

**Central Electricity Regulatory Commission
New Delhi**

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Statement of Reasons

Subject: Central Electricity Regulatory Commission (Communication system for inter-State transmission of Electricity) Regulations, 2017.

1. Introduction:

1.1 Communication systems are essential to facilitate secure, reliable and economic operation of the grid. It is also an important pre-requisite for the efficient monitoring, operation and control of power system. For integrated operation of all India Grid, uninterrupted availability of the real time data of various Power System elements assumes utmost importance. With the increase in the size and complexity of the grid, the communication needs of the power sector have increased drastically. Supervision and monitoring of grids call for transfer of real time operational data such as voltage, frequency, real and reactive power flow, energy, and status of circuit breaker & isolators positions, transformer taps and other parameters from their station to Data Collection Point (DCP) of CTU. The data is required to be automatically updated cyclically (typically every ten seconds) at the load dispatch centre for giving up to date information about the health of power systems on round the clock basis for enabling efficient and effective monitoring, supervision and control of the power system. The telemetry system is still poor in various parts of the country's network.

1.2 At present, the provisions relating to communication systems for the power sector have been spelt out in the Central Electricity Regulatory Commission (Indian Electricity Grid Code), Regulations, 2010 and Central Electricity Authority (Technical Standard for connectivity to the grid) Regulation.

1.2.1 Regulation 4.6.2 of the Indian Electricity Grid Code (IEGC) 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."

1.2.2 Regulation 6 (3) of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations provides as under:

"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."

1.3 As per the above provisions, all requesters, users, STUs and CTU are obligated to provide Systems to telemeter power system parameters. However, many of the entities have not provided necessary facilities and in many cases the adequacy, consistency and reliability of data is far from satisfactory. The Commission has from time to time given requisite directions inter-alia seeking plan for establishment of communication system. The Commission, in its order dated 26.9.2012 in Petition No. 168/MP/2011, had observed as under:-

"45. 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 substations coming in future."

1.4 It is noted that the existing provision in IEGC does not dwell upon a mechanism for planning of communication systems, roles and responsibilities of various organizations and standards/protocols to be followed, which are very vital in view of the criticality of communication systems for the power sector. IEGC as well as Tariff Regulations also do not provide norms for availability of communication system for inter-State transmission system in the country. It has, therefore, been proposed that new Regulations be framed covering the aforementioned aspects and duly taking in to consideration the new developments and emerging requirements of the grid operation and control such as Smart Grid/Smart Metering/Automatic Generation Control, PMUs, solar roof top and other RE sources for proper forecasting, scheduling, operation and control.

1.5 The Commission, in exercise of the power under section 79(1) (h) read with section 178(2)(g) and in compliance with the requirement of previous



publication under section 178(3) of the Electricity Act, 2003 (the Act), published the draft regulations on the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2016. Vide public notice No. L-1/210/2016 CERC on 7th September, 2016 and 28th October, 2016 Comments were invited from all stakeholders/public on the draft regulations.

- 1.6 In all, comments/suggestions were received from 4 stakeholders which included: (i) POSOCO, (ii) PGCIL (iii) NTPC (iv) MPPTCL. Subsequently, public hearing was held on 17th November, 2016 where oral presentations were made by PGCIL and NTPC.
- 1.7 The comments are available on CERC's website. The important issues raised by the stakeholders, and Commission's analysis and decisions thereon are presented in the subsequent paragraphs.
- 1.8 The Regulations shall be effective from 1.7.2017 keeping in view that certain Procedures/ Guidelines to be notified under these Regulations have been provided with 60 days for notification.

General Comments and Suggestions

2. Draft Regulation 2 : DEFINITIONS AND INTERPRETATIONS:

- 2.1 POSOCO has stated that Communication Channel is a virtual link which is finally assigned to the user for data and voice communication. The final aim is to have dedicated reliable communication channel for the users. Accordingly, POSOCO has suggested to include the following definition of "*Communication channel*" under "Definitions and Interpretations" in Regulation 2:

"Communication Channel" means a dedicated virtual path configured from one user's node to another user's node, either directly or through intermediary node(s) to facilitate voice, video and data communication and tele-protection system".

- 2.2 We have considered the submissions of POSOCO. We are of the view that Communication Channel is used to convey information signal from one or several senders to one or several receivers. A channel has a certain capacity for transmitting information, often measured by its bandwidth in Hz. We accept the POSOCO's suggestion and accordingly the definition of "*Communication Channel*" has been inserted by clause (f) in Regulation 2(i).



- 2.3 POSOCO has suggested the following modification to the definition of “Communication network” in Regulation 2(i)(g) to bring further clarity to the Regulations:

“Communication network” means an interconnection of communication nodes through a combination of media either directly or through intermediary nodes”

- 2.4 We agree with POSOCO's suggestions and accordingly, Regulation 2(i)(g) has been modified as follows:

“Communication network” means an interconnection of communication nodes through a combination of media either directly or through intermediary nodes”

- 2.5 POSOCO has suggested the following modification to the definition of “Communication system” in Regulation 2(i)(h) to bring further clarity in the Regulations.

“Communication system” is a collection of individual communication media, terminal equipment, relaying stations, tributary stations, usually capable of interconnection and inter-operation to form an integrated communication backbone for Power Sector. It includes the Auxiliary power supply system along with battery banks used to cater to the power supply of the communication equipment. It also includes existing communication system of Inter State Transmission System, Satellite and Radio Communication System and their auxiliary power supply system etc.”

- 2.6 In regards to above, POSOCO has stated that Communication media is the physical matter or substance e.g. wire pairs, Coaxial cable, Microwave transmission, Communication satellites, Fiber optics etc. that carry the voice and data. Further, regarding specific inclusion of "battery bank", POSOCO has stated that at present the dedicated DC power supply (DCPS) are not being provided for all the nodes of the communication system and supply is provided from the DC source available in nearby sub-stations. The ownership of these DCPS is not always with the owner of the communication node. The health of these battery sets needs to be reliable to maintain the DC supply in case of main supply failure to ensure the reliability of the communication node.

- 2.7 We agree with POSOCO's suggestion and accordingly the words "Communication media" has been added in Regulation 2(i)(h). We note that Tributary stations are any data station other than the control station. The suggestion of POSOCO for specific inclusion of "battery bank" is not required since auxiliary power supply system comes with battery banks even in existing systems. The owner of the communication system should ensure that adequate



battery backup should be available at all times to ensure that the communication system is interruption free.

2.8 Since the scope of this regulation covers both inter-State and intra-State transmission system, the definition of communication system has been modified accordingly to include Intra-State transmission system.

2.9 It is felt the definition of "Control Centre" should be included in the Definitions and Interpretations to bring in more clarity. Accordingly, the definition of "Control Centre" is included in Regulation 2(i)(i) as follows:

"i) "Control Centre" means NLDC or RLDC or REMC or SLDC or Area LDC or Sub-LDC or DISCOM LDC including main and backup as applicable."

2.8 POSOCO has submitted that to transmit control signal (ΔP) from NLDC to the generating station over the communication channel under AGC pilot project under execution. In case of pilot project, transfer of analog signal is envisaged however it may be analogue or digital depending upon the type of control. The switching device status is transmitted from the field to Master Stations to monitor the switching device state. Though this is a digital data, it is proposed to include the same for better clarity. The phasor data is being transferred over the communication channel to the Master Station under URTDSM project under execution. POSOCO has suggested the following modification of definition of "data" in Regulation 2(i)(j) so as to include details of parameter which will be communicated from user end to control centre and the same is as follows:

"Data" means a set of values of analogue and digital signal including a text, voice, video, tele-protection, alarm, control signals, switching device status, phasors, weather parameters, and parameter of a machine or the power system."

2.9 We have considered suggestions of POSOCO. We are of the view that control signal data may be required to implement upcoming requirement of Automatic Generation Control. Similarly, phasors are being installed by CTU. POSOCO shall specify the requirement of control signal wherever applicable and shall have to be provided by the User. Similarly, phasor data shall be made available wherever PMUs are being installed by CTU. As per Grid Code, "User" should provide switching device status data and other data and as such there is no need to specify the same here. Accordingly, we have modified the definition of "Data" as follows:

"j) "data" means a set of values of analogue or digital signal including a text, voice, video, tele-protection, alarm, control signal, phasor, weather parameter, parameter of a machine or the power system."



- 2.10 NTPC has sought exclusion for embedded generation plant in the definition of User. NTPC has submitted that Regulation 8 of the Connectivity Regulations provides that the Renewable Energy (RE) generating station developed by the existing generating station can seek connectivity if the existing generating station agrees to act as a principal generator. It also provides that the connectivity is to be sought through the electrical system of the existing generating station. Accordingly, embedded generators may be excluded.
- 2.11 We are of the view that for maintaining the grid security each RE generator covered under the ambit of these Regulations should provide adequate communication facilities for control and grid security. In case of RE generator for which there exists a separate Principal Generator, the Principal Generator should ensure that required data is made available to RLDC or SLDC. Further, the embedded generators should make provisions to provide data till the control room of its Principal generator so that the same can be shared with RLDC / SLDC. Hence the suggestion of NTPC is not acceptable.
- 2.12 NTPC has suggested to include the following definition of "Wide band Node" under "Definitions and Interpretations" in Regulation 2(i) for better clarity :-
- "Wide band Node: Wide bandwidth data transmission with an ability to simultaneously transport multiple signals and traffic types."*
- 2.13 We have considered the suggestion of NTPC. As per Grid Code "*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*". Further, the draft Connection Agreement notified alongwith Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-State Transmission and related matters) Regulations, 2009 provides that "*The location of data collection point (DCP) of CTU shall be the nearest station connected electrically where wideband communication capacity of POWERGRID is available.*" Hence, there is a need to define term "*Wide band Node*". We agree with the suggestion made by NTPC. Wide band is for transmitting large amounts of digital data over a wide spectrum of frequency bands. Accordingly, the definition has been included.
- 2.14 POWERGRID has submitted that with regard to Regulation 2 under definitions and Interpretations, non-availability of any suitable product of insurance exclusively for the transmission line/ overhead OPGW for communication, the transmission licensees have to adopt self-insurance policy as the risk loss can be mitigated internally out of the self-insurance reserve instead of following with the insurance companies for settlement of claim and also the funds remain



available with the licensees except in case of high value equipments having higher risk operation. Therefore, the definition of O&M expenses should include 'insurance as well as self-insurance'.

2.15 We have considered the suggestion of PGCIL. "O&M expenses" have already been defined in Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 and shall be only as per those Regulations. Since we are not determining tariff for Communication System under these Regulations currently, we do not find any merit in keeping the definition of O&M expenses in these Regulations and hence the same has been deleted.

2.16 Further, it has been observed that the definition of "Requester", which was proposed in the draft regulations, is same as that of "User". To avoid duplication, the definition of "Requester" has been deleted from the Regulations. The definition of "User" is already provided in Grid Code and shall be applicable in terms of those Regulations. In addition to the definition mentioned in Grid Code, the definition of user has been modified to include intra-State transmission system also because these regulations are applicable for both ISTS and intra-state transmission system. The definition has been modified accordingly as follows:

"aa) "User" means a person such as a Generating Company including Captive Generating Plant, RE Generator, Transmission Licensee [other than the Central Transmission Utility (CTU) and State Transmission Utility (STU)], Distribution Licensee, a Bulk Consumer, whose electrical system is connected to the ISTS or the intra-State transmission system."

3. Draft Regulation 4 : Objective

3.1 POSOCO has suggested to include "field data and phasors" under Regulation 4. POSOCO has submitted that "field data and phasors" are required to be exchanged through the proposed communication links. We are of the view that phasors are measured with Phasor Measurement Units. We are of the view that the requirement of field data and phasors are well within the definition data wherever applicable. Hence, there is no need to include the same specifically. Apart from above, the country has one synchronous integrated grid and the communication system is required for integrated operation of the entire grid. In the light of above, suitable modification has been made in Regulation 4 as under:

"4. OBJECTIVE:



These regulations provide for planning, implementation, operation and maintenance and up-gradation of reliable communication system for all communication requirements including exchange of data for integrated operation of National Grid.”

4. Draft Regulation 5 : Scope and Applicability

- 4.1 No comments have been received from the stakeholders on this Regulation. However, in light of the fact that the country has one synchronous integrated grid and State Commissions may take some time to develop their own Regulation on communication system of the State, it is felt that the communication regulation should have pan India application. Accordingly, the provision has been modified to include the power system at the State level. However, the State Electricity Regulatory Commission's may come out with their own regulation in due course. These Regulations would be applicable for intra-State entities till the separate regulations are framed by State Electricity Regulatory Commission's.

5. Draft Regulation 6 : Nodal Agency

- 5.1 POSOCO has requested to replace the word “ISTS” with “Inter State Users” in Regulation 6(i) as the intent is to develop communication system for inter State users who will be using the communication system for exchange of data as follows:

“The nodal agency for planning, and coordination for development of communication system for Inter State Users shall be the Central Transmission Utility (CTU).”

- 5.2 We agree with the suggestion made by POSOCO and accordingly Regulation 6(i) has been modified as follows:

“(i) The nodal agency for planning and coordination for development of communication system for inter-State transmission system user shall be the Central Transmission Utility”

- 5.3 POSOCO has requested to replace the words ”intra-State transmission system” in Regulation 6(ii) with “Intra State Users” as the intent is to develop communication system for intra-State users who will be using the communication system for exchange of data as shown below:



“The nodal agency for planning, and coordination for development of communication system for Intra State Users shall be the State Transmission Utility (STU).”

- 5.4 We agree with the suggestion made by POSOCO and accordingly Regulation 6(ii) has been modified as follows:

“(ii) The nodal agency for planning, and coordination for development of communication system for intra-State transmission system user shall be the State Transmission Utility (STU).”

- 5.5 POSOCO has suggested to indicate full forms of VCS as Video Conferencing System, AMR as Automatic Meter Reading. POSOCO has also suggested to include “at LDC end” and “for inter-State system” as the intent is to include all the control centres at regional and State level, which includes Sub-LDCs/ ALDCs, RE developer's control centres. POSOCO's suggestion is as follows:

“Nodal agency for integration of communication system with SCADA, WAMS, Video Conferencing System, Automatic Meter Reading, EPABX, Tele-protection system at LDC end shall be respective RLDCs for Inter State system and SLDCs for Intra state system.”

- 5.6 We agree with the suggestion made by POSOCO that all the control centres at regional and State level which includes Sub-LDCs/ ALDCs, RE developer's control centres are to be included in the above definition. We also agree with POSOCO's suggestion to include "at LDC end" since RLDCs or SLDCs shall be responsible to integrate communication system at Load despatch centre. However, we do not find need to modify the Regulation since the proposed Regulation covers the suggested intent. Regulation 6(iii) has accordingly been modified for having more clarity. The revised Regulation 6(iii) is as follows:

“(iii) Nodal agency for ensuring integration of communication system at regional level with SCADA, WAMS, Video Conferencing System (VCS), Automatic Meter Reading (AMR), EPABX, Tele-protection system shall be respective RLDCs for ISGS, ISTS and SLDCs; and respective SLDC for State Generating Stations, distribution companies, Intra-State entities, intra-State transmission system, etc.”

6. Draft Regulation 7.1 : Role of Central Electricity Authority (CEA)

- 6.1 POSOCO has submitted that route redundancy is important in case of communication failure in one path and capacity requirements should be taken care in order to obtain desired bandwidth for data transfer. POSOCO has stated that communication planning for renewable, especially for RE generators, for



proposed implementation of control features shall also be planned. POSOCO has suggested to include 'route', 'capacity', 'adequacy', 'REMC/RE generators (having capacity more than 50 MW)' in Regulation 7.1(i) as follows:

“CEA shall formulate communication planning criterion/ philosophy and guidelines for development of reliable Communication system for power system, duly considering requisite route redundancy, capacity, adequacy as well as requirements of smart grid, REMC/RE Generators (having capacity more than 50 MW) and cyber security.”

- 6.2 We agree with the suggestions made by POSOCO partly. We are not inclined to restrict the RE generator to more than 50 MW. Further we do not feel the need to specifically include "REMC" or RE generator. CEA may formulate planning criterion development of reliable Communication System for entire power system considering the upcoming developments. Regulation 7.1(i) has been accordingly modified as under:

“CEA shall formulate communication planning criterion and guidelines for development of reliable communication system for power system of India duly considering requisite route redundancy, capacity, as well as requirements of smart grid and cyber security.”

- 6.3 Regulation 7.1(ii) is modified to specifically state that CEA would formulate and notify technical standards in accordance with the Cyber Security Policy of Government of India as follows:

“(ii) CEA shall formulate and notify technical standards, cyber security requirements in accordance with the Cyber security Policy of the Govt of India from time to time, protocol for the communication system for Power Sector within the country including the grid integration with the grid of the neighbouring countries.”

- 6.4 POSOCO has suggested to modify the Regulation 7.1(iii)(c) by adding the words "existing and planned" as follows:

“Monitor and facilitate timely completion of schemes and projects for improving and augmenting the communication system along with existing and planned transmission system in the power sector.”

- 6.5 We have considered the suggestion of POSOCO. We do not find any need to specifically include the words "existing and planned" in the proposed Regulation since "transmission system" will include these. The focus of the regulation is on



"improving and augmenting associated communication system". Accordingly, the proposed Regulation 7.1(iii)(c) is retained with minor modification as follows:

“c. monitor and facilitate timely completion of schemes and projects for improving and augmenting the associated communication system along with transmission system in the power sector. ”

- 6.6 CEA has been entrusted with preparation of technical standards for communication system. It is suggested that CEA may prepare such standards expeditiously within 6 months of issue of these Regulations to enable NLDC to prepare guidelines on interfacing requirement.

7. Draft Regulation 7.2 : Role of CTU

- 7.1 POSOCO has submitted that generally the communication path is provided with protection path (separate communication channel). In case of failure of the main channel/path, the data flow is automatically shifted to the protection path which provides the reliability in the communication. Accordingly, POSOCO has suggested to include the words “alongwith appropriate protection path, REMCs and using a latest technology.” in Regulation 7.2(i).

- 7.2 PGCIL has submitted that development of reliable backbone communication system, CTU should carry out planning process from time to time as per the requirement of ISTS and inter-regional links for which authenticated data is required to be collected from Users as well as operational feedback from NLDC, RLDC, and SLDC and accordingly suggested to add following at the end of the Regulation 7.2(i):

“While carrying out planning process from time to time, CTU shall in addition to the data collected from and in consultation with the users consider operational feedback from NLDC/RLDC/SLDC.”

- 7.3 We have considered the submission of POSOCO. We agree with the suggestion made by POSOCO that appropriate protection path i.e. alternate channel with route redundancy should be provided as a protection of main path or channel. However, "route redundancy" is covered in planning criteria to be formulated by CEA and CTU shall plan based on the same duly taking care of POSOCO's concern. Hence, the word "route redundancy" is not included here specifically. We agree with suggestion of POSOCO to include term "REMC" along with other control centres. We have also defined REMC in the definitions for clarity. We are not inclined to specifically include the term "using latest technology" under Regulation 7.2(i). We are of the view that the same may be addressed duly by the Standing Committee on Communication System keeping



in view the technical advancements, requirements of power sector as well as the performance of existing communication facilities.

- 7.4 We also agree with PGCIL's suggestion regarding operational feedback. Accordingly, Regulation 7.2(i) is modified as under:

“(i) The CTU shall in due consideration of the planning criteria and guidelines formulated by CEA, be responsible for planning and coordination for development of reliable National communication backbone Communication System among National Load despatch Centre, Regional Load Despatch Centre(s) and State Load Despatch Centre(s) and REMCs along with Central Generating Stations, ISTS Sub -Stations, UMPPs, inter-State generating stations, IPPs, renewable energy sources connected to the ISTS, Intra-State entities, STU, State distribution companies, Centralised Coordination or Control Centres for generation and transmission. While carrying out planning process from time to time, CTU shall in addition to the data collected from and in consultation with the users consider operational feedback from NLDC, RLDCs and SLDCs.”

- 7.5 PGCIL has also suggested that the responsibility to provide operational feedback may be added in the scope and role of NLDC, RLDC and SLDC under Regulation 7.4, 7.5 and 7.6.

- 7.6 We agree with the submission of PGCIL regarding “operational feedback” and accordingly, provision regarding “operational feedback” has been included in Regulation 7.4, 7.5 and 7.6.

- 7.7 In the draft Regulation 8.2, it was proposed that wideband communication systems shall be planned prospectively considering the expected nodes to ensure comprehensive planning for the Communication System by the respective agencies and all grid station including pooling stations may be considered for Broad Band Communication System in consultation with Standing Committee to be constituted by CEA. We are of the view that CTU should plan a comprehensive Communication System taking into consideration expected nodes in consultation with Standing Committee to be constituted by CEA. Accordingly, this clause with slight modification has been inserted in Regulation 7.2 and the draft Regulation 8.2 is deleted. The new clause (ii) of Regulation 7.2 is as follows:

“(ii) The CTU shall plan the communication system comprehensively and prospectively for users considering the requirement of the expected nodes in consultation with Sanding Committee to be constituted by CEA.”



7.8 PGCIL has submitted that to ensure seamless integration with the international grid and in the interest of the power sector, the communication system including terminal equipments not only up to national boundary but for both ends for cross border exchanges needs to be planned by CTU in consultation with the respective transmission utilities of the neighbouring country. Accordingly, PGCIL has suggested to modify the draft Regulation 7.2(ii) to include communication system for the cross border as follows:

“CTU shall also plan communication system for the cross border transmission system for cross border exchange of power.”

7.8 The draft Regulation 7.2(ii) is now renumbered as Regulation 7.2(iii).

7.9 We have considered the submission of PGCIL. We are of the view that seamless integration with the international grid will ease the communication planning for cross border exchange and also integration of communication system for neighbouring countries. We agree with the suggestion of PGCIL and accordingly draft Regulation 7.2(ii) (now renumbered as Regulation 7.2(iii)) has been modified as under:

“(iii) The CTU shall also plan communication system for the cross border transmission system for cross border exchange of power.”

7.10 The draft Regulation 7.2(iii) is now renumbered as Regulation 7.2(iv) and retained without any modification.

7.11 POSOCO has submitted that CTU should also consult SLDCs besides CEA, STUs, ISGS, etc. and accordingly suggested to include "SLDCs" in the draft Regulation 7.2(iv).

7.12 The draft Regulation 7.2(iv) is now renumbered as 7.2(v). Further, we agree with the suggestion made by POSOCO. Accordingly, Regulation 7.2(v) is modified by including SLDCs as under:

“(v) The CTU shall discharge the above function in consultation with the CEA, State Transmission Utilities, ISGS, Regional Power Committees, NLDC and RLDCs and SLDCs.”

7.13 POSOCO has submitted that the access means the connectivity. The access is required to be provided by CTU to facilitate the network connectivity between communication network developed by CTU and the network developed by STU. This will lead formation of a seamless communication network across India. Accordingly, POSOCO has suggested to insert a new clause in Regulation 7.2 as under:



“CTU shall provide access to its communication node to interface the wideband network being implemented by State Transmission Utilities to have a single interconnected network and shall coordinate with State Utility for the interface requirement.”

7.14 We agree with POSOCO's suggestion. Accordingly, as suggested by POSOCO, a new clause (vi) under Regulation 7.2 is introduced.

7.15 POSOCO has submitted that the Network Monitoring System (NMS) is provided by the communication vendors to monitor the communication system status which is installed and commissioned by them. Necessary visualization and alerts are provided in NMS to facilitate trained operator to monitor/detect the faulty parts in the communication network. This in turn facilitates quick fault identification and restoration. POSOCO has proposed that a new clause may be included in Regulation 7.2 as under:

“CTU shall be the Nodal Agency for supervision of communication system in respect of Interstate communication system and will implement centralized supervision for quick fault detection and restoration.”

7.16 We agree with POSOCO. We are of the view that CTU should prepare a “Procedure for centralized supervision for quick fault detection and restoration” within 60 days from the notification of the Regulation. Accordingly, new clause (vii) is introduced in Regulation 7.2 as given below:

“(vii) CTU shall be the Nodal Agency for supervision of communication system in respect of inter-State communication system and will implement centralized supervision for quick fault detection and restoration. CTU shall prepare Procedure for same and submit to Commission for approval within 60 days of notification of these Regulations”

7.17 POSOCO has submitted that CEA has been given the responsibilities to do the perspective planning for the communication system in India. CTU is proposed to coordinate with STUs and plan in an integrated manner, as a nodal agency, for development of the backbone network across India as per the perspective plan. POSOCO has proposed that a new clause may be added to Regulation 7.2 as under:

“The CTU shall in consultation with STUs carry out the integrated planning for development of backbone communication systems providing interfaces to wideband communication networks of STUs at interface nodes.”

7.18 We agree with POSOCO. Accordingly, new clause (viii) is included in Regulation 7.2 as proposed by POSOCO.



- 7.19 MPPTCL has submitted that in Regulation 7.7(iv) it is mentioned that "STU shall also provide access to their wideband network for grid management by all users". The similar clause should also be included under Regulation 7.2. We agree with suggestion of MPPTCL. Accordingly, following new clause (ix) is included in Regulation 7.2.

"(ix) The CTU shall provide access to its wideband network for grid management and asset management by all users."

- 7.20 POSOCO has suggested that RLDC should be the nodal agency for integration of Communication System with necessary assistance from CTU and STU. Accordingly, a new clause (x) is inserted in Regulation 7.2 making it obligatory to extend support to the Control Centres for integration of Communication System, as under:

"(x) The CTU shall extend the required support to Control Centres for integration of communication system at respective ends."

8. Draft Regulation 7.3 : Role of National Power Committee (NPC) and Regional Power Committee (RPC)

- 8.1 The guidelines for availability of communication system shall be developed by NPC in consultation with other RPC's, NLDC and RLDC's and other states. Accordingly, following new clause, i.e. clause (i) is included in Regulation 7.3:

"(i) NPC shall be responsible for issuance of the guidelines with the approval of the Commission on "Availability of Communication System" in consultation with RPCs, RLDCs, CTU, CEA and other stakeholders within a period of two months from the date of notification of these regulations."

- 8.2 POSOCO has proposed that RLDCs should certify the availability of communication equipment based on the data furnished by CTU and also report to the Commission on monthly basis and accordingly introduce a new clause in Regulation 7.5. We have considered the suggestion of POSOCO. We agree with suggestion of POSOCO that there is a need to monitor the availability of communication system. However, the availability of transmission system is currently being certified by RPCs. We are of the view that availability of communication equipment should also be certified by RPCs based on data furnished by RLDCs. The availability data should be furnished by owner of communication equipment to respective RLDCs. Accordingly, following clause (ii) is added to Regulation 7.3:

"(ii) The RPC Secretariat shall certify the availability of communication equipment for CTU, ISGS, RLDCs, NLDC, SLDCs based on the data furnished by RLDC."



- 8.3 The proposed draft Regulation 7.3 is modified and re-numbered as clause (iii) of Regulation 7.3 as follows:

“(iii) The RPC Secretariat shall monitor instances of non-compliance of these regulations as amended from time to time and make endeavour to sort out the issues in the respective region in such a way that cases of non-compliance are prevented in future. Unresolved issues and non-compliance of any of the provisions of these regulations shall be reported by the Member Secretary of respective RPC to the Commission.”

- 8.4 We are of the view that outage planning for communication system should also be carried out at RPC so that reliable communication is ensured at all times. Accordingly, clause (iv) is added in Regulation 7.3 as given below:

“(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.”

9. Draft Regulation 7.4 : Role of NLDC

- 9.1 POSOCO has suggested replacing the words “AMI (Advanced Metering Infrastructure)” with “Automatic Meter Reading (AMR)” in clause (i) of Regulation 7.4. We have considered the submission of the POSOCO. AMI is an integrated system of smart meters, communication networks and data management systems that enables two way communication between utilities and customers. Automatic Meter Reading (AMR) means automatic collection of meter readings and transfer to a central database for further processing. We are of the view that both are required and hence we have included "Automatic Meter Reading (AMR)" and "Advanced Metering Infrastructure (AMI) in clause (i) of Regulation 7.4. NLDC shall issue guidelines keeping in view the requirements as applicable. Accordingly, clause (i) of Regulation 7.4 is modified as under:

“(i) The National Load Despatch Centre (NLDC) shall be responsible for preparation and issuance of guidelines with the approval of the Commission on the “Interfacing Requirements” in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), Automatic Meter Reading (AMR), Advanced Metering Infrastructure (AMI), etc. and for data communication from the User's point to the respective control centre(s) based on technical standards issued by CEA within 60 days of issuance of technical standards.”



- 9.2 POSOCO has submitted that proper integration of their equipment with communication system is required for smooth functioning of communication system and has suggested modification of Regulation 7.4(ii) as follows:

“The National Load Despatch Centre shall be responsible for integration of their equipment to be used for monitoring, supervision & control of Power System and adequate data availability in real-time and Video Conferencing System, Automatic Meter Reading, EPABX, Tele-protection system at NLDC with Communication system provided to NLDC with necessary assistance from CTU.”

- 9.3 We agree with suggestion of POSOCO. However, the details of integration have already been covered under Regulation 7.4(i) and shall be applicable accordingly. POSOCO has submitted that CTU will provide the communication system and the necessary access to NLDC/RLDCs/SLDCs to connect the telemetry systems e.g. SCADA, RTU/SAS, AMR, Tele-protection system, VCS etc. As the communication between the telemetry equipment at two ends depends upon the configuration of the communication system, necessary assistance is proposed. The assistance is required at the time of commissioning the telemetry equipment as well as during O&M and at the time of communication failure.

- 9.4 We agree with POSOCO's suggestion that CTU should provide necessary assistance or support for integration as required by POSOCO so that communication system is implemented on priority. Such assistance shall be required from all users including NLDC / RLDC in integration of associated communication systems. The same has been provided under Regulation 7.2 under Role of CTU. Further, we are of the view that RLDC should provide the real time data of communication system to respective RPC. Accordingly, the provision has been modified and included in role of RLDC. Accordingly, the revised clause (ii) of Regulation 7.4 is as follows:

“(ii) NLDC shall be responsible for integration of the Communication system at NLDC end for monitoring, supervision and control of Power System and adequate data availability in real-time within 60 days of the issue of the guidelines.”

10. **Draft Regulation 7.5 : Role of RLDCs**

- 10.1 POSOCO has suggested to modify Regulation 7.5 (i) as under:

“The Regional Load Despatch Centre shall be nodal agency for integration of their equipment to be used for monitoring, supervision & control of Power System and adequate data availability in real-time and Video Conferencing System, Automatic Meter Reading, EPABX, Tele-protection system at NLDC



with Communication System provided to RLDC with necessary assistance from CTU/STU.”

10.2 We agree with submission of POSOCO. However, the details of integration have already been covered under Regulation 7.5(i) and shall be applicable accordingly. Hence, the same are not included specifically in clause (i) of Regulation 7.5. We agree with POSOCO's suggestion that CTU or STU should provide necessary assistance or support for integration as required by Control Centres so that communication system is implemented on priority. We have provided the same under Regulation 7.2 and Regulation 7.7 under Role of CTU and Role of STU respectively. However, agencies like ISTS, ISGS, SLDCs and IPPs are included for clarity. Accordingly, clause (i) of Regulation 7.5 is modified as under:

“(i) The Regional Load Despatch Centre shall be nodal agency for integration and supervision of Communication System of the ISTS, ISGS, SLDCs and IPPs at RLDC end for monitoring, supervision and control of Power System and adequate data availability in real time.”

10.3 POSOCO has suggested to include the following new clause in Regulation 7.5 as under:

“RLDC’s shall certify the availability of communication equipment based on the data furnished by CTU and shall report to the Commission on monthly basis.”

10.4 We are of the view that availability of communication equipment should be certified by the concerned RPCs and accordingly suitable provision has been included in Regulation 7.3 dealing with “Role of NPC & Role of RPCs”. As POSOCO’s suggestion regarding certification of availability of communication equipment has been taken care in Regulation 7.3, we are of the view that there is no need to make any provision under Regulation 7.5.

10.5 POSOCO has suggested to include the following new clause to Regulation 7.5 as under:

“RLDC’s shall approach the Commission in case of repeated non-compliance of the regulation and non-availability/intermittency of data.”

10.6 POSOCO's suggestion to include additional clause regarding non-compliance has already been dealt in Regulation 7.3, where it has been stated that any non-compliance shall be reported to RPC and if needed, RPC shall report the same to Commission. RLDCs may approach the Commission in case the



issues are not resolved at RPC. Accordingly, specific provision has not been included in Regulation 7.5.

11. Draft Regulation 7.6: Role of SLDC

11.1 POSOCO has suggested to modify Regulation 7.6(i) as follows:

“The State Load Despatch Centre’s shall be nodal agency for integration of their equipment with Communication System in the STU network and shall be responsible for interfacing the telemetry system at SLDC end for monitoring, supervision & control of Power System and adequate data availability in real time.”

11.2 We have considered the suggestion of POSOCO. We are of the view that the proposed regulation in the present form is self contained. However, the draft regulation is modified for better clarity as follows:

“(i) The State Load Despatch Centres shall be nodal agency for integration of Communication System in the intra-State network, distribution system and generating stations at SLDC end for monitoring, supervision and control of Power System and adequate data availability in real time. ”

11.3 POSOCO has submitted that SLDCs should participate in coordination of O&M related to communication equipment with CTU and STU and accordingly proposed the following new clause (ii) under regulation 7.6:

“SLDCs shall also be responsible for appropriate coordination for O&M with CTU / STU of all control centre end communication equipment so that it remains healthy round the clock.”

11.4 We have considered the suggestion of POSOCO. As per Regulation 7.2(i) and 7.7(i), CTU and STU are responsible for coordination. We have already stated that “users” will be responsible for operation and maintenance of communication equipment. Further, outage planning shall be decided at RPC forum which shall take care of POSOCO's concerns. Accordingly, there is no need of specific addition of the proposed clause.

11.5 PGCIL has suggested that responsibility to provide operational data may be added in the scope of SLDC. We are agree with the suggestion of PGCIL, accordingly, the following clause (ii) has been included in Regulation 7.6:

“(ii) SLDC shall provide operational feedback to CTU and STU.”

12. Draft Regulation 7.7 : Role of STU



- 12.1 POSOCO has stated that protection path is important in case of communication failure in main path and hence suggested to include “protection, system, Main, back- up and area/Sub-LDCs in Regulation 7.7(i) as follows:

“The STU shall be responsible for planning and coordination for development of reliable backbone/protection communication system for data communication within a State among State Load Despatch Centre’s (Main, Back-up and Area/Sub-LDCs),DISCOM control centre’s along with Generating Stations in the State, STU Sub-Stations, IPPs, and renewable energy generators within State system.”

- 12.2 We agree with suggestion of POSOCO and accordingly clause (i) of Regulation 7.7 is modified as under:

“(i) The STU shall be responsible for planning, coordination and development of reliable communication system for data communication within a State including appropriate protection path among State Load Despatch Centre, Area LDC, Sub-LDC and DISCOM LDC including Main and backup as applicable along with STU Sub-Stations, intra-State Generating Stations.”

- 12.3 No comments are received with respect to clause (ii), (iii) and (iv) of Regulation 7.7 and hence they are retained as proposed in the draft regulations.

- 12.4 We are of the view that STUs should extend the required support to control Centres for integration of communication system at respective ends. Accordingly, following clause (v) is included in Regulation 7.7:

“(v) The STU shall extend the required support to Control Centres for integration of communication system at respective ends.”

13. Draft Regulation 7.8 : Role of Users

- 13.1 As stated earlier, the definition of “Requester” and “User” are the same and hence the definition of “Requester” has been deleted. Accordingly, the words “Requester” is deleted in Regulation 7.8.

- 13.2 POSOCO has submitted that users shall be responsible for appropriate interface of communication equipment and has accordingly suggested following modification to Regulation 7.8(i):

“The Requesters and Users including renewable energy generators shall be responsible for provision of compatible equipment along with appropriate interface for un-interrupted communication with the concerned control centre’s and shall be responsible for successful integration with the



communication system provided by CTU/STU for data and voice communication as per guidelines issued by NLDC."

13.3 We agree with submissions of POSOCO that user should provide and maintain appropriate interface for communication equipment. Accordingly, the same is considered under Regulation 7.8(i). POSOCO has also suggested to include the word "voice" in Regulation 7.8(i). It is observed that "voice" is covered under definition of 'Data' and hence there is no need to specify the word "voice" separately in Regulation 7.8(i).

13.4 Clause (ii) of Regulation 7.8 is retained unmodified.

13.5 POSOCO has stated that to bring further clarity, clause (iii) of Regulation 7.8 may be modified as under:

"The Users shall also be responsible for expansion /up gradation as well as operation and maintenance of communication equipment owned by them, if any, at their terminal end, interface ends and LDC end."

13.6 We agree with the POSOCO's suggestion that users should be held responsible for expansion or up-gradation of communication equipment owned by them. However, we are of the view that there is no need to specify the location which shall be applicable on as is where basis. Accordingly, Regulation 7.8 (iii) is modified as under:

"(iii) The Users shall also be responsible for expansion /up-gradation as well as operation and maintenance of communication equipment owned by them."

13.7 POSOCO has proposed that new Regulation 7.8(iv) may be added to Regulation 7.8 as under:

"The requesters and users shall be responsible for successful integration of data, voice and video at LDC system."

13.8 POSCO's suggestion has already been taken care in Regulation 7.8 (i) and hence we are of the view that there is no need for a specific clause in Regulation 7.8.

14. Draft Regulation 8 : Boundary of the ISTS communication system

14.1 Sub-clause (i) and (ii) of clause (1) of Regulation 8 is retained unmodified.

14.2 Sub-clause (iii) of clause (1) of Regulation 8 is modified to specify that the boundary of ISTS Communication System shall be considered as SLDCs (ISTS



interconnection). Accordingly, Sub-clause (iii) of clause (1) of Regulation 8 is modified as under:

“(iii) SLDCs (ISTS interconnection)”

14.3 Sub-clause (iv) of clause (1) of Regulation 8 has been added to state that boundary of ISTS Communication System shall be considered as ISTS sub-stations of the transmission licensees. Accordingly, Sub-clause (iv) of clause (1) of Regulation 8 is modified as under:

“(iv) ISTS sub-stations of transmission licensee”

14.4 NTPC has suggested to exclude embedded solar and renewable generator under Regulation 8.1(V). NTPC has submitted that all embedded generators connectivity is through the electrical system of the existing generating station, requirement of dedicated ISTS node for such generating plants may be excluded.

14.5 We have considered the submission of the NTPC. We have already clarified above that for maintaining the grid security each RE generator covered under the ambit of these Regulations should provide adequate communication facilities for control and grid security. In case of RE generator, for which there exists a separate Principal Generator, the Principal Generator should ensure that required data is made available to RLDC or SLDC. Further, the embedded generators should make provisions to provide data till the control room of its Principal Generator so that the same can be shared with RLDC / SLDC. Hence, the suggestion of NTPC is not acceptable.

14.6 During the public hearing, NTPC submitted following:

- (i) As per provisions of IEGC, 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 (DCP) 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.
- (ii) Data Collection Point of CTU is not firmed up at the time of finalisation of ATS. There is appreciable difference in time line between award of contact by Generator and Transmission Service Provider (TSP). Providing equipment same make to remote end (e.g for data transfer on IEC 60870-5-101 PDH) at later stage may be difficult.



- (iii) Data and Voice communication from generating plant switchyard to control centre involves number of transmission lines and substations, some of intermediate communication links may be existing, whereas some may be upcoming. Due to non-availability of spare channels at existing intermediate sub stations and readiness of upcoming Data collection point, location of DCP has been modified on several occasions. (Uncharhar IV, Darlipalli STPP, BRBCL Nabinagar etc).
- (iv) This results in requirement of a contingent point to point communication between generating plant and respective RLDC. Sometimes line charging and start-up power drawl also gets delayed on this account.
- (v) One or more transmission lines emanating from Generating switchyard generally have optical ground wire (OPGW) which forms backbone of CTU communication network.
- (vi) As per present practice, all other equipment required for transmission line protection like analogue and digital PLCC of both ends except Fibre optic Terminal Equipment (FOTE) for Generating switchyard are included in scope of supply of TSP.
- (vii) In view of this and also for seamless data integration, Switchyard of generating station may be defined as DCP and supply of FOTE for both end in the scope of TSP which may be selected through TBCB process or on nomination basis by empowered committee as the case may be.

NTPC has further suggested that Data Collection Point (DCP) is of CTU is not firmed at the time of finalisation of Associated transmission system (ATS) due to which data collection point has been modified several times.

14.7 We agree with suggestion of NTPC that DCP should be identified and informed to the concerned generator. The same should be discussed in SCM/RPC meetings and accordingly finalise the DCP. As regards NTPC's suggestion that Switchyard of generating station may be defined as DCP, CEA may consider the point in the planning criteria to be specified by CEA. Supply and maintenance of fibre optic terminal equipment shall be the responsibility of CTU.

14.8 POSOCO has suggested to include the word “comprehensively” in Regulation 8.2 to bring in further clarity as under:

“In addition to the above, the wideband communication systems shall be planned **comprehensively and** prospectively considering the expected **upcoming** nodes by the respective agencies and all Grid station including pooling stations may be considered for Broad Band Communication system in consultation with Standing Committee to be constituted by CEA.”



14.9 We agree with submission of POSOCO partly and accordingly word "comprehensively" has been included. However, since the issue pertains to planning, the said clause is removed from Regulation 8.2 and is included in Regulation 7.2 under "Role of CTU".

14.10 As stated in Regulation 5 under "Scope and Applicability" these regulations are made applicable to the power system at the State level till suitable regulations are framed by the respective State Commissions. Accordingly, the boundaries of intra-State communication system is included in these regulations as under:

"8.2 Intra-State Communication System:

(i) SLDC (State Inter-connection)

(ii) STU

(iii) Distribution Companies

(iv) State Generating Stations including renewable generators connected to State network.

(v) Sub-stations of STU and State Transmission licensees"

14.11 MPPTCL has submitted that a suitable provision should be included to clarify that renewable generators are responsible to provide telemetry and wideband communication channel up to the nearest grid sub-station of CTU or STU. MPPTCL has further submitted that the responsibility for providing the wideband communication from such grid sub-station to the nearest wideband node shall be of the respective CTU/STU.

14.12 We agree with suggestion of MPPTCL, as adequate communication system is also required for renewable generators. CEA may consider the same while framing the planning criteria and CTU and STU should plan the system accordingly.

15. Draft Regulation 9: Access to Communication System

The proposed Regulation 9, pertaining to access to communication system is deleted as the aspect of access to communication system has already been covered in Regulations 7.2 and 7.7 pertaining to "Role of CTU" and "Role of STU" respectively.

15.2 POSOCO has suggested to modify Regulation 9 as under:

"Access to the communication system shall be allowed to the requester in line with the standards and guidelines issued under the Regulations. All CTU/STU/User/SLDC/RLDC shall share/give access to their infrastructure/space/network for common cause."

15.3 We have considered the submission of POSOCO. We agree with POSOCO's suggestion that CTU, STU, User, SLDC and RLDC should provide access to its



infrastructure and network for all users for grid management. Regulation 7.2(ix) and Regulation 7.7(iv) makes it mandatory for the CTU and STU respectively to provide access to its wideband network to all users for grid management. We are also of the considered view that User, SLDC and RLDC should also provide access to its infrastructure and network for the grid management.

16. Draft Regulation 10 : Periodic testing of the communication system

16.1 As Regulation 9, pertaining to “Access to Communication System” is deleted, the regulation pertaining to “Periodic testing of the Communication System” is renumbered as Regulation 9 now.

16.2 POSOCO has suggested to replace the word "system" with word "channels" in the (renumbered) Regulation 9(i) for bringing clarity.

16.3 We have considered the suggestion of POSOCO. We are of the view that the “channel” is a path configured from one user’s node to another user’s node. However, “system” is a comprehensive communication system which includes many individual communication channels. The idea here is to test periodically the whole communication system and not limited to a communication channel and hence POSOCOs suggestion is not accepted.

16.4 POSOCO has suggested to modify (renumbered) Regulation 9(ii) as under:

“Testing process for communication network security should also be included even for third party system if exists. Appropriate O & M arrangement / policy /procedure must be adopted for all communication equipment, in accordance with the guidelines to be prepared by CTU under these Regulations.”

POSOCO has also suggested that CTU should prepare guidelines regarding operation and maintenance and all should follow it as best practices for quality maintenance.

16.5 We agree with suggestion of POSOCO and accordingly we have included a provision requiring CTU to prepare a ‘Procedure’ within 60 days of notification of these regulations, which shall include procedure for maintenance and testing for communication system.

17. New Regulation 10: Periodic Auditing of Communication System

17.1 Communication System is critical for safe and secure operation of the grid. In view of the integrated operation of Indian electricity grid, uninterrupted availability of the real time data of various power systems elements is crucial. Therefore, we are of the view that there should be regular periodic audit of



Communication System to identify short comings and take necessary remedial measures. Accordingly, a separate provision has been included as under:

“10. Periodic Auditing of Communication System:

The RPC Secretariat shall conduct performance audit of communication system annually as per the procedure finalised in the forum of the concerned RPC. Based on the audit report. RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat. An Annual Report on the audit carried out by respective RPCs shall be submitted to the Commission within one month of closing of the financial year.”

18. Draft Regulation 11: Fault reporting:

- 18.1 POSOCO has submitted that Load Despatch Centre’s shall be able to check communication equipment with RTU/SAS/PMU, etc. In case of any failure, it shall report the same to the communication system owner. POSOCO has suggested to modify Regulation 11(i) as under:

“RLDC and SLDC in case of outage of telemetered data or communication failure shall inform the respective user so that the user can check its RTU/SAS/PMU and terminal communication equipment. In case outage pertains to communication system fault, the user shall lodge complaints for failure of the communication with the communication system owner for quick restoration.”

- 18.2 We have considered the submission of the POSOCO. We are of the view that RLDC may inform the user in case of outage of telemetered data and Users shall check its respective communication system. However, we do not find any need to specifically provide details of equipment to be checked in the Regulation. Users shall be responsible for healthy functioning of systems owned by them. However, the draft regulation is modified slightly to bring in more clarity. The modified Regulation 11(i) is as follows:

“(i) RLDC and SLDC in case of outage of telemeter data, or communication failure shall inform the respective user so that the user shall ensure healthiness of its communication system. In case outage pertains to fault in communication system of other user, the user shall lodge complaints for failure of the communication to the communication system owner for quick restoration.”

- 18.3 PGCIL has submitted that Communication System being an integrated network has sender, receiver and communication media. Fault in any of the three may



lead to communication outage. Therefore, the communication providers should explore the possibility for route diversion on the existing facility in their respective system in close co-ordination with the concerned providers where fault has occurred. Accordingly, PGCIL has suggested to modify the draft Regulation 11(ii) as follows:

“All communication providers shall explore the possibility for route diversion on their existing facility in close co-ordination with concerned provider in case the fault restoration is prolonged. No separate charges shall be paid for such route diversion or channel reallocation. However, such rerouting shall be discontinued once the original channel restored.”

- 18.4 We agree with submission of PGCIL and accordingly Regulation 11(ii) has been modified by including the words “in close co-ordination with concerned provider” as under:

“(ii) The communication provider shall explore the possibility for route diversion on the existing facility in close co-ordination with concerned provider in case the fault restoration is prolonged. No separate charges shall be paid for such route diversion or channel re-allocation. However, such rerouting shall be discontinued once the original channel is restored. ”

19. Draft Regulation 12 : Communication System Availability:

- 19.1 PGCIL has submitted that the communication network is complex involving connectivity of Central Sector and State Sector Communication Systems geographically spread out. The communication system established by utilities are not having redundant path for most of the station connectivity. Improvement in availability can be achieved to some extent only when OPGW based fibre optic network with redundant path across the country is established. Under the upcoming Communication schemes expansion of communication network is planned, the implementation of which may take some time. Even after expansion, redundant path may not be possible for all stations. Further, some of the sub-stations in the communication link pertain to utilities where the Auxiliary power supply source is not reliable. Maintaining high availability of such a large communication system having inter-dependence on resources of various utilities is a daunting task. The OPGW is subjected to snapping/high fibre loss in case of natural calamity or tower collapse, etc. Under such circumstances transmission licensees may not be penalized by enhancing the normative availability. This might also hamper the preventive maintenance and periodic testing as prescribed in Regulation 9. PGCIL has proposed that the communication system channel availability needs to be defined for (a) system having single communication path and (b) system having Redundant Communication path. The owner of Communication System shall maintain channel availability up to 90% for systems having non-redundant



communication path and channel availability up to 95% system having redundant path. These availabilities shall be excluding non-availability of communication channel under force majeure condition. PGCIL has further suggested that suitable provisions for norms for Communication System availability may be provided in the 2014 Tariff Regulations. Under the 2015 RLDC Fees and Charges Regulations there is a system of incentive/disincentive for availability upto benchmark level and beyond. Similar incentive/disincentive need to be provided under this regulation.

- 19.2 PGCIL has also submitted that Network Management System (NMS) for Communication System is required to be established at NLDC with console at CTU premises/SLDC/RLDC/NTAMC.
- 19.3 POSOCO has submitted that availability percentages are defined at different level of requirements to ensure reliability. POSOCO has suggested to modify the draft Regulation 12 as follows:

“The owner of communication system shall maintain the individual communication channel availability of at least 99.9%. The owner of communication system shall maintain the availability of all communication equipment at the respective nodes of at least 99.9%. The owner of the communication system shall maintain the availability of the communication media of at least 99.9%.The owner of the communication system shall maintain the availability of the auxiliary power supply of at least 99.9 %. The mechanism for calculation of availability shall be detailed in the procedure to be prepared by NLDC and amended from time to time. The availability thus calculated shall have suitable implications while determining the tariff as per Terms and Conditions of Tariff Regulation for communication system.

The communication system shall be restored within 4 hours of reporting the fault to the concerned service provider i.e. CTU/STU. However service provider shall also have centralized monitoring for detection of fault and failure for quick restoration of the communication system.”

- 19.4 MPPTCL has submitted that a provision may be included for imposing suitable penalty on the owners of communication by RLDC/SLDC in case availability is less than 99.9%.
- 19.5 We have considered the submissions of the PGCIL, POSOCO and MPPTCL. As regards PGCIL’s submission, we are of the view that availability of Communication System is necessary for analyzing and maintaining various grid elements of power system and also the disturbances before the fault and after the fault. PGCIL has not submitted the rational for suggesting the availability percentage of 90% and 95% for communication systems with non-redundancy and redundancy communication path respectively. Hence, PGCIL’s suggestion is not considered. As regards the norms for communication system availability



the Commission will take appropriate action based on the guidelines prepared by NPC.

- 19.6 As regards PGCIL's suggestion to specify the provisions for incentive/disincentive based on the availability of communication system, we are not inclined to consider incentive/disincentive in these Regulations, as of now.
- 19.7 We agree with suggestion of PGCIL regarding establishment of NMS for Communication System. POSOCO has suggested that NMS shall aid in quick fault restoration. Since the nodal agency for quick fault restoration is CTU, the responsibility for establishing integrated NMS shall be that of CTU. A console may be provided at NLDC/SLDC/RLDC/NTAMC. However, the operating rights shall be decided by CTU in consultation with NLDC/RLDCs.
- 19.8 We have considered the submissions of POSOCO. POSOCO has defined availability percentages of various communication systems. We are of the view that presently, communication system availability is restricted to Communication Channel availability. NPC should prepare guidelines for availability of various Communication System elements and submit for approval of the Commission.
- 19.9 As regards MPPTCL submission regarding availability, we are of the view that in case the availability is less than 99.9%, the concerned RLDCs will analyze the reasons for less than 99.9% availability of Communication System and communicate the same to the concerned SLDC and the regional entities. The same may be discussed at RPC level. The Member secretary, RPC may report issues that could not be sorted out at RPC forum to the Commission.
- 19.10 Availability of Communication System is critical for the management of grid and any relaxation of this availability may prove to be fatal for the maintenance of grid. Accordingly, we are of the view that all the stakeholders should maintain availability of Communication Channel at 99.9% and in case of Communication System with back up facility, the availability should be 100%. Accordingly, the draft Regulation 12 is modified as under:

“All users of CTU, NLDC, RLDCs, SLDCs, STUs shall maintain the communication channel availability at 99.9% annually:

Provided that with back up communication system, the availability of communication system should be 100%.”

20. **Draft Regulation 13 : Cyber Security**

- 20.1 The draft Regulation 13(i) is amended to ensure that the proposed Cyber Security is in compliance with the Cyber Security Policy of Government of India. The modified Regulation 13(i) is as follows:



“(i) Communication infrastructure shall be planned, designed and executed to address the network security needs as per standard specified by CEA and shall be in conformity with the Cyber Security Policy of the Govt. of India, issued from time to time.”

20.2 POSOCO has suggested that CTU should be made responsible, and not NLDC, for monitoring cyber security incidences and accordingly modify the draft Regulation 13(ii).

20.3 Cyber security is of paramount importance and any laxity on this account may lead to a big loss. We are of the view that NLDC is the appropriate body for dealing cyber security incidences. Hence, POSOCO's suggestion is not accepted. Moreover, the manufacturer should be selected after due diligence keeping in view Government's policy/advice on cyber security. Further, RPC should ensure that audits are conducted periodically. The frequency for conducting audit may be decided at RPC forum as per standard timeline specified by CERT-In but the period for audit should not be less than twelve months.

20.4 The communication infrastructure should be up to date Further, it is felt that any updating of communication system should be in accordance with the cyber security policy/guidelines of the Government of India. Accordingly, Regulation 13(ii) has been retained unmodified.

20.5 POSOCO has proposed to include the following new clause (iii) under Regulation 13:

“Third party cyber security audits shall be conducted annually and appropriate measures shall be implemented to comply with the findings of the audits.”

20.6 We agree with the POSOCO's suggestion that third party cyber security audits should be conducted periodically. We are of the view that conducting third party audits and recommendations of audit findings should be implemented so that security and safety of the communication system from cyber incidences is secured. Further, we are of the view that the concerned RPC should ensure that the audits are conducted in accordance with the CERT-In certified third party audits. Accordingly, following new clause (iii) is added to Regulation 13(iii) as under:

“(iii) RPC shall ensure that third party cyber security audits shall be conducted periodically (period to be decided at RPC) and appropriate measures shall be implemented to comply with the findings of the audits. The audits shall be conducted by CERT-In certified third party auditors.”

21. Draft Regulation 14 : Guidelines to be issued by NLDC



- 21.1 POSOCO has suggested to modify clause (i) of Regulation 14 to bring in more clarity as follows:

“Clause 14, (i), Guidelines to be issued by NLDC

Subject to the provisions of these regulations, NLDC shall submit the Guidelines for Interfacing Requirement between different communication equipment at individual nodes, calculation of availability of the communications equipment i.e. MUX, Media, Power supply equipment etc., and individual communication channel to the Commission for approval within 60 days of notification of these regulations in the Official Gazette:

Provided that prior to submitting the guidelines to the Commission for approval, NLDC shall make the same available to the public and invite comments by putting the draft on its website and giving a period of one month to submit comments; Provided further that while submitting the detailed procedure to the Commission, NLDC shall submit a statement indicating as to which of the comments of stakeholders have not been accepted by it along with reasons thereof.”

- 21.2 We have considered the submission of the POSOCO. POSOCO has suggested that NLDC should frame the guidelines for calculation of availability of communication equipment besides the guidelines for interfacing requirement of the communication system. NPC has been entrusted with the responsibility of framing the guidelines for calculation of availability of communication system in consultation with RPCs, CEA, CTU, RLDCs and other stakeholders in Regulation 7.3(i), which includes communication equipment as well and hence POSOCO’s suggestion is taken care of.
- 21.3 POSOCO has also suggested that procedure for testing and maintenance should be prepared by CTU and accordingly requested to add the following new clause in Regulation 14:

“Subject to the provisions of these regulations, CTU shall submit the Guidelines for O&M of communication system, detailing the procedure routine maintenance, fault reporting and rectification process to the Commission for approval within 60 days of notification of these regulations in the Official Gazette:

Provided that prior to submitting the guidelines to the Commission for approval, CTU shall make the same available to the public and invite comments by putting the draft on its website and giving a period of one month to submit comments; Provided further that while submitting the detailed procedure to the Commission, CTU shall submit a statement indicating as to which of the comments of stakeholders have not been accepted by it along with reasons thereof.”



21.4 We agree with submission of POSOCO. The procedure for (a) “quick fault detection and restoration” and (b) “maintenance and testing” of communication system are to be prepared by CTU as per Regulations 7.2 and 9 respectively of these Regulations. Accordingly, clause (i) of Regulation 14 is modified as under:-

“14.1 The following entities shall be responsible for preparation, consultation and finalisation of the Guidelines / Procedure required under these Regulations:

- (i) NLDC shall prepare Guidelines on “Interfacing Requirements” in terms of Regulation 7.4(i) of these Regulations.*
- (ii) CTU shall prepare Procedure on “Centralized supervision for quick fault detection and restoration” in terms of Regulation 7.2 and on “Maintenance and testing of communication system” in terms of Regulation 9 of these Regulations.*
- (iii) NPC shall prepare Guidelines on “Availability of Communication system” in terms of Regulation 7.3 of these Regulations.”*

22. Draft Regulation 17 : Power to Remove difficulty

22.1 POSOCO has suggested to modify Regulation 17 as follows to bring in more clarity:

“If any difficulty arises in giving effect to the provisions of these regulations, the Commission may, by order, make such provision consistent with the provisions of the Act or provisions of other regulations specified by the Commission, as may appear to be necessary for removing the difficulty in giving effect to the objectives of these regulations.”

22.2 We feel that there is no need to modify the proposed Regulation 17. Accordingly, it is retained unmodified.

23 POSOCO has suggested to add a new Regulation 18 providing details of Computation and Payment of Communication Asset Charge for Inter-State Communication System. We have considered the submission of the POSOCO. With regard to calculation of availability of the communication system and computation and payment of communication asset charge for inter-State communication system it is observed that we have already provided that NPC will submit the guidelines for calculation of availability of the communication



system within 60 days of notification of these Regulations in the official gazette. The objective of these Regulations is for planning, implementation, operation and maintenance and up-gradation of reliable communication system and it is not for determination of charges for communication system and equipment. Further, at present the charges for the communication system and equipment are computed and allowed alongwith the transmission assets as provided under the 2014 Tariff Regulations. Thus, we do not find any requirement to provide for computation of charges for the communication system and equipment in these Regulations. Accordingly, POSOCO's suggestion is not accepted.

24. Activities to be carried out by CEA, CTU, RPCs, NLDC,NPC

- (i) CEA shall prepare communication planning criterion/guidelines as required under Regulation 7.1
- (ii) CTU shall prepare procedure on "Centralized supervision for quick fault detection and restoration" in terms of Regulation 7.2 and on "maintenance and testing of Communication System" in terms of Regulation 9 within 60 days of notification of these regulations in the Official Gazette

Provided that prior to submitting the procedure to the Commission for approval, CTU shall make the same available to the public and invite comments by putting the draft on its website and giving a period of one month to submit comments;

Provided further that while submitting the detailed procedure to the Commission, CTU shall submit a statement indicating as to which of the comments of stakeholders have not been accepted by it along with reasons thereof.

- (iii) NLDC shall prepare guidelines on "Interfacing Requirements" as required under Regulation 7.4 within 60 days of issuance of technical standards issued by CEA for approval of Commission.

Provided that prior to submitting the guidelines to the Commission for approval, NLDC shall make the same available to the public and invite comments by putting the draft on its website and giving a period of one month to submit comments;

Provided further that while submitting the guidelines to the Commission, NLDC shall submit a statement indicating as to which of the comments of stakeholders have not been accepted by it along with reasons thereof.



- (iv) NPC secretariat shall prepare guidelines for availability of Communication system in consultation with other RPCs, NLDC, RLDC and other stake holders within 2 months of notification of these regulations.

sd/-
(Dr. M.K. Iyer)
Member

sd/-
(A. S. Bakshi)
Member

sd/-
(A.K. Singhal)
Member

sd/-
(Gireesh B. Pradhan)
Chairperson

