सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

No. उक्षेविस/ प्रचालन/108/04/2022/10595-10629 Dated: 09.11.2022

सेवा में / To,

संलग्न सूची के अनुसार/As per list attached

विषय: दूरसंचार, स्काडा और टेलीमेटरी उप समिति की 20वीं बैठक- बैठक के कार्यवृत।

Subject: 20th meeting of Telecommunication, SCADA & Telemetry Sub Committee- Minutes of the meeting-reg.

महोदय / Sir,

उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार,स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की 20वीं बैठक दिनांक 09.09.2022 को 11:00 बजे से विडियो कोंफ्रेंसिंग के माध्यम से आयोजित की गई। बैठक में कार्यवृत इस पत्र क साथ संलग्न है । यह उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट (http://164.100.60.165) पर भी उपलब्ध हैं ।

20th meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC was held on 09.09.2022 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.

भवदीय

Yours faithfully

9/11/22

(संतोष कुमार)

(Santosh Kumar)

अधीक्षण अभियंता

Superintending Engineer

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Contents

Minutes
of
20th Meeting of Telecommunication, SCADA & Telemetry (TeST) Sub- Committee

20th Meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-Committee was held on 09.09.2022 at 11:00 am via video conferencing under the chairmanship of Member Secretary, NRPC. Minutes of the meeting are given as under:

I. Confirmation of Minute

1. Confirmation of Minutes

1.1. EE(C), NRPC informed that 19th meeting of TeST sub-committee was held on 07.03.2022 and the minutes were issued vide NRPC letter no. NRPC/OPR/108/04/2022/3686-3720 dated 20.05.2022. No comments have been received on the MoM. He requested members to confirm the minutes.

1.2. The sub-committee confirmed the minutes of the meeting..

II. Telecommunication and Telemetry issues

2. CTUIL Agenda

2.1. Following agenda points were also discussed in the 2nd ISTS Communication Planning Meeting held on 25.07.2022.

2.2. As per the CEA communication planning manual clause 4.1.2, the radial ISTS nodes are required to be connected on redundant paths. In this regard, as per CTU carried out the study and feedback received from NRLDC, following stations are proposed for dual redundant connectivity as under:

2.3. **Redundant communication for Budhil (GreenCo) & Chamera-III (NHPC)**

2.3.1. CTUIL informed that presently Chamera – III & Budhil connected on single fiber path. Redundant path to these stations can be implemented through under construction HPPTCL transmission lines i.e. Budhil to Lahal and Lahal to Chamera PS where new OPGW has also been laid by HPPTCL along with transmission line.

2.3.2. CTUIL informed that for establishment of redundancy for Chamera-III & Budhil with OPGW network, HPPTCL has to share three (03) pairs of fibres from 220kV Lahal to Budhil (GreenCo) and 400kV Lahal (HPPTCL) to Chamera Pooling (PGCIL) station for grid operation/ULDC purpose. POWERGRID informed that for this redundancy, additional FOTE (STM-16) shall be installed at Lahal and optical connectivity with Chamera PS and Budhil shall be done by

POWERGRID through these OPGW network of HPPTCL and data of Budhil and Lahal shall be reported at HP-SLDC and NRLDC on redundant path. On enquiry, HPPTCL informed that Lahal – Chamera (PS) line is under construction and likely to be completed by end of Sep/Oct' 2022 whereas Lahal – Budhil (Greenco) line has already been commissioned.

2.3.3. NRLDC also mentioned that once the Lahal-Chamera (PS) OPGW is commissioned, this redundant optical connectivity should be implemented at the earliest in order to have redundant optical routes for Chamera-III (NHPC), Budhil (GreenCo) and Lahal through redundant OPGW network. This would provide better and robust connectivity in Himachal Pradesh area stations. POWERGRID mentioned that only one additional communication equipment (STM16) is required along with SFPs for both directions, therefore scheme may be implemented in ongoing ULDC package i.e. NROSS scheme.

2.4. **Redundant communication for Pithoragarh (PG) & Sitarganj (PG)**

2.4.1. CTU informed that Pithoragarh (PG) station is connected on single fibre path to ISTS wideband communication network. Second path can be created through Pithoragarh (PG) - Pithoragarh-Almora-Haldwani-Kashipur-Roorkee (PG) PTCUL links. However, on the above PTCUL path, OPGW is available except on Pithoragarh-Almora line. During discussion of 2nd ISTS meeting, PTCUL informed that OPGW on this line is already under tendering stage.

2.4.2. Further, CTU mentioned that Sitarganj (PG) is also on single fibre path, second path can be created through Sitarganj (PTCUL) – Kiccha – Rudrapur-Pantnagar- Kashipur (existing PTCUL STM-1 links upgradable to STM-4).

2.4.3. CTU informed that above sub-stations can be protected through PTCUL OPGW network and for this additional FOTE & sharing of 3-pairs fibres of PTCUL links on Pithoragarh (PG)-Pithoragarh-Almora-Haldwani-Kashipur-Roorkee(PG) path is required for redundant path of Pithoragarh (PG) and additional FOTE & sharing of 3-pairs fibres of PTCUL links on Sitarganj (PG)-Sitarganj (PTCUL)-Kiccha- Rudrapur- Pantnagar- Kashipur path is required for redundant path of Sitarganj (PG).

2.4.4. POWERGRID mentioned that Pithoragarh, Dhauliganga and Sitarganj are only connected to single transmission line where OPGW has already been laid and PTCUL OPGW network may be used for redundancy, as proposed by CTU, on 6 fibres (3 pairs) sharing basis exclusively for ULDC purpose without any commercial implication.

2.4.5. PTCUL representative expressed their concern that consent from PTCUL management is required for sharing of fibres for the proposed links and suggested that NRPC may approach PTCUL management for approval of sharing of fibres for the proposed links.

2.4.6. MS, NRPC stated that a DO letter will be issued for the same to MD-PTCUL mentioning all issues of Telemetry data in PTCUL.

2.5. **Redundant communication for Faridabad (NTPC) & Jhajhar (NTPC)**

2.5.1. CTU informed that Faridabad (NTPC) – Palla line is LILOed at Sector-78, Faridabad of HVPNL and HVPNL is installing OPGW over Faridabad-Palla line along with LILO portion up to Sector-78, Faridabad. Further, new line is coming up from Sec-78, Faridabad to Sohna Road with OPGW. Redundant path can be created for Faridabad (NTPC) via HVPNL network up to Sohna Road (existing ISTS point).

2.5.2. Further, Jhajhar (NTPC) is also connected with single path through 400kV Jhajhar – Mundaka line. Redundant path can be created utilizing HVPNL OPGW network over Jhajjhar – Daulatabad (HVPNL) – Gurgaon HVPNL-Gurgaon (PG).

2.5.3. POWERGRID mentioned that they can establish redundant OPGW network by using HVPNL OPGW network as proposed by CTU on sharing basis (3 pairs) exclusively for ULDC purpose without any commercial implication.

2.5.4. HVPNL confirmed that redundant connectivity for Faridabad (NTPC), as proposed by CTU, may be considered after completion / commissioning of sub-station (Sector-78) along with Palla and Sohna lines. HVPNL will coordinate with POWERGRID for providing the redundant connectivity for Faridabad (NTPC) through HVPNL network. Further, HVPNL agreed to provide 3-pairs of fibres to make a redundant path via Jhajhar – Daultabad – Sec-72, Gurgaon (HVPNL)- Gurgaon (PG) for establishing redundant connectivity for Jhajjhar (NTPC).

2.6. **Redundant communication for Fatehgarh PS (Adani), Mohindergarh (Adani) & Mundra (Adani) stations.**

2.6.1. CTU informed that from Fatehgarh PS, only one fibre path is available and second path may be established either over leased line or 5 kms of OPGW can be laid on other peak of Fatehgarh Adani- Fatehgarh-II (PG) line (up to LILO portion).

2.6.2. Further, data of Mohindergarh (Adani) & Mundra (Adani) stations are reporting at RLDCs through leased line, despite the OPGW available on following lines:

(i) Mohindergarh – Mundra HVDC line (Adani)
(ii) Mohindergarh – Bhiwani (PG) line (Adani)
(iii) Mohindergarh – Dhanoda line (HVPNL)
(iv) Dhanoda – Neemrana line (HVPNL)

2.6.3. CTU mentioned that OPGW on transmission lines are being laid for data / voice reporting for grid operation purpose, so first priority should be given to grid operations purpose. Therefore, redundant path may be established through exiting OPGW network of Adani lines and data may be optically handed over to nearby ISTS point of POWERGRID or other transmission licensee. Data of Fatehgarh PS may be provided on second path connectivity of Fatehgarh PS

over leased line as station is critical in view of larger RE generator connected with this station.

2.6.4. Further, data of Mohindergarh (Adani) can be provided on redundant route when FOTE of POWERGRID shall be integrated with Adani FOTE at Bhiwani (PG). CTU also mentioned that redundant path instead of leased line via Mohindergarh (Adani)-Dhanoda (HVPNL)-Neemrana (PG) may also be utilised by suitable integration with ISTS point. Similarly Mundra HVDC is also reporting through lease line at WRLDC and NRLDC, same can also be shifted to OPGW network on Mohindergarh – Mundra HVDC line for ULDC purpose as main path and leased line as redundant path.

2.6.5. Adani representative stated that they will revert back after discussing with their management for providing redundant connectivity to Fatehgarh PS (adani), Mohindergarh (adani) & Mundra station on fibre through ULDC network.

2.6.6. MS, NRPC stated that if OPGW cable is laid on any transmission line then first priority should be given to grid operation data and voice connectivity, if spare fibres are available then only same can be utilised for other purpose, therefore, Adani should shift their telemetry data to OPGW network and lease line can be utilised as redundancy purpose.

2.7. **Redundant communication for Narora (NAPP) (NPCIL)**

2.7.1. CTU stated that presently NAPP (NPCIL) is connected with NAPP – Khurja OPGW network. A redundant path is proposed to be established by installing OPGW over 220kV NAPP – Atruali UP line (38 kms.), from where onwards fibre network is available upto NRLDC via NAPP-Atrauli-Aligarh-Sihandrarao-Kasganj-Etah-Mainpuri (UP)-Mainpuri (PG) where additional FOTE & sharing of 3-pairs fibres of PTCUL links on NAPP-Atrauli-Aligarh-Sihandrarao-Kasganj-Etah-Mainpuri(UP)-Mainpuri(PG) path is required for redundant path of NAPP.

2.7.2. UPPTCL representative stated that they are already planning OPGW over 220kV NAPP – Atruali line which may be utilized for establishing redundant path.

2.7.3. NRLDC informed that proposed route by CTU is very long and may need multiple hopes for data reporting; longer fibres length/ more equipment would be required for establishment of new redundant route. POWERGRID shared the same opinion and added that aforementioned route is very long and no equipment is presently installed by ULDC on these routes except Mainpuri 400 kV (PG).

2.7.4. NRLDC further added, Meerut PG- Simbholi is having OPGW cable (laid by UPPTCL) and therefore Simbholi to NAPP may be explored for establishment of new redundant route. POWERGRID and UPPTCL informed that they will jointly finalise shortest route for NAPP redundant connectivity and the same will be updated in next meeting.

2.8. **Redundant communication for Samba (PG)**

2.8.1. CTU informed that presently Samba (PG) is connected on single route i.e. Sambha- Kishenpur path, second path can be created by following lines where OPGW is already available:

(i) Amargarh – Samba (Indigrid line)
(ii) Samba – Jallandhar (Indigrid line)

2.8.2. CTU mentioned that FOTE of POWERGRID and Indigrid shall be integrated at Samba (PG), Amargarh (Indigrid) & Jallandhar (PG) for utilisation of OPGW network. NRLDC informed that Sambha (Indigrid) equipment has already been interconnected with POWERGRID, however OPGW link is not being utilized due to non-connectivity at Amargarh between Indigrid (ABB) and POWERGRID (TEJAS). POWERGRID has installed their equipment at later date and it was agreed by POWERGRID to connect by providing SFPs at Amargarh and requisite support shall be provided by Indigrid including their vendor (ABB).

2.8.3. Further for utilizing Sambha-Jallandhar link, POWERGRID informed that OPGW cable has been laid by Indigrid up to Kiosk and equipment of ULDC are installed in control room at both end and approach cable has to be laid from kiosk to control room and Indigrid may also allow to use of their fibres (3 pairs) for ULDC purpose by POWERGRID. Further amplifiers needs to be procured for both end for establishing this connectivity.

2.8.4. Since, the member from Indigird were absent during the meeting, MS-NRPC stated that Indigird shall be invited in the NRPC meeting for these issues as special invitee.

2.9. **Redundant communication for Bhinmal (PG) & Kankroli (PG) S/s**

2.9.1. CTU informed that Bhinmal station is presently connected with Kankroli and Zerda S/s. However, OPGW on Zerda-Ranchhodpura line is under implementation. From this line second path will be commissioned through WR network.

2.9.2. Bhinmal is also connected with RRVPNL power network and OPGW is available on the following RRVPNL lines:

(i) Bhinmal (PG) – Barmer
(ii) Barmer - Jaisalmer -II
(iii) Jaisalmer -II – Jodhpur (Kankani)
(iv) Jodhpur (Kankani) – Jodhpur (Surpura)

2.9.3. For establishment of redundant communication path, 03 pairs of optical fiber from existing OPGW on RRVPNL network are to be shared on (a), (b) & (c).

(a) Bhinmal (PG) –> Barmer-> Jaisalmer-II->Jodhpur(Kankani)->Jodhpur (Surpura)–> Merta->Ratangarh->Sikar (existing ISTS node)

(b) Merta-Beawar- Bhilwara (existing ISTS node)

(c) Merta – Heerapura (existing ISTS node)

2.9.4. CTU also mentioned that after implementation of above routes for ISTS network, additional paths will be created through RRVPNL network for better redundancy. RRVPNL agreed on the same, however they mentioned that 3 pairs of fibres on above lines can be provided to POWERGRID for ULDC purpose but their Jodhpur-220 and Ratangarh SLDC need to be covered in this scheme as their existing fibrehome equipment (STM1) is almost saturated and not upgradable, so that they can get additional redundant route on ULDC network for their RTU, SCADA/ ICCP data reporting for their SLDCs from Bhilwara, Kota, Merta & Ratangarh and POWERGRID will also get additional redundant route for Bhinmal, Sikar and WR Region network.

2.9.5. CTU also informed that agenda for redundancy of Kankroli has been sent to NCT by CTU after seeking views of NRPC vide which OPGW is proposed on 400kV Kankroli – Jodhpur (Surpura) S/c line.

2.9.6. During detailed deliberation, members agreed for providing STM-16 communication equipment as additional FOTE at below mentioned RRVPNL locations to create redundant path for Bhinmal and Kankroli. This will also provide additional ring protection for NR and WR connectivity, which will not only strengthen the ISTS network but also will provide redundant paths to RRVPNL network. RRVPNL requested, since the OPGW network has already been established and only new communication equipment need to be installed, POWERGID may include the requirement in ongoing project, so that above ISTS connectivity can be established immediately. POWERGRID informed that presently NROSS scheme is going on and these requirement can be included in NROSS scheme.

i. Bhinmal / Heerapura (only SFPs/amplifiers)
ii. Barmer
iii. Jaisalmer -II
iv. Jodhpur (Kankani)
v. Jodhpur (Surpura)
vi. Jodhpur (220)
vii. Merta
viii. Ratangarh
ix. Ratangarh SLDC
x. Beawar

Sub-Committee agreed on the same and informed CTU to take up the agenda in upcoming NRPC meeting for approval.

3. Issue with SDH (FIBCOM make) equipment installed under Package-IV(a) & IV(c) in Himachal Pradesh during transmission of real time data. (Agenda by HPSEB)

3.1. Under Package-IV(a) & IV(c), 24 nos. SDH equipment (FIBCOM Make) has been installed under Establishment of Fibre Optic Communication System in Northern Region for State Sector by PGCIL vide LAO NO: CC-CS/439-NR1/CommEqp-3236/3/G5/CA-I/5765 at various sub-stations in HP. These SDH equipment installed/commissioned during year 2018. However, the real time data communication started from March, 2022. Only two RTU stations are presently communicating through these SDH equipment.

3.2. POWERGRID informed that this issue has been resolved after some changes were carried out in the network, however, HPSEBL apprised that data of some stations are still fluctuating at HP-SLDC. POWERGRID mentioned that problem seems to be arising out of configuration issues and data is integrating on piece meal basis; it will be rectified after reconfiguration of all links one more time and HPSEBL may monitor the performance and revert back afterwards. HPSEBL agreed on the same.

4. ICCP redundancy (Agenda by PSTCL)

4.1. PSTCL informed that their telemetry data of some of the Sub-LDCs are still on single route. Once any optical fibre link gets disturbed or any issue arises in the communication equipment, entire data of particular Sub-LDC gets disturbed.

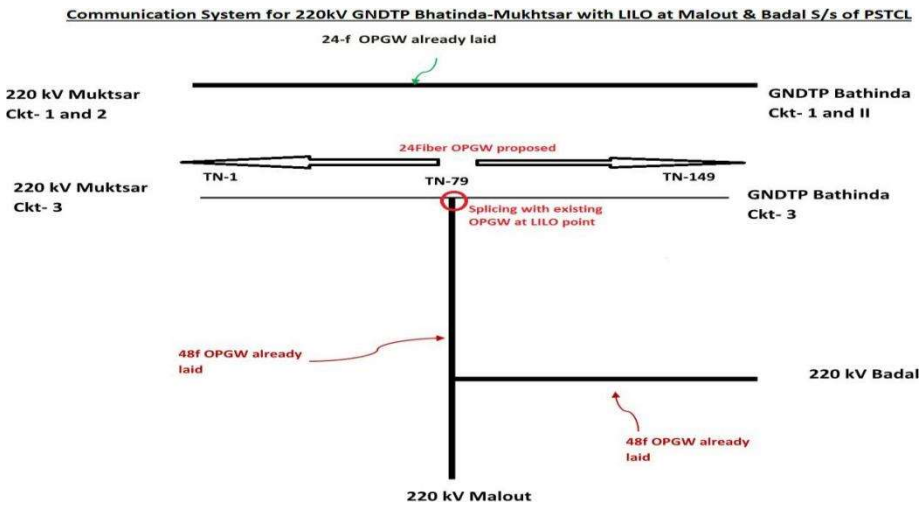
4.2. POWERGRID informed that ULDC network is implemented in different schemes and communication equipment are of different make and they have some limitation in old fibrehome equipment which were installed in Microwave replacement scheme (non-availability of SFPs in equipment). Once PSTCL's whole network is commissioned with Fibcom equipment and ongoing package of PSTCL is implemented at their own, this issue of linear connectivity would be resolved.

4.3. However, POWERGRID has configured separate Ethernet port at both ALDC/Sub-LDC to SLDC Patiala on Fibcom and Fibrehome and same can be interlinked at Jansher and Laltokalan ALDC to have redundant physical connectivity without swapping LAN cables in case of optical link outage. For that purpose, PSTCL would need to lay LAN cables from Fibcom equipment to SCADA CFE server at SLDC and connect LAN cable between Fibrehome & Fibcom at ALDC/Sub-LDC.

5. Issue of OPGW between 220kV GNDTP Bathinda to 220kV Malout (Katorewala) with LILO at 220kV Badal substation under Package-1a. (Agenda by PSTCL)

5.1. PSTCL informed that they have two separate transmission lines between Bathinda and Muktsar; i) 220 kV D/C GNDTP (Bathinda)- Muktsar (Ckt-1 & 2) ii) 220 kV GNDTP (Bathinda)- Muktsar (Ckt-3).

5.2. Ckt-1 & 2 is having 24F OPGW cable implemented in package-I(a) by POWERGRID. It may be noted that subsequently, 3rd circuit was LILOed at Badal and Malout sub-stations and OPGW was also laid on LILO lines with 48 Fibres whereas, OPGW was not envisaged on main line i.e. 220 kV GNDTP Bathinda- Muktsar (Ckt- 3) transmission line. PSTCL requested that 24F OPGW may be implemented on 3rd circuit from LILO point to nearest sub-station, so that LILO of Badal and Malout may be connected in the OPGW network and 48F of LILO line can be utilized.



5.3. On query of MS(NRPC), PSTCL informed that length of OPGW cable required from LILO point to nearest station is approx. 25 kms. POWERGRID stated that being a short line, OPGW cable should be laid on complete line (approx. 51 Kms), so that both of the LILO sub-stations may be connected in ring network i.e. 220 kV GNDTP (Bathinda) - Badal - Malout - Muktsar through Ckt-3 transmission line where one Optical connectivity is already available through GNDTP (Bathinda)- Muktsar (Ckt-1 & 2) line. This would provide better connectivity for all sub-station involved. Further, 48F OPGW may also be utilized for grid operation data.

5.4. CTU and NRLDC also agreed for the same, so that complete ring network can be established. PSTCL requested that this link may be implemented in ongoing POWERGRID project under state sector of package-I(a) or ongoing reliable communication scheme. POWERGRID informed that package-I(a) has been completed and this link can be implemented in Reliable communication scheme, however additional time (5-6 months) is required to execute this work.

5.5. Sub-Committee agreed on the same. MS, NRPC advised CTU to take up the agenda in upcoming NRPC board meeting for approval.

6. Establishment of OPGW connectivity for ANTA NTPC for Telemetry data and Voice (Agenda by POWERGRID)

6.1. In 48th NRPC, installation of OPGW on 400kV Anta-Kota line (90km approx.) was approved for AGC. During survey, it was observed the said line is originating from Anta (RRVPNL), not Anta (NTPC). This matter was informed during 2nd ISTS Communication Planning Committee Meeting for NR by CTUIL held on 25.07.2022 and it was agreed that in view of urgent need for reliable & redundant connectivity of Anta (NTPC), OPGW connectivity needs to be established in stipulated time and alternative line may be considered.

6.2. POWERGRID informed that following ISTS transmission lines are connecting Anta (NTPC) with Northern Region grid:

(i) Anta (NTPC) - RAPP 'C' (87.5km)
(ii) Anta (NTPC) - Bhilwara (187km)
(iii) Anta (NTPC) - Bassi (250km)

6.3. POWERGRID informed that Anta-Kota line was inadvertently considered for AGC connectivity wherein ANTA is a RRVPNL 765/400kV station which is even not connected with ANTA (NTPC). In view of this, earlier approved OPGW link from Kota-Anta may be changed to Anta-RAPP-C in order to provide OPGW connectivity for Anta (NTPC) under AGC. POWERGRID further informed that since the works were already been awarded under NROSS scheme and AGC connectivity is of utmost priority, Anta (NTPC) to RAPP 'C' OPGW link may be considered as change of name. POWERGRID will execute OPGW works on 220kV S/C Anta (NTPC)– RAPP 'C' (Length: 87 km) in NROSS scheme in lieu of Anta-Kota line. Anta (NTPC)– RAPP 'C' line is of approx. same length to approved Anta-Kota line and as such, there would be no additional financial implication.

6.4. NRLDC affirmed that Anta – Kota line is not connected with Anta (NTPC) which is their requirement for AGC and SCADA data connectivity. Therefore, POWERGRID's request may be considered and requested POWERGRID to establish the OPGW connectivity at the earliest on the new proposed line.

6.5. On enquiry of CTU for redundancy of Anta (NTPC), POWERGRID informed that presently, data of Anta (NTPC) is being reported to NRLDC/NLDC over leased line taken from Telecom deptt. via their OPGW laid on 220kV Anta-Bassi line. There are no spare fibres available on the link. Moreover, this transmission line has been LILOed at multiple locations (3 nos.) and useful life of 15 years of Anta-Bassi link is over. Link Budget (Design attenuation) allowed upto 61.38dB & presently losses are in range of 99dB as observed by Telecom. Existing OPGW requires replacement but due to site issues replacement may not be feasible.

6.6. CTU is of opinion that POWERGRID may replace the Anta-Bassi line for redundancy purpose for ISTS and RRVPNL OPGW network, this would get connectivity for RRVPNL's three sub-stations namely Dausa, Lalsot and Sawai

Madhopur. POWERGRID informed that there are certain constraints in taking up OPGW replacement on 220kV Anta-Bassi link as follows:

(i) Since it is 220kV line and only single peak is available, entire Communication link would be down during replacement of link.

(ii) Anta-Bassi link is 243km long which is further LILOed at 03 RRVPNL locations: Lalsot, Sawai Madhopur & Dausa. As such, OPGW of approx. 350Kms line would need to be replaced where 48F OPGW would be required in LILO portions.

(iii) Further, ROW at LILO portions belongs to RRVPNL and they have already raised the ROW issues during their OPGW network planning and execution and requested POWERGRD to surrender their ROW or lay 48fibre cable, so that RRVPNL may get exclusively 24 fibres for RRVPNL's OPGW network for 220kV & 132kV stations.

(iv) This may require 48 fibre OPGW laying on complete line including LILO stations along with additional STM-16 communication equipment and 48V DC power supply at all LILO sub-stations which will have huge/ additional financial implications, limitation of use of all fibres for central sector network and dependency on state communication nodes.

In view of constraints in replacing existing telecom OPGW on Anta-Bassi line, it would be efficient to consider OPGW on alternate line i.e. 220kV D/C Anta (NTPC)-Bhilwara for redundancy. This is significantly smaller in Line Length, viz. 187km compared to 220kV Anta-Bassi line along with all three LILOs stations.

6.7. On detailed deliberations, Sub-Committee agreed on the proposed OPGW link i.e. Anta (NTPC) to RAPP 'C' (Length: 87.5 km) as change of name in the existing NROSS scheme in lieu of Anta-Kota line being implemented by POWERGRID for AGC.

6.8. MS (NRPC) advised CTU to take up this agenda in upcoming board (NRPC) meeting for approval. Based on deliberations and input from NRLDC and consent from other stake holders, he further stated that CTU may consider and put up agenda for establishment of OPGW connectivity on 220kV D/C Anta (NTPC)-Bhilwara line (187km) as redundant route for Anta (NTPC) and emphasized that POWERGRID may not put up any agenda for replacement of 220kV Anta-Bassi OPGW link in future.

7. Urgent Replacement of old OPGW cable in Northern Region (Agenda by PGCIL)

7.1. **400kV Agra - Ballabhgarh Line (181km)**

7.1.1. POWERGRID informed that OPGW link on Agra-Ballabhgarh line is the most significant link for Northern Region as well inter-regional data traffic coming from WR, SR, ER, NER to NR onwards to NLDC/NRLDC. Agra-Ballabhgarh OPGW link was commissioned in 2004 & has completed useful life of 15 years as per CERC norms.

7.1.2. The said link is passing through industrial corridor in Agra-Mathura-Delhi NCR region. Higher contamination & deposition of pollutants has caused rusting of OPGW & hardware fittings, vibration dampers and so on causing severe damages to OPGW system. Breaking of OPGW due to failure of ACS strands due to corrosion, failure of hardware fittings such as suspension clamps, etc. exposing the fiber optic tube which is prone to water ingress has already increase the attenuation in fiber (site Photographs are attached with agenda points).

7.1.3. Further, POWERGRID has made efforts for mitigating link outage by provisioning of booster-repeater station/amplifier at Mathura, however, it is not sufficient. Data availability has deteriorated and any further outage will impact operation for ULDC & grid operation capabilities of Power System. Any further outage of old OPGW in Agra-Ballabhgarh may lead to non-availability of major chunk of NR data & inter-regional data traffic at NLDC/NRLDC & Backup NLDC. Further, OPGW re-splicing works have been carried out multiple times in some of the sections and these sections are beyond any further repair in case of any contingencies.

7.1.4. Further, POWERGRID informed that in every rainy season, there is problem of water ingress in the aluminum optical tube, resulting in outage of OPGW links for longer period (15-20 days). They are facing this issue since 3-4 seasons and every time OPGW drum are being replaced for restoration of above critical OPGW link. Due to outage of this link, longer outage of links and data has been reported. He requested for complete replacement of old OPGW on 400kV Agra-Ballabhgarh line with a new OPGW line on urgent basis.

7.1.5. Sub-Committee agreed for the same.

7.2. **Kishanpur - New Wanpoh - Wagoora line (after LILO) - 183kms**

7.2.1. Further, POWERGRID informed that OPGW on 400kV Kishenpur- New Wanpoh -Wagoora Line (183km approx.) provides the backbone connectivity between NLDC & NRLDC to important hydro stations & several sub-station stations on UT of J&K such as Uri-1, Uri-2, Kishanganga HEP, Baglihar HEP, Amargarh, Wagoora Ramban, New Wanpoh, Alsuteng-Leh Transmission system & also important for SLDC-RLDC connectivity i.e. Bemina SLDC & upcoming SLDC at Ladakh with NRLDC. Kishanpur-Wagoora OPGW link was commissioned in 2005 & has completed useful life of 15 years as per CERC norms. During installation of OPGW link, Link Budget (Design Attenuation) was <=45.91dB (~0.21db/km), however measured attenuation at end of useful life is >=80dB (~0.4dB/km).

7.2.2. POWERGRID added that OPGW is also installed on 400kV Kishanpur-New Wanhpoh line which acts as redundant route, however this line is passing through heavy snow zone and OPGW is prone to break during winter season due to heavy snowfall (upto 50mm ice thickness) in the Pir-Panjal range of The Himalayas. Rectification works in affected sections is not possible due to

unapproachable site conditions, resulting longer outage in winter/ snowfall season.

7.2.3. In view of above constraints and critical nature of the above links, POWERGRID requested that replacement of old OPGW on above links approx. 364km (i.e. 183km+181km) on 400kV Agra-Ballabhgarh and 400kV Kishenpur-Wagoora line (except LILO at Wanpoh) in Northern Region may be approved on urgent basis. These would be replaced by POWERGRID in existing/ upcoming packages for fast track execution. The scheme would be implemented on tariff route as per CERC notification and would become part of existing Commercial Agreement signed for ULDC Project.

7.2.4. CTU informed that agenda of POWERGRID has been reviewed and may be agreed, however cost cutting options may be explored for replacement of OPGW in Agra- Ballabhgarh / Kishenpur – Wagoora lines by replacement of damaged portion only in line with guidelines of replacement of other elements.

7.2.5. MS (NRPC) opined that present guidelines are applicable to replacement of Transformer & Reactor and may not be applicable for OPGW. However, as these days OPGW connectivity is vital requirement for grid operation and any data outage in grid operation would have consequences on grid operation. Being a small quantum of work, this proposal may be agreed for complete replacement, otherwise left out portion will again come up for replacement after some time and life span of fibres / OPGW has also be completed in this case. He also informed CTU to take up this agenda in upcoming board (NRPC) meeting for approval.

8. Issue regarding Non-Availability of Shutdown on 220kV ADHEPL – Phozal & 220kV Phozal - Nalagarh line for aviation Globule removal to carry out the OPGW stringing work on 220KV ADHEPL-Nalagarh link under Reliable Communication Scheme. (Agenda by PGCIL)

8.1. POWERGRID mentioned that they are establishing OPGW network for central sector communication system by replacing existing earthwire / old 12F OPGW with 24Fibres OPGW cable under Reliable Communication Scheme. Most of the balance works are pending due to non availability of Shutdown/PTW in 220kv ADHEP- Nalagarh & Chandigarh -Panchkula link .

8.2. It is to mention that shutdown/PTW is not being issued on 220kV ADHEPL – Phozal & 220kV Phozal - Nalagarh for the carrying out the work on 220KV ADHEPL-Nalagarh link. It is to mention that since December'2021, installation of only 25.865 km OPGW against 177 km and removal of 31 out of 138 no Aviation Globule has been carried out due to non-availability shutdown & PTW from HPPTCL/ AD-Hydro.

8.3. POWERGRID has repeatedly followed up for the issuance of PTW/shutdown with M/s AD-Hydro and HPPTCL, however, the consent regarding shutdown/ outage has not been granted despite the planned PTW/shutdown having approval/consent in OCC forum

8.4. Further, POWERGRID informed that due non availability of shutdown/PTW project getting delayed from scheduled time.

8.5. Member Secretary, NRPC raise the concern over non-providing of the shutdown/PTW despite the planned PTW/Shutdown approved in OCC forum. Further MS stated that a DO letter will be send to M/s AD-Hydro and HPPTCL from NRPC, in this regard.

8.6. Sub-committee decided that this agenda may also be taken up in OCC meeting.

9. Issues in OPGW laying in HPSEBL (Agenda by PGCIL)

9.1. POWERGRID inform that during various meeting (15th,16th, 17th 18th & 19th TeST Sub- committee) it was discussed that, some of the links (approx. 155 Kms) were on rail pole structure and OPGW cable laying on these old transmission lines, was not safe which shall be done after Re-conductoring and Tower strengthening done by HPSEBL. POWERGRID mentioned that that strengthening and reconductoring has not been completed till now.

9.2. PGCIL informed that due to non-availability timely and continuous shutdown on Jeory -Nogli, Kimarsain-Nogli and Gumma-Jutogh lines work getting delayed.

9.3. HPSEBL informed that strengthening works are pending on certain lines only and has been completed on most of the lines. Regarding shutdown issues, he informed that the same was not allowed due to load pattern. He assured that shut down will be facilitated by mid of September' 2022 as alternate generation will be available by then. He also informed that continuous shutdown cannot given on Gumma-Jutog line due load issue. An alternative path line construction work is under progress and expected to be completed by December' 2022 after that shutdown shall be provided.

10. Regarding confirmation of commissioned OPGW links of PSTCL under Package 1(a) (Agenda by PGCIL)

10.1. PSTCL mentioned that it is pleased to inform that all 66 links have been commissioned by POWERGRID as part of Package-I(a) and all the communication links are working successfully.

10.2. POWERGRID informed that as of now, all links has already been commissioned and needs to be capitalize and they have applied for commissioning certificate to NRLDC, however NRLDC need confirmation from PSTCL for state sector lines which is still awaited from PSTCL.

10.3. PSTCL assured to confirmed the same through email/letter within a week time.

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

11.1. Representative from PTCUL informed that the OPGW installation work is still in contractual stage and they are not able to timelines for completion till award of the same is given.

11.2. Further, they informed that they are in process of installation of leased line from Dehradun to Kashipur, which would serve as redundant communication path till OPGW connectivity is established. They confirmed that leased line would be commissioned in next one month.

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

12.1. NRLDC requested all to provide redundant communication channel to NRLDC. Different timelines given by different utilities is given below:

S.NO.	Name of RTU	Comments	Timeline
1	KISHANGANGA	NHPC	31.10.2022
2	PARBATI-2	NHPC	31.10.2022
3	Kala Amb	POWERGRID	30.09.2022
4	BUDHIL	IPP	
5	KARCHAM WANGTOO	IPP	
6	MEERUT	POWERGRID	Completed
7	PARBATI-3	NHPC	31.10.2022
8	AD Hydro	AD Hydro	
9	Bhiwadi HVDC	POWERGRID	31.12.2022
10	DRASS	POWERGRID	Completed
11	KARGIL	POWERGRID	Completed
12	LEH	POWERGRID	Completed
13	KHALSTI	POWERGRID	Completed
14	Gurgaon	POWERGRID	30.09.2022

13. Non-availability of Real-Time data from PTCUL (Agenda by NRLDC)

13.1. Representative from PTCUL informed that the RTU procurement work is still in contractual stage and they are not able to specify timelines for completion till award of the same is given.

13.2. MS (NRPC) expressed his serious concern and informed that there is no progress in RTU procurement works since last 2-3 years and requested PTCUL to expedite the works at the earliest. Further, MS (NRPC) informed that he will send a DO letter to MD, PTCUL requesting for expediting RTU procurement and installation works.

13.3. Further, PTCUL informed that contract for replacement of faulty MFT/CMR has been awarded and work would be completed in next 2 months.

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

14.1. Representative from J&K informed that 21 OPGW links have been commissioned, however data integration from J&K stations is still pending, due to non-availability of Siemens RTU engineer for integration works.

14.2. M/s Siemens informed that RTUs were installed during SCADA upgradation in 2015 and were not integrated with Control centres due to non-availability of communication channels and assured that they will plan visit to sub-stations and start the integration work after 15 days.

14.3. Further, M/s Siemens informed that at some of the locations during station retrofication work, CT/PT has been cut by JK-PDD and informed that even if RTU is integrated, sub-station data will not be available due to CT/PT disconnection and informed that new cables need to be laid which would be an additional scope of works and will have commercial implications.

14.4. Representative from J&K informed that Siemens may visit the station and submit the estimate so that necessary approval may be taken by them for above works.

15. Telemetry Issues from Powergrid Stations (Agenda by NRLDC)

15.1. Representative from POWERGRID informed that they are in the process of award for RTU upgradation and above works will be completed by 31.12.2022.

16. Reliable Telemetry from State Sub-Stations (Agenda by NRLDC)

16.1. **PSTCL**: PSTCL informed that RTU installation work is in process and it is likely to be completed by 31.12.2022.

16.2. **Haryana**: Representative from Haryana informed that they are in process of RTU installation and same would be completed at the earliest.

16.3. **HPPTCL**: HPPTCL informed that RTU installation work is in progress, however it could not be completed due to supply of L3 switch and confirmed that RTU work would be completed by 31.12.2022.

III. Issues related to Unified Load Dispatch & Communication scheme of NR

For SCADA related issues, MS (NRPC) was of opinion that there are several issues to be discussed in the meeting, it may take time for discussion and deliberations, it is suggested that in line with earlier practice, POWERGRID may call a separate meeting for AMC related issues with M/s SIEMENS and constituents where NRLDC would also attend the meeting. NRPC sectt. may also attend the meeting. However, critical issues may be deliberated here and detailed discussion may be taken up in separate meeting. POWERGRID agreed for conducting separate meeting for AMC related issues with constituents.

17. Issues being faced by HARYANA SLDC in ULDC Phase-II

17.1. **Non-displaying of Dynamic Values on SLDC Haryana Website:**

Siemens informed that after lots of efforts they couldn't restore the values. The next viable option is to rebuild the COL database which is a time-consuming activity and it would take approx. 3 days of downtime of website. Siemens stated that it will explore other options for this activity.

17.2. **E-DNA data points not updating in e-DNA software automatically:**

M/s Siemens informed that issue is pending with the OEM of eDNA and their partner Kalkitech. They have tried multiple time to resolve the issue. We are awaiting to get a resolution. However, this data is available through short id.

17.3. **Dependency of Site Engineer on one or two engineer deputed at NRLDC and Regarding Contractual obligation (qualification) of Site engineer:**

Siemens informed that although training is imparted to their newly recruited site engineers, their site engineers are of L1 expertise level and require support from senior engineers (L2/L3 level) in some cases. Further, Siemens have very high attrition of site engineers posted at Panipat SLDC.

17.4. **Issue regarding functionality of IMM: Transfer failed in Graphic Job: (Error: SVG POP Error):**

M/s Siemens informed that workaround solution is already provided to HVPNL team and the same has been working satisfactorily. HVPNL stated that they are monitoring the solution and will revert back on any issue.

17.5. **Compatibility of Siemens web-server:**

M/s Siemens informed that Web-server requires additional development, they are expecting to finish the new development soon.

17.6. **Image Backup of servers:**

Siemens informed that site team is saving the backups in HDD/NAS. There are multiple issues reported with tape drives, hence External HDD is being used.

17.7. **IMM in PDS console not working:**

M/s Siemens informed that although there were some issue with IMM such as sluggish performance, alas it's working. IMM have been improved a lot and its working at HVPNL and other SLDCs.

18. Issues being faced by UP-SLDC

18.1. **SCADA/ EMS upgradation project of SLDCs of Northern Region ULDC phase-III**

POWERGRID informed that DPR / cost estimates are yet to be approved and would be conveyed to all concerns, once it is approved.

18.2. **Cyber Security Audit of SCADA/ EMS System**

NRLDC informed that any new guidelines shall be shared with all constituents once received.

18.3. **URTSDM Project**

MS, NRPC informed that proposal of Shifting of PMU cannot be accepted at the moment. Once the Grid Operator (NRLDC) decides on the the non-utilisation of PMUs at any sub-stations/ plant, then only Sub-Committee can decide for shifting of PMU or any other element from one place to other.

19. Issues being faced by Punjab SLDC

19.1. **Implementation of ADMS in ULDC PH-III:**

POWERGRID informed that the issue of compatibility of new ADMS with new SCADA system will be updated to their Engineer-group who is involved in finalization of technical specification for SCADA/EMS system for ULDC Phase-III. However, PSTCL is also a members of this committee, therefore, it may directly submit this requirement to the committee.

19.2. **SEM-SCADA difference:**

MS (NRPC) stated that live SEM data can not be shown in control room. SEM data is mainly used for computation of energy whereas SCADA data is required for grid operation/ generating unit operation which is a voluminous data.

Representative from NRLDC showed the SCADA-SEM data for Punjab for past few weeks which indicated that there is negligible difference in SCADA-SEM

data for Punjab. He added that difference in SCADA-SEM data can't be attributed to inaccuracy of SCADA data but to downtime of communication links. As such, communication links should be strengthened.

19.3. **Intermittency of Real-Time SCADA data of All RTU's:**

POWERGRID informed that it is communication related issue and since PSTCL's network is being upgraded to STM-4 (Fibcom) and on daily basis, new links / data channels are being configured by communication wing of PSTCL and Fibcom team is working. Some times during new channel configuration/ or new IP allotment time in RTU, some mistakes were made by vendors, resulting in intermittency of communication network and data reporting. POWERGRID requested that PSTCL communication team may monitor link configuration and SCADA team may also be involve during new RTU integration.

19.4. **Double Route Status in SCADA:**

POWERGRID informed that it is covered at point 4.1 and 4.2 of PSTCL agenda of ICCP links

19.5. **Antivirus Signatures update**:

M/s Siemens informed that Anti-virus signatures get updated periodically.

19.6. **Refund of advance amount against MOU for replacement of 9 Nos of old Alstom make S-900 RTUs:**

POWERGRID informed that refund has been processed and it is in final stage of approval, hope fully refund will be processed within Sept' 2022, however refund amount will be confirmed after approval by its account section.

19.7. **Mock Drill Exercises:**

NRLDC informed that time to time, various meetings on cyber security related issues/ guidelines are being conducted and in future also, we will conduct similar type of workshops for all SLDCs.

19.8. **Compliance of Cyber Audit Reports:**

M/s SIEMENS informed that they will revert back by 12th Sept' 2022.

20. Issues being faced by DTL

20.1. **AMC invoice pending since January 22 to March 22 quarter.**

20.1.1 DTL informed that M/s Siemens has not given the original duly signed invoice for the Jan'22- Mar'22 quarter. It is claiming labour charge difference under

Price adjustment claimed in line with Appendix 2 of “Maintenance Contract Agreement”. Power grid is requested to address the issue on the Test platform so that a common consensus among all the state can be achieved regarding payment.

20.1.2 Representative of POWERGRID informed that clarification for AMC payment against price adjustment has been sought by HP-SLDC, UPPTCL and HVPNL and it has provided the same in line with contractual provisions of SCADA/EMS System implemented by M/s SIEMENS under ULDC Phase-II.

20.1.3 He urged to refer terms and procedure of payment under the said contract which clearly mentioned regarding payment towards Price Adjustment for AMC period after completion of Defect Liability Period. All relevant documents are enclosed with this MoM for record and ready reference to all Constituents (copy attached – Payment clause for AMC and GCC clause-8).

20.1.4 NRLDC is also processing the invoices in line with the contractual provisions.

20.1.5 M/s Siemens clarified that they inadvertently forgot to claim the payment, however these claims are in line with contract provisions.

20.1.6 MS, NRPC stated that it is a contractual matter and Sub-Committee/ NRPC has no say of NRPC in this matter, however, contractual provisions will prevail in this condition. He requested POWERGRID to share all relevant document to incorporate in the minutes. POWERGRID agreed for the same.

20.2. **Compliance of cyber security suggestions/ recommendations given by various state agencies.**

M/s Siemens has informed that the cyber security upgrades are not in their scope. whatever else is possible has been implemented and compliance is provided in line.

20.3. **Status of AMC of Auxiliary may be provided.**

POWERGRID informed that AMC contract has been extended for one year, copy of extension has been shared with all concerned constituents.

21. Upgradation of DC Power Supply supplied under ULDC

21.1. NRLDC informed that presently 60A DCPS is installed at NRLDC. DCPS was installed under ULDC Phase-I and is working at full load. Being obsolete, spare parts of DCPS are not difficult to arrange. Any issue in DCPS may lead to failure of DC Supply to communication equipment. POWERGRID/ CTU may take necessary action for replacement /upgradation of DC power supply at the earliest.

21.2. During 19th TeST Meeting POWERGRID informed that DCPS at NRLDC was missed under reliable scheme and confirmed they will procure/ replace DCPS at NRLDC under upcoming project.

21.3. POWERGRID informed that they are taking up for procurement of new 48V DCPS for NRLDC and NLDC, and above works will be completed by 31.12.2022 under NROSS scheme.

IV. OTHER AGENDA

22. Deputation of Permanent Engineer at SLDC Patiala (NMS) and PGCIL Jalandhar (NMS) by M/s Fibcom (Agenda by PSTCL)

22.1. PSTCL informed that OPGW Package-1(a) has been completed in PSTCL. SDH network make Fibcom under the project is being maintained by M/s Primatel (earlier known as Fibcom).

22.2. The maintenance firm has deputed 1 no. engineer in Punjab region. In this regard, due to the recent completion of works under the project, a lot of services are pending to be set-up in the new network. In addition, uninterrupted support from NMS end is also crucial in order to effectively take care of maintenance duties.

22.3. Due to deputation of only 1 no. engineer, there is severe issue in servicing of field sites and simultaneously manning the NMS. It is pertinent to mention that 1 no. position of NMS Engineer at PGCIL Jalandhar site is lying vacant as of date. Therefore, it is requested to PGCIL to depute 1 no. additional engineer in Punjab.

22.4. POWERGRID informed that as per contractual provisions, M/s Fibcom/Primatel has deployed their manpower, if PSTCL required additional manpower for PSTCL NMS / site support, PSTCL may take up with OEM (Primatel/ Fibcom) and place separate work order / issue amendment for additional manpower on extra chargeable basis.

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 they are not being issued entry permission from UT Chandigarh for DCPS, Equipment and OPGW maintenance and installation works at Manimajra UT sub-station. Since, this is very critical node for ULDC connectivity at Manimajra, he requested NRPC to intervene in the matter for allowing POWERGRID/ Agency / AMC engineer's for maintenance as well as Project related activities inside the Manimajra S/s premises.

23.2. The matter was also raised in 19th TeST Committee meeting but agenda point was not deliberated as representative of UT Chandīgarh was not present in the meeting and issue remained unresolved. There was no official from UT Chandigarh present in this meeting as well.

23.3. MS, NRPC stated that this is very serious issue and timely action is required. He will write a DO letter to Chief Secretary, UT of Chandigarh for allowing POWERGRID for carrying out maintenance as well as Project related activities inside the Manimajra S/s premises. Further, next TeST sub-committee may be organized at Chandigarh where this issue may be taken up with concerned officials of UT of Chandigarh.

24. Input for database development system for UNMS Project (Agenda by Powergrid)

24.1. Representative of POWERGRID informed that for commissioning of UNMS Project, basic database development is required which needs details of existing NMS of centre sector / state sector/ IPPs / Solar developer/ other transmission licensee and independent nodes which are reporting data for grid operation.

24.2. In various ULDC schemes, POWERGRID has commissioned communication equipment/ NMS for managing equipment that information has been collected from OEMs and provided to UNMS vendor (M/s Sterlite Technology), however details from state sector/ IPPs / other transmission licensee are yet to be provided to UNMS vendor, which is delaying the works for data development.

24.3. Here details of GE Equipment (PTCUL/ HPPTCL/UPPTCL), ABB FOTE (most of IPPs), Fibcom (UPPTCL), Keymile make (Velocis service provider) are major concern as these OEMs are managing several nodes in communication network for Centre sector (IPPs) and state constituents.

24.4. Further, this issue was raised in earlier meetings also, however, details have not been provided to POWERGRID/ M/s Sterlite for database development activity.

24.5. NRLDC stated that this information has to be provided by respective state utility at local NMS level. A separate joint meeting may be called with all STU/ communication wings of state constituents to resolve the issue, if required.

24.6. POWERGRID added that two communication equipment, viz. Nokia-make and Fibrehome-make were installed in ULDC phase-I and MW replacement project respectively. Data for the same is not available with service providers as well as OEM is also not supporting.

24.7. Replacement for Nokia equipment have already been approved and all equipment under central sector/ state sector projects will be replaced over a period of time.

24.8. Fibrehome make equipment (made in China) were installed in Microwave Replacement scheme from 2012 to 2014. Asset life of these equipment is still far from over, however, supplied/In-built NMS software is not supporting/ upgradable and OEM has also not turned up considering Restrictions on Public Procurement from neighboring countries as per guidelines by Govt. of India. On the same line, POWERGRID is not able to procure from firms in China. As such, integration of both Nokia and Fibrehome equipment in UNMS Project does not seem feasible in these circumstances.

24.9. Representative of POWERGRID again requested all constituents, IPPs and other transmission licensees, etc. to provide details of their communication equipment and individual NMS for integration in UNMS Project otherwise POWERGRID will integrate only those Equipment for which details are readily available with us. Further, it will explore other feasible options and apprise the sub-committee in its next meeting.

25. Delay in Payment (Agenda by Powergrid)

Since, there was no concerned official from J&K-PDD/ UPPCL/ PTCUL present in the meeting at the time of discussion, this agenda could not be taken up.

26. Settlement of issue of MW tower (Asset of HVPNL) installed at 400KV S/S, Bawana (Agenda by HVPNL)

MS, NRPC stated that this is long pending issue and a joint meeting may be planned with senior officials (Chief engineer/GM level) from HVPNL and DTL under MS, NRPC to resolve the issue. HVPNL may co-ordinate with NRPC sectt., in this regard.

V. TABLED AGENDA

A.1 **Implementation of Multisite Configuration between BBMB SLDC and PSTCL SLDC (agenda by BBMB)**

a. **Agenda:** The issue was discussed in 15th, 16th,17th & 18th TeST sub-committee meetings wherein BBMB conveyed that the following Multisite Configuration are yet to be implemented by M/s SIEMENS.

b. Communication channels were provided by PGCIL (in July 2022) for connectivity between the following BBMB RTUs to PSTCL SLDC, Patiala (Backup SLDC):

   i. Bhakra Left Bank Power House,
   ii. Bhakra Right Bank Power House,
   iii. Dehar Power House of BBMB

c. The connectivity link through ping connectivity of laptop between Dehar Power House of BBMB (having Fibcom equipment) and SLDC PSTCL (having Tejas equipment) was tested on 10.08.2022 and was found to be working. Further, team of SLDC BBMB visited Dehar Power House, Bhakra Left Bank Power House and Bhakra Right Bank Power House on 31.08.2022 and 01.09.2022. The port for which connectivity was checked between Dehar Power House and PSTCL SLDC, could not be assigned to the mentioned service as the IP series was not matching. Further, it was requested that services maybe shifted to the other port at SLDC PSTCL (having Tejas equipment) but same could not be established and therefore the required connectivity between Dehar Power House of BBMB and SLDC PSTCL is still pending.
d. The spare port required for mentioned connectivity at Bhakra Left Bank Power House (having Fibrehome equipment) was not available, thus the required connectivity could not be established.
e. It is requested that PGCIL may take up this matter with the concerned vendors and may resolve this issue at the earliest.

Minutes: Representative of Powergrid informed that the link was already configured. It seems, ping connectivity was not carried out properly, thus, connectivity link through could be established. He requested BBMB to grant Remote access to their system to establish the connectivity. BBMB agreed for the same.

A.2 **Cyber Security related to ULDC Phase-II and Phase-III scheme (agenda by BBMB)**

a. NCIIPC recommendations and Best Practices

Agenda: On the basis of visits of various RLDCs, NCIIPC has shared recommendations and Best Practices for various activities carried out at SLDC. It is requested that the same maybe incorporated for the ongoing ULDC Phase-II scheme by M/s Siemens and may also be incorporated in the Technical Specifications of the upcoming ULDC Phase-III scheme by PGCIL.

Minutes: Representative of BBMB requested Powergrid to incorporate NCIIPC recommendations and Best Practices regarding cyber security, anti-virus patching, etc, in ongoing ULDC phase-II and Technical Specifications of the upcoming ULDC Phase-III scheme.

Representative of Powergrid requested BBMB to share the said document with Powergrid for consideration.

b. Reference architecture shared by LDCs

Agenda: Reference architecture for LDCs has been prepared by CEA. On comparison of this architecture with architecture shared in the draft technical specifications of ULDC Phase-3 scheme, it is requested to take up this matter with proposed vendors of ULDC Phase-3 scheme so that the required changes in the architecture can be finalised.

Minutes:

i) Representative of BBMB requested Powergrid to make required changes in architecture **as per** Reference architecture for LDCs prepared by CEA.

ii) Representative of Powergrid requested BBMB to share the said document with Powergrid for consideration.

c. Regarding Mock Drill activity to be conducted in respect of cyber security

Agenda: A meeting between CISOs of all SLDCs of Northern Region, chaired by CISO (NRLDC) was held on 16.08.2022. Directions have been received to conduct cyber security related mock drill on quarterly basis. It is requested that a common cyber mock drill maybe arranged for all constituents of NR region so that compliance in this regard could be provided.

Minutes: This agenda has already been discussed at point 19.7 above.

A.3 **Compatibility of Siemens Web-server (agenda by BBMB)**

Agenda: The issue of Web-server not being compatible with TLS v1.2 of the Google chrome web browser is pending till date. Consequently, the COL website of SCADA system of SLDC, BBMB is not operating on Google Chrome. If not updated timely, the same issue will also arise with other web browsers. Matter has been taken up with M/s Siemens but no action has been taken by them in this matter.

Minutes: This agenda has already been discussed at point 17.5 above.

A.4 **Regarding Cyber Security Audit of URTDSM system (agenda by BBMB)**

Agenda: In respect of URTDSM system installed at SLDC BBMB, the cyber security audit is being carried out by CERT-In empanelled auditor on annual basis. As per the letter of CEA dated 29.06.2022, all IT-OT systems have to be audited by a CERT-In empanelled auditor on 6 monthly basis. Guidance may be provided on the above issue.

Minutes: Representative of Powergrid stated that Cyber Security Audit of URTDSM system is under the purview of Powergrid. Mere guidelines, Powergrid decided not to carry out Cyber Security Audit of OT system bi-annually.

A.5 **Ensuring smooth data Integration with between SLDCs and NRLDC during Replacement/Up-gradation of SCADA/EMS System under Unified Load Dispatch Communication (ULDC) Scheme Phase-III (agenda by BBMB)**

Agenda:

i) With reference to 18th TeST Sub-Committee meeting held on 10.08.2021, it was decided that all NR SLDCs (Uttar Pradesh, Rajasthan, BBMB, Haryana, Punjab, Delhi, Uttarakhand and Jammu & Kashmir) except Himachal Pradesh, shall go for implementation of Phase-III of Load Dispatch Scheme (Replacement/Upgradation of SCADA/EMS System) in a unified manner through POWERGRID via Tariff mode. However, HP and NRLDC (POSOCO) shall go for Replacement/Upgradation of SCADA/EMS System under Phase-III through POSOCO.

ii) In this scenario, some data integration issues or multi-vendor issues may arise during the execution of the project. An example of multi-vendor issues being faced by BBMB is quoted in BBMB's agenda regarding Implementation of Multisite Configuration between BBMB SLDC and PSTCL SLDC.

iii) BBMB had requested that any multi-vendor issue including but not limited to technical issues shall be duly addressed/executed by POWERGRID before the commencement of defect liability period/taking over the system from the vendor executing ULDC Phase-III for BBMB. POWERGRID via its letter no. C-GAC-NR ULDC III-BBMB-09 dated 30.08.2022 (copy attached) agreed to the same via S.No. 4 i.e. That the hand over/ taken over certificate shall be issued to the vendor/ implementer of Phase-III Project only after obtaining consent of owner, after resolving of all multi-vendor issues including smooth data integration between BBMB SLDC and NRLDC. Further, via S.No. 1 PGCIL mentioned that

the same may be discussed in next NRPC meeting among all SLDCs and RLDCs.

iv) Hence, it is again requested that any multi-vendor issue including but not limited to technical issues shall be duly addressed/executed by POWERGRID before the commencement of defect liability period/taking over the system from the vendor executing ULDC Phase-III for BBMB.

Minutes:

i) Representative of Powergrid apprised that Responsibilities of each of owner, vendor and employer have already been recorded in the meeting for ULDC Phase-III held last year. Anticipated technical issues arising due to multiple vendors has already been handled by Powergrid/ RLDC. These issues were taken up in a special meeting b/w RLDCs and Powergrid held on 08.09.2022.

ii) Minutes of the meeting would be shared by Powergrid with all concerned in due course.

Meeting ended with a vote of thanks to the Chair.

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Appendix-1

TERMS AND PROCEDURES OF PAYMENT

In accordance with the provisions of GCC Clause 8 (Terms of Payment) read in conjunction with Record Notes/Minutes of Post Bid Discussions enclosed as Appendix(NOA)-1 to the Notification of Award, the Owner(s) shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on price schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the parties. The Contractor may make applications for payment in respect of part deliveries as work proceeds.

1. TERMS OF PAYMENT

In addition to the Conditions stipulated under GCC Clause 8, the following terms & Conditions will apply.

1.1 Annual Maintenance (AMC) Charges

Maintenance Charges during Defect Liability Period shall be paid at the end of Defect Liability Period on submission of invoice, Performance security for Annual Maintenance Charges (AMC) by Contractor and on certification by the Owner(s). Annual Maintenance Charges (AMC) subsequent to Defect Liability Period shall be paid quarterly on submission of invoice by the contractor and on certification by the Owner(s).

1.2 Payment towards Price adjustment

The Contract price shall remain FIRM and FIXED and shall not be subject to Price adjustment for the entire duration of the Contract except for the Annual Maintenance charges after the Defect Liability Period.

Any variation in Contract price due to price adjustment provision of Appendix-2 shall be effected on presentation of invoice supported by calculations as per formulae specified therein along with documentary evidence for different indices applicable for Price Adjustment.

1.2.1 Any increase in Contract price due to price adjustment provision shall be payable as follows:

90% (ninety percent) of the price adjustment amount for the respective quarterly billing period shall be paid after certification by Owner(s)'s representative for quantum of work done in the said billing period. Balance

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10% (ten percent) of the price adjustment amount shall be paid alongwith the payment of last quarter Price Adjustment Payment at the end of the maintenance period.

1.2.2 Any reduction in Contract Price due to price adjustment provisions shall be effected by recovering 100% of the reduction amount from Contractor's invoices falling immediately due for payment or any other payments.

2. PAYMENT PROCEDURES

2.1 Method of Payment

The Owner(s) shall make payments promptly within thirty (30) days of submission of an invoice/claim by the Contractor, complete in all respects and supported by the requisite documents and fulfillment of stipulated conditions, if any. All the payment shall be released to the Contractor directly except the payment due on shipment, which shall be paid through irrevocable confirmed Letter of Credit. The Letter of Credit shall be established by the Contractor in time for shipments to be made as scheduled.
(*in case of **Option-I***)
Or
The Owner(s) shall make payments promptly within thirty (30) days of submission of an invoice/claim by the Contractor, complete in all respects and supported by the requisite documents and fulfillment of stipulated conditions, if any. All the payment shall be released to the Contractor directly.
(*in case of **Option-II***)

All payments to be made directly to the Contractor shall be made by the Owner(s) though electronic payment mechanism (e-payment) for which necessary details shall be tied up during execution of the Contract. However, a request for payment to be released through cheque shall be considered on case to case basis and merit of the same.

Note: Pro-rata shall refer to functionally complete part(s) of the facilities, for which unit rates are identified in the contract.

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2.2 Payment tracking

The Contractor may track the status of its bills using POWERGRID's 'On-line Bill Tracking' system. To use this system, the Contractor is required to get itself registered once online at POWERGRID's website – 'www.powergridindia.com' for 'Online Bill Tracking' System contained in 'Quick Link' section of the website. Pursuant to validation of the online registration and activation of the user id by POWERGRID, the Contractor may track status of bills passed and paid by POWERGRID's Corporate Centre and Regional Office under this Contract and other Contracts awarded on it by POWERGRID.

- End of Appendix-1-

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Appendix – 2

PRICE ADJUSTMENT

1. General

1.1 The Contract price shall remain FIRM and FIXED and shall not be subject to Price adjustment for the entire duration of the Contract except for the Annual Maintenance charges after the Defect Liability Period.

2. **Maintenance Charges Price Component**

The formula for calculation of the monthly price adjustments for Maintenance charges price component after the Defect Liability Period shall be as under:

A. Maintenance charges price component after the Defect Liability Period

$$MC_1 = MC_0 \{ 0.20 + 0.80 \times (L_1/L_0) \} - MC_0$$

Where,

MC_1 = Price adjustment amount for the Maintenance charges price component after the Defect Liability Period for each billing

MC_0 = Price for Maintenance charges price component after the Defect Liability Period, done in billing period as established by the Contract.

L = Indian field labour index – namely All India average consumer price index for Industrial Workers (monthly) (Base: 2001= 100), as published by Labour Bureau, Shimla, Government of India (www.labourbureau.nic.in).

The name of indices along with their base value (subscript `0') as on 30/06/2012 (i.e. 30 days prior to Bid Opening date - 30/07/2012) are indicated at Annexure (PBD) – D1 of the Record Notes of Post Bid discussions enclosed with the Notification of Award at Appendix (NOA) – 1 thereto.

A.1 i) Subscript 'o' will correspond to thirty (30) days prior to date of opening of Bids (i.e. 30/06/2012, date of bid opening – 30/07/2012).

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ii) Subscript '1' will correspond to the month of billing for indices and average of the month for the exchange rate.

A.2 The total price adjustment amount shall not be subject to any ceiling whatsoever.

A.3 The bidder shall indicate in his bid the actual values of the coefficient 'I' to be adopted.

A.4 The above price adjustment provision shall be invoked by either party subject to the following further conditions:

a) For the purpose of Price Adjustment the Billing period for various Maintenance activities after defect liability period will be as per agreed monthly schedule of Maintenance activities

b) In case the Indian field labour index is not published, as mentioned above, the Bidder shall indicate any nationally recognised published index for respective items and the source of the same shall be furnished in the Bid.

c) In case of non-publication of applicable indices on a particular date, which happens to be the applicable date for Price Adjustment purposes, the published indices prevailing immediately prior to the particular date shall be applicable.

d) If the Price Adjustment amount works out to be positive, the same is payable to the Contractor by the Owner(s) and if it works out to be negative, the same is to be recovered by the Owner(s) from the Contractor.

e) The Contractor shall promptly submit price adjustment invoices for the work done, whether it is positive or negative.

- End of Appendix-2-

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6.6 The Employer shall be responsible for the continued operation of the Facilities after Taking Over, in accordance with GCC Sub-Clause 20.1.5.

6.7 All costs and expenses involved in the performance of the obligations under this GCC Clause 6 shall be the responsibility of the Employer.

C. Payment

7. Contract Price

7.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Form of Contract Agreement.

7.2 The Contract Price shall be subject to adjustment in accordance with the provisions of Appendix 2 (Price Adjustment) to the Contract Agreement. The Contract Price shall be increased or reduced on account of variation in quantity in accordance with Clause 33 of GCC.

7.3 Subject to GCC Sub-Clauses 5.2 and 6.1 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

8. Terms of Payment

8.1 The Contract Price shall be paid as specified in the corresponding Appendix - 1 (Terms and Procedures of Payment) to the Contract Agreement. The procedures to be followed in making application for and processing payments shall be those outlined in the same Appendix.

8.2 All payments under the Contract shall be made in Indian Rupees.

9. Securities

9.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

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