



AGENDA
FOR
14th TeST MEETING

Date: 24.04.2024

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700033

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EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 14th TeST MEETING TO BE HELD ON 24.04.2024(WEDNESDAY) AT 10:30 HRS

1. PART-A: CONFIRMATION OF MINUTES

1.1. Confirmation of Minutes of 13th TeST Meeting held on 13th March 2023 physically at ERPC Conference Hall, Kolkata

The minutes of 13th TeST Sub-Committee meeting held on 13.03.2023 was circulated vide letter dated 10.04.2023.

Members may confirm the minutes of 13th TeST meeting.

2. PART-B: ITEMS FOR DISCUSSION/UPDATE

2.1 Availability of Communication System: ERPC

CERC vide order dated 19.01.2024 had approved the “Guidelines on Availability of Communication System” (**Annexure-B.2.1**) under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017

Members may discuss.

2.2 Communication Audit of Substations: ERPC

Final Standard Operating procedure (SOP) for Communication audit of Substations has been prepared in compliance to Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.

This SOP for communication audit of substations is finalized to maintain uniformity at the national level.

The Audit shall be conducted in two phases:

1. **Scrutiny of information:** In first phase scrutiny of the reports, documents etc. shall be done.
2. **Physical verification:** In the second phase physical verification shall be carried out.

The Audit would include but not limited to the following aspects:

- a. Availability of communication channels. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of communication channels would be finalized by Communication System Sub Group in consultation with other stakeholders.
- b. Availability of terminal equipment. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure

etc. The list of terminal equipment would be finalized by Communication System Sub Group. Part outage like failure of specific cards etc. would also be furnished along-with reasons.

- c. Availability of Auxiliary System e.g. Battery Charger, Battery bank, sufficient cooling equipment etc.
- d. Compliance of CERC and CEA Regulations and the procedures under these Regulations.
- e. Completion of periodic testing of the communication system in accordance with procedure for maintenance and testing prepared by CTU.
- f. Audit of all newly commissioned communication equipment within six months of its commissioning.
- g. Completion of 3rd party Cyber Security Audits.
- h. Network traffic w.r.t capacity.
- i. Spare availability, replenishment etc.
- j. Any other parameters as agreed by the Communication Sub Group.

Detailed SOP of Communication Audit along with format for collecting the details of Communication channels/links and Equipment and Audit Checklist attached at **Annexure-B.2.2**

Members may discuss.

2.3 Communication System Outage Planning: ERPC

As per Regulation 7.3 of Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017:

Quote:

The RPC Secretariat shall be responsible for outage planning for communication system in its region. RPC Secretariat shall process outage planning such that uninterrupted communication system is ensured.

Unquote

A Communication System Outage Planning Sub-Group/ TeST Sub Committee shall be formed in each region constituting the members from all the entities connected to ISTS including all CGS, ISGS, REGs/SPPDs/SPDs, STUs, SLDCs etc., of the respective Region, RLDC/Grid-India, PGCIL, CTUIL, Private Transmission licensees in respective region & RPC secretariat. The sub-group/ Sub Committee may co-opt any other member from any organization for facilitating the activities of the sub-group/ Sub Committee.

Communication System Outage Planning will be limited to the following systems:

- (i) ISTS Communication System including ISGS
- (ii) Intra-state Communication System being utilized for ISTS Communication
- (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDCs.
- (iv) Inter-regional AGC links.

- (v) Any other system agreed by the sub-group.
- A Web Portal named as “Communication System Outage Planning Portal” shall be developed by respective RLDCs. Log-in credentials shall be provided to all the ISTS connected entities/concerned entities.
 - Communication System Outage Planning (CSOP) meeting shall be conducted during the third week of every month normally (preferably through VC) to discuss and approve the proposed outages of communication links and equipment.
 - In case of any emergency outage requirement of communication links and equipment, Entities/Users/Owners may directly apply to respective RLDC with intimation to respective RPCs on D-2 basis. Confirmation of approval/rejection will be provided on D-1 basis by RLDCs in consultation with respective RPCs considering 24hrs processing window.

Detailed SOP of Communication System Outage Planning attached at **Annexure-B.2.3**

Members may discuss.

2.4 Committee to formulate comprehensive guidelines for the usage and sharing of optical fibres(OPGW) for power system applications: CEA

It has been observed that the following conflicts in respect of OPGW fiber infrastructure have started cropping up with expansion of transmission & associated OPGW infrastructure along with the multiple entities owning and operating such assets; and also own the flexibility to undertake other business for optimum utilization of its transmission assets:

- (i) Conflict in respect of sharing of fibers between multiple entities.
- (ii) (ii) Conflict in respect of fiber counts that can be used on commercial basis.
- (iii) (iii) Conflict in respect of fiber counts to be allocated for different power system applications/services.

Accordingly, a Committee has been constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of optical fibers (OPGW) for power system applications.

The Composition of the Committee is as follows:

1. Member (Power System) (Chair) ,CEA
2. Chief Engineer(PCD), CEA
3. Chief Engineer, NPC
4. Chief EngineerET & I,CEA
5. Member Secretary, RPCs
6. Executive Director, CTU
7. Executive Director, Grid India
8. Executive Director, Powergrid

9. Representative of Electric Transmission Association - 2 TSPs ETA
10. Representative (at the level of Chief Engineer or equivalent)
 - Northern Region: UPPTCL, RVPNL
 - Western Region: GETCO, MPPTCL
 - Southern Region: KSEBL, TANTRANSCO
 - Eastern Region: WBSETCL, OPTCL
 - North Eastern Region: AEGC

The Chair may co-opt more members if deemed necessary.

The Terms of Reference (ToR) of the Committee shall be as follows:

1. **Scope and Purpose:** Define the need to develop guidelines that address the unique requirements and challenges associated with the sharing of OPGW fibers among CTU, STUs, and Private Transmission Licensees.
2. **Allocation Requirements:** Define/determine the number of fibers required for catering to varied applications/services for grid management such as data, speech, protection etc., including minimum spare fibers to be earmarked for grid applications/requirements.
3. **Sharing Scenarios:** Analyse the scenarios wherein the spare fibers in the OPGW laid by an entity is to be shared amongst several entities (CTU, STU, TSPs) to facilitate real time grid monitoring. Formulating the uniform mechanism governing the access, usage, or other aspects of the shared fibers in following scenarios:

(i) Sharing of OPGW laid under ULDC scheme on the ISTS lines. (ii) Sharing of OPGW laid under ULDC scheme on the Intra-State lines. (iii) Sharing of OPGW laid by STUs on the intra State lines. (iv) Sharing of OPGW laid by CTU/Powergrid on the Intra State lines. (v) Sharing of OPGW on the ISTS lines laid by TSPs under TBCB and RTM projects.

Identify and define the role and responsibilities of Centre, State, and Private Transmission Licensees in the sharing of OPGW fibers.

4. Investigate the integration of Fiber Optic Terminal Equipment (FOTE) for differential protection in accordance with the C37.94 protocol and bring out recommendations.
5. Define the uniform mechanism of routing of OPGW fibers in case of LILO taken up on any transmission line.
6. Recommend the scenarios/limit of OPGW fibers beyond which it can be utilized for other commercial purposes.
7. Formulate recommendations for seamless adoption of these guidelines.

Communication from CEA in this regard attached at **Annexure B.2.4**

Members may discuss.

2.5 Revised Scheme on requirement of Additional FOTE at various ISTS nodes in ER due to exhaustion of existing capacity: CTU

S. No.	Items	Details
1.	Scope of the scheme	<p>Requirement of additional FOTE for upgradation of capacity(bandwidth) at various Eastern region stations due to exhaustion of existing capacity at these stations is as follows:</p> <p>a)Thirteen(13) numbers of FOTE STM-64 along with amplifiers as required as per Appendix I.</p> <p>b) Dismantling of 4 nos. of STM-16 equipment freed after conversion of STM-16 equipment to STM-64 equipment and their transportation, installation, configuration, commissioning, and integration of the same equipment at STM-4 location for the upgradation of capacity of these stations as per Appendix I.</p>
2.	Depiction of the scheme on FO Map	NA
3.	Objective / Justification	<p>In Eastern region, the communication network has STM-16 link capacity at most of the places, however at few links/nodes have STM-4 or lesser capacity. It has been observed that for the few links /nodes, the capacity has been utilised for more than 75 percent. The detail of such nodes/links was intimated by POWERGRID (enclosed as Annexure-B.2.5.1) which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.</p> <p>4th Communication Planning meeting (CPM) deliberation: CEA suggested that the upgradation of capacity may be taken up considering change of technology to MPLS. CTUIL welcomed the suggestion and stated that the MPLS implementation shall take longer time in view of committee report and subsequent approvals. In view of this, out of the above links provided by POWERGRID only links with congestion of approximately 90% and above & few other important stations shall be taken up on priority for upgradation.</p> <p>Accordingly, the list of nodes in ER with capacity utilisation of approximately 90% and above & few other important stations is enclosed as Appendix-I.</p>

		As per list, capacity upgradation of four numbers of STM-4 FOTE(Fiber Optic Terminal Equipment) to STM-16 FOTE and thirteen nos. of STM-16 FOTE to STM-64 FOTE is required.
4	Estimated Cost	Rs. 9.78 crores (approx.) (Nine crores & Seventy Eight lakhs only)
5.	Implementation time frame	12 months from date of allocation.
6.	Implementation mode	To be implemented by POWERGRID in RTM mode.
7.	Deliberations	<p>The proposed scheme was deliberated in the 3rd and 4th Communication Planning meeting (CPM) (Annexure B.2.5.2 attached for the MoM of 4th CPM) of CTUIL held on 26.12.2022 & 27.07.2023 respectively.</p> <p>POWEERGRID informed that for existing FOTE capacity cannot be upgraded by upgradation of cards and new FOTE are required at all these locations.</p> <p>ERPC reviewed the scheme in 51st ERPC meeting held on 12.01.2024(MoM attached as Annexure B.2.5.3) as follows:</p> <p>i) ERPC approved the conversion of 13 nos. STM 16 FOTE to STM 64 FOTE.</p> <p>ii) Advised POWERGRID to explore the feasibility of reusing the surplus STM16 equipment (13 units post STM16 to STM64 conversion) for the conversion of STM4 to STM16 and update the same in the next TeST Meeting of ERPC.</p> <p>POWERGRID informed vide email dtd. 21.02.2024 that they will utilize four no. of STM16 equipment freed from STM16 to STM64 upgradation as mentioned above for capacity upgradation of four no of STM-4. Also, estimated cost for dismantling of STM-16 equipment from existing location and transportation, installation, configuration, integration & commissioning of the same equipment to STM-4 location is Rs 4 lakhs per site.</p> <p>Further, POWERGRID requested in 5th CPM of ER that the time frame for implementation which has been taken as six months in the scheme may be changed to twelve months as the scheme implementation is not feasible in six months considering that STM-64 equipment are being deployed first</p>

		<p>time in Eastern region and tendering, testing, Installation, commissioning shall take time. Further, scheme involve dismantling of existing equipment and transportation to new location which shall also take considerable time in implementation. POWERGRID also suggested that nine(9) no. STM-16 FOTE left spare after conversion/upgradation of STM-4 and STM-16 FOTES may be used for O&M purpose and meeting directions for any new upcoming stations.</p> <p>Accordingly, scope of the scheme is modified as follows:</p> <p>i) Conversion of 13 nos. STM-16 FOTE to STM-64 FOTE as per enclosed Appendix I.</p> <p>ii) The conversion of STM-4 FOTE to STM-16 FOTE by utilizing four nos. FOTES freed from upgradation of STM-16 FOTE to STM-64 FOTE.</p> <p>iii) Cost Estimate: Rs. 9.78 crores (approx.) (Nine crores & Seventy Eight lakhs only);</p> <p>Implementation time frame: 12 months from date of allocation This revised scheme post ERPC review shall be put up to NCT for approval.</p>
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This scheme has been sent to ERPC for review vide email dated 01.04.2024.

Appendix-I

Sr No.	Node Name(with approx 90% capacity exhausted)	Upgradation/replacement required	Detail of Card/Equipment required for upgradation	Estimated Cost
1	Kasba	STM 16 to STM 64	Existing Equipment Cannot be upgraded. New STM 64 SDH Equipment Required	74 Lakhs
2	ERLDC	STM 16 to STM 64		74 Lakhs
3	Jeerat	STM 16 to STM 64		74 Lakhs
4	Subhashgram	STM 16 to STM 64		74 Lakhs
5	Farakka	STM 16 to STM 64		74 Lakhs
6	Kahalgaon	STM 16 to STM 64		74 Lakhs
7	Saharsa	STM 16 to STM 64		74 Lakhs
8	Binaguri	STM 16 to STM 64		74 Lakhs

9	Purnea	STM 16 to STM 64		74 Lakhs
10	Kishenganj	STM 16 to STM 64		74 Lakhs
11	Sasaram	STM 16 to STM 64		74 Lakhs
12	AB380 Repeater	STM 16 to STM 64		74 Lakhs
13	Allahabad	STM 16 to STM 64		74 Lakhs
Total Cost for conversion of 13 nos. of STM16 equipment to STM64:A				9.62 Cr
14	Gaya	STM 4 to STM 16	Upgradation to be done by utilizing four no of STM16 equipment freed in above list after upgradation to STM64.	4 Lakhs
15	Essar Chandwa	STM 4 to STM 16		4 Lakhs
16	Darbhanga(KPTL)	STM 4 to STM 16		4 Lakhs
17	Arrah	STM 4 to STM 16		4 Lakhs
Total Cost for conversion of 04 nos. of STM4 equipment to STM 16: B				16 Lakhs
Total Cost for conversion of 13 nos. of STM16 to STM 64 and 04 nos. of STM4 equipment to STM 16: A+B				9.78 Cr

CTU may update. Members may discuss.

2.6 Dual reporting of RTU, PMU, VOIP, AGC etc applications on dual channel to RLDC and Back up RLDC: CTU

Presently, all the data channels and voice channels are reporting in main and backup mode with a main channel to RLDC and protection channel to Backup RLDC. It is suggested by ERLDC & WRLDC that for increase of redundancy in the system both main and protection channels should report to RLDCs as well as back up to RLDCs in dual mode considering the criticality of real grid operations by the ERLDC.

For discussing the same meetings were held among POWERGRID, Grid-India, CTU and CEA on dated 09/05/23 and 27/06/23. Now as per discussion in meeting, POWERGRID had to provide the region wise data of additional requirement for equipment/card/port etc in respective FOTE/Gateway/RTU for the implementation of dual redundancy within 21 days.

Deliberations in 4th CPM:

POWERGRID has to provide the required data for Eastern Region to CTU. POWERGRID stated that they are compiling this data as SAS gateways upgradation which are upgradable and SAS gateway for replacement which are not upgradable. Similarly, new procurement of RTUs shall be done where the RTU have lived their life and addition procurement of RTUs where the RTU ports are insufficient. ERLDC stated that where SAS gateways are malfunctioning with expansion of ports, POWERGRID shall discuss with OEM to resolve the same. POWERGRID to submit the requisite data within a week.

POWERGRID CC AM dept. and POWERGRID GA & C dept. have provided the required data pertaining to SAS/RTU and FOTE respectively as per attached **Annexure B.2.6.1 and B.2.6.2**

Deliberation in 5th CPM:

CTU asked if there is any requirement pertaining to new FOTE and FOTE ethernet card at New Jeerat and Mednipur S/s.

POWERGRID informed that at New Jeerat and Mednipur S/s there is no requirement pertaining to new FOTE and FOTE ethernet card.

CTU asked POWERGRID to provide the existing SAS architecture for finalisation of the scheme. POWERGRID agreed to provide the same.

ERLDC stated that it is understood that the requirement of the dual channel was put up for only upcoming S/s and for the existing S/s the life of existing RTU/SAS may be evaluated and then further deliberation may be done for provisioning of dual channel for existing S/s. ERLDC further suggested that dual redundancy for existing system may be implemented by utilizing existing resources and in case any upgradation is required that can be done only after completion of useful life of existing SAS, RTU,FOTE etc.

CTU clarified that scheme was prepared as per requirement of NLDC and all RLDCs. For new ISTS schemes, CTU is already proposing for the provision for dual channel reporting of various communication applications in the RfPs. CTU further stated that the said scheme is put up for dual redundancy of the existing system which was also agreed by RLDCs and NLDC. For the requirement of existing system, POWERGRID has reviewed and provided the BoQ with tentative cost details.

CTU also mentioned that similar schemes for other regions are also being taken up for RPC review. CTU suggested the forum that the requirements provided for the scheme shall also be discussed with NLDC and RLDCs and may be reviewed in the next meeting.

ERPC stated that for the existing S/s the life of existing RTU/SAS may be evaluated for provisioning of dual channel for existing S/s.

In the meeting held on 16.04.2024 among CTU, CEA and all RLDCs, it was agreed that for existing S/s also the requirement of dual channel for various communication channels may be planned

Based on the data provided by POWERGRID AM and GA & C, requirement in ER is as follows:

Sr. No.	Region	RTU reqd. (in no.)	SAS reqd. (in no.)	FOTE reqd. (in no.)	Ethernet card reqd. (in no.)
1	ER-1	0	01	Nil	20 Nos. including main and
2	ER-2	0	03		

3	Odisha	0	00		back up
Total qty reqd.		0	04		RLDC

Cost estimate for the scheme as provided by POWERGRID is as follows:

- a) Cost of one new SAS: 1.5 cr
- b) Cost of total four new SAS required: $4 \times 1.5 \text{ cr} = 6 \text{ cr}$
- c) Cost of one ethernet card: 1.25 lacs
- d) Cost of required 20 Nos. ethernet card: $20 \times 1.25 \text{ lacs} = 25 \text{ lacs}$

Total cost estimate for the scheme (b+d): 6.25 cr

CTU may update. Members may deliberate.

2.7 Compliance for Resource disjoint as per CEA manual of communication planning for power system operation dtd 31.03.2022: CTU

As per CEA manual of communication planning for power system operation dtd 31.03.2022, to ensure redundancy with route diversity, the working path and protection path should be resource disjoint. There may exist Single Points of Failure (SPOF) in network where multiple links are aggregating to single node and failure of such node may result in failure of multiple nodes and thus the Grid visibility. Such nodes in ISTS communication network may be identified and intimated by POWERGRID/Grid-India which are SPOF. The redundancy and resource disjoint of such links is to be further ensured considering their criticality in system.

This agenda was discussed in 3rd Communication planning meeting (CPM) of CTUIL wherein, CTUIL requested POSOCO/POWERGRID to furnish such nodes based on the records/reports where data of multiple nodes have gone offline simultaneously.

CTU has identified some of the nodes as SPOF based on study of ER map as per table mentioned below:

Sr. No.	SPOF node	Existing FOTE availability and capacity	Additional FOTE Requirement/Capacity	Remark
1	Baripada	STM 4 FOTE:1 No.	STM 16 FOTE:1 No.	
2	Angul	STM 4 FOTE:1 No.	STM 16 FOTE:1 No.	
3	New Ranchi 765kV	STM 4 FOTE:1 No.	STM 16 FOTE:1 No.	
4	Jamshedpur	STM 16 FOTE:1 No.	STM 16 FOTE:1 No.	

5	Gaya 765kV	STM 4 FOTE:1 No.	0	Additional equipment under congestion scheme is also being planned.
6	Patna	STM 16 FOTE:1 No.	STM 16 FOTE:1 No.	
7	Biharsharif	STM 16 FOTE:1 No.	STM 16 FOTE:1 No.	
8	Kahalgaon	STM 16 FOTE:1 No.	0	Additional equipment under congestion scheme is also being planned.
9	Farakka	STM 16 FOTE:2 No.	0	Additional equipment under congestion scheme is also being planned.
10	New Purnea	STM 16 FOTE:1 No.	0	Additional equipment under congestion scheme is also being planned.
11	Kishenganj	STM 16 FOTE:1 No. STM 4 FOTE:1 No.	0	Additional equipment under congestion scheme is also being planned.
12	Binaguri	STM 16 FOTE:1 No. STM 4 FOTE:2 No.	0	Additional equipment under congestion scheme is also being planned.
13	Alipurdwar	STM 4 FOTE:1 No.	STM 16 FOTE:1 No.	
14	Rangpo	STM 4 FOTE:3 No.	0	3 Nos. STM 4 FOTE is existing.
15	Sasaram	STM 16 FOTE:1 No.	0	Additional equipment under congestion scheme

				is also being planned.
16	Meramundali			OPTCL S/s. Whether any FOTE is installed by POWERGRID for ULDC.
17	Gangtok	STM 4 FOTE:2 No.	0	2 Nos. STM 4 FOTE is existing.
18	ERLDC	STM 16 FOTE:1 No.	0	Additional equipment under congestion scheme is also being planned.
19	Odisha SLDC			Data to be provided by POWERGRID/SLDC
20	Bihar SLDC			Data to be provided by POWERGRID/SLDC
21	Jharkhand SLDC			Data to be provided by POWERGRID/SLDC
22	Sikkim SLDC			Data to be provided by POWERGRID/SLDC
22	WB SLDC			Data to be provided by POWERGRID/SLDC

POWERGRID/ERLDC/STU may further suggest modification/addition of nodes as SPOF in above list. After deliberation among members additional FOTE shall be planned at SPOF locations for redundancy purpose. Repeater requirements, any other requirement for removal of SPOF may also be suggested by members.

CTU may update. Members may discuss.

2.8 Replacement of old OPGW on following 10 Communication links in Eastern Region:CTU

- i. 400kV Prayagraj(Allahabad)–Sasaram(Length: 214.42 km)

- ii. 400kV Farakka –Jeerat (Length: 236.85 km)
- iii. 400kV Jeypore-Indravati (Length: 74.99 km)
- iv. 400kV Indravati-Rengali (Length: 352.69 km)
- v. 400kV Rengali-Talcher (Length: 24.63 km)
- vi. 400kV Durgapur-Farakka (Length: 149.48 km)
- vii. 400kV Farakka-Malda (Length: 42.14 km)
- viii. 400kV Malda-Binaguri (Length: 210.94 km)
- ix. 400kV Binagauri-Bongaigaon (Length: 103.75 km OPGW +6.75 km UGFO)
- x. 400kV Farakka-Kahalgaon (Length: 94.41 km)

OPGW on above mentioned lines have been installed & commissioned by POWERGRID telecom dept (PDT). These links mentioned at (a) to (j) are also catering to ULDC operation. This agenda was put up by POWERGRID in 5th CPM wherein POWERGRID stated the following:

Useful life of these links of 15 years is completed.

The link condition is deteriorating now and condition is declining. Optical Attenuation has increased beyond the design limits. Details compiled in the table below:

S.N.	Description	Link Length (km)	Design Attenuation (dB)	Actual Attenuation (dB)	YoC	Remark
1	400kV Prayagraj – Sasaram	214.42	53.61	71.82 ↑ (+18.21)	2004	
2	400kV Farakka – Jeerat	236.85	59.21	73.43 ↑ (+14.62)	2004	
3	400kV Jeypore-Indravati	74.99	18.75	24.01 ↑ (+5.26)	2005	OPGW replacement not required as per 5 th CPM deliberation
4	400kV Indravati-Rengali-Talcher	377.31	94.33	122.22 ↑ (+27.89)	2005	
5	400kV Durgapur-Farakka	149.48	37.37	56.16 ↑ (+18.79)	2004	OPGW replacement not required as per 5 th CPM deliberation
6	400kV Farakka-Malda	42.14	10.54	20.40 ↑ (+18.79)	2004	

7	400kV Malda-Binaguri	217.69	52.73	75.10 ↑ (+22.37)	2004	
8	400kV Binagauri-Bongaigaon	103.75	25.94	78.94 ↑ (+53)	2004	
9	400kV Farakka-Kahalgaon	94.47	23.60	30.85 ↑ (+7.25)	2004	OPGW replacement not required as per 5 th CPM deliberation
	Total=	1504.29 km				

- (i) These links are being utilised for sensitive and critical grid management data to RLDC/NLDC from sub-stations and SLDCs. In view of above, there is need for replacement of the above old OPGW links with new OPGW. Link wise Loss Reports are enclosed in **Annexure-B.2.8.1**
- (ii) POWERGRID is making regular efforts to maintain availability of these links. Any outage will most likely have an immense impact on grid management capabilities as these links are very important and backbone original ULDC network established for grid operation.

However, POWERGRID suggested that for better grid operation all these fibers may be laid under ISTS. The estimated Cost of replacement of old OPGW in above links except links in table at Sr. No. 3,5,9 (including FOTE) for 1185.35 kms is approx. Rs 59.27 Crores on prorata basis. However, as per deliberation in 5th CPM, the OTDR report and UNMS incorporation for the links mentioned above is to be provided by POWERGRID. The requirement of terminal equipment for the links can be assessed based on existing FOTE useful life. Hence, the detail of FOTE (Make,model,year of incorporation, capacity etc.) may also be furnished by POWERGRID for incorporating in the scheme.

Deliberation in 5th CPM:

Following points were deliberated regarding this scheme:

a)It was suggested that all the links mentioned in above list apart from 400kV Durgapur Farakka may also be checked such that they have not been taken up for replacement in any other ongoing/upcoming projects.

POWERGRID confirmed that except 400kV Durgapur-Farakka link, other links as mentioned above are not considered in any other project and may be taken up for replacement.

b)CTU further suggested that links mentioned at Sr. No. 3 and 9 i.e. 400kV Jeypore-Indravati and 400kV Farakka-Kahalgaon in the table above may be dropped for replacement now as the increase in attenuation is not very high and limited to 5-7 dB only. All members agreed for the same.

c)CTU stated that the scheme shall be taken up as a new scheme for laying of OPGW on the above mentioned links rather than replacement of OPGW as the existing OPGW was laid under PDT project and not under the ISTS scheme. Further after implementation of the above scheme, the shared usage of the existing PowerTel links for ISTS purpose shall be discontinued and PowerTel usage for the new ISTS OPGW links, if any, shall be governed by CERC norms.

POWERGRID agreed with the same.

d)The OTDR report and UNMS incorporation for the links mentioned above may also be provided by POWERGRID. The requirement of terminal equipment for the links can be assessed based on existing FOTE useful life. Hence, the detail of FOTE (Make,model,year of incorporation, capacity etc.) may also be furnished for incorporating in the scheme. POWERGRID agreed with same.

The OTDR report for some links and details of FOTE(attached as **Annexure B.2.8.2**) for the above mentioned links have been provided by POWERGRID through email dtd. 15.04.2024 and 17.04.2024 respectively.

CTU may update.Members may deliberate.

2.9 Approval of Procedure/guidelines by CERC: CTU

The following procedures/guidelines have been approved by CERC and these may be followed by constituents members for healthy communication system.

a) Procedure on “Centralized supervision for quick fault detection and restoration” under the Central Electricity Regulatory Commission (Communication System for inter State transmission of electricity) Regulations, 2017.

b) “Procedure on Maintenance and testing of Communication System” under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.

c) Guidelines on “Availability of Communication System” under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.

Members may note.

2.10 Inputs from Grid-India/ STUs to finalize scope/BoQ for VOIP Hotline exchange: CTU

1. Hot Line Speech Communication System (VOIP based PABX system) was implemented in 2016 by POWERGRID in all five regions after grid disturbance in 2012 where grid operators faced problem of fast communication due to unavailability of dedicated speech communication PAN India between NLDC, RLDCs, SLDCs, important state and ISTS substations and generators. The said PABX was implemented by M/s Orange through Alcatel Lucent as OEM.

2. In the 67th NRPC meeting, POWERGRID representative stated that the scheme executed by M/s ORANGE was with a provision of AMC of 7 years as part of the contract and the same is expiring in July' 2023 for most of the sites.

3. AMC of the same was extended and approved in the 67th NRPC for further 2 years upto July'25 with financial implication and shall be booked in ULDC O&M charges as per the CERC norms. After July'25 there is no support shall be extended by Alcatel (OEM).

4. In 67th NRPC Meeting, MS, NRPC advised CTU to plan upgradation/ new system and implementation of existing Hot line speech communication or new EPABX system timely in view of expiration of AMC in July'25.

5. It is understood that during the execution of the said project, RPCs approval was sought in all regions and cost of the project was booked in the ongoing Communication System packages of the respective regions. So, it is understood that useful life of hotline speech communication is 15 years per CERC tariff regulation.

6. In the 23rd TeST meeting NRPC advised CTU to take up the planning and approval process parallelly as POWERGRID shall file petition to CERC in 2024 for revised depreciation. It was deliberated that as the AMC extension has been approved by POWERGRID for 2 years, meanwhile CERC order will be pursued during this time. CTU also requested that POWERGRID shall provide a copy of petition for which POWERGRID agreed.

7. In view of above CTU is planning a new EPABX system which shall replace the existing system within 2 years.

8. CTU has discussed the requirement with various VOIP Exchange suppliers and proposed VOIP System Architecture is attached at **Appendix-II**. Salient features of proposed VOIP system are given below:

(i) Server based architecture

(ii) Multiple level of redundancy in compared to present system e.g. If RLDC exchange failed complete load shall be transferred to backup RLDC. If both Main & Backup RLDC failed NLDC server can take complete load. At state level Main & Backup Server are proposed main and backup SLDC. If main SLDC server failed, backup will take entire load if both main & backup SLDC failed complete load shifted to RLDC servers.

(iii) For cost optimization main and backup servers works in dual mode as main as well as backup of backup RLDC servers vice-versa

(iv) NMS for adding/ deleting users shall be provided at RLDC/ SLDC levels

(v) Operator console shall be provided to manage calls at RLDC/SLDC

(vi) Call recording features shall be provided at RLDC & SLDC level

(vii) VOIP, Digital, Analog, Four Wire E&M (at PLCC) locations are considered

(viii) Video Phones at RLDC/ SLDC for Senior officials

(ix) Trunk lines for outside calling, recurring tariff of trunk lines to be borne by respective utilities

(x) Sufficient numbers of licenses to cater future RE/ ISTS/ ISGS/ IPP locations and STU substations locations.

9. A presentation is also arranged by prospective OEM of VOIP M/s Coral in the meeting.

10. To finalize the BoQ & Scope following inputs are required from RLDC/ Grid-India and STUs no. of subscribers/locations:format

Exchange	No of phones (VOIP)-BASIC		No of phones (VOIP) - ADVANCE VIDEO	SIP TRUNK (BSNL/JIO ETC)		PRI Line (BSNL/Airtel etc.)	CO/Trunk Line (BSNL/Airtel etc.)	Radio Interface Port	Digital phones with one touch dial	Analog Phones	Voice Recorder (for 6 months storage)	
	Local	Remote		Local	Remote						2W	4W E&M (PLCC)
NLDC												
RLDC												
SLDC												
Frequency of voice recording backup												Daily/ Weekly/Monthly

Note: For the existing VOIP exchange data is enclosed as **Annexure B.2.10**

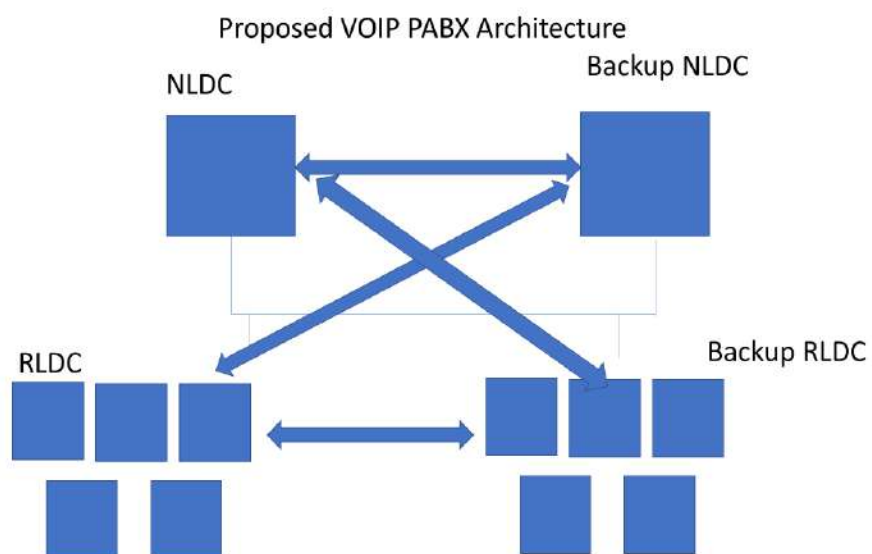
11. Location for ERLDC, Backup ERLDC, SLDC, backup SLDCs as mentioned below are to be confirmed:

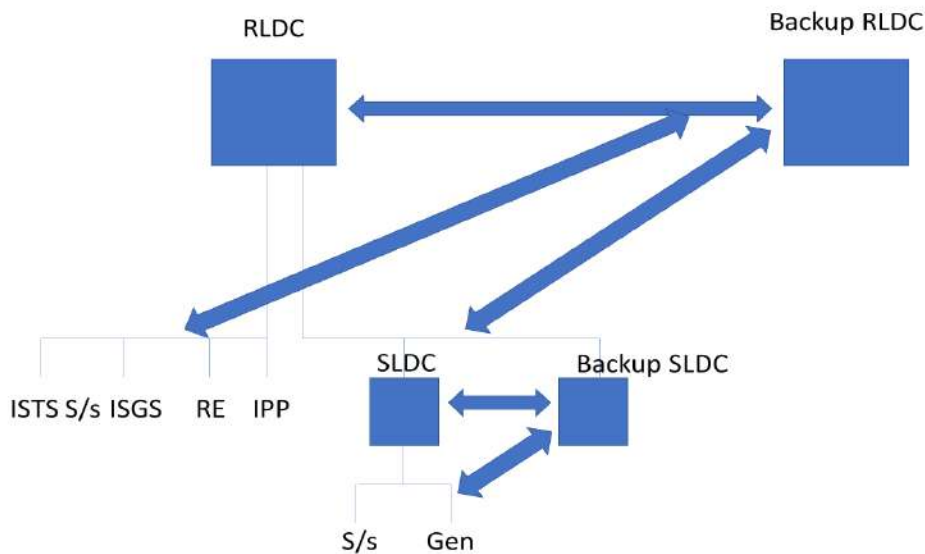
Sr No.	Main CC Location	Backup CC location
1	Backup ERLDC	
2	SLDC, Bhubaneswar(Odisha)	
3	SLDC,Ranchi(jharkhand)	
4	SLDC,Kolkata (West Bengal)	
5	SLDC,Patna(Bihar)	
6	SLDC,Gangtok(Sikkim)	

12. Location of Remote locations

13. Proposal to be discussed in the all 5 regions and combined proposals may be prepared after taking inputs from all regions and cost estimates.

Appendix-II





CTU may update. Members may deliberate.

2.11 Scheme for Connectivity for redundant path for Teesta III plant: CTU

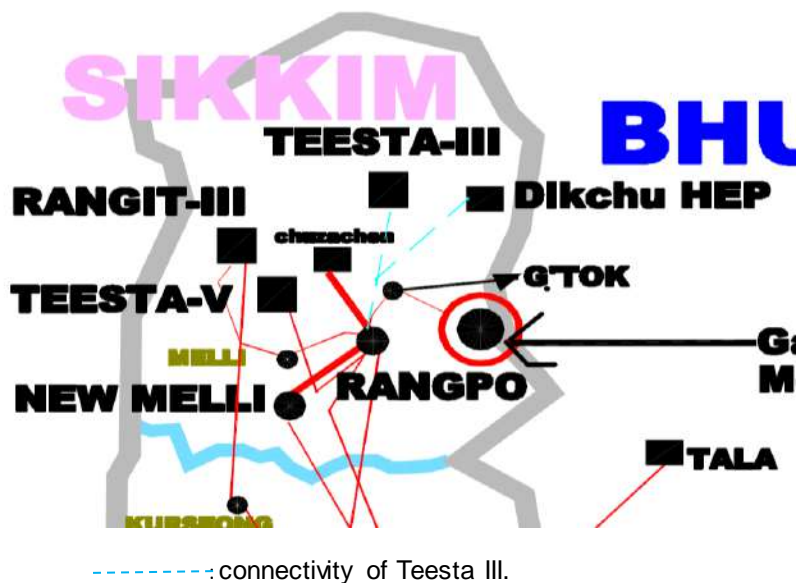
S. No.	Items	Details
1.	Scope of the scheme	Laying of OPGW with required terminal equipments from Teesta III to LILO point(15.87km) to establish 400kV Teesta III-Rangpo#1link. Presently Teesta III-Rangpo#1line is LILOed at Dikchu HEP.
2.	Depiction of the scheme on FO Map	As per diagram below in Appendix III .
3.	Objective / Justification	<p>Presently, Teesta III is connected through Teesta III - Rangpo PLCC link.</p> <p>First Fibre path for Teesta III is under implementation through Teesta III-Rangpo ckt 2 under ER-Additional Requirement Project.</p> <p>The ckt 1 of Teesta-III-Rangpo line is LILOed at Dikchu HEP. The OPGW on Dikchu HEP -Rangpo portion is already planned for Teesta III – Rangpo ckt 1.</p> <p>Thus, the Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III- Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. This agenda was discussed in 12th ERPC TeST and approved in</p>

		<p>47th ERPC dated 25/11/22 & 49th ERPC 24/03/23 with cost estimate of Rs 1.167 crores.</p> <p>However, as per MoM dtd 18.07.2023(attached as Annexure B.2.11.1) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by 29th Feb 24 as per 24th CMETS-ER MoM dated 31st Oct 23).</p> <p>Accordingly, the connectivity of OPGW for protection path of Teesta III is being revised. Now, OPGW is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt 1. The revised diagram for the scheme is enclosed in Appendix III.</p> <p>In the 4th CPM of ER dated 27/07/23, POWERGRID stated that they are already implementing the scheme for OPGW laying from Rangpo to Dikchu HEP. They further stated that suggestion of removal of Dikchu HEP to LILO point Transmission line by Dec 2023 will hamper the DOCO and recovery of the investment made for this scheme. ERLDC stated that they will also look up into the matter and revert.</p> <p>In the 51st ERPC meeting held on 12.01.2024, ERPC gave the decision as follows:</p> <ul style="list-style-type: none"> i. The scheme for the revised connectivity of the redundant path of Teesta-III is accorded for in principle approval. ii. CTU was directed to provide a cost estimate for the revised scheme in the next CCM Meeting of ERPC. <p>Accordingly, the scheme with cost estimate is proposed in ERPC CCM meeting.</p>
4.	Estimated Cost	Rs. 1,12,36,000/- (approx.) (One crore Twelve Lakhs Thirty Six Thousands only)
5.	Implementation time frame	18 months from date of allocation.
6.	Implementation mode and agency	<p>Line Ownership of the proposed section for OPGW laying in the instant scheme is with TPTL.</p> <p>To be implemented by POWERGRID in RTM mode.</p>

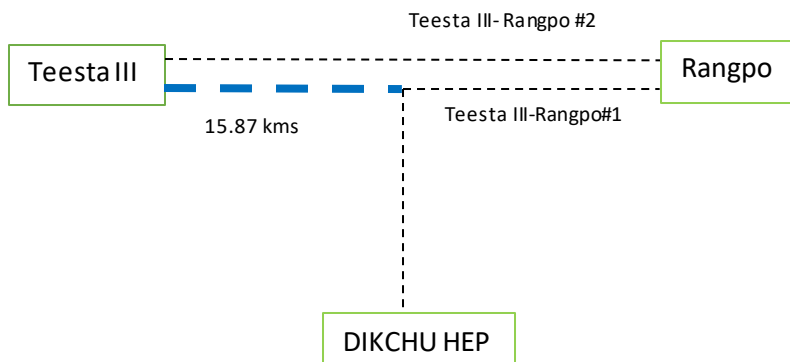
7.	Deliberations	<p>The Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III- Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. This agenda was discussed in 12th ERPC TeST and approved in 47th ERPC dated 25/11/22(MoM attached as Annexure B.2.11.2) & 49th ERPC 24/03/23 with cost estimate of Rs 1.167 crores.</p> <p>However, as per MoM dtd 18.07.2023(attached as Annexure B.2.11.3) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by 29th Feb 24 as per 24th CMETS-ER MoM dated 31st Oct 23).</p> <p>Considering the same, this scheme was then further deliberated in the 4th Communication Planning meeting (CPM) (Annexure B.2.11.4 attached for the MoM of 4th CPM) of CTUIL held on 27.07.2023.</p> <p>Accordingly, the scheme was revised and OPGW laying is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt 1. The revised scheme was deliberated in 51st ERPC meeting held on 12.01.2024.</p> <p>In the 51st ERPC meeting held on 12.01.2024, ERPC gave the decision as follows:(MoM attached as Annexure B.2.11.5)</p> <ul style="list-style-type: none"> i. The scheme for the revised connectivity of the redundant path of Teesta-III is accorded for in principle approval. ii. CTU was directed to provide a cost estimate for the revised scheme in the next CCM Meeting of ERPC. <p>As directed in 51st ERPC meeting, the revised scheme with cost estimate is being put up for CCM committee of ERPC for review.</p> <p>This scheme after CCM committee review shall be put up to NCT for approval.</p>
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Appendix III

Redundant path Connectivity of Teesta III



Schematic diagram of FO connectivity of Teesta III



Legends:

- — — — — : under this proposed scheme
- : OPGW proposed under different scheme

CTU may update. Members may deliberate.

2.12 Redundant connectivity of Nabinagar I (BRBCL): CTU

Presently, fiber optic link Nabinagar I-Sasaram is under implementation and this will form a radial link.

For second path for Nabinagar I, it is understood that, a Tx line with OPGW connecting Nabinagar I & II is to be implemented by Nabinagar II (NTPC).

Deliberation held in the 12th TeST meeting:

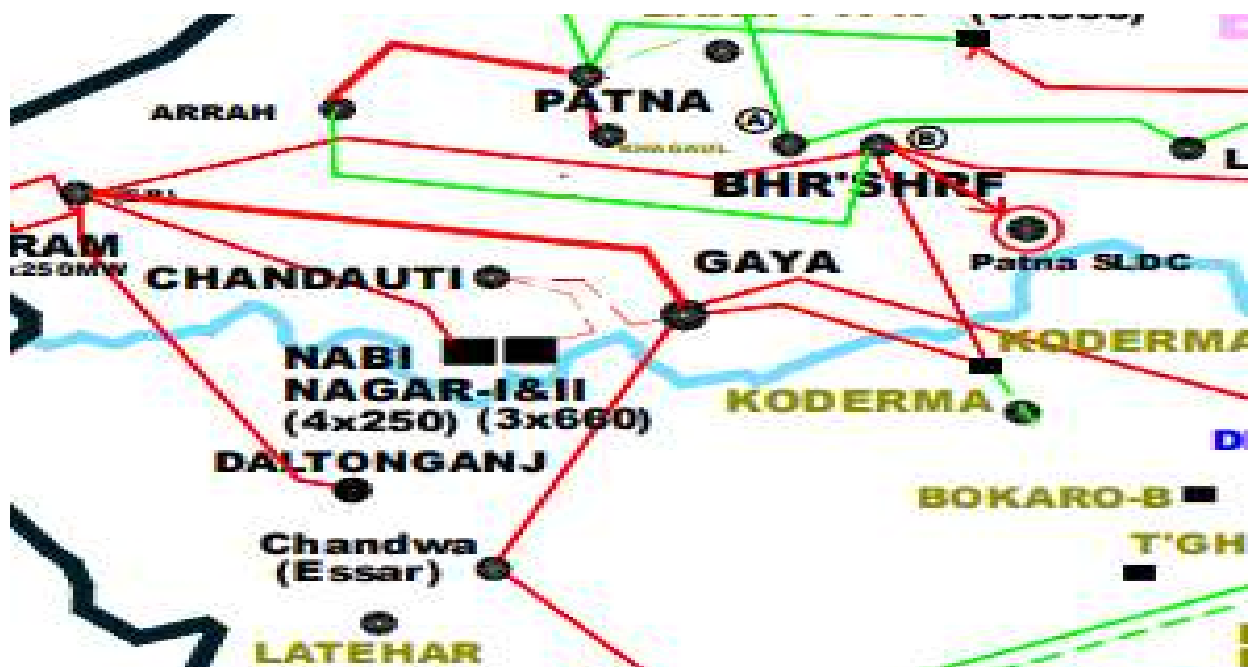
NTPC vide email dated 09/11/2022 communicated to ERPC that job is held up due to land acquisition issue for which help is being taken from local government however issue is yet to be resolved. TeST committee advised ERLDC to share status of line with CTU and ERPC after coordinating with CEA.

Nabinagar II (NTPC) may update the status of implementation. Other alternatives of the said connectivity may also be explored. The agenda was also put in 4th CPM dated 27/07/23 but could not be deliberated due to absence of NTPC.

Deliberation in 5th CPM:

The forum agreed to take up this agenda in the upcoming ERPC meeting.

FO connectivity of Nabinagar I



2.13 Updating of Link Length under Project (i). Upgradation of SCADA/RTUs/SAS in Central Sector stations and Strengthening of OPGW network in Eastern Region, (ii). Eastern Region Fibre Optic Expansion Project (Additional Requirement) & (iii). Strengthening of OPGW network in ER Grid and connectivity with other regions: Powergrid ER-II

Projects for establishment of OPGW based communication links for increasing the redundancy of ER Communication network for data reporting at ERLDC and tele protection were approved as per following details.

Name of Project	Approved in ERPC meeting
Eastern Region Fibre Optic Expansion Project (Additional Requirement)	33rd & 27th ERPC meeting
Upgradation of SCADA/RTUs/SAS in Central Sector stations and Strengthening of OPGW network in Eastern Region	39th ERPC meeting
Strengthening of OPGW network in ER Grid and connectivity with other regions	42nd ERPC meeting

Under the above projects, the following links have been completed as per below final executed link length.

Name of OPGW link	Project under which approval given	Initial approved length	Final Executed length (km)	Remark
Teesta III-Kishangunj	Eastern Region Fibre Optic Expansion Project (Additional Requirement)	212 km (Main link)	242.062	After LILO of main line of Teesta III-Kishangunj TL at Rangpo (PG), OPGW being laid on main line was also LILOed at Rangpo (PG) considering that Teesta III-Kishangunj was a very long link and Rangpo (PG) could serve as Repeater station as per technical requirement of establishing long haul links. Thus due to addition of LILO portion at Rangpo, the final executed length of mentioned link increased.
Durgapur-Jamshedpur	Upgradation of SCADA/RTUs/SAS in Central Sector stations and Strengthening of OPGW network in Eastern Region	175 km	183.635	Due to requirement of keeping loop at Joint Box locations, splicing, sagging and wastage, the final executed quantity is more than initial indicated quantity which was based on route length of transmission line.
Durgapur-Farakka		150 km	157.745	
Dikchu-Rangpo		32.67 km	32.176	
Maithan-Durgapur	Strengthening of OPGW network in	128 km	74.125	Due to typographical error the length of Maithan-Durgapur TL got interchanged with

	ER Grid and connectivity with other regions			Durgapur-Sagardighi link approved under same project Further, the final executed length of OPGW is slightly more than the route length of transmission line due to requirement of keeping loop at Joint Box locations, splicing, sagging and wastage, etc.
Durgapur–Sagardighi		72 km	133.572	Due to typographical error the length of Durgapur– Sagardighi TL got interchanged with Maithan-Durgapur link approved under same project Further, the final executed length of OPGW is slightly more than the route length of transmission line due to requirement of keeping loop at Joint Box locations, splicing, sagging and wastage, etc.
Farakka –Purnea	Strengthening of OPGW network in ER Grid and connectivity with other regions	160 km	179.643	Due to requirement of keeping loop at Joint Box locations, splicing, sagging and wastage, the final executed quantity is more than initial indicated quantity which was based on route length of transmission line.
Farakka-Sagardighi-Subhasgram		301 km	331.096	Since link length is very long, therefore there was technical requirement of establishing repeater station at Jeerat for such long-haul link. Further, there due to requirement of keeping loop at Joint Box locations, splicing, sagging and wastage, the final executed quantity is more than initial indicated quantity which was based on route length of transmission line.

Thus, link length of above tabulated links may be updated and approved as per actual executed length due to reasons mentioned above.

Powergrid ER-II may update. Members may discuss.

2.14 Issue of Trial run certificate for Teestalll -Kishanganj OPGW link: ERLDC

Request from POWERGRID has been received for issue of Trial run certificate with effect from 29.02.2024 however integration of data and voice are still pending on new commissioned link. For issuance of Trial run certificate “Date of commercial operation in relation to a communication system or an element thereof shall mean the date declared by the transmission licensee from 0000 hours of which a communication system or element thereof shall be put into service after completion of the site acceptance test including transfer of voice and data to the respective control centers as certified by the respective Regional Load Despatch Centre” - as per IEGC 2023 Clause 27 (ii - d) under Communication System.

ERLDC may update. Members may discuss.

2.15 Approval for BoQ of Equipment (FOTE, APS, FODP etc.) for new upcoming OPGW links under different approved schemes for smooth issue of Trial run certificate and utilization of redundancy of system optimally: ERLDC

ERLDC may update. Members may discuss.

2.16 Integration of tie FO links between SLDC to SLDC to improve the redundancy in the system: ERLDC

The said issue was discussed in the last few meetings, however confirmation from concerned SLDCs is awaited.

Presentation had been given in the last meeting held in May 2023 along with list of Tie line links. (List of Tie Line links has been attached in **Annexure – B.2.16**).

ERLDC may update. Members may discuss.

2.17 ROW Issues related to OPGW Installation in 132kV Rangpo - Chuzachen line: Powergrid ER-II

Power Grid had been entrusted with establishing Fiber Optic network (OPGW) over 132 kV Rangpo - Chuzachen TL of EPDS, Sikkim under Eastern Region Fibre Optic Expansion Project (Additional Requirement) for smooth communication of Chuzachen HEP power generating station to Regional Load Dispatch Centre (ERLDC) at Kolkata. The ownership of said transmission line belongs to Energy & Power Dept., Govt of Sikkim. After completing 19.327 km OPGW installation, work was again stopped in Padamchay village due to public complaint over induction problem faced between tower no. 35 and 36 of 132 kV Rangpo-Chuzachen TL due to very ground low clearance issue. Matter was taken up in 49th ERPC meeting where in Energy & Power Department, Govt. Of Sikkim was requested to resolve the issue. Further, POWERGRID had also requested intervention by Senior authority of Energy & Power Department, Govt. Of Sikkim vide letter dated 27th June 2023 to urgently resolve the issue. Matter was again highlighted in 51st TCC Meeting, wherein TCC advised ERPC secretariat to take up with Sikkim separately. However, resolution of RoW is pending till date. Since project is heavily delayed and delay reasons are not attributable to POWERGRID, forum may guide regarding short closure and modalities of recovery of investment made by POWERGRID in the mentioned link till date.

Powergrid ER-II may update. Members may discuss.

2.18 Deletion of Begusarai-Kusheshwarsthan OPGW link under 'Establishment of Communication System under Expansion/ Up-gradation of SCADA/EMS System at SLDCs in Eastern Region (BSTPCL): Powergrid ER-I

POWERGRID has successfully implemented the OPGW laying work alongwith communication equipments under the project 'Establishment of Communication System under Expansion/ Up-gradation of SCADA/EMS System at SLDCs in Eastern Region (BSTPCL)'. All the links were commissioned successfully except only 1 no. link Begusarai-Kusheshwarsthan link that could not be completed due to severe ROW issues which was to be resolved by BSPTCL. Out of total 65.923 Km, around 4.6 Km OPGW was laid and the balance scope of 60 Km was requested to be short-closed/deleted from this contract.

The matter was discussed several times including 3rd TEST meeting held at ERPC, Kolkata on 20.12.2019 and BSPTCL agreed for deletion of the balance scope of works of this link. The request for deletion of this link was further communicated to BSPTCL several times through letter ER-I/PAT/ULDC/F-19/ dated 23.01.2023, ER-I/PAT/ULDC/F-19/1973 dated 14.09.2022

and ER-I/PT/ULDC/BSPTCL/PKG-2B/723 dated 06.07.2020(**Annexure B.2.18**) However, BSPTCL intimated that the line was not in service as major portion of the line was not available due to tower collapse in flood. Copy of correspondence and relevant pages of minutes of 3rd TEST Meeting are enclosed for reference(**Annexure B.2.18**)

Considering the above and completion of contract closing activities, it is requested for deletion of Begusarai-Kusheshwarthan OPGW link from the scope of the subject project.

Powergrid ER-I may update. Members may discuss.

2.19 Requirement of Shutdown and Data Outage for RTU replacement/SAS Upgradation Package for Eastern Region under Upgradation of SCADA/RTUs/SAS in Central Sector Stations and strengthening of OPGW network in Eastern Region: Powergrid ER-II

The installation & Commissioning work under RTU Replacement/SAS Upgradation Package for Eastern Region currently underway as various sites. Data outage & Shutdown of feeders during integration works is expected as detailed below.

RTU Data Outage:	
i)	RTU Locations where replacement of old RTU is to be done with new RTU
a) Binaguri b) Maithon c) Subhasgram d) Gangtok	RTUs shall be replaced in phased manner. Binaguri & Gangtok are targeted to be replaced within May 2024. Since these RTUs have already reached end of life, replacement of these RTUs is required on priority for which timely shutdown is crucial for wiring and adaptation works. Recently, Shutdown of 400KV-BINAGURI-NEW PURNEA-2 TL had been disallowed on 15.04.2024 (08:00 hrs to 18:00 hrs), and such denial of shutdown may lead to delay in replacement of RTUs.

Powergrid ER-II may update. Members may discuss.

2.20 Status of procurement of new DCPS for ULDC equipment housed at ERLDC - Powergrid ER-II

In 13th TeST meeting, ERLDC had asked POWERGRID to upgrade the 48V DCPS with Battery Bank for ULDC equipment at ERLDC since the current DCPS & battery bank were very old (installed nearly 17 years back, during ULDC Phase-I) and couldn't cater to the present load at ERLDC in 1+1 mode. TeST committed had advised POWERGRID to expedite the procurement process. Accordingly, POWERGRID had procured new 48V DCPS and Battery Bank of enhanced capacity in 1+1 mode in order to cater to existing and future load and successfully commissioned the same on 26.11.2023 under the Project: Upgradation of

SCADA/RTUs/SAS in Central Sector stations and Strengthening of OPGW network in Eastern Region.

Powergrid ER-II may update.Members may discuss.

2.21 Redundant Auxiliary Power Supply System at Kasba Node- Powergrid ER-II

At present, all Nodes of POWERGRID are having redundant power supply, either from ULDC DCPS or from Substation Charger. However, at Kasba Node which is critical for data reporting of all Central Sector and State sector stations at ERLDC, there was only single power supply from ULDC DCPS. Therefore, it would be beneficial to all stakeholders if a redundant power supply is made available at Kasba Node. The requirement of same was highlighted in 4th ISTS Communication Planning meeting for Eastern Region held on 27.07.2023 (virtual mode) and Grid India (ERLDC) agreed for same. At present, POWERGRID is implementing the project: Strengthening of OPGW network in Eastern Region. Therefore, considering prudence, 01 no. 48V DCPS with BB at Kasba was included within scope of above project for better redundancy of power supply for communication equipment.

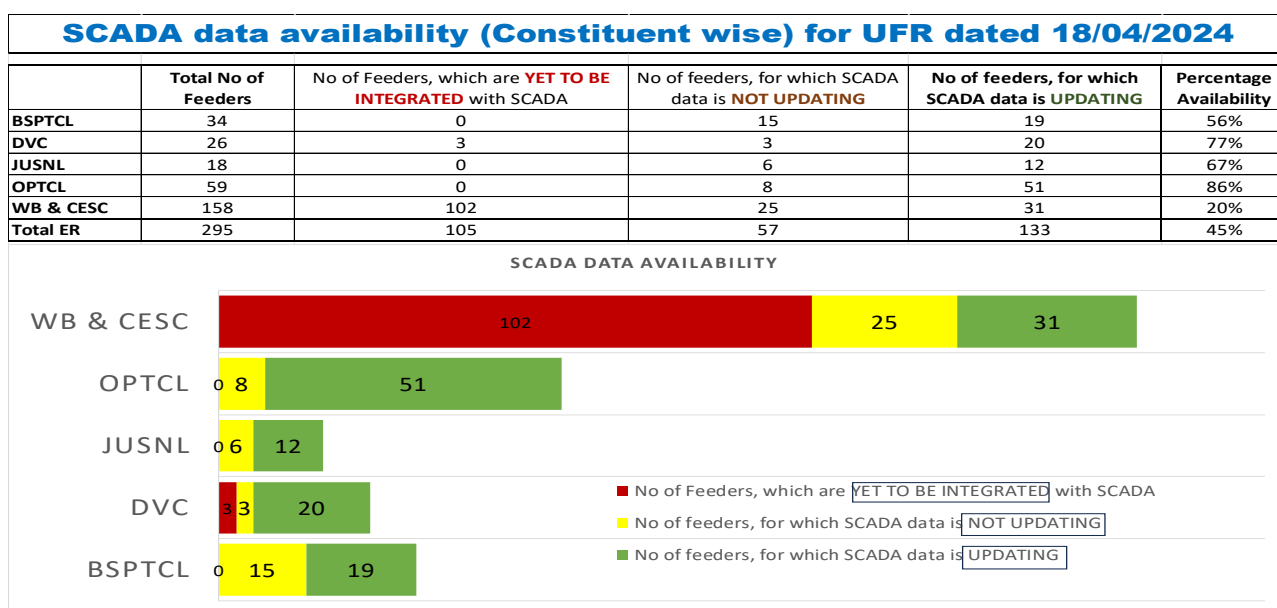
Powergrid ER-II may update.Members may discuss.

2.22 UFR integration in SCADA: ERLDC

UFR Scheme & Segregation in various stages as per RPC Planning and associated Telemetry reporting status in Constituents SCADA/EMS system may be updated.

As Per IEGC , 2023, Clause 13.d

“ SLDC shall ensure that telemetered data of feeders (MW power flow in real time and circuit breaker status) on which UFR and df/dt relays are installed is available at its control centre. SLDC shall monitor the combined load in MW of these feeders at all times. SLDC shall share the above data with the respective RLDC in real time and submit a monthly exception report to the respective RPC.”



All concerned Constituents may update. Members may deliberate.

2.23 Major outage i.r.o Telemetry data reporting: ERLDC

In September 2023, there was outage of majority Telemetry data reporting at ERLDC including RTU / PMU / VOIP/ AMR & ICCP Links along with other communication at ERLDC Control Room. Incident was intimated to POWERGRID and affected partial system was restored progressively after 02 days (07.09.2023 To 09.09.23). It is bringing notice that that a similar type of incident also happened in February 2020, at that time restoration of Data & Voice took nearly 7 to 8 days.

After Preliminary investigation by vendors during restoration, it was found that Such incidents are happening mainly due to Layer-2 Traffic (Malicious Traffic/Virus/Hardware malfunction) is connected to communication system of ULDC, thereby communication system was crashed due to which unable to handle legitimate data and voice hence data was stopped reporting at ERLDC. The system was restored only after restarting all the equipment of the communication system.

In view of above ERLDC recommends for the following:
(This may be implemented at earliest):

S. No.	Details of MAC/IP address required for	Details to be provided by	Repository of Details of MAC/IP address to be maintained by	Remarks
1	RTU/PMU/VOIP/AMR/any other equipment's connected to communication system.	POWERGRID / SLDC / IPP / ISGS	ERLDC / ERPC	Details are to be provided as per the approved format for the communication system audit report along with MAC/IP details of end user equipment. (Format is enclosed at Annexure – B.2.23 in line with previous recommendations).

This may be implemented in due course of time:

S. No.	Proposed to act for	Technical feasibility and implementation of same	Action to be taken by	Concurrence to be given by
1	Implementation of Network segmentation by using layer 3 cards/devices at SLDC's,	AMC vendor of communication system of ER.	POWERGRID	SLDC/ RLDC/ RPC

	RLDC's to segregate various services/system of RTU/PMU/ VOIP /AMR etc. at SLDC and ERLDC to avoid cascading effect.			
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ERLDC may update.Members may deliberate.

2.24 Telemetry outage of Farakka STPS: ERLDC

Telemetry issues associated to Farakka STPS (i. e unavailability of data of 65 nos. of digital and 40 nos. of Analog data) is long pending (details attached as **Annexure-B.2.24**). The matter was taken up in the 197th OCC Meeting, NTPC representative submitted that offer from M/s GE has been received. As intimated by NTPC, the contract was under awarding stage and the work was expected to be completed within soon.

NTPC may update.Members may deliberate.

2.25 Integration of AMR data on PLCC for which Fibre connectivity is not available: ERLDC

AMR data of a few locations in Eastern region are not integrated on OPGW Link. The said issue was discussed in the last 5th communication planning meeting of Eastern region for exploration of integration of said AMR data on PLCC links where OPGW Link is not available. In the said meeting POWERGRID GN&C, CC Team intimated that AMR data is under control of regional AM dept, hence said issue may be discussed in Test Meeting along with ULDC & AM dept POWERGRID.

Hence it is proposed to carry out testing and study of feasibility of integration of AMR data on PLCC on Pilot basis by the team ERPC, ERLDC and POWERGRID.

List of such stations is enclosed at Annexure-B.2.25

ERLDC may update. Members may deliberate.

2.26 Non - reporting of RTU / SAS data to MCC ERLDC or BCC ERLDC: ERLDC

Some of RTU / SAS data are reporting only to MCC ERLDC or BCC ERLDC (List is enclosed at **Annexure-B.2.26**) mainly due to issues in the Local station LAN as learned from various communication over phone.

Due to which whenever Back up/Main link is down the entire said data is not available at ERLDC. Hence the concerned may investigate said issue to restore the same at the earliest please. (List of Non - reporting of RTU / SAS data to MCC ERLDC or BCC ERLDC is attached in **Annexure –B.2.26** separately).

ERLDC may update. Members may deliberate.

2.27 Agenda by DVC

2.27.1 Upgradation Plan for Hot Line Communication (ORANGE EPABX)

2.27.2 Reconciliation of materials, with M/s. Chemtrols, during SCADA AMC period for closing the AMC Contract.

2.27.3 Laying of OPGW in DVC Sector

Sl. No.	Name of Link	Voltage Level	Approx. length (km)
1.	CTPS - RTPS via CTPS-Kalyaneswari LILO	220kV	82
2.	RTPS - Kalyaneswari via CTPS-Kalyaneswari LILO	220kV	83
3.	BTPS B -Jamshedpur	220kV	155
4.	Dhanbad - Patherdih	132kV	35
Length			Total 355

Upon approval in the 47th ERPC meeting held on 25.11.2022 and subsequent consent letter of DVC dated 5.1.2023, PGCIL was assigned for laying of OPGW in above-mentioned lines. Due to delay in finalisation of Contract by PGCIL and subsequent approval from CEA for Renovation & Augmentation of DVC's T&D System, DVC decided to lay OPGW on above-mentioned lines by itself. DVC had withdrawn its consent from PGCIL through letter dated 04.03.2024.

This may please be approved by TeST Committee.

DVC may update. Members may discuss.

2.28 Replacement of UPS and Battery Bank: JUSNL

Two nos. of UPS of 40 kVA installed under the SCADA/ EMS project is in non-working condition since 01 (one) year.

However, M/s Chemtrols has, installed one 60kVA UPS with SMF Battery Bank (12V/65AH, Qty. 40 Nos.) on rent basis. Through their e-mail dated 28.01.2022, M/s Chemtrols assured that the system shall provide minimum 04 hrs backup. But, the performance is not satisfactory as it provides back up for hardly 1.5 hrs only even after replacement of almost all the cells of the battery bank.

Furthermore, if this UPS gets breakdown, SCADA/ EMS system will become idle. So, redundancy for UPS may be ensured.

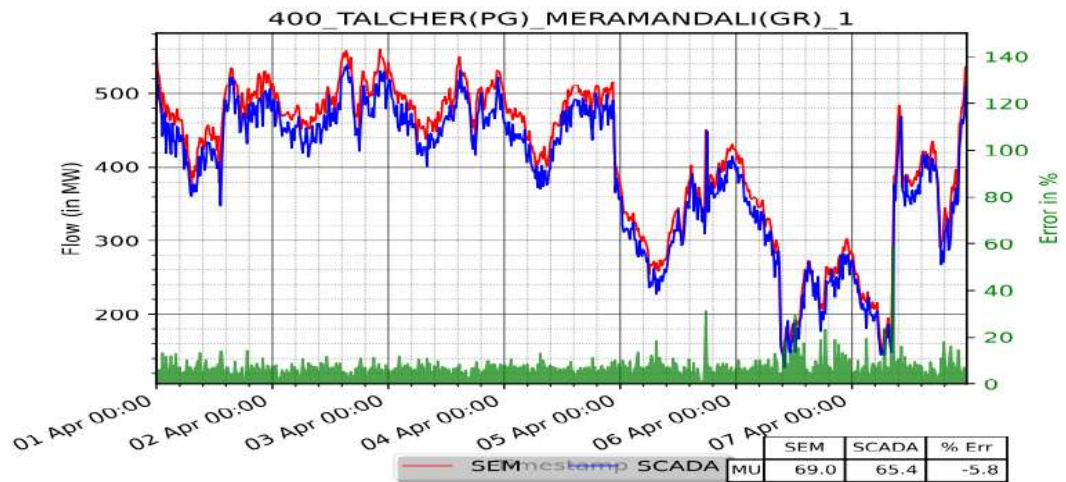
JUSNL may update. Members may deliberate.

2.29 Deviation in SCADA Vs SEM data: ERLDC

ERLDC publishes deviation in tie-lines data of SCADA system while comparing with SEM meter data every week.

Below mentioned feeder is having erroneous SCADA data at NTPC end while comparing with SEM for a long duration till date.

400 TALCHER(PG) MERAMANDALI(GR) 1



Plot: SEM vs SCADA data comparison at Odisha end

NTPC and ERLDC may update. Members may deliberate.

2.30 Non availability of SCADA in Eastern region: ERLDC

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

AOR	No of SS/GS without data Telemetry
BSPTCL	06
JUSNL	09
OPTCL	06
WBSETCL	03
DVC	00
SIKKIM	00

Table: Area wise no of station without data telemetry as on 18-04-2024.

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

Non availability of Telemetry of Bihar

SL No.	BSPTCL	Last Reported
1	KISHANGANJ_NEW_220	25-08-2023
2	SAMASTIPUR_NEW_220	13-09-2023
3	SONENAGAR_NEW_220	27-01-2024
4	KBUNL_STG1_220	31-03-2023
5	MOKAMA_BGCL_220	INTEGRATION ISSUE
6	JAMALPUR_BGCL_220	30-03-2024

Team ERLDC Visited SLDC Patna ,on 12.03.24 & 13.03.24 to carry our discussions on various points such as unavailability of data telemetry, UFR integration status , Cyber Security aspects in OT network etc.

During the visit it was learnt that the Telemetry issues are being taken up by the SLDC Team and it will be resolved soon.

Non availability Telemetry of Jharkhand

SL No.	JUSNL	Last Reported
--------	-------	---------------

1	PATRATU_220	16-12-2023
2	BURMU_220	INTEGRATION ISSUE
3	CHATRA_220	11-01-2024
4	GIRIDIH_220	INTEGRATION ISSUE
5	GODDA_220	11-01-2023
6	JASIDIH_220	08-02-2024
7	GARHWA_220	25-06-2023
8	SMARTCITY	27-02-2023

Non availability telemetry of Odisha

SL No.	OPTCL	Last Reported
1	NALCO_220	21-04-2023
2	ROHIT_220	28-03-2022
3	LAPANGA_400/220	HIGHLY INTERMITENT
4	EMAMI_220	07-09-2023
5	TATA_GR_220	16-03-2019
6	TELCO_220	INTEGRATION ISSUE

Non availability telemetry of West Bengal

SL No.	WBSETCL	Last Reported
1	TLDP4_220	28-08-2023
2	DHARAMPUR_220	28-08-2023
3	BARUIPUR_220	28-08-2023

Team ERLDC Visited SLDC , Howrah, on 08.04.24 to carry our discussions on various points such as unavailability of data telemetry, UFR integration status , Cyber Security aspects in OT network etc.

It was learnt that the Real Time telemetry of TLDP4,Dharampur & Baruipur was stopped reporting to SLDC, Howrah due to identified issues at the site end and SCADA Team at SLDC was taking up the matter.

BSPTCL,JUSNL, OPTCL, WBSETCL may update. Members may deliberate.

2.31 Replacement / Up-gradation of old RTUs in Eastern Region: ERLDC

The report on “Replacement/up-gradation of old RTUs in Eastern Region” for Real Time data transfer to ERLDC Main and Back-up Control Center over IEC104 protocol was approved by ERPC in 36th ERPC meeting held at Bhubaneswar on 14th September 2017.

The contract for replacement/up-gradation of old RTUs in Eastern Region is awarded subsequently by POWERGRID on 31st December 2020.

POWERGRID agreed to replace the old RTUs on priority basis as per the list submitted by ERLDC

The Old S-900 RTUs mentioned in the priority list (like Jamshedpur, Bihar Shariff, Muzaffarpur etc.) have not been replaced yet.

The Real time Grid Operation at ERLDC is getting adversely affected on account of frequent failure of SCADA data from above mentioned old S-900 RTUs which were installed in the ULDC Phase-I (2005) and have completed their life span. Apart from that many a times, it has been observed that the poor maintenance of these old RTUs is affecting the availability of Telemetry.

RTU/SAS Upgradation/Replacement Status attached in **Annexure-B.2.30**

ERLDC and POWERGRID may update. Members may deliberate.

2.32 SCADA/EMS upgradation package: ERLDC

Upgradation of SCADA/EMS System under ULDC Phase III is being taken up by POWERGRID. As reported, NIT for the same has been floated July 2023. Stage - I discussion with System Integrators already completed and revised technical Specifications already approved by POWERGRID authority. Financial bid submission for the work is under process. Placement of award is expected by May 2024.

Considering the gravity of the AMC extension of the SCADA/EMS package POWERGRID may update the status.

ERLDC and POWERGRID may update. Members may deliberate.

2.33 SCADA OS upgradation: ERLDC

As per recommendation by Ministry of Power on 20th April 2022 and as per clause no 3 g (ii) of the Minutes of Meeting dated 09th May 2022 (enclosed as Annexure-III) “Legacy OT System should be upgraded by July 2022 Accordingly, ERLDC has upgraded its OS in SCADA desktops to Windows 10 Pro in 2022.

All the SLDCs are requested to upgrade the OS in their SCADA systems to the latest version.

ERLDC may explain. Members may update.

2.34 Improper Support from M/S OSI, OEM OF SCADA Application: ERLDC

ERLDC SCADA/EMS system was installed in Eastern Region and OSI Monarch application is being used as core SCADA/EMS applications. In ERLDC SCADA/EMS system, several functionalities of SCADA/EMS system like DTS, STLF etc are not functioning properly for which support is required from OEM i.e. OSI.

Further M/S Chemtrols to ensure availability of back to back support from OEM regarding SCADA/EMS System in Eastern Region.

ERLDC and M/S Chemtrols may update. Members may deliberate.

2.35 SCADA Integration & Reporting Status of Transnational Tie Lines with Nepal: ERLDC

SCADA data reporting in respect of 132 KV Kataiya-Duhabi Feeder ,132 KV Ramnagar-Valmikinagar Surajpura Feeder is not available at ERLDC .

ERLDC and BSPTCL may update. Members may deliberate.

2.36 Availing PSDF for SCADA/EMS upgradation: Sikkim SLDC

Sikkim shall avail 100% PSDF grant for the Unified SCADA/EMS Phase-III Up gradation as per the latest notification of providing 100% Assistance to NER including 6+1 AMC.

Relevant letter from NLDC attached at **Annexure B.2.35**

Sikkim SLDC may update. Members may deliberate.

2.37 Cyber security of communication system: ERLDC

Cyber security of communication system along with end user equipment RTU, PMU, VOIP, AMR etc. needs to be complied with as per regulatory requirements. In the special meeting of communication system (held in May 23) said issue was intimated to all concerned constituents. Now concerned may update the status on said issue.

ERLDC may explain. Members may update.

2.38 Cyber Security Audit: JUSNL

The compliance report of Cyber Security Audit conducted during March' 2023 has not been submitted to SCADA, SLDC till date. Requests for the same has been made to M/s Chemtrols. However, the compliance report is still awaited.

JUSNL may update. Members may deliberate.

2.39 SOC Implementation at SLDCs: ERLDC

As per Information Technology (Information Security Practices and Procedures for Protected System) Rules, 2018, all constituents whose assets have been declared as CII/protected systems need to implement SOC.

Bihar has already floated tender for SOC Implementation. All other SLDCs are requested to expedite the process for SOC Implementation.

ERLDC may explain. Members may update.

Annexure B.2.1

CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

No.- L-1/210/2016/CERC

CORAM:

Shri Jishnu Barua, Chairperson

Shri I. S. Jha, Member

Shri Arun Goyal, Member

Shri P. K. Singh, Member

Date of Order: 19th January, 2024

In the matter of:

Approval of “Guidelines on Availability of Communication System” under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.

Order

The Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 (hereinafter referred to as the ‘Communication Regulations’) were published on 29.05.2017 in the Gazette of India Extraordinary (Part-III, Section-4, No. 218).

2. Regulation 7.3 of the Communication Regulations requires NPC to prepare Guidelines on “Availability of Communication System” in consultation with the stakeholders and submit the same for approval of the Commission.

3. Accordingly, NPC has submitted the “Guidelines on Availability of Communication System”, after stakeholder consultation, for approval of the Commission.

4. The Commission has examined the Guidelines submitted by NPC, and after incorporating suitable changes, the Commission hereby approves the “Guidelines on Availability of Communication System” which are enclosed as an Annexure to this Order.

Sd/-	Sd/-	Sd/-	Sd/-
(P. K. Singh)	(Arun Goyal)	(I. S. Jha)	(Jishnu Barua)
Member	Member	Member	Chairperson

**GUIDELINES
ON
AVAILABILITY OF COMMUNICATION SYSTEMS**

Prepared in Compliance

To

Central Electricity Regulatory Commission

(Communication System for inter-State transmission of electricity)

Regulations, 2017

January 2024

GUIDELINES ON AVAILABILITY OF COMMUNICATION SYSTEM

1. INTRODUCTION:

1.1 As per Regulation 7.3 of the Central Electricity Regulatory Commission (Communication System for inter-State transmission of Electricity), Regulations, 2017, National Power Committee (NPC) has been entrusted to prepare Guidelines on Availability of Communication System in consultation with RPCs, RLDCs, CTU and other stakeholders. Accordingly, these Guidelines have been prepared for determining Availability of Communication System.

1.2 The relevant provisions in the Central Electricity Authority (Technical Standards for Connectivity to the Grid), Regulations, 2007, CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 and CERC (Indian Electricity Grid Code) Regulations, 2023 in respect of Communication System are as follows:

1.2.1 **Regulation 6(3) of the CEA (Technical Standards for Connectivity to the Grid)** stipulates that *'the requester and user shall provide necessary facilities for voice and data communication and transfer of online operational data, such as voltage, frequency, line flows and status of breaker and isolator position and other parameters as prescribed by the appropriate load dispatch centre.'*

1.2.2 **Regulation 5(1) of the CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020** stipulates that user shall be capable of transmitting all operational data as required by appropriate control centre.

1.2.3 **Regulation 11 of the Indian Electricity Grid Code (IEGC) 2023 stipulates as follows:**

"11. DATA AND COMMUNICATION FACILITIES (1) Reliable speech and data communication systems shall be provided to facilitate necessary communication, data exchange, supervision and control of the grid by the NLDC, RLDC and SLDC in accordance with the CERC (Communication System for inter-State Transmission of Electricity) Regulations, 2017 and the CEA Technical Standards for Communication.

(2) The associated communication system to facilitate data flow up to appropriate data collection point on CTU system including inter-operability requirements shall also be established by the concerned user as specified by CTU in the Connectivity Agreement.

(3) All users, STU and participating entities in case of cross-border trade shall provide, in coordination with CTU, the required facilities at their respective ends as specified in the connectivity agreement. The communication system along with data links provided for speech and real time data communication shall be monitored in real time by all users, CTU, STU, SLDC and RLDC to ensure high reliability of the communication links.”

2. DEFINITION:

2.1 Words and expressions used in these guidelines shall have the same meaning assigned in the Electricity Act, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation ,2007, CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020, CERC (Communication System for Inter-State transmission of Electricity), Regulations, 2017 and Indian Electricity Grid Code Regulations, 2023 and amendments thereof.

2.2 Other words have been explained as per the context in these Guidelines.

3. SCOPE AND APPLICABILITY:

3.1 As per Regulation 5 (i) of the CERC (Communication System for inter-State transmission of Electricity), Regulations, 2017, *“These regulations shall apply to the communication infrastructure to be used for data communication and tele -protection for the power system at National, Regional and inter-State level and shall also include the power system at the State level till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commissions.”*

3.2 Accordingly, these guidelines shall be applicable to the CTU for the Communication System Infrastructure of inter-State Transmission System. The guidelines shall also be applicable to STU for the Communication System Infrastructure of intra-State Transmission System, till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commission.

3.3 The CTU (or STU as the case may be) shall have back to back co-ordination/agreement with transmission licensees, generators, dedicated transmission line owners, bulk consumers and concerned entities for providing power system communication on their network.

3.4 Responsibility of CTU and STU:

- a) CTU (or STU as the case may be) shall be responsible for submission of the details of communication channels including the redundant channels configured for use of voice / data / video exchange, protection, Tele-protection / SPS to respective RLDC (SLDC as the case may be) on monthly basis incorporating the details of new channels configured during previous month. The total number of communication channels (N) is based on the requirement of RLDCs/NLDC and the same would be decided in consultation with respective RPCs/NPC.
- b) CTU (or STU as the case may be) shall be responsible for submission of the performance/availability of configured channels of the previous month to respective RLDCs for verification by RLDCs and onward submission to respective RPC for computation of availability of the communication system for previous month.
- c) CTU (or STU as the case may be) shall submit availability reports of configured channel including the redundant channels in format prescribed by RLDC/RPC, generated from the centralized NMS. The availability report of the call logging facility (with time stamp) may be provided till commissioning of centralized NMS for availability computation.

4. TREATMENT OF COMMUNICATION SYSTEM OUTAGES:

- 4.1 Outage time of communication system elements (i.e. channels) due to acts of God and force majeure events beyond the control of the communication provider shall be considered deemed available. However, onus of satisfying the Member Secretary, RPC that element outage was due to aforesaid events shall rest with the communication provider.
- 4.2 Any outage of duration more than one (01) minute in a time-block shall be considered as not available for the whole time-block. Any outage of duration less than or equal to one (01) minute in a time-block shall be treated as deemed available provided such outages are not more than ten (10) times in a day.

Illustration: If a channel is out for a duration less than or equal to one (01) minute in a time-block, and such outages are more than ten (10) times in a day, all the time-blocks with such outages shall be treated as not available.

4.3 All other outages not covered under 4.1 and 4.2 shall be considered as not available during the whole block for the computation of channel availability.

5. METHODOLOGY FOR COMPUTATION OF AVAILABILITY OF COMMUNICATION SYSTEM:

5.1 Availability of Communication System (A_{CS}) shall be calculated as under:

$$A_{CS} = \frac{\sum_{i=1}^N A_i}{N}$$

Where - N is total number of communication channels as specified in 3.4(a) above.

- A_i is Availability of i^{th} Channel which shall be calculated as given in 5.2 below.

5.2 Availability of i^{th} Channel (A_i) shall be arrived as under:

$$A_i = \frac{B_T - B_{Ni}}{B_T} \times 100$$

Where B_T is Total number of time-blocks in a month

B_{Ni} is the total number of time-blocks, in which i^{th} channel was not available after considering deemed availability status of 4.1 & 4.2 above.

$$B_{Ni} = B_{ANi} - B_{Gi} - B_{LTTi}$$

Where- B_{ANi} is absolute number of time-blocks in which the i^{th} channel was 'not available' on account of any reason.

- B_{Gi} is Number of time-blocks out of B_{ANi} , in which i^{th} channel was 'not available' on account of act of God as specified in 4.1 above.

- B_{LTTi} is Number of time-blocks out of B_{ANi} , in which i^{th} channel was 'not available' for a duration less than or equal to one (01) minute in a time-block and not more than ten (10) times in a day as specified in 4.2 above.

Illustrations:

Case1: If there are 2880 time-blocks (B_T) in a month, and a particular channel is not available for a total of 70 time-blocks; and out of this, the above mentioned channel was not available for 20 (B_{Gi}) time-blocks due to act of God, six (06) time-blocks for less than one (01) minute (B_{LTTi}), then $B_{ANi}=70$, $B_{LTTi}=06$, $B_{Ni} = 70-20-06 = 44$, and $A_i = (2880-44)/2880 = 98.47\%$

Case 2: If there are 2880 time-blocks (B_T) in a month, and a particular channel is not available for a total of 70 time-blocks; and out of this, the above mentioned channel was not

available for 20 (B_{Gi}) time-blocks due to act of God, 11 time-blocks for less than 1 minute, then $B_{ANi}=70$, $B_{LTTi} = 0$, $B_{Ni}=70-20-0=50$, and $A_i = (2880-50)/2880 = 98.26\%$.

6. Revision of these Guidelines

6.1 As and when required, these Guidelines shall be reviewed and revised by NPC with the approval of the Commission.

Annexure B.2.2

Final Standard Operating Procedure (SOP) for Communication audit of Substations

1. This procedure has been prepared in compliance to Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017. As per clause 10 of the Regulation, RPC shall conduct annual audit of the communication system annually as per the procedure finalized in the forum of the concerned RPC. However, this SOP for communication audit of substations is finalized to maintain uniformity at the national level. It also mandates that RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by respective RPC is to be submitted to the Commission within one month of closing of the financial year.
2. The Audit would be conducted in two phases. In first phase scrutiny of the reports, documents etc. In the second phase physical verification shall be carried out.
3. Each User/entity, using inter-state transmission or the intra-state transmission incidental to inter-state, shall submit the detailed report to RPC Secretariat and RLDC, as per prescribed format on yearly basis. The detailed report shall be submitted by the April end of the respective year. This report shall be considered as self-certificate regarding availability and healthiness of the Communication system of respective user/entity.
4. In respect of intra-state users/entities, SLDC shall submit detailed reports yearly by the April end of the respective year, to RPC Secretariat and RLDC.
5. Outage report of all the channels (including Network Management System, PLCC etc) report for a month shall be submitted by the Users/entities to RLDC and respective SLDCs, on monthly basis, by 7th day of the next month. RLDC and SLDCs after verifying the NMS data shall submit report to RPC Secretariat by 15th day.
6. All users/entities and Control Centers shall get the third-party cyber security audits done from a Cert-in certified vendor in compliance of CEA (Cyber Security in Power Sector) Guidelines,2021. The detailed report of the Cyber Security Audit shall be submitted by 15th April for the previous financial Year.
7. RPC Secretariat may ask any other information required for Audit of the communication system in addition to these periodic reports.

Phase-I Audit: Scrutiny of the Information

8. A Communication System Audit Sub-Group comprising one member each from RPC, RLDC, PowerGrid and One of the respective Region SLDCs shall be constituted by RPC Secretariat with the approval of Member Secretary, RPC. The sub-group may co-opt any other member from any organization for facilitating the activities of the sub-group. Further, consultation from CEA may be taken, if required. The Audit team shall be formed excluding the member for the Organization/Utility whose system is to be audited.
9. The Communication System Audit Sub-group shall scrutinize the information received in RPC Secretariat. The Sub-group may also ask any additional information necessary for its activities. All the users/entities, RLDC, SLDCs shall provide the information to the sub-group on priority within the stipulated time period.
10. The sub-group shall also identify the nodes for physical inspection based on the criticality of the node in view of performance of the communication network or based on the deficiencies observed in the communication system.
11. The Audit would include but not limited to following aspects:
 - a. Availability of communication channels. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of communication channels would be finalized by Communication System Sub Group in consultation with other stakeholders.
 - b. Availability of terminal equipment. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of terminal equipment would be finalized by Communication System Sub Group. Part outage like failure of specific cards etc. would also be furnished along-with reasons.
 - c. Availability of Auxiliary System e.g. Battery Charger, Battery bank, sufficient cooling equipment etc.
 - d. Compliance of CERC and CEA Regulations and the procedures under these Regulations.
 - e. Completion of periodic testing of the communication system in accordance with procedure for maintenance and testing prepared by CTU.
 - f. Audit of all newly commissioned communication equipment within six months of its commissioning.
 - g. Completion of 3rd party Cyber Security Audits.
 - h. Network traffic w.r.t capacity.
 - i. Spare availability, replenishment etc.
 - j. Any other parameters as agreed by the Communication Sub Group.

Phase-II Audit: Physical Verification

12. Based on the Recommendations of the Communication System Audit Sub-group, Audit team shall be constituted and the physical inspection Audit plan shall be prepared by RPC Secretariat.
13. Audit team shall be formed on regional basis.
14. Audit shall be carried out in a planned manner as included in this document by a team of three members. The audit team shall comprise of one representative from the RPC Secretariat, one representative from RLDC and one representative from any of the Utilities or SLDCs of respective Region. The Audit team shall be formed excluding the member for the Organization/Utility whose system is to be Audited. The Audit team may co-opt any other member from any organization for facilitating the activities of the committee.
15. Once the plan is finalized, minimum 3 days advance notice shall be served to the concerned Auditee entity intimating the detailed plan so that availability of required testing equipment and the required documents is ensured by Auditee entity and is made available to the Audit team during the site visit.
16. Member Secretary, RPC in consultation with the Communication System Audit Sub-Group may decide on any additional nodes/locations for physical inspection if a location is very critical in view of performance of the communication network at any time of the year.
17. The Scope of the physical verification shall include but not limited to the following:
 - a. Available communication Network for its redundancy
 - b. Availability of channel redundancy for all the functions for which it is configured.
 - c. Communication equipment (hardware and software configuration) of all the nodes including repeater stations for its recommended performance.
 - d. Documentation of the configuration of the respective site and its updation.
 - e. Fibre layout / usage of fibre / Availability of dark fibre and its healthiness.
 - f. Cable Schedule and identification / tagging.
 - g. Healthiness of Auxiliary supply including the healthiness of Battery backup.
 - h. Healthiness of Earthing / Earth protection for communication system.
 - i. Availability of sufficient cooling equipment at the User's premises to maintain the stipulated temperature for the communication equipment.
 - j. Optical power level
 - k. Alternate modes of communication for speech
18. The format for collecting the details of Communication channels/links and Equipment is at **Annexure-I** and the same shall be furnished by the Auditee entity.

19. Communication Audit Checklist points are given in **Annexure-II** and the same are to be thoroughly verified by the Audit team.
20. Expenses towards Lodging, Boarding & Transportation (Excluding Air/Train Fair) between various places within the jurisdiction of Auditee entity shall be borne by respective Auditee entity. The Coordinating Officer(s) from the Auditee Utilities identified for each Team is (are) responsible for facilitating them to all the Members of respective Team.
21. Audit team shall submit report including recommendations for action on deficiencies, if any, found during the inspection, within 15 days from the date of inspection to Member Secretary, RPC. After approval of MS, RPC, the report would be communicated to the Auditee entity for compliance.

Audit Compliance Monitoring

22. Communication System Audit Sub-group would monitor the compliance of audit observations as applicable. Non-compliance of Audit Recommendations, if any, shall be put up to TCC and RPC.
23. The Annual Audit Report would be reviewed by a Communication System Sub Group at RPCs level. After considering the observations of Sub Group, RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by RPC would be submitted to the Commission within one month of closing of the financial year.

REGIONAL COMMUNICATION AUDIT REPORT			
General Information:			
1	Substation Name		
2	SS Voltage level		
3	Date of commissioning of the substation	XX.XX.XXXX	
4	Region & State / Auditee	/	
5	Audit Date		
6	Name of the Utility which owns the SS		
Details of Audit Team Members :			
SL	Name	Designation	Organization
1			
2			
3			
4			
Attached Documents, if any			
SL	Name of the document	Original / Signed / Copy	
1			
2			
3			
4			
5			
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8		
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17		

Communication Channels and Equipments Audit Format

(A) List of channels in usage for data (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / others:

Sl	Description (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / Others)	Source	Destination	Channel Routing	Ownership details of terminal equipment / Links
1					
2					
3					
4					
5					
6					
7					
8					

(B) List of terminal communication equipments:

Sl	Name of Station	Equipment Type (SDH / PDH / Radio / VSAT / EPABX)	Make / Model	Ownership
1				
2				
3				
4				
5				
6				
7				
8				

(C) Communication System Details:

I. SDH Equipment

(1) Card Details:

Slot No	IP Address & Path / Direction Name	Card Details	Place a ✓ mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		(i) (ii) (iii)	(i) (ii) (iii)
Power Supply		(i) (ii) (iii)	(i) (ii) (iii)

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

--	--	--	--	--	--

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

II. PDH Equipment

(1) Card Details :

Slot No	IP Address	Card Details	Place a ✓ mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?	

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		(i) (ii)	(i) (ii)

		(iii)	(iii)
Power Supply		(i) (ii) (iii)	(i) (ii) (iii)

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

III. OPGW / Optical Fibre Details

Number of Directions	Name of Direction	No. of Pairs	No. of Fibers used	No. of spare & healthy Fibers	Unarmoured cable laid within PVC/Hume duct pipe?	Fibre Count in OPGW? Whether matching with Approach cable to FODP?	Overall Optical Fibre Path Attenuation (dB/km)	Power Received	Conformation to Compliance of CEA Standards

IV. Healthiness of Auxiliary System:

(1) Details of 2 independent Power Sources :

VIII. Radio Communication Details:

Number of Equipments	Make and Model	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
			Schedule	Actual			

IX. Data Retention : (i) **Earliest Date of availability of data:** _____
(ii) **Historical data availability** : _____ days.

X. Control Command Delay : (i) **Time delay in seconds from Control Centre for SCADA** : _____ Seconds
(ii) **Time delay in seconds from Control Centre for WAMS** : _____ Seconds

XI. Wide Band Network : (i) **Absolute channel delay in protection applications** : _____ ms
(ii) **Channel delay asymmetry in protection applications** : _____ ms
(iii) **Switching Time delay to alternate path/route during failure of one path** : _____ ms

XII. Any other information :

Audit Team Member
SRPC

Audit Team Member
Co-Ordinator

Audit Team Member
PGCIL (Internal / External)

Audit Team Member
State (Internal / External)

Communication Audit Checklist (Annexure-II)

S.No	Check list points	Expected	Actual	Reference
1	Whether OPGW is terminated properly. Down lead shall be fixed property in sufficient locations. Metallic part shall be connected to earth mat riser.	Yes		
2	Distinct approach cable shall be laid 1 Protection & Communication 2 Fibers for commercial applications Item no 1 cable shall be terminated in communication room FODP One number FODP panel shall be available in communication room			
3	Fiber Identification shall be done in FODP properly			
4	Whether End to end tests were carried out during installation and records are available (both Optical Power Source/receiver testand OTDR Test results			
5	Whether patch chords 1 Cross labelled (source/ receive) 2 Tx – Rx Marking 3 Mechanical protection is provided for patch chords laid between panels			
6	Whether separate room for communication is available with following:- 1 Air conditioning with standby A/C Unit 2 AC Distribution board with ELCB 3 Single point earthing bar which shall be connected to substation Earth mat			
7	Two sets of 48 V (Positive Earthed) DC System shall be available with 1 Common DC Distribution board/ Panels with incoming MCB, coupler MCB , out doing MCB setc 2. Minimum 200 Ah (2 sets of battery) VRLA batteries are preferred to keep chargers and battery in communication room. 3. Battery Charger shall be Thyristorised/SMPS			
8	Battery Charger alarms /measurements shall be made available to SAS (if available) It can be achieved through MOD bus or connecting analogue/ digital signals to Common BCU of SAS. If such system is not available major			

Communication Audit Checklist (Annexure-II)

	alarms shall b alarmed in common substation annunciator			
9	2 nos of substation Data (From RTU or SAS Gateway)shall route in different roots to Main and Standby Load Dispatch centres			
10	Kindly assure proper protection is available for AC Distribution (ELCB, MCB, Backup fuse),			
11	Aux Transformer neutral Earthing shall be connected to Stations earth mat (Aux Transformers shall be installed in yard earth mat area only)			
12	Whether DG sets with AMF panels are provided for Aux AC Supply			
13	Whether 2 nos 11 kV (or 33kV) supplies are available for Each station aux Transformer			

Annexure B.2.3

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

1. As per the following CEA and CERC Regulations, the Communication Outage for the Region shall be carried out by RPC Secretariat:

a) Regulation 7.3 of Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 stipulates as below:

Quote:

7.3 Role of National Power Committee (NPC) and Regional Power Committee (RPC):

.....
(iv) The RPC Secretariat shall be responsible for outage planning for communication system in its region. RPC Secretariat shall process outage planning such that uninterrupted communication system is ensured.
.....

Unquote

b) Regulation 10 Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 notified on 27.02.2020 envisages as below:

Quote:

10. Outage Planning: Monthly outage shall be planned and got approved by the owner of communication equipment in the concerned regional power committee, as per detailed procedure finalized by the respective regional power committee.

Unquote

2. A Communication System Outage Planning Sub-Group/ TeST Sub Committee shall be formed in each region constituting the members from all the entities connected to ISTS including all CGS, ISGS, REGs/SPPDs/SPDs, STUs, SLDCs etc., of the respective Region, RLDC/Grid-India, PGCIL, CTUIL, Private Transmission licensees in respective region & RPC secretariat. The sub-group/ Sub Committee may co-opt any other member from any organization for facilitating the activities of the sub-group/ Sub Committee.

3. Communication System Outage Planning will be limited to the following systems:

- (i) ISTS Communication System including ISGS
- (ii) Intra-state Communication System being utilized for ISTS Communication
- (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDCs.
- (iv) Inter-regional AGC links.

- (v) Any other system agreed by the sub-group.
4. Communication Equipment/link within the scope of the Procedure would include :
- (i) Optic Fibre links
 - (ii) Any other link being used for ISTS communication
 - (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDC
 - (iv) VC links between LDCs
 - (v) Inter-regional AGC links
 - (vi) SPS Links
 - (vii) Tele-Protection
 - (viii) AMR
 - (ix) PMU
 - (x) SDH & PDH
 - (xi) DCPC
 - (xii) RTU & its CMU cards
 - (xiii) DTPCs
 - (xiv) Battery Banks and Charging Equipment
 - (xv) EPABX
 - (xvi) Any other equipment/link agreed by the sub-group
5. A Web Portal named as “Communication System Outage Planning Portal” shall be developed by respective RLDCs. Log-in credentials shall be provided to all the ISTS connected entities/concerned entities.
6. Entities/Users/Owners shall add their communication links and the equipment to the Web Portal as soon as they are commissioned. The same has to be furnished to RPC Secretariat /RLDCs.
7. Entities/Users/Owners of the communication equipment shall upload the outage proposals of communication links and the equipment (in the prescribed format only) to be availed during subsequent month by 7th/8th of every month in the Web Portal.
8. RPC Secretariat consolidates the list of outage proposals received from various Entities/Users/Owners of the communication links and equipment by downloading from the Web portal and circulate the same among all the respective region entities by 15th of every month. Communication outages affecting other regions would be coordinated by respective RLDC through NLDC.
9. Communication System Outage Planning (CSOP) meeting shall be conducted during the third week of every month normally (preferably through VC) to discuss and approve the proposed outages of communication links and equipment.
10. The approved outages of Communication links and equipment in the CSOP meeting shall be published in the RPC website and respective RPCs Communication Outage Portal within 3 days from the date of CSOP meeting.

11. Outage of the approved communication links and equipment shall be availed by the respective owner /entities after confirming the same with RLDC on D-3 basis.
12. In case of any emergency outage requirement of communication links and equipment, Entities/Users/Owners may directly apply to respective RLDC with intimation to respective RPCs on D-2 basis. Confirmation of approval/rejection will be provided on D-1 basis by RLDCs in consultation with respective RPCs considering 24hrs processing window.
13. Entities/Users/Owners shall take the code from the respective RLDC before availing the planned outage of the communication links & equipment and before restoration of the same.
14. Entities/Users/Owners of the communication links and equipment shall submit the deviation report for the approved outages (approved dates & approved period) availed during the previous month and the report on planned / forced / other outage of communication links / equipment by 10th of the month to RPC Secretariat as per the format at **Annexure-I** .
15. In the monthly CSOP meetings, communication links and equipment whose outage duration (Planned / Forced / Others) more than 48 hours for the last 12 months of rolling period shall be deliberated for the measures to be taken in future for the better outage management. The date deviations and non-availing the outages that were approved in the previous CSOP meetings shall also be deliberated in the CSOP meetings.

I/34304/2024



भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत संचार विकास प्रभाग

Power System Communication Development Division



Subject: Committee to formulate comprehensive guidelines for the usage and sharing of optical fibers (OPGW) for power system applications - reg

महोदय / Sir,

It has been observed that the following conflicts in respect of OPGW fiber infrastructure have started cropping up with expansion of transmission & associated OPGW infrastructure along with the multiple entities owning and operating such assets; and also with the flexibility to undertake other business for optimum utilization of its transmission assets:

- (i) Conflict in respect of sharing of fibers between multiple entities.
- (ii) Conflict in respect of fiber counts that can be leased on commercial basis.
- (iii) Conflict in respect of fiber counts to be allocated for different power system applications/services.

Accordingly, a Committee has been constituted under the chairmanship of Member (Power System), CEA tasked with formulating comprehensive guidelines for the usage and sharing of optical fibers (OPGW) for power system applications.

The Composition of the Committee is as follows:

S.no	Members	Organisation/Association
1.	Member (Power System) (Chair)	CEA
2.	Chief Engineer, PCD	CEA
3.	Chief Engineer, NPC	CEA
4.	Chief Engineer, ET & I	CEA
5.	Member Secretary, RPCs	RPCs
6.	Executive Director, CTU	CTU
7.	Executive Director, Grid India	GridIndia
8.	Executive Director, Powergrid	Powergrid
9.	Representative of Electric Power Transmission Association – 2 TSPs	EPTA
10.	Representative from STUs (at the level of Chief Engineer or equivalent)	<ul style="list-style-type: none"> • Northern Region: UPPCL, RRVPNL • Western Region: GETCO, MPPTCL • Southern Region: KSEBL, TANTRANSCO • Eastern Region: WBSETCL, OPTCL • North Eastern Region: AEGC

The Chair may co-opt more members if deemed necessary.

Keep it as
Agenda item
for Test
Meeting
14/4

27/3 3600 DDL

I/34304/2024

The Terms of Reference (ToR) of the Committee is as follows:

- 1) **Scope and Purpose:** Define the need to develop guidelines that address the unique requirements and challenges associated with the sharing of OPGW fibers among CTU, STUs, and Private Transmission Licensees.
- 2) **Allocation Requirements:** Define/determine the number of fibers required for catering to varied applications/services for grid management such as data, speech, protection etc., including minimum spare fibres to be earmarked for grid applications/requirements.
- 3) **Sharing Scenarios:** Analyse the scenarios wherein the spare fibers in the OPGW laid by an entity is to be shared amongst several entities (CTU, STU, TSPs) to facilitate real time grid monitoring. Formulating the uniform mechanism governing the access, usage, or other aspects of the shared fibers in following scenarios:
 - (i) Sharing of OPGW laid under ULDC scheme on the ISTS lines.
 - (ii) Sharing of OPGW laid under ULDC scheme on the Intra-State lines.
 - (iii) Sharing of OPGW laid by STUs on the Intra State lines.
 - (iv) Sharing of OPGW laid by CTU/Powergrid on the Intra State lines.
 - (v) Sharing of OPGW on the ISTS lines laid by TSPs under TBCB and RTM projects.

Identify and define the role and responsibilities of Centre, State, and Private Transmission Licensees in the sharing of OPGW fibers.

- 4) Investigate the integration of Fiber Optic Terminal Equipment (FOTE) for differential protection in accordance with the C37.94 protocol and bring out recommendations.
- 5) Define the uniform mechanism of routing of OPGW fibers in case of LILO taken up on any transmission line.
- 6) Recommend the scenarios/limit of OPGW fibers beyond which it can be utilized for other commercial purposes.
- 7) Formulate recommendations for seamless adoption of these guidelines.

Nomination Process:

It is requested from constituent organizations to kindly nominate Members/Senior-level officers with expertise in fiber optics, power sector operations, and related fields. The nominated individuals should be able to actively contribute to the Committee's objectives.

Please submit your nominations by 12.03.2024 at cepcd.cea@gov.in

भवदीय,

(S K Maharana)

Signed by: S. K. Maharana

Chief Engineer (PCD)

Date: 07-03-2024 16:0

Reason: Approved

To,

1. Member (PS), CEA, New Delhi
2. Chief Engineer , NPC, CEA, New Delhi
3. Chief Engineer, ET&I, CEA, New Delhi
4. Member Secretary, NRPC, New Delhi
5. Member Secretary, WRPC, Mumbai
6. Member Secretary, SRPC, Bengaluru
7. Member Secretary, ERPC, Kolkata
8. Member Secretary, NERPC, Shillong
9. Chairman & Managing Director, POWERGRID
10. Chairman & Managing Director, GRID INDIA
11. Chief Operating Officer, CTUIL
12. Chairman, UPPTCL, Uttar Pradesh
13. Managing Director, RVPNL
14. Chairman-cum-Managing Director, OPTCL, Odisha
15. Chairman & Managing Director, WBSETCL, West Bengal
16. Managing Director, GETCO, Gujarat
17. Managing Director, MPPTCL, Madhya Pradesh
18. Chairman & Managing Director, KSEBL, Kerala
19. Chairman & Managing Director, TANTRANSOCO, Tamil Nadu
20. Chairman, AEGCL, Assam
21. Director General, EPTA, New Delhi – with a request to nominate members from 2 TSPs.

With a request to
nominate the
concerned officer

Bandwidth Congestion details in ER

Sl. No	From Stations	To station	Bandwidth usage	Single Node that affects multiple node	Installed Bandwidth Capacity	Year of Installation
1	ERLDC Kolkata	KASBA	96%	ERLDC	STM-16	2016
2	ERLDC Kolkata	SUBHASHGRAM PG	92%			
3	Kasba	SUBHASHGRAM PG	100.00%	KASBA	STM-16	2016
4	Kasba	Jeerat	95.40%			
5	Jeerat	RAJARHAT PG	74.70%	JEEERAT	STM-16	2016
6	Jeerat	Behrampur PG	87.20%			
7	Jeerat	Farakka NTPC	88.60%			
8	Behrampur PG	Farakka NTPC	81.60%	Behrampur PG	STM-16	2015
9	Farakka NTPC	Malda PG	85.30%			
10	Farakka NTPC	KAHALGAON NTPC	87.30%			
11	Farakka NTPC	DURGAPUR PG	86.30%	Farakka NTPC	STM-16	2016
12	Malda PG	Purnea 400 PG	74.60%	MALDA PG	STM-16	2015
13	Malda PG	Dalkhola PG	74.20%			
14	Purnea 400 PG	Binaguri 400KV PG	92.50%	Purnea 400 PG	STM-16	2016
15	Purnea 400 PG	Kishanganj PG	79.30%			
16	Dalkhola	Kishanganj PG	77.42%	Dalkhola	STM-16	2015
17	Kishanganj	SAHARSA	93.03%	Kishanganj	STM-16	2016
18	Kishanganj	Binaguri 400KV PG	92.10%			
19	SAHARSA	KPTL Darbhanga	92.60%			
20	Binaguri 400KV PG	RONGPO	76.87%	Binaguri 400KV PG	STM-16	2015
21	Binaguri 400KV PG	BIRPARA	74.30%			
22	KPTL Darbhanga	DARBHANGA ECI	92.63%	KPTL Darbhanga	STM-4	2015
23	Kahalgaon	LAKHISARAI	79.02%	Kahalgaon	STM-16	2015
24	Lakhisarai	BSF 400 KV	87.65%	Lakhisarai	STM-16	2015
25	BSF 400 KV	SASARAM	89.23%	BSF 400 KV	STM-16	2015
26	BSF 400 KV	MUZAFFARPUR	72.30%			
27	Arrah PG	PATNA PG	100.00%	Arrah PG	STM-4	2015
28	Arrah PG	BSF 400 KV	100.00%			
29	Sasaram PG	Gaya 765	79.60%			
30	Sasaram PG	AB380 Rept.	90.30%			
31	Gaya 765	Essar (chandwa)	90.45%	Gaya 765	STM-4	2015
32	Essar (chandwa)	Ranchi 765	87%	Essar (chandwa)	STM-4	2015
33	Ranchi 765	Ranchi 400	84.23%	Ranchi 765	STM-4	2015
34	Ranchi 400	Chaibasa	81.97%	Ranchi 400	STM-16	2015
35	Ranchi 400	Maithan PG	79.90%			
36	Maithan PG	KAHALGAON	75.96%			
37	Durgapur PG	KANCHANPUR	76.64%	Durgapur PG	STM-16	2016
38	Jamshedpur PG	Chaibasa	79.34%	Jamshedpur PG	STM-16	2015
39	Chaibasa	Rourkela	76.87%	Chaibasa	STM-16	2015
40	Rourkela	Jamshedpur PG	76.48%	Rourkela	STM-16	2016
41	Rourkela	JHARSUGUDA	85.80%	JHARSUGUDA	STM-4	2015

11	Northkaranpura STPP	1	Additional 1 no. SDH required for resource disjoint
12	Teesta V	1	Additional 1 no. SDH required for resource disjoint
13	Rangit	1	Additional 1 no. SDH required for resource disjoint
14	MPL	2	Not Required
Total quantity required		08 Nos.	

3) Connectivity of STU node on fibre in view of AMR.

The meter readings from several locations (mostly STU nodes) (list of location shall be provided by GRID-INDIA) in each region are intermittent and having communication issues as the meters at the state nodes are not having secure & reliable communication links and are operational on public domain communication links like GPRS. Deliberation in this regard was also held in 12th TeST meeting of ERPC.

GRID-INDIA has identified a list of such nodes for each region. It is proposed to provide the connectivity of such nodes on captive OPGW network for receiving the data successfully.

The line length from STU node to nearest ISTS node may be provided by Grid-India/STU/State constituent along with line name, line ownership etc as per attached format(**Annexure II**). Till date none of the state has provided the data.

Members may deliberate.

Deliberation:

CTUIL stated that even after repeated follow up and emails, the requisite data has not been provided by states.

ERLDC stated that the agenda may be discussed in TeST meeting where state representatives will be present. The forum agreed with the same.

4) Congestion in ISTS communication network:

The communication networks have STM16 link capacity at most of the places, however few links having STM 4 or lesser capacity. There may be few links /nodes the capacity of whom may have been utilised more than 75 percent. The detail of such nodes/links may be intimated by POWERGRID/GRID-INDIA which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.

Deliberation in 3rd Meeting:

POWERGRID agreed that such nodes/links shall be intimated to CTUIL on review of network.

POWERGRID has intimated the detail of links whose capacity is exceeded by 75%. POWERGRID to provide detail of the existing capacity of these links.

Members may deliberate.

Deliberation:

POWERGRID agreed to provide detail of the existing capacity of the links whose capacity is exceeded by 75%. POWERGRID vide email dtd.03.08.2023 has provided list for existing capacity of the links whose capacity is exceeded by 75% (as attached in **Annexure III**).

CTUIL requested POWERGRID to give agenda in regard to links where capacity has exhausted and upgradation is required.

CEA stated that the upgradation of capacity may be taken up considering change of technology to MPLS. CTUIL welcomed the suggestion and stated that the MPLS implementation shall take longer time in view of committee report and subsequent approvals. In view of this, the links with congestion of 90% and more shall be taken up on priority for upgradation.

CEA/CTUIL also requested POWERGRID to provide report on pilot project of MPLS conducted by them in ER region.

5) Integration of interstate tie lines with existing communication system. (By ERLDC)

By integrating the selected tie-line FO links b/w states with existing communication system to form a ring network b/w state and RLDC to enhance redundancy in the system.

Ex. – 132 KV Joda (OR) – Ramchandrapur (JH)

Deliberation in 3rd CPM:

Deliberations were held regarding whether the above said tie lines will be considered in ISTS lines or not.

CTUIL stated that as they are dealing with ISTS lines planning only, OPGW laying on these tie lines may be taken up by STU/concerned utility.

ERPC stated that such lines will not be covered in ISTS links. But, if OPGW laying on these tie lines will increase redundancy for ISTS network then a comprehensive proposal for such tie lines in consultation with concerned state utility may be put up in next upcoming meeting by GRID-INDIA.

GRID-INDIA has provided the detail of interstate tie lines on which OPGW is required.

Members may deliberate.

Deliberation:

Clause 5 for category (B) is stipulated below:

“Communication Schemes/Packages proposed by CTUIL for upgradation/modification of existing ISTS Communication System, standalone projects, adoption of new technologies shall be put up to RPC for their views. RPC to provide their views on the Schemes/Packages proposed by CTUIL within 45 days of receipt of the proposal from CTUIL”.

In consideration of above, it is requested that ERPC may forward their views in respect of the proposed scheme at the earliest, so that the scheme may be taken up promptly for consideration in the NCT meeting along with the views of ERPC.

The proposed scheme was deliberated in the 3rd & 4th Communication Planning meeting (CPM)) of CTUIL held on 26.12.2022 & 27.07.2023 respectively where in POWERGRID confirmed the quantity of additional FOTE required at AGC locations as per **Annexure B.1.2.1**.

The agenda for this scheme was also deliberated in 12th ER TeST meeting held on 09.11.2022 .This scheme after ERPC approval/review shall be put up to NCT for approval.

The proposed scheme along with MOM of 3rd & 4th Communication Planning meeting (CPM)) of CTUIL and MOM of 12th ER TeST meeting attached at **Annexure B.1.2.2**

CTU may explain. TCC may deliberate/concur.

Deliberation in 51st TCC Meeting:

Representative of CTU explained the agenda, highlighting the critical aspects related to the proposed scheme. They emphasized the importance of Automatic Generation Control (AGC) within the context of the project, underscoring the significance of reliable communication system for the operation of AGC. Accordingly, to enhance the reliability, redundant Fiber Optic Termination Equipment (FOTE) would be required.

Recognizing the importance of the AGC and its associated communication system, TCC agreed with the proposal and referred it to 51st ERPC meeting for necessary approval.

ERPC may approve.

Deliberation in 51st ERPC Meeting:

After a detailed review, ERPC approved the proposal of “Requirement of Additional FOTE for redundancy at AGC locations in Eastern Region”.

B.1.3 Requirement of Additional FOTE at various ISTS nodes in ER due to exhaustion of existing capacity-CTU

CTU has studied the existing ISTS communication system based on the inputs and feedback received from POSOCO and other constituents. Thereafter, the regular ISTS Communication Planning Meeting for Eastern Region was convened by CTUIL on 27.07.2023 and subject agenda was deliberated.

In line with MoP office order no. 15/03/2017-Trans-Pt (1) dated 09.03.2022 regarding “Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)- reg”, as per clause 5 for Category (B) Communication Schemes/Packages proposed by CTUIL for upgradation/modification of existing ISTS Communication System shall be put up to RPC for their views. RPC to provide their views on the Schemes/Packages proposed by CTUIL within 45 days of receipt of the proposal from CTUIL.

Clause 5 for category (B) is stipulated below:

“Communication Schemes/Packages proposed by CTUIL for upgradation/ modification of existing ISTS Communication System, standalone projects, adoption of new technologies shall be put up to RPC for their views. RPC to provide their views on the Schemes/Packages proposed by CTUIL within 45 days of receipt of the proposal from CTUIL”.

In consideration of above, it is requested that ERPC may forward their views in respect of the proposed scheme (**Annexure-B.1.3.1**) at the earliest, so that the scheme may be taken up promptly for consideration in the NCT meeting along with the views of ERPC.

In Eastern region, the communication network has STM16 link capacity at most of the places, however at few links/nodes have STM 4 or lesser capacity. For the few links /nodes, the capacity has been utilised for more than 75 percent. The detail of such nodes/links was intimated by POWERGRID(enclosed as **Annexure-B.1.3.2**) which are having congestion in terms of traffic/bandwidth so that planning for capacity enhancement of the node/link may be done.

4th Communication Planning meeting (CPM) deliberation:

CEA suggested that the upgradation of capacity may be taken up considering change of technology to MPLS. CTUIL welcomed the suggestion and stated that the MPLS implementation shall take longer time in view of committee report and subsequent approvals. In view of this, out of the above links provided by POWERGRID only links with congestion of approximately 90% and above & few other important stations shall be taken up on priority for upgradation.

Accordingly, the list of nodes in ER with capacity utilisation of approximately 90% and above & few other important stations is enclosed as **Annexure-B1.3.3**.

As per list, capacity upgradation of four numbers of STM4 FOTE(Fiber Optic Terminal Equipment) to STM-16 FOTE and thirteen nos. of STM16 FOTE to STM 64 FOTE is required.

CTU may explain. TCC may deliberate/concur.

Deliberation in 51st TCC Meeting:

Representative of CTU explained the agenda and flagged the issue of congestion in the communication network, especially in nodes/links with STM4 or lower capacity. He further highlighted the need for upgradation of four nos. STM4 FOTE to STM-16 FOTE and thirteen nos. STM16 FOTE to STM 64 FOTE.

Upon enquiry from ERPC secretariat, representative of POWERGRID mentioned that upgrading the equipment might not be possible and complete equipment replacement is necessary rather than an upgrade.

TCC agreed with the proposal for 13 nos of STM 16 to STM 64 conversion. However, TCC raised a query regarding the STM16 equipment that would be left unused after the STM 16 to STM 64 conversion and advised Powergrid to explore the feasibility of repurposing the surplus STM16 equipment for STM4 to STM16 conversion.

TCC referred the agenda to 51st ERPC for further deliberation and approval.

ERPC may approve.

Deliberation in 51st ERPC Meeting:

MS, ERPC briefly highlighted the need for upgradation of the ISTS communication network due to congestion, especially in nodes/links with STM4 or lower capacity.

CMD, OPTCL emphasized on the rapid technological changes, including the adoption of AI, and suggested implementing a scheme that is future-proof for at least the next 10 years. He further advocated against frequent changes of devices or equipment.

Upon enquiry from the forum, CTU representative confirmed that the upgraded equipment would be compatible and usable even after the implementation of MPLS technology.

ERPC decisions:

1. ERPC approved the conversion of 13 nos. STM 16 FOTE to STM 64 FOTE.
2. Advised POWERGRID to explore the feasibility of reusing the surplus STM16 equipment (13 units post STM16 to STM64 conversion) for the conversion of STM4 to STM16 and update the same in the next TeST Meeting of ERPC.

B.1.4 Revised connectivity for redundant path of Teesta-III- CTU

Presently, Teesta III is connected through Teesta III -Rangpo PLCC link.

First Fibre path for Teesta III is under implementation through Teesta III-Rangpo ckt 2 under ER-Additional Requirement Project.

The ckt 1 of Teesta-III-Rangpo line is LILoed at Dikchu HEP. The OPGW on Dikchu HEP - Rangpo portion is already planned for Teesta III – Rangpo ckt 1.

The ownership of these lines are as follows:

Teesta-III – Rangpo: TVTL & POWERGRID

LILO point L to LILO Line up to DIKCHU HEP:

Proposed connectivity of Teesta- III – LILO point L: TVTL & POWERGRID

Members may confirm.

Thus, the Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III-Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. This agenda is discussed in 12th ERPC TeST and in 47th ERPC dated 25/11/22(MoM attached as Annexure IV) & 49th ERPC 24/03/23.

However, as per MoM dtd 18.07.2023(attached as Annexure V) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by Dec 2023).

Further, in 24th CMETS-ER MoM dated 31st Oct 23, readiness of above said intra state transmission system was updated as 29th Feb 24(expected date).

Accordingly, the connectivity of OPGW for protection path of Teesta III is revised. Now, OPGW is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt

The revised diagram for the scheme is as below:

Availability details of RTU/SAS ethernet port at various POWERGRID stations for data reporting to Main and Back up RLDC through redundant channels

Sl.No	Region	Total Stations	No of stations				Remarks
			SAS(Are 5 no. of ethernet ports available)		RTU(Are 5 no. of ethernet ports available)		
			Yes(No's)	No(No's)	Yes(No's)	No(No's)	
1	WR1	26	15	9	2	0	
2	WR2	32	9	18	4	1	
3	SR1	21	0	13	0	8	
4	SR2	38	0	25	0	13	
5	ER1	17	11	1	0	5	Upgradation WIP SAS_5, RTU_5
6	ER2	14	4	3	1	6	Upgradation WIP SAS_5, RTU_6
7	NR1	38	8	22	4	4	
8	NR2	25	1	18	5	1	
9	NR3	27	5	15	5	2	
10	NER	22	2	14	0	6	
11	ODISHA	10	5	0	0	5	Upgradation WIP SA_1, RTU_5
Total		270	60	138	21	51	
Final qty (Stations are Excluded which are under upgradation)				138		35	
						Rate per station(Cr.)	Amount in Crores
Total SAS based stations				138		1.5	207.00
Total RTU based stations					35	0.3	10.50
Grand Total							217.50

Availability of additional requirement of RTU/SAS/SDH/Ethernet port at substation for dual redundancy of channels at Main and Back up RLD

Sl No	Region	Name of Substation	Protocol in use for data reporting at RLD	Are 4 no. of ethernet port available in existing RTU/SAS?		Required no. of Ethernet card (Minimum 2 port) in existing RTU	Required no. of Ethernet card (Minimum 2 port) in existing SAS/Gateway	Required no. of SAS	Required no. of ethernet port in SDH additionally* service wise				If Yes, Please mention requirement of SDH/Ethernet card	
				Yes/No	If no, please mention requirement of RTU/SAS/Ethernet card.				2 no. for SCADA Service	1 no. for PMU	1 no. for VOIP	2 no. for AGC		
1	ER1	Chaitusa 400/132kV	IEC 104	Yes					Yes/No	Yes/No	Yes/No	Yes/No	Requirement	
2	ER1	Gaya 765/400/220 KV	IEC 104	Yes					Yes	Yes	Yes	N/A	1 no ETH Card	
3	ER1	Kishanganj 400/220 KV	IEC 104	Yes					Yes	Yes	Yes	N/A	1 no ETH Card	
4	ER1	New Ranchi 765/400 kV	IEC 104	Yes					Yes	Yes	Yes	N/A	1 no ETH Card	
5	ER1	Chandwa 400 KV	IEC 104	Yes					No	No	No	N/A		
6	ER1	Dalonganj 400/220 KV	IEC 104	Yes					No	No	No	N/A		
7	ER1	Banka 400/132kV	IEC 104	Yes	SAS upgradation work is in progress				No	No	No	N/A		
8	ER1	Lakhisarai 400/132 KV	IEC 104	Yes	SAS upgradation work is in progress				No	No	No	N/A		
9	ER1	Sasaram 765/400/220/132/33 KV	IEC 104	Yes	SAS upgradation work is in progress				No	No	No	N/A		
10	ER1	Ara 220/132kV	IEC 104	Yes	SAS upgradation work is in progress				No	No	No	N/A		
11	ER1	Purnea 220/132 S/s	IEC 101	NO	SAS upgradation work is in progress				No	No	No	N/A		
12	ER1	Purnea New S/s	IEC 101	NO	RTU upgradation work is in progress				No	No	No	N/A		
13	ER1	Jamshedpur S/s	IEC 101	NO	RTU upgradation work is in progress				No	No	No	N/A		
14	ER1	Muzaffarpur S/s	IEC 101	NO	RTU upgradation work is in progress				No	No	No	N/A		
15	ER1	Sasaram S/s	IEC 101	NO	RTU upgradation work is in progress				No	No	No	N/A		
16	ER1	Biharsharif S/s	IEC 101	NO	RTU upgradation work is in progress				No	No	No	N/A		
17	ER1	Pana S/s	IEC 101	NO	May be taken up with vendor (schneider)				No	No	No	N/A		
Sl No	Region	Name of Substation	Protocol in use for data reporting at RLD	Are 4 no. of ethernet port available in existing RTU/SAS?		Required no. of Ethernet card (Minimum 2 port) in existing RTU	Required no. of Ethernet card (Minimum 2 port) in existing SAS/Gateway	Required no. of SAS	Required no. of ethernet port in SDH additionally* service wise				If Yes, Please mention requirement of SDH/Ethernet card	
Sl No	Region	Name of Substation	Protocol in use for data reporting at RLD	Yes/No	If no, please mention requirement of RTU/SAS/Ethernet card.				2 no. for SCADA Service	1 no. for PMU	1 no. for VOIP	2 no. for AGC		
1	ER2	Mada	IEC 104*	NO	Gateway - Ethernet card/ Splitter required		RTU converted into SAS in RHD packages/ADDCAP package. Compl. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
2	ER2	Rango	IEC 101	NO	Gateway - Ethernet card/ Splitter required		new SAS-1 no. required		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
3	ER2	Dukhola	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded/replaced with SAS		RTU converted into SAS in RHD packages/ADDCAP package. Compl. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	NA	No	NA	Not Required
4	ER2	Gangtok	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	NA	No	NA	Not Required
5	ER2	Silguri 220	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded/replaced with SAS		RTU converted into SAS in RHD packages/ADDCAP package. Compl. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	NA	No	NA	Not Required
6	ER2	Binguri	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
7	ER2	Subhasgram	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
8	ER2	Mauhon	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
9	ER2	Durgapur	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU being converted into SAS in RHD packages/ADDCAP package. Compl. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
10	ER2	Baharanpur	IEC 104 - Port	NO	NA, RTU communicating through PDH; RTU to be upgraded/replaced with SAS		SAS upgradation in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
11	ER2	Alpurdur	IEC 104 - Port	NO	SAS Gateway to be upgraded		SAS upgradation in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
12	ER2	Bipara GIS	IEC 104 - Port	NO	Gateway - Ethernet card/ Splitter required		SAS upgradation in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
13	ER2	Meli New	IEC 104 - Port	NO	Gateway - Ethernet card/ Splitter required		SAS upgradation in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
14	ER2	Rajrhat	IEC 104 - Port	NO	SAS Gateway to be upgraded		SAS upgradation in CC awarded packages/Package Y. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet card
Sl No	Region	Name of Substation	Protocol in use for data reporting at RLD	Are 4 no. of ethernet port available in existing RTU/SAS?		Required no. of Ethernet card (Minimum 2 port) in existing RTU	Required no. of Ethernet card (Minimum 2 port) in existing SAS/Gateway	Required no. of SAS	Required no. of ethernet port in SDH additionally* service wise				If Yes, Please mention requirement of SDH/Ethernet card	
Sl No	Region	Name of Substation	Protocol in use for data reporting at RLD	Yes/No	If no, please mention requirement of RTU/SAS/Ethernet card.				2 no. for SCADA Service	1 no. for PMU	1 no. for VOIP	2 no. for AGC		
1	ODISHA	Ripada	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
2	ODISHA	Indravati	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
3	ODISHA	Jypore	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
4	ODISHA	Rengali	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
5	ODISHA	Roorkele	IEC 101	NO	NA, RTU communicating through PDH; RTU to be upgraded		RTU 101 is being replaced with ru 104 in CC awarded packages. Timeline - 2 years		No. of Ethernet ports to be increased by existing replacing gateway	No	No	No	NA	Not Required
6	ODISHA	Anul	IEC 104 - Port	Yes	NA, SAS upgradation completed		Upgradation Completed		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet Card
7	ODISHA	Bolapur	IEC 104 - Port	Yes	NA, SAS upgradation completed		Upgradation Completed		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet Card
8	ODISHA	Konabar	IEC 104 - Port	Yes	NA, SAS upgradation completed		Upgradation Completed		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet Card
9	ODISHA	Panditbali	IEC 104 - Port	Yes	NA, SAS upgradation completed		Upgradation Completed		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet Card
10	ODISHA	Sundergarh	IEC 104 - Port	Yes	NA, SAS upgradation completed		Upgradation Completed		No. of Ethernet ports to be increased by existing replacing gateway	Yes	Yes	Yes	NA	Ethernet Card
Availability of additional requirement of SDH/Ethernet port at Control Centre for dual redundancy of channels at Main and Back up RLD														
Required no. of ethernet port additionally* service wise														
		2 no. for SCADA Service	1 no. for PMU	1 no. for VOIP	2 no. for AGC	2 no. for ICP	1 no. for PDC			If no, Please mention requirement of SDH/Ethernet card	Please mention BW congestion in the link till control centre, if any	Required no. of Ethernet card (Minimum 8 port)	Required no. of SDH with minimum 8 no. of Ethernet port	
Main RLD		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ethernet card	1	1	0	
Back up RLD/ALDC		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ethernet card	1	1	0	
										Total	2	2	0	

Fibre optic link proposed for replacement of OPGW in 5th Communication Planning Meeting of ER- Details of Communication Equipment

Link Name	Site Name	SDH Make	SDH Model	Year of commissioning	DCPS Make	DCPS Rating	Battery Bank Make	Battery Bank Rating	Year of Commissioning	Remarks	Requirement
400kV Farakka -Jeerat	Jeerat	Coriant	hiT 7080	2016	Delta	35A	HBL	450 A-h	2024	1 peak OPGW ; However, TL is presently LILOed at Sagardighi where both peak is having OPGW in LILO portion (at Sagardighi & Jeerat)	No Requirement of additional FOTE. However interfaces shall be required as per detailed engineering and link budget
	Farakka	Coriant	hiT 7080	2016	Exicom	750A	Exide	600 A-h	2016		No Requirement of additional FOTE. However interfaces shall be required as per detailed engineering and link budget
400kV Farakka-Malda	Farakka	ECI	NPT1200	2022	Ettek	15A	HBL	200 A-h	2022	BOTH PEAK OPGW	No Requirement of additional FOTE. However interfaces shall be required as per detailed engineering and link budget
		Tejas	TJ1400	2024	Huawei	600A	Amra Raja	1275 A-h	2012		
400kV Malda-Binaguri	Malda	Coriant	hiT 7080	2015	ASCOM	40A	HBL	650 A-h	2005	Presently TL is LILOed at Purnea. OPGW is laid on ONE PEAK only above Ckt.I	Additional FOTE required
					Delta	35A	HBL	450 A-h	2023		
400kV Binaguri-Bongaigaon	Binaguri	Coriant	hiT 7025	2015	ASCOM	40A	HBL	680 A-h	2005	Initially TL was Purnea-Bongaigaon which was LILOed at Binaguri later. OPGW is laid on one peak only (Ckt.II LILO portion at Binaguri & Ckt. I on Main TL)	No Requirement of additional FOTE. However interfaces shall be required as per detailed engineering and link budget
					Tejas	TJ1400	2020	Delta	35A		
400kV Indravati-Rengali-Talcher	Indravati	Coriant	hiT 7025	2015	Delta	35A	DBL	450 AH	2023		Existing STM-4 Equipment may be upgraded to STM-16
					Delta	35A	DBL	450 AH	2023		Existing STM-4 Equipment may be upgraded to STM-16
	Rengali	Coriant	hiT 7025	2015	Delta	35A	DBL	450 AH	2023		Existing STM-4 Equipment may be upgraded to STM-16
					Delta	35A	DBL	450 AH	2023		Existing STM-4 Equipment may be upgraded to STM-16
400kV Prayagraj (Allahabad)-Sasaram	Prayagraj (Allahabad)	Tejas	TJ1400	2014	Battery Bank replacement no Required.						Equipment may be replaced.
	Sasaram	Coriant	hiT 7025	2015	Delta	35A	HBL	450 A-h	2024		No Requirement of additional FOTE. However interfaces shall be required as per detailed engineering and link budget
		Tejas	TJ1400	2024							

Jeypore Indravati

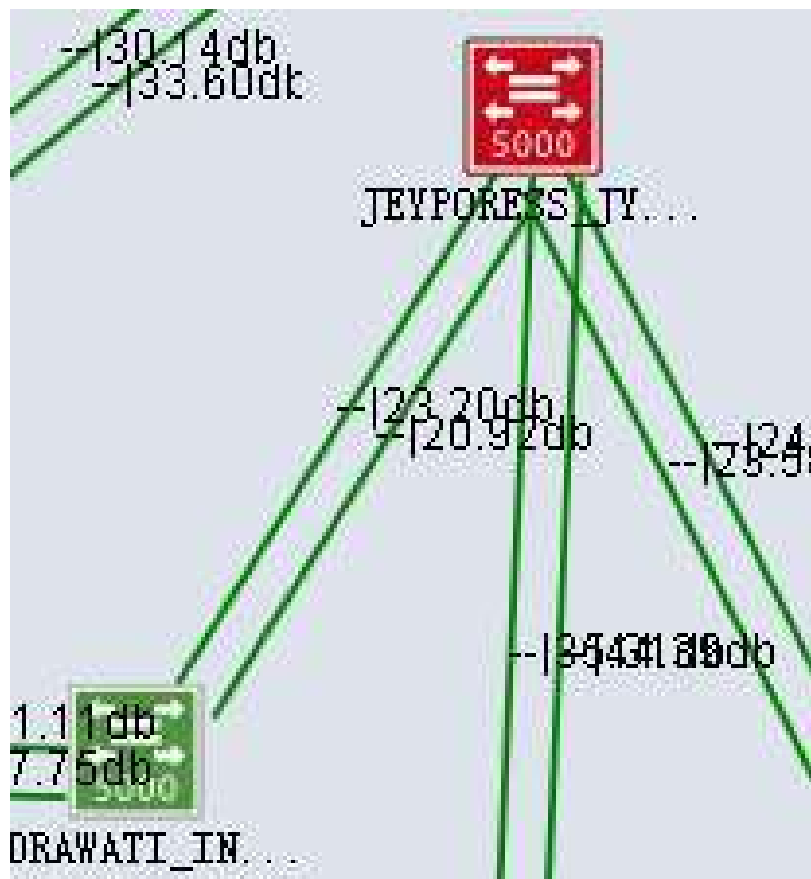
ZTE

The image shows two overlapping screenshots of a 'ZTE Optical Attenuation' window. The top window displays a table with one row of data. The bottom window displays a table with one row of data. Both windows have 'Refresh' and 'OK' buttons at the bottom right.

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA Inderavati-...	Indravati_ORRS_Z920_E2 -EONA3...	19.86	Jeypore**_ORRS_Z920_E2 -EONA...	-4.07	23.93

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Jeypore-SEO...	Jeypore**_ORRS_Z920_E2 -SEOB...	16.5	Indravati_ORRS_Z920_E2 -EONA3...	-7.51	24.01

FiberHome



Indravati-Talcher

ZTE

The diagram shows a network topology with several optical attenuation windows overlaid. The windows display the following data:

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Indravati_OR...	Indravati_ORRS_Z920_E2-EONA3...	20	ILA472***_KLHD_Z920_E2-EONAD252...	-14.92	34.92

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA472***_KL...	ILA472***_KLHD_Z920_E2-SEOBA...	17.28	Indravati_ORRS_Z920_E2-EONA3...	-13.34	30.62

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA472***_KL...	ILA472***_KLHD_Z920_E2-EONA...	15.27	ILA677***_BLGR_Z920_E2-EONA3...	-10.22	25.49

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA677***_BL...	ILA677***_BLGR_Z920_E2-EONA3...	19.95	ILA472***_KLHD_Z920_E2-SEOPA...	-6.98	26.93

The diagram shows a network topology with several optical attenuation windows overlaid. The windows display the following data:

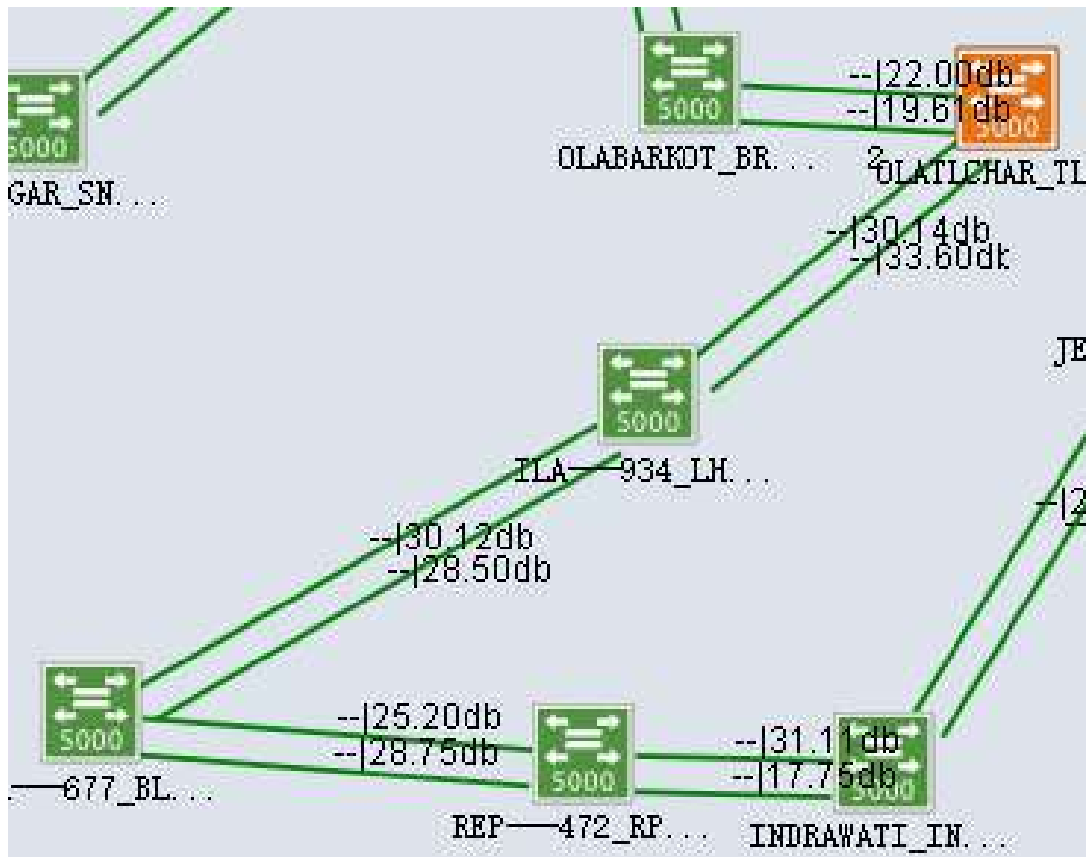
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	OLA T934-EO...	ILA677***_BLGR_Z920_E2-EONA3...	17.89	OLA-T934*_ORRS_Z920_E2-EON...	-13.54	31.43

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	OLA T934-EO...	OLA-T934*_ORRS_Z920_E2-EOBA...	21	ILA677***_BLGR_Z920_E2-EONA3...	-12.08	33.08

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	OLA T934-SE...	OLA-T934*_ORRS_Z920_E2-SEO...	14.58	Talchar**_ORRS_Z920_E2-EONA...	-12.79	27.37

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	OLA T934-EO...	Talchar**_ORRS_Z920_E2-EOBAH...	16.11	OLA-T934*_ORRS_Z920_E2-EON...	-15.48	31.59

FiberHome



Farakka Jeerat

ZTE

The image displays five overlapping ZTE Optical Attenuation configuration windows. Each window contains a table with the following columns: Row ID, Information of..., Source Port, Output Power(d..., Dest Port, Input Power(dB..., and Attenuation Val... Each window also features 'Refresh' and 'OK' buttons at the bottom right.

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Farakka-SEO...	Farakka**_WB**_Z920_E2-SEOBA...	19.67	ILA206***_MRSD_Z920_E2-EONA...	-7.15	26.82

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA206-EONA...	ILA206***_MRSD_Z920_E2-EONA...	18.49	Farakka**_WB**_Z920_E2-EONA...	-3.12	21.61

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA425-EONA...	ILA425***_NDIA_Z920_E2-EONAD...	19.99	ILA206***_MRSD_Z920_E2-EONA...	-8.37	28.36

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA206-EONA...	ILA206***_MRSD_Z920_E2-EONA...	19.99	ILA425***_NDIA_Z920_E2-EONAD...	-4.69	24.68

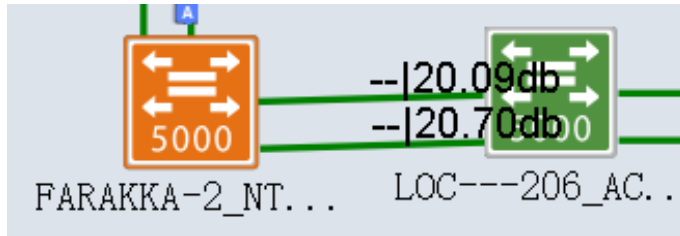
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA425-EONA...	JEERAT-SS_WB**_Z920_E2-SEOB...	19.25	ILA425***_NDIA_Z920_E2-EONAD...	1	18.25

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA425-EONA...	ILA425***_NDIA_Z920_E2-EONAD...	19.34	JEERAT-SS_WB**_Z920_E2-EONA...	-0.06	19.40

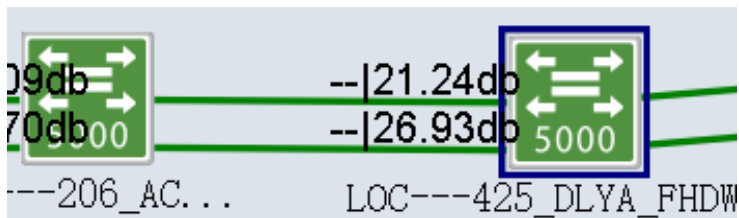
RTAMC8HLG MGLY Z385 NE Alarms are synchronized successfully. | NE Count:1399 Disconnected NE:30 Offline NE:99

FiberHome

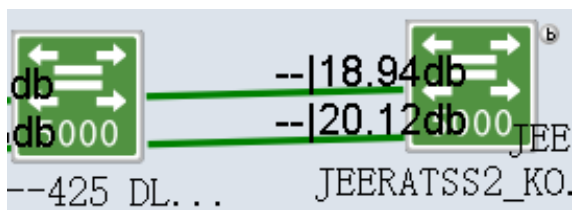
Farakka - ILA 206



ILA 206 - LOC 425



LOC 425 - Jeerat



Farakka Malda

ZTE

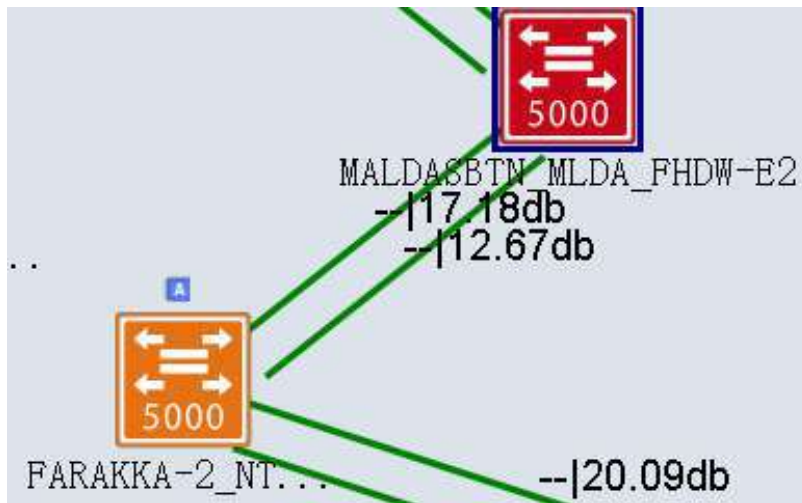
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Malda-EONA...	Farakka**_WB**_Z920_E2-SEOBA...	19.33	Malda-SS*_WB**_Z920_E2-EONA...	-1.07	20.40

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Malda-EONA...	Malda-SS*_WB**_Z920_E2-EONA...	19.99	Farakka**_WB**_Z920_E2-EONA2...	1.75	18.24

Refresh OK

FiberHome



Farakka Kahalgaon

ZTE

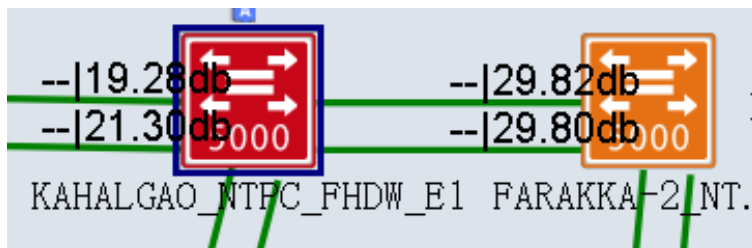
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Farakka-SEO...	Farakka**_WB**_Z920_E2 -SEOBA...	19.44	Kahalgaon_BIHR_Z920_E1 -EONA...	-8.3	27.74

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Farakka-EON...	Kahalgaon_BIHR_Z920_E1 -SEOB...	19.51	Farakka**_WB**_Z920_E2 -EONA3...	-11.34	30.85

Refresh OK

FiberHome



Malda Binaguri

ZTE

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA-947-EON...	Malda-SS*_WB**_Z920_E2 -SOP2[...		ILA947***_RGJ*_Z920_E2 -EONAD...	-5.18	Unable to count...

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA-947-EON...	ILA947***_RGJ*_Z920_E2 -EONAD...	20.01	Malda-SS*_WB**_Z920_E2 -SOP2[...	-8.47	28.48

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA-947-EON...	ILA947***_RGJ*_Z920_E2 -EONAD...	19.61	ILA750***_RGJ*_Z920_E2 -EONAD...	-3.49	23.10

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA-947-EON...	ILA750***_RGJ*_Z920_E2 -EONAS...	20	ILA947***_RGJ*_Z920_E2 -EONAD...	-2.45	22.45

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA 750-EONA...	ILA750***_RGJ*_Z920_E2 -EONAD...	19.98	Binaguri*_WB**_Z920_E2-SOP2[0-...	-4.75	24.73

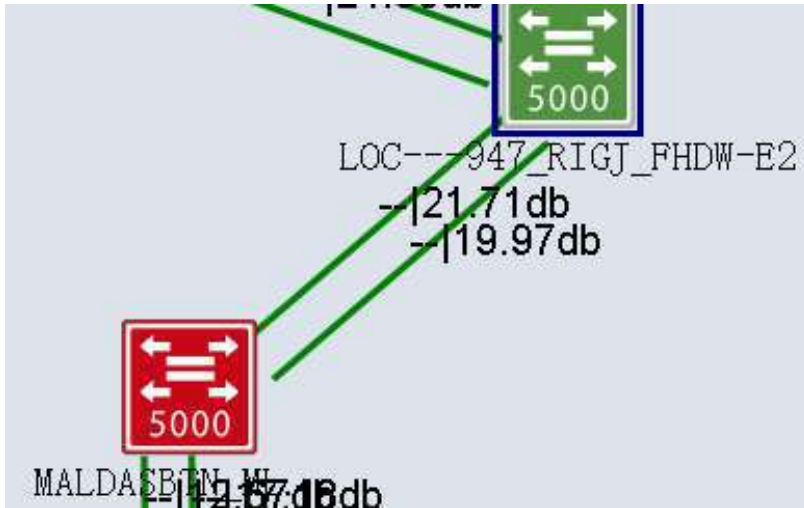
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1	ILA 750-EONA...	Binaguri*_WB**_Z920_E2-SOP2[0-...		ILA750***_RGJ*_Z920_E2 -EONAS...	-8.22	Unable to count...

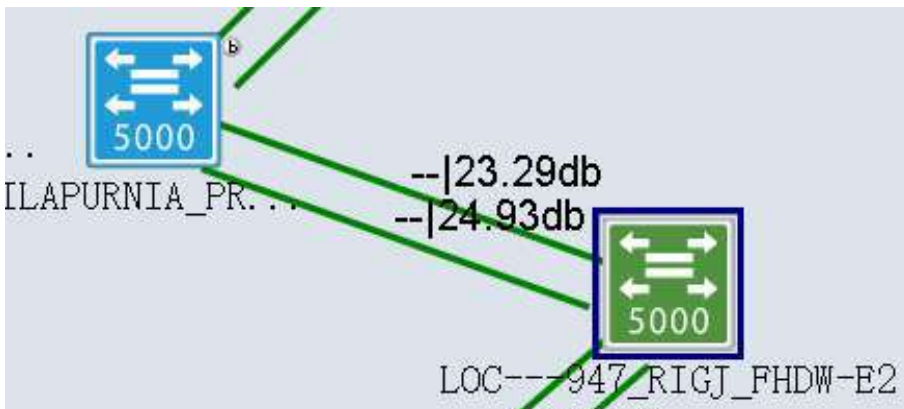
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FiberHome

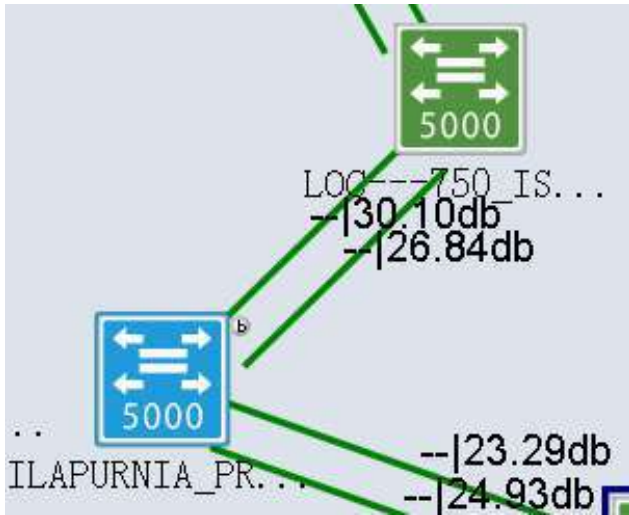
Malda - LOC 947



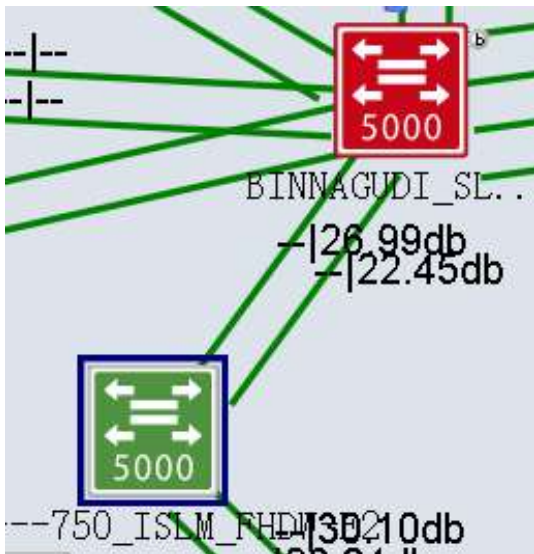
LOC 947 - ILA Purnia



ILA Purnia - LOC 750



LOC 750 – Binaguri

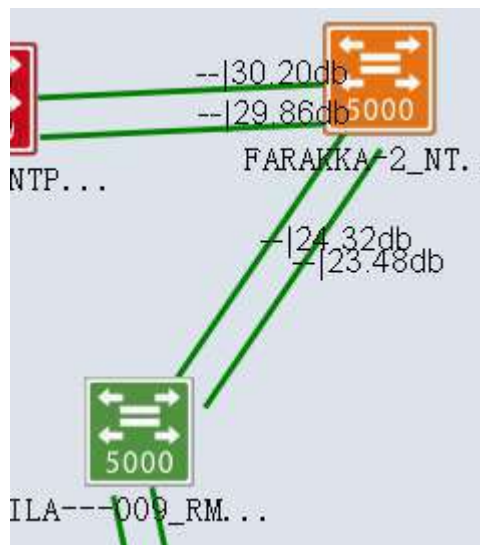


Durgapur Farakka

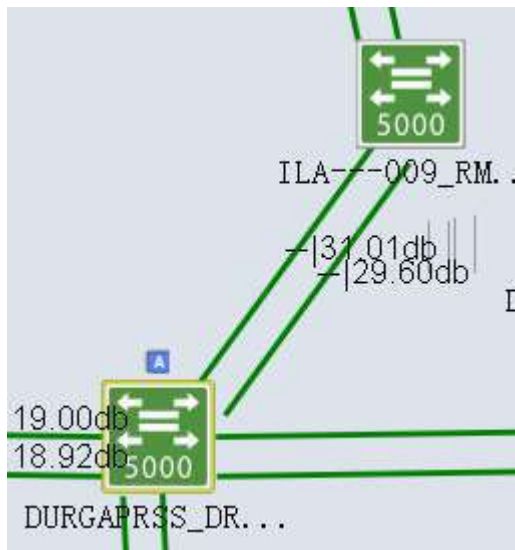
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Durgapur-SE...	Durgapur*_DGP*_Z920_E2 -SEOB...	19.98	ILA185***_RPH*_Z920_E2 -EONAD...	-10.56	30.54
1	ILA185***_RP...	ILA185***_RPH*_Z920_E2 -EONAD...	19.99	Durgapur*_DGP*_Z920_E2 -EONA...	-11.77	31.76
1	Farakka-SEO...	Farakka**_WB**_Z920_E2 -SEOBA...	19.47	ILA185***_RPH*_Z920_E2 -EONAD...	-4.51	23.98
1	ILA-T185-EO...	ILA185***_RPH*_Z920_E2 -EONAD...	19.42	Farakka**_WB**_Z920_E2 -EONA2...	-4.98	24.40

FiberHome

Farakka - OLA 009



OLA 009 - Durgapur



Binaguri Bongaigaon

ZTE

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Binaguri-SEO...	Binaguri*_WB**_Z920_E2-SEOBA2...	18.84	ILA396***_JLPG_Z920_E2-EONAD...	-5.49	24.33

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Binaguri M92...	ILA396***_JLPG_Z920_E2-EONAD...	19.99	Binaguri*_WB**_Z920_E2-EONA33...	-6.89	26.88

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Coochbehr_...	Cooch_254_WB**_Z920_E2-EONA...	18.03	ILA396***_JLPG_Z920_E2-EONAD...	-3.41	21.44

Refresh OK

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	ILA-T-396-EO...	ILA396***_JLPG_Z920_E2-EONAD...	18.51	Cooch_254_WB**_Z920_E2-EONA...	-4.12	22.63

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Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Coochbehar_...	Cooch_254_WB**_Z920_E2-EONA...	20	Bongaigan_ASSM_Z920_NE-EONA...	-13.17	33.17

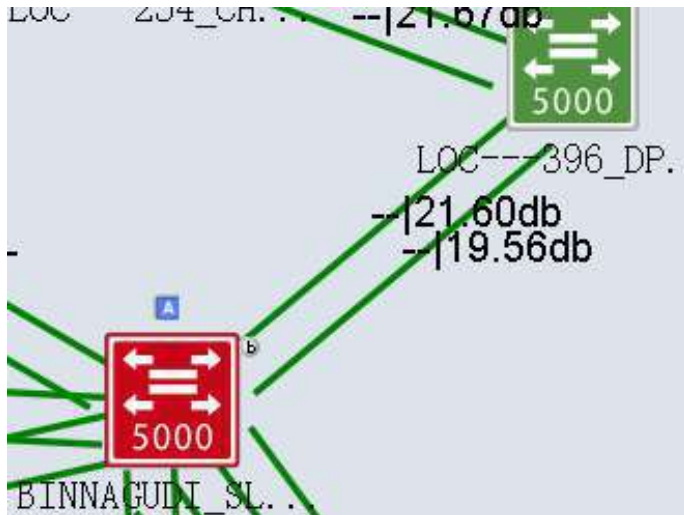
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Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Coochbehr_...	Bongaigan_ASSM_Z920_NE-SEOB...	16.07	Cooch_254_WB**_Z920_E2-EONA...	-13.19	29.26

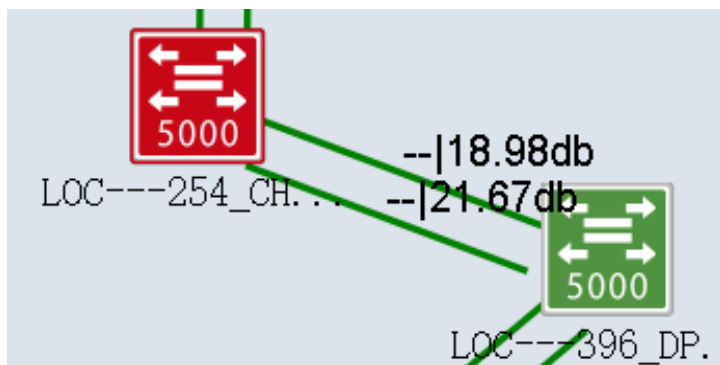
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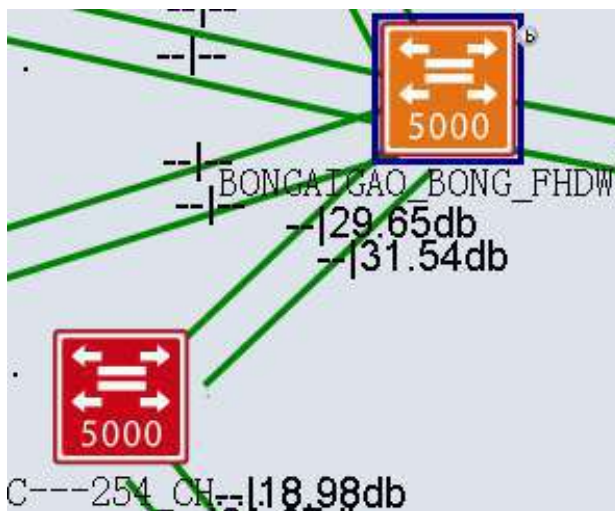
Binaguri - LOC 396



LOC 396 - LOC 254



LOC 254 - Bongaigaon



ANNEXURE B.2.10

Site Name	Total Licence (IP Phone)	IP Phone-configured in System	No of used IP Phone	Total Licence (SIP Phone)	SIP Phone-configured in system	No of used SIP Phone	Total Licence (2 Wire/Analog phone)	No of used Analog Phone	Analog Phone configured in system	
Bhubneshwar	142	93	86	40	30	28	180	information to be provided by respective stu	135	
Meramandli	142	10	10	40	2	0	180		48	
Ranchi,Kusai colon	142	6	6	40	4	2	116		96	
Patna	142	131	60	40	2	0	212		200	
Howrah	142	130	7	40	20	16	212		204	
Maithan	202	76	50	250	60	50	148		120	
Sikkim	142	4	3	40	0	0	84		68	
SLDC,WB	142	64	4	40	0	0	148		48	
AL WB	142	20	10	40	0	0	212		48	
SLDC,Ranchi	142	34	Not used	40	0	Not Used	116		34	
	1480	568	236	610	118	96	1608		0	1001



सेंट्रल ट्रान्समिशन यूटिलिटी ऑफ इंडिया लिमिटेड

(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)

(भारत सरकार का उद्यम)

CENTRAL TRANSMISSION UTILITY OF INDIA LTD.

(A wholly owned subsidiary of Power Grid Corporation of India Limited)

(A Government of India Enterprise)

Ref: CTU/E/01/Dikchu

Date: 18-07-2023

To: As per Distribution List


Subject: Minutes of Meeting regarding scheduling of power from Dikchu HEP in Sikkim under GNA Regulations, 2022

Dear Sir/Ma'am,

A meeting to discuss the scheduling of 96MW power from Dikchu HEP in Sikkim under GNA Regulations, 2022 was held on 26th June, 2023 through video conferencing. In this regard, please find enclosed minutes of the meeting.

धन्यवाद/ Thanking you,

भवदीय / Yours faithfully,


18/07/2023

(राजेश कुमार) / (Rajesh Kumar)

वरिष्ठ महाप्रबंधक/ Sr. General Manager

Distribution List:

1. Chief Engineer (PSP&A-II) Central Electricity Authority Sewa Bhawan, R.K.Puram New Delhi-110066	2. Member Secretary Eastern Regional Power Committee 14, Golf Club Road, Tollygunge Kolkata-700033
3. Director (SO) Grid Controller of India Limited 9th Floor, IFCI Towers, 61, Nehru Place, New Delhi-110016	4. Executive Director Eastern Regional Load Despatch Centre 14, Golf Club Road, Jubilee Park, Golf Gardens, Tollygunge, Kolkata, West Bengal - 700095
5. Authorised Signatory Sneha Kinetic Power Projects Pvt. Ltd. C-35, Lane-1, Sector-2, New Shimla Shimla, Himachal Pradesh-171009	

Minutes of Meeting held on 26-06-2023 regarding scheduling of 96MW power from Dikchu HEP in Sikkim under GNA Regulations, 2022

- 1.0 Dy. COO (CTUIL) welcomed the participants to the meeting. The list of participants is enclosed at **Annexure-I**.
- 2.0 CTU informed that the present meeting has been convened based on the letter received from M/s Sneha Kinetic Power Projects Private Limited (SKPPPL) dated 06-06-2023 (enclosed at **Annexure-II**) wherein M/s SKPPPL has requested the formalities to be fulfilled for scheduling of 96MW power from its Dikchu HEP in Sikkim under GNA Regulations, 2022.
- 3.0 CTU mentioned the following about the matter:
 - An interim ISTS connectivity of 96MW was granted to M/s SKPPPL as per CERC order dated 03-12-2014 in Petition No. 157/MP/2014 wherein CERC allowed LILO of one circuit of Teesta III HEP – Kishanganj 400kV D/c (Quad) line (subsequently LILoed at Rangpo S/s) at Dikchu HEP as an interim arrangement connectivity of Dikchu HEP. In the said order, it is also mentioned that the interim arrangement is to be removed upon completion of originally planned 220kV Dikchu – Rangpo line (to be initially operated at 132kV) by Govt. of Sikkim.
 - The intra-state connectivity system (under the scope of Sikkim) was revised from original plan in the 1st meeting of ERPC-TP held on 14-02-2020, wherein following was decided in regard to Connectivity system of Dikchu HEP:

“the following scope of works in regard to connectivity system of Dikchu HEP was agreed:

 - (i) *LILo of one circuit of Dikchu Pool-Singhik 220kV D/c (Twin Moose) line (to be initially operated at 132kV) – by Govt. of Sikkim*
 - (ii) *LILo of one circuit of Teesta-III – Rangpo/Kishanganj 400kV D/c (Quad) line at Dikchu HEP would be disconnected from Dikchu HEP switchyard and original Teesta-III – Rangpo – Kishanganj 400kV D/c (Quad) line would be restored by generation developer upon commissioning of above LILo.”*
 - LILo of one circuit of Dikchu Pool – Singhik 220kV D/c line (operated at 132kV) at Dikchu HEP is being implemented under Comprehensive Scheme (being implemented by POWERGRID under Consultancy). POWERGRID vide email dated 23-06-2023 has informed that the above scheme is expected by Dec 2023.
 - Presently, no LTA exists from Dikchu HEP, and ERLDC confirmed that power is being evacuated from Dikchu HEP under STOA only.
 - Now M/s SKPPPL vide said letter has requested for the formalities required to schedule 96MW power under the GNA Regulations, 2022 without affecting

the operation of the plant. In this regard, it is to mention that the most suitable provision under GNA Regulations, 2022 was observed is **2nd proviso of Regulation 22.4 (a)**, which is quoted below:

“For Connectivity grantees covered under Regulation 4.1 of these regulations, the effective date of GNA of such Connectivity grantees shall be the start date of Connectivity or COD of ATS, whichever is later.

Provided that where only some of the transmission elements of the ATS have achieved COD before the COD of the ATS and the Connectivity grantee seeks part effectiveness of its Connectivity, the Nodal Agency shall make such part Connectivity and corresponding GNA effective, subject to availability of transmission system.

Provided also that where such GNA is yet to become effective, such entity shall be eligible to get its power scheduled partly or fully of the quantum of Connectivity sought for, subject to availability of transmission system by treating such access as deemed T-GNA, and shall not be required to pay T-GNA charges.”

- 4.0 In view of the above, it was proposed that once the scheduling of power under GNA Regulations, 2022 starts, the scheduling of power from Dikchu HEP may be done under T-GNA till commissioning of final intra-state connectivity system.
- 5.0 ERLDC mentioned that as per Regulation 26.1 of the GNA Regulations 2022, M/s SKPPPL for its Dikchu generation would not fulfill the eligibility requirements for grant of T-GNA as they are injecting entity. CTU mentioned that T-GNA may be allowed by Grid-India from Dikchu HEP to eligible entities under Regulation 26.1 till commissioning of final intra-state connectivity system.
- 6.0 ERLDC further mentioned that as per the present interim arrangements viz. LILO of one circuit of Teesta III HEP – Kishanganj 400kV D/c (Quad) line (subsequently LILoed at Rangpo S/s) at Dikchu HEP, under the outage of Dikchu – Rangpo 400kV line section, there is an operational constraint in evacuation of power (considering overload capacity) of both Teesta-III & Dikchu HEPs simultaneously during the high hydro condition due to the limiting constraints in 400kV cable installed at Teesta-III switchyard (2000A rated cable section in Quad Moose line). Accordingly, curtailment of power of Dikchu HEP would be required under T-GNA. ERPC also supported the operational constraints raised by ERLDC.
- 7.0 CTU clarified that Teesta-III HEP has been granted deemed GNA of 536MW. Further, they the generation developer has already opted for transition of balance quantum i.e. 664MW (1200-536), under Regulation 37.6 (1), which has already been agreed for grant on existing ISTS in the 19th CMETS-ER with start date as “Date from which scheduling under GNA starts as per CERC notification/communication”. As per Regulation 37.6 (1) (a), grant shall be made after submission of requisite Conn-BG by generation developer of Teesta-III HEP. Further, the Regulation 29.2 states that “The GNA grantees shall have priority over the T-GNA grantees for use of the ISTS.”. Thus, curtailment of power under T-GNA, if any, would be as per the provisions in the GNA Regulations, 2022.

- 8.0 It was also noted in the meeting that, the ISTS transmission charges and deviation calculation for Dikchu HEP for T-GNA shall be as per applicable Regulations of CERC.
- 9.0 Dikchu HEP developer noted that power scheduled with present ISTS interim arrangement under T-GNA is liable to curtailed as per provisions of GNA Regulations, 2022.
- 10.0 After detailed deliberations, it was agreed that 96MW of power can be scheduled from Dikchu HEP (in Sikkim) of M/s SKPPPL under T-GNA in line with various provisions of the GNA Regulations, 2022. This arrangement shall strictly continue only till completion/commissioning of final intra-state connectivity system of Dikchu HEP by Govt. of Sikkim i.e. LILO of one circuit of Dikchu Pool – Singhik 220kV D/c line (operated at 132kV) at Dikchu HEP. Further, the ISTS transmission charges and deviation calculation for Dikchu HEP for T-GNA in ISTS shall be as per applicable Regulations of CERC.

- x - x - x -

B) Teesta-III Node

Presently, Teesta III is connected through Teesta III - Rangpo PLCC link. First Fiber path is under implementation through Teesta III- Rangpo circuit#1. Teests-III-Rangpo#2 is LILoed at Dikchu. The Redundant Fiber path for Teesta-III may be planned through LILo of Teesta III- Rangpo #2. For redundant fiber path, OPGW may be laid on Teesta III- Dikchu portion (approx. 26 kms line length) of Teesta III - Rangpo#2.

OPGW is already planned on Dikchu -Rangpo portion of Teesta III - Rangpo#2 .

The detailed scheme is attached at **Annexure-1.4B**.

12th TeST Committee accorded the scheme and referred it to TCC for further approval.

Deliberation in the 47th TCC meeting:

TCC concurred and referred it to ERPC for approval.

Deliberation in the 47th ERPC meeting:

ERPC approved.

B1.5. Upgradation of OPGW network in DVC for strengthening and redundancy of communication network in DVC sector.

DVC intends for strengthening of communication network of DVC through laying of OPGW based communication system for following major purposes:

- In the present communication network of DVC, there are some nodes having single connectivity. For redundant connectivity, OPGW connectivity for the stations is to be established in redundant paths.
- Strengthening of the existing communication network will enable reliable real-time data transfer for smooth grid operations.
- OPGW connectivity is required for establishment of DTPC in some lines.
-

Following is the list of links where OPGW laying along with terminal equipment is proposed:

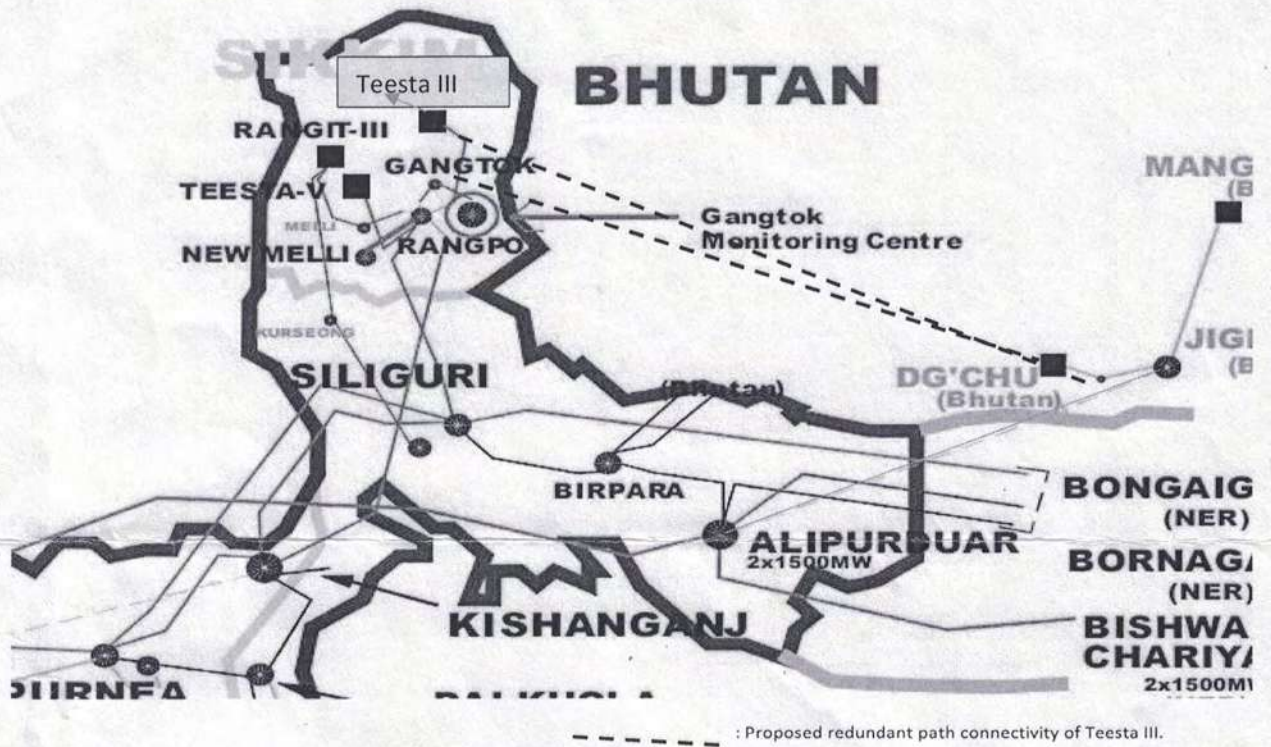
S/n	Name of Link	Voltage Level	Approx. Length (Km)
1	BokaroA-Koderma	400kV	105
2	Dhanbad-Patherdih	132kV	22
3	CTPS-Kalyaneswari LILo at RTPS	220kV	125
4	Parulia-Bardhaman	220kV	90
5	DTPS-Parulia (LILo at DSPTS) LILo part (48F)	220kV	8
6	BokaroA-Jamshedpur (DVC)	220kV	155
7	Joda-Jamshedpur (DVC)	220kV	140
8	MejiaA-Ramgarh220	220kV	155
9	BTPSA-BTPS B (UGFO)	UG	5
Total			805

Connectivity of Teesta III to ISTS Fibre communication network

S. No.	Items	Details
1.	Name of Scheme	Connectivity of Teesta III(Teesta Urja Ltd.) to ISTS communication network
2.	Scope of the scheme	The OPGW installation on Teesta III- Dg'chu portion (approx. 26 kms line length) of 400kV Teesta III – Rangpo#2(TPTL line).
3.	Depiction of the scheme on FO Map	Exhibit-I
4.	Objective / Justification	<p>Presently, Teesta III is connected through Teesta III - Rangpo PLCC link.</p> <p>First Fiber path is under implementation through Teesta III-Rangpo circuit#1.</p> <p>Teests-III-Rangpo#2 is LILLOed at Dg'chu. The Redundant Fiber path for Teesta-III may be planned through LILLO of Teesta III-Rangpo #2. For redundant fiber path, OPGW may be laid on Teesta III- Dg'chu portion (approx. 26 kms line length) of Teesta III – Rangpo#2.</p> <p>OPGW is already planned on Dg'chu -Rangpo portion of Teesta III – Rangpo#2.</p>
5.	Estimated Cost	Rs. 1.167 Crore (approx.)
6.	Implementation time frame	21 months from Gazette notification.

Suman
24.8.2022
Kaushal Suman
Manager, CTUEL

FO connectivity of Teesta III in Map



Schematic diagram of FO connectivity of Teesta III



Legend:

— — — — — : Present scope

----- :Planned

Suman
24.08.2022
Kaushal Suman
Mgs., CTUEL

At present, all Nodes of POWERGRID are having redundant power supply, either from ULDC DCPS or from Substation Charger. However at Kasba Node which is critical for data reporting of all Central Sector and State sector stations at ERLDC, there is only single power supply from ULDC DCPS. Therefore, it would be beneficial to all stakeholders in case a redundant power supply is made available at Kasba Node. At present, POWERGRID is implementing the project: Strengthening of OPGW network in Eastern Region. Therefore, it would be prudent to include 01 no. 48V DCPS with BB within scope of above project for better redundancy of power supply for communication equipment. Since, the Kasba node is within WBSETCL premises, necessary space to be provided by WBSETCL.

Members may deliberate.

Deliberation: POWERGRID explained the requirement of redundant power supply at Kasba node as mentioned above. Grid-India agreed for the same.

Forum suggested POWERGRID to carryout the survey of WBSETCL premises for arranging suitable space requirement and accordingly put up the agenda in test meeting.

8. Revised connectivity for redundant path of Teesta-III

Presently, Teesta III is connected through Teesta III -Rangpo PLCC link.

First Fibre path for Teesta III is under implementation through Teesta III-Rangpo ckt 2 under ER-Additional Requirement Project.

The ckt 1 of Teesta-III-Rangpo line is LILOed at Dikchu HEP. The OPGW on Dikchu HEP - Rangpo portion is already planned for Teesta III – Rangpo ckt 1.

The ownership of these lines are as follows:

Teesta-III – Rangpo: TVTL & POWERGRID

LILO point L to LILO Line up to DIKCHU HEP:

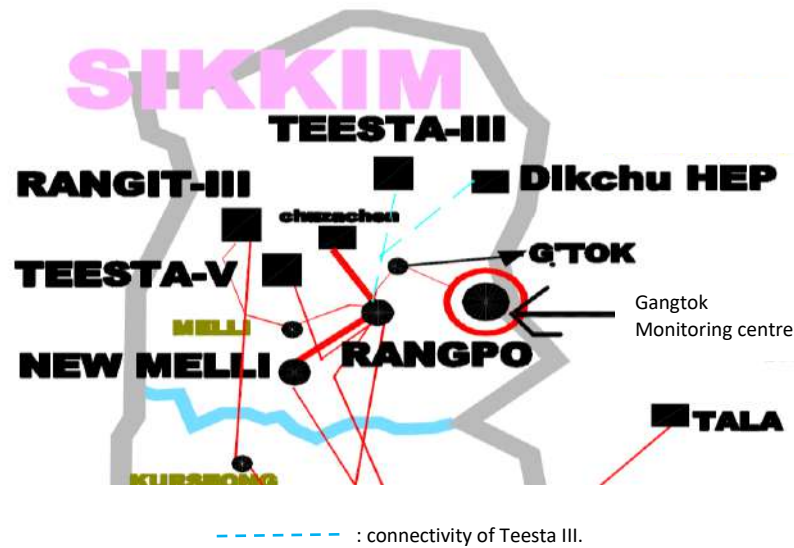
Proposed connectivity of Teesta- III – LILO point L: TVTL & POWERGRID

Members may confirm

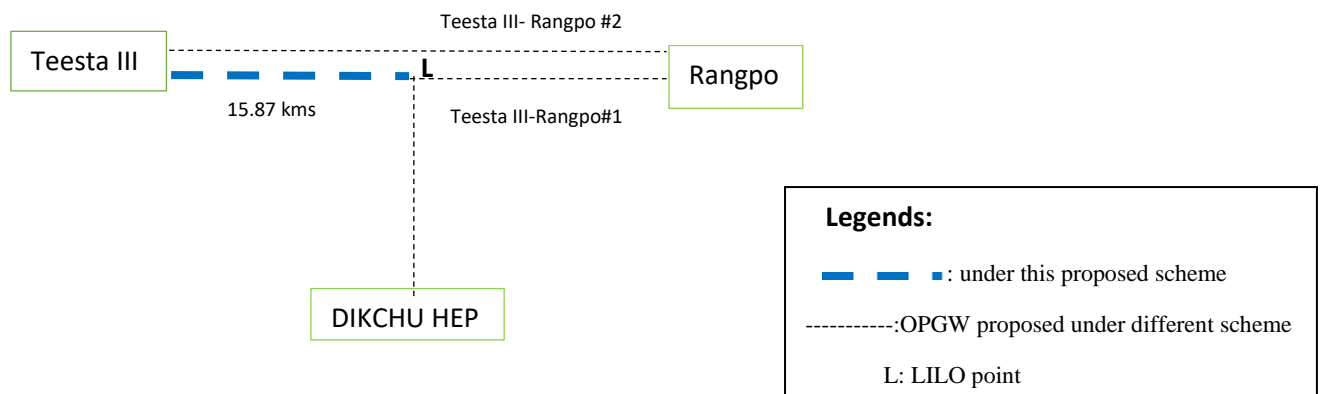
Thus, the Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III-Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. However, as per MoM dtd 18.07.2023(attached as **Annexure IV**) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by Dec 2023).

Accordingly, the connectivity of OPGW for protection path of Teesta III is revised. Now, OPGW is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt 1. The revised diagram for the scheme is enclosed

Redundant path Connectivity of Teesta III



Schematic diagram of FO connectivity of Teesta III



Deliberation:

POWERGRID stated that they are already implementing this scheme. They further stated that suggestion of removal of Dikchu HEP to LILLO point Transmission line by Dec 2023 will hamper the DOCO and recovery of the investment made for this scheme. ERLDC stated that they will also look up into the matter and revert.

In view of above, CTU proposed to take up the matter to ERPC TeST meeting for deliberation of this issue and further feasibility of provision of OPGW from Teesta III to LILLO point.

9.Strengthening of Communication link between SLDCs to ERLDC: There are many instances of outage of data/voice at ERLDC due to failure of communication link including last

CMD, OPTCL emphasized on the rapid technological changes, including the adoption of AI, and suggested implementing a scheme that is future-proof for at least the next 10 years. He further advocated against frequent changes of devices or equipment.

Upon enquiry from the forum, CTU representative confirmed that the upgraded equipment would be compatible and usable even after the implementation of MPLS technology.

ERPC decisions:

1. ERPC approved the conversion of 13 nos. STM 16 FOTE to STM 64 FOTE.
2. Advised POWERGRID to explore the feasibility of reusing the surplus STM16 equipment (13 units post STM16 to STM64 conversion) for the conversion of STM4 to STM16 and update the same in the next TeST Meeting of ERPC.

B.1.4 Revised connectivity for redundant path of Teesta-III- CTU

Presently, Teesta III is connected through Teesta III -Rangpo PLCC link.

First Fibre path for Teesta III is under implementation through Teesta III-Rangpo ckt 2 under ER-Additional Requirement Project.

The ckt 1 of Teesta-III-Rangpo line is LILoed at Dikchu HEP. The OPGW on Dikchu HEP - Rangpo portion is already planned for Teesta III – Rangpo ckt 1.

The ownership of these lines are as follows:

Teesta-III – Rangpo: TVTL & POWERGRID

LILO point L to LILO Line up to DIKCHU HEP:

Proposed connectivity of Teesta- III – LILO point L: TVTL & POWERGRID

Members may confirm.

Thus, the Redundant Fibre path for Teesta-III was planned by laying of OPGW on Teesta III-Dikchu HEP portion (approx. 26km line length) of Teesta III – Rangpo ckt1. This agenda is discussed in 12th ERPC TeST and in 47th ERPC dated 25/11/22(MoM attached as Annexure IV) & 49th ERPC 24/03/23.

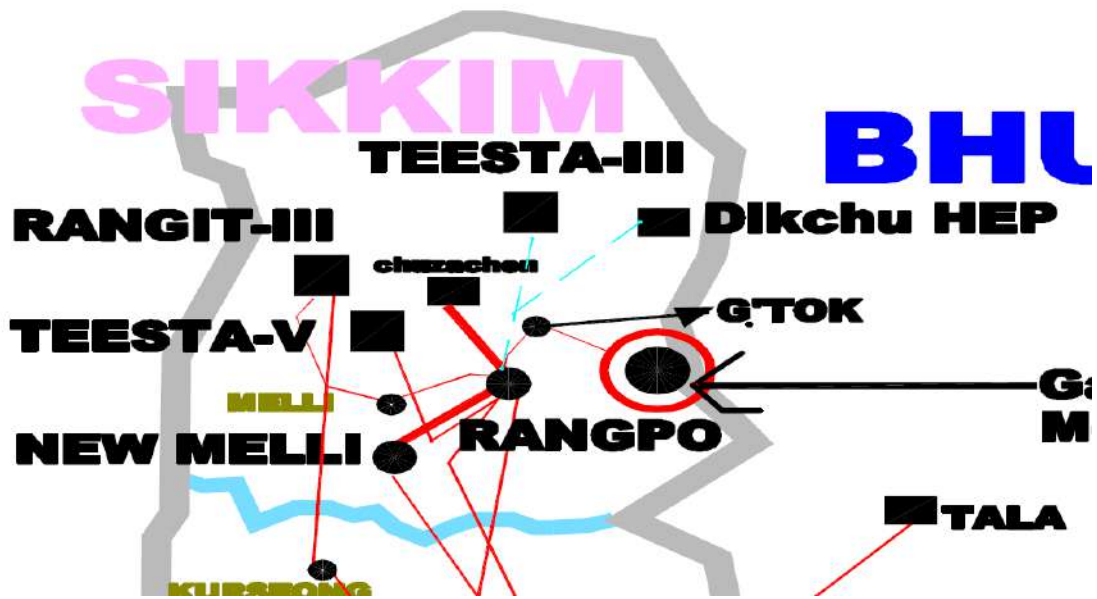
However, as per MoM dtd 18.07.2023(attached as Annexure V) regarding scheduling of power from Dikchu HEP in Sikkim under GNA regulation 2022, it is understood that connectivity of Dikchu HEP with ISTS is an interim arrangement and shall be eliminated on readiness of intra state transmission system (expected by Dec 2023).

Further, in 24th CMETS-ER MoM dated 31st Oct 23, readiness of above said intra state transmission system was updated as 29th Feb 24(expected date).

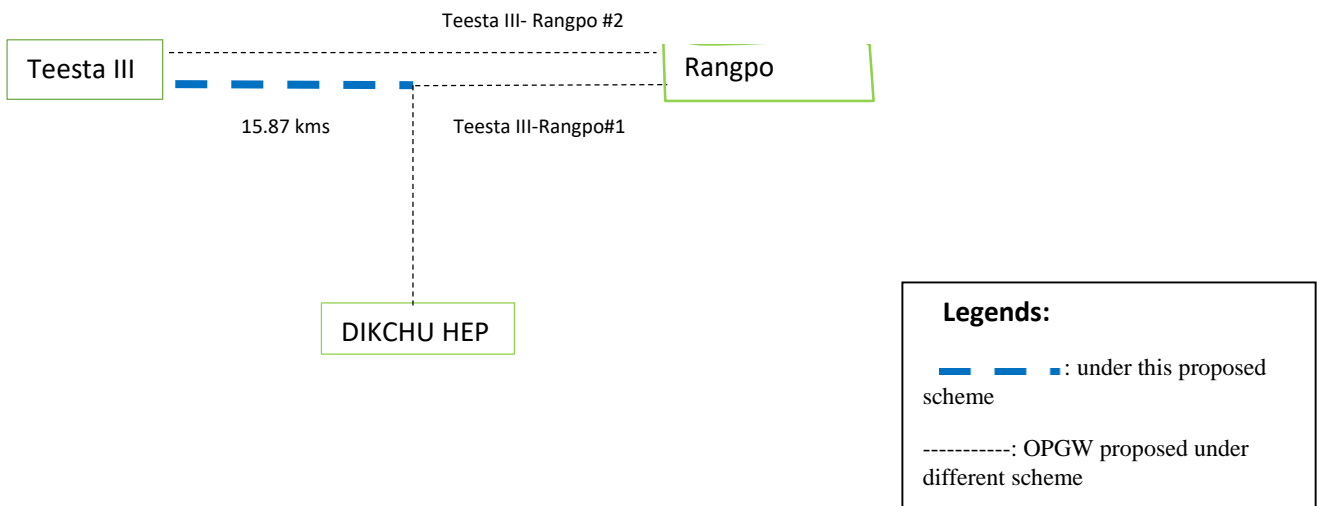
Accordingly, the connectivity of OPGW for protection path of Teesta III is revised. Now, OPGW is proposed on Teesta III to LILO point for Dikchu HEP (15.87 km) on Teesta III-Rangpo ckt

The revised diagram for the scheme is as below:

Redundant path Connectivity of Teesta III



Schematic diagram of FO connectivity of Teesta III



In the 4th CPM of ER dated 27/07/23(MoM attached as **Annexure –B.1.4**), POWERGRID stated that they are already implementing this scheme. They further stated that suggestion of removal of Dikchu HEP to LILO point Transmission line by Dec 2023 will hamper the DOCO and recovery of the investment made for this scheme. ERLDC stated that they will also look up into the matter and revert.

In view of above, feasibility of provision of OPGW from Teesta III to LILO point may be deliberated.

CTU may explain. TCC may deliberate/concur.

Deliberation in 51st TCC Meeting:

Representative of CTU explained the need for revising the plan for the redundant fibre path for Teesta-III, citing the following reasons:

1. A change in the status of Dikchu HEP's connectivity with ISTS, as per GNA regulation 2022, indicating that it is an interim arrangement and will be eliminated upon readiness of the intra-state transmission system, expected by December 2023.
2. An update in the readiness of the intra-state transmission system, now expected by 29th February 2024, as per the 24th CMETS-ER MoM dated 31st October 2023.

Representative of POWERGRID raised concerns about the Right of Way (RoW) issue and requested a separate timeline for the implementation of the revised project.

Representative of TPTL, the line owner, acknowledged the RoW issue in Sikkim but assured that they would extend all possible assistance to POWERGRID with the support of the District Administration in Sikkim.

POWERGRID also mentioned that they are already implementing the Dikchu-Rangpo OPGW connectivity project and expressed concerns that the removal of the Dikchu HEP to LILO point Transmission line by December 2023 would affect the Document of Compliance (DOC) and recovery of the investment made for this scheme.

Representative of ERLDC supported the idea of retaining the OPGW for the LILO portion, emphasizing its importance for data transmission from Dikchu to SLDC Sikkim and further to ERLDC. They suggested that keeping the OPGW for the LILO portion intact is advisable unless the transmission line is dismantled.

TCC provided the following recommendations:

1. Agreeing with the proposal of revised connectivity for redundant path of Teesta-III, TCC urged POWERGRID to expedite the implementation of the revised scheme as OPGW connectivity is crucial.
2. Advised TPTL to help POWERGRID resolve the RoW issue with the cooperation of the Sikkim government. If the issue remains unresolved, TCC suggested approaching ERPC for further assistance.
3. Agreed with ERLDC's perspective on retaining the OPGW for the LILO portion, as it enhances data visibility.

ERPC may approve.

Deliberation in 51st ERPC Meeting:

MS, ERPC briefly explained the need for revising the plan for the redundant fibre path for Teesta-III due to changes in the connectivity status of Dikchu HEP and updates on the intra-state transmission system's readiness.

ERPC decisions:

1. *The scheme for the revised connectivity of the redundant path of Teesta-III received in-principle approval.*
2. *CTU was directed to provide a cost estimate for the revised scheme in the next CCM Meeting of ERPC.*

Annexure-B.2.16

S/n	Line name	Line Length
01	220 KV JODA (GRIDCO)-RAMCHANDRAPUR (JSEB)	130 km
02	220 KV SANTALDIH (WBSETCL) - CHANDIL(JSEB)	98 Km
03	132 KV PATRATU (JSEB) - PATRATU (DVC) -1	6 Kms
04	132 KV LALMATIA (JSEB) - KAHALGAON (BSPHCL)	34 Km
05	220 KV JAMSHEDPUR (DVC) – JINDAL - JODA (GRIDCO)	150 Kms
06	66 KV KALIMPONG (WBSETCL) - MELLI (SIKKIM)	15 Km
07	132 KV KOLAGHAT(DVC) - KOLAGHAT (WBSETCL)	50 Meters
08	220 KV BIDHANNAGAR (WBSETCL)-WARIA(DVC)	10 Kms.
09	132 KV DALKHOLA (WBSETCL)-BAISI(BSPHCL)	46 Kms
10	132 KV RAJGIR (BSPHCL) - BARHI (DVC)	138 Kms.



पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref: ER-I/PAT/ULDC/F-19/

Date: 23.01.2023

To
Chief Engineer (Telecom & OPGW)
Bihar State Power Transmission Company Ltd.
Vidyut Bhawan, Bailey Road, Patna-800021

Kind Attn: Sh. D.K.Jha

Sub: Establishment of Communication System under Expansion/ Up-gradation of SCADA/EMS System at SLDCs in Eastern Region (BSTPCL): Short-closing of Begusarai-Kusheshwarsthan OPGW link regarding

References: Our letter ref. no. ER-I/PAT/ULDC/F-19/1973 dated 14.09.2022

Dear Sir,

POWERGRID has successfully implemented the OPGW laying work alongwith communication equipments under subject project in BSPTCL. All the links were commissioned successfully except only 1 no. link Begusarai-Kusheshwarsthan link which could not be completed due to severe ROW issues. Out of total 65.923 Km, around 4.6 Km OPGW was laid and the balance scope of 60 Km was requested to be short-closed from this contract.

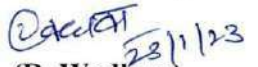
The matter was discussed several times including 3rd TEST meeting held at ERPC,Kolkata on 20.12.2019 and BSPTCL agreed for off-loading the balance scope of works of this link. Copy of correspondence and relevant pages of minutes of 3rd TEST Meeting are enclosed.

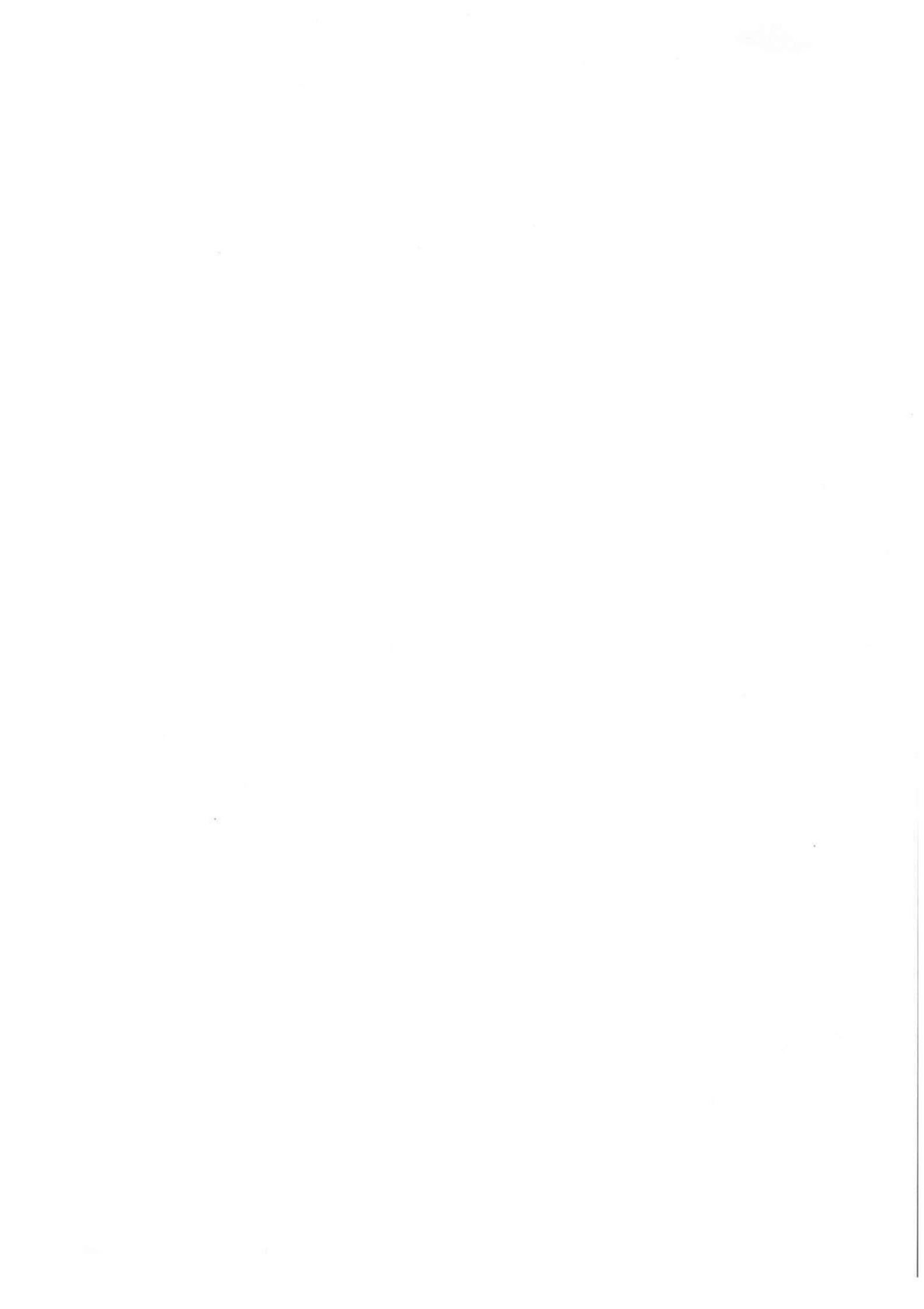
The request for short-closing of this link from this project was further communicated through our letter ref. no. ER-I/PAT/ULDC/F-19/1973 dated 14.09.2022. Copy of letter enclosed.

Considering completion of contract closing activities for this project, it is requested to short-close balance works of Begusarai-Kusheshwarsthan OPGW link from the scope of the subject project.

Thanking you.

Yours faithfully


(R. Wadhwa)
CGM(AM), ER-I





पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref: ER-IPAT/ULDC/F-19/1973

Date: 14.09.2022

To
Chief Engineer (System Operation)
Bihar State Power Transmission Company Ltd.
Vidyut Bhawan, Bailey Road, Patna-800021

Kind Attn: Sh. A.K. Chaudhary

Sub: Establishment of Communication System under Expansion/ Up-gradation of SCADA/EMS System at SLDCs in Eastern Region (BSTPCL and DVC): Issuance of commissioning certificate of 5 nos. OPGW links and associated equipments and short-closing of 01 no. OPGW link

Dear Sir,

As you are aware that following 05 nos. OPGW links alongwith associated equipments has been successfully commissioned. The details of 05 nos. links are enclosed and summarized below:

S/n	Name of OPGW Link	OPGW Cable (24 F, DWSM) along with associated hardware and accessories (km)	Remarks
1	MTPS-Gopalganj	100.35	Commissioning of 05 nos. links of total 266.27 Km OPGW alongwith associated equipments as per annexure-I.
2	Siwan-Gopalganj	30.12	
3	Saharsa- Purnea (BH)	101.11	
4	Kahalgaoon(BH)-Kahalgaoon(NTPC)	5.71	
5	Hatidah-Lakhisarai(BH)	28.98	
		266.27	

It is kindly requested to issue the trial operation certificates for above-mentioned 05 nos. links as per format enclosed for further necessary action at this end.

It is further to mention that Begusarai-Kusheshwarasthan link could not be completed due to severe ROW issues. The matter was discussed several times and BSPTCL agreed to short-close this link after completion of the work in balance pending links. Presently, work has been completed in all the links and hence it is requested to short-close Begusarai-Kusheshwarasthan OPGW link.

Thanking you

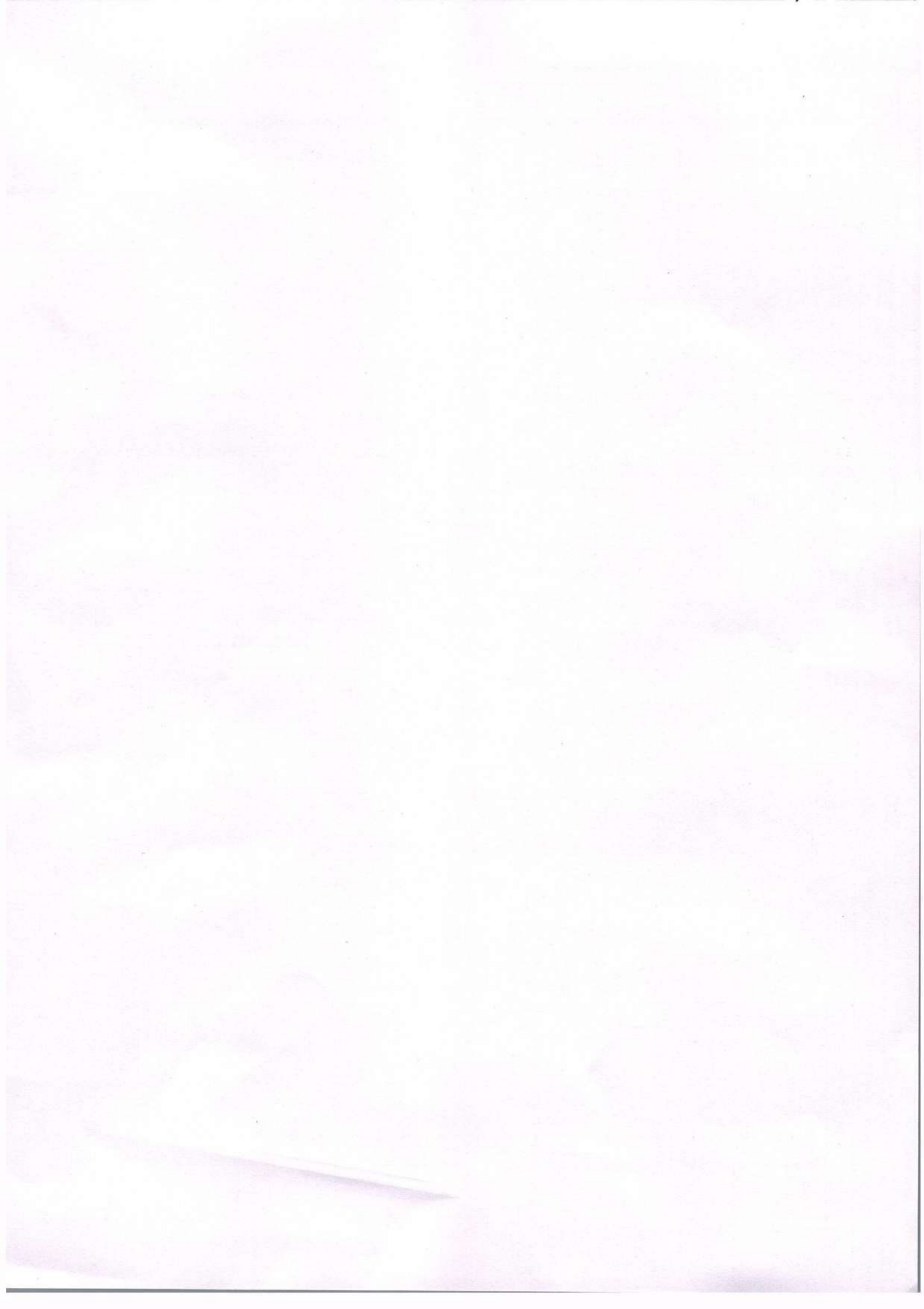
Sailed
14/09/2022
केन्द्रीय निर्माण शाखा
भारत स्टेट पावर ट्रांसमिशन कॉर्पोरेशन लिमिटेड
पटना-21

Yours faithfully

(S.K.Singh)
CGM(AM), ER-I

Enclosure:

- Format for issuing of Trial Operation Certificates by BSPTCL(Annex-A).
- Details of links with associated equipments(Annex-I)



Ref: ER-I/PT/ULDC/BSPTCL/PKG-2B/

1723

Date: 06.07.2020

To,

Director (Projects),
 Bihar State Power Transmission Company Ltd,
 Vidyut Bhavan, Bailey Road, Patna- 800001.

Ref: LOA-1135/5794/3848 dtd. 16.08.2016.

**Sub: Fiber Optic Cabling Package for SCADA/EMS Upgradation of BSPTCL (Pkg-II B):
 Short Closure of package due to long pending ROW-reg.**

Dear Sir,

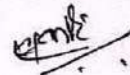
This has reference to the BSPTCL OPGW Package (Pkg. II-B, Non- Priority links) awarded on M/s Prem Power Construction Pvt. Ltd., India under the ULDC SCADA/EMS Up-gradation package of BSPTCL-ER.

In this regard, it is to inform that Installation and Commissioning of OPGW in 23 out of 28 nos. links have been completed under the said package. The status of balance five (05) links is mentioned hereunder:

Sl. No.	Link Name/ Name of Trans. Line	Link Length (km)	Erection Completed (km)	Balance Erection (km)	Erection Plan
1	Begusarai- Kusheshwarasthan	65.923	4.515	61.408	Severe ROW Problem. Team demobilized as per BSPTCL's mail.
2	MTPS- Gopalganj	100.351	73.336	27.015	Severe ROW Problem. Team demobilized.
3	Siwan- Gopalganj	30.117	30.117	0	Link Commissioned. Data communication pending for commissioning of MTPS- Gopalganj OPGW link.
4	Lakhisarai- Hathidah	28.978	28.538	0.44	Pending due to Railway ROW permission near Hatidah Railway Station. Only two spans pending.
5	Kahalgaoon (NTPC)- Kahalgaoon(BH)	5.709	5.534	0.175	Only 1 span inside NTPC premises pending. Will be attended in July'20.
	Total	231.078	142.04	89.038	

It is requested to kindly resolve the long pending ROW issue of lakhisarai- Hathidah link at the earliest so that the pending work of 2 spans may be completed at the earliest.

 It is pertinent to mention that the matter of long pending ROW of MTPS- Gopalganj & Begusarai- Kusheshwarasthan links were discussed in the 3rd TeST meeting of ERPC dtd. 20.12.2019 (Item No. B.10, copy enclosed for ready reference) wherein BSPTCL agreed to offload POWERGRID of the balance work and get the same completed under BSPTCL's upcoming Reliable Communication package. Further, it was agreed that POWERGRID will handover the balance available OPGW Material & Hardware Fittings to BSPTCL.



Contd... Page 02

 पूर्वी क्षेत्र -I क्षेत्रीय मुख्यालय : बोर्ड कॉलोनी , शास्त्री नगर , पटना - 800023 (बिहार) , दूरभाष : 0612-2283002,2284082 (इपीएबीएक्स)
 Eastern Region -I RHQ. : Board Colony, Shastri Nagar, Patna - 800023 (Bihar), Tel. 0612-2283002,2284082(EPABX)

 पंजीकृत कार्यालय : बी -9, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016 दूरभाष : 011-26560112, 26560121, 26564812, 26564892, सीआईएन : L40101DL1989GOI038121
 Registered Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110 016. Tel : 011-26560112, 26560121, 26564812, 26564892, CIN : L40101DL1989GOI038121

Website : www.powergridindia.com

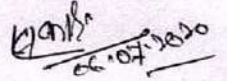
:: 02 ::

In view of above, it is requested to kindly allow POWERGRID to handover the balance available OPGW Cable & Hardware fittings to BSPTCL pertaining to the aforementioned two links (88 km approx.) and enabling short closure of the Erection package awarded on M/s PPCL.

This is for your kind information & further needful please.

Thanking you.

Yours faithfully,



(Sanjay Kumar Singh)
Chief General Manager (Asset Mgmt.)

Copy (NIO):

1. ED (LD&C), Corporate Centre, Gurgaon.
2. CGM (I/c), ERTS-I, Patna.



Minutes
of
3rd TeST Meeting

Date: 14.01.2020
Eastern Regional Power Committee
14, Golf Club Road, Tollygunge
Kolkata: 700 033

EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 3RD TELECOMMUNICATION, SCADA AND TELEMETRY SUB-COMMITTEE MEETING HELD AT ERPC, KOLKATA ON 20.12.2019 (FRIDAY) AT 11:00 HOURS

List of participants is enclosed at **Annexure-A**.

Member Secretary, ERPC, at the outset, welcomed all the participants in the meeting. He mentioned that agenda items for providing OPGW along with communication equipment in Important ISTS Lines (for strengthening of OPGW Network of ER-Grid and ER-NR & ER-WR Connectivity) was approved in the ERPC meeting held on 13th December 2019. He further mentioned that U-NMS implementation was also approved in principle.

ERPC further mentioned that agenda for providing OPGW link availability for the stations where AMR are installed is discussed in Commercial committee meeting as well as Operation Co-ordination Committee meeting and requested all constituents to share the details. ERLDC mentioned that it would be better if a consolidated list has to be shared to all constituents so that they could able to provide the detail. ERPC requested ERLDC to share the list. ERLDC agreed for the same.

Thereafter, all agenda were taken for discussion.

PART – A : CONFIRMATION OF MINUTES

ITEM NO. A.1: Confirmation of minutes of 2nd TeST Sub-committee meeting held on 26.11.2019

The minutes of 2nd TeST Sub-committee meeting held on 26.11.2019 circulated vide letter dated 17.12.2019.

Members may confirm the minutes of 2nd TeST Sub-committee meeting.

Deliberation in the meeting

Members confirmed the minutes of 2nd TeST Sub-committee meeting.

PART – B : ITEMS FOR DISCUSSION

ITEM NO. B.1: SCADA/EMS System Installed in Eastern Region:

1. Software Related

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

14.01.2020

been shared with BSPTCL.

ITEM NO. B.9: Issues Related to M/s FIBCOM make SDH --BSPTCL

a) 48 Volt DCPS is not working because of following issues.

S.No	Site Name	Description With Date
1	Kishanganj Old	Issues in rectifier and contactor since 04/11/2019
2	Karmanasa	Issue in contactor since May/2019
3	Banjari	Issue in contactor since May/2019

b) SAT of DCPS and SDH are still incomplete at many sites.

c) Upgradation of software to facilitate integration of SFP is still pending at Saharsa Purnea & Ara(PG)

d) Shifting of DCPS from Purnea(PG) to Darbhanga is pending since long.

e) Half duplex observed at Arrah, Sabour and Sonenagar Old GSS etc since long time. Even in running condition Full duplex is converted to half duplex without any external interference.

f) VOIP is not working at following GSS: Ara, Khagaul, Sonenagar, Sipara, Sonebarsa, Dalsinghsarai, Sultanganj, Jahanabad, Darbhanga and Madhubani.

g) Incompetent of manpower deployed at BSPTCL HQ.

Members may discuss.

Deliberation in the meeting

Powergrid informed that the issues related to M/s FIBCOM has already been discussed in a meeting held on 21.11.2019 at Vidyut Bhavan, BSPTCL, wherein M/s FIBCOM has assured to resolve the outstanding issues by 15th Jan 2020.

ITEM NO. B.10: OPGW installation being executed by PGCIL through agency M/S PPCL --BSPTCL

a) ROW in 220 KV MTPS-Gopalganj transmission line- A letter has been received from field office which states that ROW at the said location is persisting since construction of 220 KV MTPS-Gopalganj lines taken up by PGCIL. Intervention of PGCIL is required to resolve the issue of ROW.

b) SAT of OPGW - M/S PPCL has given the program of SAT nine months back. They have carried out SAT of 132 KV MTPS-Motihari & Motihari-Betia line. Losses found in said lines which are yet to be corrected as SAT of future line are pending since long.

c) Installation work of OPGW taken up for 132 KV Kahalgaon(BH)-Kahalgaon(NTPC) T/L- not completed yet.

d) Clearance of railway required for OPGW installation at railway crossing of 132 KV Hathidah-Lakhisarai T/L- BSPTCL has written letter to Railway. However, it is well aware to all that-no such clearance is sought by any agency for the work of live line installation of OPGW.

Members may discuss.

Deliberation in the meeting

Powergrid gave the following details –

S. No.	OPGW issue	Deliberation in the meeting
1	ROW in 220 KV MTPS-Gopalganj transmission line	Powergrid informed that the OPGW installation of the two lines may be foreclosed as the ROW is prevailing for more than two years and is yet to be resolved by BSPTCL. BSPTCL informed that a separate meeting may be called between Powergrid & BSPTCL and the agency may be then offloaded. Further, BSPTCL informed that the balance work shall be carried out by BSPTCL's agency under Reliable Communication Package.
2	SAT program of OPGW	Powergrid informed that the agency has already deputed its team to carry out Pre-SAT testing & rectification, if any. The OPGW links shall be offered for SAT w.e.f 23.12.2019. Powergrid requested BSPTCL to depute their officials for witnessing the SAT and subsequent Sign-off. BSPTCL agreed for the same.
3	Installation work of OPGW taken up for 132 KV Kahalgaon(BH)-Kahalgaon(NTPC) T/L	Powergrid informed that M/s PPCL shall be submitting the details of its manpower which would be forwarded to NTPC Kahalgaon, for subsequent issuance of Gate Pass. Powergrid informed that the work would be completed subsequently.
4	Clearance of railway required for OPGW installation at railway crossing of 132 KV Hathidah-Lakhisarai T/L	Powergrid informed that the Railway permission is to be arranged by BSPTCL. M/s PPCL shall complete the balance work subsequently.

ITEM NO. B.11: Replacement of old RTU in Eastern Region for reporting of RTU / SAS to back-up Control Centre

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

Utility	Status	Deliberation in the 2 nd TeST meeting	Target
POWERGRID	Pending	Powergrid intimated that process for placement of LoA has already been started and informed that NIT would be	

III. Details of Voice communication available between Sub-station and Control Centre :

Sl. No	IP Address & MAC	Voice communication	Status on Healthiness of Voice communication
1			
2			
3			

Annexure B.2.24

Farakka SCADA Data unavailability status as on 18.04.2024				
Digital			Analog	
SCADA Name	Status	Remarks	SCADA Name	Status
400_KAHAL_PG_3_L1_ISO	Closed	Suspected	21/400_Xfmr6_Pri_Q	Suspected
400_GOKR4_WB_1_MB1_ISO	Open	Suspected	400_KAHAL_PG_3_P	Suspected
400_GOKR4_WB_1_L1_ISO	Open	Suspected	400_KAHAL_PG_3_Q	Suspected
400_GOKR4_WB_1_Tie_ISO	Open	Suspected	400_KAHAL_PG_4_P	Suspected
400_GOKR4_WB_2_Tie_ISO	Open	Suspected	400_KAHAL_PG_4_Q	Suspected
400_GOKR4_WB_2_MB2_ISO	Open	Suspected	400_GOKR4_WB_1_P	Suspected
400_GOKR4_WB_2_L1_ISO	Open	Suspected	400_GOKR4_WB_1_Q	Suspected
400_GOKR4_WB_1_R_L_ISO	Open	Suspected	400_GOKR4_WB_2_P	Suspected
400_MALDA_PG_1_MB1_ISO	Closed	Suspected	400_GOKR4_WB_2_Q	Suspected
400_Main_Bus_R2_MB1_ISO	Open	Suspected	400_GOKR4_WB_1_R_Q	Suspected
400_Unit2_L1_ISO	Closed	Suspected	21_UNIT6_T_P_RED	Suspected
400_DURGA_PG_1_MB2_ISO	Open	Suspected	21_UNIT6_T_Q_RED	Suspected
400_DURGA_PG_1_L1_ISO	Open	Suspected	400_MALDA_PG_2_P	Suspected
400_Unit1_MB1_ISO	Closed	Suspected	400_MALDA_PG_1_Q	Suspected
400_Unit1_L1_ISO	Closed	Suspected	400_Main_Bus1_R1_Q	Suspected
400_Unit4_L1_ISO	Closed	Suspected	400_SAGAR_WB_1_Q	Suspected
400_BAHAR_PG_1_L1_ISO	Closed	Suspected	400/33_Xfmr2_Pri_P	Suspected
400_BAHAR_PG_2_L1_ISO	Closed	Suspected	400/33_Xfmr2_Pri_Q	Suspected
400_BAHAR_PG_2_MB2_ISO	Closed	Suspected	400_SAGAR_WB_2_Q	Suspected
400_BAHAR_PG_2_L_ISO	Closed	Suspected	400_DURGA_PG_1_P	Suspected
400_BAHAR_PG_2_Tie_ISO	Closed	Suspected	400_DURGA_PG_1_R_Q	Suspected
400_BAHAR_PG_1_L_ISO	Open	Suspected	16/400_Xfmr1_Pri_Q	Suspected
400_DURGA_PG_1_R_L_ISO	Open	Suspected	400_KAHAL_PG_2_Q	Suspected
400_MALDA_PG_2_L_ISO	Closed	Suspected	400/33_Xfmr3_Pri_P	Suspected
400_MALDA_PG_1_L_ISO	Closed	Suspected	21/400_Xfmr4_Pri_Q	Suspected
400_ICT4_L_ISO	Closed	Suspected	400_KAHAL_PG_1_Q	Suspected
400_Main_Bus_R1_L_ISO	Closed	Suspected	220_Main_Bus1_Freq	Suspected
400_SAGAR_WB_1_L_ISO	Closed	Suspected	400/220_ICT4_Sec_P	Suspected
400_SAGAR_WB_2_L_ISO	Closed	Suspected	400/220_ICT4_Sec_Q	Suspected
400_DURGA_PG_1_L_ISO	Closed	Suspected	220_LALMA_PG_1_P	Suspected
400_KAHAL_PG_2_L_ISO	Closed	Suspected	220_LALMA_PG_1_Q	Suspected
400_Unit3_MB2_L_ISO	Closed	Suspected	16_Unit2_T_Q	Suspected
400_Unit2_L_ISO	Closed	Suspected	400_PURNW_PG_Q	Suspected
400_Xfmr2_L_ISO	Open	Suspected	400_RAJHT_PG_Q	Suspected
400_Unit1_L_ISO	Closed	Suspected	400_RAJHT_PG_R_Q	Suspected
400_Xfmr1_L_ISO	Open	Suspected	400_BAHAR_PG_2_P	Suspected
400_Xfmr3_L_ISO	Normal	Suspected	400_BAHAR_PG_1_Q	Suspected
400_Unit4_L_ISO	Closed	Suspected	400_BAHAR_PG_2_R_Q	Suspected
400_Unit5_MB1_L_ISO	Open	Suspected	400_Main_Bus1_Angle	Suspected
400_DURGA_PG_2_L_ISO	Closed	Suspected	400_Main_Bus2_Angle	Suspected
400_KAHAL_PG_1_L_ISO	Closed	Suspected		
400_Unit3_L1_ISO	Operated	Suspected		
400_Unit5_L1_ISO	Closed	Suspected		
400_Unit5_MB2_L_ISO	Closed	Suspected		
400_RAJHT_PG_L_ISO	Closed	Suspected		

400_GOKR4_WB_1_Main_CB	Travel	Suspected
400_GOKR4_WB_1_GOKR4_WE	Travel	Suspected
400_GOKR4_WB_2_Main_CB	Travel	Suspected
400_Unit5_Xfmr3_Tie	Closed	Suspected

400_KAHAL_PG_1_BAHAR_PG_	Closed	Suspected
400_BAHAR_PG_2_Main_CB	Closed	Suspected
400_Unit5_CB1	Closed	Suspected

220_ICT4_CB	Closed	Suspected
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400_Main_Bus_R1_CB	Travel	Suspected
400_BAHAR_PG_1_Main_CB	Closed	Suspected
400_KAHAL_PG_3_BAHAR_PG_	Closed	Suspected

400_Main_Bus_R1_SAGAR_WB	Open	Suspected
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400_Unit2_Main_CB	Closed	Suspected
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400_DURGA_PG_1_Main_CB	Open	Suspected
400_Unit1_Main_CB	Closed	Suspected
400_Unit1_Xfmr1_Tie	Closed	Suspected

400_KAHAL_PG_2_Main_CB	Closed	Suspected
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Annexure-B.2.26

RTU / SAS Main & Standby Link Status				
Responsible Entity	SI No	Station Name	Main link Availability	Standby link Availability
POWERGRID ER - I	1	CHANDAUTI	Down	Up
POWERGRID ER - I	2	SAHARSA	Down	Up
POWERGRID ER - I	3	CHAIBASA	Up	Down
POWERGRID ER - II	4	BAHARAMPUR	Down	Up
POWERGRID ER - II	5	MALDA	Down	Up
POWERGRID ER - II	6	NEW_FARAKKA	Up	Down
POWERGRID ER - II	7	RAJARHAT	Up	Down
POWERGRID ER - Odisha Projects	8	PANDIABILI	Up	Down
NTPC	9	BARH	Up	Down
NTPC	10	TALCHER	Up	Down
NTPC	11	KBUNL	Up	Down
NTPC	12	NPGC	Up	Down
OPGC	13	OPGC	Up	Down
APNRL	14	APNRL	Up	Down
DANS ENERGY	16	TASHIDING	Down	Up
MOTIHARI	17	MOTIHARI	Up	Down
DANS ENERGY	18	RONGICHU	Up	Down
ATL	19	DHANBAD	Up	Down
NHPC	20	RANGIT	Up	Down
DANS ENERGY	21	JORETHANG	Up	Down

Annexure B.2.30

List of RTU/SAS PGCIL to be replaced / up-gradated

S. No	Region	Name of Substations	RTU/SAS Status	Status
1	ER-II	Durgapur*	AlstomRTU-S900	To be replaced
2	ER-II	Malda*	AlstomRTU-S900	To be replaced
3	ER-II	Binaguri*	AlstomRTU-S900	To be replaced
4	ER-II	Siliguri 220 kV	AlstomRTU-C264	To be replaced
5	ER-II	Birpara	SIEMENS make SAS	Replaced
6	ER-II	Subhasgram*	AlstomRTU-C264	To be replaced
7	ER-II	Dalkola	AlstomRTU-C264	To be replaced
8	ER-II	Gangtok	AlstomRTU-C264	To be replaced
9	ER-II	Behrampur	SIEMENS make SAS	Replaced
10	ER-II	Rangpo	SIEMENS make SAS	Replaced
11	ER-II	New Melli	SIEMENS make SAS	Replaced
12	ER-II	Maithon	AlstomRTU-S900	To be replaced
13	ER-I	Biharsharif*	AlstomRTU-S900	To be replaced
14	ER-I	Jamshedpur*	AlstomRTU-S900	To be replaced
15	ER-I	Purnea 400 kV	AlstomRTU-S900	To be replaced
16	ER-I	Purnea 220 kV	SIEMENS make SAS	Replaced
17	ER-I	Sasaram HVDC	SIEMENS make SAS	Hardware Upgraded
18	ER-I	Banka	SIEMENS make SAS	Hardware Upgraded
19	ER-I	Lakhisarai	SIEMENS make SAS	Hardware Upgraded
20	ER-I	New Ranchi	SIEMENS make SAS	Hardware Upgraded
21	ER-I	Chaibasa	SIEMENS make SAS	Hardware Upgraded
22	ER-I	Sasaram 756 kV	SIEMENS make SAS	Hardware Upgraded
23	ER-I	Arrah	SIEMENS make SAS	Replaced
24	ER-I	Muzafarpur*	AlstomRTU-S900	To be replaced
25	ER-I	Daltongunj	SIEMENS make SAS	Replaced
26	ER-I	Chandwa	SIEMENS make SAS	Replaced
27	ER-I	Gaya	SIEMENS make SAS	Replaced
28	ER-I	Kisangunj	SIEMENS make SAS	Replaced
29	ER-I	Chaibasa	SIEMENS make SAS	Replaced
30	Orisha Project	Angul	SIEMENS make SAS	Replaced
31	Orisha Project	Bolangir	SIEMENS make SAS	Replaced
32	Orisha Project	Keonjhor	SIEMENS make SAS	Replaced
33	Orisha Project	Talcher HVDC*	AlstomRTU-S900	To be replaced
34	Orisha Project	Jharsuguda SAS	SIEMENS make SAS	Replaced
35	Orisha Project	Indravati*	AlstomRTU-C264	To be replaced
36	Orisha Project	Jeypore*	AlstomRTU-S900	To be replaced
37	Orisha Project	Kalabadia*	AlstomRTU-C264	To be replaced
38	Orisha Project	Rengali*	AlstomRTU-C264	To be replaced
39	Orisha Project	Rourkela*	AlstomRTU-S900	To be replaced

Annexure B.2.36

GRID CONTROLLER OF INDIA LTD.

National Load Despatch Centre

**(Designated as Nodal Agency in accordance with Regulation 5 of CERC (PSDF) Regulations, 2014)
(PSDF-Secretariat)**

Office Address: B-9, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi -16

Tel: 011-26524521, 26536959 Fax: 011-26524525, 26536901

Website: <https://psdfindia.in/>. Email psdf@posoco.in; nldc.psdf2020@gmail.com

Ref: NLDC-PSDF/2023-24/

Dated: 14th February 2024

To,

As per the distribution list:

Subject: - Decision taken during 22nd Meeting of the Monitoring committee regarding the sanction of the New Projects including the projects under examination, for one year.

Sir,

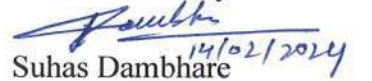
This is to inform that during the 22nd meeting of the Monitoring Committee, a decision has been taken to withhold the sanction of New Projects including the projects under examination for the period of one year, except the critical projects i.e. SCADA for NER, Security Operation Center (SOC) of SLDCs, Islanding Schemes and REMC projects.

The decision has been taken considering the fund availability in PSDF account and the existing liabilities on account of ongoing projects. This decision shall be reviewed after a period of one year.

As per the decision taken by the Monitoring committee, all the projects that are under examination (barring the critical projects mentioned above) are considered as deemed returned. The list of such projects is attached at Annexure-I. Also, new projects barring the above exceptions, shall not be accepted for funding through PSDF until the aforementioned decision remains in effect. This is for kind information please.

Thanking you,

Yours faithfully


Suhas Damhare 14/02/2024

Sr.GM (PSDF)

NLDC-Grid India

Copy to:

- 1) CMD, Grid-India
- 2) Chairperson, CEA
- 3) JS (OM) MOP
- 4) ED(NLDC) Grid-India
- 5) CE(NPC) CEA
- 6) Director (OM) MOP

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
1	Manipur	NER	MSPCL	Implementation of ADMS Solution on 33/11kV Substation in Manipur. (322)	88.08
2	Nagaland	NER	Nagaland	Implementation of Reliable Communication (OPGW). (312)	65.87
3	Telangana	SR	TSTRANSCO	Renovation & Upgradation of Protection system and Replacement of different Substations equipment's in TSTRANSCO Substations of 400kV & 220kV. (319)	105.76
4	Telangana	SR	TSNPDCCL	Project of Reactive Power Management by installation and commissioning of Capacitor Bank Substation. (323)	88.81
5	Odisha	ER	OPTCL	Implementation of WAMS (Wide Area Management System) in Odisha. (350)	19.36
6	Nagaland	NER	DoP, Nagaland	Implementation of ADMS in Nagaland. (353)	55.51
7	Rajasthan	NR	RRVNL	Installation / Re-shuffling of 33KV, 5.43 MVAR Capacitor Bank at various GSS of RRVNL. (320)	38.87
8	Telangana	SR	TSSPDCL	Installation and Commissioning of 301 Nos. capacitor banks at various 33/11kV sub-stations of Southern Power Distribution Company of Telangana Ltd. (TSSPDCL) (326)	22.15
9	Rajasthan	NR	JdVVNL	Implementation of Automatic Reactor Power Solution on 33/11kV Sub Stations of Jodhpur (Discom). (347)	296.85
10	Rajasthan	NR	JVVNL	Provision of 11kV Dynamic/Automatic Switched Capacitor Bank at various 33/11kV Sub Stations. (349)	175.48
11	Rajasthan	NR	AVVNL	Provision of 11kV Dynamic/Automatic Switched Capacitor Bank at various 33/11kV Sub Stations. (351)	222.37
12	Telangana	SR	TSTRANSCO	Improvement of Voltage Profile by installing 25 Nos. Capacitor Banks	13.86

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
				at 33KV level at various EHT Substations in TSTRANSCO. (409)	
13	Andhra Pradesh	SR	APEPDCL	Installation of Capacitor Bank in the existing 33/11kV Substation in the jurisdiction of 5 Circles in APEPDCL. (424)	33.80
14	Andhra Pradesh	SR	APSPDCL	Supply, Installation and Commissioning Capacitor banks at various 33/11kV Substations and lengthy overloaded agriculture feeders for reactive power compensation in Southern Power Distribution Company of A.P Ltd. (425)	44.13
15	Andhra Pradesh	SR	APTRANSCO	Installation of Capacitor Banks for Reactive Power Compensation at various 220KV & 132 KV substations in APTRANSCO in the state of Andhra Pradesh. (430)	24.12
16	Rajasthan	NR	RRVPL	Purchase and installation of Numerical relays (Distance, Differential & Back-up) & TOD Meters for Re-furbishment of existing installed Control & Relays and panels at various substations of RRVPL.(325)	18.38
17	Tripura	NER	TSECL	Re-conducting of 132kV transmission lines of TSECL by HTLS conductor with allied accessories. (339)	70.93
18	Meghalaya	NER	MePGCL	Renovation & Upgradation of Protection & Control System under PSDF Phase-II. (341)	67.17
19	Kerala	SR	KSEBL	Providing Bus bar protection at major 110kV busses in Kerala. (342)	26.00
20	Kerala	SR	KSEBL	Providing Line Differential Protection Scheme for short lines. (343)	3.00
21	Nagaland	NER	Nagaland	Re-conducting of 66kV Transmission line with HTLS Panther Conductor from (1) Nagarjan- Singrijan Ckt-1 (2)Nagarjan- Singrijan Ckt-2 (3) Singrijan- Chumukedima S/C (4) Singrijan - Ganeshnagar S/C. (344)	28.66

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
22	Karnataka	SR	KPTCL	Work of Relacement of Darke conductor to Darke equivalent HTLS conductor along with polymer insulators of existing outgoing 220kV DC lines from Kali generating complex for a distance of 212.522 kms in Uttara Kannada Dist. (352)	567.81
23	Punjab	NR	PSTCL	Providing Sub-station Automation System at 97nos 220kV Sub-station in Punjab. (354)	393.98
24	Gujarat	WR	GETCO	New Energy Accounting & Scheduling Software at SLDC, Gujarat under SAMAST regulation. (357)	37.96
25	Madhya Pradesh	WR	MPPTCL	Uprating the capacity of 132kV transmission lines by replacing existing ACSR conductor with High Ampacity Conductor along with associated Substation Equipments in Madhya Pradesh. (358)	161.00
26	Meghalaya	NER	MePTCL	Reconductoring & Strengthening of the 132kV single circuit line with High Temperature and Low Sag (HTLS) conductor under Meghalaya. (362)	25.27
27	Chhattisgarh	WR	CSPTCL	Installation of 1x125 MVAR 3 phase 400 KV Bus Reactor at 400 KV Sub-station Jagdalpur (Parchanpal) and 400 KV Sub-Station Raita (Raipur) & conversion of 06 Nos. 50 MVAR line reactors into switchable line reactors at 400 KV Sub-Station Raita (Raipur) CSPTCL. (363)	34.42
28	Uttarakhand	NR	PTCUL	Project for Replacement of ACSR Panther Conductor with HTLS Conductor on transmission lines at PTCUL. (367)	47.45
29	Odisha	ER	OPTCL	Implementation of STAMS (State Transmission Asset Management System) in Odisha. (368)	200.00
30	Maharashtra	WR	MSETCL	Design, Supply, Installtion, Testing, & Commissioning of Station Data Concetrator (SLDC)/ Station RTU/ Gateway with expandable IO modules, MFM and other allied equipment for Visibility of 250 nos lf	68.35

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
				MSETCL and substation to SLDC & ALDC along with comprehensive Annual Maintenance Contract for 05 years after 02 years warranty period. (369)	
31	Telangana	SR	TSTRANSCO	Upgradation from 132 KV Gachibowli- RC Puram DC Line to 220 KV DC line by using insulated cross arms & replacement of existing conductor with equivalent HTLS conductor. (370)	46.62
32	Sikkim	NR	Sikkim	Implementation of SAMAST (Scheduling, Accounting, Metering & Settlement of Transactions in Electricity) in Sikkim. (398)	24.51
33	Sikkim	NR	Sikkim	Re-Conductoring and Strengthening of the 66kV Transmission line from LLHP S/Stn to Pakyong S/Stn and Ring Main System of Gangtok by ACCC HTLS Conductor. (399)	29.33
34	Goa	WR	GED	Renovation & Upgradation of Protection system of 220kV & 110kV EHV Substation of Goa. (403)	93.77
35	Meghalaya	NER	MePTCL	Supply and Installation of Transmission line surge Arrester (TLSA) on the 132kV D/C Line from Myntdu Leshka Hydrel Electric Power Station (MLHEP) to 132kV Khliehriat Grid Sub Station. (404)	2.15
36	Odisha	ER	OPTCL	Physical Separation of OT Network from IT network based on MPLS-TP Technology. (405)	49.56
37	Goa	WR	GED	Implementation of SAMAST (Scheduling, Accounting, Metering & Settlement of Transactions in Electricity) in Goa. (406)	47.68
38	Telangana	SR	TSTRANSCO	Automation of 21 nos EHT Substations in TSTRANSCO. (407)	148.06
39	Gujarat	WR	GSECL	Proposal for Design, supply, installation, retrofitting, testing and Commissioning of 220 KV Bus Bar Panel/Scheme, 220 kV Bus-coupler scheme and 400/220/33 KV ICT & Station Transformer-1 to 4 relay	2.78

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
				scheme at Wanakbori TPS, GSECL. (408)	
40	Arunachal Pradesh	NER	Arunachal Pradesh	Implementation of Automatic Reactive Power Solution on 33/11kV Substations in Arunachal Pradesh. (412)	55.87
41	West Bengal	ER	WBSETCL	Supply & Installation of Bus-Bar Protection Panels including Bus Differential Relays and GPS based Time Synchronization Equipments in different 220 kV & 132 kV Sub-stations of WBSETCL. (413)	55.41
42	Rajasthan	NR	RRVPL	Smart Transmission Operation Management System-Extension (STOMS-EXTN) in Rajasthan Power System. (414)	160.06
43	Telangana	SR	TSSLDC	Implementation of Automatic Generation Control (AGC) at TSSLDC. (419)	5.04
44	Andhra Pradesh	SR	APTRANSCO	Renovation & Strengthening of Earth mat and Protection wall in various 220kV sub stations in APTRANSCO. (421)	23.66
45	Rajasthan	NR	RRVPL	Installation of 3nos STATECOM, 09 nos Bus Reactor and 2nos of Power Flow Control Devices at various substations. (422)	776.43
46	DVC	ER	DVC	Renovation & Modernization of DVC T&D System (Phase-I). 423)	387.51
47	Andhra Pradesh	SR	APTRANSCO	Implementation of Cyber Security measures in APTRANSCO as per the CEA guidelines by Establishing a dedicated communication system for APTRANSCO IT applications, with Industrial grade 2.5GB fibre optic L2/L3 switches on available dark fibres of APTRANSCO OPGW network to isolate APRANSCO OPGW network to isolate APTRANSCO OT (SCADA) system. (427)	32.65

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
48	Karnataka	SR	KPCL	Renovation & Modernization of Switchyard equipments and Protection system of 66/110/220/400kV substation of KPCL. (429)	104.44
49	West Bengal	ER	WBSETCL	Replacement of existing conductor by higher capacity HTLS conductor in different 220KV transmission lines of WBSETCL. (431)	252.34
50	Andhra Pradesh	SR	APTRANSCO	Installation of Standard and Special Protection Scheme by providing Control Switching Devices (CSD) for 400 kV Circuit Breakers at 400 kV substations in APTRANSCO. (433)	22.27
51	Telangana	SR	TSTRANSCO	Strengthening of 220KV Nagaram - Warangal DC line by replacement of existing ACSR Zebra/ Moose conductor with HTLS conductor equivalent to ACSR Zebra Conductor to avoid overloading. (434)	21.16
52	Madhya Pradesh	WR	MPPGCL	Renovation & Upgradation 400kV & 220kV substations of MPPGCL switchyard equipment installed at substations of MPPGCL. (435)	70.18
53	Uttarakhand	NR	UPCL	Installation of Reactive Power Solution on 33/11kV Substation in Uttarakhand. (436)	58.99
54	Bihar	ER	BSPTCL	Implementation of SAS for control and monitoring of existing 10 Nos of 132/33 Kv substation of Transmission circle of Patna including modification of existing IEDs and field equipment of BSPTCL. (437)	105.10
55	DVC	ER	DVC	Implementation of SAMAST ((Scheduling, Accounting, Metering & Settlement of Transactions in Electricity) in DVC. (438)	
56	Andhra Pradesh	SR	APTRANSCO	System Strengthening works for captative power compensation by supply, erection and commissioning of 11kV 2 MVAR capacitor banks with associated equipment and bay extension at various 33/11kV Sub-Stations in Justification of APCDPCL. (439)	27.40

Sl. No.	Name of State/Entity	Region	Name of Entity	Name of Scheme and Unique ID No	Estimated cost by entity (Rs. Crore)
57	Telangana	SR	TSTRANSCO	Remote Access of Disturbance Recorders (DRs) & Event Loggers (Els) in TSTRANSCO. (441)	41.63

Sr. No	Name of Entity	State	Address
1	APEPDCL	Andhra Pradesh	Chief General Manager (Projects) Eastern Power Distribution Company of Andhra Pradesh Ltd. 3 rd Floor Corporate Office, D.No.50-27-5/1, P&T Colony, Seethammadhara, Visakhapatnam-530013 Email: cgm_proj@apeasternpower.com
2	APSPDCL	Andhra Pradesh	Chief General Manager (Projects & IT) Southern Power Distribution Company of A.P. Ltd. #19-13-65/A, Vidyut Nilayam, Corporate Office, Kesavayanagunta Road, Tripuati-517503 Email: cgmprojects@gamil.com
3	APTRANSCO	Andhra Pradesh	Chief Engineer (Transmission) Transmission Corporation of Andhra Pradesh Ltd. Vidyut Soudha, Gunadala, Vijayawada-520004 Email: ce.aptransmission@gamil.com
4	Arunachal Pradesh	Arunachal Pradesh	Chief Engineer (Power) Department of Power, Government of Arunachal Pradesh Vidyut Bhawan Zero Point, Tinali, Itanagar-791111, Arunachal Pradesh Email: Cheifengineercez@gmail.com
5	AVVNL	Rajasthan	Addl. Chief Engineer (Projects) Ajmer Vidyut Vitran Nigam Ltd. Vidyut Bhawan, Panchsheel Nagar, Makarwali Road, Ajmer, Rajasthan- 305001 Email: ceprojectavvnl2022@gmail.com
6	JdVVNL	Rajasthan	Superintending Engineer (PP&M) Rajasthan Rajya Vidyut Prasaran Nigam Ltd. Jodhpur Vidyut Vitran Nigam Ltd. New Power House, Basni, Jodhpur- 342003 Email: seppmj@gmail.com
7	JVVNL	Rajasthan	Addl. Chief Engineer (PPM) Jaipur Vidyut Vitran Nigam Ltd. Room No: 149, Old Power House Premises, Banipark, Jaipur-302016 Email: sermdf@jvvn.org
8	RRVPNL	Rajasthan	Chief Engineer (PP&D) Rajasthan Rajya Vidyut Prasaran Nigam Ltd. Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur-302005 Email: ce.ppm@rvpn.co.in , se.pp@rvpn.co.in
9	BSPTCL	Bihar	Chief Engineer (Project-II) Bihar State power Transmission Corporation Ltd. Vidyut Bhawan, 4 th Floor, Bailey Road, Patna-800001 Email: Project.2@bsptcl.bihar.gov.in
10	CSPTCL	Chhattisgarh	Executive Engineer (P&P) Chhattisgarh State Power Transmission Company Ltd.

			3rd Floor, SLDC Building Dangania, Raipur- 492013 Email: cepnpcspc@cspsc.co.in & ram_n_patel@rediffmail.com
11	DoP, Nagaland	Nagaland	Chief Engineer (T&G) Department of Power, Government of Nagaland Electricity House, Kohima, Nagaland- 797001 Email: cetransgen@gmail.com
12	DVC	DVC	Chief General Manager (System Planning) Damodar Valley Corporation DVC Towers, VIP Road, 11th Floor, Kolkata-700054 Email: sandip.pal@dvc.gov.in
13	GED	Goa	Superintending Engineer Government of Goa, Electrical Department 3rd Floor, Vidyut Bhavan, Adjacent Hotel Mandovi, Panji Goa- 403001 Email: cee-elec.goa@nic.in
14	GETCO	Gujarat	Additional Chief Engineer Gujarat State Electricity Corporation Ltd. (SLDC) 132kV Gotri Sub-station compound, Opp. Kalpvrux Building, Near T.B. Hospital, Gotri Road, Vadodara-390021 Email: acesldc.getco@gebmail.com & celd@gebmail.com
15	GSECL	Gujarat	Chief Engineer (Gen) Gujarat State Electricity Corporation Ltd. Sardar Patel Vidyut Bhavan, Race Course, Vadodara- 390007 Email: ceg.gsecl@gebmail.com
16	KPCL	Karnataka	Chief Engineer (Elec. Designs) Karnataka Power Corporation Ltd. 3 rd Floor Drug Control Office premises, Siten:03, Survey No: 13/3, Palace Road, Bangaluru-560001 Email: ceedkpcl@gmail.com
17	KPTCL	Karnataka	Chief Engineer (Elec.) Transmission Zone Karnataka Power Transmission Corporation Ltd. Zonal Office Complex, Sector No. 45, 110/11kV Stations Premises, Navanagar, Bagalkot-587103 Email: mwzkptclbgkt@gmail.com , ceepnc@gamil.com & mwz_kptclbgkt@rediffmail.com
18	KSEBL	Kerala	Chief Engineer (Trans) System Operation Kerala State Electricity Board Ltd. State Load Despatch Centre, HMT Colony PO, Kalamassery- 683503, Kerala Email: cesoklsy@gmail.com
19	MePGCL	Meghalaya	Chief Engineer (Generation) Meghalaya Power Generation Corporation Ltd. Lumjingshai, Short Round Raod, Shillong-793001 Email: cegen.meecl@gmail.com

20	MePTCL	Meghalaya	Chief Engineer (Transmission) Meghalaya Power Transmission Corporation Ltd. MePTCL Complex, Lumjingshai, Short Round Road East Khasi Hill, Shillong-793001 Email: cetranzemeptcl@gmail.com
21	MPPGCL	Madhya Pradesh	Chief Engineer (R&M) Madhya Pradesh Power Generation Company Ltd. Shed No: 10, Vidyt Nagar, Rampur Jabalpur-482008 Email: ceonr@rediffmail.com & cennr@vahoo.co.in
22	MPPTCL	Madhya Pradesh	Chief Engineer (Plg. & Design) Madhya Pradesh Power Transmission Company Ltd. Block No: 03, Shakti Bhawan, Rampur, Jabalpur-482008 Email: creps321@yahoo.com , ce.pnd@mptransco.nic.in
23	MSETCL	Maharashtra	Chief Engineer, (ACI&P) Maharashtra State Electricity Transmission Co. Ltd. Old Load despatch Centre Building, Thane Belapur Road, Airoli Sector-1, Navi-Mumbai- 400708 Email: ceaci@mahatransco.in
24	MSPCL	Manipur	General Manager, (SLDC) Manipur State Power Company Ltd. SLDC, Yurembam Power House, Imphal-795004, West Manipur Email: gmsldcmanipur@gmail.com
25	OPTCL	Odissa	<ul style="list-style-type: none"> • Director, SLDC Odisha Power Transmission Corporation ltd. State Load Despatch Centre, GRIDCO Colony, P.O- Mancheswar Rly. Colony, Bhuneshwar-751017 Email: dir.sldc@sldcorissa.org.in • General Manager (Electrical) Odisha Power Transmission Corporation ltd. Technical Building, Jan path Road, Bhuneshwar-751022 Email: tel.pknayak@optcl.co.in
26	PSTCL	Punjab	Dy. Chief Manager/ TS Design Punjab State Transmission Corporation Ltd. PSTCL, 3rd Floor, Opp. Kali Mata Mandir, Shakti Sadan, Patiala- 147001 Email: se-trd@pstcl.org
27	PTCUL	Uttarakhand	Superintending Engineer Power Transmission Corporation of Uttrakhand Ltd. SE(T&C) Office, 132kV Substation Kathgodam Premises, Hydel Gate, Kathgodam, Haldwani-263126 Email: setandchld@gmail.com & dp_singh@ptcul.org
28	Sikkim	Sikkim	Chief Engineer Power Department, Govt. of Sikkim Power Secretariat, Kazi Road, Gangtok- 737101

			Email: shovathapa.gtk69@gmail.com
29	TSECL	Tripura	Dy. General Manager Tripura State Electricity Corporation Limited Transmission Division, Jatabari, 79th Tilla, Agartala- 799006 Email: dgm.transagartala@gmail.com agm.transmission@tsecl.in
30	TSNPDCL	Telangana	Chief General Manager (Project) Northern Power Distribution Company of Telangana Ltd. 2nd Floor, Corporate Office, Nakkalagutta, Hanamkonda, Warangal- 506002 Email: cgmproj@tsnpdcl.in , cgmprojtsnpdcl@gmail.com
31	TSSLDC	Telangana	Chief Engineer (SLDC) Transmission Corporation of Telangana Ltd. Room No: 613'A' Block, Vidyut Soudha, Khairtabad, Hyderabad- 500082 Email: ce.sldc@tstransco.in
32	TSSPDCL	Telangana	Chief General Manager (Project) Northern Power Distribution Company of Telangana Ltd. 4th Floor, Corporate Office, Mint Compound, Hyderabad- 500063 Email: cgmproj@tssoutherenpower.com cgmproj99@gmail.com
33	TSTRANSCO	Telangana	Chief Engineer (Transmission) Transmission Corporation of Telangana Ltd. Room No: 501'A' Block, Vidyut Soudha, Khairtabad, Hyderabad- 500082 Email: ce.400kv.vs@tstransco.in Ce.trans@tstransco.in , cetransmissionts@gmail.com
34	UPCL	Uttarakhand	Superintending Engineer Uttarakhand Power Corporation of Ltd. V.C.V. Gabar Singh Urja Bhawan, Balliwala Chowk, Dehradun-248001 Email: ee.shishirupcl@gamil.com
35	WBSETCL	West Bengal	Chief Engineer (CP Dept.) West Bengal State Electricity Transmission Company Ltd. Vidyut Bhawan, 9th Floor, A-Block, Sate lake, Sector-II, Block –DJ, Kolkata- 700091 Email: cpd@wbsetcl.in , cpd.wbsetcl@gmail.com