 2 and Lapanga 1 & 2	6	6	4	8	1	1	4		1
						HV Side of GT									
1	Central-I, ER	400	Farakka	NTPC	3	3 x 500 MW units (U - 4,5 & 6)	9	9	6	12	1	1	6		2
2	Central-I, ER	400	Kahalgaon	NTPC	3	3 x 500 MW units (U - 5, 6 & 7)	9	9	6	12	1	1	6		2
3	Central-I, ER	400	Talcher	NTPC	6	6 x 500 MW units (U - 1, 2,3, 4,5 & 6)	18	18	12	24	1	1	12		3
4	Central-I, ER	400	Barh	NTPC	2	2 x 660 MW units (U - 4 & 5)	6	6	4	8	1	1	4		1
5	Central-I, ER	400	NPGC	NTPC	2	1 x 660 MW unit (U - 1)	6	6	4	8	1	1	4		1
6	Central-I, ER	765	Dharlipalli	NTPC	1	1 x 800 MW unit (U - 1)	3	3	2	4	1	1	2		1
7	Central-I, ER	400	Teesta V	NTPC	3	3 x 500 MW units (U - 1,2 & 3)	9	9	6	12	1	1	6		2
8	DVC-I	400	Mejia-B	DVC	2	2 X 500 MW units (U - 7 & 8)	6	6	4	8	1	1	4		1
9	DVC-I	400	Koderma TPS	DVC	2	2 X 500 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
10	DVC-I	400	Bokaro"A"	DVC	2	1 x 500 MW unit (U - 1)	6	6	4	8	1	1	4		1
11	DVC-I	400	RAGHUNATHPUR	DVC	2	2 x 600 MW units (U - 1& 2)	6	6	4	8	1	1	4		1

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							3-Phase Voltage Phasors (Vr, Vy, Vb)	3-Phase Current Phasors (Ir, Iy, Ib)	Positive Sequence Voltage & Current	Digital Inputs (DIs)	Frequency	ROCOF	Analog Values (MW & MVAR)		
						No of signals ---------->	3	3	2	4	1	1	2		
12	DVC-I	400	DSTPS	DVC	2	2 X 500 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
13	W.B.-I	400	Sagardighi	West Bengal	2	2x500 MW units (U - 3& 4)	6	6	4	8	1	1	4		1
14	W.B.-I	400	PPSP	West Bengal	4	4X225 MW units (U - 1, 2, 3 & 4)	12	12	8	16	1	1	8		2
15	Orissa-II	400	IBTPS Stage II	OPGC	2	2x660 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
16	Orissa-II	220	Balimela	OHPC	8	6x60+2x75 MW units (U - 1, 2, 3, 4, 5, 6, 7 & 8)	24	24	16	32	1	1	16		4
17	Orissa-II	220	U-Kolab	OHPC	4	4x80 MW units (U - 1, 2, 3 & 4)	12	12	8	16	1	1	8		2
18	Orissa-II	220	U-Indravati	OHPC	4	4x150 MW units (U - 1, 2, 3 & 4)	12	12	8	16	1	1	8		2
19	Orissa-II	220	Rengali	OHPC	4	4x50 MW units (U - 1, 2, 3 & 4)	12	12	8	16	1	1	8		2
20	Central-I, ER	400	MPL	MPL	2	2 x 525 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
21	Central-I, ER	400	JITPL	JINDAL	2	2x600 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
22	Central-I, ER	400	JLHEP	DANS	2	2X48 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
23	Central-I, ER	400	TEESTA -III	TUL	6	6X200 MW units (U - 1, 2,3, 4,5 & 6)	18	18	12	24	1	1	12		3
24	Central-I, ER	400	DIKCHU	SKPPL	2	2X48 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
25	Central-I, ER	220	Taseding	DANS	2	2X48.5 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
26	Central-I, ER	132	CHJACHEN	GATI	2	2 X 49.5 MW units (U - 1& 2)	6	6	4	8	1	1	4		1
							258	258	172	344	22	22	172		114

Under Construction & Planned Transmission System of POWERGRID

A. Under Construction

1. ERSS-V: Feb'2020

- Purnea – Rajarhat 400kV D/c via Farakka & Gokarna (441km) (Purnea – Farakka – Gokarna section commissioned) – Feb'20

2. ERSS-XII

- Farakka: Augmentation of 2nd 400/220kV 315MVA ICT – Mar'20

3. ERSS-XV: Mar'20

- LILO of Sagardighi – Subashgram S/c line at Jeerat (1km) – Feb'20

4. Transmission System for evacuation of power from Punatsangchhu-I (1200MW), Punatsangchhu-II (990MW), Mangdechhu (720MW) and Wangchhu (570MW) HEPs in Bhutan (POWERGRID Portion)**:**

- Jigmeling - Alipurduar 400kV D/c (Quad) line (Indian Portion) (163km) – Mar'20

5. ERSS-XVII (Part-B)

- **Transformation capacity augmentation at 400/220kV level**
  - Malda: Replacement of 2x315MVA with 2x500MVA ICT – Jan'20
  - New Siliguri: 315MVA (3rd) ICT – Jan'20
  - Installation of 400/220kV, 2x315MVA ICTs (one each in parallel to the existing ICTs) at Rourkela and Jeypore Substations – Feb'20 & Mar'20 respectively

6. Sikkim IPP Corridor (Part-B1): Jun 2020

- LILO of 2nd circuit of Teesta III – Kishanganj 400kV D/c (Quad) line at Rangpo (15km)

7. ERSS-XX: May 2020

- ICT Augmentation:
  - Rangpo: 220/132kV, 4th 100MVA ICT
  - Maithon: 400/220kV, 3rd 500MVA ICT
  - Reconductoring of Rangpo – Siliguri 400kV D/c line with HTLS -220ckm

8. Baharampur – Bheramara 400kV 2nd D/c line

- 400kV D/c Baharampur (PG)– Bheramera (B'desh) line (IInd Ckt) – India portion – Mar'20

9. ERSS-XVIII: by POWERGRID under TBCB – Jul'20

- **765kV System**
  - 765/400kV, 2x1500MVA new S/s each at Medinipur and Jeerat (New)
  - Ranchi (New) – Medinipur 765kV D/c line - 279km
  - Medinipur – Jeerat (New) 765kV D/c line- 167km
- **400kV Interconnection**
  - LILO of Chandithala – Kharagpur 400kV D/c line at Medinipur – 73km
  - Jeerat (New) – Subhasgram 400kV D/c line(quad) -108km
  - Jeerat (New) – Jeerat 400kV D/c line (quad) – 25km

10. ERSS-XXI: by POWERGRID under TBCB – Mar'21

- 400/220/132kV New substation at Sitamarhi (1000+400MVA)
- 400/220/132kV New substation at Chandauti (1500+600MVA)
- 400/220/132kV New substation at Saharsa-New (1000+400MVA)
- 400/132kV, 315MVA ICT Augmentation at Motihari (DMTCL) S/s
- Darbhanga – Sitamarhi New 400kV D/c (Triple snowbird) line – 81km
- Sitamarhi New – Motihari 400kV D/c (Triple snowbird) line -85.5km
- LILO of Nabinagar-II – Gaya 400kV D/c (Quad) line at Chandauti New -2.5km
- LILO of Kishanganj – Patna 400kV D/c (Quad) line at Saharsa New – 75.5km

B. Planned

1. ERSS-XXII

Upgradation at Malda (400/220/132kV)

- Modification of 132kV SMT bus scheme to DM bus scheme in GIS
- 2 no additional 132kV GIS line bays

Annexure-2

Under Construction & Planned Transmission System (through TBCB)

A. Under Construction

1. Transmission system with new HEPs in Bhutan – by Kalptaru (KPTL)

- Alipurduar – Siliguri 400kV D/c (Quad) line (234ckm) – May'19 (*as per CEA report*)

2. Immediate Evacuation System for North Karanpura STPP (1960 MW) – by Adani

- NKSTPP – Gaya 400kV D/c (quad) line (186ckm): Mar'21
- NKSTPP – Jharkhand Pool 400kV D/c (quad) line (63ckm): Jun'20

3. ERSS-XIX: Oct'20 – by Adani

- 400/220kV, 2x500MVA new S/s at Dhanbad
- LILO of Maithon RB – Ranchi 400kV D/c line at Dhanbad (2ckm)

4. Talcher Augmentation Scheme: by Reliance (Uncertain)

- 400/220kV, 2x315MVA new S/s at Behrampur
- Rourkela – Talcher – Behrampur – Gazuwaka (322+440+580 ckm) 400kV D/c

ANNEXURE-C1

Sl No.	Agenda point	Deliberation in the last TeST meeting	Deliberation in the 7th TeSTmeeting
3rd TeST Meeting			
1.	Restoration of frequent failure of Sagardighi STPS data	ERPC advised WBSETCL & Powergrid to co-ordinate for early restoration of the same. ERPC further advised WBSETCL & Powergrid to come up with a redundant path for providing the Sagardighi STPS data. WBSETCL informed that they would consult WBPDCL to come up with the same. *In 6th TeST Meeting, WBSETCL informed that they have informed this matter to WBPDCL to come up with solution for SAS related problem and are yet to get any action plan from WBPDCL regarding restoration of data from Sagardighi STPS. WBSETCL further informed that they are continuously pursuing the matter with WBSPDCL for restoration of Sagardighi SCADA data. ERLDC informed that this is long pending issue and hence requested WBSETCL to resolve the issue at the earliest otherwise, request ERPC to include this agenda point in next TCC/ERPC meeting for further deliberation and guidance. WBSETCL & ERPC agreed for the same.*	
2.	Replacement of faulty BCU (seven nos) at	Powergrid informed that they have already taken the matter	

	Kishanganj Site	with their OEM (M/s Siemens) and would be resolved by January, 2020. Powergrid informed that 4 nos. of BCU have been replaced *In 5th TeST Meeting Powergrid informed that the OEM would visit the site in next two weeks and the work would be completed by 15th March, 2020.* *In 6th TeST Meeting , POWERGRID informed that they are taking up these matters with OEM. POWERGRID further informed that particular BCU Model, installed at Kishanganj, is having certain issues and OEM is replacing these faulty BCUs by next month end.*	

Annexure-C2

SL No	POSOCO / Constituent	Deliberation in the last TeST meeting	Latest Status
ERLDC			
1	Implementation of Automatic Demand Management Scheme (ADMS) in Bihar	M/s Chemtrols informed that is having BSPTCL having communication issue with field. IN 5th TeST Meeting BSPTCL informed that they are having all other data transferred correctly from the same communication link through which ADMS signal is transferred. In 6th TeST Meeting, M/s Chemtrols informed that they would further perform testing to ascetain the reason for failure to send the ADMS signal correctly to the field site from Control centre.Chemtrols informed that due to the COVID-19 Pendamic situation site visit activitivits are very slow. They further informed that they are planning that after the withdrawn of lockdown at Bihar.	
2	Schedule for conducting Cyber Security Audit for ERLDC Main and its backup is yet to be submitted by M/s Chemtrols.	M/s Chemtrols agreed to submit the date by 15th February 2020.In 5th TeST Meeting M/s Chemtrols informed that they have shared the schedule.In 6th TeST Meeting , M/S Chemtrols informed that Due to the COVID-19 Pendamic situation cyber audit schedule of March 2020 prosponeded. Chemtrols are planning to complete the activity remotely. Proposal for remote Cyber Audit has been put up for approval to ERLDC and other SLDCs.	
3	Configuration of domain controller (DC) installed at ERLDC and its backup is not proper. Rule and policy being imposed in one controller is not being synched with other DCs.	In 5th Test Meeting M/s Chemtrols informed that that it would be resolved by 02.03.2020.In 6th TeST Meeting , M/S Chemtrols informed that Chemtrols informed that due to the COVID-19 Pendamic situation all activities were done remotely. For this issue, they will resolve that issue once the situation get normalise.	
DVC			
1	01 (One) External Firewall (Checkpoint) taken for repair for last 01 month.	M/s Chemtrols informed that already spare is available at side. For faulty item repairing activity is in under process and will be completed by 29.02.2020.In 5th TeST Meeting M/s Chemtrols informed that that it would be resolved by 02.03.2020 .In 6th TeST Meeting M/S Chemtrols informed that SMPS replaced and FW will be send by 1st week of Aug-2020	
2	Spare Power Supply for RTU (DC to DC) converter should be made available for maintenance purpose.	Procurement is in under process and spare material would be available by 29.02.2020. In 5th TeST Meeting M/s Chemtrols informed that that it would be resolved by 15.03.2020.In 6th TeST Meeting , M/S Chemtrols informed that Procurement was Completed	
3	1 (One) No of Cell (2V,160AH) of UPS-1 battery Bank is faulty.	M/s Chemtrols have taken up this issue with HBL for procurement of Battery Cell.In 5th TeST Meeting M/s Chemtrols informed that they need approval for replacing 2V 160 AH VRLA battery with 2V 150 AH. This is since HBL has stopped the manufacturing model with 2V 160 AH specification. All constituents agree to approve the same subject to confirmation letter from OEM.In 6th TeST Meeting , M/S Chemtrols informed that M/s Chemtrols ensure DVC BCC(Maithon) to replace a full battery bank and procurement for the same has been completed. As per the Manufacturer(Exide), manufacturing of New bank will be completed by July-2020 and by end of Aug-2020 bank will be delivered to site.	
BSPTCL Portion			
1	One SMPS of VPS is defective since 29/11/2019	M/s Chemtrols informed that procurement is under progress and it would be completed by 29.02.2020. In 6th TeST Meeting , M/S Chemtrols informed that Procurement has been done and material available in Kolkata office of M/s Chemtrols. Due to the COVID-19 Pendamic situation material was not send to site. It will send by 1st week of Aug -2020	
2	20 no. of LDMS are not functioning either of issue of inverter or CPU.	M/s Chemtrols informed that work is in Progress.	
3	**Integration of new bay**:- As per AMC contracts Chemtrols has to integrate 50 nos. of new bays in to RTU.	M/s Chemtrols informed that procurement of requisite materials at their end is under process. Further, BSPTCL has been requested to share the new bay list.In 5th TeST Meeting BSPTCL informed that they would share the list at the earliest.In 6th TeST Meeting , M/S Chemtrols informed that Material has been sent to Chemtrols site engineer of Bihar.Due to the COVID-19 Pendamic situation presently, site visit is not possible. After withdrawn of lockdown, they will start the activity again.	
4	The following materials are faulty which are required to be replaced at the earliest: •MFT – 9 pcs •Decode – 2 pcs •Node – 6 Pcs	M/s Chemtrols informed that MFT would be delivered to BSPTCL by 15/02/2020 and Decode Modem has been replaced. M/s Chemtrols informed that they need 1 month more for repairing RTU nodes. In 5th TeST Meeting M/s Chemtrols informed that they have replaced MFT and Decode Modem. They would repair RTU nodes by March, 2020.In 6th TeST Meeting , M/S Chemtrols informed that MFM and Modem delivered to BSPTCL. Node has been sent to Ramsdeq for repairing. Spare nodes has been replaced with those faulty nodes.	
WBSETCL Portion			
1	Chemtrols RTU is not integrated through IEC-104 protocol though communication link is ready	M/s Chemtrols informed that work is in progress.In 6th TeST Meeting, M/S Chemtrols like inform that in many sites communication link still not stable.	