CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram:
Dr. Pramod Deo, Chairperson
Shri M.Deena Dayalan, Member

DATE OF HEARING: 24.1.2012

DATE OF ORDER: 9.10.2012

Petition No. 215/MP/2011
with I.A. No. 43/2012

In the matter of

Petition under section 28 (e) of the Electricity Act, 2003 read with Regulation 1.5 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 for establishment and maintenance of Communication facilities by the users of the Eastern Region in terms of Regulation 4.6.2 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, read with Regulation 5(3) of CEA (Technical Standards for Connectivity to the Grid) Regulation, 2007 to ensure availability of reliable real time data at ERLDC.

And
In the matter of

Eastern Regional Load Despatch Centre, Kolkata .....**Petitioner**

Vs

1. Bihar State Electricity Board, Patna
2. OPTCL, Bhubaneswar
3. WBSETCL, Kolkata
4. Jharkhand State Electricity Board, Ranchi
5. Energy and Power Deptt., Govt. of Sikkim, Gangtok
6. Damodar Vellay Corporation, Kolkata
7. ERTS-I, Power Grid Corporation of India Ltd, Patna
8. ERTS-II, Power Grid Corporation of India Ltd, Patna
9. Sterlite Energy Ltd., Bhubaneswar
10. Maithon Power Limited, Noida
11. NTPC,ER-I, Patna
12. NTPC,ER-II, Patna
13. NHPC Ltd., Faridabad
14. NTPC, Farakka Super Thermal Power Station, Murshidabad
15. NTPC, Talcher Super Thermal Power Station, Angul

16. NTPC,Kahalgaon Super Thermal Power Station, Bhagalpur
.....**Respondents**

Following were present:

Shri S.K. Chandrakar, ERLDC
Shri Mukhopadhyay, ELRDC
Ms. Joyti Prasad, NRLDC
Shri R.B.Sharma, Advocate for BSEB an JSEB
Shri Shailendra Singh, NTPC
Shri Amrita Singh, NTPC
Shri R.Raina, NHPC
Shri Jitender Kumar Jha, NHPC
Shri C.Vinod, NHPC

ORDER

The petitioner, Eastern Regional Load Despatch Centre (ERLDC) has filed this petition seeking directions to all users of Eastern Region to establish and maintain the data telemetry and communication facilities in terms of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (hereinafter referred to as 'the Grid Code), Central Electricity Authority (Technical Standards for connectivity to the Grid) Regulations, 2007 (hereinafter referred to as 'CEA Connectivity Regulations') and various other regulations issued by the Central Commission from time to time.

2. The petitioner has submitted that in terms of Section 28 (e) of the Electricity Act, 2003 (the Act), ERLDC is responsible for carrying out real time operations for the grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code. The real time data is vital for

taking decisions during grid operation in terms of Section 2 (54) of the Act. Further, to maintain security and reliability of the network, state estimator tool is used at control centre to determine the current state of system and perform contingency analysis. The accuracy of state estimator results also depends on the real time data availability (digital and analog) from the users.

3. The petitioner has submitted that getting real time data of various power system elements using reliable communication system has become an essential pre-requisite for successful operation of modern power system and in this regard, POSOCO vide its letter dated 19.11.2010 had submitted to the Central Commission a comprehensive proposal for institutional mechanism for planning and implementation of communication system for power sector.

4. The petitioner has submitted that in accordance with Section 2 (54) of the Act, Regulation 5 (3) of CEA Connectivity Regulations and details procedures of Central Transmission Utility approved under Regulation 27(1) of the Central Electricity Regulatory Commission (Grant of Connectivity, Long-Term Access and medium-term open Access in inter-state Transmission and related matters) Regulations 2009 (hereinafter referred to as 'CERC Connectivity Regulations'), user, who is getting connected to the grid, is solely responsible to provide the telemetry to the Load Despatch Centre. The Central Transmission Utility (CTU)/State Transmission Utilities (STUs) are to coordinate the required communication for voice and data. The associated

communication system to facilitate data flow up to appropriate data collection point on CTU system shall also be established by the concerned user or STU as specified by CTU in the Connection Agreement. All users/STUs in coordination with CTU shall provide the required facilities at their respective ends as specified in the Connection Agreement.

5. The petitioner has submitted that despite continuous efforts and persuasion with the concerned utilities/users, requisite data from a number of generating stations/sub-stations are still not being telemetered to the concerned RLDCs. These issues were raised in the various Regional Power Committee (RPC) forums, namely Operation Coordination Sub-Committee (OCC)/ULDC Scheme Monitoring Group (USMG), Technical Coordination Committee (TCC) / concerned Regional Power Committee (RPC) Board.

6. The petitioner has submitted the status in respect of the deficiencies in telemetry in the Eastern Region, which includes the following:

(a) Telemetry not provided;

(b) Telemetry provided but not working/working intermittently;

(c) Data telemetry is working on single communication channel hence lack reliability;

(d) Voice communication not available.

7. Replies to the petition have been filed by NHPC, NTPC and Damodar Valley Corporation and West Bengal State Electricity Transmission Company Limited.

8. NHPC Ltd in its reply affidavit dated 4.1.2012 has submitted that for Teesta-V Hydro Electric Project (HEP), the matter has been taken up with Powergrid and would be rectified shortly as and when the shutdown is taken. For Rangit HEP also the matter has been taken up with Powergrid and the Original Equipment Manufacturer (OEM) and Power Grid has intimated that the online disturbance is due to problem in Power Line Carrier Communication (PLCC) Channel. For the upcoming generating stations of NHPC, procurement, installation, testing and commissioning of PLCC panels with exchange, Line Matching Unit (LMU) etc. is in the scope of the transmission line executing agency at both the ends.

9. NTPC Ltd in its reply affidavit dated 11.1.2012 and 24.2.2012 has submitted that 400 kV Barh switchyard has been charged but the generating station is yet to be commissioned. SCADA hardware has been installed and interface with CTU telemetry is being commissioned. CTU has to ensure further communication till ERLDC. Farakka Unit # 6 is yet to declare commercial operation. Necessary hardware for extending power station inputs up to Data Collection Point (DCP) of CTU has been commissioned and CTU has to ensure further communication till ERLDC. The non-availability of data from 220 kV Lalmatia has been investigated and problem identified in the PLCC link was

rectified on 29.11.2011 and now data is available at DCP of CTU. With regard to Talcher STPS, Kahalgaon STPS and Farakka STPS, it has been submitted that the metering location of generator terminal is different from the switchyard control room where data transfer Remote Terminal Unit (RTU) is located which means capital expenditure for additional cabling, installation of transducers etc. POSOCO may formalize data essentially required for system operation in OCC which may be finalized for old and new generating stations separately. Further, Talcher TPS is 100% allocated to home State Odisha and its fall under the jurisdiction of SLDC, Odisha and data for which is being provided to SLDC, from where it has to be uplinked to ERDLC by SLDC, Odisha.

10. NTPC has also submitted that as per the definition of "user" under Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Center and other related matters) Regulations, 2009, the users would have been NTPC Stations/ Stages of Farakka- I and III, Kahalgaon-I and II, Talcher- I, Talcher TPS and Barh STPS and accordingly, copy of petition should have been served on them instead of RED ERHQ- I and RED ERHQ- II.

11. With regards to "MW, MVAr, kV on primary (LV) side of Generating Transformer (GT) in respect of Talcher STPS, Kahalgaon STPS and Farakka STPS" NTPC in its affidavit dated 24.2.2012 has submitted that the said data are not essential for system operation and there need not be any

requirement of providing the same at additional cost at this stage as the MW, MVAr at the generator terminal can easily be computed. NTPC further submitted that as per Regulation 4.6.2 of Grid Code, all users, STUs and CTU are required to provide Systems to telemeter power system parameter in line with interface requirements and other guidelines made available by ERLDC and NTPC is coordinating with CTU in real time in case of non-availability of data on the CTU/ STU communication system.

12. The Demodar Valley Corporation (DVC) in its reply affidavit dated 23.2.2012 has submitted that the useful life of ULDC system functional since 2005 would cease in 2014. As such, a proposal from Power Grid for replacement/upgradation of existing SCADA/ EMS system for ERLDC (POSOCO) and SLDCs of Eastern Region was principally adopted in 20th meeting of Eastern Regional Power Committee (ERPC) held on 7.12.2011. DVC entrusted PowerGrid to establish new SLDC at DVC HQ in addition to the existing SLDC at Maithon which is to be executed within a time frame of 27 months after formal approval. DVC is laying Optical Ground Water (OPWG) through DVC network. Laying of 474 km OPGW cable and 15 km Underground Fibre Optic (UGFO) cable was approved in 10th meeting of ERPC held on 10.4.2009. As per directions of Department of Telecommunication, out of 474 km, 255 km OPGW cable will be laid against microwave link replacement and its major portion has been completed. Further, 219 km OPGW along with laying of 15 km UGFO cable is being executed by Power Grid to be completed by March, 2014. DVC has also

initiated to build another OPGW network through 132 kV power line of DVC. M/s BSNL will develop the network, in the mutual interest of both DVC and BSNL. After completion of the said scheme by 2014, a full fledged SCADA/ EMS system will be functional in DVC which will eradicate all the problems due to deficiencies in different system.

13. In response to reply of NHPC and NTPC, the petitioner vide its rejoinder dated 18.1.2012 has submitted that the responsibility of providing real time data and express voice communication up to ERLDC lies with utility only and in case communication link is not healthy, it is the duty of utility to coordinate with CTU/PLCC Vendors to make the same operational. Since 12.6.2011, real time data and voice communication from 220 kV Lalmatia sub-station is not available at ERLDC. It has been submitted that in ULDC project, provision was kept to telemeter both HV and LV side data and accordingly, cable, transducers, etc. had been purchased. NTPC has provided the CT/PT for High Voltage (HV) side and not for Low Voltage (LV) side. Despite delivery of all material at site by CTU under ULDC project, no clearance/ front/ CT/ PT have been provided by NTPC. Further, LV side data of Ramagundam station of NTPC has been made available at SRLDC. Data for LV side is required due to the following reasons:

> *"Due to ISTS experiencing high voltage due to diurnal and seasonal variation of load and generation, voltage at all sub-stations cannot be maintained within the specified band unless the generators connected to ISTS maintain the station 400 kV voltage close to nominal value. Data requirement of LV side is therefore necessary for verification of generator reactive power, with respect to the capability limits of the generating unit in compliance to sub-clause 6 of Clause 6.6 (Reactive Power and Voltage Control) of the IEGC, without sacrificing on active generation required at that time. ERLDC*

submitted that data required from new as well as old stations has already been discussed in several SCADA O&M meetings and requirement for new stations was decided in 9th SCADA O&M meeting held in Kolkata on 26.8.2011."

14. With regard to Talcher STP, the petitioner has submitted that w.e.f. 30.12.2011, only selective real time analog data is received in ERLDC via SLDC, Odisha. However, no status signal, Sequence of Event (SoE) has been made available so far. For resolving common issues such as telemetering of LV side data by all NTPC generators in Eastern Region, as well as real time data from new generating units, the Operation Services Department of NTPC, Eastern Region Headquarters is the nodal agency for communicating with ERLDC/ ERPC. Although issues specific to station are taken up with the concerned head of the station, ERHQ- I and II have been considered as respondents, since all the stations in Eastern Region are essentially under the functional and administrative jurisdiction of the stated RHQs. Hence, Regional Executive Directors of ER-I and II have been made respondents in the petition. For resolving issues common to all stations, RHQs are authorized by NTPC to take final decision.

15. Power Grid in its affidavit dated 14.12.2011 has submitted that all the sub-stations are commissioned with Power Line Carrier Communication (PLCC). The PLCC equipment is being provided with the provisions for data transmission to SCADA system of RLDCs. However, the PLCC system has limitation in terms of its reliability and capacity for data and speech communication. Powergrid has further submitted that requirement of

communication system has increased in recent years due to introduction of Wide Area Measurement System (WAMS), Special Protection Schemes (SPS) and commissioning of large number of sub-stations and same cannot be met with PLCC. Therefore, Wide Band Communication System based upon fibre optic is required.

16. Power Grid has further submitted that 11 sub-stations of Power Grid provided with fibre optic or microwave links in, Eastern Region under ULDC scheme. Due to the replacement of microwave link by fibre optic, 4 additional existing sub-stations of PGCIL will be connected with fibre optics by June 2013. In order to provide speech and data connectivity of upcoming and remaining sub-stations of Power Grid, Fibre Optic Expansion Projects have been approved by the Eastern Regional Power Committee for implementation which will be completed by March 2014.

17. The petitioners have submitted that in order to ensure that in future all the sub-stations are provided with fibre optic based communication system along with the commissioning of sub-stations, the requirements are being put for consideration of the Standing Committee on Transmission Planning at the time of approval of the transmission schemes.

18. We heard the representatives of the petitioner and respondents and have perused the relevant records.

19. During the course of hearing on 24.1.2012, learned counsel for the respondents Bihar State Electricity Board (BSEB) and Jharkhand State Electricity Board (JSEB) submitted that before approaching the Commission, the petitioner has not brought the matter before Eastern Regional Power Committee (ERPC) forum as required under Sections 25 and 29 (4) of the Electricity Act, 2003 and Regulation 1.5 of the Indian Electricity Grid Code Regulations and therefore, the petition is not maintainable. He requested that the petitioner may be directed to approach Regional Power Committee for resolving the issues raised in the petition. The learned counsel further submitted that he did not question the requirement of facilities, but he has objection to the process followed by the petitioner for approaching the Commission. In response, the representative of the petitioner submitted that the issues raised in the petition were discussed in the meetings of SCADA O&M Committee and Operation Coordination Committee of Eastern Region which are part of ERPC only. He clarified that the constituents of Eastern Region are members of these Committees. The representative of the petitioner also emphasized the requirement of data telemetry and communication facilities for successful operation of the power system. He submitted that the all Users, STUs and CTU are required to provide Systems to telemeter power system parameter such as flow, voltage and status of switches/transformer taps etc. in line with interface requirements and other guideline made available by RLDC in terms of Regulation 4.6.2 of Indian Electricity Grid Code and these facilities are required for the operation of the power system in the State also. with regard to latest position of the action

taken by the constituents as per agreement in the SCADA O&M Committee of Eastern Region, the representative of the petitioner submitted that some new generating stations and transmission sub-stations do not have RTUs.

20. During the course of the hearing, the respondents were directed to submit their time bound plant for mitigating the deficiencies in their respective systems. BSEB vide its letter dated 20.2.2012 had indicated the time line for availability of the communication system. WBSETCL vide its affidavit dated in its reply dated 23.2.2012 has submitted the timeline for availability of the communication system.

21. We have considered the submissions made by the parties. Regulation 4.6.2 of the Grid Code provides as under:

> ***"4.6.2.*** *Reliable and efficient speech and data communication systems shall be provided to facilitate necessary communication and data exchange, and supervision/ control of the grid by the RLDC, under normal and abnormal conditions. All Users, STUs and CTU shall provide Systems to telemeter power system parameter such as flow, voltage and status of switches / transformer taps etc. in line with interface requirements and other guideline made available by RLDC. The associated communication system to facilitate data flow up to appropriate data collection point on CTU's system shall also be established by the concerned User or STU as specified by CTU in the Connection Agreement. All Users/STUs in coordination with CTU shall provide the required facilities at their respective ends as specified in the Connection Agreement."*

In view of the above, the real-time visibility of the generating stations and the sub-stations to the Load Despatch Centre is necessary for the reliable grid operation and security of the electrical power system.

22. Regulation 6 (3) of CEA Connectivity Regulations provides as under:

> *"6 (3) The requestor and user shall provide necessary facilities for voice and data communication and transfer of operational data, such as voltage, frequency, line flows, and status of breaker and isolator position and other parameters as prescribed by Appropriate Load Despatch Centre."*

23. Clause 1.1 (c) of the "General Conditions for Connectivity" of the Procedures of Central Transmission Utility approved under CERC Connectivity Regulations provides as under:

> *"The applicant or inter-State transmission licensee shall provide facilities for voice and data communication for transfer of real time operational data such as voltage, frequency, real and reactive power flow, energy, status of circuit breaker & isolator positions, transformer taps and other parameters from their station to Data Collection Point (DCP) of CTU as per IEGC. CTU shall provide access to applicant's data transfer through communication Network in case spare channels are available on mutually agreed terms. The location of DCP of CTU shall be the nearest station connected electrically where wideband communication capacity of POWERGRID is available. Additional communication system from the DCP to the concerned RLDC shall be the responsibility of CTU, however its cost shall be borne by the applicant. The responsibility of data transfer shall be that of the applicant."*

24. Under the Grid Code, it is the responsibility of all users, STUs and CTU to provide systems to telemeter power system parameters in line with interface requirements and other guideline made available by RLDC and associated communication system to facilitate data flow up to appropriate data collection point on CTUs system. In view of the critical importance of telemetry and associated communication system for ensuring reliability in operation of the grid and optimum utilization of the transmission system, there is an imperative need for all users to establish the telemetry and associated communication system in time bound manner so that the power system operation may be most reliable and optimum. Moreover, in view of the

requirement of communication system for a generating station and sub-station, the planning should be done in advance by the generating company and transmission licensee to ensure that necessary system are in place before commissioning of generating station or sub-station to take care of the communication requirements even at the time of injection of power infirm by a generating station and sub-station during testing.

25. From the pleadings of the parties, we have observed that in certain cases there is lack of coordination among different entities on the issue of data availability of the LV side of the GT etc. We expect that NLDC/RLDCs/SLDCs to take necessary steps to ensure coordination and co-operation for installation and operation among the users of telemetry and associated voice and data communication system.

26. We also observe that many State Transmission Utilities, State Power Departments/Electricity Departments have not responded to our directions to submit a clear-cut action plan for the establishment of the communication system for the existing system and the time schedule for completion including the provisioning for integration of new generating stations and the sub-stations coming in future. We direct all users to submit the information by 31.10.2012 to the NLDC. We direct NLDC to submit a report by 10.11.2012 about the status of implementation of the telemetry system. If any user does not comply with our directions, it will be construed as non-compliance of the

order of the Commission and appropriate proceedings under Section 142 of the Electricity Act, 2003 shall be initiated against such users.

27. The petitioners have also filed I.A No. 43/2012 seeking directions to all the respondents to establish redundant and reliable data telemetry in time bound manner and maintain the same and associated communication facilities in terms of the Grid Code, CEA Connectivity Regulations and CERC Connectivity Regulations. In view of our decision in the preceding paragraph, no separate directions are required to be issued in the said IAs.

28. The Petition No. 215/MP/2011along with IA No. 43/2012 is disposed of with above terms.

Sd/-
(M.DEENA DAYALAN)
MEMBER

sd/-
(Dr. PRAMOD DEO)
CHAIRPERSON