सत्यमेव जयते

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

सं. उक्षेविस/ प्रचालन/108/04/2022/2203-2237 दिनांक 28.02.2022

सेवा में / To,

संलग्न सूची के अनुसार/As per list attached

विषय**:** दूरसंचार, स्काडा और टेलीमेटरी उप समिति की उन्नीसवीं बैठक की कार्यसूची ।
**Subject:** Agenda for 19th meeting of Telecommunication, SCADA & Telemetry Sub Committee

इस कार्यालय के पत्र दिनांक 14.01.2022 के क्रम करते हुए यह सूचित किया जाता है कि उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार,स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की 19वीं बैठक दिनांक **07.03.2022** को **11:00** बजे से वेब-एक्स विडियो कोंफ्रेंसिंग के माध्यम से आयोजित की जाएगी । बैठक में सम्मिलित होने के लिए लिंक व आवश्यक जानकारी सदस्यों को ई-मेल द्वारा प्रदान करा दी जाएगी । बैठक की कार्यसूची आपकी सूचना एवं आवश्यक कार्यवाही हेतु संलग्न है । कृपया बैठक में भाग लेने की कृपा करें ।

In continuation to NRPC letter of even no. dated 14.01.2022, it is intimated that the 19th meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC will be held on **07.03.2022** at **11:00 AM** via WebEx video conferencing. The link and necessary information to attend the meeting would be provided to the members via e-mail. The agenda for the meeting is enclosed herewith for your information and necessary action. Kindly make it convenient to attend the meeting.

28/02/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता

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## I. Confirmation of Minute

### 1. Confirmation of Minutes

1.1. The minutes of 18th meeting of TeST sub-committee held on 10.08.2021 were issued on 25.08.2021. Minutes are available at NRPC website (http://164.100.60.165). No comments have been received on the MoM so far.

1.2. Members may discuss and confirm the Minutes.

## II. Telecommunication and Telemetry issues

### 2. Issues in OPGW laying in HPSEBL (Agenda by POWERGRID)

2.1. As discussed in 15th 16th, 17th &18th TeST Sub- committee of NRPC meeting wherein HPSEBL had assured that they will strengthen the 66kV rail pole structure (8 links apprx155km) and reconductoring shall also be done. It was also agreed that HEPSEBL will inform to POWERGRID about strengthening and reconductoring work so that POWERGRID may carry out the work of laying OPGW. It is to mention that strengthening and reconductoring has not been completed till now. Mobilization of OPGW gang to carry out OPGW installation work in one link and then demobilization of the gang will cost huge financial impact to contractor.

2.2. OPGW work could not be started/completed in following links due non-availability shutdown.

i. Jeory- Nogli

ii. Gumma Jutog.

iii. Nogli – Samauli

iv. Kumarsain – Gumma

v. Samauli – Andhra

2.3. OPGW work could not be completed in Bhaba- Kashang link due non-removal of Aviation Globules by HPSEBL.

### 3. Establishment of Additional fibre connectivity for NRLDC/NLDC communication network (Agenda by NRLDC)

3.1. For reporting of data at NLDC, NRLDC, WAMS, REMC and back up of RLDCs installed at New Delhi, new OPGW (48F) was planned on overhead transmission line between 220kV Tughlakabad – R. K. Puram (approved in NRPC meeting), however due to various issues, this line was laid underground through NRLDC / IIT Delhi main gate. It is also learnt that DTL

has laid 96 fibre OFC cable between these stations. POWERGRID is requested kindly spare 48F from Tughlakabad to NRLDC (main gate) and NRLDC to R K Puram – Vasant Kunj 220kV for grid operation / ULDC purpose only.

3.2. After inclusion of above link, following robust fibre connectivity shall be established for NLDC, RLDC and all back up RLDCs for grid operation. As per earlier planning, new OPGW/ OFC links were planned as below:

i. Ballabhgarh – Badarpur – Mehrauli – Vasant kunj 66kV - NRLDC (existing ULDC)
ii. Maharanibagh – NRLDC – underground (existing Telecom)
iii. Jhatikara – Bamnauli - Mehrauli -Vasant Kunj 220 – R K Puram – NRLDC (Partial commissioned)
iv. Ballabhgarh – Tughlakabad PG – Tughlakabad (DTL) – NRLDC - **Proposed**
v. NRLDC - R K Puram - Vasant – Kunj 220 – Mehrauli (existing ULDC network) – **Proposed**

3.3. DTL is requested to terminate their OFC cable near NRLDC, allow POWERGRID to use their underground fibres (48F) from Tughlakabad (DTL) to NRLDC (main gate) to R K Puram – Vasant Kunj 220kV of ULDC purpose for strengthening of ULDC network for NLDC and all RLDCs (main and backup), REMC, and WAMS system.

## 4. OPGW installation on main lines which are to be LILOed at new Substations in TBCB projects (Agenda by CTUIL)

4.1. A new sub-station, Dausa, is proposed to be established by LILOing the following two existing lines:

I. 765kV D/c (2x765 S/c) Jaipur (Phagi)(RVPNL) – Gwalior line (312 kms.)

II. 400kV D/c Agra – Jaipur (South)(PG) line (254 kms.)

4.2. Both the lines are owned by PGCIL. Further, it is to mention that, OPGW on the LILO portion is envisaged along with the construction of the proposed lines.

4.3. Connectivity diagram of the scheme is attached at **Annexure-I.** From the diagram, it is apparent that, there is no OPGW on the abovesaid existing main lines and redundancy of data communication of the new Dausa substation to RLDC cannot be maintained without OPGW availability on these main lines.

4.4. Thus, OPGW needs to be provided by replacing one earth wire on both the main existing lines and integrating it with OPGW of the upcoming LILO section.

4.5. **Proposal**: The OPGW provision is required on the following two lines by replacing the existing one earth-wire by Live Line installation:

I. 765kV S/c Jaipur (Phagi)(RVPNL) – Gwalior line (312 kms.) (One 765 S/c is proposed)

II. 400kV D/c Agra – Jaipur (South)(PG) line (254 kms.)

4.6. Members may deliberate.

## 5. Package-I(a) being implemented in PSTCL by PGCIL for expansion of Fiber Optic Communication System

**(Agenda by PSTCL)**

5.1. Package-I(a) being implemented in PSTCL by PGCIL for expansion of Fiber Optic Communication System is overdue from the committed commissioning date. The supply and erection part of project is complete and the same is presently at commissioning and integration stage.

5.2. Due to non-commissioning of communication links, the establishment of redundancy links in the network of PSTCL could not be achieved. Also, this pendency is expected to impact the commissioning of RTU's under the ongoing project of PSTCL.

5.3. PGCIL is requested to provide the schedule and completion date of balance works in respect of Package-I(a). PGCIL may also supply PSTCL the commissioning reports of the project.

**(Agenda by PGCIL)**

5.4. POWERGRID put their best efforts and commissioning of OPGW links on various transmission lines of PSTCL under Package 1(a) has almost completed. 66 links has already been commissioned which needs to be capitalized. As per procedure, POWERGRID applied for commissioning certificate to NRLDC, they need confirmation from respective state constituents for state sector lines, in this case confirmation from PSTCL is pending since long and we are not able to declare DOCO for the said links (pending since 6-7 months).

## 6. Leasing out dark fibers from PSTCL links under Package-I(a) (Agenda by PSTCL)

6.1. PSTCL intends to lease out dark fibers from its links under Package-I(a). However, as these links are being limited to the periphery of the network, these may not be able to service long haul requirements which may be required under leasing contract.

6.2. Thus, PGCIL may apprise the details of dark fibers from central sector OPGW links which can be allotted to PSTCL for this purpose

**7. Status of OPGW connectivity at NHPC Power Stations under Central Sector scheme (Agenda by NHPC)**

7.1. In the 18th TeST meeting held on 10.08.2021, it was informed by PGCIL that they are planning to complete the remaining work of OPGW by November 2021.

7.2. At Parbati-III Power Station, other than reliable data telemetry, OPGW is also required for AGC implementation.

7.3. PGCIL may update the status of OPGW commissioning at Parbati-II and Parbati-III Power Station.

**8. Issue regarding Dismantled scrape Earth wire under Reliable Communication Scheme (Agenda by PGCIL)**

8.1. POWERGRID is establishing OPGW network for centre sector communication system by replacing existing earthwire / old 12F OPGW with 24Fibres OPGW cable under Reliable Communication Scheme, approx. 2100 kms of OPGW cable has been installed in Northern Region-II out of 2532 Kms. Most of the balance works are pending in Hilly terrain area specially in 400kV S/C Parbati Pooling (Banala) – Koldam, 400kV S/C Parbati II (HEP) - Parbati III & 400kV Kurukshetra-Malerkotla lines due to non availability of consent by their owners and 220KV Budhil Chamera & 220kv ADHEP- Nalagarh line due to non availability of non auto mode.

8.2. POWERGRID put their best efforts and installation / replacement of OPGW on 20 out 28 links has been almost completed. Now balance 400kV S/C Parbati Pooling (Banala) – Koldam, 400kV S/C Parbati II (HEP) - Parbati III & 220kv ADHEP- Nalagarh lines needs to be expedited to complete the works with at the earliest. However, due to issue of scrap earthwire, work could not be stared in the above two line as their owner Indigrid has not given the consent to start the work in their lines and OPGW installation work in 220kv ADHEP- Nalagarh lines also heldup as line owner(A D Hydro Power Limited) is not allowing gang to work as they want to take back dismantled the earth wire.

8.3. It is to mention that the cost of scrap earth wire along with its hardware & fittings is inbuilt in the price of supply & installation of Fibre Optic Cable and similar treatment is being extended to all other constituents of Northern Region-II where earth wire is being replaced with Fibre Optic Cable under Northern Region-II (Reliable Scheme) as it was a condition of the Tender Document. As can be seen this way Project Cost has reduced as bidders had taken this factor into consideration while quoting the price for supply of Goods & Services. This will eventually result in reduced tariff once the project is completed, commissioned & capitalized. Which is in line with the sprit of

CERC sharing regulation, Hence no earth wire shall be return to the line owners.

8.4. NRPC is requested to intervene for providing permission for OPGW installation works in the above mentioned links.

## 9. PTCUL Telemetry Issues- Non-availability of Real-Time data from PTCUL (Agenda by NRLDC)

9.1. As per details submitted by PTCUL out of 51 Sub-Station/Generating Stations data from only 28 Sub-stations are integrated at SLDC. Also, many feeders are not integrated even at the locations where RTUs are installed. (**Annexure-II**).

9.2. The same issue was also informed to PTCUL vide letter (Ref: - NRLDC/SL-II/2019-20) dated: - 05.03.20.

9.3. Also, the issue was discussed in Special Meeting with PTCUL held in July 2020 and December 2020. Subsequently issue was discussed in 17th and 18th Test Meeting and 45th TCC-48th NRPC and 47th TCC-49th NRPC meetings.

9.4. It is to inform that PTCUL is still not connected to Backup NRLDC. It is requested to please take up with OEM for ICCP integration with Backup NRLDC.

9.5. During 47th TCC -49th NRPC meeting, representative from PTCUL informed that they are in the process of tendering of RTU and OPGW Installation work and informed that they would expedite the installation works, and is expected to be completed in 6 months. Further, representative from PTCUL informed that faulty CMRs/ Transducers replacement work is in progress and same would be completed within 3 months.

9.6. It is to inform that there is negligible improvement in this regard. PTCUL is requested to please arrange for the telemetry at the earliest

9.7. PTCUL may update.

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

10.1. 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. Matter of reliable communication to NRLDC was also discussed in Special Meeting with PTCUL on 07th July 2020 conducted by NRPC, 45th TCC/ 48th NRPC Meeting where PTCUL/ PGCIL assured that reliable communication link would be available in

6 months. Issue was also discussed in 47th TCC/ 49th NRPC meeting where PTCUL representative informed that they are in the process of tendering of RTU and OPGW Installation work and it is expected to be completed in 6 months. PGCIL mentioned that after completion of OPGW works by PTCUL on Majra (Dehradun SLDC) to Dehradun PG line, PGCIL will immediately integrate the communication equipment and establish redundant communication route for Dehradun SLDC.

10.2. This is to inform that there is negligible improvement in telemetry from PTCUL. PTCUL is requested to please update the status of telemetry integration to NRLDC.

10.3. PTCUL/ PGCIL may update.

## 11. J&K Telemetry Issues (Agenda by NRLDC)

11.1. Reliability and accuracy of SCADA data and its associated communication system is essential for monitoring and coordinating operations of a large electricity grid. It helps in visualization and management of the critical grid element failure/grid incident in real time and minimizes the possibility of any untoward incidences/disturbances. Network applications in Energy management system (EMS) such as State Estimator (SE), Real Time Contingency Analysis (RTCA) also necessitate reliable and accurate real time analog and digital data. Data communication has to be made through redundant and alternate path communication channel.

11.2. 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.

11.3. The matter has been discussed in various TCC and TeST Meetings but there is no improvement of the same.

11.4. Brief details are as follows:

I. Under SCADA upgrade project 66 RTUs were installed by M/s Siemens at all 400 kV / 220 kV and 132 kV sub-stations/generating Stations of J&K PDD.

II. RTUs were not integrated with Control centre due to non-availability of communication network.

III. RTUs were tested locally and commissioned without data availability at Control Centre.

IV. Due to Non availability of data, JK PDD is not able to monitor its drawl from grid and its generation. It is dependent of Central sector data for monitoring of drawl.

11.5. Matter was also discussed in Special Meeting with J&K on 28.07.2020 where in Representative of J&K informed that they have given consultancy work to PGCIL for installation of OPGW in J&K. However, due to funding issue OPGW work has been stalled by PGCIL. According to J&K almost 95% of the work is complete and once funding issue is resolved non-availability of telemetry issue will be resolved.

11.6. Matter was also discussed in 47th TCC-49th NRPC meeting, J&K confirmed that they will resolve the issues mutually with PGCIL so that data starts reporting to SLDC/ NRLDC

11.7. This is to inform that there is no improvement in this regard.

11.8. J&K to update the status.

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

12.1. The provision of redundant & reliable communication was discussed in various TeST Meetings. Redundant communication is to ensure that two ports at RTU end are configured for RLDC. Also, data is configured with two different communication channels for bringing redundancy into the system and increase reliability of data to NRLDC/RLDC.

12.2. The reliability of communication channel to NRLDC was discussed in various TeST Meeting since November 2016(8th TeST Meeting). It is informing that still 18 RTUs are reporting to NRLDC on single channel.

12.3. It is requested to expedite the process of providing redundant channel for the remaining locations at the earliest. It is to note that stations where second is down since long is considered as single channel only. Thus, it is requested that reliability of redundant channel may also be ensured.

12.4. List of RTUs with single channel is given below:

| S. NO. | Name of RTU | Comments | Timeline |
|---|---|---|---|
| 1 | KISHANGANGA | NHPC | |
| 2 | PARBATI-2 | NHPC | |
| 3 | SALAL | NHPC | Second gateway Faulty |
| 4 | KalaAmb | PGCIL | Second gateway Faulty |
| 5 | BUDHIL | IPP | |
| 6 | KARCHAM WANGTOO | IPP | |
| 7 | SHREE CEMENT | IPP | |
| 8 | URI-2 | NHPC | Spare port not available |
| 9 | MEERUT | PGCIL | Second gateway Faulty |
| 10 | NEEMRANA | PGCIL | Second gateway Faulty |
| 11 | AMARGARH | STERLITE | |

| S. NO. | Name of RTU | Comments | Timeline |
|---|---|---|---|
| 12 | PARBATI-3 | NHPC | |
| 13 | AD Hydro | ADHydro | |
| 14 | Bhiwadi HVDC | PGCIL | Second gateway Faulty |
| 15 | DRASS | PGCIL | Second gateway not |
| 16 | KARGIL | PGCIL | Second gateway not |
| 17 | LEH | PGCIL | Second gateway not |
| 18 | KHALSTI | PGCIL | Second gateway not |

12.5. PGCIL/ Utilities are requested to please update the status.

## 13. Integration of PMU data from Gumma Sub-Station (Agenda by NRLDC)

13.1. HPPTCL has given undertaking vide letter HPPTCL/Projects/F-105/2020-21/9973 dated 22.10.2020 (**Annexure-III**) while charging of Gumma Sub-station that PMU data from Gumma will be integrated with SLDC and NRLDC within in 6 months.

13.2. It is to inform that integration of PMU from Gumma Sub-station is still pending. During 18th TeST Meeting. Representative from HPPTCL informed that PMU procurement is in tender stage and PMUs at Gumma Sub-station will be installed at the earliest.

13.3. HPPTCL to update the status of PMU Integration at Gumma Sub-Station.

## 14. Operation of PMUs installed under various sub-station of Utilities (Agenda by PGCIL)

14.1. Several times, it has been observed that GPS cable, Antenna has been used for sub-station purpose by local sub-station officials, resulting PMUs data reporting disturbed in SLDCs.

14.2. All SLDCs are requested kindly issue necessary instructions for non-disturbance of these devices. Further, entry permission / work permission may be issued in live line conditions for CT/PT termination in case of PMU replacement for faulty cases.

## 15. Telemetry Issues from PGCIL Stations (Agenda by NRLDC)

15.1. SCADA data is very important. Decisions in real-time are taken by Real-time engineers of NRLDC based on real-time data available to Control room. There is requirement of good quality input data for smooth grid monitoring & Control. Further, good telemetry is also essential of running of State Estimator/Energy Management System (EMS).

15.2. Since proper telemetry is not available from many PGCIL substations, it has impact on successful running of state estimator. Correct telemetry is essential for running State Estimator/ Contingency Analysis in EMS, Better SE output will aid in situational awareness of the system operators of NRLDC.

15.3. In this regard, letter regarding Telecommunication, SCADA & Telemetry issues from PGCIL Sub-stations was given by NRLDC vide NRLDC/Telemetry/ dated 15 Dec 2021. **Annexure-IV**. Although, there is improvement with respect to issues raised but data from many sub-stations is still unreliable.

15.4. It is requested to please take up for rectification of data on priority basis and confirm the dates of resolution of the points.

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

16.1. Telemetry status updated till 30.11.2021 is given below:

| | Northern Region summary sheet and details of current status of implementation of telemetry system | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | User Name | Total Nos of Stations | | Telemetry not Provided | | | | Telemetry Intermittent | | | | Total non-availability of data in % | |
| | | | | Total nos. of | | Non-availability | | Total nos. of | | Non-availability | | | |
| | | GS | SS | GS | SS | GS | SS | GS | SS | GS | SS | GS | SS |
| 1 | Punjab | 17 | 171 | - | 54 | - | 32% | - | 8 | - | 5% | - | 36% |
| 2 | Haryana | 5 | 271 | - | 63 | - | 23% | - | 9 | - | 3% | - | 27% |
| 3 | Rajasthan | 20 | 231 | - | - | - | - | 2 | 11 | 10% | 5% | 10% | 5% |
| 4 | Delhi | 6 | 45 | - | - | - | - | - | 3 | - | 7% | - | 7% |
| 5 | UP | 23 | 287 | - | - | - | - | 11 | 149 | 48% | 52% | 48% | 52% |
| 6 | Uttarakhand | 13 | 44 | 2 | 26 | 18% | 70% | 2 | 4 | 18% | 9% | 18% | 79% |
| 7 | HP | 13 | 31 | 1 | 11 | 8% | 35% | 0 | 5 | 0% | 16% | 8% | 52% |
| 8 | JK | 5 | 73 | 2 | 67 | 40% | 92% | - | - | - | - | 40% | 92% |
| 9 | PGCIL | - | 89 | - | - | - | - | - | 6 | - | 7% | - | 7% |
| 10 | NTPC | 15 | - | 1 | - | 7% | - | 3 | - | 20% | - | 27% | - |
| 11 | NHPC | 14 | - | - | - | - | - | 5 | - | 36% | - | 36% | - |
| 12 | NPCIL | 5 | - | - | - | - | - | 1 | - | 20% | - | 20% | - |
| 13 | NJPC | 2 | - | - | - | - | - | - | - | - | - | - | - |
| 14 | THDC | 2 | - | - | - | - | - | - | - | - | - | - | - |
| 15 | BBMB | 6 | 16 | - | - | - | - | - | 1 | - | 6% | - | 6% |
| 16 | IPP/JV/ Patran | 27 | 9 | 2 | - | 7% | - | 12 | 2 | 44% | 22% | 52% | 22% |
| | Sub-Total | 173 | 1267 | 8 | 221 | 5% | 17% | 36 | 198 | 21% | 16% | 25% | 33% |
| | Grand Total | 1440 | | 229 | | 16% | | 234 | | 16% | | 32% | |

16.2. All constituents/utilities are requested to submit timelines for correction/ rectification of telemetry.

16.3. Constituents to update the status.

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

### 17. Issues being faced by UP SLDC in ULDC Phase-II:

17.1. Issue regarding functionality of PDS:

- PDS is still not working as PDS is not connecting to PSOS server. In the 18th TeST meeting Power grid was requested to call a separate meeting with the constituents and M/S Siemens for resolving this issue. The meeting is yet to be held.

17.2. Common Bi-Annual Cyber Security Audit for SCADA/ EMS system under ULDC-Phase-II for all Northern Grid Power sector constituents:

- As per recent guidelines by CERT- GO, Cyber Security Audit is to be done bi-annually, presently as in the existing AMC contract with M/S Siemens, SCADA system is being audited annually by CERT-IN empaneled agency. Existing AMC may be amended to comply with the recent guidelines of Bi - annual VAPT cyber security audit. In the 18th TeST meeting Power grid was instructed to discuss the issues in a separate meeting with M/S Siemens and request them to conduct second cyber security audit for all the constituents at the existing prices. An early action is required.

17.3. Problems in SCADA replay

- Some SCADA displays replays are not generating. The problem has been lodged several times in the Siemens complaint portal, but no solution has been provided by the M/S Siemens.

17.4. IPP Conflict problem

- The frequent problem of IPP conflict is taking place, due to that the availability of SCADA data is affected. Siemens to provide trouble shooting and diagnostic method for this problem. The problem has been lodged several times in the Siemens complaint portal, but no solution has been provided by the M/S Siemens.

17.5. Showing MVAR reading by default on Grid map display

- In the 220 kV grid map diagram MVAR readings of the line elements are display by default. The problem has been lodged several times in the Siemens complaint portal, but no solution has been provided by the M/S Siemens.

17.6. Frequent stopping of real-time shared data with Third party applications

- Frequent stooping of sharing of real time data from SCADA system to the third part applications. The problem has been lodged several times in the Siemens complaint portal, but no solution has been provided by the M/s Siemens.

**18. Issues being faced by PSTCL in ULDC Phase-II:**

18.1. Implementation of PSTCL SLDC Grid Operations from BBMB Backup Control Centre

- As PSTCL intends to operate and control Grid Operations from BBMB Backup Control Centre for one day, availability of all the SCADA data/displays/UFR/df-dt displays/ Remote tripping displays etc. (as available in Punjab SLDC Control room Ablowal) in the Backup SCADA Control centre, BBMB, Chandigarh is required.
- Presently, some of the SCADA data of SLDC, Patiala is not reporting correctly at BBMB Backup SLDC Control Center.
- Hence, M/s Siemens may kindly be asked to do the needful required so that all the operations of Main SCADA control centre can be performed from Backup Control Centre, Chandigarh

18.2. Up-gradation from Window 7 to Windows 10 operating system

- As discussed in the previous TeST meetings, currently Operating Consoles/ Remote Consoles/ Laptop are running on Windows 7 Operating System and the support of Windows 7 has been discontinued by OEM. As such, Operating System needs to be upgraded to Windows 10. M/s Siemens may kindly be conveyed again to do the needful.

18.3. Additional Cyber Security Audit and Latest Audit held at Pb SLDC

- As per CERT-GO guidelines, Cyber Security Audit by a CERT-In empaneled auditor in addition to the yearly cyber audit under ULDC Phase-II has been made mandatory. SLDC Punjab/ PSTCL is looking into options of conducting the same by way of tender etc. However, As it might take some time, It is proposed that either PGCIL or POSOCO/NRLDC can get it conducted by a CERT-In empaneled auditor, other than M/s AKS IT Services, by ULDC Ph-II Contract amendment or by tender process for all Northern Region states in one package, which will be save time for carrying out the said additional audit.
- In addition to this, M/s Siemens may kindly be asked to submit the root cause analysis report along with compliance report for the PSTCL Audit conducted in month of July-21 at the earliest and it may be ensured that all reports submitted by M/s Siemens are duly vetted/signed by Senior Personnel of M/s Siemens, which in the past has been noticed is never done in spite of various e-mails.

18.4. Double Route Status in SCADA

- Pb SLDC/PSTCL has 7 nos. 400 kV stations having double communication routes. However, there is no provision, aware to this office, for displaying both the routes, which causes a major problem to SCADA office and our field teams.
- Hence, M/s Siemens may be asked to look into the matter on top priority and ensure displaying double route status either by changing the code or software or by some additional utility.

18.5. Block-wise Live Data Report in SCADA system

- It is informed that Power Controllers are using the macro based excel sheet, developed during ULDC Ph-I M/s Alstom project as that time SCADA system was not that advanced. However, Now SCADA system supports excel, word, VBA's, etc. and hence M/s Siemens may kindly be asked to do the needful please as excel sheet hangs up due to high data.

18.6. RTU Maintenance

- M/s Siemens may be asked to carry out regular RTU maintenance two times a year.

18.7. Replacement of Faulty Weather Transducer at 220 kV Ablowal

- M/s Siemens may kindly be asked to ensure that weather data of Ablowal 220kV Station is correct by either replacing or rectifying the issue of faulty weather transducers of Ablowal.

18.8. "Not Secure" Message being displayed on Punjab SCADA web server

- M/s Siemens may kindly be asked to check and resolve why "Not Secure" Message being displayed on Punjab SCADA web server.

**19. Issues being faced by HVPNL in ULDC Phase-II:**

19.1. IMM in PDS console not working (agenda by HVPNL)

- This issue has been pending since long. Matter was discussed several times but M/s Siemens could not resolve it so far.
- M/s Siemens may be asked to resolve the issue.

19.2. Non-displaying of Dynamic Values on SLDC Haryana Website

- For last almost one and half years, it has been observed that Dynamic values for some displays are not depicting on SLDC Haryana Website. Initially, it was told by M/s Siemens that this issue is due to non-clearing of Buffer from COM server and this issue is linked with Replay / Grid data function issue and whenever these issues (Replay, Grid data) will resolve, the subject cited issue will automatically get resolved. Now more than 8 months already

passed since the Replay function issue resolved, still the subject cited issue is unresolved.

- M/s Siemens does not even consider updating HVPNL regularly with progress on this issue.
- M/s Siemens be asked to give time frame for resolution of the issue.

19.3. E-DNA data points not updating in e-DNA software automatically

- Any modifications in domain data nomenclature, either not automatically reflected in the e-DNA points or sometimes even if they appear, old remains exist rather than merging with new one. M/s Siemens has been asked to provide necessary assistance in this regard but Siemens remains unresponsive as usual. Other utilities may also share their experiences in this regard and what practices they are following to avoid such situation.
- M/s Siemens may be asked to resolve this issue.

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

- It has been observed that the local site engineer depends heavily on the NRLDC site engineer. For the small pity issues, they have to take support from back-end team (due to lack of training). Due to dependence of other site engineers also on NRLDC site engineer, it becomes difficult to resolve the matter within the time limit.
- Further as per conditions of contract “The support engineer so deployed shall be qualified personnel having at least 5 years of experience in the delivered SCADA/EMS System. “But neither such conditions are obliged nor the regular training is being provided to the site engineers otherwise they could resolve the matter themselves.
- M/s Siemens may be asked to oblige conditions of contract and deployment of qualified and well-trained engineer as appointed at NRLDC.

19.5. Issue regarding functionality of IMM: Transfer failed in Graphic Job

- During the activation of a display job in IMM, most of the time it shows SVG POP error and ‘transfer job failed error’ occurs. In the 17th TeST meeting, it was assured by M/s Siemens that they will resolve the issue as and when it is raised. However, there is no permanent solution given by M/s Siemens so far. Further for last one month, some specific job in IMM (Comp display job, Baliar Kalan station modification) is getting transfer failed. M/s Siemens is unable to rectify the issue.
- M/s Siemens may be asked to resolve the matter at the earliest as these jobs are creating hurdles in station testing.

19.6. Hardware failure issue & data retrieval thereof / LTA reload functionality

- In the 17th TeST meeting, hardware failure issue & data missing was discussed at length and it was assured by M/s Siemens that both the issue will be resolved soon.
- Although there is no major hardware fault occurred in the HVPNL system for last 1 year however the data retrieval issue is still unresolved. Further the LTA reload functionality demonstration is pending from Siemens side.
- M/s Siemens may be asked to retrieve the missing data in the system and demonstrate the LTA reload functionality.

19.7. Data Replica (DR) Server

- It has found that only one no. DR is working in the system. The second (redundant) DR is dummy on and is not ready to operate in case the other DR fails. It comes into the knowledge that the situation is the same in all SLDCs/NRLDCs. Other constituent states can examine and verify this.
- M/s Siemens may be asked why only one DR server is active and by when they will make the other DR server in operationalize state. It is pertinent to mention that HVPNL is continuously asking M/s Siemens since Sept. 2021 to resolve the matter M/s Siemens.

## 20. Issues being faced by BBMB in ULDC Phase-II:

20.1. Implementation of Multisite Configuration between BBMB SLDC and PSTCL SLDC

- The issue was discussed in 15th, 16th, 17th & 18th TeST meeting wherein BBMB conveyed the following Multisite Configuration is yet to be implemented by M/s SIEMENS:
- The flow of BBMB ICCP data between Backup Control Centre i.e. PSTCL SLDC and NRLDC.
- In 17th TeST meeting M/s SIEMENS informed that it would check all possibilities and inform whether a solution is feasible or not by May 2020. M/s SIEMENS gave a basic layout of approach towards implementation with extra cost vide email dated 07.09.2020. However, the entire scope of implementing end to end solution by providing multisite facility to all Main and Backup Control centers of Northern Region including NRLDC and BRLDC was originally included in the original scope of the contract.
- In the 18th TeST Meeting, no representative from M/s SIEMENS was present in the meeting. Representatives of other SLDCs also stated that ICCP data from their Backup Control Centres and NRLDC was also not flowing. The sub-committee urged POWERGRID to take up the matter with M/s Siemens (by conducting a separate meeting with M/s SIEMENS and the constituents

to resolve all such issues) and ensure that the work is completed at the earliest without any extra cost.

- The matter was taken up with POWERGRID and M/s SEIMENS. However, neither any such meeting was conducted nor any progress has been made in this direction in spite of reminders.

## 21. Establishment of dedicated backup Control Centers for SLDC under ULDC Phase-III (Agenda by NRLDC)

21.1. In SCADA upgrade/ replacement project under ULDC Phase-II concept of backup control centres was der this project backup Control centres of RLDC/SLDCs were established in Northern Region. However, NRLDC /UPPTCL/Jammu and Kashmir has dedicated backup control centres. Whereas other SLDCs are backup of each other as given below:

| S. No | Main SLDC | Backup |
|---|---|---|
| 1. | Delhi | Rajasthan |
| 2. | Rajasthan | Delhi |
| 3. | Haryana | HPPTCL |
| 4. | HPPTCL | Haryana |
| 5. | BBMB | PSTCL |
| 6. | PSTCL | BBMB |

21.2. There are many constraints in the configuration above:

I. Database modelling of one SLDC has to be done by other SLDC, but due to dependency on other SLDC database, modelling work is delayed leading to non-synchronization of data between Main and backup Control center.

II. RTU reporting monitoring of one SLDC has to be done by other SLDC, which is not being done.

III. Multisite configuration couldn't to be properly configured due to such arrangements.

21.3. Keeping in view of the above constraints it is essential that separate dedicated backup control centres should be established by States and periodic testing and monitoring of backup control centres could be done by respective SLDC representative only

21.4. Till date testing of backup control center of SLDCs apart from UP and JK could be done due to constraints given above.

21.5. Members may like to discuss.

**22. Data Integration between Main and Backup Control Centre (CC) of SLDC BBMB with Main and Backup CC of NRLDC at SLDC (Agenda by BBMB)**

22.1. With regard to data integration between Main and Backup Control Centre (CC) of SLDC BBMB with Main and Backup CC of NRLDC on ICCP (Inter Centre Control Protocol) under ULDC Phase-III, NRLDC (POSOCO) is requested to incorporate specific clauses as a part of the contract agreement to ensure the integration on ICCP shall be in the scope of the vendor implementing SCADA System at NRLDC (at NRLDC end). The same request is made to PGCIL to incorporate specific clauses as a part of the contract agreement to ensure the integration on ICCP shall be in the scope of vendor implementing NR SLDC ULDC Phase-III (at SLDC end).

22.2. This matter pertains to all SLDCs in NR.

**23. Rollover to IPv6 for External World Connectivity under ULDC Phase-III scheme (Agenda by BBMB)**

23.1. As per the guidelines of Ministry of Communications, all Govt. organizations have to ensure the migration of their websites to IPv6 technology. As new infrastructure for SCADA system is being procured under ULDC Phase-III scheme, it may be ensured that necessary equipment should have dual stack feature so that the Corporate-On-Line website and other external world connectivity for SCADA system can operate on both on IPv4 and IPv6 technologies.

23.2. This matter pertains to all SLDCs in NR.

**24. Dismantling of Nokia Equipment at NRLDC (Agenda by NRLDC)**

24.1. Nokia Communication equipment were installed at NRLDC under ULDC package. Four (4) number of racks for Nokia were installed. Now almost all the data from Nokia has been shifted and these racks are almost ideal for more than a year. As there is severe space constraint in NRLDC communication room and space for installation of new equipment is not available. In this regard PGCIL is requested to take necessary action for dismantling of Nokia equipment at NRLDC so that space can be vacated for installation of new Equipment.

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

25.1. 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.

25.2. PGCIL/CTU may take necessary action for replacement /upgradation of DC power supply at the earliest.

## IV. OTHER AGENDA

**26. Telemetry of real time active power (MW) data to SLDCs.**

26.1. After implementation of CERC (Deviation Settlement Mechanism and related matters) Regulations 2014 and subsequent amendments, many constituents had raised the issue of difference between SCADA data and IEM data. As per present practice, the utilities take decisions of their drawl management, based on real-time MW SCADA data visible at control room. However, the commercial settlement is based on the IEM data and on account of the difference in SCADA Vs IEM data, the decision taken during real time based on the SCADA data is not justified and led to increase in DSM penalty. The issue was raised by utilities of SRPC, NRPC and WRPC in their respective forums. To mitigate this problem, the utilities suggested to get the real time active power (MW) data to SLDCs through IEMs. As the existing IEMs in service are not capable of telemetry of real-time MW data, the issue of installing additional energy meter in series with existing IEMs or Provision of real time MW data to SLDCs in the technical specification of the new 5/15-minute IEMs to be supplied and installed was emerged.

26.2. CEA also received communications from PGCIL dated 20.07.2020 and WRPC dated 25.09.2020 on the above issue.

26.3. A meeting was convened on 19.11.2020 by MS, NPC on the issue which was chaired by Chairperson CEA. In the meeting followings were decided:

I. *All the existing IEMs shall be replaced with new technology IEMs having facility to communicate recorded data to LDCs in real time. The modalities for the project shall be decided later on.*

II. *All future IEMs at ISTS interface points shall have the feature of user configurable 5/15 min time block along with real time streaming of 1 min (at least) instantaneous data. A reliable communication system (preferably OFC) would be adopted while finalizing the Technical specifications. In order to harmonize the new age end-to-end metering solution, the Technical Specifications (TS) of the new technology IEMs shall be followed on Pan-India basis.*

III. *A Joint Committee comprising members from all RPCs, CEA, and CTU/ PGCIL & POSOCO shall be formed to deliberate and finalize the above TS.*

IV. *To minimize DSM penalties during the interim period, the state utilities may put additional meters in series with the existing meters at the ISTS locations at their own cost in consultation with CTU (PGCIL). With a view to help the States / DISCOMs to take decision in this regard, it was decided with the consent of GETCO that they (GETCO) shall carry out the pilot project for real time monitoring of metering data at ISTS*

*points of their state at their own cost and share the outcome of the project with NPC*

V. *Subsequently, similar project may be taken up by other interested states if they find outcome of the Pilot Project commercially beneficial to them.*

VI. *POSOCO would assess the feasibility of placing new AMR-MDP system at its RLDCs/NLDC and make efforts to arrange the same, or suggest a techno-economic solution to collect the metered data at RLDCs/NLDC from the AMR*-MDP system.

26.4. Accordingly, NPC Secretariat vide letter No. 4/MTGS/NPC/CEA/2020/94-104 dated 02.12.2020 had constituted the Joint Committee comprising members from each RPC, CEA, and CTU, PGCIL & POSOCO to deliberate and finalize the Technical Specifications of IEMs.

26.5. The first meeting of the Joint committee was held on 05.02.2021 through VC, wherein the draft technical specification of Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP) was discussed.

26.6. Further, the following deliberation / decision were taken in the 10th NPC Meeting held on 09th April, 2021:

I. Director, NLDC, stated that as per Grid Code, all concerned entities (in whose premises the interface meters are installed) shall take weekly meter readings and transmit them to the RLDC. Even though now it is Automatic Meter Reading (AMR), it shall the responsibility of the entities (substation wherever the meter is located) to send the weekly data to RLDCs.

II. MS, NPC stated that the sending weekly energy data and telemetry of the real time data through AMR to RLDCs and SLDC to be defined. She suggested that the responsibility may be defined in IEGC/CEA metering regulation.

III. MS, ERPC informed that sending the AMR data (and maintenance) should be the responsibility of respective power utilities (Generator/Transmission company/ whoever) having the metering facilities at their end.

IV. MS, WRPC informed that the issue has been raised due to sign change regulation, which has commercially affected the utilities.

V. Chairperson, CEA informed that the Metering Regulation is under revision and the responsibility of telemetry of real time data may be defined in the metering regulation.

VI. MS, NPC requested CTU to send their comments through email. Other utilities also may send their comments at the earliest.

VII. Chairperson, NPC stated that the issue may be discussed in detail in the RPCs and then may be referred back to NPC.

26.7. Subsequently, a Meeting of the Joint Committee for IEM and CDCS Technical Specification was held on 14.04.2021 under the Chairmanship of Chairperson, CEA wherein the Responsibility & location of CDCS system of ISTS meters & Telemetry of real time 1-minute active power (MW) data from IEMs to respective SLDC and the following were decided (MoM issued on 21.05.2021):

I. The Technical Specifications shall be in two parts as below and shall be used on all India basis by the implementing agency (ies).

Part-I TS shall consist of IEM along with DCU and other accessories for automatic data downloading from meter at Substation level.

Part-II TS shall consist of CDCS (Central Data Collecting System) comprising AMR for receiving data automatically and MDP for the Meter Data Management analytics.

II. 5/15 minute Energy accounting data shall be transmitted directly to RLDC. However, modalities for real time MW data streaming to SLDC with technical details shall be deliberated and finalized by the Joint Committee/ RPCs. Further, RPCs may explore to house the servers in RPC secretariat being in proximity with RLDCs utilising the communication facilities available at RLDCs.

III. All the members shall give their comments in draft TS on priority and NPC shall circulate the revised TS to all committee members.

IV. Responsibility of Operation & Maintenance of IEM & DCU and CDCS & MDP may be as per CEA metering Regulations. Implementation methodology shall be finalized by RPC.

26.8. Members may deliberate.

**27. Permission to work for Installation of DCPS & Battery and Maintenance activity of existing communication equipment at Manimajra UT sub-station under ULDC scheme (Agenda by PGCIL)**

27.1. POWERGRID has established ULDC System for Grid Operation of Power System wherein SCADA/EMS System, RTU, URTDSM, PMU, DCBS BATTERY, DCPS, OPGW, Communication Equipment etc were installed progressively from year 2000 to till date in various centralized Communication schemes. To maintenance the whole ULDC network centrally, POWERGRID was entrusted to establish and maintain ULDC system centrally. Accordingly, as per requirement, Wideband Communication system has been installed at

various locations under which microwave and fibre optic equipment have been installed. Continuous operations of these equipment are vital from the Grid Operation point of view as Telemetry Data / Voice channel from all RTU locations are communicated to State Load Dispatch centers (SLDCs) and NRLDC / NLDC over these equipment. As mandated by USMG/TEST sub-committee of NRPC, Annual maintenance is required to be done on continuous basis of these communication equipment to prevent any data outage. MOU for maintenance of complete ULDC System (OPGW, wideband communication, RTU, Auxiliary Power system, modems, etc) equipment has been signed with Northern Region Constituents.

27.2. Under the various ULDC schemes, OPGW, Communication Equipment (Fibrehome, Tejas, ZTE 385), 48V DCPS System (Exicom, HBL) including Battery Banks has been installed at Manimajra UT sub-station which is bypass communication node for SLDC -BBMB Chandigarh, Panchkula (HVPNL) HPSEBL-SLDC and Nalagarh PG Station. This location is very critical for availability of Telemetry data and Voice for these SLDCs and NRLDC. One Hydro plant (AD Hydro 192MW) data is also reporting through Nalagarh – Manmajra – Chandigarh communication link.

27.3. Replacement of existing 12 F OPGW with 24 F OPGW on 66kv Chandigarh-Pachkula link was considered under reliable scheme which is connected through Manimajra UT sub-station. 48V DCPS needs to be replaced at Manimajra substation under reliable scheme which has already been supplied in August'21 but due to non permission to entry in Manimajra UT sub-station DCPS could not be installed and commissioned and lying POWERGRID store at Hallomajra in Chandigarh. Battery may get discharged without timely installation

27.4. NRPC is requested to intervene for providing entry permission from UT Chandigarh for DCPS, OPGW installation and maintenance works.

**28. Non-availability of space for UNMS project at State constituents (Agenda by PGCIL)**

28.1. In line with NRPC approval, POWERGRID has awarded the U-NMS project for implementation of Unified Network Monitoring System to monitor the entire communication network of Central Sector as well as State Sector in Northern Region. For implementation of the said scheme, one Control Centre has to be established at New Delhi where Network Monitoring System (Centralized monitoring round the clock) and Servers shall be installed, one back up control centre shall be established at Lucknow.

28.2. For monitoring and operation of state sector communication network, following equipment and furniture shall be installed. For installation of these equipment, space is required at all SLDCs for 42 U rack (800x1000x2000mm) and

furniture. For powering up of all equipment, uninterrupted AC power supply is required at all SLDCs from existing UPS system.

i. Workstation dual monitor – 2 nos.
ii. Work station – single monitor – 1 no.
iii. WAN router – 2 nos.
iv. 24 ports LAN switch – 1 no.
v. Internal Firewall – 2 nos.
vi. External Firewall – 2 nos.
vii. Color laser printer – 1 no.
viii. Furniture (Table for above dual & single monitor and printer, 3 nos chair)

28.3. Survey at all SLDCs and main / back up control centre has been carried out and following is the status for space for equipment, furniture and UPS availability. Engineering is going on and materials is scheduled to be delivered at site in May' 2022, however Development System (PDS) is being delivered at main and back up control centre where database development /validation works will commence shortly.

| S. No. | Site Type | Site Name | Space for 42U Rack (1 no.) | Space for Furniture | UPS Supply Availability | Remarks |
|---|---|---|---|---|---|---|
| 1 | Main Control Centre | Katwaria Sarai, New Delhi | 6 Racks - Yes | Yes | Yes (new) | |
| 2 | Back up CC | Lucknow | 6 Racks - yes | Yes | Yes (new) | |
| 3 | DTL | Minto Road, New Delhi | No | No | No | |
| 4 | HVPNL | Panipat | Yes | Yes | Yes | |
| 5 | RRVPNL | Jaipur | No | No | No | |
| 6 | PTCUL | Dehradun | No | No | No | Installation of any equipment/rack can't be allowed in the SLDC building. New SLDC building is proposed where we could plan for the installation in future |
| 7 | UPSLDC | Lucknow | Yes | No | Yes | |
| 8 | J&K PDD | Jammu | Yes | No | Yes | |
| 9 | HPPTCL | Shimla | No | No | Yes | |
| 10 | BBMB | Chandigarh | No | No | Yes | |
| 11 | PSTCL | Patiala | No | No | Yes | |

28.4. All constituents are requested kindly make suitable arrangement for space at SLDCs for 42U rack, furniture and UPS as per above requirement.

## 29. Input for database development system for UNMS Project (Agenda by PGCIL)

29.1. For commissioning of UNMS Project, basic database development is required which need 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. 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 still not been provided to UNMS vendor, which will delay the works for data development. 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. In this regard, a joint meeting was also conducted with all OEMs and State Constituents for providing details on 29.10.2021, however details are still not provided. One more Equipment viz. Nokia make communication Equipment - Centre Sector/ State sector (installed in ULDC phase-I), data for the same is not available with service providers as well as OEM due to system support. It may be noted that replacement has already been approved for Nokia and over the time period, all equipment shall be replaced under centre sector / state sector projects. Inclusion of Nokia equipment (ULDC Phase-I) in UNMS Project may be deleted from the scope due to non-availability of OEM support.

29.2. All constituents / IPPs / other transmission licensees, etc are requested to provide details of their communication equipment / individual NMS for integration in UNMS Project.

## 30. Delay in Payment (Agenda by PGCIL)

30.1. POWERGRID is providing consultancy services on RTU/APS/ Wideband/ OPGW maintenance to constituents on overhead charges basis as per MOU signed with respective Constituents. Constituents are paying on quarterly or yearly basis with advance payment. Most of the constituents informed that they have made payment but payment details are not shared by constituents in most of the cases. In some cases data is not provided by constituents since 2-3 years and POWERGRID's management is very serious against these outstanding payments. Auditors has raised serious issues for non-settlement of payment in SAP / POWERGRID books. POWERGRID have no other option to deduct the overhead charges from advance 1% deposited with us and cancellation of AMC with immediate effects. All constituents are requested to deposit payment and details may also be provided for main payment and TDS immediately (within 7 days). As on date outstanding is Rs 1.97 crores as per

POWERGRID finance. Some payment are received but no details available, which is also laying outstanding category due to non-settlement issues. Constituents wise details shall be provided during the meeting.

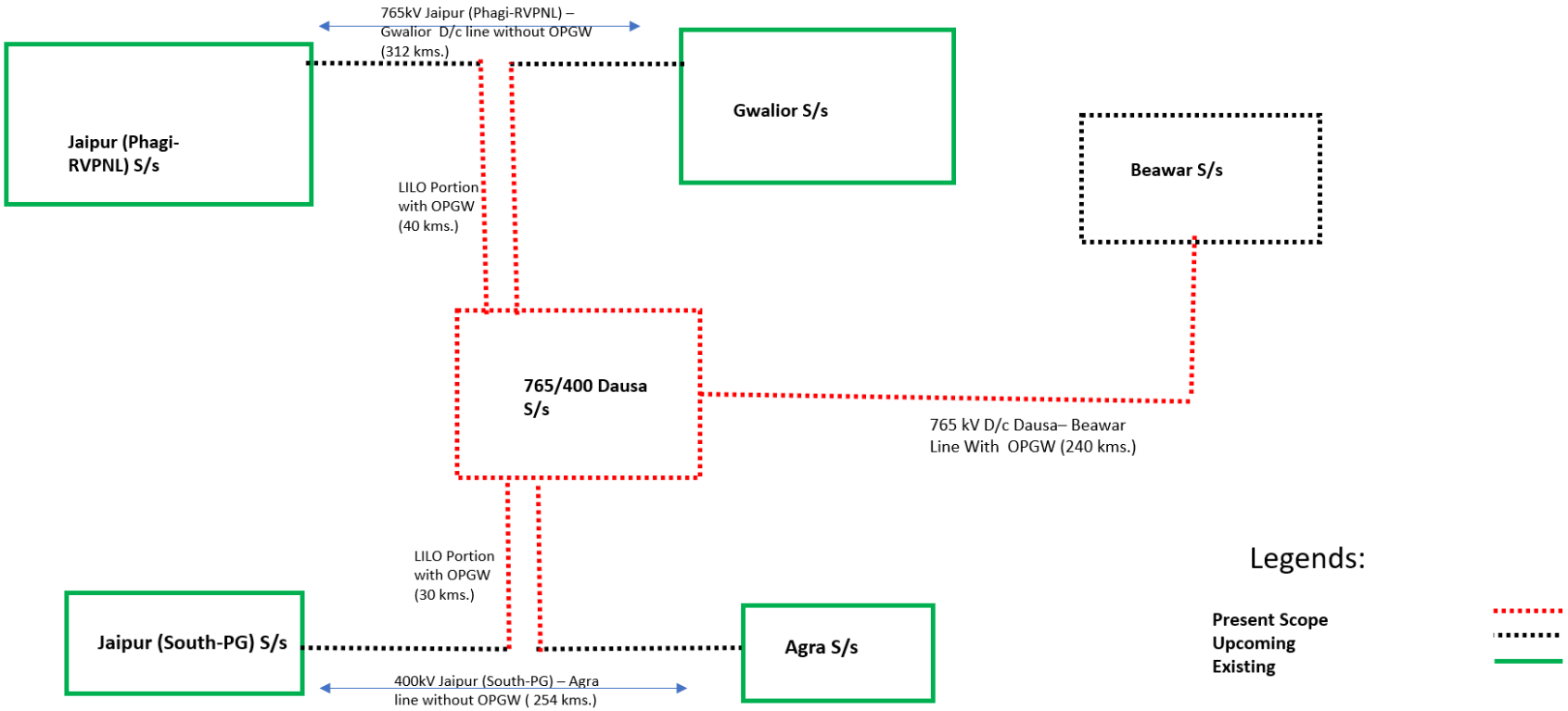
**31. Settlement of issue of MW tower (Asset of HVPNL) installed at 400KV S/S, Bawana (Agenda by HVPNL)**

31.1. In 18th TeST meeting, an agenda was put up for consideration of NRPC, upon which it was suggested by Member Secretary, NRPC to HVPNL and DTL to sort out this bilateral issue mutually. It is added that HVPNL management had already approved the proposal of DTL regarding usages of MW tower and conveyed to DTL during December – 2021.

31.2. Therefore, DTL may be emphasized to get resolve the long pending issue, the vendor M/s Maa Chintpurni Traders, Patiala is pressing very hard for collection of MW tower material standing at 400KV S/S, Bawana. The copy of MoM with DTL is placed at **Annexure-V** & letter regarding approval of HVPNL management is placed at **Annexure-VI**.

**Annexure-I**

Proposed Communication for Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under phase III –Part H



**Annexure-II**

| Sl. No | Name | Voltag | Type | RTU/SAS | Integrattion Stat |
|---|---|---|---|---|---|
| 1 | ALMORA | 132 | SUB-STN | NO | NA |
| 2 | BAJPUR | 132 | SUB-STN | NO | NA |
| 3 | BHAGWANPUR | 132 | SUB-STN | NO | NA |
| 4 | BHOWALI | 132 | SUB-STN | NO | NA |
| 5 | BHUPATWALA | 132 | SUB-STN | NO | NA |
| 6 | BINDAL | 132 | SUB-STN | NO | NA |
| 7 | CHAMBA | 220 | SUB-STN | Yes | YES |
| 8 | CHIBRO-H | 220 | GEN-STN | Yes | YES |
| 9 | CHILLA-H | 132 | GEN-STN | Yes | YES |
| 10 | CHURDIYALA | 132 | SUB-STN | NO | NA |
| 11 | DHAKRANI-H | 132 | GEN-STN | Yes | YES |
| 12 | DHALIPUR-H | 132 | GEN-STN | Yes | YES |
| 13 | GAMMA GEN-T | 220 | GEN-STN | Yes | YES |
| 14 | IIP HARAWALA | 220 | SUB-STN | Yes | NO |
| 15 | JASPUR | 132 | SUB-STN | NO | NA |
| 16 | JAWALAPUR | 132 | SUB-STN | NO | NA |
| 17 | JHAJRA, DEHRADUN | 220 | SUB-STN | Yes | YES |
| 18 | KAMALWAGANJA, HALDWANI | 220 | SUB-STN | NO | NA |
| 19 | KASHIPUR 400KV | 400 | SUB-STN | Yes | YES |
| 20 | KASHIPUR 132KV | 132 | SUB-STN | Yes | YES |
| 21 | KATHGODAM | 132 | SUB-STN | NO | NA |
| 22 | KHATIMA-H | 132 | GEN-STN | Yes | YES |
| 23 | KHODRI-H | 220 | GEN-STN | Yes | YES |
| 24 | KICHA | 132 | SUB-STN | Yes | YES |
| 25 | KOTDWAR | 132 | SUB-STN | NO | NA |
| 26 | KULAHAL-H | 132 | GEN-STN | Yes | YES |
| 27 | LAKSAR | 132 | SUB-STN | Yes | YES |
| 28 | MAHUAKHERAGANJ | 220 | SUB-STN | Yes | YES |
| 29 | MAJRA, DEHRADUN | 132 | SUB-STN | NO | NA |
| 30 | MANERIBHALI-II-H | 220 | GEN-STN | Yes | YES |
| 31 | MANERIBHALI-I-H | 220 | GEN-STN | Yes | YES |
| 32 | MOHAMADPUR-H | 33 | GEN-STN | NO | NA |
| 33 | MANGLORE | 132 | SUB-STN | Yes | YES |
| 34 | PANT NAGAR | 220 | SUB-STN | Yes | YES |
| 35 | PATHARI-H | 33 | GEN-STN | NO | NA |
| 36 | PIRANKALIYAR | 220 | SUB-STN | Yes | YES |
| 37 | PITHORAGARH | 132 | SUB-STN | Yes | YES |
| 38 | PURKUL | 132 | SUB-STN | NO | NA |
| 39 | RAMGANGA-H | 132 | GEN-STN | NO | NA |
| 40 | RISHIKESH-I | 400 | SUB-STN | Yes | YES |
| 41 | RISHIKESH-II | 220 | SUB-STN | Yes | YES |
| 42 | RAMNAGAR | 132 | SUB-STN | NO | NA |
| 43 | ROORKEE | 220 | SUB-STN | Yes | YES |
| 44 | RUDRAPUR | 132 | SUB-STN | NO | NA |
| 45 | HARIDWAR(SIDCUL) | 220 | SUB-STN | Yes | YES |
| 46 | SITARGANJ | 132 | SUB-STN | Yes | YES |
| 47 | SARAVANTI INFRA -T | 220 | GEN-STN | Yes | YES |
| 48 | SATPULI | 132 | SUB-STN | NO | NA |
| 49 | SIMLI | 132 | SUB-STN | NO | NA |
| 50 | SRINAGAR-I | 400 | SUB-STN | Yes | YES |
| 51 | SRINAGAR-II | 132 | SUB-STN | NO | YES |

| Station Name | Non available Analog data | Non available Digital data |
|---|---|---|
| Bhagwanpur | All | All |
| Chamba | All | All |
| Chhibro | Available | Line Isolator |
| Chilla | Bus 1 Frequency | Isolator Bus Coupler |
| Dhakrani | All | All |
| Dhalipur | All | All |
| Gamma | Bus 1 Voltage (data wrong) | Available |
| Jhajra | ICT 2 132 KV side - P, Q | All isolator data wrong (All open) |
| | 132 KV Mazra - Q | some CB data wrong (analog flow is there but CB open) |
| | 132 KV both buses- Freq | |
| | 132 KV both buses- Voltage value wrong (0 KV) | |
| Kashipur 132 | 132 KV Bazpur, KVS IGL P, Q | All |
| | 132/33 KV ICT 1,2,3 both sides P , Q | |
| Kashipur 400 | 400 KV Nehtaur Q | |
| | 400 KV Bus 2 Frequency | 400 KV CB Main bay Moradabad, Nehtaur, Bareilly-I, ICT-I, ICT-II |
| | 220 KV Mahuakheraganj P, Q | 400 KV CB all tie bay |
| | 220 KV Sravanti P, Q | 400 KV Bus and other Isolator Main bay Roorkee-I, Nehtaur, Bareilly-I, ICT-I, ICT-II |
| | 220 KV Bus 2 and 3 Voltage and Frequency | 220 KV CB ICT-II, Mahuakheraganj, Sravanti, TBC, Pantnagar-II |
| | 132 KV Bazpur P, Q | 220 KV Isolator Sravanti, Mahuakheraganj Bay |
| | | 220 KV Line Isolator ICT-I, II, Pantnagar-I (wrong status) |
| | | 132 KV CB Bazpur |
| | | 132 KV Line Isolator all(wrong status) |
| Khatima | All | All |
| Khodri | 220 KV Rishikesh, Dhakrani P, Q | All CB and Isolator (wrong ststus) |
| | 220 KV Bus 1 Frequency | |
| Kicha | ICT 3 P, Q | All CB |
| | | Isolator Richa, Sitarganj, ICT 1, 2, 3 |
| | | Isolator CPP, Rudrapur (wrong status) |
| Kulhal | Mazra 1, II P, Q | CB Mazra 1, Giri, Unit 1,2,3 |
| | Bus 1 Frequency | CB Dhalipur (wrong Status) |
| | | All Bus Isolator (wrong Status) |
| Laksar | All | All |
| Mahuakheraganj | 132 KV Bus 2 Voltage and Frequency | 220 KV CB Gamma, MBC, ICT 2 |
| | 33 KV Bus 1 Voltage and Frequency | 220 KV Bus 3 isolator Sravanti |
| | | 132 KV Line Isolator Kashipur 132 |
| Manerbhali 1 | Unit 3 P | CB Unit 1,2,3, ICT 1,2 |
| | Bus 2 Frequency | Isolator ICT 2 |
| | ICT 2 P, Q | All other Isolator (wrong status) |
| Manerbhali 2 | Unit 1, 3 P, Q | All |
| Manglore | All | All |
| Mazra | All | All |
| Pantnagar | 220 KV Bus 1 Voltage and Frequency | All (wrong and suspected) |
| | 220 KV Bus 2 Voltage | |

| | | |
|---|---|---|
| | 220 KV side ICT 5, 6 P, Q | |
| | 132 KV Bus 1 Voltage and Frequency | |
| | 132 KV Rudrapur, Kathgodam P, Q | |
| Pirankaliyar | All | All |
| Pithoragarh | Bus voltage and Frequency | |
| | Almora, ICT 1,2,3 P Q | All |
| Rishikesh 220 | 220 KV Sidkul, khodri, Manerbhali 2, ICT 1,2 P, Q | 220 KV CB Manerbhali 2, ICT 1,2 |
| | 132 KV ICT 1,2,3, Srinagar P,Q | 220 KV all Isolator Manerbhali 2 |
| | | 220 KV all Line Isolator |
| | | 132 KV all CB |
| | | 132 KV all line Isolator |
| Rishikesh 400 | 220 KV Voltage and Frequency | 400 KV CB TBC |
| | | 400 KV Line isolator Nehtaur, Rishikesh |
| | | 220 KV Line isolator ICT 1,2 |
| Roorkee | 220 KV Bus 1 Voltage and Frequency | 132 KV CB ICT3,4, Sidkul, BHGPR |
| | 220 KV Bus 2 Voltage | 132 KV isolator ICT 4 |
| | 220 KV ICT 1,2 P,Q | |
| | 132 KV All | |
| Sidcul | All | All |
| Sitarganj | Bus Voltage and Frequency | |
| | Kicha, khatima, ICT1,2 P, Q | CB feeder 1, Pilibhit, Khatima, ICT 1,2, Sitarganj 2 |
| | | Isolator ICT1,2 |
| Srinagar | | Line Isolator ICT1,2,3,4 Both sides |

Annexure-III


# HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LTD.

***(A State Govt. Undertaking)***

Regd. Office: HimfedBhawan, New ISBT Road,Panjari, Shimla-171005
Ph.:- 0177-2831283, 2831284 FAX:-0177-2831284
(CIN):U40101HP2008SGC030950
(GSTIN):02AACCH1548M1ZP

HPPTCL

Web: - www.hpptcl.com


**HPPTCL/Projects/F-105/2020-21** -9973 **22- Oct, 2020**

To

Incharge NRLDC,
Power System Operation Corporation Limited, 18-A,
Shaheed Jeet Singh Sansalwal Marg, Katwaria Sarai, New Delhi -110016.

**Sub: Energization of 400/220kV Gumma Sub-Station – Installation of PMU thereof**

Sir,

This is in reference to email dt. 19th October 2020 from ankurgulati@posoco.in vide which it has been requested to ensure installation of PMU at 400/220kV Gumma Substation within 6 months.

In this regard it is informed that HPPTCL shall take required action for installation of PMU at Gumma Sub-Station within 6 months.

**General Manager (Project),**
**HPPTCL, Shimla, HP.**
**Himfed Bhawan, Panjari Shimla-171005**

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेशण केन्द्र / NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय :18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली- 110016
OFFICE :18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi- 110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

Ref:/NRLDC/Telemetry

Date: - 15.12.2021

To,

1. **Executive Director ,NR-1 RHQ POWERGRID, Faridabad, Haryana**
2. **Executive Director ,NR-2 RHQ POWERGRID ,Jammu, J&K**
3. **Executive Director ,NR-3 RHQ POWERGRID ,Lucknow, Uttar Pradesh**

**Sub:** - Regarding non-availability of Telemetry data from POWERGRID Sub-stations

It is to emphasize regarding the importance of SCADA data requirements for the smooth grid operations. Decisions in real-time are taken by Real-time engineers of NRLDC based on real-time data available to Control room. This is to inform that there is requirement of good quality input data for smooth grid monitoring & Control. Further, good telemetry is also essential of running of **State Estimator/Energy Management System (EMS).**

Since proper telemetry is not available from many substations, it has impact on successful running of state estimator. Correct telemetry is essential for running State Estimator/ Contingency Analysis in EMS, Better SE output will aid in situational awareness of the system operators of NRLDC.

This is to inform that telemetry data from many POWERGRID sub-stations is not available at NRLDC. List of non-updating Digital/Analog Points is given in **Annex-I.** The matter of non-availability of digital points have been discussed in various TeST meetings/ OCC Meetings, still there is minimal improvement in this regard.

It may be noted that as per **IEGC cl 4.6.2 Reliable and efficient speech and data communication systems** shall be provided to facilitate necessary communication and data exchange, and supervision/control of the grid by the RLDC, under normal and abnormal conditions.

Further, as per **clause 12 of Communication Regulations, 2017** "All users of CTU, NLDC, RLDCs, SLDCs, and STUs shall maintain the communication **channel availability at 99.9% annually**: Provided that with back up communication system, the availability of communication system should be 100%."

----Contd----

**Your intervention is required to advise the concerned for rectification of the telemetry at NRLDC on priority basis and arrange for rectification by 31st Jan 2022.**

Your corporation is highly solicited.

Thanking You,

Regards

15/12/21.

**(N. Nallarasan)**

**Chief General Manager (I/C), NRLDC**

**Copy to:**

1.Member Secretary, NRPC, New Delhi

2. Director Operation , POWERGRID

3.Chief General Manager (AM&ULDC) , NR-1 , POWERGRID

4.Chief General Manager (ULDC) , NR-2 , POWERGRID

| Station | Voltage Level | Bay | Device | Point |
|---|---|---|---|---|
| MEERT_PG | 400 | LIKTSWR1 | Iso1 CB | Status |
| BALIA_PG | 400 | LIPATNA3 | Iso Line | Status |
| BALIA_PG | 400 | LIPATNA4 | Iso Line | Status |
| BHIWA_PG | 220 | 13NMRNA | Iso Line | Status |
| BLIHV_PG | 400 | 19BHWHV1 | CB | Status |
| BLIHV_PG | 400 | 19BHWHV1 | Iso2 CB | Status |
| BLIHV_PG | 400 | 19BHWHV1 | Iso Bb 1 | Status |
| BLIHV_PG | 400 | 20BH1CP1 | CB | Status |
| BLIHV_PG | 400 | 20BH1CP1 | Iso1 CB | Status |
| BLIHV_PG | 400 | 20BH1CP1 | Iso2 CB | Status |
| BLIHV_PG | 400 | 21CPBKC1 | CB | Status |
| BLIHV_PG | 400 | 21CPBKC1 | Iso2 CB | Status |
| BLIHV_PG | 400 | 21CPBKC1 | Iso Bb 2 | Status |
| BLIHV_PG | 400 | 22CPBKC2 | CB | Status |
| BLIHV_PG | 400 | 22CPBKC2 | Iso2 CB | Status |
| BLIHV_PG | 400 | 22CPBKC2 | Iso Bb 1 | Status |
| BLIHV_PG | 400 | 23BHWHV2 | CB | Status |
| BLIHV_PG | 400 | 23BHWHV2 | Iso1 CB | Status |
| BLIHV_PG | 400 | 23BHWHV2 | Iso2 CB | Status |
| BLIHV_PG | 400 | 24BHWHV2 | CB | Status |
| BLIHV_PG | 400 | 24BHWHV2 | Iso2 CB | Status |
| BLIHV_PG | 400 | 24BHWHV2 | Iso Bb 2 | Status |
| BLIHV_PG | 400 | 25CPBKC3 | CB | Status |
| BLIHV_PG | 400 | 25CPBKC3 | Iso2 CB | Status |
| BLIHV_PG | 400 | 25CPBKC3 | Iso Bb 1 | Status |
| BLIHV_PG | 400 | 26TIECP1 | CB | Status |
| BLIHV_PG | 400 | 26TIECP1 | Iso2 CB | Status |
| BLIHV_PG | 400 | 26TIECP1 | Iso1 CB | Status |
| BLIHV_PG | 400 | 27TIE | CB | Status |
| BLIHV_PG | 400 | 27TIE | Iso2 CB | Status |
| BLIHV_PG | 400 | 27TIE | Iso Bb 2 | Status |
| BLIHV_PG | 400 | 28TIE | CB | Status |
| BLIHV_PG | 400 | 28TIE | Iso2 CB | Status |
| BLIHV_PG | 400 | 28TIE | Iso Bb 1 | Status |
| BLIHV_PG | 400 | 29TIE | CB | Status |
| BLIHV_PG | 400 | 29TIE | Iso2 CB | Status |
| BLIHV_PG | 400 | 29TIE | Iso1 CB | Status |
| BLIHV_PG | 400 | 30TIE | CB | Status |
| BLIHV_PG | 400 | 30TIE | Iso2 CB | Status |
| BLIHV_PG | 400 | 30TIE | Iso Bb 2 | Status |
| BLIHV_PG | 400 | CPBK_C1 | CB | Status |
| BLIHV_PG | 400 | CPBK_C1 | Iso1 CB | Status |
| BLIHV_PG | 400 | CPBK_C2 | CB | Status |

| | | | | |
|---|---|---|---|---|
| BLIHV_PG | 400 | CPBK_C2 | Iso Line | Status |
| BLIHV_PG | 400 | CPBK_C3 | CB | Status |
| BLIHV_PG | 400 | CPBK_C3 | Iso Line | Status |
| BLIHV_PG | 400 | W1BS | Sect Bb1 | Status |
| BLIHV_PG | 400 | W1BS | Iso Bb 1 | Status |
| BLIHV_PG | 400 | W1BS | Iso Bb 2 | Status |
| BLIHV_PG | 400 | W2BS | Sect Bb2 | Status |
| BLIHV_PG | 400 | W2BS | Iso Bb 2 | Status |
| MLERK_PG | 220 | 12T3 | Iso Bb 2 | Status |
| MLERK_PG | 220 | 04T2 | Iso Bb 2 | Status |
| MLERK_PG | 220 | 04T2 | Iso Bb 1 | Status |
| MLERK_PG | 220 | 01T1 | Iso Bb 2 | Status |
| MLERK_PG | 220 | 01T1 | Iso Bb 1 | Status |
| MLERK_PG | 400 | 10TIE | Iso CB 1 | Status |
| MLERK_PG | 400 | 10TIE | CB | Status |
| MEERT_PG | 400 | 12MUZA11 | CB | Status |
| LDINA_PG | 220 | 11LINE_5 | Iso Line | Status |
| LDINA_PG | 220 | 11LINE_5 | Iso Bb 2 | Status |
| LDINA_PG | 220 | 11LINE_5 | CB | Status |
| ALBAD_PG | 400 | LISASRM | Iso Line | Status |
| JTIKR_PG | 765 | SRAGRA_1 | Iso Line | Status |
| JALAN_PG | 400 | 10CHMBA2 | Iso CB 2 | Status |
| JALAN_PG | 400 | 1CHM1 | Iso CB 1 | Status |
| FATPR_PG | 765 | 9TIE | Iso CB 2 | Status |
| CHMBA_PG | 220 | 09FUTUR4 | CB | Status |
| CHMBA_PG | 220 | 04T2 | CB | Status |
| CHMBA_PG | 220 | 05MBC | Iso Bb 2 | Status |
| CHMBA_PG | 220 | 05MBC | Iso Bb 1 | Status |
| CHMBA_PG | 220 | 05MBC | CB | Status |
| CHMBA_PG | 220 | 02T1 | CB | Status |
| CHMBA_PG | 400 | 05T2 | Iso Bb 2 | Status |
| CHMBA_PG | 400 | 05T2 | Iso Bb 1 | Status |
| CHMBA_PG | 400 | 03JALAN1 | Iso Line | Status |
| CHMBA_PG | 400 | 03JALAN1 | CB | Status |
| BHWHV_PG | 400 | LIHISAR2 | Iso Line | Status |
| BHWHV_PG | 400 | LIHISAR1 | Iso Line | Status |
| BHWHV_PG | 400 | LIBLIHV4 | Iso Line | Status |
| BHWHV_PG | 400 | LIBLIHV3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C6_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C6_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C6_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C6_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C6_1 | Iso Line | Status |

| | | | | |
|---|---|---|---|---|
| BHWHV_PG | 400 | CBK_C5_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C5_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C5_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C5_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C5_1 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C4_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C4_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C4_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C4_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C4_1 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_1 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_1 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C1_3 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C1_2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C1_1 | Iso Line | Status |
| BHWHV_PG | 400 | W4MBC | Iso Bb 2 | Status |
| BHWHV_PG | 400 | W4MBC | Iso Bb 1 | Status |
| BHWHV_PG | 400 | W3MBC | Iso Bb 2 | Status |
| BHWHV_PG | 400 | W3MBC | Iso Bb 1 | Status |
| BHWHV_PG | 400 | CPBK_C3 | Iso Line | Status |
| BHWHV_PG | 400 | CPBK_C3 | CB | Status |
| BHWHV_PG | 400 | CPBK_C2 | Iso Line | Status |
| BHWHV_PG | 400 | CPBK_C2 | CB | Status |
| BHWHV_PG | 400 | CPBK_C1 | Iso Line | Status |
| BHWHV_PG | 400 | CPBK_C1 | CB | Status |
| BHWHV_PG | 400 | 28HISAR2 | Iso CB 1 | Status |
| BHWHV_PG | 400 | 28HISAR2 | CB | Status |
| BHWHV_PG | 400 | 31HISAR3 | Iso CB 1 | Status |
| BHWHV_PG | 400 | 31HISAR3 | CB | Status |
| BHWHV_PG | 400 | 10A | Iso CB 1 | Status |
| BHWHV_PG | 400 | 10A | CB | Status |
| BHWHV_PG | 400 | 11A | Iso CB 1 | Status |
| BHWHV_PG | 400 | 11A | CB | Status |
| BHWHV_PG | 400 | 25CPBKC6 | Iso Bb 1 | Status |
| BHWHV_PG | 400 | 25CPBKC6 | Iso CB 1 | Status |
| BHWHV_PG | 400 | 24BLIHV4 | Iso Bb 2 | Status |
| BHWHV_PG | 400 | 24BLIHV4 | Iso CB 2 | Status |
| BHWHV_PG | 400 | 24BLIHV4 | CB | Status |
| BHWHV_PG | 400 | 23BL4CP5 | Iso1 CB | Status |
| BHWHV_PG | 400 | 23BL4CP5 | Iso2 CB | Status |
| BHWHV_PG | 400 | 23BL4CP5 | CB | Status |

| | | | | |
|---|---|---|---|---|
| BHWHV_PG | 400 | 22CPBKC5 | Iso Bb 1 | Status |
| NMRNA_PG | 400 | LIBHWHV1 | Iso Line | Status |
| NMRNA_PG | 400 | BRNMRNA1 | Iso Line | Status |
| BLIHV_PG | 400 | W2BS | Iso Bb 1 | Status |
| BLIHV_PG | 400 | CBK_C1_1 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C1_2 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C1_3 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C1_4 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C1_5 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C2_1 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C2_2 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C2_3 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C2_4 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C2_5 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C3_1 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C3_2 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C3_3 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C3_4 | Iso Line | Status |
| BLIHV_PG | 400 | CBK_C3_5 | Iso Line | Status |
| BLIHV_PG | 400 | LIBHWHV3 | Iso Line | Status |
| BLIHV_PG | 400 | LIBHWHV4 | Iso Line | Status |
| BLIHV_PG | 400 | LIBHWHV1 | Iso Line | Status |
| BLIHV_PG | 400 | LIBHWHV2 | Iso Line | Status |
| WANPO_PG | 220 | 11MBC | Iso Bb 2 | Status |
| WANPO_PG | 220 | 11MBC | Iso Bb 1 | Status |
| WANPO_PG | 220 | 11MBC | CB | Status |
| WANPO_PG | 220 | 07T2 | Iso Bb 3 | Status |
| WANPO_PG | 220 | 07T2 | Iso Bb 2 | Status |
| WANPO_PG | 220 | 07T2 | Iso Bb 1 | Status |
| WANPO_PG | 220 | 07T2 | CB | Status |
| WANPO_PG | 220 | 02MRBZR1 | Iso Line | Status |
| WANPO_PG | 220 | 02MRBZR1 | Iso Bb 3 | Status |
| WANPO_PG | 220 | 02MRBZR1 | Iso Bb 2 | Status |
| WANPO_PG | 220 | 02MRBZR1 | Iso Bb 1 | Status |
| WANPO_PG | 220 | 02MRBZR1 | CB | Status |
| WANPO_PG | 400 | 18SVC | Iso Bb 2 | Status |
| WANPO_PG | 400 | 16KISHN4 | Iso Bb 1 | Status |
| WANPO_PG | 400 | 16KISHN4 | Iso CB 1 | Status |
| MANSR_PG | 400 | 7SOHNA2 | Iso Line | Status |
| MANSR_PG | 400 | 6SOHNA1 | Iso Line | Status |
| JALAN_PG | 220 | 13KARTA2 | Iso Line | Status |
| JALAN_PG | 220 | 12KARTA | Iso Line | Status |
| JALAN_PG | 220 | 05T1 | Iso Line | Status |
| JALAN_PG | 220 | 04MBC | Iso Bb 1 | Status |
| JALAN_PG | 220 | 09DASYA2 | Iso Line | Status |

| | | | | |
|---|---|---|---|---|
| JALAN_PG | 220 | 08DASYA1 | Iso Line | Status |
| JALAN_PG | 220 | 10NEHR2 | Iso Line | Status |
| JALAN_PG | 220 | 11NEH1 | Iso Line | Status |
| JALAN_PG | 220 | 01T2 | Iso Line | Status |
| JALAN_PG | 400 | LIAMRIT1 | Iso Line | Status |
| JALAN_PG | 400 | 9CHMBA1 | Iso CB 1 | Status |
| JALAN_PG | 400 | 7CHM1_2 | Iso Bb 2 | Status |
| JALAN_PG | 400 | 7CHM1_2 | Iso CB 2 | Status |
| JALAN_PG | 400 | 6AMRIT | Iso CB 2 | Status |
| JALAN_PG | 400 | 4MOGA2 | Iso CB 1 | Status |
| JALAN_PG | 400 | 3MOGA1 | Iso CB 2 | Status |
| JALAN_PG | 400 | 18HMRPR | Iso CB 2 | Status |
| JALAN_PG | 400 | 14T2LDI | Iso1 CB | Status |
| JALAN_PG | 400 | 12T1 | Iso CB 1 | Status |
| HISAR_PG | 220 | 02TBC | Iso Line | Status |
| FATPR_PG | 400 | 14MAINP1 | Iso1 CB | Status |
| FATPR_PG | 400 | 10T2 | Iso CB 1 | Status |
| FATPR_PG | 765 | LIT4 | Iso Line | Status |
| BHWHV_PG | 400 | 22CPBKC5 | Iso CB 1 | Status |
| BHWHV_PG | 400 | 21CPBKC4 | Iso Bb 2 | Status |
| BHWHV_PG | 400 | 21CPBKC4 | Iso CB 2 | Status |
| BHWHV_PG | 400 | 20BL3CP4 | Iso1 CB | Status |
| BHWHV_PG | 400 | 20BL3CP4 | Iso2 CB | Status |
| BHWHV_PG | 400 | 20BL3CP4 | CB | Status |
| BHWHV_PG | 400 | 19BLIHV3 | Iso Bb 1 | Status |
| BHWHV_PG | 400 | 19BLIHV3 | Iso CB 1 | Status |
| BHWHV_PG | 400 | 19BLIHV3 | CB | Status |
| BHWHV_PG | 400 | 18TIE | Iso Bb 2 | Status |
| BHWHV_PG | 400 | 18TIE | Iso CB 2 | Status |
| BHWHV_PG | 400 | 18TIE | CB | Status |
| BALIA_PG | 400 | LIBARH_1 | Iso Line | Status |
| BALIA_PG | 400 | LIT1 | Iso Line | Status |
| BALIA_PG | 400 | 24T1 | Iso CB 2 | Status |
| BALIA_PG | 400 | 24T1 | CB | Status |
| BALIA_PG | 400 | 22RASRA | CB | Status |
| BALIA_PG | 400 | 21SSRM1 | Iso Bb 2 | Status |
| BHNML_PG | 400 | SRKNKRL | CB | Status |
| LDINA_PG | 220 | 14SHNWL1 | Iso Line | Status |
| LDINA_PG | 220 | 15LALTO3 | Iso Line | Status |
| MEERT_PG | 765 | LIBRLY | Iso Line | Status |
| MEERT_PG | 765 | SRBRLY | Iso Line | Status |
| BRELY_PG | 400 | LIBRLY2 | Iso Line | Status |
| KNPR1_PG | 765 | BRKNPR1 | Iso Line | Status |
| JALAN_PG | 400 | LIKURHV | IsoLine1 | Status |
| BALLB_PG | 400 | LIKANPR4 | Iso1 CB | Status |

| | | | | |
|---|---|---|---|---|
| BALLB_PG | 400 | LIKANPR4 | Iso2 CB | Status |
| KURHV_PG | 220 | 02T1 | Iso Line | Status |
| KURHV_PG | 220 | 07T2 | Iso Line | Status |
| SOHWL_PG | 220 | 11TANDA2 | CB | Status |
| PNCHK_PG | 400 | LIT3 | Iso Line | Status |
| SRNPR_PG | 400 | 18BGPT2 | CB | Status |
| SRNPR_PG | 400 | 15BGPT1 | CB | Status |
| KNPR1_PG | 765 | SRALIGR1 | CB | Status |
| GRKPR_PG | 400 | LIMUZAF1 | IsoLine1 | Status |
| LDINA_PG | 400 | LISVC | Iso Line | Status |
| LDINA_PG | 400 | LISVC | IsoLine1 | Status |
| KLAMB_PG | 220 | 03T1 | Iso Line | Status |
| KLAMB_PG | 400 | 2BABL1R2 | CB | Status |
| KLAMB_PG | 400 | 2BABL1R2 | Iso1 CB | Status |
| KLAMB_PG | 400 | 2BABL1R2 | Iso2 CB | Status |
| MANSR_PG | 400 | 9BR2 | CB | Status |
| MANSR_PG | 400 | 9BR2 | Iso Bb 2 | Status |
| ORAI_PG | 765 | LIT1 | Iso Line | Status |
| ORAI_PG | 400 | LIT2 | Iso Line | Status |
| BHDLA_PG | 400 | 15T1 | Iso Bb 2 | Status |
| BHDLA_PG | 400 | 15T1 | Iso CB 2 | Status |
| BHDLA_PG | 400 | 15T1 | CB | Status |
| GRKPR_PG | 400 | 50FSC | Iso1 CB | Status |
| GRKPR_PG | 400 | 52FSC | Iso1 CB | Status |
| GRKPR_PG | 400 | 50FSC | IsoLine1 | Status |
| BHDLA_PG | 400 | LI4T1 | Iso Line | Status |
| LKNOW_PG | 400 | 50FSC1 | Iso Line | Status |
| LKNOW_PG | 400 | 53FSC | Iso Line | Status |
| NALAG_PG | 400 | LIST | Iso Line | Status |
| NALAG_PG | 32 | CT | Iso Bb 1 | Status |
| KNKRL_PG | 220 | 04T1 | Iso Line | Status |
| KNKRL_PG | 220 | 05T2 | Iso Line | Status |
| KNKRL_PG | 220 | 07T3 | Iso Line | Status |
| BHIWN_PG | 400 | 34FTR2 | CB | Status |
| BHIWN_PG | 400 | 34FTR2 | Iso CB 1 | Status |
| BHIWN_PG | 400 | 37FTR3 | Iso CB 1 | Status |
| BHIWN_PG | 400 | 37FTR3 | CB | Status |
| BHDLA_PG | 220 | 17TPREL | Iso Bb 3 | Status |
| BHDLA_PG | 220 | 24MAHOBA | Iso Bb 2 | Status |
| BHDLA_PG | 220 | 37AZURE | CB | Status |
| BHDLA_PG | 220 | 37AZURE | Iso Bb 1 | Status |
| BHDLA_PG | 220 | 37AZURE | Iso Bb 2 | Status |
| BHDLA_PG | 220 | 37AZURE | Iso Line | Status |
| BALIA_PG | 400 | LIAUTOTR | Iso Line | Status |
| GRKPR_PG | 400 | SRLKNOW1 | Iso Line | Status |

| | | | | |
|---|---|---|---|---|
| GRKPR_PG | 400 | SRLKNOW3 | Iso Line | Status |
| GRKPR_PG | 400 | SRLKNOW4 | Iso Line | Status |
| GRKPR_PG | 400 | SRMOTIH1 | Iso Line | Status |
| GRKPR_PG | 400 | SRMOTIH1 | CB | Status |
| GRKPR_PG | 400 | SRMOTIH2 | CB | Status |
| GRKPR_PG | 400 | SRMOTIH2 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C1_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C1_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C2_6 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_4 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_5 | Iso Line | Status |
| BHWHV_PG | 400 | CBK_C3_6 | Iso Line | Status |
| BHDLA_PG | 220 | 22T6 | CB | Status |
| BHDLA_PG | 220 | 22T6 | Iso Bb 1 | Status |
| BHDLA_PG | 220 | 22T6 | Iso Bb 2 | Status |
| BHDLA_PG | 220 | 22T6 | Iso Line | Status |
| BHDLA_PG | 220 | 13T4 | Iso Line | Status |
| BHDLA_PG | 220 | 13T4 | Iso Bb 3 | Status |
| BHDLA_PG | 220 | 13T4 | Iso Bb 2 | Status |
| BHDLA_PG | 220 | 13T4 | Iso Bb 1 | Status |
| BHDLA_PG | 220 | 13T4 | CB | Status |
| SIKAR_PG | 400 | LIKHTRI1 | Iso Line | Status |
| WANPO_PG | 220 | 07T2 | Iso Line | Status |
| WANPO_PG | 220 | 10T3 | Iso Line | Status |
| JALAN_PG | 400 | 31FUTR1 | CB | Status |
| JALAN_PG | 220 | 17BR1 | CB | Status |
| JALAN_PG | 220 | 18BR2 | CB | Status |
| KHTRI_PG | 765 | 12TF3 | Iso CB 2 | Status |
| KHTRI_PG | 765 | 12TF3 | CB | Status |
| KHTRI_PG | 765 | 15TF4 | CB | Status |
| KHTRI_PG | 765 | 15TF4 | Iso CB 2 | Status |
| FTGR2_PG | 220 | 13T3 | Iso Bb 3 | Status |

Analog Points:

| Station | Voltage Level | Bay | Measurement |
|---|---|---|---|
| JIND__PG | 400 | LIT1 | Q |
| JIND__PG | 400 | LIT1 | P |
| WANPO_PG | 220 | FEB_T2_S | TapPosMv |
| WANPO_PG | 220 | FEB_T3_S | TapPosMv |
| WANPO_PG | 220 | 08WANPO6 | Q |
| WANPO_PG | 220 | 08WANPO6 | P |
| WANPO_PG | 220 | 06WANPO5 | Q |
| WANPO_PG | 220 | 06WANPO5 | P |
| WANPO_PG | 220 | 05WANPO4 | Q |
| WANPO_PG | 220 | 05WANPO4 | P |
| WANPO_PG | 220 | 03WANPO3 | Q |
| WANPO_PG | 220 | 03WANPO3 | P |
| WANPO_PG | 220 | BB3 | V |
| BLIHV_PG | 400 | BB1A | Frequ |
| BLIHV_PG | 400 | BB2A | V |
| BLIHV_PG | 400 | BB2A | Frequ |
| BLIHV_PG | 400 | BB1B | V |
| BLIHV_PG | 400 | BB1B | Frequ |
| BLIHV_PG | 400 | BB2B | V |
| BLIHV_PG | 400 | BB2B | Frequ |
| BLIHV_PG | 400 | CPBK_C1 | Q |
| BLIHV_PG | 400 | CPBK_C2 | Q |
| BLIHV_PG | 400 | CPBK_C3 | Q |
| BLIHV_PG | 400 | W1BS | P |
| BLIHV_PG | 400 | W1BS | Q |
| BLIHV_PG | 400 | W2BS | P |
| BLIHV_PG | 400 | W2BS | Q |
| BLIHV_PG | 400 | LIBHWHV3 | P |
| BLIHV_PG | 400 | LIBHWHV3 | Q |
| BLIHV_PG | 400 | LIBHWHV4 | P |
| BLIHV_PG | 400 | LIBHWHV4 | Q |
| BLIHV_PG | 400 | LIBHWHV1 | P |
| BLIHV_PG | 400 | LIBHWHV1 | Q |
| BLIHV_PG | 400 | LIBHWHV2 | P |
| BLIHV_PG | 400 | LIBHWHV2 | Q |
| SRING_PG | 220 | 08MBC | P |
| SRING_PG | 220 | 03TBC | Q |
| SRING_PG | 220 | 03TBC | P |
| SRING_PG | 400 | BR3 | Q |
| SRING_PG | 400 | BR2 | Q |
| SRING_PG | 400 | 10BR23 | Q |
| GRKPR_PG | 400 | FE_T2 | TapPosMv |

| | | | |
|---|---|---|---|
| GRKPR_PG | 400 | FE_T1 | TapPosMv |
| SOHWL_PG | 400 | LIT2 | Q |
| SOHWL_PG | 400 | LIT2 | P |
| SOHWL_PG | 400 | LIT1 | Q |
| SOHWL_PG | 400 | LIT1 | P |
| SOHWL_PG | 400 | BB1 | V |
| SOHWL_PG | 400 | FE_T2 | TapPosMv |
| SOHWL_PG | 400 | FE_T1 | TapPosMv |
| FATPR_PG | 400 | LIT2 | Q |
| FATPR_PG | 400 | LIT2 | P |
| FATPR_PG | 400 | LIT1 | Q |
| FATPR_PG | 400 | LIT1 | P |
| FATPR_PG | 765 | LIT4 | Q |
| FATPR_PG | 765 | LIT4 | P |
| FATPR_PG | 765 | LIT3 | Q |
| FATPR_PG | 765 | LIT3 | P |
| SIKAR_PG | 400 | LIT2 | Q |
| SIKAR_PG | 400 | LIT2 | P |
| SIKAR_PG | 400 | LIT1 | Q |
| SIKAR_PG | 400 | LIT1 | P |
| DADHV_PG | 400 | D_THM2 | Q |
| DADHV_PG | 400 | D_THM2 | P |
| DADHV_PG | 400 | D_THM1 | Q |
| DADHV_PG | 400 | D_THM1 | P |
| DADHV_PG | 400 | BB2B | Frequ |
| DADHV_PG | 400 | BB2B | V |
| DADHV_PG | 400 | BB1B | Frequ |
| DADHV_PG | 400 | BB1B | V |
| CHMBA_PG | 400 | 07T1 | Q |
| CHMBA_PG | 400 | 07T1 | P |
| CHMBA_PG | 400 | 05T2 | Q |
| CHMBA_PG | 400 | 05T2 | P |
| BHWHV_PG | 400 | LIHISAR2 | Q |
| BHWHV_PG | 400 | LIHISAR2 | P |
| BHWHV_PG | 400 | LIHISAR1 | Q |
| BHWHV_PG | 400 | LIHISAR1 | P |
| BHWHV_PG | 400 | W4MBC | Q |
| BHWHV_PG | 400 | W4MBC | P |
| BHWHV_PG | 400 | W3MBC | Q |
| BHWHV_PG | 400 | W3MBC | P |
| BHWHV_PG | 400 | W2MBC | Q |
| BHWHV_PG | 400 | W2MBC | P |
| BHWHV_PG | 400 | W1MBC | Q |
| BHWHV_PG | 400 | W1MBC | P |
| BHWHV_PG | 400 | CPBK_C6 | Q |

| | | | |
|---|---|---|---|
| BHWHV_PG | 400 | CPBK_C5 | Q |
| BHWHV_PG | 400 | CPBK_C3 | Q |
| BHWHV_PG | 400 | CPBK_C2 | Q |
| BHNML_PG | 400 | LIT2 | Q |
| BHNML_PG | 400 | LIT2 | P |
| BHNML_PG | 400 | LIT1 | Q |
| BHNML_PG | 400 | LIT1 | P |
| PNCHK_PG | 220 | 8TBC | Q |
| PNCHK_PG | 220 | 8TBC | P |
| PNCHK_PG | 220 | 10MBC | Q |
| PNCHK_PG | 220 | 10MBC | P |
| PNCHK_PG | 220 | BB3 | Frequ |
| BHIWN_PG | 220 | 1T3 | Q |
| BHIWN_PG | 220 | 1T3 | P |
| BHIWN_PG | 400 | LIFET2 | Q |
| BHIWN_PG | 400 | LIFET2 | P |
| BHIWN_PG | 400 | LIFET1 | Q |
| BHIWN_PG | 400 | LIFET1 | P |
| BHIWN_PG | 765 | LIT2 | Q |
| BHIWN_PG | 765 | LIT2 | P |
| BHIWN_PG | 765 | LIT1 | Q |
| BHIWN_PG | 765 | LIT1 | P |
| BHIWA_PG | 400 | LIT3 | Q |
| BHIWA_PG | 400 | LIT3 | P |
| BHIWA_PG | 400 | LIT2 | Q |
| BHIWA_PG | 400 | LIT2 | P |
| NMRNA_PG | 400 | FE_T1 | TapPosMv |
| BALIA_PG | 765 | LIT2 | Q |
| BALIA_PG | 765 | LIT2 | P |
| BALIA_PG | 765 | LIT1 | Q |
| BALIA_PG | 765 | LIT1 | P |
| MOGA__PG | 220 | FEB_T2_S | TapPosMv |
| MOGA__PG | 220 | FEB_T1_S | TapPosMv |
| ADHYD_PG | 220 | 03MBC | Q |
| ADHYD_PG | 220 | 03MBC | P |
| LKNW1_PG | 765 | LIT2 | Q |
| LKNW1_PG | 765 | LIT2 | P |
| LKNW1_PG | 765 | LIT1 | Q |
| LKNW1_PG | 765 | LIT1 | P |
| LKNOW_PG | 400 | LIT2 | Q |
| LKNOW_PG | 400 | LIT2 | P |
| LKNOW_PG | 400 | LIT1 | Q |
| LKNOW_PG | 400 | LIT1 | P |
| LDINA_PG | 400 | LIT4 | Q |
| LDINA_PG | 400 | LIT4 | P |

| | | | |
|---|---|---|---|
| LDINA_PG | 400 | LIT3 | Q |
| LDINA_PG | 400 | LIT3 | P |
| LDINA_PG | 400 | LIT2 | Q |
| LDINA_PG | 400 | LIT2 | P |
| LDINA_PG | 400 | LIT1 | Q |
| LDINA_PG | 400 | LIT1 | P |
| LDINA_PG | 220 | FEB_T4_S | TapPosMv |
| KRCHM_PG | 400 | L6NPTHA2 | Q |
| KRCHM_PG | 400 | L5NPTHA1 | Q |
| KRCHM_PG | 400 | L4BASPA2 | Q |
| KRCHM_PG | 400 | L3BASPA1 | Q |
| KNKRL_PG | 400 | LIT3 | Q |
| KNKRL_PG | 400 | LIT2 | Q |
| KNKRL_PG | 400 | LIT1 | Q |
| JALAN_PG | 400 | LIT2 | Q |
| JALAN_PG | 400 | LIT2 | P |
| JALAN_PG | 400 | LIT1 | Q |
| JALAN_PG | 400 | LIT1 | P |
| JIND__PG | 220 | 12PG_PG6 | Q |
| JIND__PG | 220 | 12PG_PG6 | P |
| JIND__PG | 220 | 11PG_PG5 | Q |
| JIND__PG | 220 | 11PG_PG5 | P |
| JIND__PG | 220 | 06TBC | Q |
| JIND__PG | 220 | 06TBC | P |
| JIND__PG | 220 | 05MBC | Q |
| JIND__PG | 220 | 05MBC | P |
| JIND__PG | 400 | LIT2 | Q |
| JIND__PG | 400 | LIT2 | P |
| SMBHA_PG | 220 | FEB_T2_S | TapPosMv |
| WANPO_PG | 220 | 12TBC | Q |
| WANPO_PG | 220 | 12TBC | P |
| WANPO_PG | 220 | 11MBC | Q |
| WANPO_PG | 220 | 11MBC | P |
| SIKAR_PG | 400 | FE_T2 | TapPosMv |
| SIKAR_PG | 400 | FE_T1 | TapPosMv |
| KTPTL_PG | 220 | FEB_T1_S | TapPosMv |
| KTPTL_PG | 220 | FEB_T2_S | TapPosMv |
| KTPTL_PG | 400 | LIT1 | P |
| KTPTL_PG | 400 | LIT1 | Q |
| KTPTL_PG | 400 | LIT2 | P |
| KTPTL_PG | 400 | LIT2 | Q |
| BHNML_PG | 33 | FEB_T2_T | TapPosMv |
| BHNML_PG | 33 | FEB_T1_T | TapPosMv |
| BHNML_PG | 220 | FEB_T2_S | TapPosMv |
| BHNML_PG | 220 | FEB_T1_S | TapPosMv |

| | | | |
|---|---|---|---|
| MLERK_PG | 400 | FE_T3 | TapPosMv |
| MLERK_PG | 400 | FE_T2 | TapPosMv |
| MLERK_PG | 400 | FE_T1 | TapPosMv |
| ADHYD_PG | 220 | EA_H02 | TapPosMv |
| KNKRL_PG | 33 | FEB_T3_T | TapPosMv |
| KNKRL_PG | 33 | FEB_T2_T | TapPosMv |
| KNKRL_PG | 33 | FEB_T1_T | TapPosMv |
| KNPR1_PG | 765 | GF_T2 | TapPosMv |
| KNPR1_PG | 765 | GF_T1 | TapPosMv |
| AGRHV_PG | 220 | BB3 | V |
| AGRHV_PG | 220 | BB3 | Frequ |
| AGRHV_PG | 400 | LIAGR1B | P |
| AGRHV_PG | 400 | LIAGR1B | Q |
| PALRS_PG | XFMR | ANTA_GF | P |
| BUDHL_PG | 11 | DUM | P |
| BUDHL_PG | 11 | DUM | Q |
| SRING_PG | 400 | SE_WNPO1 | Q |
| SRING_PG | 400 | SE_WNPO2 | Q |
| CHIT7_PG | 765 | GF_T2 | TapPosMv |
| JIND__PG | 400 | LIKURHV2 | P |
| JIND__PG | 400 | LIKURHV2 | Q |
| JIND__PG | 400 | LIKURHV1 | P |
| JIND__PG | 400 | LIKURHV1 | Q |
| AJMER_PG | 765 | GF_T2 | TapPosMv |
| AJMER_PG | 765 | GF_T1 | TapPosMv |
| SIKAR_PG | 400 | FE_T3 | TapPosMv |
| WANPO_PG | 400 | DTF_1 | I |
| WANPO_PG | 400 | DTF_1 | Q |
| WANPO_PG | 400 | DTF_2 | I |
| WANPO_PG | 400 | DTF_2 | Q |
| WANPO_PG | 400 | TCR_1 | I |
| WANPO_PG | 400 | TCR_1 | Q |
| WANPO_PG | 400 | TCR_2 | I |
| WANPO_PG | 400 | TCR_2 | Q |
| WANPO_PG | 400 | TSC_1 | I |
| WANPO_PG | 400 | TSC_1 | Q |
| WANPO_PG | 400 | AUX_T1 | Q |
| WANPO_PG | 400 | AUX_T1 | I |
| ORAI_PG | 765 | GF_T2 | TapPosMv |
| ORAI_PG | 765 | GF_T1 | TapPosMv |
| HMRPR_PG | 400 | FE_T3 | TapPosMv |
| BHDLA_PG | 220 | 37AZURE | P |
| BHDLA_PG | 220 | 37AZURE | Q |
| BALIA_PG | 765 | FD_AUTO | TapPosMv |
| FATPR_PG | 400 | FE_T3 | TapPosMv |

| | | | |
|---|---|---|---|
| BHDLA_PG | 220 | 13T4 | Q |
| BHDLA_PG | 220 | 13T4 | P |

# Minutes of meeting on microwave tower at Bawana held in the office of DGM (SLDC) / DTL, Minto Road, New Delhi on 01/10/2021

**Following executives attended the meeting:**

**Delhi Transco Limited:**

1. Shri Sarada Prasanna Routray – Manager (Communication)
2. Shri S. K. Tyagi – Assistant Manager (Communication)

**HVPNL:**

1. Shri Rajesh Sharma – Asst. Executive Engg.

**M/s Maa Chintpurni Patiala**

1. Sh. Yogesh Goel (Authorized representative)

**Following points were deliberated in the meeting:**

1. The Microwave tower standing tall at Bawana belongs to HVPNL. HVPNL has sold the above said tower to M/s Maa Chintpurni, Patiala at scrap value of Rs. 11,88,859/- (including taxes) in e-auction dated 24.07.2020 for tower weight of 66.8MT.
2. DTL requested HVPNL to spare the microwave tower in the present condition (no dismantling) as it is being used by DTL.
3. An arrangement has been drawn out to settle the matter mutually as per deliberation in the 18th meeting of TeSt Sub-Committee (copy enclosed at cp side), where upon NRPC directed both the utilities to resolve the matter bilaterally as per point 3.2.6. The proposed arrangement is to swap DTL's similar quantity scrap as per lifting order.
4. DTL will arrange similar qty of scrap as per lifting order for said purpose from its sites.
5. MW antennas, RF Cables etc on Tower belongs to HVPNL will be dismantled and handed over to SLDC Panipat office of HVPNL by M/s Maa Chintpurni, Patiala.
6. M/s Maa Chintpurni Patiala is in agreement to the above discussed solution/arrangement to settle the matter.
7. HVPNL will put the case to its management for final decision with respect to this arrangement, as proposed by DTL & agreed by auctioner i.e., Maa Chintpurni Patiala.
8. If HVPNL Management agrees to this arrangement, then the said asset of MW Tower (Bawana) will transferred to DTL for all the intents & purposes.

01/10/2021

Yogesh Goyal
1-10-2021
M/s Maa Chintpurni Patiala

01/10/2021
DTL

01/10/2021
HVPNL

HVPN

**HARYANA VIDYUT PRASARAN NIGAM LIMITED**
Regd. Office, Shakti Bhawan, Plot No. C-4, Sector-6, Panchkula, 134109
Corporate Identity Number U40101HR1997SGC033683
Website: www.hvpn.org.in Email ID: scnsldcrtumtc@hvpn.org.in,
Phone No. 0180-2664852

To

The Manager (Technical) Communication,
SLDC, Minto Road, New Delhi
Email: connectdtl@gmail.com

Kind Attention
Sh. S.P.Rautaray

Memo No. - Ch- 3 /Cpc 30/Vol II Dated: - 10.12.2021

Subject: **Dismantlement of Microwave Radio Tower asset of HVPNL from 400KV DTL, Bawana.**

It is to inform that the request of DTL regarding utilization of asset of HVPNL of MW Tower installed at 400KV DTL, Bawana has been considered by HVPNL management on following terms & conditions as under.

1. *In principal approval for providing equal iron scrap of weight 66.8 MT (MW tower weight of Bawana site) by DTL to M/s Maa Chintapurni Traders Patiala from DTL site / stores.*
2. *Transferring of assets of MW Tower installed at 400KV S/Stn, Bawana to DTL for all intents & purposes.*

Therefore it is requested to take up the matter accordingly to provide the scrap equal to weight of MW Tower (66.8 MT) to M/s Maa Chintapurni Traders Patiala in presence of HVPNL representative & take over the asset of MW Tower of 400KV S/Stn Bawana.

**Executive Engineer,**
**SLDC Const. -cum- Mtc. Division,**
**HVPNL, Sewah (Panipat)**

CC to -

1. The CE/SO & Comml, HVPNL, Panchkula.
2. The SE / SLDC D&C Circle, HVPNL, Sewah (Panipat).
3. Chief Manager / PGCIL, Katwaria Sarai, New Delhi for information & necessary action.

D:\SEN SLDC Sewah\[illegible] Letter Depot\[illegible]