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भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

Dated: 28.06.2023

सेवा में / To,

संलग्न सूची के अनुसार/As per list attached

विषय: दूरसंचार, स्काडा और टेलीमेट्री उप समिति की 22 वीं बैठक- बैठक के कार्यवृत्त।**Subject: 22nd meeting of Telecommunication, SCADA & Telemetry Sub Committee- Minutes of the meeting-reg.**

उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार, स्काडा और टेलीमेट्री (टेस्ट) उप-समिति की 22 वीं बैठक दिनांक 24.05.2023 को 11:00 बजे से विडियो कॉन्फ्रेंसिंग के माध्यम से आयोजित की गई। बैठक में कार्यवृत्त इस पत्र के साथ संलग्न है। यह उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट (<http://164.100.60.165>) पर भी उपलब्ध है।

22nd meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC was held on 24.05.2023 at 11:00 am video conferencing. Minutes of the meeting are enclosed herewith. The same are available on NRPC website (<http://164.100.60.165>).

अनुलग्नक-यथोपरि।

Encl.: As above.

Signed by Anzum Parwej

Date: 28-06-2023 14:44:24

Reason: ^(अंजुम परवेज) Approved
(Anzum Parwej)

अधीक्षण अभियंता

Superintending Engineer

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**Minutes
of
22nd Meeting of Telecommunication, SCADA & Telemetry (TeST) Sub- Committee**

22nd Meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-Committee was held on 24.05.2023 at 11:00 am via video conferencing under the chairmanship of Member Secretary, NRPC. Minutes of the meeting are given as under:

1. Confirmation of Minutes

- 1.1. AEE(C) informed that minutes of 21st meeting of TeST sub-committee held on 13.12.2022 were issued on 17.02.2023 and no comments have been received till date.

Decision of the forum:

- 1.2. *Sub-committee confirmed the minutes.*

2. Introduction of MPLS Technology in ISTS Communication (Agenda by CTU)

- 2.1. CTU stated that a new MPLS technology is being proposed in place of SDH. He stated that a Seminar on MPLS Technology was also organized in Jan'23 which was attended by participants from CEA, RPCs, CERC, Grid-India, STUs, Transmission Licensees, POWERGRID, MPLS Service providers both in person and online. CTU briefed about the MPLS technology. (Presentation enclosed as **Annexure – I**)
- 2.2. CTU stated that few states are already using MPLS technology such as Rajasthan, Kerala etc. Rajasthan stated that use of Technology has just started with 70 % network completed, hence it is in nascent stage only.
- 2.3. MS, NRPC highlighted that before any technology shift deep analysis is required with all the RPCs. He stated that cost implications also need to be studied. He proposed that a committee may be constituted by NPC division, CEA with participation from all RPCs, CTU, POWERGRID, other experts etc.

Decision of the forum:

- 2.4. *Forum decided that a committee may be constituted by NPC division, CEA with participation from all RPCs, CTU, POWERGRID, other experts etc.*

3. Providing redundant communication to 400kV Manesar Substation (Agenda by CTU)

- 3.1. CTU informed that presently 400kV Manesar sub-station is connected through ISTS communication network via following two (02) transmission lines:
- (i) 400kV D/C Manesar-Neemrana.
 - (ii) 400kV D/C Manesar- Gurgaon.

400kV D/C Manesar- Gurgaon line is LILoed at Sohna Sub-station and further proposed to be LILoed at Neemrana-II S/s under Rajasthan REZ Ph-IV (Part-B).

- 3.2. He stated that Manesar S/s is an important wideband node of Northern Region in view of WAMS PDC backup housed at Manesar. Hence, 03rd link is proposed as one more backup communication to be planned to Manesar. Additional link may be created by laying OPGW from the crossing point of Neemrana – Manesar (2nd E/W peak of the line) & Agra-Jhatikara line upto Jhatikara & Manesar, which will be around 35 kms.
- 3.3. He stated that line length is around 35 kms which was also discussed in the 3rd Meeting of CTUIL for Planning of Communication System for Inter-State Transmission system (ISTS) in Northern Region held on 17.02.2023.
- 3.4. Details of proposed link is given below in the figure:

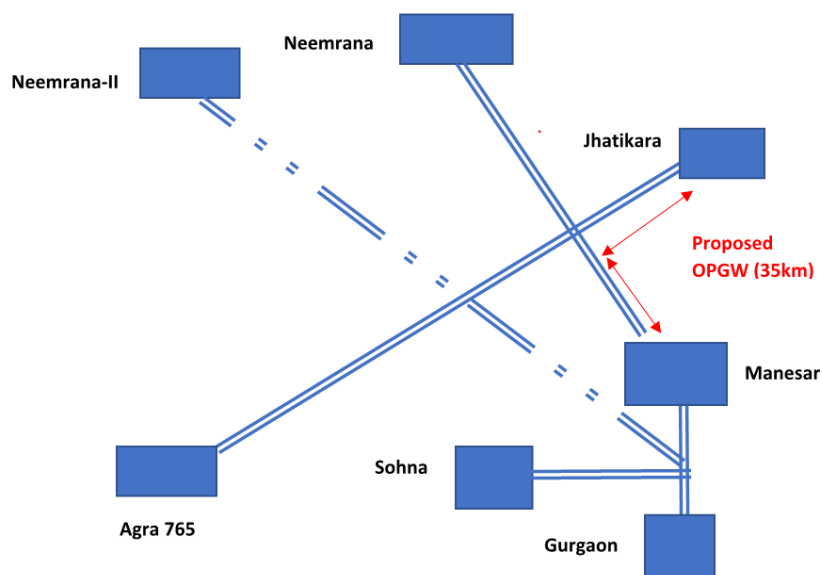


Figure-1

Decision of the forum:

- 3.5. *Forum agreed with the proposal of CTU.*

4. Redundant communication for Fatehgarh PS (Adani), Mohindergarh (Adani) & Mundra (Adani) stations (Agenda by CTU)

- 4.1. Adani informed that additional FOTE needs to be installed at Mohindergarh which may be allowed in Additional Capitalization. CTU stated that provision of FOTE in original scope needs to be explored.
- 4.2. NRLDC informed that new FOTE has been installed in Ckt 3 & 4 of Mohindergarh– Bhiwani (PG) line under ULDC and for redundancy use this new FOTE may be explored by Adani. Adani agreed for the same.

- 4.3. For Fatehgarh PS station Adani informed that OPGW laying is required. CTU stated that separate scheme for OPGW installation may be prepared for the same.

Decision of the forum:

- 4.4. *Adani was requested to explore the use of new FOTE installed in Ckt 3 & 4 of Mohindergarh– Bhiwani (PG) line under ULDC. CTU was advised to submit separate scheme for OPGW installation for connectivity to Fatehgarh PS station Adani.*

5. Redundant communication for Samba (PG) (Agenda by CTU)

- 5.1. Indigrid confirmed that local patching issue at Amargarh and bypassing of KLM has been completed which is now operational.
- 5.2. For the Samba- Jalandhar link Indigrid informed that OPGW was not originally in their scope of line, however installation has been carried out for commercial utilization. He proposed that separate OPGW installation can be done for ISTS purposes.
- 5.3. Forum technically agreed for the requirement of Samba- Jalandhar link for redundancy. However, it was decided that issue of usage of existing OPGW or separate OPGW installation may be deliberated in separate meeting.

Decision of the forum:

- 5.4. *The requirement of Samba- Jalandhar link for redundancy was technically agreed. The issue of usage of existing OPGW or separate OPGW installation is to be deliberated in separate meeting.*

6. Redundant communication for Dulhasti (NHPC) (Agenda by CTU)

- 6.1. CTU informed that POWERGRID was requested to submit additional cost details (in view of tower strengthening if required), survey report and all relevant details to CTU if tower strengthening is required.
- 6.2. POWERGRID informed that towers have been retrofitted and modified drawings are being requested for detailed study. MS, NRPC stated that a letter will be written to CMD, POWERGRID to expedite the issue.

Decision of the forum:

- 6.3. *It was decided that a letter may be written to CMD, POWERGRID to expedite the issue.*

7. Redundant communication for Alusteng, Drass, Kargil, Khalasti, Leh (Agenda by CTU)

- 7.1. POWERGRID informed that OPGW is commissioned till Alusteng. Further, Alusteng to Zainakot to Wagoora is commissioned by J&K. He stated STM-4 equipment required at Zainakote and additional STM-16 equipment required at

Wagoora. He stated that consent from J&K is required for utilization of OPGW for ISTS purposes. J&K agreed for the same.

Decision of the forum:

7.2. *CTU was advised to submit the detailed scheme as per deliberation in the meeting.*

8. Redundant communication for Narora (NAPP) (NPCIL) (Agenda by CTU)

8.1. UPPTCL has confirmed that they have included NAPP – Atrauli link (38 kms.) in their OPGW package awarded to TCIL. He stated that present link is Narora (NAPP) – Atrauli – Aligarh (400) – Sikandara Rao – Kasganj- Etah – Mainpuri (UP) – Mainpuri (PG) -> NRLDC which can be utilized with KLM bypass.

8.2. NRLDC informed that another link through Narora-Khurja is already present, however frequent outages have been reported in past of this link.

8.3. Representative from UPPTCL informed that outage was due to some activity carried on by site personal and unknowingly fiber given for ULDC purpose was disturbed and now they have instructed site personal to take necessary precaution during any activity.

8.4. POWERGRID also stated that there are compatibility issues with equipment which may also affect reliability of the available link, hence separate dedicated link for ISTS purposes may be envisaged.

8.5. CTU suggested that alternate path may be explored with lesser hops e.g. OPGW on Narora – Sibhawali UPPTCL line can also be planned which has line length of around 88 kms.

Decision of the forum:

8.6. *CTU was advised to submit the detailed scheme as per deliberation in the meeting.*

9. Redundant communication for Sewa-II (Agenda by CTU)

9.1. POWERGRID informed that around 02 km underground OPGW laying needs to be done with few additional equipment.

9.2. NRLDC suggested that OPGW installation may be done on priority by taking in existing scheme. CTU highlighted that scheme fall under category B of MoP order, hence approval of NRPC and NCT will be required.

Decision of the forum:

9.3. *CTU was advised to submit the detailed scheme as per deliberation in the meeting.*

10. Connectivity of STU node on fibre in view of AMR. (Agenda by CTU)

- 10.1. CTU informed that meter readings from several locations (mostly STU nodes) are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links.
- 10.2. He highlighted that in the 3rd ISTS planning meeting of NR it was deliberated that respective state/utility may check the Fibre connectivity and apprise the details. If fibre connectivity is required for such stations in view of AMR, CTU shall make a scheme and take approval.

Decision of the forum:

- 10.3. *It was decided that STUs to provide the details to CTU for examination and preparation of scheme within 15 days.*

11. Congestion in ISTS communication network (Agenda by CTU)

- 11.1. POWERGRID informed that equipment under ULDC phase 1 have been replaced with STM-16. POWERGRID was requested to review and intimate status for the links where bandwidth is utilized more than 75%.

Decision of the forum:

- 11.2. *POWERGRID was requested to review and intimate status for the links where bandwidth is utilized more than 75%.*

12. Redundancy philosophy in case of availability of only one transmission line from ISTS/ISGS station: (Agenda by CTU)

- 12.1. CTU informed that Many ISTS/Generating stations are connected with single fibre path due to non-availability of alternate transmission lines, especially in the case of terminal nodes/Hydro stations/RE Generators. In this scenario, for providing protection path may be explored through OPGW on same transmission line on second peak, VSAT, Lease line etc.
- 12.2. It was deliberated that protection path needs to be planned on case to case basis.

Decision of the forum:

- 12.3. *Forum deliberated that protection path may be planned on case to case basis.*

13. Redundant communication for Faridabad (NTPC) & Jhajhar (NTPC) (Agenda by CTU)

- 13.1. HVPNL informed that LILO of Faridabad – Palla at Sector-78 has been completed. POWERGRID stated that Sector -78 to Sohna is yet to be commissioned for the connectivity till Gurgaon.
- 13.2. Further redundant communication for Jhajhar using Jhajhar – Daultabad – Sec-72, Gurgaon (HVPNL)- Gurgaon (PG) links will be completed in 02 months.

14. Redundant Communication for Chamera-III (NHPC) & Budhil (Greenko) (Agenda by CTU)

- 14.1. CTU informed that the 3rd ISTS planning meeting of NR it was deliberated that to provide redundancy for Chamera-III (NHPC) and Budhil (Greenko), 2 nos. of additional STM-16 equipment are required at Lahal & Budhil.
- 14.2. HPPTCL was requested to provide 3 pair of optical fibres for above redundancy on following lines:
 - (1) 220kV Lahal – Budhil (Greenko)
 - (2) 400kV Chamera Pooling(PGCIL)- Lahal(HPPTCL)

Decision of the forum:

- 14.3. *CTU was advised to submit the detailed scheme as per deliberation in the meeting.*

15. Redundant Communication for Pithoragarh (PG) Sitarganj (PG) stations (Agenda by CTU)

- 15.1. PTCUL stated that PSDF funding for OPGW implementation on Pithoragarh-Almora line is under planning. He stated DPR for the same will be submitted shortly.

Decision of the forum:

- 15.2. *PTCUL was requested to expedite the implementation of OPGW on priority.*

16. Additional FOTE at AGC locations (Agenda by CTU)

- 16.1. CTU requested POWERGRID to provide details of existing FOTE and requirement of additional ports/cards/FOTE at AGC locations so that planning of additional FOTE can be carried out. NRLDC was requested to provide updated list of AGC to POWERGRID.

Decision of the forum:

- 16.2. *POWERGRID to provide details of existing FOTE and requirement of additional ports/cards/FOTE at AGC locations and NRLDC to provide updated list of AGC to POWERGRID for the same.*

17. Redundant communication for Saharanpur (PG) S/s (Agenda by CTU)

- 17.1. POWERGRID informed that installation of OPGW on Saharanpur-Bhagpat PG line may not be feasible due to severe RoW.
- 17.2. UPPTCL advised to explore path of Saharanpur (PG)-Devband-Saharanpur (UP)-Nanauta-Shamli-Muradnagar. UPPTCL was requested to give consent for fibre sharing also if path is to be utilized.
- 17.3. CTU stated that additional FOTE may also be planned.

Decision of the forum:

17.4. CTU was advised to submit the detailed scheme as per deliberation in the meeting.

18. VOIP connection for Indigrid Control Centre at NOIDA (Agenda by CTU)

18.1. CTU stated that at present Indigrid doing Real time operation for their ISTS elements located in different regions e.g. WR, SR, NR, NER from their control centre (CC) located at BDTCL-Bhopal S/s.

18.2. He stated that Indigrid is now setting up new CC at NOIDA by shifting their existing CC located at BDTCL-Bhopal S/s and requested CTUIL for providing VOIP connection to their NOIDA control centre through NRLDC.

Decision of the forum:

18.3. *It was decided that a separate meeting of NRPC, CTU, NRLDC, PGCIL and Indi-Grid may be done to deliberate issue in detail.*

19. Extension of AMC and Upgradation of Hot Line Speech Communication System (M/s ORANGE) (Agenda by POWERGRID)

19.1. POWERGRID informed that all are aware that for Hot Line Speech Communication System was implemented by POWERGRID for PAN India basis wherein NLDC, RLDCs and all SLDCs are inter connected through Alcatel Lucent make EPABX system, VOIP/Analog phones are also installed at power plants/sub-station/IPPs, etc over dedicated OPGW network of ULDC. This scheme was executed by M/s ORANGE and 7 years of AMC was also part of the original contract and this AMC going is to expire in coming July' 2023.

19.2. He stated that M/s ORANGE has agreed to support for AMC for next 2 years on best effort basis only. They also mentioned that "any equipment becomes faulty during the AMC then, they shall render the services on best effort basis and SLA / Penalties shall not be applicable. They also confirmed that they will, at all times, faithfully and in a professional manner perform all of the services that may be reasonably required of, and from ORANGE pursuant to the terms of this Agreement". Prices offered for this AMC is almost 5 to 6 times higher in comparison with present AMC charges.

19.3. Accordingly, POWERGRID is proposing that additional financial implication on account of AMC extension through M/s ORANGE (Presently engaged in AMC) for next two years shall be booked in ULDC O&M charges and additional cost implication shall be recovered in tariff charges under CERC O&M cost.

19.4. CTU stated that upgradation/replacement of existing Hot Line/VOIP communication system across India is under process which may take time.

Decision of the forum:

19.5. *Forum agreed for the extension of AMC which may be taken up on priority by PGCIL.*

20. Frequent outage of OPGW link for NARORA, NPCIL Power Plant (Agenda by POWERGRID and NRLDC)

20.1. Already deliberated at Agenda no. 8.

21. Signing of AMC contract for Synergy make RTUs (replaced by POWERGRID) (Agenda by POWERGRID)

21.1. POWERGRID informed that POWERGRID has issued AMC contract for next 6 years effective from 01.12.2022 to 30.11.2028, M/s Synergy has repeatedly pursuing with constituents to Sign the AMC contract for smooth operations.

Decision of the forum:

21.2. *Utilities were requested to sign the AMC contract within 10 days.*

22. AMC for VSAT for URI-II (Agenda by POWERGRID)

22.1. NHPC stated that suitable action for extension of AMC for VSAT system installed at Uri-II is being taken.

23. Permission to work for Installation of DCPS & Battery and Maintenance activity of existing communication equipment at Manimajra UT sub-station under ULDC scheme (Chandigarh -Panchkula link) (Agenda by POWERGRID)

23.1. POWERGRID informed that issue for providing entry permission from UT Chandigarh for DCPS, OPGW installation under Reliable communication scheme is resolved as of now.

24. Implementation of U-NMS Project (Database development and input for integration) (Agenda by POWERGRID)

24.1. POWERGRID informed that in HVPNL's case, M/s Velocis (KEYMILE make Equipment) is very reluctant in providing details mentioning non-availability/non-support from OEM as this make/model of equipment/NMS is of absolute technology and Keymile (Now ownership is with Hitachi) is also not having proper support for this NMS. They mentioned that in case any issues observed during integration/ running of third party script in this NMS, M/s Velocis may not be able to restore the system and grid operation data reporting at SLDC Panipat will be affected very seriously. Further, POWERGRID also highlighted few issues at BBMB and DTL.

Decision of the forum:

24.2. *The issue was deliberated in detail and it was decided that a joint visit may be planned at HVPNL, BBMB and DTL by concerned utilities and PGCIL within a week to resolve the issue on priority.*

25. Delay in Payment of consultancy services provided by POWERGRID (Agenda by POWERGRID)

25.1. POWERGRID highlighted that they are providing consultancy services on RTU/APS/Wideband/OPGW maintenance to constituents on overhead charges basis as per MOU signed with respective Constituents.

25.2. He highlighted that PTCUL, J&K PDD, UPPTCL are not paying the amounts despite several reminders.

Decision of the forum:

25.3. *All the constituents were requested to clear the pending dues on priority.*

26. Installation of interface energy meters along with AMR equipment at interstate points of Punjab at PGCIL stations (Agenda by PSTCL)

26.1. PSTCL informed that agenda of Replacement/Installation of Interface Energy Meters at PGCIL Sub-Stations has been already deliberated in 205th OCC meeting and a separate meeting held by NRPC. He highlighted that they had installed EDMI(Wallaby) make meters at PGCIL Sub-Stations while executing boundary metering project in 2012-13 which are being replaced with latest interface energy meters.

26.2. He stated that POWERGRID approval for the following is required:

1. Approval to install new energy meters at LV side of ICT's at PGCIL sub stations.
2. Approval to install AMR equipment like DCU, Network Switch, Wall mount enclosure and associated equipment/cabling, etc. at PGCIL sub stations.
3. Approval to access optical network of PGCIL for communication of meter data upto SLDC, Ablowal.

26.3. POWERGRID informed that they do not have objection for replacement of meters with continuing present communication over GPRS. However, there may be space constraint for installation at LV side and technical constraints also need to be examined. NRLDC suggested that issue needs to be analyzed and examined in detail.

Decision of the forum:

26.4. *It was decided that a separate meeting may be held to discuss the issue in details.*

27. Regarding AMC Extension of ULDC Ph-II (Agenda by Punjab, HPSLDC, BBMB, UPSLDC, Rajasthan, Delhi and HVPNL)

27.1. Forum was apprised that utilities have raised the issue of cyber-security risk owing to End of subscription of External firewall and internal firewalls are due for subscription on dated 31st March 2023 and 30th April 2023 respectively.

27.2. POWERGRID informed that an internal committee has been constituted to examine the contractual clauses related to firewall. It was informed that contract has been already extended for 02 years except clauses related to firewall.

Decision of the forum:

27.3. *POWERGRID was requested to submit recommendations of committee by 30th June, 2023 and resolve the issue.*

28. Regarding suspected data of Power Grid Intrastate drawal Points (Agenda by Punjab)

28.1. PSTCL highlighted that PGCIL 400 KV ICTs SCADA data remains stuck for some time without showing any suspected sign and recently on 4th May, 2023 400KV Ludhiana ICT-2 220KV side data was stuck for approx. 6 hrs.

Decision of the forum:

28.2. *POWERGRID informed that issue is being handled on priority.*

29. Budgetary Cost intimated by M/s PGCIL for upgradation/replacement of SCADA/EMS System to be installed under ULDC Phase-III scheme: (Agenda from HPSLDC)

29.1. PGCIL highlighted that this is only Budgetary cost and final cost may be different from this. He stated the issue is already under the discussion of management.

30. ULDC Arrear bill submitted by M/s PGCIL for SCADA/EMS system installed Under ULDC-II scheme in HP State (Agenda from HPSLDC)

30.1. PGCIL informed that invoices have been raised as CERC order. It was informed that clarifications have been already issued.

Decision of the forum:

30.2. HP SLDC was requested to submit a detailed letter for the non-levying of surcharge on the payment.

31. Regarding procedure related to removal of advisories from External Firewall (Agenda by BBMB)

Decision of the forum:

31.1. It was suggested that issue may be taken up in the upcoming meeting of all CISOs under the chairmanship of CISO, MoP.

32. Regarding component wise bifurcation/breakup of Cost for ULDC Phase- III scheme. (Agenda by BBMB)

Decision of the forum:

32.1. PGCIL informed that component wise bifurcation of total cost estimate of ULDC Phase-III scheme will be shared within 15 days.

33. Regarding calculation of availability computation of SCADA, /EMS system on basis of cyber security measures for ULDC Phase-III scheme. (Agenda by BBMB)

33.1. BBMB briefed about the methodology for calculation of availability computation of SCADA/EMS System specifically dedicated to ensuring compliance of cyber security related measures. He also suggested that gravities may be made as a part of tender which may enforce vendor to follow cyber security.

33.2. PGCIL stated that cyber security must be ensured by the vendor and only 01-month timeline has been given in ULDC phase-III bid for vendors to implement

updates/patches. He stated that presently patching is defined under severity – 1. He stated that technical specifications are under deliberations and may be reviewed as per the feedback. It was decided that PGCIL will update after internal deliberations.

Decision of the forum:

33.3. *PGCIL to update after internal discussion.*

34. Regarding Capacity Building for central/state utilities (100% funding may be done through PSDF) (Agenda by BBMB)

34.1. The agenda was deferred on the request of BBMB.

35. Regarding implementation of Security Operation Centre (SOC) (Agenda by BBMB)

35.1. The agenda was deferred on the request of BBMB.

36. SCADA Upgradation Project ULDC Phase-III (Agenda by UPSLDC)

36.1. UPPTCL requested PGCIL to expedite the upgradation of the SCADA /EMS system so that the new SCADA/EMS System shall be operationalized before the end of the extension of the existing AMC contract with Siemens.

36.2. POWERGRID informed that contract will be awarded by August, 2023

37. URTDSM PROJECT (Agenda by UPSLDC)

37.1. PGCIL stated that integration of new PMUs has been already covered in 07 years AMC awarded to M/s GE. It was highlighted that sufficient space is also available in PDC. UP was requested to take up the issue with M/s GE.

Decision of the forum:

37.2. *UP was requested to take up the issue with M/s GE for PMU integration.*

38. PTCUL Telemetry Issues (Agenda by NRLDC)

38.1. NRLDC informed that telemetry data from PTCUL is very poor and is causing constraint in grid operation and monitoring. Further, it was informed that issue has been raised at many forums since last 3 years but until date there is no improvement.

38.2. PTCUL informed that last tender was cancelled due to higher rates than estimate; there was approximate 39% more than estimate. Further, it was informed that they have prepared fresh DPR for RTU & OPGW installation and they would submit the proposal within next 7-10 days. After approval, PTCUL will initiate tendering process and try to expedite the work.

38.3. MS NRPC raised concern about non-availability of telemetry to control room and requested PTCUL to expedite the proposal. As per details submitted by PTCUL out of 58 Sub-Station/Generating Stations data from only 26 Sub-stations are integrated at SLDC. Also, many feeders are not integrated even at the locations where RTUs are installed.

39. Non-availability of Reliable / Redundant Communication System for PTCUL, SLDC (Agenda by NRLDC)

- 39.1. NRLDC informed that SLDC Uttarakhand is connected to NRLDC through radial network from Roorkee-Dehradun and all services like ICCP, PMU/PDC and VOIP are working on this. Any issue in link leads to outage of Voice and Data communication between SLDC Uttarakhand and NRLDC. Further, it was informed that issued has been raised at many forums since last 3 years but until date there is no improvement.
- 39.2. PTCUL informed that they in process of signing of agreement between BSNL and PTCUL for three channels between SLDC and Kashipur. Alternate channel shall be configured in next 10 days.

40. J&K Telemetry Issues (Agenda by NRLDC)

- 40.1. NRLDC informed that Real-Time data availability from Jammu and Kashmir is very poor. There is zero visibility of data in J&K stations. With poor monitoring of data, it is very difficult to monitor grid in efficient manner. Further, the issue was discussed in various forums but till date there is negligible improvement.
- 40.2. J&K informed that around 12 links has been commissioned in Jammu Region and 14 links in Kashmir region. Further, SAT and testing of other links are in progress and all work is expected to completed in 6 months. Further, POWERGRID, J&K and Siemens are carrying out regarding RTU integration joint survey and they will finalize the process to integrate the RTUs. NRLDC requested J&K to submit the detailed timelines to NRLDC/NRPC.

Decision of the forum:

- 40.3. J&K to submit the detailed timelines to NRLDC/NRPC.

41. Communication plan for channel redundancy to NRLDC (Agenda by NRLDC)

- 41.1. Following timelines were discussed after detailed discussion

S.NO.	Name of RTU	Comments	Timeline	Remarks
1	KISHANGANGA	NHPC	15 June	Material has been received at site , integration will be completed by 15 June
2	PARBATI-2	NHPC	30 June	NHPC informed that redundant communication is available, however channels could not be commissioned due to non-availability of OPGW /PLCC. POWERGRID confirmed they will coordinate and integrate data through PLCC by 30 June. Further , for OPGW between Banala and Koldam , CTUIL requested POWERGID to have separate meeting for finalization of modalities of OPGW replacement
3	PARBATI-3	NHPC		
4	KARCHAM WANGTOO	IPP	31 Dec	They are process of upgradation to IEC-104 and same will be completed by Dec-23
5	BUDHIL	IPP	10 June	Converter supplied , shall be integrated by 10 th June

6	AD Hydro	AD Hydro	15 August	OPGW installation between AD Hydro shall be completed by 15 August
7	Bhiwadi HVDC	POWERGRID	Second gateway Faulty	

42. Telemetry Issues from POWERGRID Stations (Agenda by NRLDC)

- 42.1. NRLDC informed that Real-Time data availability from Bali and Bhiwadi HVDC is very poor, unreliable, and requested POWERGRID for rectification of the same.
- 42.2. POWERGRID informed that present device installed for data communication was installed in 2010 and vendor has declared its End of life and since it is a propriety product any changed cannot be done by POWERGRID and Gateway upgradation needs to be carried out at Balia and Bhiwadi HVDC. Additional cost assessment for upgradation is in finalization and upon approval, they will award for upgradation and they will put proposal for upgradation in next RPC Meeting.

43. Upgradation of DC Power Supply supplied under ULDC (Agenda by NRLDC)

- 43.1. NRLDC informed that installation of new DCPS was approved in 19th TeST Meeting and requested POWERGRID to expedite the commissioning of DCPS at NRLDC.
- 43.2. POWERGRID confirmed that due to some issues in Type test which has led to delay in supply of DCPS, it is expected that supply & commissioning of DCPS at NRLDC will be completed by December 2023.

44. U-NMS remote console at NRLDC (Agenda by NRLDC)

- 44.1. NRLDC informed that availability of Remote console is essential requirement and requested POWERGRID to expedite the supply of remote console at NRLDC. POWERGRID informed that CTUIL has given the letter to POWERGRID for supply of remote console at NRLDC under U-NMS and they are in process of supplying remote console at NRLDC.
- 44.2. POWERGRID confirmed that remote console will be supplied at NRLDC within next 2 months. POWERGRID is commissioning U-NMS in northern Region through M/s Sterlite. However, it was learnt that POWERGRID has not envisaged U-NMS remote console at NRLDC.

Decision of the forum:

- 44.3. *POWERGRID to supply remote console at NRLDC within next 2 months.*

45. Telemetry issue from NTPC Singrauli (Agenda by NRLDC)

- 45.1. Representative from NTPC was not available in the meeting so the agenda could not be discussed.

46. Removal of Dismantled Material from NRLDC (Agenda by NRLDC)

46.1. Representative from POWERGRID informed that they have now removed the scrap material from NRLDC.

47. Redundant communication to NRLDC (Agenda by NRLDC)

47.1. Representative from NRLDC informed that Additional fibre connectivity to NRLDC via Tughlakabad- NRLDC-R.K.Puram was approved in 19th TeST Meeting held on 07th March 2022. Accordingly, fibre connectivity has been made in December 2022, however link is yet to be commissioned. NRLDC requested POWERGRID to please expedite the work as one of the existing communication link to NRLDC via Mahanranibagh is highly prone to cut and any outage of this links leads to radial connectivity to NRLDC/NLDC.

47.2. POWERGRID informed fibre has been laid by DTL but there is some issue in fibre and requested DTL to rectify the issues at the earliest. Further, POWERGRID informed that for final connectivity of DTL fibre with NRLDC there are some challenges in road crossing in front of NRLDC gate and they have made payment to CPWD and it is expected they will get permission in next 15 days. POWERGRID further assured that it will be commissioned in next month.

Decision of the forum:

47.3. *POWERGRID to commission redundant communication to NRLDC by next month.*

48. EOL/EOS for firewalls supplied under URTDSM Project (Agenda by NRLDC)

48.1. NRLDC informed that internal / external firewall supplied under URTDSM are reaching its End of Life/ End of support and requested POWERGRID to take timely action so that firewall could be replaced before expiry.

48.2. POWERGRID informed that they will take-up with vendor and get the devices replaced within schedule.

49. Frequent Issue of Telemetry data from Amritsar Sub-Stations (Agenda by NRLDC)

49.1. NRLDC informed that there is frequent interruption of BCU Gateway as it goes into hanged state frequently, affecting Punjab Drawal. It was requested to please take up for resolution of the issues at the earliest.

49.2. POWERGRID informed that they have raised the issue to concerned office and they are taking up with OEM for resolution of the issues at the earliest.

50. PMU integration of RRVPNL stations supplied under STNAMS (Agenda by NRLDC)

50.1. NRLDC informed that as discussed in RPC meetings, RVPN agreed to integrate STNAMS PDC of RVPN with URTDSM PDC at Rajasthan SLDC by 30th April 2023. However, desired integration is pending and requested RVPN/Rajasthan SLDC to expedite the integration.

50.2. Rajasthan SLDC informed that they are have already taken up with concerned wing of RVPN regarding confirmation of Cyber Security compliance. They will again pursue with RVPN for integration and cyber security compliance.

51. Calculation of actual drawal by states based on SLDC end SCADA data (Agenda by NRLDC)

51.1. NRLDC requested that issue regarding drawal calculation of state using state telemetry points has been discussed in various TeST/OCC Meetings. However, such calculation is still pending from many SLDCs. NRLDC requested all to calculate the drawal as discussed so that it can act as redundant calculation. NRLDC further confirmed this calculation will help cross-validating drawal calculated using central sector data and any inconsistency can be immediately identified.

51.2. NRLDC requested Haryana, Punjab, J&K, Uttarakhand, HP to calculate drawal as discussed and share the same with NRLDC.

Decision of the forum:

51.3. Representative from States confirmed that they will share with NRLDC within next 15-20 days.

52. Telemetry Issue from Narora Generating Station (Agenda by NRLDC)

52.1. Already deliberated at Agenda no. 8.

53. Telemetry Status from State Sub-stations/Generating Stations (Agenda by NRLDC)

Telemetry Status as on 31.03.2023 is given below;

Northern Region summary sheet and details of current status of implementation of telemetry system														
													Updated Till:	31.03.2023
Sl. No.	User Name	Total Nos of Stations		Telemetry not Provided				Telemetry Intermittent				Total non-availability of data in %		
		GS	SS	GS	SS	GS	SS	GS	SS	GS	SS	GS	SS	
1	Punjab	17	173	0	19	0.00%	10.98%	0	21	0%	12%	0%	23%	
2	Haryana	5	271	-	52	-	19%	0%	13	0%	5%	0%	24%	
3	Rajasthan	20	232	0	0	0.00%	0.00%	4	20	20%	9%	20%	9%	
4	Delhi	7	46	---	---	0%	0%	0	14	0.0%	30.0%	0.0%	30.0%	
5	UP	32	327	0	0	0%	0%	10	103	31%	31%	31%	31%	
6	Uttarakhand	14	44	1	29	7%	66%	1	3	7%	7%	14%	73%	
7	HP	13	35	0	10	0.00%	28.57%	0	0	0%	0%	0%	29%	
8	JK	4	66	2	64	50%	97%	2	2	50%	3%	100%	100%	
9	POWERGRID	-	90	-	-	-	-	-	20	-	22%	-	22%	
10	NTPC	15	-	-	-	0%	-	8	-	53%	-	53%	-	
11	NHPC	14	-	-	-	0%	-	10	-	71%	-	71%	-	
12	NPCIL	5	-	-	-	-	-	1	-	20%	-	20%	-	
13	NJPC	2	-	-	-	-	-	1.00	-	50%	-	50%	-	
14	THDC	2	-	-	-	-	-	1%	-	1%	-	1%	-	
15	BBMB	6	14	-	-	-	-	0	0%	0%	0%	0%	0%	
16	IPP/JV/Patran	53	9	-	-	0%	-	12	2	23%	22%	23%	22%	
TOTAL		209	1307	3	174	1%	13%	49.01	198	23%	15%	25%	28%	
Total (over all)		1516		177		12%		247.01		16%		28%		
Note:														
1. Constituentswise details is as furnished by SLDC's / as available at RLDC.														

After detailed discussions following timelines were shared by states.

S.No	State	Timeline	Remarks
1.	Punjab	31 Nov 2023	Tendering under progress
2.	Himanchal Pradesh	15 July 2023	Testing under progress

54. Non-displaying of Dynamic Values on SLDC Haryana Website (Table Agenda by HVPNL)

54.1. Representative from SIEMENS was not available in the meeting so the agenda could not be discussed.

55. E-DNA new data points list not updating in e-DNA ChAD manager (Table Agenda by HVPNL)

55.1. Representative from SIEMENS was not available in the meeting so the agenda could not be discussed.

56. Image Backup of servers (Table Agenda by HVPNL)

56.1. Representative from SIEMENS was not available in the meeting so the agenda could not be discussed.

57. IMM in PDS console not working (Table Agenda by HVPNL)

57.1. Representative from SIEMENS was not available in the meeting so the agenda could not be discussed.

58. Agenda regarding settlement of issue of MW tower (Asset of HVPNL) installed at 400KV S/Stn, Bawana (Table Agenda by HVPNL)

58.1. HVPNL informed that DTL was requested to expedite the settlement of the issue of MW tower installed at 400kV substation Bawana. It was assured by representative of DTL that NOC given by HVPNL is under consideration of DTL Management and the issue will be resolved.

58.2. MS, NRPC stated that a separate meeting may be planned with senior officials from HVPNL and DTL to resolve the issue. HVPNL may co-ordinate with NRPC sectt., in this regard.

Decision of the forum:

58.3. *A separate meeting to be planned with senior officials from HVPNL and DTL to resolve the issue.*

Introduction of MPLS Technology in ISTS Communication

Why migrate from SDH?

- End of life of SDH technology, will be obsolete soon, (Last development- 2000).
- SDH is having fixed bandwidth channels for various communication applications and not as per use.
- Bandwidth efficiency is not as high as MPLS.
- SDH OEMs are advising to go for new technologies as globally chip production of SDH equipment is reduced and thus maintenance of SDH equipment is getting difficult.
- Trend in technology change, Globally Power Utilities are migrating from conventional SDH (circuit switching) to MPLS (Packet Switch Network) such as Energinet Denmark, ORES UK, Austin Energy USA etc.
- A platform needed for growth using flexible protocols to support future applications.
- High demand IP packet based applications.

Why go for MPLS?

- Adaptability of Multiple protocol applications obviate the use of protocol converters.
- MPLS is Packet Switch Network technology, no reservation of data bandwidth (BW), high BW efficiency.
- QoS based services.
- Long term availability of spares as new technology.
- Various Class of Service available for different applications data.
- Different services can be mapped in different VPNs through single physical port.
- Supports both L2 and L3 network.
- Higher Cyber Security due to use of VPN, easy deployment of Firewall.

Table: Comparison of Various Technologies

Factors	SDH	IP-MPLS	TP-MPLS
Channel routing	Static user defined	Dynamic network defined	Static user defined
Channel directions	Bidirectional (same To-Fro paths)	Unidirectional (different To-Fro paths)	Bidirectional (same To-Fro paths)
Channel Supervision	End to end	Link wise	End to end
Data channel	Deterministic	Non-deterministic (without special measures)	Nearly deterministic (if network planned properly)
NMS & Control Panel	Same	Different	Same
Resilience (Protection mechanism switching)	<50ms	>50ms	<50ms
Latency	0.06ms	> 0.06 ms	0.02ms
Bandwidth efficiency	Fixed BW	Efficient	Efficient

Seminar on MPLS Technology

- CTU organized a seminar on “Introduction of MPLS Technology in Indian Power Sector” on 24 January 2023 at Gurugram.
- Seminar was graced by Member (Power System) CEA, Shri A. K. Rajput and his team.
- Seminar was available Offline as well as Online.
- Participants from CEA, RPCs, CERC, STUs, TSPs attended both in person and through webinar.
- Total participants were around 200 who actively participated.
- MPLS vendors GE, NOKIA, HITACHI, CISCO, SIEMENS and TEJAS presented their MPLS systems and shared the experiences along with case studies in Power Sector.

Present ISTS Communication Network

- Approx 70000 Km of OPGW.
- Approx 750 ISTS Nodes.
- SDH based network – Capacity STM-1 / 4/ 16/ 64.
- As per CERC Tariff Regulation, life of SDH equipment is 15 Yrs.

Present Power System Applications

- i. SCADA
- ii. PMU
- iii. Tele protection
- iv. Telecontrol
- v. AGC
- vi. Voice
- vii. Automated Metering Application
- viii. Video conferencing
- ix. ICCP (between control centers)
- x. Station to PDC
- xi. PDC to PDC
- xii. Supervision of communications System
- xiii. Video Surveillance
- xiv. Data Sync between MCC & BCC

Options of Migration to MPLS

- New Nodes / replacement of SDH nodes completing its useful life to be provided with suitable MPLS equipment at the node, intervening path and respective RLDC.
- Integration of MPLS equipment with the existing SDH system at nodes and respective RLDC .
- Technologies are available MPLS - TP / IP/ Hybrid.

Challenges in Migration to MPLS:

- Adopting MPLS TP / IP / Hybrid wrt ISTS System functional requirements esp. latency.
- Dovetailing of MPLS-TP/IP with legacy SDH network at full existing capacity.
- Seamless integration of MPLS with its various technologies viz TP / IP/ Hybrid.
- Optimization of existing repeaters (Locations) for the MPLS Network. MPLS network may require more repeaters as compared to legacy SDH network and may not be able to support single hop of upto 200-225 km.
- Latency of MPLS network needs to be designed for meeting the voice & data communication as per CEA Technical Standards 2020.
- MPLS may not support as many directions as supported in SDH network.
- Compatibility of different MPLS networks for providing centralized supervision.

Adoption of New Technologies

Regulation

As per clause 22 of CEA (Technical Standards for Communication System in Power System Operations) Regulations 2020

Adoption of new technologies. Plan shall be made for introduction and adoption of new technologies, with the approval of the appropriate Commission or as per the regulations or pursuant to the reforms programme of the appropriate Government.

Thank You