

CENTRAL ELECTRICITY REGULATORY COMMISSION
4th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001
Ph:23753942 Fax- 23753923

Petition No.180/MP/2017

Dated 13.2.2019

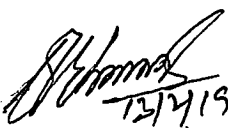
Notice

Subject: Report on Powergrid's intent of sharing of Transmission Infrastructure with Telecom Operators with regard to Commissions' direction during hearing held on 11.1.2018 in Petition No. 180/MP/2017.

The Commission vide Record of Proceedings for the hearing dated 11.1.2018 constituted a Committee under the chairmanship of Chief (Finance) with Chief (Engineering) and Chief (Law) as members to look into the technical and financial aspects of the project by considering that how the Petitioner would like to share its revenue with the beneficiaries.

2. A copy of the report submitted by the Committee is enclosed for information and comments, if any, by all the concerned stake-holder by 1.3.2019.

The Petition shall be listed for hearing in due course.


12/2/19
(Vipin Sharma)
Bench Officer

CENTRAL ELECTRICITY REGULATORY COMMISSION
3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001

Report on POWERGRID's intent of sharing of Transmission Infrastructure with Telecom Operators with regard to Commissions' direction during hearing held on 11.1.2018 in Petition No. 180/MP/2017

1. Background of the Case

1.1 Powergrid Corporation of India Ltd. ("POWERGRID") has approached the Commission with a Miscellaneous Petition No. 180/MP/2017 for utilising its Transmission Line Towers for Telecom antenna, power and telecom equipment's and drawing power from earth wire as per Regulation 4(a) of the Central Electricity Regulatory Commission (Sharing of revenue derived from utilization of transmission assets for other business) Regulations, 2007.

1.2 The Commission during hearing held on 11.1.2018 in the petition no 180/MP/2017 constituted Committee to look into the technical and financial aspects of the proposal. Relevant part of RoP is extracted below:-

"..... the Commission constituted a Committee under the chairmanship of Chief (Finance) with Chief (Engineering) and Chief (Law) as members to look into the technical and financial aspects of the project by considering that how the Petitioner would like to share its revenue with the beneficiaries. The Commission directed the Committee to submit its report after seeking comments from the beneficiaries within a period of three months from the date of issue of the RoP."

1.3 The Committee held two meetings at CERC Office on 25.1.2018 & 19.9.2018 respectively.

1.4 First Meeting of the Committee was held on 25.1.2018, wherein, the representative of POWERGRID made a detailed presentation on the technical aspects of the project. The representative of the POWERGRID informed that a full-fledged demo set-up has been established at Jhatikara substation on Mundka 400kV Quad line, which is working satisfactorily since 18.6.2017. In respect of financial aspect of the project, POWERGRID informed that since the project is at a nascent stage, the same needs to be ascertained keeping in view the financial viability of the business as the same would largely depend upon various factors such as number of towers utilized, location of tower and business of Telecom players in the area (population/prosperity level). After discussion, POWERGRID was requested to furnish following information:-

- a. Submission of Financial proposal of the project including Revenue sharing model with beneficiaries along with justification;
- b. Submission of Technical paper for use of Power induced in the earth wire.

- 1.5 In compliance to the above, POWERGRID, vide letter dated 3.5.2018 submitted its financial proposal and technical paper.
- 1.6 The members of the Committee visited the demo project site at Jhatikara substation on 17.5.2018.
- 1.7 The Commission vide RoP dated 13.9.2018 directed POWERGRID to discuss the matter with the distribution companies explaining the benefits of the scheme and submit their views/comments on the issue, on or before, 15.10.2018. POWERGRID has submitted that in compliance to RoP dated 13.9.2018, it has uploaded the petition alongwith financial proposal on its website on 8th October 2018 seeking comments from the State Distribution Licensees by 14th October 2018 and submitted the comments it received from them.
- 1.8 Second meeting of the Committee was held on 19.9.2018, wherein, POWERGRID made a presentation on the technical, financial and legal aspects of the project. After the discussions, POWERGRID was requested to furnish a comprehensive Technical Report on the project. In compliance, POWERGRID vide letter dated 12.10.2018 submitted its technical report.

2. POWERGRID's submission as per Petition and Technical report are summarized herebelow:

- 2.1 POWERGRID has submitted that "Digital India" is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. Government of India has also approved the e-Kranti programme recently with the vision of "Transforming e-Governance for Transforming Governance" by utilizing the emerging technology like Mobile, Cloud etc. To achieve the goal of "Digital India" program, universal mobile connectivity is one of the main pillars.
- 2.2 India has a lot of villages without mobile connectivity and countless sparsely populated areas with poor mobile connectivity. Telecom Service Providers (TSPs) are reluctant to establish telecom network in remote areas due to
- Non-availability of Electricity Board power supply,
 - Difficulty to lease land and manage the Mobile set-up due to its remoteness,
 - High maintenance costs due to accessibility issues/Running DG set for more than 12 hours/day,
 - Low revenue due to low population base in rural area and
 - Non-availability of BTS in rural areas during flood like disasters.
- 2.3 Further, TRAI has emphasized for reduction in carbon footprint through reducing use of DG set at mobile tower locations and utilizing alternate possible energy source including renewables. In addition several measures are being taken for reduction of carbon footprints viz.:

National Digital Communications Policy – 2018 : DOT has emphasised for leveraging existing assets of the broadcasting and power sector to improve connectivity, affordability and sustainability and facilitate the establishment of Mobile Tower Infrastructure by promoting and incentivizing deployment of solar and green energy for telecom towers.

Also significant efforts are being done by DOT for electrification of non-electrified telecom towers under Deendayal Upadhyaya Gram Jyoti Yojna (DDUGJY) scheme. The electrification is ensuring power supply to telecom tower and thereby reducing the diesel consumption at the BTS tower site.

Further, under Rural Electrification Policy 2006, Govt. is also having thrust on IT in rural area through Decentralised Distributed Generation (DDG).

- 2.4 Since none of the Telecom players is interested in erecting the Telecom Tower on remotely rural area due to either non availability of Power Supply or very much unreliable power, leading to running the Telecom BTS on continuous DG resulting into high operational cost and making it commercially non-viable to mobile operator. Further Mobile operators are having low revenue from these areas. In the ~~given~~ ^{giving} situation, telecom operators are not willing to install the telecom towers. POWERGRID has approx. 2,50,000 Transmission Line Towers. Most of the ~~Petitioner~~ ^{Petitioner} EHV Transmission Lines (400kV D/C, 765kV S/C and 765kV D/C) ^{of POWERGRID} route fall along rural/interior geographies having sparsely populated areas and could be used to improve the IT in rural area.
- 2.5 POWERGRID has taken an initiative to explore the possibility to offer a cost effective solution to TSPs in overcoming the problem of providing transmission infrastructure & provide reliable power to telecom mobile operators and thereby helping in offering reliable telecom connectivity in remote areas to fulfill the dream of Digital India.
- 2.6 Since the lighting-up of BTS at these locations were essential for leasing of Towers, POWERGRID has devised this methodology of converting "induced power" in earthwire, which is otherwise going drain to earth, to light-up the BTS for which substantial capex has to be incurred.
- 2.7 POWERGRID's initiative is to explore the possibility to offer a cost effective solution by providing transmission infrastructure & reliable power to the telecom mobile operators, which would facilitate in overcoming the problems faced by them in offering telecom connectivity in remote areas to fulfill the Govt. dream of Digital India. Furthermore, since the transmission line availability of POWERGRID is generally more than 99%, the said arrangement would provide highly reliable power, thereby eliminating need of DG set, consumption of diesel and reducing carbon footprint.

3. **Salient Technical Aspects as per technical report submitted vide letter dated 12.10.2018.**

POWERGRID has submitted that they have approx. 2,50,000 Transmission Line Towers. Majority of these towers are located in remote areas/rural areas and the same could be used to improve the IT infrastructure in rural area. Out of these towers, approx. 1,50,000 towers are suitable for Base Transceiver System application.

A. Infrastructure

- a) The transmission towers of POWERGRID shall be used for mounting the telecom antennas, Base Transceiver System (BTS) and associated auxiliary power supply equipment for mobile communication.
- b) The EHV line Towers are having heights in the range of 30-50 Mtrs and are suitable to install the Telecom Mobile antenna at the height of 20-30 Mtrs. To install/place these equipment, a platform on the transmission line tower (at 7-8 meters above ground) shall be constructed (refer photo attached). The platforms at height of 7-8 meters will provide physical space to install, Power PT, its associated equipment & BTS equipment. It will be safe from flood like natural disasters.
- c) For Telecom BTS application, small amount of Power (about 3kW per telecom operator) is required. Reliable power supply is proposed to be provided for operation of BTS equipment from transmission line itself by adopting suitable technologies available viz., tapping the Induced power in Earth wire of EHV Line through Power PT, without affecting main transmission line.

B. Methodology for tapping Induced Power from Earth wire of EHV Line

Two earth wires are provided at the top of 765kV & 400kV transmission lines for lightning protection. These earth wires get continuously charged through capacitive coupling with live conductors. This energy is continuously discharged through grounding of earth wire on each transmission line towers. The discharge current/ energy can be utilized to provide reliable power to BTS locations on transmission line towers itself, which otherwise is going to ground through earthing on each tower. This Power can be utilized by insulating the Earth wire from tower, and tapping it through Power PT. Earth wire is to be insulated from towers using suitable insulators, hardware; Arcing horns are to be provided across each insulator to ensure continuity during lightning strikes.

C. Simulation Studies

- a) A simulation study was carried out by POWERGRID to tap power from Earth-Wire of these lines, by isolating Earth-Wire (E/W) from towers by utilising Power PT & LA.

Conditions during isolation of earth wire -

- For study purpose, 10km line was considered with source at one end and 500 MW load at another end.
- Transmission line has been simulated in MATLAB.

Summary Chart of Simulation Study Results

Sl. No.	Line Configuration & Voltage Class	Open Circuit Induced Voltage (kV) in E/W	Max power drawn (kVA) per KM length of E/W
1	400kV D/C line	30 – 50 kV	0.92 – 2.34
2	765kV D/C line	60 -100 kV	3.86 – 9.53
3	765kV S/C line	50 kV	2.23

Effect on Transmission Loss: Results for 400 kV D/C Line (Both Ckt Charged)

E/W Voltage (kV)	E/W Current (Amp)	PT Load (kW)	Loss in source impedance (kW)
(0 kV) Short Ckt	0.6100	00	18.605
29.39	0.0326	0.954	0.053
29.27	0.0648	1.892	0.210
29.07	0.0965	2.799	0.466
28.79	0.1275	3.662	0.813
28.45	0.1576	4.470	1.242
28.05	0.1863	5.213	1.735
27.59	0.2139	5.887	2.288
27.10	0.2401	6.488	2.882
26.56	0.2648	7.015	3.506
26.00	0.2880	7.470	4.147
25.43	0.3098	7.855	4.799
24.83	0.3301	8.175	5.448
24.24	0.3490	8.435	6.090
23.64	0.3665	8.639	6.716
23.04	0.3828	8.794	7.327
22.45	0.3979	8.906	7.916
21.87	0.4118	8.978	8.479
21.30	0.4247	9.017	9.019
20.74	0.4365	9.027	9.527

Zs=50 kOhm, Z of E/W is insignificant

- b) As per the study results, current flowing through Earth Wire is 0.61 Amp during the condition of Earth Wire solidly grounded. This corresponds to 18kW loss per 10Km of Earth Wire. When E/W is insulated from Towers, loss due to E/W is

zero and when Power PT is connected (after isolating Earth Wire), the losses in the Earth Wire varies with the load not exceeding 18kW. Thus there is no increase in Overall System Losses.

- c) It has been observed that 1kVA, 2kVA & 4kVA power can be drawn per Km of isolated E/W on 400kV D/C, 765kV S/C & 765kV D/C lines respectively under normal operating condition. Isolated E/W length can be increased as per requirement of Aux. power. This small amount of power is generally sufficient for Telecom application.

D. Effect on availability of EHV lines

- a) Under the methodology proposed by POWERGRID, a platform shall be installed for mounting the electrical and telecom equipment and tapping of power from the earth wire.
- b) Since there is no interference with the main system, it will not affect the availability of the transmission system.
- c) However as a precautionary measure, POWERGRID has committed that they shall ensure the following:
 - (a) the tenancy on each tower would not disturb the normal functioning of transmission system and is not more than load bearing capacity/structural strength of Tower;
 - (b) the transmission services are not affected due to installation of Mobile/ Telecommunication equipment on its transmission towers; and
 - (c) continue to have supervision and control on the activity of the selected telecom operator and shall ensure that the utilization of its assets for this proposed business shall not in any manner adversely affect its performance or obligation in the transmission business.

E. Effect of EHV lines on Mobile signals

A study has also been conducted by IIT Delhi, regarding interference on mobile signal by High Voltage of EHV Lines. As per their study, no significant interference has been observed at the BTS and Antennas, and mobile signals.

F. Pilot project and demo set-up

- a) POWERGRID has informed that a pilot project at Bhiwani S/s on 400kV Bhiwani-Jind D/C line was successfully implemented in January 2017 to extract power from earth wire (E/W). Load of about 2.7 kW was drawn from 2.3 km of isolated E/W. From the above, POWERGRID observed that approx. 1kVA per km of 400kV D/C Line earth wire can be drawn.

- b) Based on this pilot project, a full-fledged demo set-up was established by POWERGRID at Jhatikara substation on Mundka 400kV Quad line. In this set up, approx. six km earth wire is isolated/ insulated from towers using 132kV class polymer insulators & arching horns across insulators to take care of intended lightning protection. Other E/W (having OPGW) are not disturbed. Induced charging current of isolated E/W is tapped at one point using Power PT & LA arrangement. In this set up, one of the telecom operators has also installed BTS and associated panel, batteries, charger etc. on the tower platform itself. The antennas have been installed on tower and the BTS equipment on the platform of the tower at Jhatikara sub-station. POWERGRID has submitted that the said set-up has been working satisfactorily since 18.6.2017.

G. Limitations

POWERGRID has submitted that the aforesaid proposed business has following limitations:

- Low voltage line Limitation: Only 400kV D/C and above voltage lines can be useful to provide the required Power for BTS equipment's through isolated the earthwire. Lower voltage line heights are not suitable for installation of Mobile Antenna.

Due to this limitation, only 1,50,000 Transmission Tower are useful.

- Technology Limitation: As per industry feedback approximately 8kW power is required to run the BTS System. For getting the 8kW Power, it is required to isolate the Earthwire from 20 Towers on 400kV D/C Lines and from 10 towers on 765KV lines. Therefore only 1 Location is usable out of 20 Tower in 400kV D/C Line and 10 Towers in 765 KV Lines.

Due to technological limitation, only 12,700 towers are useful.

- Minimum revenue per Tower: As per consultant engaged by POWERGRID – KPMG assessment, only those tower locations are financially viable to Mobile Operator where the nearby population is minimum 3500. Out of 12,700 towers, tower locations with geographies of a population of min. 3500 are around 6000 Nos.
- Based on KPMG assessment, the saleable location will vary from 1250 to 6000 Nos.

4. Salient Financial Aspects as submitted vide letter dated 17.5.2018.

- 4.1 Financial Aspects of the Project: In line with CERC (Sharing of Revenue derived from utilization of Transmission Assets for other business) Regulations,



2007, POWERGRID is required to share the revenue derived from such business with the beneficiaries of ISTS.

A. Capex-Capex/Location (in Lacs):

Sr.	Capex Expenditure	Life of Asset	Asset details
i.	Rs.15.30 Lacs	15 Year	Power PT, LA and other Power equipment
ii.	Rs.1.9 Lacs	7.5 Year	Battery Charger with remote monitoring
iii.	Rs.2.45 Lacs	5 Year	Battery Bank

B. Operational Expenses:

Annual operational expenses/Location: Rs.1.12 Lacs (Rs.9325/Month).

C. Revenue :

Being the new entry of POWERGRID in market and present financial conditions of Telecom industries, M/s KPMG recommended the following rentals/Month/Location viz industry offer-

Parameter	Industry Average	BSNL	POWERGRID (Mobile Operator)
Urban Rent- Single Tenant	56000	51750	50000
Rural Rent- Single Tenant	56000	50000	45000
Urban Rent- Second Tenant	49000	48075	45000
Rural Rent- Second Tenant	49000	46500	40000
Urban Rent Third Tenant	41000	44768	
Rural Rent Third Tenant	41000	43350	

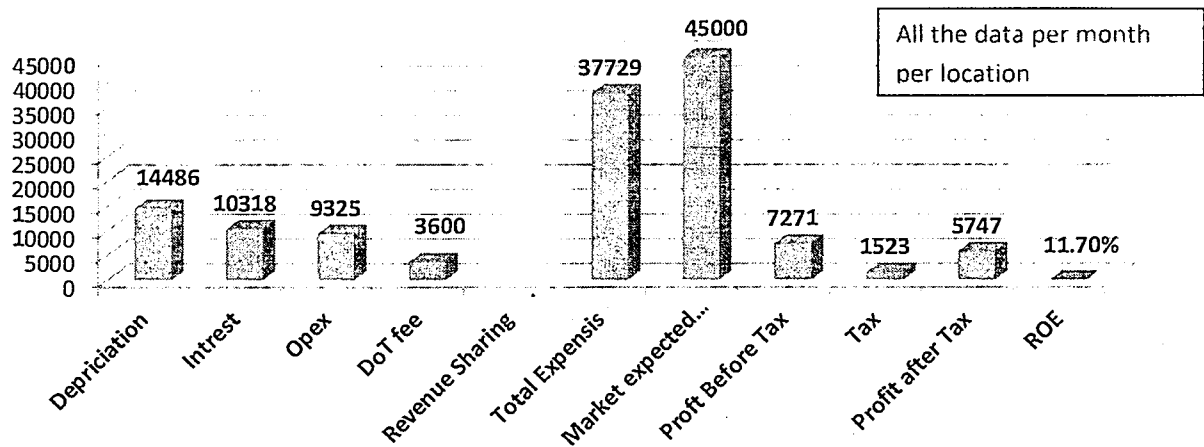
- Note:** 1. The rents are including all the expenses including energy cost.
2. Urban: Rural Tower Split ratio is 10:90 % and double tenancy of 100% in urban area and 5% in rural area.

D. Other consideration as per KPMG recommendation

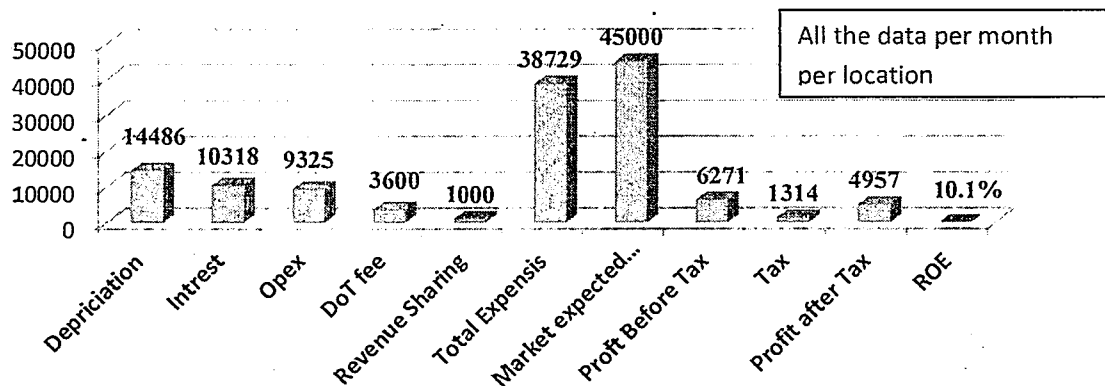
- I. Agreement with TSP's will be for 15 Years
- II. Debt : Equity = 70:30
- III. Interest on Loan @ 9%
- IV. Taxes @ 20.96%
- V. DoT license fee on revenue @ 8 % on revenue
- VI. **Depreciation:** Rs. 14,486/Location (Considering the life of assets the depreciation rates are (i) 6.7% for equipment with Life of 15 Years, (ii)13.3 % for equipment with Life of asset 7.5 Years and (iii) 20% for equipment with Life of asset 5 Years.)

E. Considering all the tower in rural area with single tenancy, the RoE calculation/Location-

- I. Without sharing revenue with beneficiaries



II. Sharing about 13.5% of PBT (Rs.1000/Month/Location) with beneficiaries



F. Proposed profit sharing with beneficiary:

a) As per CERC Norms in Transmission line business, POWERGRID will get the RoE @ 15.5%, however considering the benefits mentioned above to rural society, POWERGRID is proposing to pay to beneficiary of Rs.12,000/Location/Year(Approx-13.5% of profit before TAX) and accordingly total sharing with beneficiary will be :

	Total Revenue	Rs. 68 Cr/Year
Case-I (Leasing of 1250 Towers)	Total PAT to POWERGRID	Rs. 7.4 Cr/Year
	Sharing with beneficiary :	Rs.1.5Cr/Year
	Total Revenue	Rs. 324 Cr/Year
Case-II (Leasing of 6000 Towers)	Total PAT to POWERGRID	Rs.35.6 Cr/Year
	Sharing with beneficiary	Rs.7.2 Cr/Year

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- b) POWERGRID has submitted that presently all the assumptions are taken based on KPMG Report (estimated values) and interaction with existing Infrastructure service provider. However, the actual revenue /profits will depend upon the cost of procurement for material (supply and installation) and actual revenue earned from the customers. In case of major variations in expenditure and revenue, revised proposal will be submitted to CERC.

G. Proposed Clients

POWERGRID has submitted that it can offer the service directly to telecom operators like BSNL, Airtel, Vodafone, Jio etc. or to telecom infrastructure players like Indus, Bharti Infratel who will in turn give it to telecom players.

5. Response of DISCOMs on POWERGRID's proposal vide petition notice dated 4.7.2018

- 5.1 The Commission vide Notice dated 4.7.2018 uploaded the Financial Proposal including Revenue Sharing model with the beneficiaries and Technical paper submitted by POWERGRID on CERC website seeking comments/ suggestions/ observations from the stakeholders/public. Replies have been filed by MP Power Management Company Ltd., UP Power Corporation Ltd, BSES Rajdhani Power Ltd., North Bihar Power Distribution Company Limited & South Bihar Power Distribution Company Limited, Maharashtra State Electricity Distribution Company Limited. Rejoinder to the aforesaid replies have also been filed by the POWERGRID.
- 5.2 The Commission vide RoP dated 5.10.2018 directed the Petitioner to discuss the matter with the distribution companies explaining the benefits of the scheme and submit their views/ comments on the issue. In compliance with the Commissions' directed dated 5.10.2017, the Petitioner uploaded the Petition along with financial proposal on its website and West Bengal State Electricity Distribution Company Limited (WBSEDCL), MPPMCL, TPDDL, BRPL have filed their comments.
- 5.3 The brief of replies /comments filed by Discoms and Rejoinder filed by POWERGRID is attached at **Annexure-A**.

6. Observations of the Committee

- 6.1 Based on the Petition; technical and financial proposal submitted by POWERGRID, discussions held with POWERGRID, and replies submitted by the distribution companies and rejoinder submitted by POWERGRID the observation of the Committee are as under:

6.2 Need of Initiative

- It is a fact that India has deficiency of Telecom/Network coverage in rural/remote areas and countless sparsely populated areas with poor connectivity. The major problem faced by the Telecom Service providers in providing network services in remote/rural areas is that there is a huge investment towards land and installing towers and set up for reliable power supply which results in high operation cost. The proposed business of POWERGRID would help in improving mobile connectivity and quality of service in areas having deficiency of Telecom mobile network thus help the Digital India program of Govt. of India. Furthermore, if the initiative taken by POWERGRID becomes a successful model, the same can be used by other transmission licensees and distribution licensees to offer their assets for such purpose.
- Committee notes that POWERGRID 's initiative to explore the possibility to provide transmission infrastructure & reliable power to the telecom mobile operators would facilitate Govt. initiatives of providing digital/telecom connectivity in remote areas and thus benefit the people at large. Further, it will help in reduction of DG sets leading to reduction in carbon footprint and better mobile connectivity in remote areas.

6.3 Technical Aspects

- (a) Infrastructure: It is observed that suitable modification shall be carried out by constructing a platform on the transmission towers which shall be used for mounting the telecom antennas, Base Transceiver System (BTS) and associated auxiliary power supply equipment for mobile communication.

POWERGRID has submitted that significant capital expenditure is involved in carrying out the infrastructure changes apart from O&M expenditure and the same shall be borne by them and shall not be passed on to the ISTS beneficiaries. The same shall be recovered from the Telecom Operators.

- (b) Tapping of Induced Power & effect on transmission losses: It is noted that there is inherent loss of power during transmission. Such power losses are taken into account while scheduling of power from generating station to its buyers. It is also noted that two earth wires are provided at the top of 765kV & 400kV transmission lines for lightning protection. These earth wires get continuously charged through capacitive coupling with live conductors. This energy is continuously discharged through grounding of earth wire on each transmission line towers. Thus we agree that with the above methodology the power which was otherwise going waste into ground through earthing at each tower location would be utilised.

Studies have been carried out by POWERGRID which has demonstrated that by tapping/isolating the earth wire, there is no adverse effect on the transmission losses.



(c) Effect on availability of EHV lines & effect of EHV lines on Mobile signals:

POWERGRID has submitted as follows:

- (a) there is no interference of proposed infrastructure changes and mobile signals on the main ISTS system and hence it will not affect the availability of the transmission system. POWERGRID has also submitted that no interference of high voltage of EHV lines was observed on the mobile signal in the studies conducted by IIT Delhi. On an average 1kW of power per km of E/W can be drawn from a 400kV D/C line.
- (ii) Since all Power tapping equipment (PT, LA etc) are connected to E/W, any outage/fault of connected equipment will not cause tripping of EHV line, thus there is no impact on transmission line operation/availability.
- (iii) Since T/L availability is more than 99.5%, the said arrangement shall provide very high reliable power, thereby reduction in consumption of diesel and thus reduction in carbon footprint.

6.4 Financial Aspects


- (b) POWERGRID has proposed only to rent out its transmission tower and thereby recover its opportunity cost towards converting the transmission tower for telecom uses.
- (c) It is also noted that the telecom business is highly competitive market. Currently, more than 4 lakh towers are in use by various operators. The actual additional requirement of telecom towers in the market and the number of POWERGRID's transmission line tower suiting their requirement for telecom purpose cannot be ascertained at this stage.
- (d) From the financial analysis submitted by POWERGRID, it is noted that POWERGRID would be required to make capital expenditure of Rs. 19.65 lakhs per location to provide infrastructure viz., platform and power supply inputs. Apart from the above, POWERGRID would also need Annual operational expenses of approx. Rs. 1.12 lakhs per location and 8% of its revenue to DOT towards licensee fee. Considering the same, POWERGRID has proposed approx. 13.5% of its profit after tax to be shared with the beneficiaries. POWERGRID has submitted that with this proposal, the return of equity for POWERGRID works out to 10.1%.
- (e) The capital expenditure to the extent of transmission tower shall be charged to transmission business. The capital expenditure under the proposed BTS activity shall be booked as separate business head. The net surplus after adjusting the operational cost shall be shared with the beneficiaries for reduction of their transmission charges. Initially, it may be appropriate to

consider the sharing in the ratio of 50:50, which may be reviewed after completion of one year.

7. Recommendations

Based on the foregoing, Committee recommendations are as follows:

- The proposed use of the existing transmission line will not alter the rights of the procurers of the transmission service, but, it will optimize the utilization of the assets which is permitted under Section 41 of the Act.
- POWERGRID may be allowed to undertake the business of offering its transmission line towers to Mobile Telecom Service Providers/ Telecom Infrastructure Providers on commercial basis, in line with Section 41 of the Electricity Act, 2003, for effective utilization of assets and to benefit the society at large.
- The act of providing electricity by POWERGRID for the telecom equipment installed on its transmission towers out of the electricity which was otherwise wasted does not amount to 'generation' or 'trading' in electricity and thus the prohibition prescribed under the first proviso to Section 38 and the third proviso to Section 41 of the Electricity Act, 2003 would not be applicable in any way to the activity proposed by POWERGRID.
- It is felt prudent that in initial stages sharing of revenue after meeting cost may be in the ratio of 50:50 with the beneficiaries. However, the same may be reviewed at a later date (after one year) after ascertaining the financial viability of the business by POWERGRID.



(S.C. Shrivastava)
Chief (Engg)



(T. Rout)
Chief (Law)



(M.K. Anand)
Chief (Finance)

Replies filed by the Discoms to the Petition No. 180/MP/2017 and POWERGRID's Rejoinder.

The salient contention of parties submitted are summarized herein below:

Submissions of UPPCL:

- UPPCL has submitted that before granting of proposal, POWERGRID may be directed to submit the Detailed Project Report(DPR), Technical approval of the Standing Committee of Northern Region and other regions, Administrative approval of the Board of Directors, Details of clearance between the proposed equipments with the live line to satisfy the requirements of Indian Electricity Rules.
- The Petitioner should ensure that non- hindrance of transmission services due to frequent maintenance of mobile/ telecommunication equipments.
- The telecommunication service provider will maintain the proposed equipments installed on EHV Towers, which must be supervised by PGCIL simultaneously in order to avoid fatal accidents.
- The tariff for power supply to the mobile service providers may be decided by the Commission. Since, PGCIL will supervise the maintenance work, 20% of the revenue earned may be credited to PGCIL and the balance 80% to the beneficiaries.

Submissions of MPPMCL:

- (a) MPPMCL has submitted that the proposed utilization of the transmission assets should not result in any interruption in power supply in any manner.
- (b) The cost to be incurred on installation of system for other business is to be borne by the POWERGRID in full and in no case any amount shall be passed on to the respondents.
- (c) The revenue sharing of revenue obtained due to optimal utilization of transmission tower shall be in the same ratio in which PoC charges are being billed, on monthly basis.
- (d) The revenue sharing of revenue obtained due to optimal utilization of transmission tower shall be in the same ration in which PoC charges are being billed on monthly basis. BRPL has also relied on its reply filed in the Petition.
- (e) The tenancy in each tower should be in such manner that it does not disturb the normal functioning of system and is not more than load bearing capacity/ structural strength of tower.

Submissions of BSES Rajdhani Power Ltd.:

(a) The proposal submitted by PGCIL amounts to sale and purchase of power. The first proviso to Section 38 and the third proviso to Section 41 of the Electricity Act, 2003 specifically prohibits sale and supply of power by any transmission licensee. Since, PGCIL is a transmission licensee, any sale and supply of power by PGCIL cannot be undertaken under the garb of "other businesses."

(b) PGCIL has proposed to supply power to telecom asset/ transmission system which would mean that PGCIL is indulging in the trading of electricity despite being a transmission licensee, i.e. PGCIL is actually purchasing and selling, which implies that PGCIL is performing the function of distribution licensee. However, PGCIL does not have a distribution system as required under section 2 (17) of the Electricity Act, 2003.

(c) As per Section 38 of the Electricity Act, PGCIL can only undertake the functions assigned to it under the Electricity Act i.e. transmission of electricity. There is no provision under the Electricity Act which empowers PGCIL to indulge into trading/ supply of electricity. Further the third proviso to Section 41 of the Electricity Act, prohibits transmission licensee to carry out trading in electricity. If PGCIL seeks to engage in trading/ supply of electricity, it would require distribution licence and distribution system which cannot be done under the current regulatory framework.

(d) The Appropriate Commission has to stipulate a 'proportion' or 'percentage' of the 'other income' in order to reduce the transmission charges.

(e) The proposed action of PGCIL for offering transmission line towers to telecom service providers may compromise the quality of power being supplied. Section 38 (2) (c) of the Electricity Act mandates PGCIL to ensure smooth flow of electricity and development of an efficient, coordinated and economical system. Accordingly, suitable safeguards should be specified by the Commission while taking a final view on the proposal submitted by PGCIL.

(f) PGCIL should ensure that the implementation of the telecommunication system should not result into outage which disrupt smooth flow of electricity, In case, there is outage due to implementation of the telecommunication system, the same should be excluded while calculation of the availability of the transmission system.

Since, the cost involved in mounting the telecom antenna for Mobile Telecom Service Providers and any structural changes in existing or future lines of tower/ foundation of tower do not fall within the ambit of allowed expenses under the CERC (Terms & Conditions of Tariff) Regulation, 2014, it should not be passed on to the beneficiaries and ultimately on the consumers.

Submissions of NBDCL & SBPDCL:

(a) The Petitioner has not ascertained the financial viability of the business. Therefore, it would be difficult for the Commission to decide on the sharing of revenue.

(b) When the revenue is uncertain its sharing is also not certain. It is for the Powergrid to ensure the soundness of their R&D project for tapping induced power in the earth wire of 400 kV line as any failure would put the Powergrid in severe problems for which he himself is responsible. The beneficiaries will not assume any risk and the entire risk of success or failure of the project rests with the Petitioner.

(c) The Petitioner is required to furnish the details as to how much the amount from levying of fees and other charges will be available for sharing with the beneficiaries. Once these details are made available, the Commission can decide the sharing between the Petitioner and the beneficiaries.

(d) To determine the market based monthly lease price, it may be desirable for the Powergrid to float tender for offering such facility.

Submissions of MSEDCL

(a) The proposed utilization of power by the Petitioner amounts to trading of power, which is contrary to Section 41 of the Electricity Act. Therefore, the Commission should not allow the petitioner to resale or trade such power to telecom utilities.

(b) In case, the Commission is of the view to allow the Petitioner to facilitate telecommunication consumers by the proposed methodology, the Petitioner is required to take a separate power supply connection and also to make a separate metering arrangement.

(c) At present, 100% expenditure incurred on CTU infrastructure is reimbursed through PoC mechanism by State discoms. Therefore, 100% revenue earned by the Petitioner by the proposed methodology through rent ect should be utilized towards reduction of transmission charges payable by the beneficiaries of the assets. Further, the revenue may be shared in proportion to the PoC charges payable by the State Discoms and shall be adjusted on monthly basis in the bills of the respective months.

(d) The Petitioner has submitted the estimated O & M charges consisting the average marketing spend, watch & ward insurance, maintenance cost etc,. Some of the O & M charges claimed by the Petitioner are not part of the O & M charges.

(e) The Petitioner should ensure uninterrupted and reliable supply during installation or during operation of telecom equipment. The Commission is requested to ensure the reliability and availability of the transmission system upon installation of telephone equipment at any point of time.

6. The comments of WBSEDCL and TPDDL are as under

Comments of WBSEDCL:

- (a) The supply of power to the end customer is the function of distribution licensee and not of distribution licensee.
- (b) By the proposed supply of power to the Telecom Service Providers by PGCIL, the distribution licensees will lose its business to the extent of power supply made by PGCIL
- (c) As net revenue of beneficiaries after tax will be negligible and in comparison to loss in business, there may be a net revenue loss of Distribution Licensees. In this context the gain sharing should be fixed at such a level so that Distribution Licensees are compensated to the extent of loss in business.

Comments of TPDDL

(a) PGCIL, under section 41 of the Electricity Act, 2003 has proposed "other business", i.e., to supply power to the Telecom asset/ transmission system from the isolated earth wire. The said business should be undertaken while adhering to the technical and legal prescription of the Electricity Act, 2003 and the rules and regulations made thereunder.

As regards, the sharing of revenues from the income earned from proposed "other business", PGCIL has proposed to share a revenue of Rs. 12,000/Location/Year (approx. 13.5% of profit before TAX) with the beneficiaries. The said formulae proposed by PGCIL is against the purport of Section 41 of the Electricity Act, 2003 which provides that the revenue derived from "other business" of the transmission licensee must be on a '**proportionate**' basis.

(b) A fixed amount, as proposed by PGCIL cannot be a representative of the proportionate amount. The formula should take into consideration any increase in income from other sources and proportionately increase the revenue being shared with the beneficiaries. Further, the methodology of proportion is followed so that any change in revenue from "other income" is accounted for i.e., there is an increase in revenue shared, in case the income from "other sources" increases or vice versa. Therefore, the income from other sources be shared among the beneficiaries and PGCIL in some proportion and not a fixed amount. The income from other sources be shared among the beneficiaries on a proportionate basis and not a fixed amount. Further, the revenue derived from such business as approved by the Appropriate Commission shall be utilized for reducing the transmission and wheeling charges. The concept of sharing of revenue on proportionate basis is being followed by most State Electricity Regulatory Commissions. TPDDL, proposes that PGCIL may retain



10% of the net revenues and pass on the remaining 90% revenue to be shared with the beneficiaries. As such, an increase in the revenue would lead to reduction in transmission tariff, and consequentially benefit of the same shall be passed on to the end consumers, as envisaged under section 61 of the Electricity Act, 2003. Any cost incurred by PGCIL which includes Capital Expenditure and Operational Expenditure or other business cost, in creating the infrastructure for the proposed project should be completely financed through the revenue generated by the transmission system. The same should not be made a part of the Capital Cost and O&M expenses for the purpose of tariff of the concerned transmission system.

9. Rejoinder of Powergrid to the Replies filed by UPPCL, NBPDC, SBPDCL, TPDDL, BRPL, MPPMCL, MSEDCL

(a) The Petitioner is merely providing electricity by tapping induced power through isolating earth wires of its own transmission lines towers, which in usual course goes as waste into the ground. Therefore, the proposed activity by the Petitioner does not in any way involve 'Generation of Electricity', which infact is the prohibition provided under first proviso to Section 38 of the Electricity Act, 2003.

(b) The Petitioner under the proposed activity is neither purchasing electricity from any source nor retaining any of the transmitted electricity. There is no purchase of electricity per se by the Petitioner. Therefore, the proposed activity by the Petitioner does not fall under 'Trading of Electricity' in any manner.

(c) The core activity under the proposed scheme is to provide space to the Telecom operator to install their telecom Antenna on the Transmission Tower of the Petitioner. The provisioning of electricity for functioning of the telecom equipments is only an ancillary and incidental necessary act, which would be facilitated by the Petitioner by tapping of induced energy from the earthwire of its transmission line i.e. out of energy which otherwise goes waste. Therefore, the proposed activity does not amount to generate or trading of electricity.

(d) PGCIL will ensure that transmission services are not affected due to installation of Mobile/Telecommunication equipment on its transmission towers

(e) Significant capital expenditure is involved in the project apart from O&M expenditure and the same shall be borne by the Powergrid and shall not be passed on to the Respondents.

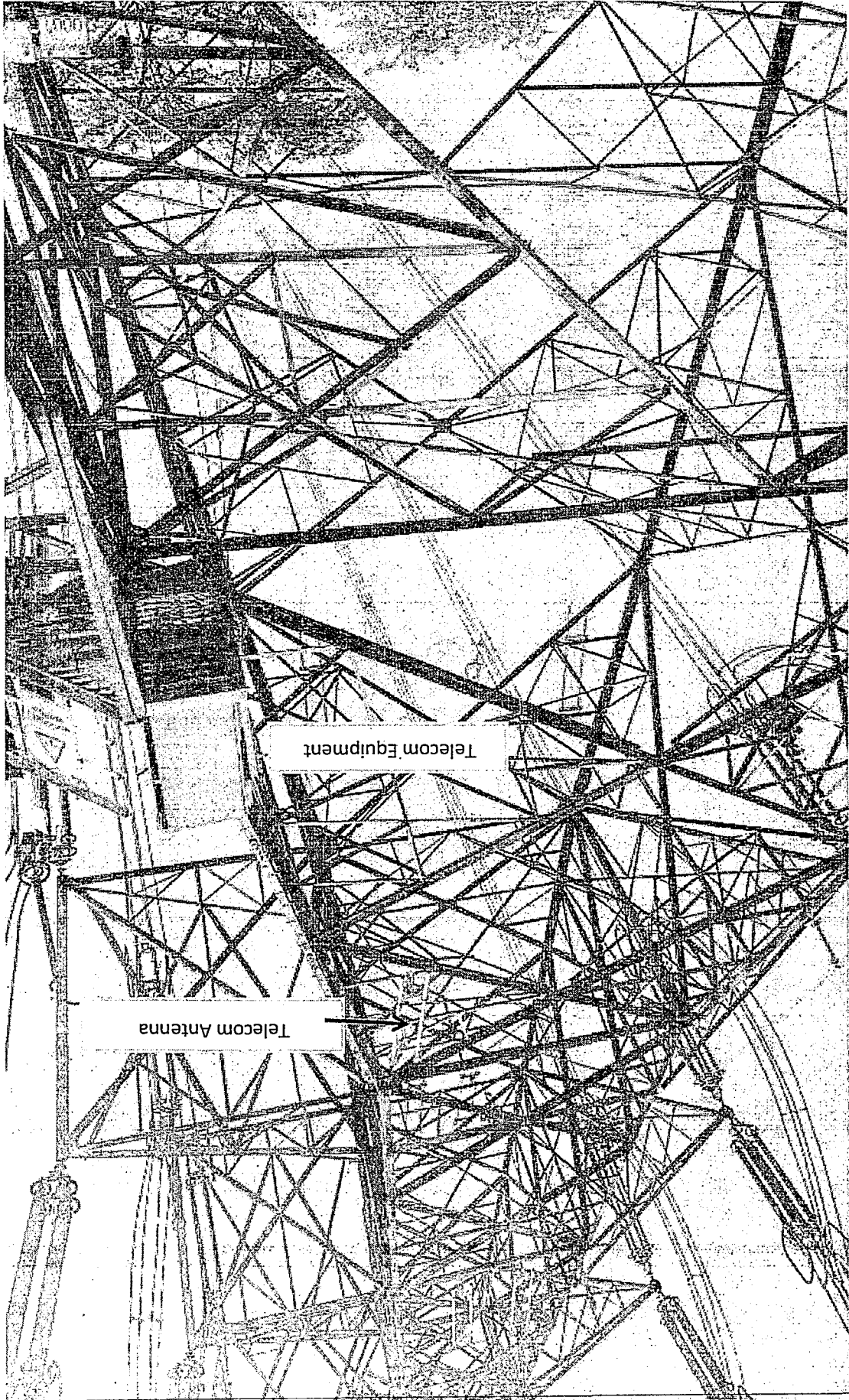
(f) With regard to sharing of the revenue, the Petitioner is yet to ascertain the financial viability of the proposed business as the same would depend upon various factors such as number of towers utilized, location of tower and business of Telecom players in the area (population/prosperity level). It shall ensure that the tenancy on each tower would not disturb the normal functioning of transmission system and is not more than load bearing capacity/structural strength of Tower.

(g) The Petitioner will ensure that the tenancy on each tower would not disturb the normal functioning of transmission system and is not more than load bearing capacity/ structural strength of the tower.

(h) The capital cost to be incurred upon Tower modification and allied installation required for Telecom sytem shall be borne by the Petitioner shall not be passed upon the state utilities.

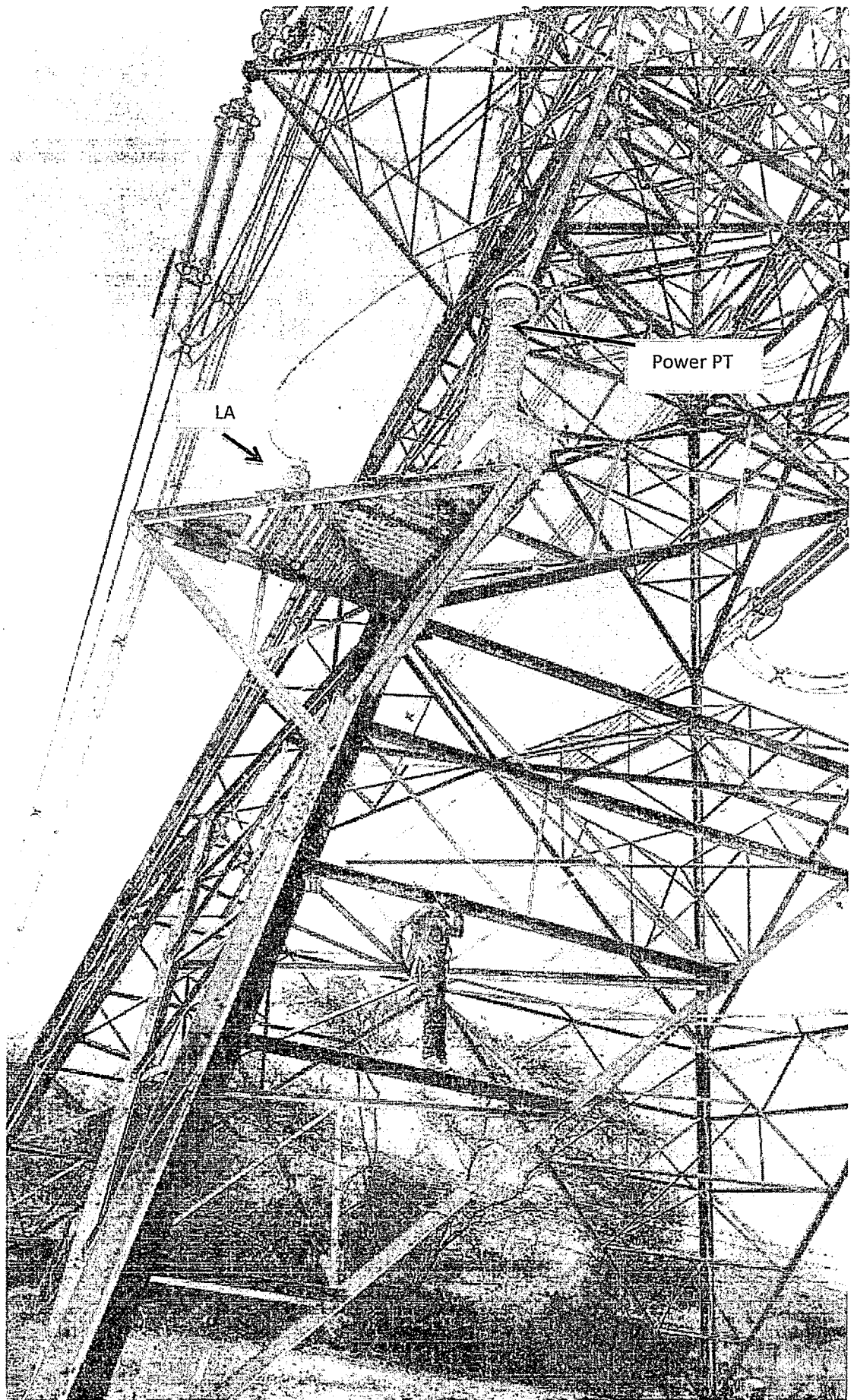
(i) As per KPMG assessment a significant capital expenditure of Rs 19.65 lakh/ location is involved in the project apart from O & M expenditure @ Rs 1.12 lakh/ year and the Petitioner shallbe recovering he amount from lease rent only, ROE obtained on said capex come to around 10% which is much lower than the RoE obtained by the Petitoinet from its transmission business.



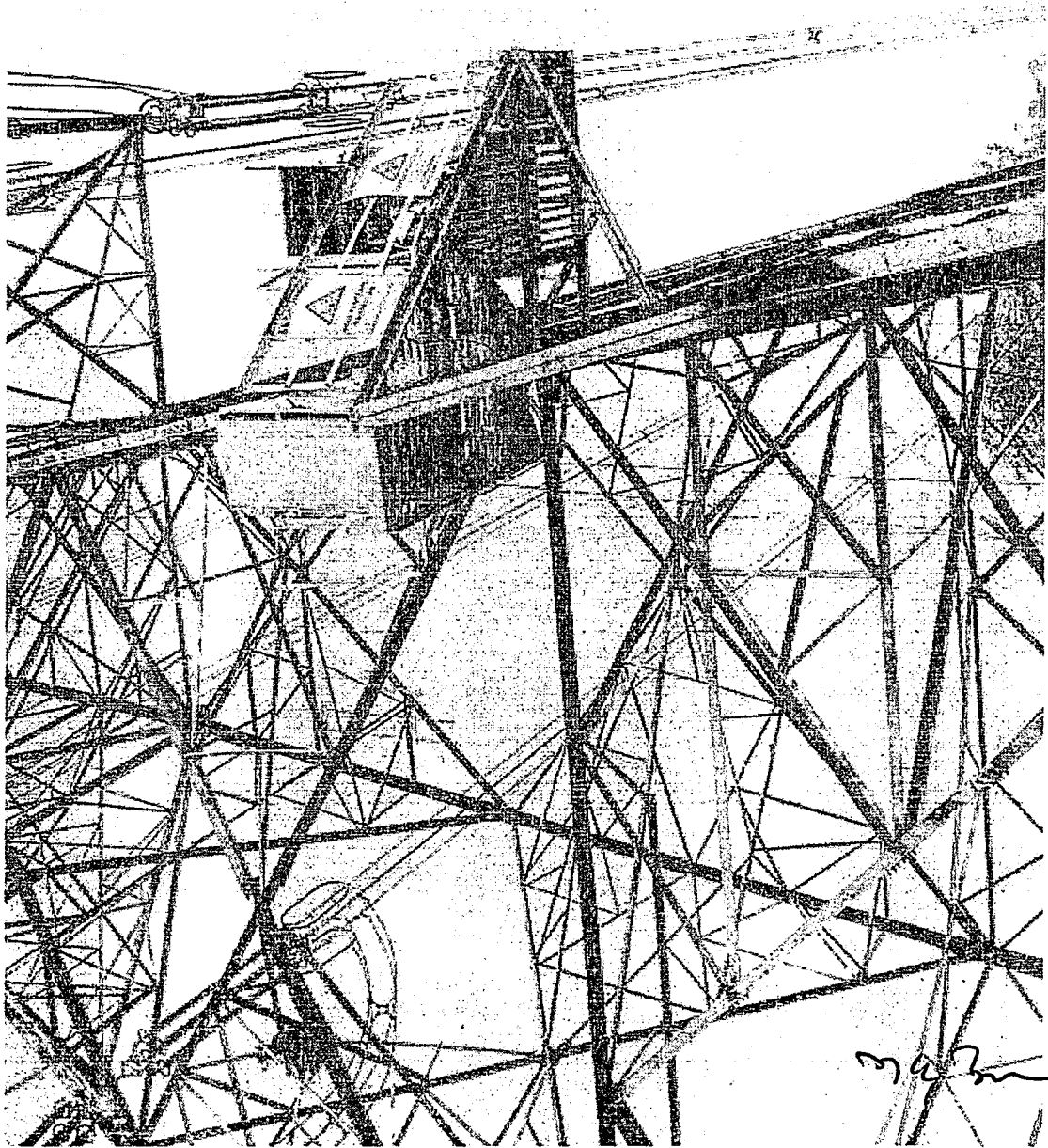


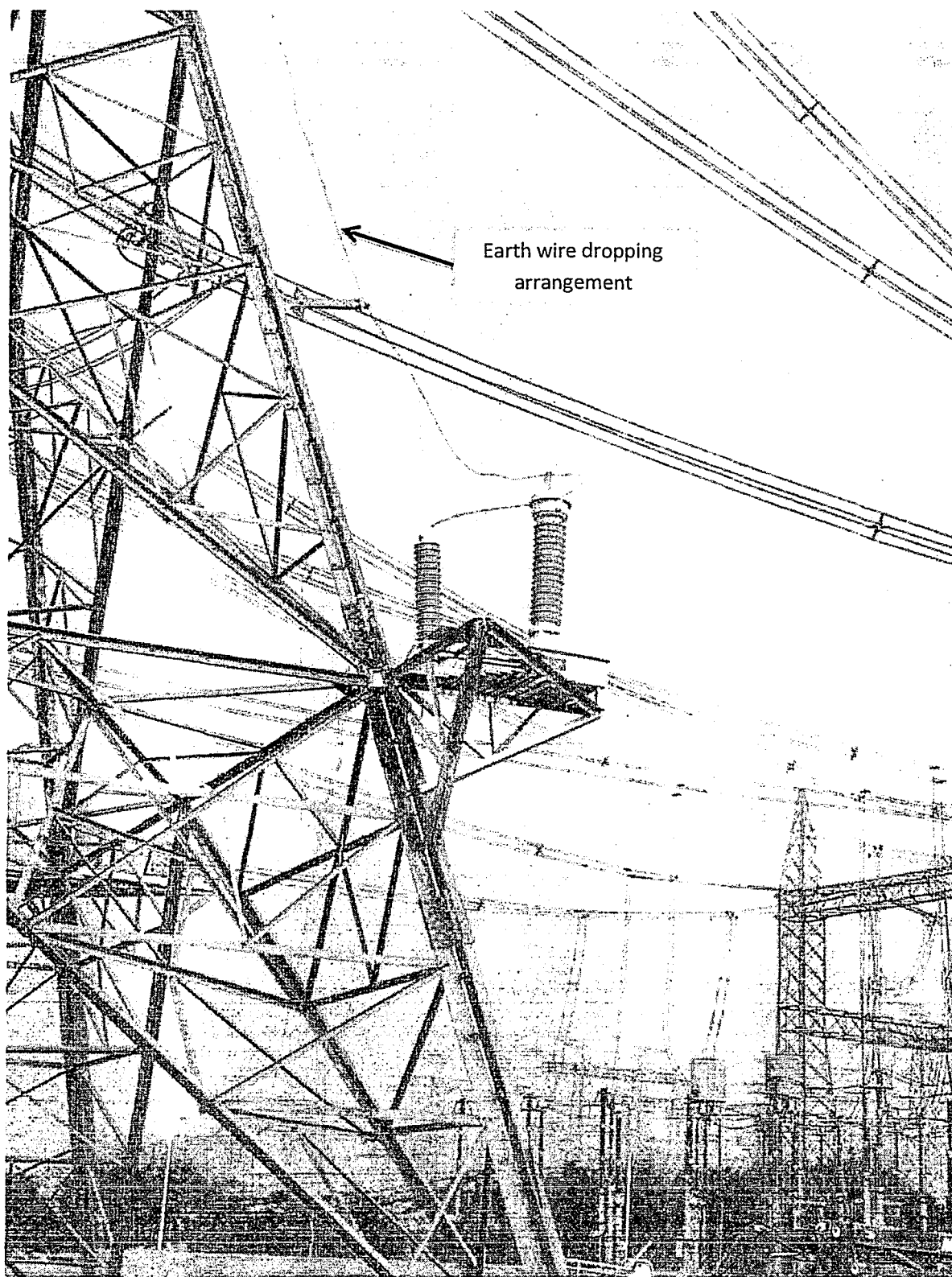
Telecom Equipment

Telecom Antenna



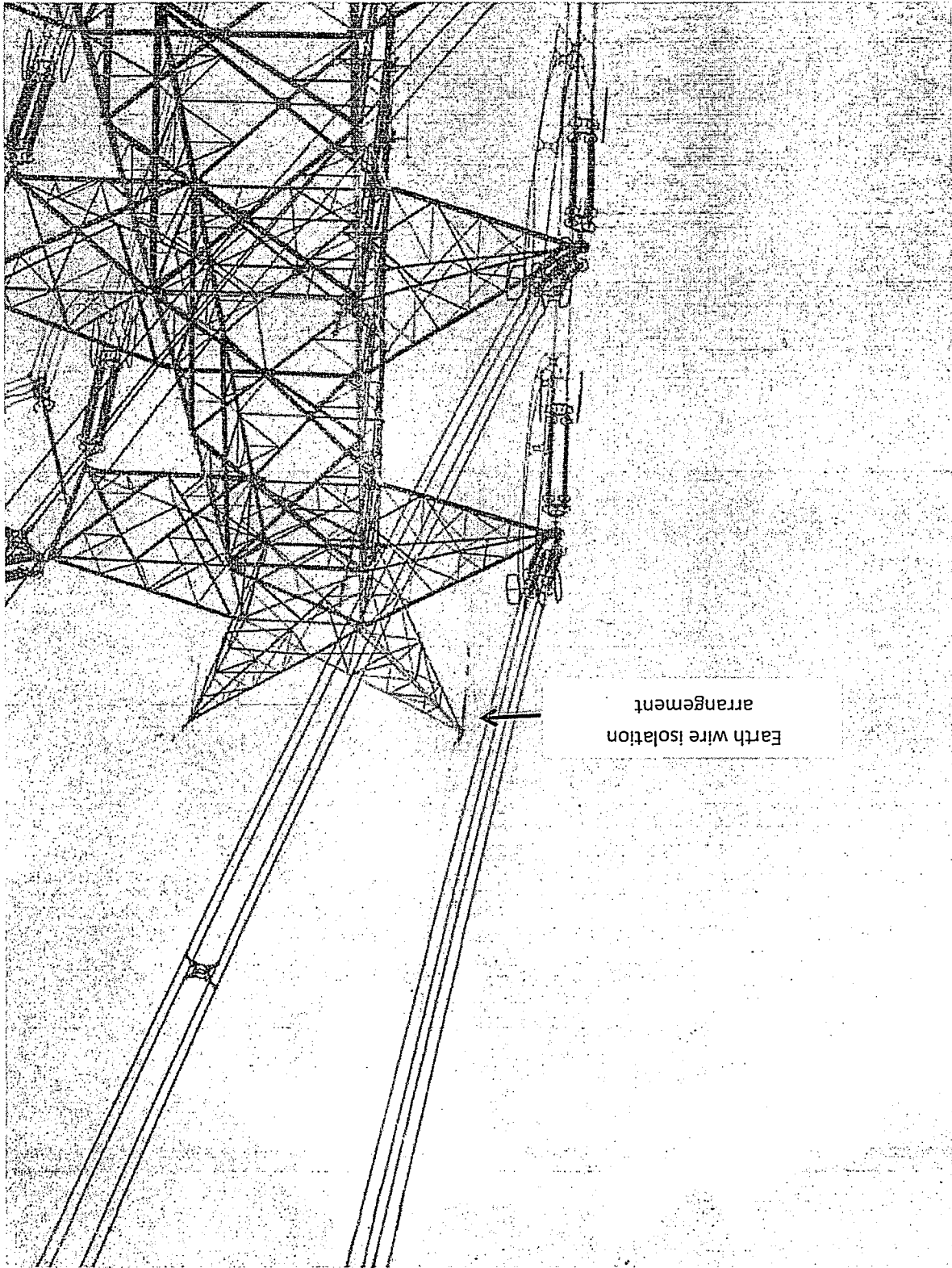
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Earth wire dropping arrangement

07/3/20



Earth wire isolation
arrangement