

**Report of the  
Comptroller and Auditor General of India  
for the year ended March 2017**



लोकहितार्थं सत्यनिष्ठा  
Dedicated to Truth in Public Interest

**Union Government  
(Ministry of Communications  
and  
Ministry of Electronics & Information Technology)  
Report No. 21 of 2018**



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## **PREFACE**

This Report of the Comptroller and Auditor General of India for the year ended March 2017 has been prepared for submission to the President under Article 151 of the Constitution of India. Chapter IV of the Report which pertains to Public Sector Undertakings under the Ministry of Communications and Ministry of Electronics & Information Technology has been prepared for submission to the President under Section 19(A) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service (DPC)) Act, 1971 as amended in 1984.

This Report contains significant results of Performance Audit and Compliance Audit of the Ministry of Communications and Ministry of Electronics & Information Technology and Departments/Public Sector Undertakings under these Ministries. The instances mentioned in this Report are those which came to notice in the course of test audit during the period 2017-18 as well as those which came to notice in earlier years, but could not be reported in the previous Audit Reports.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.





## OVERVIEW

This Report contains significant audit findings which arose from the Performance Audit and Compliance Audit of the Ministry of Communications (MoC) and Ministry of Electronics and Information Technology (MeitY) and Departments/ Public Sector Undertakings under the Ministries. It contains four chapters. Chapter I gives audited entity profile, analysis of expenditure, financial performance of the departments and Follow up on Audit Reports. Chapter II, III and IV relate to audit findings/observations arising out of audit of Department of Telecommunications, Department of Posts, and Public Sector Undertakings under these Ministries.

Some of the important findings in the Report are given below:

### Chapter- II Department of Telecommunications (DoT)

#### Audit on “Spectrum Management in DoT”

As per the National Telecom Policy (NTP) 2012, one of the major objectives of Spectrum Management was to re-farm spectrum and allot alternative frequency bands or media to service providers from time to time to make spectrum available for introduction of new technologies for telecom applications and prepare a roadmap for availability of additional spectrum every five years. In India, total spectrum allocated for GSM based mobile (cellular) services (2G/2.5G) is 2X25 MHz in 900 MHz band and 2X75 MHz in 1800 MHz bands. Upto 2x6.2 MHz of 900 MHz band was being used by Defence till date. No action/deliberation for re-farming of 900 MHz band was initiated by Wireless Planning & Coordination (WPC) of DoT. The continuing use of spectrum in these bands by Defence results in loss of opportunity cost for the nation as a whole.

##### *Paragraph 2.1.7.1*

Railways was assigned 1.6 MHz spectrum along seven railway tracks in 900 MHz band. Considering the increased requirement of spectrum for commercial use for telecom services, TRAI in its recommendations dated 13 May 2005 and 11 May 2010 on Spectrum related issues recommended for re-farming of spectrum in 900 MHz from incumbents for its utilization for commercial use by telecom operators. Though Telecom Regulatory Authority of India (TRAI) emphasized time and again for re-farming of spectrum assigned to Railway in 900 MHz for telecom use, Department of Telecommunication (DoT) had not taken any action in this regard. Assignment of spectrum to Railway in 900 MHz band hampered the contiguous assignment of spectrum to telecom operators which in turn adversely affected the optimal utilization of spectrum.

##### *Paragraph 2.1.7.2*

A guard band is a narrow frequency range that separates two ranges of wider frequency. During harmonization of 1800 MHz band, DoT made a provision for 0.2 MHz guard band (0.1 MHz at each side of the band, i.e. in the start and in the end of the total 55 MHz spectrum) and one additional guard band of 0.2 MHz in between this spectrum band in all 22 LSAs. It was also noticed that the location (frequency spot) of the additional guard band of 0.2 MHz considered by the DoT was varying from LSA to LSA. Additional guard band of 4.4 MHz spectrum (0.2 MHz spectrum in each 22 LSAs) was not considered while putting up spectrum in 1800 MHz band for auction and thus spectrum in 1800 MHz, which is a prime band, remained unutilized. The provision of additional guard band needs a review by DoT.

***Paragraph 2.1.8.1***

DoT prescribed (March 2013) levy of one time spectrum charge (OTSC) for spectrum held beyond 2.5 MHz by CDMA operators and issued (March 2013) demand note of ₹ 1152.68 crore to Tata Teleservices Limited (TTSL)/Tata Teleservices (Maharashtra) Limited (TTML). DoT order provided that licencees not willing to pay OTSC may surrender spectrum beyond 2.5 MHz. TTSL/TTML surrendered (April 2013) the CDMA spectrum of 2.5 MHz each in Maharashtra and Andhra Pradesh and 1.25 MHz each in Kolkata, Chennai, Bihar, Gujarat, Haryana, Karnataka, Kerala, Punjab, Rajasthan, Uttar Pradesh (East) and Uttar Pradesh (West) under protest. TTSL/TTML also surrendered 1.25 MHz in Delhi and Mumbai and retained 3.75+3.75 MHz and paid first instalment of ₹ 62.91 crore as OTSC in respect of Delhi and Mumbai under protest. The surrendered spectrum was not put to auction held in February 2014 and March 2015 by DoT on the plea that the matter was sub-judice though the High Courts had not restrained DoT from putting the surrendered spectrum to auction. The spectrum surrendered by TTSL/TTML pertaining to Mumbai, Andhra Pradesh and Maharashtra LSAs was put to auction only in October 2016 while the spectrum in the other LSAs were not put to auction though it remained unutilised. The annual value of spectrum surrendered by TTSL but not put to auction worked out to ₹ 127.33 crore.

BSNL was allotted start up spectrum of 6.2 MHz in 900 MHz band in all its Service Areas during 2000 and 2003. Subsequently it was allotted additional 1.8 MHz in Jammu & Kashmir in 900 MHz, 1.2 MHz in Gujarat, 1.8 MHz in Rajasthan and West Bengal and 3.8 MHz in rest of 15 LSAs except Punjab in 1800 MHz band during 2004 to 2007. After DoT's decision to levy OTSC, BSNL proposed to surrender (January 2013) 1.8 MHz in 1800 MHz band in 15 LSAs. However, DoT has not withdrawn the excess spectrum proposed to be surrendered by BSNL till date (March 2018). Financial impact due to delay in withdrawal of excess spectrum held by BSNL is ₹ 520.79 crore.

***Paragraphs 2.1.9.1 & 2.1.9.2***

The mobile backhaul (Microwave) is an integral part of the cellular telecom network which connects cell sites (Base Transceiver Stations) with Base Station Controllers.

The assignment of MW backhaul carriers is made administratively, subject to availability of spectrum. DoT constituted a committee in December 2012 to look into the allotment/assignment of spectrum in various categories of spectrum users covering different categories of licences and authorizations. The Committee proposed that the spectrum allotment in Microwave band to all the service providers should be allotted through market related process (auction). However, allocation of MW Access spectrum had been done on First Come First Serve (FCFS) basis. Though carriers were available in other bands and propagation characteristics of MWA spectrum in lower bands (say 13/15 GHz) was better compared with higher bands (18/21 GHz and beyond), allotment of MWA to Access Service providers was withheld by DoT since June 2010. Non-allotment of MWA spectrum to Access Service Providers despite availability resulted in loss of revenue to the Government.

***Paragraph 2.1.10***

The New Telecom Policy 1999 (NTP 1999) allowed the then existing Cellular Mobile Service licensees to migrate from a Fixed Licensee Fee Regime to a Revenue Share arrangement with effect from 01 August 1999. The revenue sharing was to be done as a fixed percentage of their Adjusted Gross Revenue (AGR) for Micro Wave (MW) access/backbone Spectrum also. However, the spectrum charges for MW access/backbone Spectrum and satellite Spectrum of National Long Distance (NLD) and International Long Distance (ILD) networks were still levied on formula basis instead of revenue share basis (i.e. percentage of AGR), as being done for MW access spectrum of cellular network which indicated non-uniform policy in DoT.

***Paragraph 2.1.10.1***

National Frequency Register (NFR) is the basic record for all frequency assignments and it would be referred to identify assignable frequency for any new applicant. WPC implemented (January 2005) “Automatic Spectrum Management System (ASMS)” which caters to the requirement of application, assignment, channeling plan, Standing Advisory Committee On Radio Frequency Allocations (SACFA) clearance, etc. The NFR in ASMS was not being updated at the time of assignment of new frequencies and/or surrender/withdrawal of previously assigned frequencies.

***Paragraph 2.1.11.1***

Monitoring of RF spectrum is carried out to ensure compliance with regulatory provisions governing radio communications and to intervene with national or foreign stations contravening these provisions. However, Wireless Monitoring Headquarter (MHQ)/Regional Headquarters (RHQs) nor International Monitoring Station (IMS)/Wireless Monitoring Station (WMS)/Inspection units had updated base of wireless licensees and frequency assignments since 2009-10.

***Paragraph 2.1.11.2***

Large number of equipment/Mobile Monitoring System (MMS) vehicles were supplied around 2004-05 under World Bank funded Project to all the wireless monitoring stations for carrying out the various types of monitoring activities. These equipment/MMS vehicles went faulty and remained so for several years.

***Paragraph 2.1.11.3***

Mobile monitoring function is essential in Very High Frequency (VHF) and Ultra High Frequency (UHF) frequency bands because of line of site constraints. 21 mobile monitoring Vehicles fitted with expensive electronic equipment under World Bank aided NRSMMMS project procured between the year 2005 and 2007 were provided one vehicle each to all 21 WMSs/IMSs centers. However, more than 75 per cent vehicles could not be used for mobile monitoring due to faulty equipments/vehicles and non availability of drivers.

***Paragraph 2.1.11.4***

MHQ has been assigning the inspection target of 10 wireless users per month to all ten Inspections units. However, the Inspection units could not achieve the target in any year during the last five years and there was a shortfall ranging from 44 per cent to 76 per cent in conducting inspections.

***Paragraph 2.1.11.5)***

Issue/grant of wireless licences and renewal of such licences were transferred to the Regional Licensing Offices (RLOs). However, three RLOs namely Kolkata, Guwahati and Chennai had not maintained the data base of licenses issued/renewed in different categories. Further, renewal charges for the period after the expiry of the validity of licences had not been collected in 2660 cases, even though the licences had expired long back.

***Paragraph 2.1.11.6***

Though foundation stone for establishing Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) was laid in March 2011 with an objective to ensure an efficient spectrum planning and engineering for achieving optimal spectrum use in present and future, no progress was made towards establishment of the institute. DoT needs to review the necessity for the Institute since there are already centres for excellence for telecom in Indian Institutes of Technology (IITs) besides DoT's own telecom technology development centre viz. Centre for Development of Telematics (C-DoT).

***Paragraph 2.1.12.1***

Central Government organizations / Ministries / Departments were exempted from payment of License Fee and Royalty Charges (Spectrum charges) for their wireless network prior to 01 June 2004. The State Police Organisations (SPOs) were exempted from payment of Royalty charges on spectrum usage, however, they were required to pay Licence Fee for the spectrum. DoT decided (April 2004) to charge for spectrum

from all the wireless users including Government departments/organizations as per the existing fixed formula with effect from 01 June 2004. Further, spectrum charges (Royalty) for captive users were revised with effect from April 2012. There were 35 SPOs and eight Central Para Military Forces (CPMFs) who were assigned spectrum for their wireless network. The decision to levy spectrum charges was taken in April 2004 but even after elapse of 13 years, reconciliation of authorized frequency could be made in respect of only 20 SPOs and CPMFs. In respect of these 20 SPOs and CPMFs, total spectrum charges for the spectrum assigned before 01 June 2004 levied was ₹ 163.58 crore and late fee levied was ₹ 284.11 crore for the period 2004-14. Out of these amounts, only ₹ 100.86 crore had been received. In respect of spectrum assigned during 01 June 2004 to 31 March 2012 to two SPOs and CPMFs, ₹ 64.20 crore was levied as Spectrum charge and ₹ 85.60 crore was levied as late fee, out of which only ₹ 13.93 crore has been received.

Doordarshan (DD) provided details of frequency assignment to WPC during 2010 and 2012. Further, DD and All India Radio (AIR) informed WPC during 2013-14 that the Government waived off their spectrum charges due upto 31 March 2011 (₹ 455.89 crore- DD and ₹ 32.48 crore- AIR) and requested WPC to reconcile the spectrum charges in respect of its transmitters with effect from 01 April 2011. WPC had not been able to reconcile the issues relating to the frequency assignments as well as the amount waived off by the Government. It was also found that DD and AIR were paying spectrum charges after March 2011 whenever it applies for frequency assignments for its new transmitters or replacements for existing transmitters. WPC had not raised demands for annual spectrum charges in respect of old existing frequency assignments as well as for newly frequency assignments made to DD and AIR though they expressed repeated willingness of paying spectrum charges from 01 April 2012.

***Paragraph 2.1.12.2***

In terms of Cabinet note on “Notification of Defence Band and Defence Interest Zone, which was approved by the Cabinet on 21 January 2015, a separate proposal for waiver of Spectrum Charges payable by Defence was to be submitted for the approval of the Cabinet. However, no such proposal for waiver of Spectrum Charges for Defence Forces has been got approved from the Cabinet till date.

***Paragraph 2.1.12.3***

Spectrum for captive users to private as well as government users is primarily allotted in spectrum band below 806 MHz. There was no mechanism put in place by WPC to review realization of spectrum charges and to raise demands regularly (annually) for timely realization of revenue from captive users. It was up to the users to pay spectrum charges on their own or WPC raised demands whenever users approached to WPC for renewal/surrender of licences.

- One such instance having substantial financial implication was noticed in respect of MRF Tyres Limited Chennai which was granted licence to operate

VHF Wireless Radios for providing communication between their vehicles participating in the motor races and rallies conducted in different parts of India. MRF paid (September 2012) renewal charges of ₹ 1,36,150 for the period from 01 October 2012 to 30 September 2013. Subsequent to payment of renewal charge by MRF Tyres, WPC issued a demand for ₹ 9,38,358 as per revised rate for the period till September 2013. MRF contested the demand stating that the wireless operations were made by them within 5 KM radius only, even though it was an all India licence and requested (December 2012) DoT to reconsider the revision of spectrum charges notice. It was noticed that MRF did not obtain WOL and had not paid spectrum charges as yet. The spectrum charges along with penalty due for the period from 01 April 2012 to 30 September 2017 at revised rates worked out to be ₹ 55.33 lakh.

**Paragraph 2.1.12.4**

### **Chapter- III Department of Posts (DoP)**

#### **Audit of Core Insurance Solution (CIS) in Department of Post**

Unique customer ID were not generated resulting in failure in exercising necessary system based controls on the financial limit on sum assured for an insurant. Despite specific provision in the Request For Proposals (RFP) for Financial Services System Integrator for IT Modernisation Project, functional deficiencies existed in the system in areas like medical examination of insurant, revival of lapsed policies, Agency Management System and Work Flow methodologies. There were computational errors in surrender value, rebate and interest leading to manual intervention. Changes made in POLI Rules were not incorporated immediately in the Core Insurance Solution (CIS) through necessary modifications in the software. Due to non-integration of CBS with CIS neither insurant could pay premium/loan amount by auto transfer nor department could credit maturity value/ loan to his POSB account. System suffered IT deficiencies like Multiple Log on Functionality, Unrestricted rights/privileges to System Administrator, non-availability of user log and audit trail. There were inadequate IT controls in bulk upload facilities, lack of supervisory controls in premium cancellation, inadequate controls in suspense maintenance and Lack of functionalities in Fraud management system. Disaster Recovery Centre was non-functional on account of non-loading of CIS Application software. Roll out of CIS in Port Blair HO and Army Postal service (APS) was not carried out due to which the policies of these two centres were being maintained in the system of National Informatics Centre (NIC) causing inconvenience to the department as well as to the customers. Department failed to adhere to timeline prescribed for delivery of services in Citizen Charter due to poor planning and implementation.

**Paragraph 3.1**

### **Stocking of Cash Certificates in Department of Posts (DoP)**

**Non-linking of Receipts of Cash Certificates (CCs) from India Security Press (ISP), Nasik with the indents placed by Circle Stamp Depots (CSD) resulted in excess receipt and resultant accumulation of CCs at the CSDs. As the retention of the certificates in the CSDs is prone to misuse, DoP needs to take immediate action to ensure that all the unsold certificates are obtained by ISP Nasik for appropriate disposal.**

*Paragraph 3.2*

### **Chapter- IV Public Sector Undertakings under the Ministry**

#### **Telecom services provided by Bharat Sanchar Nigam Limited (BSNL) in North Eastern Region (NER) of India**

Bharat Sanchar Nigam Limited (BSNL) failed in implementing Comprehensive Telecom Development Plan (CTDP) for North Eastern Region (NER) approved by the Cabinet in September 2014 .This was because of failure of the major tenders under CTDP as given below:

- Tender relating to Survey, Planning, Supply, Installation, Testing, Commissioning, Integration with existing core network and Operations & Maintenance for five years of 2G Global System For Mobile Communications (GSM) Network along with Very Small Aperture Terminal (VSAT), Network Hub & radio backhaul to provide coverage in uncovered villages at an estimated project cost of ₹ 1460 crore in April 2016 .
- Tender relating to laying of Under Ground (UG) cable, cable ducts, etc. issued by Chief General Manager (CGM) Telecom Stores, Kolkata in February 2015 and the tender for procurement of Dense Wavelength Division Multiplexing (DWDM) equipment floated by BSNL Corporate office in February 2015.

Thus, due to failure of the above two major tenders the objective of CTDP i.e. rollout for 2G coverage in uncovered areas of NER and OFC Ring connectivity along with augmentation of transmission media was yet to be achieved.

Regional Trunk Planning Committee (RTPC) approved (April 2008 and June 2014) 116 OFC routes for rehabilitation work in Assam, NE-I and NE-II Circles. The works were to be executed by North East Task Force (NETF), Guwahati. The progress of work was 10 *per cent* in Assam and nil in NE-I and NE-II as on date and the delays ranged between 3 to 10 years. Due to poor progress of rehabilitation OFC work in the region, BSNL hired media mostly from M/s Oil India Ltd and M/s Power Grid Corporation of India Ltd (PGCIL).

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Nagaland does not have a single tower within 10 Km range of 215 Km long international border with Myanmar while the tower density was 130 Km/tower in Arunachal Pradesh, 99.5 Km /tower in Manipur and 170 Km/tower in Mizoram. Further, although MHA had proposed to DoT for creation of communication infrastructure in the form of towers in the border areas with the funds available under USOF, DoT stated that DoT/USOF did not propose to fund the provision of mobile services in border and naxal affected areas. Thus, even though MHA initiated the proposal for improving telecom services in border areas of North Eastern Region as early as 2014, there was virtually no progress resulting in spill-over signals from neighboring countries being used by the civilians posing threat to national security/economy.

Mean time to Repair (MTTR) is the sum of duration of repair time in hours for all the fault incidences in a quarter divided by total number of fault incidences in a quarter. MTTR was higher than the bench mark of “less than or equal to eight hours” fixed by Telecom Regulatory Authority of India (TRAI) in Assam, NE-I, ETR Circles and Sikkim SSA during the years from 2014-15 to 2016-17.

***Paragraph 4.1***



# CHAPTER-I

## INTRODUCTION

### 1.1. About this Report

This Report of the Comptroller and Auditor General (CAG) of India for the year ended 31 March 2017 relates to matters arising from Audit of financial transactions of Ministry of Communications (MoC) and Ministry of Electronics & Information Technology (MeitY) under the Government of India including Departments/Public Sector Undertakings (PSUs) under the administrative control of these Ministries.

This Chapter provides a profile of the Ministry/Departments/entities under these Ministries and a brief analysis of their receipt and expenditure. This chapter also includes follow up on audit observations on these Ministries/Departments and PSUs under the Ministries. Chapters II to IV relate to present findings/observations arising out of the Audit of Department of Telecommunications (DoT), Department of Posts (DoP) and Public Sector Undertakings (PSUs) under these Ministries respectively.

### 1.2. Authority for Audit

The authority for audit by the CAG and reporting to the Parliament is derived from Articles 149 and 151 of Constitution of India and CAG's (Duties, Powers & Conditions of Service (DPC)) Act, 1971. CAG conducts audit of expenditure of Ministries/Departments of the Government of India under Sections 13<sup>1</sup> and 17<sup>2</sup> and audit of PSUs under Section 19<sup>3</sup> of the CAG's (DPC) Act.

### 1.3. Planning and conduct of Audit

Audit is conducted in accordance with principles and practices enunciated in auditing standards and performance audit guidelines promulgated by the CAG. The audit process starts with the assessment of risk of the Ministry/Department/PSU. Based on this risk assessment, the frequency and extent of audit are decided.

### Profile of Audited Entities

### 1.4. Ministry of Communications

#### 1.4.1. Department of Telecommunications (DoT)

Department of Telecommunications (DoT) is responsible for policy formulation, performance review, monitoring, international cooperation and Research &

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<sup>1</sup> Audit of (i) all expenditure from the Consolidated Fund of India, (ii) all transactions relating to Contingency Funds and Public Accounts and (iii) all trading, manufacturing, profit and loss accounts, balance-sheets and other subsidiary accounts

<sup>2</sup> Audit and report on the accounts of stores and stock kept in any office or department of the Union or of a State

<sup>3</sup> Audit of accounts of Government companies and corporations (not being companies) established by or under law made by Parliament

Development in telecommunication sector. The Department also allocates frequency and manages radio communications in close coordination with international bodies. It is also responsible for enforcing wireless regulatory measures and monitoring the wireless transmission of all users in the country. The Department is also responsible for grant of licenses to operators for providing basic and value added services in various telecom circles as per the approved policy of the Government.

➤ **Analysis of Revenue and Expenditure**

The comparative position of revenue and expenditure of DoT during 2016-17 and in the preceding four years is given in the table below:

**Table-1: Revenue and Expenditure of DoT**

(₹ in crore)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
Revenue	18,902.00	40,113.76	30,624.18	55,129.10	70,241.14
Expenditure	9,273.38	10,835.57	13,026.14	23,584.81	31,067.78

(Source: Appropriation and Finance Accounts of DoT)

Major components of Expenditure are expenses on account of communication services (58 per cent) and pension and other retirement benefits (30 per cent approx.). Major sources of revenue of the department are license fee and spectrum usage charges received from telecom service providers. The details of license fee and spectrum usage charges received during the last five years are given below:

**Table-2: Details of License Fee and Spectrum Usage Charges received**

(₹ in crore)

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
License Fee	11,456.48	14,628.47	12,358.29	15,771.27	15,614.44
Spectrum Revenue <sup>4</sup>	7,401.43	25,150.85	17,841.93	36,486.91	53,860.69

(Source: Finance Accounts, Union Government 2016-17)

During 2016-17, Spectrum Usages charges increased by 47.62 per cent over 2015-16 due to increase in receipts from Mobile Services.

➤ **Brief Profile of the Telecom Sector**

Telecommunications has evolved as one of the critical components of economic growth required for overall socio economic development of the country. The telecom sector witnessed phenomenal growth during the past decade. During the period from 2012-13 to 2016-17, the number of telephone subscribers increased from 89.80 crore to 119.50 crore. The status of overall growth for the year 2012-13 to 2016-17 in the telecom sector is given below:

<sup>4</sup> Includes Spectrum Usage Charges and Auction Fee (both Upfront as well as Deferred Payment).

**Table-3: Status of Growth in the Telecom Sector**

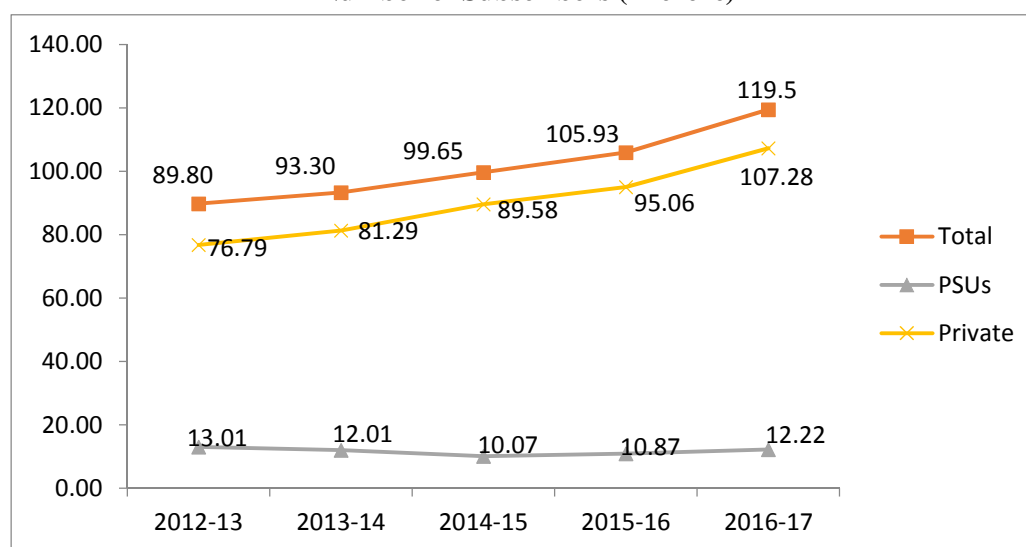
Year	Subscribers (in crore)					Tele density (in percentage)		
	Total	Rural	Urban	Wireline	Wireless	Overall	Rural	Urban#
2012-13	89.80	34.92	54.88	3.02	86.78	73.32	41.02	146.96
2013-14	93.30	37.77	55.53	2.85	90.45	75.23	43.96	145.78
2014-15	99.65	41.93	57.72	2.66	96.99	79.38	48.37	148.61
2015-16	105.93	44.78	61.16	2.52	103.41	83.40	51.26	154.18
2016-17	119.50	50.18	69.32	2.44	117.06	91.08	56.47	166.71

(Source: Annual Reports of Department of Telecommunications (DoT))

# Percentage tele density in urban areas is more than 100 per cent due to the fact that most of the customers have more than one connection.

Growth of telecom sector during the last five years in terms of subscriber base is depicted in the graph given below:

**Chart 1: Growth in subscriber base - Private versus PSUs**  
Number of Subscribers (in crore)



(Source: Monthly Telecom Scenario from DoT)

As is evident from the above graph, the subscriber base of Private Telecom companies is significant in comparison to Public Sector Telecom companies. During the last five years, the subscriber base of PSUs reduced by 7 per cent (from 13.01 crore in 2012-13 to 12.22 crore in 2016-17) whereas subscribers of private companies increased by 40 per cent (from 76.79 crore to 107.28 crore) during the same period.

### ➤ Regulatory Framework of the sector

#### Telecom Regulatory Authority of India (TRAI)

Telecom Regulatory Authority of India (TRAI) was established with effect from 20 February 1997 by an Act of the Parliament to regulate telecom services including fixing/revision of tariffs for telecom services which was earlier vested in the Central

Government. The main objective of TRAI is to provide an environment, which is fair and transparent, encourages competition, promotes a level-playing field for all service providers, protects the interest of consumers and enables outreach of technological benefits to one and all. Under the TRAI Act, TRAI is mandated to

- ❖ ensure compliance of the terms and conditions of telecom licenses;
- ❖ lay down the standards of quality of service to be provided by the service providers and ensure the quality of service;
- ❖ specify tariff policy and recommend conditions for entry of new service providers as well as terms and conditions of license to a service provider;
- ❖ considerations and decisions on issues relating to monitoring of tariff policy, commercial and technical aspects of interconnection;
- ❖ principles of call routing and call handover;
- ❖ free choice and equal ease of access for the public to different service providers;
- ❖ resolution of conflicts that may arise due to market developments and diverse network structures for various telecom services;
- ❖ need for up-gradation of the existing network and systems; and
- ❖ development of forums for interaction amongst service providers and interaction of the Authority with consumer organisations.

The Government, by notification dated 09 January 2004 defined broadcasting services and cable services as telecommunication services thus bringing these sectors under the ambit of TRAI. TRAI is also required to make recommendations either *suo-motu* or on a reference from the licensor i.e. Department of Telecommunications, Ministry of Communications or Ministry of Information and Broadcasting in the case of Broadcasting and Cable Services.

### **Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT)**

Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT) was set up effective from 24 January 2000 by way of an amendment to the TRAI Act to adjudicate any dispute between a licensor and a licensee, between two or more service providers, between a service provider and a group of consumers and to hear and dispose off appeals against any direction, decision or order of TRAI.

### **➤ Important DoT Units**

Department of Telecommunications includes Telecom Enforcement and Resource Monitoring (TERM) Cell, Controller of Communications Accounts (CCAs), Wireless Planning and Coordination Wings (WPC), Telecom Engineering Centre (TEC), National Telecommunications Institute for Policy Research (NTI), National Institute of

Communication Finance (NICF) and Centre for Development of Telematics (C-DoT) which is a Research and Development Unit.

#### ➤ **Universal Service Obligation Fund (USOF)**

To give impetus to rural telephony, Government of India constituted a Universal Service Obligation Fund (USOF) by an Act of Parliament with effect from 01 April 2002. The resources for meeting Universal Service Obligation (USO) were to be raised through a Universal Access Levy (UAL) as a percentage of revenue earned by all telecom operators under various licences. As per Para 9B of the Indian Telegraph Act, 2003, the sums of money received towards USOF shall be first credited to Consolidated Fund of India and the Central Government may, if the Parliament by appropriation on this behalf so provides, credit such proceeds to the fund from time to time for being utilized exclusively for meeting USO. An amount of ₹ 85,716.80 crore was collected by DoT as USO levy upto 31 March 2017 and credited to Consolidated Fund of India. However, out of this amount, only ₹ 37,309.26 crore (43.53 *per cent*) was received by DoT through appropriation by Parliament and credited to USO Fund as of 31 March 2017. This included ₹ 6,948.64 crore adjusted in 2008-09 on account of reimbursement to Bharat Sanchar Nigam Limited (BSNL) during the years 2002-06 towards License Fee and Spectrum Charges for fulfilling rural obligation under USOF. Thus, an amount of ₹ 48,407.54 crore has still not been transferred to the USOF by the Government of India.

#### **1.4.2. Public Sector Undertakings (PSUs) under administrative control of the Department**

Brief profile of important PSUs under administrative control of the Department is given below:

##### **Bharat Sanchar Nigam Limited**

Bharat Sanchar Nigam Limited (BSNL), fully owned by Government of India, formed in October 2000, provides telecom services across the length and breadth of the country excluding Delhi and Mumbai. BSNL is a technology oriented company and provides various types of telecom services namely telephone services on landline, Wireless in Local Loop (WLL) and Global System for Mobile Communications (GSM), Broadband, Internet, Leased Circuits and Long Distance Telecom Service. The Company's total revenue during the year 2016-17 was ₹ 31,533.44 crore and it incurred a loss of ₹ 4,793.21 crore.

The overall performance of the company in the past three years is detailed below:

**Table-4: Performance of BSNL during last three years**

Year	Revenue	Expenditure	Loss	Subscriber base		
				Wireline	Wireless	Total
	(₹ in crore)			(in crore)		
2014-15	28,645.20	37,292.10	8,234.09	1.64	7.72	9.36
2015-16	32,918.70	36,742.72	3,879.92	1.48	8.68	10.16
2016-17	31,533.44	36,326.65	4,793.21	1.38	9.62	11.00 <sup>5</sup>

An analysis of the above data reveals that although the revenue of the company increased during 2015-16, however it decreased during 2016-17. Further, the subscriber base of wireline consumers showed decreasing trend whereas it increased in case of wireless subscribers during 2014-15 to 2016-17.

### **Mahanagar Telephone Nigam Limited**

Mahanagar Telephone Nigam Limited (MTNL) was set up in 1986, under the Companies Act, 1956 as a wholly owned Government Company and is responsible for the control, management and operation of telecommunications networks in Delhi and Mumbai. MTNL is the principal provider of fixed line telecommunication service and GSM mobile services in these two metropolitan cities. MTNL also provides dial up internet services in Delhi and Mumbai under separate non-exclusive license agreement. It also provides broadband and 3G services. The Government disinvested 20 *per cent* shares to banks/their subsidiaries and financial institutions in 1994. MTNL is a listed Company as on date and 56.25 *per cent* shares are with Government and rest with private shareholders. The Company's total revenue during the year 2016-17 was ₹ 3,552.46 crore and it incurred a loss of ₹ 2,970.57 crore.

The overall performance of the company in the past three years is detailed below:

**Table-5: Performance of MTNL during last three years**

Year	Revenue	Expenditure	Loss	Subscriber base		
				Wireline	Wireless	Total
	(₹ in crore)			(in crore)		
2014-15	3,821.06	6,723.48	2,893.41	0.36	0.35	0.71
2015-16	3,512.71	6,351.19	2,005.74	0.35	0.36	0.71
2016-17	3,552.46	6,497.91	2,941.08	0.35	0.36	0.71

The revenue of the company marginally increased during the year 2016-17 when compared to 2015-16. The expenditure showed a downward trend during the period

<sup>5</sup> Subscriber base is available as per Annual Report of DoT (up to November 2016)

from 2014-15 to 2016-17. The subscriber base of wireline and wireless consumer more or less remained the same.

#### **Millennium Telecom Limited (MTL)**

Millennium Telecom Limited (MTL) was formed as wholly owned subsidiary company of Mahanagar Telephone Nigam Limited (MTNL) in the year 2000 for setting up submarine cable project and to provide IT solutions. The Company's total revenue was ₹ 5.12 crore and it earned a profit of ₹ 0.40 crore during the year 2016-17.

#### **Indian Telephone Industries Limited (ITI)**

ITI is India's pioneering venture in the field of telecommunications. ITI started its operations in Bengaluru in 1948, which were further extended to other areas by setting up manufacturing plants at Srinagar in Jammu and Kashmir, Naini, Rae Bareli and Mankapur in Uttar Pradesh and Palakkad in Kerala. The Company's total revenue during the year 2016-17 was ₹ 1,903.99 crore and it earned a profit of ₹ 304.88 crore.

#### **Telecommunications Consultants India Limited (TCIL)**

Telecommunications Consultants India Limited (TCIL), fully owned by Government of India, was set-up in 1978 with the main objective of providing world class technology in all the fields of telecommunications and information technology, to excel in its operations in the overseas and domestic markets by developing proper marketing strategies and to acquire state-of-the-art technology. The Company's total revenue during the year 2016-17 was ₹ 1,205.11 crore and it earned a profit of ₹ 70.82 crore.

#### **Tamilnadu Telecommunications Limited (TTL)**

Tamilnadu Telecommunications Limited (TTL) was incorporated in 1988 as a three way joint venture of TCIL (49 *per cent*), Tamilnadu Industrial Development Corporation Limited (TIDCO) (14.63 *per cent*) and Fujikura Limited of Japan (7.18 *per cent*). The balance shares are held by banks and financial institutions, private trust, Non-Resident Indians (NRIs) and the Indian public. TTL manufactures optical fibre cables for Telecommunications. This company has been referred to BIFR and a scheme of restructuring was sanctioned on 21 July 2010. It has also diversified into Tablet PC and FTTH (Fibre to the Home) components. The Company's total revenue in 2016-17 was ₹ 2.68 crore and it incurred a loss of ₹ 16.26 crore.

#### **Intelligent Communications Systems India Limited (ICSIL)**

Intelligent Communications Systems India Limited (ICSIL) was incorporated in 1987 as a joint venture of TCIL and Delhi State Industrial and Infrastructure Development Corporation (DSIIDC), an undertaking of Delhi Government, where TCIL has 36 *per cent* shareholding and DSIIDC has 40 *per cent* shareholding. The company is

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engaged in trading of hardware items such as computer/telecom/IT equipment of reputed brands. It also supplies manpower to various organizations and provides education through licensees under individual agreements with each one of them. It also undertakes annual maintenance contracts of hardware items. The Company's total revenue during 2016-17 was ₹ 147.81 crore and it earned a profit of ₹ 3.66 crore.

### **TCIL-Bina Toll Road Limited**

TCIL-Bina Toll Road Limited is a fully held subsidiary of TCIL and was incorporated in 2012. This company was created with the objective of execution of Infrastructural Project viz. the Toll Road Project between Bina and Kurwai Town in the State of Madhya Pradesh, India on design, build, finance, operate and transfer (DBFOT) basis. The company started its commercial operation in April 2014. The Company's total revenue during the year 2016-17 was ₹ 5.15 crore and it incurred a loss of ₹ 10.46 crore.

### **TCIL-Lakhnadone Toll Road Limited**

TCIL-Lakhnadone Toll Road Limited, a fully held subsidiary of Telecommunications Consultants India Limited (TCIL) was incorporated in 2013. It's a Special Purpose Vehicle created with an objective of executing the Concessionaire Agreement with Madhya Pradesh Road Development Corporation Limited (MPRDC) for the development of Lakhnadone Toll Road Project. Concessionaire agreement with MPRDC was entered into by TCIL in September 2011 and a tripartite agreement was entered into between TCIL, MPRDC and the Company in August 2014 to substitute the name of TCIL with that of the Company. Further, TCIL would work as a supporting organization till completion of the project and hand it over to the Company. The company earned revenue of ₹ 1.93 crore and incurred a loss of ₹ 4.64 crore during 2016 -17.

### **Bharat Broadband Network Limited (BBNL)**

Bharat Broadband Network Limited (BBNL), a special purpose vehicle (SPV) has been incorporated in 2012 under the Companies Act, 1956 to execute National Optical Fibre Network Project (NOFN). BBNL has been given responsibility to connect approximately 2.50 lakh Gram Panchayats (GPs) of the country through Optical Fibre utilizing existing fibers of PSUs viz. BSNL, RailTel and Power Grid and laying incremental fiber wherever necessary to bridge the connectivity gap between Gram Panchayats and Blocks, which would ensure broadband connectivity with adequate bandwidth. The Company's total revenue was ₹ 106.33 crore and it earned a profit of ₹ 22.85 crore during the year 2016-17.



### Hemisphere Properties India Limited (HPIL)

Hemisphere Properties India Limited (HPIL), a public limited company, was incorporated in 2005 and became a Government company from 18 March 2014. The company was incorporated pursuant to clause 7.10 of Share Purchase Agreement and 4.7 of Share Holders Agreement executed on 13 February 2002 between the Government of India and M/s Panatone Finvest Limited and other Tata Group companies wherein the surplus land identified at the time of disinvestment of Videsh Sanchar Nigam Limited (VSNL) was to be demerged into the Company. Government of India owns 51.12 *per cent* equity shares through Department of Telecommunications and remaining are owned by M/s. Tata Capital Limited and Af-taab Investment Company Limited. The paid up share capital of the company is ₹ 5.00 lakh. The company earned a revenue of ₹ 5.88 lakh during the year 2016-17 and incurred a loss of ₹ 1.02 lakh.

### 1.4.3. Department of Posts (DoP)

The postal network of India is the largest network in the world having more than 1.54 lakh post offices and extends to the remotest corners of the country. While the core activity of the Department is processing, transmission and delivery of mail, there are also a diverse range of retail services undertaken by the Department which include money remittance, banking as well as insurance. It is also engaged in disbursement of Pension and Family Pension to Military and Railway pensioners, Family Pension to families of coal mine employees and industries covered by the Employees Provident Fund Scheme. The Postal Department has also undertaken responsibility for social benefit payments such as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and social security pension schemes.

### Financial Performance

The earnings of the Department are in the form of 'Revenue Receipts' and 'Recoveries'<sup>6</sup>. The revenue receipts, recoveries and revenue expenditure of DoP for the years 2012-13 to 2016-17 are shown in the table below:

**Table-6: Revenue receipts and Revenue expenditure of DoP**

(₹ in crore)

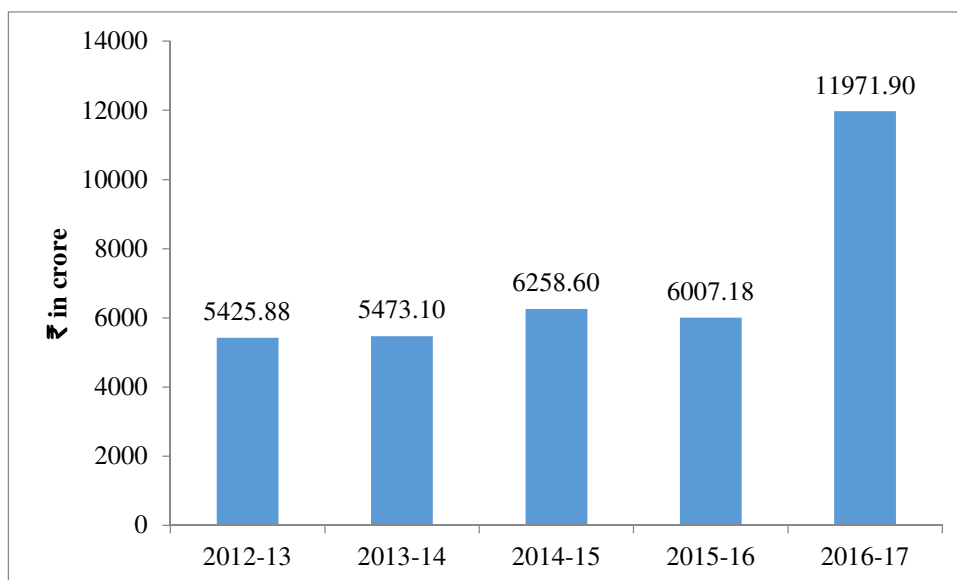
Year	Revenue Receipts	Recoveries	Revenue Expenditure	Deficit (2)+(3)-(4)
(1)	(2)	(3)	(4)	(5)
2012-13	9,366.50	688.77	15,481.15	5,425.88
2013-14	10,730.42	593.19	16,796.71	5,473.10
2014-15	11,635.98	661.98	18,556.56	6,258.60
2015-16	12,939.79	707.70	19,654.67	6,007.18
2016-17	11,511.00	730.90	24,211.85	11,971.90

(Source: Appropriation Accounts of DoP)

<sup>6</sup> Represents recoveries on account of Services rendered to other Governments and Departments of Union Government

There was a deficit of ₹ 11,971.90 crore on postal services<sup>7</sup> in 2016-17. The main reason for the deficit as attributed by the Department was increase in Working Expenses due to increased expenditure under salary, domestic travel expenses, office expenses, professional services and other charges, etc. The comparative position of deficit in postal services during the period from 2012-13 to 2016-17 is as under:

**Chart 2: Deficit in Postal Services**



#### **1.4.4. Public Sector Undertakings under the Administrative Control of the Department**

##### **India Post Payments Bank Limited**

India Post Payments Bank Limited (IPPB) was incorporated as a Public Limited Company on 17 August 2016, under the Department of Posts, with 100 *per cent* equity from Government of India. The Company commenced operations with effect from 28 January 2017. IPPB will offer demand deposits, such as savings and current accounts, up to a balance of ₹ 1 lakh, digitally enabled payments and remittance services between entities and individuals and also provide access to third-party financial services, such as insurance, mutual funds, pension, credit products, forex, etc. in partnership with insurance companies, mutual fund houses, pension providers, banks, international money transfer organizations, etc. The Company's total revenue was ₹ 44.98 crore and it earned a profit of ₹ 2.22 crore during the period ending 31 March 2017.

#### **1.5. Ministry of Electronics and Information Technology (MeitY)**

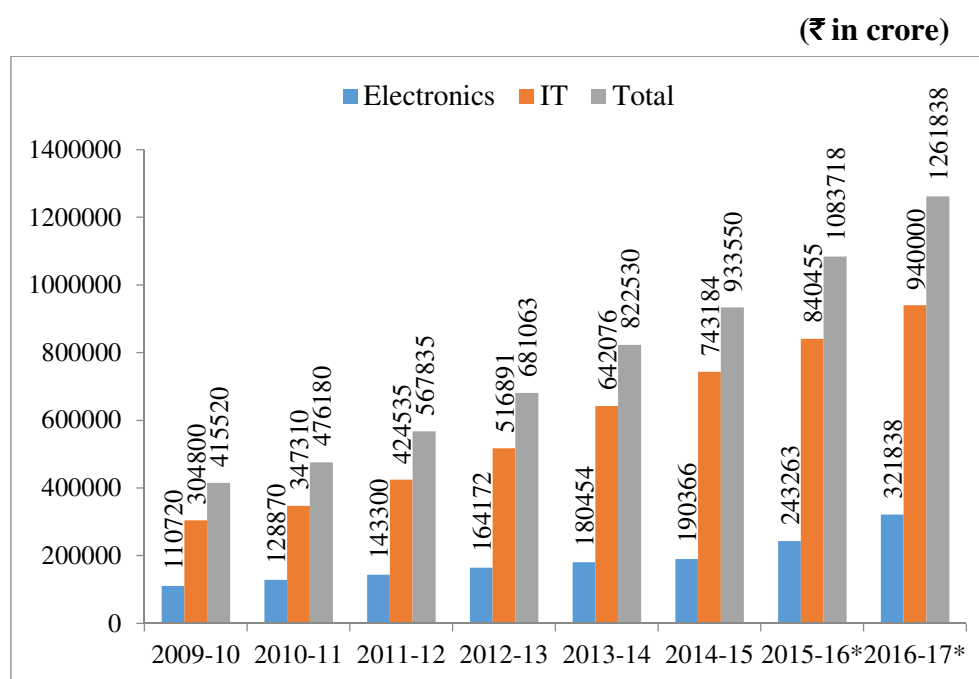
Ministry of Electronics and Information Technology (MeitY) plays an important role in the development of Electronics and Information Technology sector. The vision of

<sup>7</sup> Deficit was calculated as the difference between revenue receipts plus recoveries and revenue expenditure, i.e., {₹ 11,511.00+ ₹ 730.90} - ₹ 24,211.85}

MeitY is e-Development of India as the engine for transition into a developed nation and an empowered society.

The Indian IT industry has been contributing substantially to India's GDP, exports and employment. Production and growth of Indian Electronics and IT-ITeS (Information Technology Enabled Services) industry from 2009-10 to 2016-17 is given in the chart below:

**Chart 3: Electronics and IT production**



(Source: Annual Report of MeitY)

\* Estimated figures are based on inputs from Industry Associations, Ministries and other Organizations.

The main reason for sustained overall growth of the Electronics and IT-ITeS industry as considered by the department is relatively higher growth in software and services which are largely export driven and also dominate the electronics and IT sector.

In order to carry out its functions, MeitY is provided with budgetary support in the form of Grants from the Government of India. The Grants received vis-à-vis Expenditure incurred by MeitY during the period from 2012-13 to 2016-17 is given in the table below.

**Table-7: Grants vis-à-vis expenditure**

(₹ in crore)

Year	Amount of Grant	Total Expenditure
2012-13	3,051	1,903
2013-14	3,052	2,166
2014-15	3,929	3,583
2015-16	2,759	2,594
2016-17	3,719	3,641

(Source: Appropriation Accounts of MeitY)

There are five organizations<sup>8</sup> and seven Autonomous Societies<sup>9</sup> under MeitY in addition to one statutory authority viz. Unique Identification Authority of India (UIDAI) and two attached offices viz. National Informatics Centre (NIC) and Standardisation, Testing and Quality Certification Directorate (STQC).

### **Unique Identification Authority of India (UIDAI)**

The Unique Identification Authority of India (UIDAI) is a statutory authority established under the provisions of the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 (“Aadhaar Act 2016”) on 12 July 2016 by the Government of India, under the Ministry of Electronics and Information Technology (MeitY).

Prior to its establishment as a statutory authority, UIDAI was functioning as an attached office of the then Planning Commission (now NITI Aayog) vide its Gazette Notification No.-A-43011/02/2009-Admn.I) dated 28th January, 2009. Later, on 12 September 2015, the Government revised the Allocation of Business Rules to attach the UIDAI to the Department of Electronics & Information Technology (DeitY) of the then Ministry of Communications and Information Technology.

UIDAI was created with the objective to issue Unique Identification numbers (UID), named as "Aadhaar", to all residents of India that is (a) robust enough to eliminate duplicate and fake identities, and (b) can be verified and authenticated in an easy, cost-effective way. Expenditure of UIDAI during 2016-17 was ₹ 1132.84 crore against budgetary grant of ₹ 1135.27 crore.

### **National Informatics Centre (NIC)**

National Informatics Centre (NIC) provides network backbone and e-Governance support to Central Government, State Governments, UT Administrations, Districts and other Government bodies. It offers a wide range of Information and Communication Technology (ICT) services in close collaboration with Central and State Governments in the areas of

- (a) Centrally sponsored schemes and Central Sector schemes,
- (b) State sector and State sponsored projects, and
- (c) District Administration sponsored projects.

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<sup>8</sup> Controller of Certifying Authorities (CCA), Cyber Appellate Tribunal (CyAT), Semiconductor Integrated Circuits Layout-Design Registry, Indian Computer Emergency Response Team (ICERT) and .In Registry

<sup>9</sup> Education & Research in Computer Networking (ERNET), Centre for Development of Advanced Computing (C-DAC), Centre for Materials for Electronics Technology (C-MET), National Institute of Electronics and Information Technology (NIELIT), Society for Applied Microwave Electronics Engineering and Research (SAMEER), Software Technology Parks of India (STPI) and Electronics and Computer Software Export Promotion Council (ESC)

### **Standardisation, Testing and Quality Certification Directorate (STQC)**

STQC, established in year 1980, is an internationally recognized Assurance Service Provider to both Hardware and Software sectors to provide state of art technology based quality assurance services to its clients and to align with MeitY mandate to focus on IT sector. Expenditure of STQC during 2016-17 was ₹ 108.26 crore against budgetary grant of ₹ 115.00 crore.

#### **1.5.1. Public Sector Undertakings (PSUs) under administrative control of the Ministry**

Brief profile of important PSUs under administrative control of the Department is given below:

##### **Digital India Corporation**

Digital India Corporation, formerly known Media Lab Asia, is a ‘not for profit’ company set up under Section 25 of the Companies Act, 1956 with an objective to bring the benefits of ICT to the common man. The application areas of the company include use of ICT for Healthcare, Education, Livelihood and Empowerment of Disabled. It is a company which is limited by guarantee and does not have any share capital. The audit of this company was entrusted to CAG under the provisions of sections 143(5) and 143(6) of Companies Act, 2013. The company works with leading institutions for undertaking development work. The Company earned ₹ 279.31 crore during 2016-17 of which ₹ 279.29 crore (99.99 *per cent*) was received through Grant-in-aid.

##### **National Informatics Centre Services Inc. (NICSI)**

National Informatics Centre Services Inc. (NICSI) was set up in 1995 under Section 25 of the Companies Act, 1956 under National Informatics Centre to provide total IT solutions to the Government organizations. The main objectives of NICSI are to provide economic, scientific, technological, social and cultural development of India by promoting utilization of Information Technology. The Company’s total revenue was ₹ 1,327.07 crore and surplus after tax during the year 2016-17 was ₹ 64.41 crore.

#### **1.6. Budget and Expenditure Controls**

A summary of Appropriation Accounts for 2016-17 in respect of DoT, DoP and MeitY is given in Table 8:

**Table-8:**  
**Details of grants (voted and charged) received and expenditure incurred for the two**  
**Departments under Ministry of Communications and Ministry of Electronics &**  
**Information Technology**

(₹ in crore)

Sl. No.	Ministry/Department	Grant/Appropriation (including supplementary grant)	Total Expenditure	(-) Savings/ (+) Excess
1.	Department of Telecommunications	31,167.04	31,067.78	(-) 99.26
2.	Department of Posts	23,832.36	24,716.30	(+) 883.94
3.	Ministry of Electronics and Information Technology	3,718.89	3,641.38	(-) 77.51

(Source: Appropriation Accounts of the Departments for 2016-17)

### 1.7. Recoveries at the instance of Audit

During the course of Audit, an instance of excess payment by BSNL was noticed as detailed below:

BSNL entered (February 2008) into agreements with various Infrastructure Providers (IPs) for the purpose of providing telecom services. As per the agreements, payments were to be made to IPs considering "Basic Composite Rate". Though the rates were amended and were applicable for sites installed after a particular date, BSNL continued to make payments at old rates resulting in excess payment of ₹ 9.13 crore. An amount of ₹ 9.03 crore was recovered after being pointed out by Audit.

### 1.8. Follow up on Audit Reports-(Civil)

The Lok Sabha Secretariat issued instructions in April 1982 to all Ministries to furnish notes to the Ministry of Finance (Department of Expenditure), indicating remedial/corrective action taken on various paragraphs contained in the Audit Reports, soon after these were laid on the Table of the House.

In their Ninth Report (Eleventh Lok Sabha) presented to the Parliament on 22 April 1997, the Public Accounts Committee (PAC) desired that submission of pending Action Taken Notes (ATNs) pertaining to Audit Reports for the years ended March 1994 and 1995 should be completed within a period of three months and recommended that ATNs on all paragraphs pertaining to the Audit Reports for the year ended March 1996 onwards be submitted to them duly vetted by Audit, within four months from the laying of the Reports in Parliament.

Further, the Committee, in their Eleventh Report (Fifteenth Lok Sabha) presented to the Parliament on 29 April 2010, recommended that the Chief Accounting Authorities

should be made personally accountable in all cases of abnormal delays in taking remedial action and submitting ATNs to PAC.

A review of the position of receipt of ATNs on paragraphs included in Audit Reports, Union Government (Communications & IT) up to the year 2017 revealed that ATNs in respect of 43 paragraphs relating to two departments under MoC viz. DoP & DoT and 1 paragraph pertaining to MeitY were pending as of January 2018 as detailed in *Appendix-I*.

### **1.9. Follow up on Audit Reports - (Commercial)**

Audit Reports of the Comptroller and Auditor General (CAG) represent the culmination of the process of scrutiny of accounts and records maintained in various offices and departments of PSUs. It is, therefore, necessary that appropriate and timely response is elicited from the Executive on the audit findings included in the Audit Reports.

The Lok Sabha Secretariat requested (July 1985) all the Ministries to furnish notes (duly vetted by Audit) indicating remedial/corrective action taken by them on various paragraphs/appraisals contained in the Audit Reports (Commercial) of the CAG as laid on the table of both the Houses of Parliament. Such notes were required to be submitted even in respect of paragraphs/appraisals which were not selected by the Committee on Public Sector Undertakings (COPU) for detailed examination. The COPU in its Second Report (1998-99 Twelfth Lok Sabha), while reiterating the above instructions, recommended:

- Setting up of a monitoring cell in each Ministry for monitoring the submission of Action Taken Notes (ATNs) in respect of Audit Reports (Commercial) on individual Public Sector Undertakings (PSUs);
- Setting up of a monitoring cell in Department of Public Enterprises (DPE) for monitoring the submission of ATNs in respect of Reports containing paras relating to a number of PSUs under different Ministries; and
- Submission to the Committee, within six months from the date of presentation of the relevant Audit Reports, the follow up of ATNs duly vetted by Audit in respect of all Reports of the CAG presented to Parliament.

While reviewing the follow up action taken by the Government on the above recommendations, the COPU in its First Report (1999-2000-Thirteenth Lok Sabha) reiterated its earlier recommendations that the DPE should set up a separate monitoring cell in the DPE itself to monitor the follow-up action taken by various Ministries/Departments on the observations contained in the Audit Reports (Commercial) on individual undertakings. Accordingly, a monitoring cell has been functioning in the DPE since August 2000 to monitor the follow up on submission of ATNs by the concerned administrative Ministries/Departments. Monitoring cells have

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also been set up within the concerned Ministries for submission of ATNs on various Reports (Commercial) of the CAG.

Further, in the meeting of the Committee of Secretaries (June 2010) it was decided to make special efforts to clear the pending ATNs/ATRs on CAG Audit Paras and COPU recommendations within the next three months. While conveying this decision (July 2010), the Ministry of Finance recommended institutional mechanism to expedite action in the future.

A review of the position of receipt of ATNs relating to PSUs under the administrative control of MoC and MeitY included in the Audit Reports up to the year 2017 revealed that ATNs in respect of 112 paragraphs were pending as of January 2018 as detailed in the ***Appendix-II***.



## CHAPTER-II

### DEPARTMENT OF TELECOMMUNICATIONS

#### 2.1 Performance Audit on “Spectrum Management in DoT”

##### Spectrum Management Framework

##### 2.1.1 Spectrum

Spectrum is a term to describe a band of electro-magnetic frequencies. Electromagnetic spectrum is the range of all possible frequencies of electromagnetic radiation, which in turn is a form of energy emitted and absorbed by charged particles as they travel through space exhibiting wave-like behaviour. It includes the visible spectrum (light), as well as infrared, ultraviolet and X-rays. Radio Frequency (RF) spectrum refers to the part of the electromagnetic spectrum that can be used for communication. It corresponds to frequencies from 3 KHz to 3000 GHz<sup>1</sup>. Spectrum (radio waves) is an important and essential natural scarce resource need for all wireless applications. Radio spectrum is always around us in the form of invisible waves. Radio spectrum is used by countless technologies that affect most aspects of our lives. These range from the more straightforward and longer established applications, such as listening to our favourite radio programme, watching live matches or using a mobile phone, to the more subtle and pervasive ones, such as remotely locking our car or using a satellite navigation system. Today, radio spectrum is affecting virtually everyone’s life and has become a major political topic and a significant contributor to national gross domestic product (GDP). The radio spectrum has been recognized the world-over as an important tool for socio-economic development of a nation.

The radio frequency spectrum ranging from 8.3 KHz to 275 GHz has been allocated as per table of Frequency Allocation under Article 5 of International Telecommunication Union’s (ITU) radio regulations for various radio communication services. There are 41 different type of services defined in Radio Regulations such as fixed service, mobile service, broadcasting service, radio navigation service, space operation service, radio astronomy service, aeronautical mobile service, amateur service, maritime mobile service, land mobile service, port operation service, radio determination service, mobile satellite service, radiolocation service, aeronautical satellite service, ship movement service, meteorological aids service, etc. Some spectrum (such as in the Ultra High Frequency (UHF band) - 300-3000 MHz) is suitable for a wide variety of services and is thus in great demand.

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<sup>1</sup> The number of cycles per unit of time is called the frequency. For convenience, frequency is most often measured in cycles per second (cps) or the interchangeable Hertz (Hz) (60 cps = 60 Hz). Hertz are commonly expressed in multiples: kilohertz (10<sup>3</sup> Hz, kHz), megahertz (10<sup>6</sup> Hz, MHz), gigahertz (10<sup>9</sup> Hz, GHz), and terahertz (10<sup>12</sup> Hz, THz)

Spectrum Management is the combination of administrative and technical procedures necessary to ensure the efficient operation of radio communication services. Since radio waves do not stop at national frontiers, the need for international planning of frequency allocations and protection of the legitimate use of radio spectrum has long been recognised. On the global level, the task falls upon ITU which is a specialised agency within the United Nations System. It is responsible for the regulation, standardization and development of telecommunications.

### **2.1.2 National Frequency Allocation Plan (NFAP) and National Frequency Register (NFR)**

National Frequency Allocation Plan (NFAP) is an important policy document for spectrum managers, wireless users and manufacturers in the country and facilitates optimal utilization of radio frequency spectrum for various services and applications. It is developed in consultation with stakeholders within the frame work of International Frequency Allocation Table of the ITU Radio Regulations. The current NFAP in vogue is NFAP-2011 which came into effect from 01 October 2011. National Frequency Register (NFR) is the basic record for all frequency assignments and it would be referred to identify assignable frequency for any new applicant. As such, it is utmost necessary to update the NFR by adding particulars of new assignments and deleting particulars of surrendered/withdrawn frequency assignments.

### **2.1.3 Process of allocation of spectrum**

In India, assignment of frequencies for various uses is made on the basis of NFAP. All users intending to use radio frequency submit their application to the Wireless Planning and Coordination Wing (WPC) where they are processed first for issue of an Agreement in Principle (AIP) or Decision Letter (DL) and then issue of Wireless Operating License (WOL). WOL is issued after the applicant satisfies the conditions of the AIP/DL like equipment clearance, Standing Advisory Committee on Radio Frequency Allocations (SACFA) clearance and payment of required fee. In the case of telecom service providers, signing of telecom license precedes frequency allotment.

### **2.1.4 Radio Spectrum users and types of licences**

In terms of spectrum allotment and pricing, the spectrum users are categorized in three types as Captive users, Commercial users and Broadcasters.

(i) A 'Captive user' of RF spectrum is a person to whom the WPC has assigned one or more radio frequencies within specified space-time combination(s) to meet his own needs, but not for providing any kind of broadcasting or telecommunication service(s) to others (third parties) directly using the said frequencies. Major captive users are Central/State Government Departments, Defence and Paramilitary Forces, Public Sector Undertakings (PSUs), State Police/fire services, Airport Authority and Aircrafts, Maritime, Ports and Ships, Private and other users. Spectrum assigned to State Police organizations, Central Para Military Forces, Civil Aviation are primarily

in non -International Mobile Telecommunications (IMT) bands<sup>2</sup> whereas spectrum to Defence and some PSUs are in both IMT and non-IMT bands.

(ii) A 'Commercial user' of RF spectrum is an entity to whom the WPC has assigned one or more radio frequencies within specified space-time combination(s) for providing any kind of broadcasting or telecommunication service(s) to others (third parties) directly using the said frequencies. Telecom Service Providers, Internet Service Providers, Commercial Very Small Aperture Terminal (VSAT) Service Providers, National Long Distance (NLD)/ International Long Distance (ILD) Service Providers, Public Mobile Trunking Service Providers and Private Frequency Modulation (FM) Broadcasters are major commercial users of Radio Spectrum.

(iii) Broadcasting Services users are Licensed Teleport Operators for Satellite uplinking, Licensed Digital Satellite News Gathering (DSNG) Operators, FM Broadcasting (Commercial/Community Radio), Sound and Terrestrial TV Broadcasting (Prasar Bharti), etc.

### **2.1.5 Formulation of Spectrum Management Policy**

Use of spectrum in India is governed under the provisions of Indian Wireless Telegraphy Act, 1933 and allocation of spectrum is made under the frame work of National Frequency Allocation Plan (NFAP) which is revised from time to time. Cellular services using spectrum was introduced in the country in 1994 in pursuance of National Telecom Policy (NTP) 1994. However, NTP 1994 was silent about spectrum management policy. Subsequently a New Telecom Policy (NTP) 1999 was formulated which identified the issues relating to spectrum management. It emphasized that spectrum be utilised efficiently, economically, rationally and optimally. It also stated the need for a transparent process of allocation of frequency spectrum for use by a service and making it available to various users under specific conditions. It further identified the need for re-farming of spectrum from Defence and others and to charge spectrum usage fee. However, even after formulation of NTP 1999, DoT continued to adopt administrative approach of spectrum management. Allotment of spectrum was bundled with licences and minimum spectrum of 2x4.4 MHz for GSM technology based cellular services and 2x2.5 MHz for CDMA technology based cellular services was allotted by DoT (WPC) to the companies which obtained telecom licences. Additional Spectrum beyond this start up spectrum was allotted based on subscribers linked criteria prescribed by DoT. The bundled spectrum was not liberalized spectrum.

Though the telecom sector fuelled by cellular segment (mobile phones) witnessed significant growth and penetration of telecommunications services in the country contributing significantly to the growth of the economic and social sectors and country's Gross Domestic Product (GDP), the policy of continued administrative allocation of spectrum to telecom service providers raised controversies and thus

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<sup>2</sup> IMT bands refers to spectrum band used for providing public mobile telecom services.

necessitated the revision of spectrum management policies. In this background, NTP 2012 was formulated. Major issues regarding spectrum management enumerated in NTP 2012 were as follows-

- i) To delink spectrum in respect of all future licences and to make available Spectrum at a price determined through market related processes.
- ii) To move at the earliest towards liberalisation of spectrum to enable use of spectrum in any band to provide any service in any technology as well as to permit spectrum pooling, sharing and later, trading to enable optimal utilisation of spectrum through appropriate regulatory framework.
- iii) To re-farm spectrum and allot alternative frequency bands or media to service providers from time to time to make spectrum available for introduction of new technologies for telecom applications and prepare a roadmap for availability of additional spectrum every 5 years.
- iv) To undertake periodic audit of spectrum utilisation to ensure its efficient use
- v) To make available adequate globally harmonized International Mobile Telecommunications (IMT) spectrum in 450 MHz, 700 MHz, 1800 MHz, 1910 MHz, 2.1 GHz, 2.3 GHz, 2.5 GHz, 3.5 GHz bands and other bands to be identified by ITU for commercial mobile services.
- vi) To identify additional frequency bands periodically, for exempting them from licensing requirements for operation of low power devices for public use.
- vii) To consider requirement of spectrum in certain frequency bands in small chunks at specified locations for encouraging indigenous development of technologies/ products and their deployment.
- viii) To review the existing geographical unit of allocation of spectrum with a view to identifying scope for optimization.
- ix) To promote use of white spaces with low power devices, without causing harmful interference to the licensed applications in specific frequency bands by deployment of Software Define Radios (SDRs), Cognitive Radios (CRs), etc.
- x) To establish and strengthen Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) as a Government Society for undertaking policy research in radio spectrum engineering, management/radio monitoring and related aspects.

The whole country was divided in 23 Licensed Service Areas (LSA) for awarding telecom licences and allocation of spectrum. However, in September 2005, two LSAs of Chennai Metro and Tamil Nadu (excluding Chennai) were merged and made one LSA for award of licence.

In May 2012, the Union Cabinet approved the National Telecom Policy (NTP) 2012. One of the salient features of the policy was to make available broadband on demand and use of telecom infrastructure which in turn would enable businesses in urban as well as rural areas to engage in the web-economy and e-commerce for inclusive development. The NTP 2012 envisaged to ensure adequate availability of spectrum and its allocation in a transparent manner through market related processes. It also targeted to make available additional 300 MHz spectrum for IMT services by the year 2017 and another 200 MHz by 2020. It further provided periodic audit of spectrum utilization to ensure its efficient use. Details of the guidelines for Spectrum Management under NTP 2012 are given in para 2.1.7.1 of this Report.

## **2.1.6 Organisational Arrangement**

### **2.1.6.1 Department of Telecommunications and Telecom Commission**

The work relating to formulation of telecom policy, issue of licences for various telecom services and spectrum allocation are under the overall control of Department of Telecommunication (DoT) under Ministry of Communications. Telecom Commission (TC) is the apex body in DoT whose function include formulation of telecom policy, licensing of telecom services, assignment, monitoring and control of spectrum, cooperation with various international telecom bodies, etc. TC comprises of a chairman, four full time members (Member (Finance), Member (Technology), Member (Services), Member (Production) and four part time members. Secretary, DoT is the chairman of TC.

### **2.1.6.2 Wireless Planning & Coordination Wing**

The Wireless Planning & Coordination (WPC) Wing of DoT, created in 1952, is the national radio regulatory nodal agency of the Government of India and is responsible for planning, regulating, and managing the limited resources of Radio Frequency (RF) spectrum and associated satellite orbits, including geo-stationary satellite orbit as well as licensing of wireless stations in the country. It is headed by the Wireless Advisor to the Government of India. It exercises the statutory functions of the Central Government and issues licenses to establish, maintain and operate wireless stations.

### **2.1.6.3 Standing Advisory Committee on Radio Frequency Allocations (SACFA)**

Standing Advisory Committee on Radio Frequency Allocations (SACFA) is a high level committee chaired by Secretary (DOT)/Chairman, Telecom Commission. Heads of major wireless users/administrative ministries of the Govt. of India, Member (Technology), Telecom Commission, and Wireless Adviser to the Govt. of India, Joint Secretary, DoT are its members. WPC wing of the Ministry of Communications provides secretarial help to the committee. Joint Wireless Adviser, WPC wing is the member-secretary of the Committee.

The main functions of the committee are to make recommendations on:-

- Major frequency allocation issues,
- Formulation of National Frequency Allocation Plan,
- Making recommendations on various issues related to International Telecommunications Union (ITU),
- Asia Pacific Telecommunity (APT),
- To sort out the problems referred to the committee by various wireless users, site clearance of all wireless installations in the country, etc.

#### **2.1.6.4 Regional Licensing Offices**

In the past, spectrum users were predominantly in the Government sector and private sector were using spectrum for their captive uses. Wireless licences were being issued by WPC wing of DoT. With the increase in number of spectrum users, certain wireless licences (radio paging, import, maritime mobile station, experimental, etc.) were decentralized from WPC wing to five RLOs at Delhi, Mumbai, Kolkata, Chennai and Shillong since January 2007.

#### **2.1.6.5 Wireless Monitoring Organisation (WMO)**

The Wireless Monitoring Organisation (WMO) is the field organization of the WPC wing. Wireless monitoring is an integral part of the spectrum management and this monitoring is carried out by WMO through a network of one International Satellite Monitoring Earth Station (ISMES), five International Monitoring Stations (IMSS) and 22 Wireless Monitoring Stations (WMSs) located all over India. WMO has 10 Inspection Units which carry out physical inspection of wireless installations. WMO is headquartered at New Delhi and has four Regional Headquarters (RHQs) at Delhi, Mumbai, Kolkata and Chennai. WMO is also equipped with five Radio Noise Survey Units, which undertake detailed and complicated measurements to aid in the spectrum management activity. WMO has ten Inspection Units which carry out physical inspection of wireless installations.

#### **2.1.6.6 Telecom Regulatory Authority of India (TRAI)**

Telecom Regulatory Authority of India was established by an Act of Parliament in March 1997 to regulate the telecommunication services, and for matters connected therewith or incidental thereto.

#### **2.1.6.7 Telecom Disputes Settlement and Appellate Tribunal (TDSAT)**

Telecom Disputes Settlement and Appellate Tribunal (TDSAT) was established in 2000 by an amendment to TRAI Act 1997 to take over the adjudicatory dispute resolution functions of TRAI.

### Scope and objective of Audit

The performance audit was conducted during October 2016 to January 2017 with a view to examine the efficiency and effectiveness of the spectrum management functions of Department of Telecommunications (DoT) on the basis of records/documents maintained at WPC and Wireless Planning & Finance (WPF) wings of DoT for the period from 2011-12 to 2016-17 (till December 2016). Also records of 10 Monitoring stations and Inspection units of WMO including regional and main headquarters of WMO and five (5) RLOs were also test checked.

Main objectives of conducting Performance Audit of Spectrum Management were to:-

- Examine the extent of efficient and optimal utilisation of the available spectrum in tune with the International Telecommunication Union (ITU) and internal frameworks.
- Examine realization of revenue from spectrum usage by DoT.
- Examine the monitoring mechanism of spectrum usage put in place by DoT.

### Audit criteria

Important criteria used in audit are

- Telecom Policy of DoT (NTP - 1994, 1999 and 2012)
- ITU radio regulations, International Frequency Allocation Table and National Frequency Allocation Plan.
- Relevant TRAI recommendations, TDSAT and Hon'ble Supreme Court judgements
- DoT's relevant committees' report
- Relevant orders issued by WPC and WPF wings of DoT

### Audit Methodology

An entry meeting was held with the Secretary, DoT and other senior officers of WPC and WPF wings of DoT on 27 October 2016 before actual commencement of audit. In the entry meeting, the scope and objectives of audit were explained. The audit was conducted on the basis of records/information made available by the WPC and WPF wings of DoT. Audit also accessed public documents available on the websites of DoT, TRAI, TDSAT, Supreme Court and ITU. Additional data, information and clarifications were obtained through issue of Audit Inspection Memos. Draft report was issued to DoT before holding an exit meeting with DoT on 05 October 2017. The Report takes into account, the replies by the WPC and WPF wings of DoT, which were received in October 2017.

## **Audit Acknowledgement**

We place our sincere appreciation for the cooperation extended by DoT in facilitating this audit.

## **Audit Findings**

Audit findings emanated from the Performance Audit are described in succeeding paragraphs.

### **2.1.7 Re-farming of spectrum**

As per the NTP 2012, one of the major objectives of Spectrum Management was to re-farm spectrum and allot alternative frequency bands or media to service providers from time to time to make spectrum available for introduction of new technologies for telecom applications and prepare a roadmap for availability of additional spectrum every five years. However, it was observed that the objective was partially achieved as the spectrum has not been re-farmed from different users whose needs could be fulfilled by different frequency bands as well as with less bandwidths than that had been initially allotted. The Audit observations are as given in the succeeding paragraphs:

#### **2.1.7.1 Spectrum re-farming from Defence Services for commercial telecommunication use**

In India, total spectrum allocated for GSM based mobile (cellular) services (2G/2.5G) is 2X25 MHz in 900 MHz band and 2X75 MHz in 1800 MHz bands. Though the total spectrum available for cellular services in 1800 MHz is 2X75 MHz, major part of this spectrum was being used by Defence Services. Some part of 900 MHz band (upto 2x6.2 MHz) was being used by Defence till date. Also, spectrum in 2100 MHz band (2x60 MHz) was available for commercial applications for 3G services. This band was also extensively used by Defence Services.

DoT had identified the need way back in 1999 for re-farming of spectrum from Defence and others who had been historically major users.

The Government of India constituted a Group of Ministers (GoM) in September 2003 which recommended that adequate spectrum be made available for unimpeded growth of telecom services modalities which was to be jointly worked out by WPC of DoT and Defence Services.

The issue of Spectrum Management was also considered by the Parliamentary Standing Committee on Information Technology in its 28<sup>th</sup> Report presented to the both Houses of Parliament in December 2005. The committee urged DoT to make available additional spectrum for telecom services and also recommended for formulation of “Defence Band<sup>3</sup>” and “Defence Interest Zone<sup>4</sup>” (DB & DIZ) that would reduce the time

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<sup>3</sup> Various spectrum blocks to be used by military forces

<sup>4</sup> 50km area near the international border where the defence ministry and DoT decide on spectrum use parameters during peace time and hostilities.



consuming process of continuous coordination, vacation and migration from assigned frequencies besides other benefits of proper planning for procurement and development of equipment by both Defence and telecom industry. This would also result in contiguous assignment of spectrum which results in optimum utilization of scarce resource like spectrum.

The Empowered Group of Ministers (EGoM) on vacation of spectrum and auction of 3G, in its meeting held on 05 March 2012, directed DoT for formal notification of "DB & DIZ". However, the formal notification of "DB & DIZ" could be made only in March 2015 subsequent to Cabinet decision on 21 January 2015. Out of total available spectrum of 2x75 MHz in 1800 MHz band, 2 x 55 MHz was designated as telecom band and 2x20MHz was designated as Defence band. Also, out of total available spectrum of 2x60 MHz in 2100 MHz band, 20 MHz in uplink band and 15 MHz in downlink band was designated as Defence band.

Pursuant to promulgation of "DB & DIZ", exercise of harmonization of spectrum allotted to TSPs in 1800 MHz was finalized by WPC by June 2016.

A committee constituted by DoT recommended (March 2013) that usage of spectrum by Space, AIR/TV, Defence and Railways in the IMT band (Telecom band) should be re-farmed/ reallocated for public telecom services at the earliest.

Though the action for re-farming of 1800/2100 MHz band from Defence had been taken, but no action/deliberation for re-farming of 900 MHz band was initiated by WPC (DoT). The continuing use of spectrum in these bands by Defence (may be due to its legacy network equipment) results in loss of opportunity cost for the nation as a whole.

DoT (WPC) stated (August and October 2017) that the delay in notification of "DB & DIZ" could not be attributed to WPC given the complexities and importance attached to it. Regarding 900 MHz band, it was stated that WPC did not feel any need to carry out harmonisation in this band as it had not received any request for harmonisation of 900 MHz band from TSPs. On the allotment of spectrum to the Defence in 1800 MHz band across the country, it stated that the allocation of spectrum to the Defence has been deliberated over a long period of time and decided by the highest level decision making body and as such it was to be implemented in letter and spirit.

Audit observes that the notification of "DB & DIZ" issued in March 2015 itself provided that Defence band would be revisited from time to time and Defence services would be given desired amount of spectrum as per requirement in the designated area (including commercial band) during pre-hostility period/when actual operations were imminent as per the provisions of union war book/any appropriate authority designated by government. In view of above provisions and TRAI's repeated recommendations, there may be scope for re-farming some part of 2x20 MHz spectrum in prime band of 1800 MHz and 35 MHz in 2100 MHz band presently earmarked across the country for

Defence use. Further, deliberation on re-farming of 2x6.2 MHz with Defence in 900 MHz also needs to be initiated by DoT without waiting for any request from TSP as the responsibility for ensuring efficient and optimum utilisation of spectrum lies with DoT (WPC) and not with TSPs.

#### **2.1.7.2 Re-farming of Spectrum from Railway**

Prior to 01 June 2004, the Central Government organizations/Ministries/ Departments were exempted from payment of License Fee and Royalty Charges (Spectrum charges) for their wireless network. However, DoT decided to levy Spectrum charges from all wireless users including Government organizations/Ministries/Departments at the existing rates with effect from 01 June 2004. Spectrum charges (Royalty) for captive users were revised w.e.f. April 2012.

Railways was assigned 1.6 MHz spectrum along seven railway tracks in 900 MHz band. Considering the increased requirement of spectrum for commercial use for telecom services, TRAI in its recommendations dated 13 May 2005 and 11 May 2010 on Spectrum related issues recommended for re-farming of spectrum in 900 MHz from incumbents for its utilization for commercial use by telecom operators.

For the purpose of efficient and optimum utilization of spectrum by a user, charging of spectrum should be based on its economic value. Spectrum in 900 MHz band is a commercial band for telecom use which has been auctioned since February 2014. In February-June 2015, the WPC wing arrived at the annual charges of 1.6 MHz spectrum assigned to Railway based on auction price as ₹ 308.47 crore which was much higher compared to annual charges of ₹ 37.82 crore being levied on formulae basis.

Telecom Commission also decided (April 2016) that captive frequency assignments in the commercial bands used for telecom services would be re-examined due to the high differential between the auction determined price and the charges payable by captive users as per extant orders. However, no final decision has been taken till date in this regard.

Though TRAI emphasized time and again for re-farming of spectrum assigned to Railway in 900 MHz for telecom uses which was also concurred by DoT's own committee, WPC had not taken any action in this regard.

As stated to audit, Spectrum in 900 MHz band had been assigned to Railway in select train routes only. This suggests that spectrum in 900 MHz was not an absolute necessity for Railway and its wireless communication need would have been met in other bands normally allotted to Captive users. Moreover, Railway had been assigned spectrum in VHF band for its more than one lakh walkie-talkie for its operational use.

Assignment of spectrum to Railway in 900 MHz band hampered the contiguous assignment of spectrum to telecom operators which in turn adversely affected the optimal utilization of spectrum.

DoT replied (August and October 2017) that allotment in respect of spectrum in 900 MHz band had been done in line with NFAP for safety of passengers for communication in Railway. Spectrum is also utilised for national security and safety. Railway is a Government carrier for transportation and public utilities. Hence the passenger safety can not be undermined with commercial usage. This frequency band is not allocated exclusively for TSPs for commercial usage. Ecosystem is also not available for such application in other frequency band. So Railway has been allocated spectrum in this band keeping overall interest of the public safety. As far as the use of this frequency band in other places not used by Railway, the same can be taken into consideration for use by other services on case to case basis. So it can not be said that valuable spectrum in 900 MHz is in inefficient use, considering commercial utilisation only.

Audit is of the view that though the allotment of spectrum to railway in 900 MHz was in line with the NFAP that provides that certain frequency spots in the frequency band may be considered for train control and mobile train radio system for specific locations on a case to case basis, however, Railway actually uses such frequency spots across the railway tracks only. As per the data furnished (April 2016) by WPC to Audit, allocation of frequency spots of 200 KHz spectrum in 900 MHz band had been made for whole circle as this spot had not been assigned to TSP. In other words, such frequency spots remain susceptible for unauthorised use which would remain undetected in view of inadequate monitoring of spectrum as deduced in Para 2.1.11. DoT itself accepted the fact that use of this frequency band in other places not used by Railway can be taken into consideration for use by other services that indicates that this valuable frequency in 900 MHz band was not being utilised efficiently. Moreover, 900 MHz band is a commercial band and its optimum and efficient utilisation should be ensured by refarming/harmonising. WPC didn't respond on the audit query on the methods of charging for spectrum used in 900 MHz by Railway in view of DoT's own committee recommendations. This is causing inefficient use of scarce and valuable spectrum in 900 MHz in view of its commercial utilisation.

### **2.1.8 Harmonization of spectrum**

Harmonization of Spectrum entails making the Spectrum assigned to the Service Providers in Contiguous frequencies thereby increasing the efficiency and economies. The NTP 2012 had stated that one of the objectives of the Spectrum Management was to make available adequate globally harmonized International Mobile Telecommunications (IMT) spectrum in 450 MHz, 700 MHz, 1800 MHz, 1910 MHz, 2.1 GHz, 2.3 GHz, 2.5 GHz, 3.5 GHz bands and other bands to be identified by ITU for commercial mobile services. DoT has taken steps to harmonize spectrum in 800 MHz and 1800 MHz band by June 2016. Audit scrutiny of files relating to harmonization of spectrum in 1800 MHz and 800 MHz bands revealed the following-

### **2.1.8.1 Additional guard band in 1800 MHz band leading to non-utilization of spectrum**

A guard band is a narrow frequency range that separates two ranges of wider frequency. This ensures that simultaneously used communication channels do not experience interference which would result in decreased quality for both transmissions.

TRAI in its recommendation (27 January 2016), indicated for guard band of 0.2 MHz in each LSA out of total 55 MHz (1710-1765 MHz paired with 1805-1860 MHz) spectrum earmarked for commercial use in 1800 MHz band. Audit noticed that during harmonization of 1800 MHz band, DoT made a provision for 0.2 MHz guard band (0.1 MHz at each side of the band, i.e. in the start and in the end of the total 55 MHz spectrum) and one additional guard band of 0.2 MHz in between this spectrum band in all 22 LSAs. It was also noticed that the location (frequency spot) of the additional guard band of 0.2 MHz considered by the DoT was varying from LSA to LSA i.e., in Jammu & Kashmir, it was close to start of the band (1715.1-1715.3/ 1810.1-1810.3) whereas in Tamil Nadu (TN) it was close to the end (1743.3-1743.5/ 1838.3/1838.5).

DoT (WPC) replied (August and October 2017) that in 1800 MHz band, GSM and LTE (FDD) are the two technologies which are currently being used in India for providing telecom services. Deploying two different technologies – GSM and LTE – in the adjacent frequency channels may cause interference. Keeping in view of this fact, during harmonization, as per the international practice, it was decided to make allotment to TSPs having more than or equal to 5 MHz of auction acquired spectrum, preferably in the starting of the frequency band, followed by a guard band equal to 0.2 MHz and thereafter allotment made to TSPs having less than 5 MHz of auction acquired spectrum and lastly TSPs with administratively allotted spectrum so as to ensure co-existence of both the technologies viz. GSM and LTE, in the same band. As the number of TSPs who acquired 5 MHz or more than 5 MHz spectrum through auction varies from LSA to LSA, the position of this 0.2 MHz guard band also varies from LSA to LSA. It is international practice to keep guard band on either side of the frequency band to avoid interference from the services working in the adjacent bands. Accordingly, 0.1 MHz spectrum has been kept as guard band on either side of the 1800 MHz band. To sum up, the allocation of the guard band in the 1800 MHz band and quantum of guard band (0.2 MHz or 0.4 MHz) is determined by the consideration of administrative allotted spectrum and auction acquired spectrum, and also technology considerations. At the first opportunity, the guard band in 1800 MHz band would be eliminated.

Reply of the Department is not acceptable as the reasons/conditions for additional guard band given in the reply are not satisfied in case of three LSAs (Uttar Pradesh (UP) (West), Haryana and Himachal Pradesh (HP)). In UP (West) LSA, auction acquired spectrum of only 2.2 MHz by Idea lies between auction acquired spectrum of Telewings (7 MHz) and Videocon (5 MHz) and the provision for guard band equal to 0.2 MHz is

followed by spectrum allocated to Videocon. Similarly in Haryana LSA, auction acquired spectrum of 5 MHz pertaining to Videocon is followed by auction acquired spectrum of 3.4 MHz spectrum allocated to Bharti and the provision for guard band equal to 0.2 MHz is followed by spectrum allocated to Bharti. In HP LSA also, auction acquired spectrum of 5.4 MHz pertaining to Reliance Jio is followed by auction acquired spectrum of 4.8 MHz allocated to Idea and the provision for guard band equal to 0.2 MHz is followed by spectrum allocated to Idea. If in the above three circles deployment of two different technologies, GSM and LTE, in the adjacent frequency channels is not causing interference then on the similar lines, this additional guard band can be removed in other LSAs too. The Department also accepted the fact that guard band in 1800 MHz band would be eliminated.

As a result, while putting up spectrum in 1800 MHz band for auction, this portion of additional guard band spectrum was not considered for sale and thus 4.4 MHz spectrum (0.2 MHz spectrum in each 22 LSAs) in 1800 MHz, which is a prime band, remained unutilized. The annual loss on account of 4.4 MHz spectrum on account of additional guard band is ₹ 30.92 crore <sup>5</sup> (**Annexure- I**). The provision of additional guard band needs a review by DoT as further misutilisation of this spectrum cannot be ruled out.

### **2.1.9 Underutilization/non utilization of IMT spectrum**

Spectrum in 1800 MHz band remained unutilized due to various reasons as detailed below:

#### **2.1.9.1 Idling of administratively assigned spectrum surrendered by Tata Teleservices Limited (TTSL) and Tata Teleservices (Maharashtra) Limited (TTML)**

DoT prescribed (March 2013) levy of one time spectrum charge (OTSC) for spectrum held beyond 2.5 MHz by CDMA operators and issued (March 2013) demand note of ₹ 1152.68 crore to Tata Teleservices Limited (TTSL)/Tata Teleservices (Maharashtra) Limited (TTML). DoT order provided that licencees not willing to pay OTSC may surrender spectrum beyond 2.5 MHz.

In this background, TTSL/TTML surrendered (April 2013) the CDMA spectrum held by them beyond 2.5+2.5 MHz in 13 LSAs (Kolkata, Chennai, Bihar, Gujarat, Haryana, Karnataka, Kerala, Punjab, Rajasthan, UP (E), UP (W), Maharashtra and Andhra Pradesh). It surrendered 2.5 MHz each in Maharashtra and Andhra Pradesh and 1.25 MHz each in rest 11 LSAs under protest). Also, it surrendered 1.25 MHz in Delhi and Mumbai and retained 3.75+3.75 MHz and paid first instalment of ₹ 62.91 crore as OTSC in respect of Delhi and Mumbai under protest. It also filed writ petitions challenging levy of OTSC in High courts of Mumbai and Kolkata.

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<sup>5</sup> As the selling price of October 2016 auction

Above surrendered spectrum was not put to auction held subsequently in February 2014 and March 2015 by DoT on the plea that the matter was sub-judice. However, High Courts had not restrained DoT from putting the surrendered spectrum to auction.

In February 2014 auction, 800 MHz band spectrum was not put to auction and in March 2015 auction of 800 MHz band, following was observed:

- 108.75 MHz in 20 LSAs were put to auction, out of which 86.25 MHz spectrum (i.e. about 80 *per cent*) was sold out.
- In eight LSAs, all spectrum (30 MHz spectrum) put to auction was sold out and out of these eight LSAs, in case of seven LSAs 11.25 MHz spectrum (1.25 MHz in each LSA surrendered by TTSL) was available with DoT, but the same was not put to auction.
- Further, in two LSAs no spectrum was put to auction, despite 2.5 MHz spectrum (1.25 MHz in each LSA surrendered by TTSL) was available with DoT.

TRAI while giving its recommendations (January 2016) viewed that DoT should have ensured that the spectrum surrendered by TTSL/TTML was not kept idle and should take appropriate legal remedies to put it in the upcoming auction.

Based on legal opinion taken by DoT on this TRAI's recommendation, a DoT committee noted that TTSL/TTML had filed Writ petitions in the Hon'ble High Courts and the matter was sub-judice and thus the proposed auction of spectrum surrendered by TTSL/TTML during the pendency of Writ Petitions might create third party interest, leading to legal complications and would affect the complete auction process. Therefore, TRAI was requested to reconsider its recommendation.

TRAI in its response (April 2016) on DoT's reference reiterated its recommendation that DoT should take legal course of action so as to ensure that this stalemate does not continue for long. It also stated that the Hon'ble Court(s) may be apprised that by keeping the spectrum surrendered by TTSL idle, the Government was losing substantial revenue in form of spectrum charges which was recurring and irreparable.

In the auction held in October 2016, spectrum surrendered by TTSL/TTML pertaining to Mumbai, Andhra Pradesh and Maharashtra LSAs was put to auction (as license was expiring during September 2017). But for remaining 12 LSAs it was not put to auction, despite the fact that this spectrum (12x1.25 MHz) was already lying idle for the past three and half years.

DoT (WPC) replied (August 2017) that TTSL and TTML surrendered the spectrum under protest but went to court when OTSC was charged from them. In this matter, the opinion of Legal Adviser of DoT was sought, who opined that auction of spectrum surrendered by TTSL/TTML may lead to third party interest so long as the court does

not deliver its judgment. Effort for speedy disposal of various legal cases relating to OTSC was made by filing Transfer Petitions in the Hon'ble Supreme Court, which was not admitted and disposed off on 19 January 2015. As the matter is sub-judice, the spectrum in question may not be considered as idling and suitable for auction.

Reply of the Department is not tenable as TTSL/TTML surrendered the spectrum in April 2013 to absolve it from any liability arising out of the OTSC on spectrum holding beyond 2.5 MHz in the 800 MHz band and paid OTSC where it retained spectrum beyond 2.5 MHz. Moreover, High Courts did not restrain DoT from auctioning the spectrum surrendered by TTSL/TTML when they challenged the OTSC demand issued to by DoT in the courts.

Thus, by not putting to auction (in three LSAs till October 2016 and in 12 LSAs till date) the surrendered spectrum in 800 MHz by TTSL/TTML, the valuable spectrum was lying unutilised. Further, the unauthorized use of these spectrums cannot be ruled out. The annual value of spectrum surrendered by TTSL but not put to auction in three LSAs till October 2016 and in 12 LSAs till date is ₹ 57.78 crore and ₹ 69.55 crore<sup>6</sup> respectively (**Annexure – II**).

#### **2.1.9.2 Withdrawal of excess spectrum from BSNL**

DoT was assigning additional GSM spectrum beyond initial allocation of 4.4 MHz to service providers on subscriber based criteria since February 2002 and it was last revisited in January 2008. It was noticed that most of the service providers were requesting for allocation of 2G spectrum since March 2008 on the basis of subscriber based criteria.

BSNL was allotted start up spectrum of 6.2 MHz in 900 MHz band in all its Service Areas during 2000 and 2003. Subsequently it was allotted additional 1.8 MHz in Jammu & Kashmir in 900 MHz, 1.2 MHz in Gujarat, 1.8 MHz in Rajasthan and West Bengal and 3.8 MHz in rest of 15 LSAs except Punjab in 1800 MHz band during 2004 to 2007. It was only after DoT's decision to levy OTSC, BSNL proposed to surrender (January 2013) 1.8 MHz in 15 LSAs in 1800 MHz band. However, DoT has not withdrawn the excess spectrum proposed to be surrendered by BSNL till date (March 2018).

DoT (WPC) stated (August and October 2017) that audit observation regarding raising the issue of surrender of excess spectrum held by them for efficient utilization of spectrum would be complied with. It also stated that WPC Wing had not received any letter from BSNL regarding surrender of 1.8 MHz spectrum in these 15 LSAs where it has been allotted 3.8 MHz spectrum in 1800 MHz band. However, WPC Wing had received a letter from BSNL in October 2012 on the subject "Retention of CDMA and

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<sup>6</sup> At the reserve/selling price of March 2013 auction.

GSM spectrum by BSNL” in which M/s BSNL, among others, also stated that GSM spectrum beyond 4.4 MHz is necessary to be retained by them for serving its customers.

Reply of the Department is not tenable since BSNL in its letter of October 2012 to DoT stated that it required to retain spectrum beyond 4.4 MHz and requested the Government to bear the due payment for spectrum beyond 4.4 MHz. Subsequently, BSNL intimated DoT its decision to surrender (January 2013) 1.8 MHz in 15 LSAs where it had been allotted additional 3.8 MHz in 1800 MHz band. Despite this proposed surrender, BSNL still would have spectrum beyond 4.4 MHz in each service areas. Non receipt of any letter from BSNL for surrender of spectrum was an indication of lack of coordination and communication between different wings of DoT.

Financial impact due to delay in withdrawal of excess spectrum held by BSNL is ₹ 520.79 crore<sup>7</sup> (**Annexure –III**).

#### **2.1.10 Inequitable allotment of Microwave Access Spectrum to Telecom Service Providers**

The mobile backhaul (Microwave) is an integral part of the cellular telecom network which connects cell sites (Base Transceiver Stations) with Base Station Controllers. Microwave (MW) frequencies are generally assigned in chunks of 2x28 MHz, known as MW carriers. There are two types of MW carrier viz. Microwave Access (MWA) carriers and Microwave Backbone (MWB) carriers.

MWA carriers are generally in the frequency bands of 10 GHz and beyond. These are assigned for short-haul systems which are used to carry traffic through relatively shorter distances. MWA carriers are typically used in the mobile backhaul networks (mainly in the pre-aggregation part). In India, currently 13 GHz (12.750-13.250 GHz), 15 GHz (14.5-15.5 GHz), 18 GHz (17.7-19.7 GHz) and 21 GHz (21.2-23.6 GHz) bands are used for the assignment of frequencies for MWA carriers.

MWB carriers are assigned for relatively longer links of minimum link length of 15 KMs and in the hilly terrains, these are assigned for minimum link length of 10 KM.

Presently, in India, the assignment of MW backhaul carriers is made administratively, subject to availability of spectrum. Regarding the assignment of carriers for MW access and backbone networks, the order of 18 April 2002 issued by the Wireless Planning and Coordination (WPC) wing of the DoT stated that-

*“Assignment of frequencies for MW access and MW backbone networks for cellular operations would continue to be considered on the basis of full justification on the requirements and availability of the spectrum on case-to case and link-to-link basis after taking into consideration the interest of the other users with a view to ensure electromagnetic compatibility, etc. The complete technical analysis and all related*

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<sup>7</sup> At the selling price of 2014 auction.



*aspects of frequency assignments, including efficient use of spectrum will apply before assigning frequencies for various MW access/backbone links. There will be no obligations on the part of the Government to assign frequencies for such purposes”.*

In order to maintain the level playing field among all telecom operators, it was declared (29 January 2011) by DoT that “in future, the spectrum will not be bundled with licence and spectrum will be made available only through market driven process.”

Subsequent to this decision, access spectrum for various telecom access services (i.e. 2G/3G/4G) in 800/900/1800/2100/2300/2500 MHz band were auctioned during November 2012, March 2013, February 2014, March 2015 and October 2016.

DoT constituted a committee in December 2012 to look into the allotment/assignment of spectrum in various categories of spectrum users covering different categories of licences and authorizations. In terms of the deliberations (General principles governing allotment of spectrum) of the Committee, Spectrum could be auctioned where:-

- (i) Demand outstrips Supply
- (ii) Spectrum is allotted on exclusive basis
- (iii) Spectrum is allotted over wide areas(State/Circle level)
- (iv) Revenue from auction is expected to fetch more revenue than through administrative pricing
- (v) Spectrum is used for providing public commercial services
- (vi) Spectrum bands identified for providing public commercial service i.e. even presently used by captive users.

On the basis of the above principles, it was proposed by the Committee that the spectrum allotment in Microwave band on service area/area basis for terrestrial operations to all the service providers including ISP/NLD/ILD operators for providing telecom services should be allotted through market related process (auction).

However, in contravention of the Committee’s recommendations, allocation of MW Access spectrum had been done on First Come First Serve (FCFS) basis till date as was being done for 2G license/Access Spectrum till 2009. This was despite the fact that it was used for providing public commercial services and MW Access spectrum was allotted for the entire service area (first carrier) and/or at least for some cities, as being done in case of access services spectrum (2G/3G/4G spectrum).

It was also found that allotment of MWA to Access Service providers was withheld by DoT since June 2010 and allotment against only one application was made in December 2015. There were 101 applications pending till November 2016 for allotment of MWA.

It was also observed that all available carriers in the 15 GHz band have already been assigned to the existing (initial) operators (viz. Vodafone, Bharti, Tata, Reliance etc.);

there was no carrier available in this band. Now in this band, the demand had outstripped the supply. MW carriers in 13 GHz have also been allotted to BSNL and other non TSPs. However, carriers were available in other bands. It may be noted that propagation characteristics of MWA spectrum in lower bands (say 13/15 GHz) was better compared with higher bands (18/21 GHz and beyond).

DoT issued guidelines (October 2015) for allotment of MWA and MWB for interim period provisionally pending the final decision by the Government. The guidelines stated that TSPs would be allotted, including the present holdings, a maximum of 4 carriers (each MWA carrier refers to 2x28 MHz) for Metro and Category A Service Area, 3 carriers for Category B and Category C Service Areas. However, initial incumbent TSPs had been allotted five to seven MWA carriers and they were allowed to hold the allotted carriers. However, DoT has not taken final decision on method of allocation of MWA spectrum yet.

Thus by non-allotment of MWA spectrum to Access Service Providers despite availability resulted in loss of revenue to the Government. Further by allowing initial incumbent TSPs to hold administratively allotted excess MWA carriers and allotment of MWA to one applicant in December 2015, the principle of providing level playing field to all TSPs was not being followed. Considering above facts and DoT's committee recommendations, the allotment of MWA spectrum should have been made only through auctions.

DoT (WPC) replied (August and October 2017) that

- a) TRAI recommended (August 2014), among others, that the allocation of MWA & MWB carriers should be done administratively i.e. not through the auction mode. The Department (October 2015) sent back reference to the TRAI and TRAI sent its response (November 2015). The Department was still considering the above TRAI recommendation and response to the back-reference. Meanwhile, an interim guideline dated 16 October 2015 for allotment of MWA and MWB carriers was issued, till a final decision was taken by Government on pricing and allotment of MWA/MWB carriers.
- b) As regards pendency of 101 applications for allotment of MWA/MWB spectrum, it was clarified that majority of the applications pertained to the erstwhile quashed 2G licenses and may be treated as require no action. However, some of the 101 applications pertain to the applicants who got their license renewed after their expiry of UAS licenses from 2014 onwards. The main reason for pendency of such applications (renewal cases) was that the applicants were unwilling to comply with the existing (provisional) guidelines dated 16 October 2015 in which pricing has been upwardly revised, among other issues.
- c) Regarding equitable distribution of MWA/MWB carriers among the TSPs, it is worth mentioning that the existing provisional guidelines provide for retention of

earlier allotted MWA/MWB carriers to the incumbent licensees, pending the final decision on the TRAI recommendations which also takes care of the quantum of MWA/MWB to be allotted to the TSPs based upon the amount of access spectrum. Once the decision is taken finally, the issue of equitable distribution would also be taken care of.

Reply of the Management is not tenable as-

i. In order to maintain the level playing field among all telecom operators DoT decided in 2011 that in future spectrum would be made available only through market driven process. DoT had started auction of access spectrum but also continued allotment of MWA spectrum administratively (FCFS) to Telecom Service Providers. This shows contradictions in DoT's own policy implementation.

ii. As regards pendency of 101 applications, if majority of the applications pertained to the erstwhile quashed 2G licenses and remaining applications were renewal cases and the applicants were unwilling to comply with the guidelines (October 2015), then what was the need for continuance of their name in the pending list maintained by DoT, if no action was required for those cases. Moreover, provisional guidelines dated 16 October 2015 for allotment MWA/MWB carriers did not contain any upward price revision rather it was to be provisional subject to final decision of the Government.

iii. Regarding equitable distribution of MWA/MWB carriers among the TSPs, Department accepted the contention of audit and stated that once the decision is taken finally, the issue of equitable distribution would also be taken care of. However, the final decision regarding method of allocation of MWA/MWB is pending since 2012. Meanwhile, allotment of MWA was made to one applicant in December 2015.

Thus, Audit is of the view that allotment of MWA carriers to TSPs should be made equitably and through market related process.

**2.1.10.1 Charging for MW spectrum for NLD/ILD networks on formulae basis instead of AGR basis**

The New Telecom Policy 1999 (NTP 1999) allowed the then existing Cellular Mobile Service licensees to migrate from a Fixed Licensee Fee Regime to a Revenue Share arrangement with effect from 01 August 1999. The revenue sharing was to be done as a fixed percentage of their Adjusted Gross Revenue (AGR).

Subsequently, spectrum charges for access spectrum were also brought into Revenue Share (percentage of AGR) w.e.f. 01 August 1999. Similarly, spectrum charges for MW Access networks and Backbone networks for cellular operations were also fixed as a percentage of AGR from 18 April 2002 onwards as per the use of MW Access/Backbone bandwidth.

This percentage rate of MW Access/Backbone<sup>8</sup> spectrum for cellular networks were further revised vide WPC order dated 03 November 2006 and 10 November 2008.

Audit observed that the spectrum charges for MW access/backbone Spectrum and satellite Spectrum of NLD and ILD networks were still levied on formula basis<sup>9</sup> instead of revenue share basis (i.e. percentage of AGR), as being done for MW access spectrum of cellular network.

There are many cellular operators viz. Airtel, Vodafone, Reliance, Tata, Idea, BSNL, etc. who have Cellular as well as NLD and ILD networks and Microwave spectrum were used for Cellular as well as NLD and ILD networks also. There was no mechanism to monitor or identify the use of Microwave spectrum by an operator for a specific network and thus charging for MW spectrum for different networks differently (AGR based for cellular and formulae based for NLD/ILD networks) appeared to be flawed and subject to manipulation. It is pertinent to mention here that MW access/backbone Spectrum and satellite Spectrum of NLD and ILD networks were used for providing public commercial service. Charging one part of commercial spectrum (Access/MW spectrum for cellular networks) based on percentage of AGR and charging other parts of commercial spectrum (MW spectrum for NLD/ILD networks) on formulae basis exhibit inherent contradictions in larger policy implementation of Revenue Share regime.

DoT (WPC) replied (August and October 2017) that NLD/ILD network was recognized as a separate kind of service under Unified Licencing (UL) i.e. for existing licencing regime. Further NLD/ILD services have been existing prior to the advent of cellular services in the country. It is important that, while deciding the charging for NLD/ILD, a common criterion be evolved for this service, irrespective of the NLD/ILD holder having licence to operate any other kind of services for which charging policy/criterion may be different. In case any suspicion on unauthorized usage is brought to the notice of WPC, it is possible to find out the same through monitoring/inspection by Wireless Monitoring Organization (WMO).

Reply of the Department is not tenable as the NLD/ILD service is different service but it is a type of commercial telecom service and licence fee on these services is also based on percentage of AGR similar to that of access services. Levy of spectrum charges for MW access spectrum of cellular network are on revenue share basis (i.e. percentage of AGR) whereas spectrum charges for MW access/backbone spectrum and satellite

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<sup>8</sup> The mobile backhaul (Microwave) is an integral part of the cellular telecom network which connects cell sites (BTS) with Base Station Controllers. There are two types of MW carrier viz. Microwave Access (MWA) carriers and Microwave Backbone (MWB) carriers. MW Access is normally in the frequency band 10 GHz and beyond and MW Backbone networks are generally below 10 GHz

<sup>9</sup> Annual royalty =MXWXC; (M= Constant Multiplier depending upon the end to end distance for MW Links; W= Weight decided by adjacent channel separation for RF channeling plan deployed; C= Number of RF Channels used.)

spectrum of NLD and ILD networks are levied on formula basis. This was indicative of non-uniform policy in DoT and needs to be reviewed.

#### **2.1.11 Monitoring of Spectrum Use**

Wireless monitoring is an integral part of the spectrum management. The ability to do extensive monitoring is important to DoT for a number of reasons. In addition to making sure that spectrum policy is being complied with and tracking down sources of interference such as GPS jammers and nonconforming sources of radio frequencies, good spectrum-monitoring data can help in taking informed licensing decisions and give DoT insight into whether and how occupied a particular band is, whether bands might be good candidates for re-farming and how successful an agency's spectrum policies are.

This monitoring is carried out by the Wireless Monitoring Organisation (WMO), a field unit of the WPC Wing of DoT. Main function of the WMO is to ensure compliance of licence conditions by all wireless licensees and to monitor any un-authorized use of spectrum so that interference-free communication can be provided to all authorized licensees. Such monitoring is also done to find unutilized/under-utilized spectrum by licensees.

During the performance audit, 10 Inspection units situated at Delhi, Mumbai, Chennai, Kolkata, Nagpur, Hyderabad, Bangalore, Shillong, Jalandhar and Ajmer along with 10 International Monitoring Station (IMS)/Wireless Monitoring Station (WMS) situated at these stations and four Regional Headquarters (RHQs) of WMO at Delhi, Mumbai, Kolkata and Chennai as well as Wireless Monitoring Headquarter (MHQ) at Delhi were audited. Audit findings are given in succeeding paragraphs.

##### **2.1.11.1 Non-updation of National Frequency Register (NFR)**

National Frequency Register (NFR) is the basic record for all frequency assignments and it would be referred to identify assignable frequency for any new applicant. As such, it is utmost necessary to update the NFR by adding particulars of new assignments and deleting particulars of surrendered/withdrawn frequency assignments.

WPC implemented (January 2005) "Automatic Spectrum Management System (ASMS)" which caters to the requirement of application, assignment, channeling plan, SACFA clearance, etc. Based on the data maintained in the ASMS, NFR in soft version (Access table excluding secret data) was made available to audit.

Audit analysis of the NFR revealed that

- Frequency assignment in 1800 MHz band to TSPs whose licences were quashed in 2012 and who did not acquire licences subsequently, were still appearing in NFR as assigned (Allianz Infratech (P) Ltd, Etisalat DB reality, Loop Telecom Ltd, S Tel Ltd)

- Microwave Backbone (MWB) spectrum had been allotted to SSTL and RJIL in 2014 and 2016. However, no particulars of assignment of MWB frequency in the frequency range of 3 GHz to 10 GHz to above TSPs were noticed in the NFR.
- MWA spectrum assigned to Telenor/Uninor/Telewing was not found in NFR whereas it was allotted to them.
- Data Access (India) Limited, previously an International Long Distance Operator (ILDO), ceased its operations long ago. However, frequency assignments against this entity were still appearing in the NFR. A few similar instances are Deccan Airlines and Kingfisher Airlines.

DoT (WPC) stated (August and October 2017) that records related to spectrum assignment including details of base stations of TSPs are available in the NFR/ASMS, were processed for grant of Wireless Operating Licences (WOL), in force during that time. Recently during 2016 the requirement of WOL has been done away. However, spectrum in 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, and 2500 MHz bands assigned to TSPs in 22 services areas through auction process and these assignment details are available on the DoT website. It was further stated that necessary action would be taken to delete the records of frequency assignment in respect of quashed licences as pointed out by audit and that was to be done manually after verification. However, presence of such old records of these TSPs does not affect the process of spectrum allotment as it is being carried out through auction process only after verification of auction data and not the NFR. Regarding no particulars of assignment of MWB/MWA frequency available in ASMS, it was stated that MW carriers assigned to TSPs were limited in number and generally assigned administratively by processing the case on file and a separate physical record was maintained for the purpose in the respective file. Further, M/s SSTL, RJIL and Telenor had not submitted deployment plan for MWA/MWB assignment till November 2016 and in absence of which it would not be possible to update NFR in ASMS. However, efforts are being taken to update the NFR database in co-ordination with NIC.

The reply confirms that NFR in ASMS was not being updated at the time of assignment of new frequencies and/or surrender/withdrawal of previously assigned frequencies. It defeats the purpose of having a system like ASMS for efficient management of valuable resource like spectrum. When data in NFR relating to frequency assignment of major spectrum band having immense commercial value was in such a state, the situation regarding data relating to private captive users would not be any better. Further, as mentioned later at para 2.1.11.2 of the report providing outdated NFR data to WMO units was compromising the monitoring of unauthorized spectrum use.

Frequency allocation data of NFR which is of non-strategic uses should be uploaded in the DoT website so that all the stake holders have equal footing and thereby increasing transparency in this field.

**2.1.11.2 Non-availability of updated database of wireless licensees with WMO headquarter and Monitoring Stations**

For efficient frequency management and regulation, it is necessary that monitored information and data are accurate and reliable. Monitoring of RF spectrum is carried out to ensure compliance with regulatory provisions governing radio communications and to intervene with national or foreign stations contravening these provisions. Monitoring is also carried out to eliminate interference from other wireless users, jamming by man-made noise, etc. and also to study the occupancy of the radio spectrum. Wireless users are also to be monitored for their activeness on their authorised frequencies to identify unused frequencies so that those frequencies may be allocated to the needy wireless users. In order to achieve monitoring objectives, it is essential that MHQ/RHQ and Monitoring Stations have accurate, complete and timely information on allocated Band/ frequencies and wireless licences. The need for updated data/records with MHQ/RHQ and Monitoring Stations is clearly spelt out in Wireless Monitoring Stations Manual.

It was observed during audit that neither MHQ/RHQs nor IMS/WMS/Inspection units had updated base of wireless licensees and frequency assignments since 2009-10. MHQ informed (November 2016) that in the year 2009-10, a soft copy of licences was received from WPC wing and forwarded to all the monitoring stations/Inspection units. Similar reply was also furnished by other units. It was further stated that MHQ was planning to provide an updated list of licences as on date to the monitoring stations/inspection units after fetching the data from WPC wing. It was also stated that efforts would be made to get access to the database of WOLs maintained by WPC wing. Further WPC in its reply (August 2017) stated that updated list of licences in NFR was being distributed to all monitoring stations/inspection units. It also stated that whenever data regarding frequency allocation were needed by the Wireless Monitoring Stations/inspection units for resolving interference cases/carrying out inspection, the same was sought from respective Regional Licencing Office/WPC Wing for fruitful conclusion.

Reply of the Department is not convincing in view of the fact stated earlier that NFR itself was not updated. In absence of updated data base of wireless licensees and frequency assignments with WMO headquarter and monitoring stations, the monitoring of spectrum users would be totally ineffective. This is an indication of state of affairs in respect of monitoring of spectrum which is an important aspect of Spectrum Management, that information is being given to WMO units only in case of need expressed by them and there is no automatic transfer of information relevant for them.

**2.1.11.3 Non maintenance of monitoring equipment supplied under World Bank funded project**

Large number of equipment/Mobile Monitoring System (MMS) vehicles were supplied around 2004-05 under World Bank funded Project to all the wireless monitoring stations for carrying out the various types of monitoring activities. These equipment/MMS vehicles went faulty and remained so for several years.

Annual Maintenance Contract (AMC) for the maintenance of equipment/MMS vehicle with M/s HFCL was terminated by WPC wing on 06 May 2011 due to inconsistent and unsatisfactory performance.

WMO was to take suitable action regarding maintenance of facilities (National Spectrum Monitoring System) installed under National Radio Spectrum Management and Monitoring System (NRSMMMS) at WMO and its field offices. Above mentioned critical equipment were proprietary items of Thales Communications, France. The proprietary items can only be maintained and spare parts like LO Cards be supplied by M/s Thales Communications, France and M/s Himachal Futuristic Communications Limited (Tripartite agreement). However, they didn't respond to the request of WMO to maintain and repair these equipments. Hence, these equipments remained faulty. Recently, in November 2016, WMO has written to M/s Thales Communications, France for purchase of LO Card.

Only third party equipment supplied under this project could be repaired by the respective parties. 15 Spectrum Analyzers became faulty at different dates starting from 2007 to January 2012. The work orders for repairing these 'Spectrum Analyzers' were issued on 31 October 2013 only and was repaired by 26 November 2013. It took around seven years to get one equipment (Spectrum analyzer) repaired which is heart of monitoring activities. UPS batteries remained dead for more than nine years. Many critical types of equipment like LO2000 cards, High Frequency Direction Finder (HFDF) fixed, Esmeralda Miniport Receiver, Signal Power Meter, HFDF Transportable Direction Finder (TDF) 2030, RF Antenna, Direction Finder Mast, etc. remained faulty for several years.

WMO authorities stated (February 2017) that after the termination of AMC in May 2011 (matter still under arbitration), WMO processed the case of repair of 15 Spectrum Analyzers which had become faulty between 2007 to 2012, however, the financial concurrence could be obtained only in October 2013. WMO processed the case of AMC of 21 Spectrum Analyzers in October 2014 which was under consideration till January 2016 but it was not approved as these equipments had outlived their useful life. Now these important equipments which were heart of monitoring activities were repaired on case to case basis. WPC in its reply (August 2017) narrating above facts further stated that there was no laxity on the part of DoT for repairing of third party equipments supplied under the World Bank projects.



The facts stated above confirm that due importance was not given to maintenance of equipments to ensure effective monitoring activities. This was when spectrum monitoring needed to be at full effectiveness to discourage unauthorized use of commercial spectrum.

**2.1.11.4 Inadequate mobile monitoring due to non-movement of mobile vehicles**

Mobile monitoring function is essential in VHF and UHF frequency bands because of line of site constraints. Therefore vehicles fitted with Mobile Receiver, Portable Antenna, Direction Finder, Measurement Equipment and Batteries are provided to carry out mobile monitoring of the signals from close range. Mobile monitoring is done for technical, specific, unauthorized and illicit transmission.

Audit observed that 21 mobile monitoring Vehicles fitted with expensive electronic equipment under World Bank aided NRSMMMS project procured between the year 2005 and 2007 were provided one vehicle each to all 21 WMSs/IMSs centers. Audit noticed that more than 75 per cent vehicles could not be used for mobile monitoring as depicted below.

**Table - 2**

<b>Year</b>	<b>Total vehicles available</b>	<b>No of vehicles which remained idle</b>	<b>Reasons for idling</b>
2012-13	21	12 -16	Equipment fault/vehicle faults.
2013-14	21	12-19	Equipment fault/non availability of drivers/ vehicle faults
2014-15	21	17	Equipment fault/non availability of drivers/ vehicle faults.
2015-16	21	18-20	Equipment fault/non availability of drivers/ vehicle faults

As can be seen from the above that 12 vehicles in April 2012 were off the road (Distance covered was zero) due to equipment fault/non availability of drivers/vehicle faults. This number increased to 20 in March 2016 due to similar reasons.

WMO stated (December 2016) that monitoring of spectrum to detect un-authorized/ illegal use at various wireless monitoring stations were carried out by available equipment such as hand held spectrum analyzer and portable spectrum analyzer. WPC in its reply (August 2017) also stated after verification of details mentioned by audit that idling of monitoring vehicles supplied under World Bank aided NRSMMMS project to some extents affected the monitoring activity. However, mobile monitoring at various Wireless Stations in the given period was carried out by other available vehicles and equipments (hand held spectrum analyzer, EB 200, Agilent spectrum analyzer etc.). It further stated that many serious interference cases had been resolved by WMO by utilizing existing monitoring facilities with affirmative results. However, deploying

equipments with latest technology and other infrastructures would definitely help in strengthening the wireless monitoring activities.

Reply of the Department confirms that there was little mobile monitoring activity which was supposed to be done through these vehicles as these vehicles remained idle due to various faults. This also showed not only the poor system of maintenance of technical equipment used for monitoring purposes but entailed the loss of Channel Hours of monitoring work also. Further, the DoT reply is only talking about removal of interference. The reply is silent about monitoring the use of unauthorized/unallocated spectrum.

As side-wise bands of the band allotted to a licensee may remain vacant, possibilities of un-authorized use of spectrum by a licensee (Telecom or captive) or illegal use by unscrupulous elements cannot be ruled out. Also unauthorized use of spectrum which is suitable for commercial use but earmarked for Defence cannot be ruled out since spectrum is kept reserved for Defence on pan India basis but Defence uses it in selected and limited geographical areas. Considering the risk of commercial exploitation by unauthorized entities/illegal use of spectrum, technical competence of WMO needs to be strengthened by deploying proper equipment and other infrastructure.

#### **2.1.11.5 Non-achievement of inspection target by the Inspection units**

The authorized wireless stations are required to be inspected to ensure that they are established, maintained and worked in conformity with the terms and conditions of license, Radio Regulations and statutory rules and have established operating procedures and practices. Each wireless station is scheduled to be inspected at least once in three years.

MHQ has been assigning the inspection target of 10 wireless users per month to all ten Inspections units. It was also made clear that if post of Engineer (Inspection) was vacant, Officer in Charge (OIC) had to carry out the inspection works in addition to his own duties and the target was kept 50 *per cent* only i.e. five wireless users per month.

A review of Performance Reports of various Inspection units for the periods from 2011-12 to 2015-16 revealed that the Inspection units could not achieve the target in any year during the last five years (**Annexure - IV**). There was a shortfall ranging from 44 *per cent* to 76 *per cent* in conducting inspections in Kolkata, Delhi, Jalandhar, Ajmer, Nagpur and Hyderabad Inspection units. No inspection was conducted from October 2010 to October 2016 by Shillong unit whereas target of inspection was fully achieved by Mumbai unit.

WPC stated (August 2017) in its reply that posting of sufficient manpower was to be ensured to carry out inspection work properly. Efforts would be made to fully achieve the targets of inspection after posting of sufficient manpower in WMSs/IMSs under which the inspection units are working.

Above reply confirms failure of DoT (WPC) in carrying out the inspections as per the assigned targets, any possible violations by wireless licensees such as non-payment of royalty & license fees by licensee, unauthorized use of wireless stations, etc. reportable to WPC, remained incomplete.

**2.1.11.6 Deficiency in monitoring assignments by MHQ/RHQ**

MHQ/RHQ assign monitoring assignments to WMSs that can be classified into two broad categories viz. Specific assignments and Routine assignments. Specific assignments pertain to resolving interference cases, identification/locating unauthorized operations, occupancy/vacancy of specific band, etc. Routine assignments are carried out regularly on predetermined schedule as per monthly monitoring programme coordinated by RHQ.

Audit analysis of monthly monitoring assignments made by North RHQ Delhi to monitoring stations in its jurisdiction revealed that in absence of updated wireless licences issued and vacant spectrum details, large range of spectrum band was assigned for monitoring giving no detail of assigned or vacant spectrum.

DoT (WPC) stated (August 2017) that copy of frequency assignment letter is forwarded to Director (WMO) for monitoring the frequencies and distribution to concerned monitoring stations. However, it will be ensured to provide the relevant information to all the monitoring stations on priority.

The facts remains that the lack of proper details of frequency assignments and vacant spectrum bands with monitoring stations provide them little scope for detecting unauthorized use of vacant spectrum while carrying out the routine monitoring with whatever monitoring equipment WMS had at its disposal. This deficiency had economic risks also.

**2.1.11.7 Functioning of Regional Licensing Offices (RLOs)**

In the past, spectrum users were predominantly in the Government sector and private sector was using spectrum for its captive uses. Wireless licences were being issued by WPC wing of DoT. With the increase in number of spectrum users, certain wireless licences were decentralized from WPC wing to five RLOs at Delhi, Mumbai, Kolkata, Chennai and Shillong (shifted at Guwahati) since January 2007. The issue/grant of following types of wireless licences were transferred to the Regional Licensing Offices (RLOs).

- (a) Radio Paging (Captive) Licences
- (b) Import Licence
- (c) Maritime Mobile Station Licence
- (d) Aeronautical Mobile Station Licence

- (e) Radio Control of Models Licence
- (f) Experimental Licence
- (g) Demonstration Licence
- (h) Short Range UHF Hand-Held Licence.

Audit was also conducted at the five RLOs to examine the process of issue of licences. Main audit findings are described as follow-

**(A) Data base of licences issued by RLOs not maintained**

In addition to grant/issue of new licences by RLOs, renewal of such licences is also to be done by RLOs itself. Audit noticed that out of five RLOs, three RLOs namely Kolkata, Guwahati and Chennai had not maintained the data base of licenses issued/renewed in different categories. However, Mumbai and Delhi RLOs have been maintaining data base.

DoT (WPC) stated (August 2017) that the records of licences and renewals are being maintained by almost all RLOs with the help of a software and also in MS Word files stored in computer systems and as well as in the form of register/hardcopy.

The reply confirms that maintenance of data base of licences issued was not uniform across all RLOs.

**(B) Non-renewal of wireless licences issued by RLOs to captive users**

Issue of certain types of wireless licences as mentioned above were decentralized to RLOs. The orders prescribing the rates of Licence fee and other fees, Surcharge/Late fee and charging methodologies for Royalty/Licensee fees for different type of assignments of frequencies to these 'Captive Users' stipulated *inter-alia* that

(i) No radio frequency shall be assigned, reserved, or blocked unless the applicant pays, in advance, all applicable license fees and royalty charges for the full duration of authorization/assignment of the radio frequency.

(ii) Where the period is greater than one year, the wireless/users applicant has to pay the license fee and royalty in annual installments in advance every year

(iii) Surcharge/Late fee for delayed renewal of various licenses shall be levied on the total amount due (i.e. license fee plus royalty charges) @ 2 per cent per month or part thereof, subject to the minimum of ₹ 250 per license. In case the delay is more than one year the said late fee shall be applied in an annually compounded manner.

Test check of records at RLOs Chennai, Delhi, Kolkata and Mumbai revealed that renewal charges for the period after the expiry of their validity had not been collected in respect of 2660 licensees, even though the licences had expired long back as detailed below:

Table - 3

(₹ in crore)

Sl. No.	Name of RLO	Earliest Date since expiry of License	No. of Captive Users whose licenses were not renewed	Amount of License Fee and Royalty Due
1.	Chennai	31 December 2009	182	0.48
2.	Delhi	31 December 2007	1176	2.37
3.	Kolkata	31 December 2009	51	0.07
4.	Mumbai	12 July 2007	1251	5.05
<b>Total</b>			<b>2660</b>	<b>7.97</b>

DoT (WPC) in its reply (August 2017) reiterated that renewal of wireless licence was a continuous process and every licensee had to renew or surrender it and late fee in case of delay renewal of licences was levied. It also stated that based on the observation by audit, all the licensees were served demand notices to regularize their licences by the RLOs. It was further stated that the strength of officers was grossly inadequate for the effective and efficient function of the RLOs. As regard ensuring timely receipt of revenue dues, a proposal for creation of enforcement group was under process. The proposed enforcement group consists of legal and finance officers to advice for proper function. The enforcement group would ensure timely renewal of the existing wireless licences by sending reminders/notices and subsequent follow up, if required in a comprehensive manner.

The reply is not tenable as justifying non-renewal by shifting onus on the licensees for renewal or to shortage of staff, the Department cannot abdicate from its responsibility in ensuring to take necessary action to put in place effective monitoring mechanism so that Government dues are recovered timely. The above replies indicate that there was neither monitoring of the use of spectrum nor the users were communicated to renew the license by licensor. It also implies that there was no mechanism put in place in RLOs to monitor timely collection of revenues due to the Government. Thus, failure of DoT to take timely action in renewing the captive licenses resulted in non-realisation of ₹ 7.97 crore (**Annexure - V**) on account of license fee and royalty in addition to late fee due for the licences issued by RLOs.

### 2.1.12 Other Issues

#### 2.1.12.1 Establishing and strengthening Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS)

Foundation stone for establishing Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) was laid in March 2011 with the objective to ensure an efficient spectrum planning and engineering to achieve optimal spectrum use in present and future. NTP 2012 also envisaged strengthening of the IARSEMS as a

Government Society for undertaking policy research in radio spectrum engineering, management/radio monitoring and related aspects. This institute was to be a Research and Development (R & D) institute and not a training institute. A committee on Establishment and Strengthening of IARSEMS recommended (March 2015) various measures to be taken up for establishment of the institute. However, no progress was made towards establishment of the institute.

DoT stated (October 2017) that a major decision (in principle approval of Telecom Commission) regarding establishment of IARSEMS was taken.

The need for the Institute may be reviewed by DoT as no concrete progress has been made so far and there are already centres for excellence for telecom in Indian Institutes of Technology (IITs). Further, DoT has its own telecom technology development centre as Centre for Development of Telematics (C-DoT).

#### **2.1.12.2 Non-recovery of Spectrum charges from SPOs, CPMFs, Doordarshan and All India Radio (Prasar Bharti)**

Prior to 01 June 2004, the Central Government organizations/Ministries/Departments were exempted from payment of License Fee and Royalty Charges (Spectrum charges) for their wireless network. The State Police Organisations (SPOs) were exempted from payment of Royalty charges on spectrum usage, however, they were required to pay Licence Fee for the spectrum. DoT decided (April 2004) to charge for spectrum from all the wireless users including Government departments/organizations as per the existing fixed formula with effect from 01 June 2004. Further, spectrum charges (Royalty) for captive users were revised with effect from April 2012.

Audit noticed that-

(a) There were 35 SPOs and eight Central Para Military Forces (CPMFs) who were assigned spectrum for their wireless network. The decision to levy spectrum charges was taken in April 2004 but even after elapse of 13 years, reconciliation of authorized frequency could be made in respect of only 20 SPOs and CPMFs. In respect of these 20 SPOs and CPMFs, total spectrum charges for the spectrum assigned before 01 June 2004 levied was ₹ 163.58 crore and late fee levied was ₹ 284.11 crore for the period 2004-14. Out of these amounts, only ₹ 100.86 crore had been received. In respect of spectrum assigned during 01 June 2004 to 31 March 2012 to two SPOs and CPMFs, ₹ 64.20 crore was levied as Spectrum charge and ₹ 85.60 crore was levied as late fee, out of which only ₹ 13.93 crore has been received. After 01 April 2012, the users were required to pay spectrum charges for the first year in advance before issue of frequency allotment.

Telecom Commission (TC) in April 2016 decided that late fee component from the spectrum charges conveyed towards the reconciled assignments issued to SPOs and CPMFs against the spectrum assignment made prior to 01 June 2004 may not be made

applicable but for frequency authorized during 01 June 2004 to 31 March 2012, spectrum charges along with late fee as applicable would be charged as per extant rules from the date of issue of the frequency allotment.

DoT (WPC) stated (August and October 2017) that in addition to demand notes issued to 20 SPOs (as on March 2017), 10 more SPOs have been issued demand notes and only five were pending, which was expected to be completed in a short period. Further out of eight CPMFs, two CPMFs (NDRF & SSB) were paying both spectrum fee and late fee. Remaining six CPMFs have reconciled their network and demand note is being issued for payment of spectrum charges shortly. In view of the decision of TC, late fee for spectrum charges prior to 01 June 2004 has been dropped.

This indicated the lackadaisical approach of WPC in resolving issues having huge financial implications. Though the demands stated to have been issued, no details of demand notes issued and payments received were furnished to audit.

(b) Similarly, Doordarshan (DD) provided details of frequency assignment to WPC during 2010 and 2012. Further, DD and All India Radio (AIR) informed WPC during 2013-14 that the Government waived off their spectrum charges due upto 31 March 2011 (₹ 455.89 crore- DD and ₹ 32.48 crore- AIR) and requested WPC to reconcile the spectrum charges in respect of its transmitters with effect from 01 April 2011. AIR further requested WPC to reconcile old frequency assignments for its transmitters and reiterated its intention to clear all its liabilities pending since 01 April 2011.

It was observed that WPC had not been able to reconcile the issues relating to the frequency assignments as well as the amount waived off by the Government. It was also found that DD and AIR were paying spectrum charges after March 2011 whenever it applies for frequency assignments for its new transmitters or replacements for existing transmitters. Letter of Intent (LoI) and subsequently Decision Letters (DLs) for 38 High Power Transmitters (HPTs) and 111 Low Power Transmitters (LPTs) were issued to DD during 2013-15. Considering the lowest rate for HPT/LPT, annual spectrum charges for Transmitters of DD as on 01 April 2010 would be ₹ 72.20 crore<sup>10</sup> for the year 2012-13 and onwards. Further, revised annual spectrum charges for one transmitter/station of AIR was in the range of ₹ 50,500 to ₹ 3,38,000.

WPC had not raised demands for annual spectrum charges in respect of old existing frequency assignments as well as for newly frequency assignments made to DD and AIR though they expressed repeated willingness of paying spectrum charges from 01 April 2012.

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<sup>10</sup> Annual spectrum charges for 103 LPTs were levied @₹ 361000 and @₹ 541000 for 8 LPTs. Also, Annual spectrum charges for 23 HPTs were levied @₹ 2026000 and @₹ 1351000 for 15 HPTs. (213 HPT x1351000+1203 LPT x361000)

DoT (WPC) stated (August and October 2017) that letter for reconciliation of spectrum dues to DD and AIR was issued (November 2016). It was also stated that licensees were required to apply for renewal of their licences and pay the dues timely. It was further stated that formation of Enforcement Group was also under active consideration which would ensure regular monitoring and timely receipts of dues.

The reply is not acceptable in view of the fact that though the decision to levy spectrum charges from all captive users including government organizations was taken in April 2004, demands for annual spectrum charges due from DD and AIR for old existing frequency assignments as well as newly frequency assignments (after March 2011) have not been made. This resulted in non-realization of revenues to DoT despite details furnished by DD and AIR and their expressed willingness to pay dues to DoT. National Frequency Register (NFR) is the basic document and it is referred by the concerned sections of WPC for any new frequency assignment. So, instead of taking proactive action to reconcile frequency assignments based on data already provided by DD and AIR as well as details as per NFR maintained by WPC itself, it had been awaiting for reconciliation provided by DD and AIR seriously compromising the revenue of DoT.

#### **2.1.12.3 Waiving off of Spectrum Charges receivable from Defence Services**

DoT decided to levy Spectrum charges (License Fee and Royalty Charges) from all wireless users including Government organizations/Ministries/Departments at the existing rates with effect from 01-06-2004.

Defence Services were identified as major user of spectrum in NFAP 1981 and continued to be so, however, no spectrum charges was received from Defence after 2004 till date. Meanwhile a Memorandum of Understanding (MoU) was signed between Ministry of Communication (DoT) and Ministry of Defence (MoD) for Vacation of spectrum and setting up of exclusive, dedicated OFC network for Armed Forces on 22 May 2009. In terms of the MoU, one of the triggers to release the spectrum by Defence Forces was “Waiving of Spectrum Charges for Defence Forces”.

In terms of Cabinet note on “Notification of Defence Band and Defence Interest Zone, which was approved by the Cabinet on 21 January 2015, a separate proposal for waiver of Spectrum Charges payable by Defence was to be submitted for the approval of the Cabinet.

However, it was noted that no such proposal for waiver of Spectrum Charges for Defence Forces has been got approved from the Cabinet till date. As such, as a matter of routine, WPC raises demands while issuing Letter of Intent (LoI) for any new frequency assignments requested by the Defence Forces but Defence Forces have not been paying any spectrum charges in view of provisions made in the MoU and the Cabinet note.



DoT (WPC) stated (August 2017) that in principle approval for waiver of spectrum charges for Defence had been obtained from finance Ministry on 21 March 2011 and it had been mentioned to quantify the exact amount for waiver. However, Defence has not provided complete details of assignments made prior to 2004 for calculating exact amount of dues for waiver. The exact amount of spectrum charges can be calculated after reconciliation of entire network of Defence. A proposal for approval of cabinet will be made after the entire network is reconciled.

Above confirms the laxity of WPC authorities in maintaining proper details of assignments made to important organisations like Defence and unreasonable delay in reconciliations and carrying out the decision of the Cabinet.

#### **2.1.12.4 Recovery of Spectrum charges from Private Captive users**

DoT committee constituted (December 2012) to look into the allotment/assignment of spectrum in the various categories (Commercial as well as captive users) in its report noted (March 2013) that data linking spectrum bandwidth utilization with spectrum earmarked in respect of licences in various categories of services along with revenue realized in respect of licences and frequency assignments was incomplete and opined that reconciliation of licensing records and revenue realization in coordination with Finance Branch needs to be urgently completed.

Spectrum for captive users to private as well as government users is primarily allotted in spectrum band below 806 MHz. No of licences under various categories of users (below 806 MHz) are as follows-

**Table - 4**

<b>Licence Series</b>	<b>No. of licences</b>	<b>Remarks</b>
P	6217	Private Licences
L	3304	Government Licences
G	556	PSUs Licences
M	113	Meteorological Licences
FL	1528	Government Licences
FP	1832	Private Licences
E	154	Electricity Deptt. Licences
EOT	102	Crain Related Licences
RP	200	Radio Paging Licences
FAA	53	AAI Licences

Particulars relating to realization of Spectrum charges from above users are maintained in Manual registers. Some registers relating to FL, FP, E and G licence series were test checked by audit to ascertain the realization of spectrum charges from such captive users.

Audit noted that there was no mechanism put in place by WPC to review realization of spectrum charges and to raise demands regularly (annually) for timely realization of

revenue from captive users. It was up to the users to pay spectrum charges on their own or WPC raised demands whenever users approached to WPC for renewal/surrender of licences. Particulars of licences test checked and cases of non- payment of spectrum charges are as follows-

Table - 5

Licence Series	Total no. Licence issued	Total no. of Licences test checked as per register	Cases of non payment
FL	1528	(Sl. No. 1094 to 1240)=147 (Sl. no. 931 to 1093)=163 <b>Total = 310</b>	18
FP	1832	(Sl. No. 336 to 500)=165 (Sl. no. 851 to 1030)=180 (Sl. No. 182 to 355)=154 (Sl. No. 501 to 665)=165 <b>Total = 664</b>	150
E	154	(Sl. No. 03 to 81)=79 <b>Total = 79</b>	14
G	556	(Sl. No. 01 to 117)=117 <b>Total = 117</b>	07
<b>Total</b>	<b>4070</b>	<b>1170</b>	<b>189</b>

Since the number of licences issued to captive users is huge, monitoring of realization of spectrum charges from individual users can be better managed through the system only. WPC implemented one system namely Automated Spectrum Management System (ASMS) in 2005 but realization of revenue was still manual and hence WPC was not been able to review realization of spectrum charges and raise demands leading to non realization of spectrum charges in time. Spectrum charges for captive users were revised w.e.f 01 April 2012. Due to non realization of annual spectrum charges in time, even when demand was raised for a long period, the licensees disputed the increased demand on some pretext or other. One such instance having substantial financial implication was noticed in respect of MRF Tyres Limited Chennai which was granted licence to operate VHF Wireless Radios for providing communication between their vehicles participating in the motor races and rallies conducted in different parts of India. MRF paid (September 2012) renewal charges of ₹ 1,36,150 for the period from 01 October 2012 to 30 September 2013. Subsequent to payment of renewal charge by MRF Tyres, WPC issued a demand for ₹ 9,38,358 as per revised rate for the period till September 2013. MRF contested the demand stating that the wireless operations were made by them within 5 KM radius only, even though it was an all India licence and requested (December 2012) DoT to reconsider the revision of spectrum charges notice. It was noticed that MRF did not obtain WOL and had not paid spectrum charges as yet. The spectrum charges along with penalty due for the period from 01 April 2012 to 30 September 2017 at revised rates worked out to be ₹ 55.33 lakh.

DoT (WPC) stated (August and October 2017) that unless otherwise requested by the applicant, Wireless Operating License (WOL), was granted for a period of one year with an option given to the licensee to renew the license for subsequent years by paying the license fee and royalty. The license fee and royalty are not changed every year. It also stated that spectrum charges were fixed one time charges and were not automatically recurring in nature and a parallel cannot be drawn with services such as telephone, electricity, gas etc. The wireless operating license grants the right of use of the specified frequency for a period of one year only. Presently, there is no rule to force the licensee to renew the license. However, in the cases where licencees are not renewing in time, late fee is levied in addition to normal charges.

It was further added that a proposal for creation of enforcement cell under WPC Wing was under consideration, which would ensure timely renewal of wireless licences among others. To prevent misuse of spectrum, inspection engineers are posted in the Regional Monitoring Headquarters and Monitoring Stations under Wireless Monitoring Headquarters (MHQ). The inspection engineers guide the wireless users in managing the licenses granted to them. However, considering that the captive use of wireless have increased considerably in the last decade, and based on past audit observations, a proposal to establish enforcement directorate was under submission.

As regard to the example of MRF Tyres Limited, it was stated that the error in issuing demand would be rectified and contested the amount arrived out by audit up to September 2017 as WOL had not been obtained by MRF Tyres Limited.

Audit observed that on one hand, Department justified non-renewal of licences by captive users and on the other hand considered a proposal to establish enforcement group. This contradiction in approach of the Department and inadequate monitoring and inspection mechanism for spectrum usage by various licencees indicates lack of any mechanism/system to realize due revenue in time from private captive users leading to loss of revenue. In case of MRF Tyres Limited, WPC could not revisit its demand even after the request made by it in 2012. Audit worked out the charges recoverable from MRF as per demand notes issued by WPC itself and assuming that it was using spectrum assigned to it as WPC had not debarred nor withdrawn the spectrum assigned to it.

### **Conclusion**

The spectrum as an economic resource is unusual in that it is both non-exhaustible and non-storable. Unlike oil and water, the spectrum will never run out, although it may become increasingly congested. Also, it cannot be accumulated for later use. These factors put a premium on a streamlined process for making spectrum available for purposes which are useful to society. How the RF spectrum is managed, has profound impact on the society, on its education, culture, prosperity and security. NTP 2012 had cast immense responsibilities on DoT for Spectrum Management. This included

re-farming of spectrum, harmonization of spectrum, promoting use of white spaces, strengthening of Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) and above all undertaking periodic audit of spectrum utilisation to ensure its efficient use.

Although Spectrum Audit has been initiated by DoT in October 2017, action was still due in most of the areas of Spectrum Management by DoT. The NFAP 2011 was not updated although two World Radio Congresses have taken place in 2012 and 2015. The National Frequency Register remained un-updated and was not the correct reflection of the frequency assignments with various users.

A substantial amount of spectrum as identified for commercial use was allotted to Defence and Railway on pan India (all LSAs) basis. Defence and Railway use such spectrum in limited geographical areas in a LSA leaving such spectrum in rest of the LSA as unused/vacant. Further, large amount of spectrum was kept unused/vacant in various LSAs.

There was good deal of action in re-farming of Spectrum from Defence. However, re-farming needs to be further taken forward not only in respect of spectrum held by Defence but also in respect of spectrum held by Space and Railway departments.

There were serious deficiencies in the maintenance of infrastructure for effective monitoring of spectrum even though it was one of the most critical responsibility of DoT. The updated database of wireless licences issued had not been provided to WMO and its monitoring stations thus making the whole monitoring process an ineffective exercise. Available equipment procured under World Bank funded scheme were not maintained and no action for suitable replacements of such monitoring equipment was made. Due to available vehicles not being in operational conditions, mobile monitoring could not be done upto desired level.

Spectrum is susceptible to harmful, illegal and unauthorized uses by unscrupulous agencies. Possibility of unauthorized use of vacant spectrum suitable for commercial use (2G/3G/4G) partially spectrum unused lying with Defence/Railway/DoT can't be ruled out in view of ineffective spectrum monitoring mechanism put in place.

## CHAPTER-III

### DEPARTMENT OF POSTS

#### 3.1 Audit of Core Insurance Solution (CIS) in Department of Post

##### 3.1.1 Introduction

Postal Life Insurance (PLI) was initially introduced in 1884 by the Government for the benefit of the Government employees and later extended to employees of Central, State, Public Sector Undertakings (PSUs), Nationalized Banks, etc. PLI also extends the facility of insurance to the officers and staff of the Defence services and para-military forces. Apart from single insurance policies, Postal Life Insurance also manages a Group Insurance scheme for the Gramin Dak Sevaks of the Department of Post (DoP). PLI offers seven types of policies viz. Whole Life Assurance (SURAKSHA), Convertible Whole Life Assurance (SUVIDHA), Endowment Assurance (SANTOSH), Anticipated Endowment Assurance (SUMANGAL), Joint Life Assurance (YUGAL SURAKSHA), Scheme for Physically handicapped persons and Children Policy

**Rural Postal Life Insurance (RPLI)** was established to extend its coverage to the rural areas to transact life insurance business with effect from 24 March 1995. The prime objective of the scheme is to provide insurance cover to the rural public in general and to benefit weaker sections and women workers of rural areas in particular and also to spread insurance awareness among the rural population.

The details of number of active policies under PLI/RPLI, Sum assured and Premium Income for the two years ending 31 March 2017 is furnished in the Table below:

**Table 1**

#### Details of Number of active policies, Sum Assured Premium Income

Particulars		2015-16	2016-17
Number of active policies (in lakh)	PLI	49.30	46.80
	RPLI	149.15	146.84
Aggregate Sum Assured (₹ in crore)	PLI	109982.09	113084.81
	RPLI	81733.73	83983.47
Premium Income (₹ in crore)	PLI	6657.03	7233.89
	RPLI	2012.17	2120.02

##### 3.1.2 Implementation of Computerization of Core Banking (CBS) and Core Insurance Solution (CIS)

As a part of Information Technology (IT) Modernization Project, DoP carried out Business Process Re-engineering (BPR) across various functional areas and created To-Be processes to achieve BPR objectives. In order to implement these To-Be processes in a sustainable manner, Core Insurance Solution (i.e. McCamish system) was

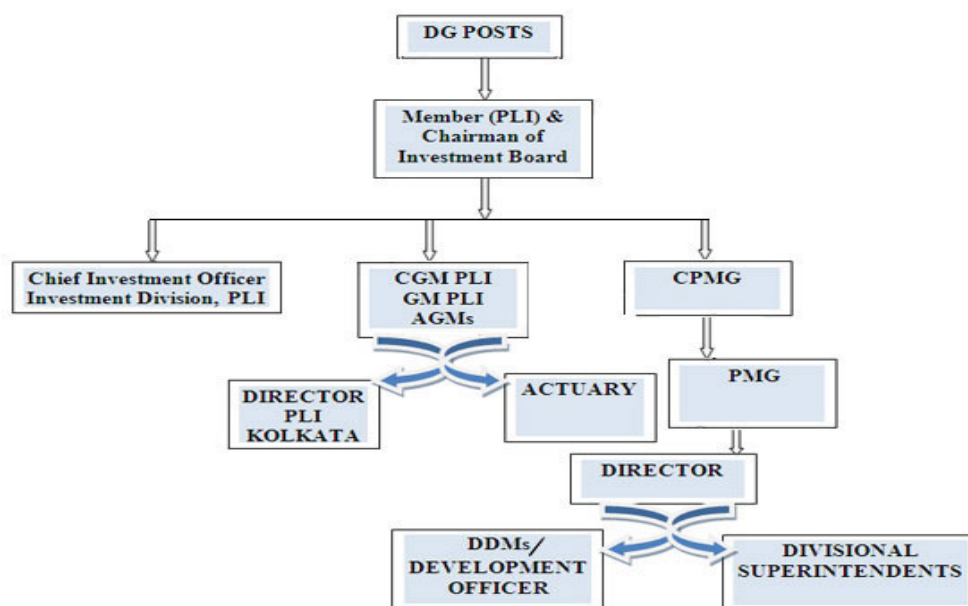
embedded in the Financial Services System Integrator (FSI), one of the eight silos of the India Post 2012 IT modernization Project. The project for Computerization of Core Banking (CBS) and Core Insurance Solution (CIS) was awarded (August 2012) to M/s Infosys as a single Financial System Integrator (FSI) at a cost of ₹ 649 crore, out of which the cost of software related to CIS was ₹ 70.70 crore. The project components like central/branch level hardware and network are commonly shared by CBS and CIS. The project commenced in September 2012 and migration was completed in July 2016. The scheduled date of completion of acceptance testing was 28 July 2014. The Roll Out including data migration of CBS, PLI and Enterprise Content Management System (ECMS) was accepted on 31 July 2016 and certificate of acceptance was issued on 26 December 2016. As of date (March 2017), the project is under Operation and Maintenance by M/s Infosys.

The Key Objectives of the Life Insurance being part of India Post Project were:

- To become the first choice insurer in rural India;
- To develop a fully integrated life insurance platform to enable efficient and cost effective service to existing and new customers;
- To improve the quality of service being offered to the customers; and
- To achieve “financial inclusion” of the un-insured rural population, while minimizing the cost of operation.

### **3.1.3 Organisational setup**

Directorate of PLI under the DoP, headed by a Chief General Manager, is the apex body for formulation of all policies, products and administration of the Post Office Insurance Fund. The procurement of business, after sale service and all types of claims management are performed in the field, i.e. Circles. The Office of Director, PLI, Kolkata functions as the Central Accounting Office. The Investment Division, PLI is headed by the Chief Investment Officer, PLI and is located at Mumbai.



McCamish is a total insurance solution which handles the following functions:

- New Policy Proposals
- Policy Serving
- Document Scanning & saving
- Managing Agents
- Customer Service

The above activities are carried out by the following systems:

- Lead Management System-Monitor and track all prospective clients, generate calling schedules, distribute leads and route them to designated agents, generate reports to monitor sales pipeline, track and capture client communication etc.
- Work Flow Management System - Rule-based workflow on policy creation, issue, approvals, claim servicing, loan sanctions, sales & marketing etc. and Task automation (SMS alert, generation of customer IDs, alerts on policy approval, cheque bouncing, e-mail notice, policy lapse notice, etc.).
- Agency Management System-Manage day to day transactions with agents (monitor sales, generate agency performance), agency profile creation, agency recruitment, licensing, calculation of commission, disbursement of commission, training, etc.
- Enterprise Content Management System (ECMS)-A separate system integrated with McCamish for scanning and storage of documents as soft copies.

### 3.1.4 Scope of Audit

An IT Audit on implementation and functioning of Core Insurance Solution was conducted in 28 Head Post Offices (HPOs) in six selected Circles<sup>1</sup> of Department of Post during the period from April 2017 to June 2017 with a view to ensure that the Department's business needs have been met without compromising security, privacy, cost and other critical business elements. The Data Centre at Navi Mumbai and Disaster Recovery (DR) Centre at Mysore were also visited by the audit team. The records maintained in the Postal Directorate and O/o CGM (PLI) was also examined during the audit.

Management of Investment of Fund of PLI and RPLI was included in Comptroller and Auditor General of India's Report No. 29 of 2016. The following deficiencies were pointed out in the said report:

- Non-consideration of daily net accretion of fund generated through McCamish System for investment; and
- Mismatch of receipt and payment figures as uploaded by HPOs in NIC/McCamish and Cash Account figures prepared by HPOs;

### 3.1.5 Audit Objectives

The main audit objectives were to:

- ascertain whether the PLI/RPLI related Rules and Regulations were correctly incorporated in the system for its effective functioning; and
- ascertain whether the migration and rollouts were carried out in such a way that the department's objectives in introduction of the system were achieved.

### 3.1.6 Audit Criteria and Methodology

The criteria considered for assessing the achievement of audit objectives were:

- ✓ The functional/technical requirements specified in the Request For Proposal (RFP) and the milestones prescribed on implementation;
- ✓ The rules and regulations on PLI and RPLI contained in Post Office Life Insurance Rules 2011; and
- ✓ Best practices in Information Technology controls and security.

Audit adopted system based techniques like use of menu facilities in CIS in the HPOs of six selected Circles and examination of relevant records at Postal Headquarters, PLI Directorate. It also involved:

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<sup>1</sup> Delhi, West Bengal, Maharashtra, Punjab, Karnataka and Tamil Nadu



- Visit to HPOs, Divisional Offices, O/o DDM PLI, Postal Circle Offices in six selected Postal Circles;
- Visit to Data Centre at Navi Mumbai, Disaster Recovery Centre at Mysore and Centre For Excellence in Postal Technology (CEPT), Chennai;
- Issue of audit questionnaire and Joint meeting with the IT vendors;
- Interaction with users and System Administrators;
- Examination of records maintained at Circle, PLI Directorate and Postal headquarters level on formulation of the project, implementation of the project and various field reports;
- Checking of functional/technical requirements prescribed in the RFP were carried out in a distributed manner in the selected circles; and
- Confirmation of audit observations through issue of audit memos to the Management before firming up the audit conclusions.

### **Audit Findings**

Audit checks conducted on the software functionalities revealed serious deficiencies on non-compliance with RFP/POLI Rules 2011, flaws in workflow, IT control deficiencies, erroneous calculations etc. which are detailed below:

#### **3.1.7 Functional Deficiencies in the software**

##### **3.1.7.1 Non-generation of Unique Customer ID**

The Request For Proposals (RFP) for Financial Services System Integrator for IT Modernisation Project stipulated that the system must generate Unique Customer ID for every policy owner, life insured, nominee/beneficiary/assignee and for every person who submitted a proposal and whose details were entered in the Core Insurance System. It was essential that a policy holder should be allotted a Unique Customer ID and all subsequent policies should be linked to that ID to ensure that the total sum assured does not exceed the prescribed financial limit for PLI and RPLI. The system provided for tagging with existing customer ID of the proponent who was already having PLI/RPLI policy.

Audit observed that instead of tagging the new proposal of the existing customer with the already available Customer ID by the Data Entry Operator, a new customer ID was being created for new policy enrolled in the system. Hence, different customer IDs were created in the system for different policies taken by the same customer. Consequently, the Core Insurance Solution (CIS) could not exercise necessary system based controls on the financial limit<sup>2</sup> on sum assured for an insurant.

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<sup>2</sup> Maximum or Aggregate Sum assured in respect of PLI and RPLI were ₹ 50 lakh and ₹ 10 lakh respectively.

Though the data entry screen accepted the Aadhaar number of the insurant as one of the identities, it was not a mandatory field.

Ministry replied (October 2017) that functionality for merging more than one customer IDs of same insurant for different policies was already under testing with Centre For Excellence in Postal Technology (CEPT) and once testing was completed successfully, the same would be deployed. It was also stated that in legacy system of National Informatics Centre (NIC), there was no Customer ID and when data was migrated, each policy was assigned separate Customer ID.

While appreciating the limitations of legacy system, Audit contends that the system should have the facility to prompt the data entry operator about matching names, street, etc. so as to prompt for search of any existing Customer ID before generating a new one for the proposal under consideration.

### **3.1.7.2 Functional Deficiencies on Medical Examination of Insurants**

As per Rule 28 of the POLI Rules 2011, when a proposal is not accepted within 60 days after the proposer has been medically examined, a second medical certificate shall be obtained. If the policy is declined by the Department, the amount of premiums shall be refunded to the proponent after deducting the Medical Examination Fee. RFP stipulated that these provisions should be embedded in the system.

Audit, however, observed that the system had following deficiencies:

- i) **Date of Medical Examination:** The date of medical examination was not recorded in the CIS at the time of data entry of the new business proposal. Due to this, the CIS did not prompt for second medical examination in case a proposal was not accepted, after the proposer has been medically examined, within sixty days.
- ii) **Non-deduction of Medical examination fee in respect of declined proposals:** The system failed to deduct medical examination charges and refund sanction was generated without deducting the amount of medical charges.

To illustrate, in case of a proposal declined in Basavanagudi HO under Karnataka Circle and initial refund of premium was made, the receipt generated by the system did not deduct the medical examination fee and sanction was issued manually for the refund net off medical fee.

Ministry replied (October 2017) that regarding date of medical examination, the issue was taken up with the vendor. Regarding Non-deduction of Medical examination fee in respect of declined proposals, it was stated that although the amount was wrongly indicated in the letter generated, correct amount was shown in disbursement. The issue was taken up with the vendor.

The reply indicates that compliance to the RFP as well User Requirement Specifications were not ensured before making the system live.

**3.1.7.3 Failure to accept revival amount in instalments in respect of lapsed policies**

As per POLI Rules, 2011, revival of a lapsed policy shall be subject to payment of all arrears of premia with interest thereon at the rates prescribed by the Director General of Posts. The interest prescribed by the Director General of Post was 12 *per cent* per annum calculated as simple interest upto 12 months of default and at the compounded rate for more than 12 months.

Audit scrutiny revealed the following irregularities in the system on revival of lapsed policies:

**i) Excess Calculation of Interest**

A test check in Tamil Nadu Circle revealed that the interest calculated by McCamish for the revival of policies was higher than the actual interest due in 15 cases.

Ministry replied (October 2017) that issue was being examined with the relevant data available in the system for taking needful action.

The reply does not address the audit observation regarding deficiency in the system.

**ii) Non-acceptance of dues in instalments**

Audit scrutiny in Tamil Nadu Circle also revealed that even though the system generated the revival quotes for payment of dues in one lump sum or in instalments up to 12, the system could not accept payment in instalments. As a result, revival of RPLI policies were affected as most of the insurants preferred only payment through instalments. Further, on payment of first instalment, the status of policy became active and premium for all defaulted months were shown as paid, resulting in leakage of revenue.

Ministry replied (October 2017) that in accordance with the spirit of POLI Rules 2011, the system treats the policy as active when the regular instalments of arrears of premium with due premium is received. However, in case there is a default in making payment of instalment within due date till last instalment, the status of the policy becomes lapsed again and the amount already paid in instalments would move to suspense. Thus, there was no defect in the system. Ministry further stated that updating all instalments of policy on payment of the first instalment and cases of non-acceptance of instalments were being examined by obtaining details from Circles and also getting data of instalment revivals from Infosys.

The reply indicates that compliance to the RFP as well User Requirement Specifications were not ensured before making the system live. As the defects pointed out could result

in loss of money to the Government in case of complete reliance on the system, Ministry needs to ensure that the defects are set right at the earliest.

### 3.1.8 Computational Errors in Surrender Value, Rebate and Interest.

#### 3.1.8.1 Surrender Value

##### a) On Conversion:

As per POLI Rules 2011, Convertible Whole Life Policy can be converted into an Endowment Assurance (EA) policy maturing at a specified age, at the end of five years (with a grace period at the end of six years) from the date of commencement of risk. When such a policy is converted to EA, the bonus will be retrospectively recalculated as if the policy existed as EA from the date of issue. It was noticed that the surrender value calculated by the system was in excess by ₹ 18,898.31 in a single case in Maharashtra Circle.

##### b) On Commutation

Audit observed that the paid up value generated by the system were more than the actual amount due in case of surrender of policies where the policy holders opted for commutation of policies (commuted prior and after migration to McCamish) as detailed below:

Table 2

Sl. No.	Policy Number	Paid up Value as per CIS (₹)	Paid up value Due ( Sum Assured * No. of prem. Paid/Total no. of Premium (₹)	Excess (₹)
1	TN-540438-B	69,078.95	59,064.33	10,014.62
2	TN0585768-CS	1,19,302.05	1,15,413.54	3,888.51
3	TN-598310-CS	1,54,861.89	1,44,478.85	10,383.04
4	R-TN-EA-2354292	92,500.00	89,090.91	3,409.09
	<b>TOTAL</b>			<b>27,695.26</b>

Calculation of higher paid up value was particularly noticed in those cases where the sum assured was reduced through commutation.

Ministry replied (October 2017) that the issues were taken up with the vendor,

As the defects could result in loss to the Department, expedite action needs to be taken to set right the same to avoid both duplication (generation of calculation by the system and checking of the same manually) as well as delay to the customers in settlement of the claims.

#### 3.1.8.2 Rebate

In terms of Policy Design Brochure of PLI/ RPLI as circulated by the PLI management, the tables of premium are based on “Monthly Premium for per ₹ 10,000/- sum assured”.

In terms of Rule 22 of POLI rules, 2011 rebate is allowable for advance deposit of PLI premium for 6, 12 or more months. Rates of such spot rebate are two *per cent* for greater than 11 months and one *per cent* for greater than five months in case of PLI premium. No rebate is allowable in case of advance deposit of premium for 3 months (quarterly).

A test check of CIS generated dummy quotations revealed that system allowed rebate in excess of the eligible rebate in cases of half yearly and yearly mode. System also allowed irregular rebate on quarterly payments. It was also noticed during audit that the system calculated premium for half yearly and annual premium at a lower rate than those applicable for advance deposit for equivalent periods on monthly basis with rebate.

Maharashtra Circle replied that there was a difference between manual and system calculation premium which was not rectified, West Bengal Circle stated that a pre-devised chart of premiums payable for quarterly and annual mode was fed in the system and accordingly system generated quotations matched with the same chart. As such, there was no excess rebate allowed.

Ministry stated (October 2017) that the system was calculating the rebate and premium as per rules.

The reply is not acceptable since the rate chart pertained to 2003 and did not match with the prevailing rate of rebate. Thus, the rate chart was not updated in the system indicating that there was no periodic review of the rates entered in the system so as to ensure their relevance.

### **3.1.8.3 Delay in incorporation of changes in POLI rules**

Any changes made in the POLI Rules are to be duly incorporated in the CIS through necessary modifications in the software. As per the Gazette Notification of January 2016, the condition for payment of a given sum of money was changed from 'death of the insurant' to 'on attaining the age of 80 years' in the case of Whole Life Assurance (WLA) and Convertible Whole Life Assurance (CWLA) policies. The Centre of Excellence of Postal Technology (CEPT), Chennai, under DoP was authorized to test all modifications in software before implementation.

During the audit of CEPT, Chennai, it was noticed that the necessary software patch for incorporating the above change was not submitted by the FSI vendor for testing even after more than one and a half years and the fact was accepted by the Department.

Ministry stated (October 2017) that the FSI vendor was directed to provide the functionality which would be offered for UAT in seven weeks from 01 October 2017.

The reply indicated the Department's failure in initiating timely action for incorporating the change in the software.

### **3.1.9 Functioning of Agency Management System (AMS)**

As per the RFP, the Agency Management System (AMS) of CIS must assist PLI team to manage day-to-day transactions with agents, view agent database to assign leads, monitor sales and premiums collected. The system should also have ability to generate agency performance management reports, handle agency billing, payments, licensing, filing, reporting, performance management and ensure that commissions will only be paid to the agents for the business procured by them while their agency is active. It must have the ability to calculate additional incentives based on performance management and special promotion schemes.

It was noticed that the AMS was not operating in an integrated way to deliver the desired objectives as defined under the RFP. The incentive/commission due to be paid to the agents was not generated by CIS. The sanctions for the incentives to agents were issued on the basis of manual calculations. Such manual process involves risk of improper payments besides defeating the objective of computerization.

Ministry stated (October 2017) that initially AMS was working fine for policies where premium was collected in CIS directly. The issue of non-generation of incentive/commission by the system cropped up in the year 2016 as a major issue. The matter was taken up the vendor who intimated that fixing of this issue would take considerable time. It was also stated that non-updation of premium posting for pre-migration period and also non-collection of premium through collection screen of CIS after migration were contributory factors for non-generation of incentive/commission correctly by the system. Ministry further stated that provision for the new marketing structure and new incentive/commission structure effective from 01 August 2016 and 01 April 2017 respectively were yet to be made in the system. As the vendor was insisting that it was a major change involving cost, the matter was taken up with the Project Management Unit (PMU) Division for defining major and minor changes. The Department also stated that the agency module was not fully operational and the agent's commission was calculated manually.

The reply indicates that proper training was not given to data entry operators regarding the process of collection of premium as well as the fact that timely updation of the rates in the system was not ensured.

#### **3.1.9.1 Flaws in Work flow Methodology resulting in Polices escalating to Wrong approver**

Work Flow Management System (WFMS) in CIS must have the ability to assign proposals automatically to the appropriate data entry operator, based on business rules/criteria. When the aggregate limit on a claim exceeds the limit prescribed for the user, WFMS must assign the claim to the supervisor for approval. The Work Flow should move from one stage to the other stage based on the responsibility level and financial powers granted to departmental officers. Further, the policies should escalate

only to the authorized approvers and they have to be removed promptly from the queue once approval/rejection was granted.

During audit, it was noticed that there were deviations in the work flow which resulted in policies escalating to wrong approvers in 18 cases in Maharashtra, two cases in Karnataka Circle and 38 cases in Tamil Nadu Circle. Deficiencies in workflow resulted in non-observance of the financial limits prescribed by the DoP for approvers at various level.

Ministry stated (October 2017) that as per system design, aggregation in sum assured was checked by system for policies attached with same Customer ID. If the new proposal was not tagged with the Customer ID during the data entry, system will not aggregate the sum assured and move the case to approver based on sum assured of the said proposal. It was also stated that in legacy system of National Informatics Centre (NIC), there was no Customer ID and when data was migrated, each policy was assigned separate Customer ID. Ministry further stated that a new functionality to merge different customer IDs was under testing with CEPT.

While appreciating the limitations of legacy system, Audit contends that the system should have the facility to prompt the data entry operator about matching names, street, etc. so as to prompt for search of any existing Customer ID before generating a new one for the proposal under consideration.

### **3.1.10 Integration of other applications with CIS**

#### **3.1.10.1 Inconsistencies in treatment of cheque payment by customers due to lack of system functionality in reversing the credit in the event of cheque dishonor**

Industry practice and Post Office Life Insurance (POLI) Rules 2011 as amended from time to time prescribes that date of receipt for Cheque is the date of receipt of premium.

The RFP specified that the date of receipt for cheque should be date of receipt of premium and in case of cheque bounce; the system must provide the functionality to reverse the premium entry, if already passed in CIS. It must also reverse the subsequent entries passed, if any.

Audit observed that there was no uniform procedure in the Circles in accepting and accounting cheque payments. While Karnataka, Tamil Nadu and Maharashtra Circles accounted the date of presentation of cheque as the date of payment. Punjab, Delhi and West Bengal Circles accounted the date of clearance of the cheque as the date of payment. Further, the system was not reversing the entries automatically in case of dishonor of cheques.

Ministry replied (October 2017) that as per system design, cheque has to be accepted in the CIS on date of presentation of cheque. The system would send the details of the cheque to CBS for clearance and premium is updated in CIS. However, in case of dishonor of cheque, CBS would pass on the information to CIS and system would

automatically reverse all entries passed. Presently, integration of CIS and CBS was not in place and hence, automatic reversal of credit was not happening. Integration issue was taken up with the FSI vendor. It was also stated that till such integration was made, an alternate solution for reversing the entries of dishonored cheque was made available through suspense maintenance of CIS system.

As different procedures have been adopted by different Circles, the reply that as per system design, cheque has to be accepted in the CIS on date of presentation of cheque is not convincing. Ministry may review the prevailing procedure in all Circles and ensure that the procedure is not only uniform but also complies with the statutes.

### **3.1.10.2 Integration of CBS with CIS**

As per RFP, the system should seamlessly integrate with other business systems such as Mail, Package Applications, etc. when India Post Integration backbone is available

Due to non-integration of CBS with CIS, the insurant could not pay the premium/loan amount by auto transfer from his Post Office Savings Bank (POSB) account. The credit in respect of maturity value/loan also could not be transferred to the insurant's POSB account by the Department.

Ministry stated (October 2017) that the matter was taken up with the FSI vendor and being pursued vigorously.

The reply indicates the fact that compliance to RFP was not ensured in entirety resulting in various shortcomings and necessitating manual intervention defeating the objective of computerisation.

### **3.1.10.3 Declaration of bonus**

Actuarial Valuation is a process by which a prudent estimate is made as to the value of the unexpired policy liabilities of the insurer. Declaration of bonus on PLI/RPLI policies is made on the basis of such valuation report. RFP specified the following functional requirements for generating data connected with actuarial valuation:

- (i) Must be able to generate reports based on claim type (surrender, maturity, and death), product type and area of loss to actuarial department and product development department
- (ii) Must be able to generate reports products wise, Claim amount paid on incurred basis to actuarial department and operating office
- (iii) Core Insurance System must allow the actuarial team to access case wise data of existing product portfolio to assess the product performance

In DoP, the actuarial valuation is done after preparation of financial review and preparation of revenue account by the Director, PLI, Kolkata and approval by Postal Secretary. The required data is to be given to the valuating agency by the PLI Directorate by 30 September every year to the actuarial agency. Under the legacy



system, bonus declaration was made after a delay of one year and till such time bonus for the policies matured during the year was paid at the rate applicable for the previous year.

Audit observed that the data required for actuarial valuation could not be generated in the system leading to delay in completing the actuarial valuation. Bonus for the year 2015-16 could not be declared so far (December 2017) due to problems connected with generating the required data from CIS.

Ministry stated (October 2017) that there were several legacy policies where premium posting was pending before migration due to non-availability of live system at collection counters. Certain fields were added in the actuarial valuation data/reports and analyzing the data received from FSI vendor took time. After analyzing the data and addressing the issues, the data was furnished to Actuary for valuation.

The reply vindicates Audit contention that compliance to RFP was not ensured in entirety resulting in non-utilisation of benefits of computerization.

### **3.1.11 Information Technology Security & Controls**

#### **3.1.11.1 Multiple Logon Functionality**

Multiple logon functionality allows a user to log on the system from more than one terminal concurrently. Multiple logons open up unsecured connections in the network since accessing the system from such open terminals by unauthorized user is possible exposing the system to serious data security risks. Multiple logons will also compromise the traceability in the event of any unauthorized access.

Audit noticed that multiple logon by the same user were allowed in the system.

Ministry stated (October 2017) that the matter was taken up with PMU division for getting necessary provisions made in the system.

As multiple logons would compromise the security of the system, the Department needs to ensure that the facility is disabled at the earliest.

#### **3.1.11.2 Inadequate IT Controls in Bulk Upload Facility**

Bulk Upload Facility is a facility in CIS for updating the premium posting for those policies where

- maturity date has passed or death claim or surrender request has been indexed and no front end collection is, as such, possible;
- policies have lapsed due to non-updating of premium posting in NIC system by offices concerned, and hence, updating of premium posting is required;
- for pay policies, this functionality is used after following process of 'Special Group Collection'.

Except cases mentioned above, in other cases, Bulk Upload utility to update the premium posting of legacy data should not be used as per the Standard Operating Procedure (SOP) issued by Postal Department in September 2015.

The following audit observations were made in this regard:

- Bulk Upload Facility was used for purposes other than that specified in the SOP. For example, bulk upload facility was used for uploading premium collected by salary deduction in other Government/Semi-Government entities;
- The files uploaded through bulk upload contained various errors /deficiencies;
- There was no reconciliation of the amount of receipt updated in CIS through “.csv” files with that of actual receipt accounted in the books of accounts; and
- There was no reporting structure available to the CPC Manager/Circle level to monitor unauthorized use of bulk uploading facility.

The use of bulk upload facility for the above rendered the system vulnerable for fraudulent updating of premium/loan recovery/revival receipts. A fraud case involving misuse of bulk upload was reported in Tamil Nadu Circle where a counter PA misappropriated PLI/RPLI collections to the tune of ₹ 3.15 lakh by not crediting the receipts and uploading bogus excel files through bulk upload by logging into HO/CPC without the knowledge of SPM/HO.

Ministry stated (October 2017) that as per process in system, first collection has to be done through collection screen of CIS for pay recovery policies of a particular special group and then schedules received in soft copies are uploaded against that collection and group. System checks total values of both amount collected and total value of schedule and allows upload of premium posting in policies to the extent of amount collected. It was further stated that there were several legacy policies where premium posting was pending before migration and to update those premium postings in the policies, option for updating the premium posting through “.csv” files was provided. Bulk upload is an essential facility since if the functionality was removed, the Department would not be able to update premium posting in those policies where premium was received and then, servicing those policies would be impacted. Ministry further stated history of uploaded “.csv” files were available in the system along with details of user who uploaded the files and hence, can be checked by the Supervisor of CPC or any other authority having access to this functionality. It was also stated that the instructions were issued to the effect that upload of “.csv” file should be made after approval of CPC Manager and feasibility to restrict the access of premium posting through “.csv” files to Circle or CEPT level was under consultation with the FSI vendor.

The fraudulent transaction as stated above indicates that the SOP issued by the Department did not provide adequate safeguard against misuse of bulk upload facility. Lack of system based supervisory controls facilitated manipulation in bulk upload.

### **3.1.11.3 Lack of Supervisory controls on Cancellation of Premium Collection**

The collection dashboard of McCamish system has a provision (radio-button) for cancellation of receipt of premium/loan. Such cancellation can be done by the Postal Assistant at the counter, after receipt of premium payment and issue of receipt to the customer for which, he/she required no system based authorization/approval from the supervisor. Such cancellation can be done before end of the day and it will not be reflected in day end collection report also. The receipt numbers in the day end collection report was also not in numerical order as the receipts were generated on Pan India basis. The cancellations made at the counter were not reflected in the Treasurer's Cash Book/HO Cash Book but only in the premium collection report. This was a serious control deficiency fraught with the risk of embezzlement of PLI receipts. It could also lead to lapse of policy and subsequent customer hardships.

In December 2016, PLI Directorate issued instructions forbidding cancellation of collection by counter Postal Assistant (PA) on his own without following prescribed procedure of noting the error and permission of authority concerned.

An instance of embezzlement of ₹ 70,000/- being the premium collected by exploiting the lack of system based supervisory control was reported from Tamil Nadu Circle.

The following further system deficiencies were also noticed in this regard:

- i) There was no cross checking mechanism in-built into the CIS for guarding against misuse of such option.
- ii) The staff in the Central Processing Centre section could also access the collection module. This indicated that there was improper segregation of duties.
- iii) The system could be accessed by the users even after closure of business hours for not only accessing reports but also to enter/modify receipts and payments too. In such a scenario, premium could be collected and entered into the CIS even after generation of 'Day end Collection Report' at the close of business hours and such receipt could be kept out of Government account.

Ministry stated (October 2017) that the cancellations were reflected in the Premium Collection Report and it was also directed that DPM/APM/Supervisor of counter would check that no receipt of collection was cancelled by counter PA without following prescribed procedure and permission of authority. It was also stated that the matter was taken up with FSI vendor for making certain provisions in the system for prevention

and detection of irregular activities which included provisioning of restricting collections beyond business hours. Ministry further stated that instruction was being issued for removing access of collection to CPC staff and on implementation of CIS, wherein functionalities of ‘Single sign on’, HRMS and “Identity and Access Management”, were available, PLI staff would have access only to the defined functionalities as per the defined roles in the ‘IAM’ automatically.

Availability of access to the system even after closure of business hours indicates serious system design flaw. Further, despite system checks as stated by the Ministry, the fact misappropriation of money took place calls for immediate review of system design and corrective action to avoid recurrence of the same.

#### **3.1.11.4 Unrestricted rights/ privileges to a System Administrator of a Circle Processing Centre (CPC)**

As per the RFP, the system must allow the administrator to limit access to records, files and metadata<sup>3</sup> to specified users or user groups.

It was noticed that the System Administrator (SA) of a Circle Processing Centre (CPC) enjoyed the privilege to view/change the roles and authorizations of users of other Postal Circles also. Existence of this provision is a serious threat/security lapse. The SA of a CPC should be able to view only the groups related to that CPC and its Sub Office. Similarly, queue accessing level operation should also be restricted.

Ministry stated (October 2017) that as per system design, System Administrator of a Circle cannot view the users of other Circles. The issue reported was being analysed/ examined for taking appropriate action in the matter.

#### **3.1.11.5 Lack of adequate controls in suspense maintenance menu which gives scope for manipulations in suspense**

During audit, it was noticed that the amount shown under suspense in the system could be transferred to any other policy. The fact that premium of a policy could be transferred to any other policy and the premium could also be reversed was reported by office of Post Master General (PMG) Central Region, Tamil Nadu to the Chief Post Master General, Tamil Nadu in May 2017.

In Tamil Nadu Circle alone, ₹ 210.83 crore was found under suspense in respect of premium, loan and interest recovered through the pay of State and Central Government departments which were updated into the system through bulk upload of “.csv” file. There was no front end tool to watch appropriations out of the suspense head. The lack of necessary controls in suspense maintenance menu is a serious control deficiency which involved the risk of manipulations of suspense available in the system.

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<sup>3</sup> A set of data that describes and gives information about other data

Ministry stated (October 2017) that there were requirements in the RFP for transfer of funds from one policy to another policy and also for reversing the transactions. Instruction was being issued to ensure restriction of suspense maintenance functionality to CPC supervisors only.

### **3.1.11.6 Lack of functionalities on Fraud Management System**

India Post 2012 initiative of DoP envisaged a robust and resilient information security system to protect critical digital assets of the organization. Accordingly the RFP prescribed the following fraud related security requirements:

- (i) The solution must support proactive detection of fraud related incidents;
- (ii) The solution must provide for analytical capability that can quickly detect emerging patterns based on a relative sample of fraudulent activities;
- (iii) The solution must have ability to take feeds from customer contributed fraud related information like fraudulent IP addresses, Device IDs, etc.;
- (iv) The solution must be able to receive inputs from online fraud monitoring services;
- (v) Monitor all channels simultaneously and detect patterns across all of them in real time for enhanced correlation of fraudulent activities;
- (vi) The system shall have the ability to create follow up tasks after fraud case has been flagged; and
- (vii) The system shall flag claims to show that they are under fraud investigation.

However, the above requirements were not available in the system at present. Since these are very critical in detection and prevention of frauds in a network environment, non-implementation of the same would compromise the security of the system.

Ministry stated (October 2017) that the matter was taken up with Infosys about the security requirements listed RFP. PLI Directorate was pursuing the matter with CEPT.

The reply indicates that compliance to RFP was not ensured before the system went live. Department needs to take expedite action to ensure that the above features are implemented without further delay so as to ensure that security of the system is not compromised.

### **3.1.12 Availability of User Log and Audit Trail**

User Log and Audit Trail are two critical capabilities of an IT system to monitor the user activities and changes made in the database. System should generate log report of users logging in and out of the system throughout a period of time and also generate reports for login access, staff with multiple level accesses, functionality based access,

user Ids disabled, suspended, cancelled users, etc. An audit log or audit trail is a chronological record of security-relevant data that documents the sequence of activities affecting an operation, procedure, event, file or document.

### **3.1.12.1 User Log**

As per the RFP, the system should produce and maintain system audit logs on the system for a period agreed to with DoP and on expiry of the agreed period, the audit logs should be archived and stored off-site. The CIS has various levels of users in hierarchical order in-built into the system. Periodical monitoring of logins of the users in various CPCs under each Circle level is very important in identifying any violations of the access policy of the department.

However, it was observed that the user log report was not available in the system in front end at Circle level. There was no provision for periodical back up of the system log. Further, in case, system log was required for investigation purpose in fraud cases, Circle authorities have to depend on the FSI vendor for generation of required details. Absence of such monitoring at Circle level would lead to fraudulent activities going unnoticed.

The system should also support tracking of all the System administration activities within appropriate system log. It was noticed that no such logs were being maintained and system was not configured to auto save the logs in the system. As such, the activities of the System Administrator could not be tracked.

### **3.1.12.2 Audit Log**

As per the RFP, the system should generate audit trails of all transactions. The minimum fields that should be captured in the audit trail are Date and time stamp, Transaction ID linked to every transaction/activity. Transaction ID has to be unique and should not be duplicated. Further the Transaction ID should be generated whether the transaction is successful, unsuccessful/rejected, User ID, Authorized By and Overridden By, etc. It should also track changes made in parameter files along with detailed audit trail. These were essential audit trail related requirements in the RFP.

During audit, it was noticed that there was no provision for a report in the front end to monitor the changes made by the software vendor, in the existing policies after migration. In the absence of any hold on the data available in CIS, loss or mismanagement of data could not be watched/monitored at Circle level.

Ministry stated (October 2017) that audit details for all transactions are available in the tables to the system which can be accessed from the back-end and that the observations have been shared with CEPT for necessary examination and further action to access the audit trails/details/logs. On User log, it was stated that it would be provided by CSI after CSI single sign on was rolled out. On Audit log, it was stated that the details are available in tables for all transactions and can be accessed from the back-end.

The reply regarding Audit log is not convincing since the facility is available from the back-end and not from front end and back-end is not accessible to all.

### **3.1.13 Business Continuity & Disaster Recovery Plans**

The objective of having a Business Continuity<sup>4</sup> and Disaster Recovery<sup>5</sup> (BC & DR) Plan and associated controls is to ensure that the organisation can still accomplish its mission and it would not lose the capability to process, retrieve and protect information maintained in the event of an interruption or disaster leading to temporary or permanent loss of computer facilities. DR is an immediate requirement whereas BC is a more comprehensive and long term requirement. Since the Core Insurance Solution operates in a real-time online mode with a centralized database, disaster recovery and business continuity plans are very critical for the Department. The RFP included necessary provisions on BC&DR system.

The Disaster Recovery Centre was commissioned in the premises of CEPT, Mysore on 19 March 2015 and maintained by the FSI vendor, M/s Infosys. All necessary hardware like the Data Server, Diesel Generator sets and Uninterrupted Power Supply was installed. The connectivity to Data Centre, Navi Mumbai was also provided on digital media. The backup software was also provided at the DR Centre, but even after two years of commissioning, the DR Centre was not functional on account of non-loading of CIS Application software.

It was also noticed that the DoP was yet to finalize its Business Continuity & Disaster Recovery Plan even after a lapse of five years of finalization of the project.

Ministry stated (October 2017) that setting up of Disaster Recovery Centers was in progress and commissioning expected in January 2018. On BCP, it was stated that the same has already been approved.

Non-functioning of the Disaster Recovery Centre can seriously affect the business continuity in insurance service in the event of any major failure of the Data Centre and the only other option available will be to retrieve the data from the daily backups taken at the Data Centre which will be time consuming process. Thus, early setting of Disaster Recovery Centre and finalization of BCP are very crucial.

### **3.1.14 Implementation and Rollout**

#### **3.1.14.1 System not tested for the prescribed number of concurrent users resulting in slowness and interruptions in service.**

The system response time of an IT system depends on the number of concurrent users which it can cater to. As per the RFP, system should support at least 120 Transactions

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<sup>4</sup> **Business continuity (BC)** describes the processes and procedures an organization must put in place to ensure that mission-critical functions can continue during and after a disaster.

<sup>5</sup> **Disaster Recovery (DR)** is the process an organization uses to recover access to their software, data, and/or hardware that are needed to resume the performance of normal, critical business functions after the event of either a natural disaster or a disaster caused by humans.

per Second (TPS) and at least 16,000 concurrent users on the proposed hardware and Solution for Insurance. For Enterprise Content Management System (ECMS), the approximate people scanning the documents shall be approximate 20,000 and the number of users who would be using the data for operational purposes from ECMS would be approximately 3500, with the concurrent users being approximate 600 users and number of peak users shall be approximate 1000 users. The RFP also stipulated that the proposed Database software should be certified and tested by the banking and insurance application OEM to scale upto 40000 concurrent users and 16000 concurrent users respectively.

But it was noticed from the minutes of the PLI sub-committee meeting in March 2015 that the internal testing in CIS was done by Infosys for 6000 concurrent users only. The inadequate concurrent users negatively affected the system response time resulting in slow functioning and error messages despite inputting all relevant data. Similar problems were encountered in ECMS for policy creation.

Audit further observed that the ECMS function was not working properly since the implementation stage of pilot phase i.e. March/June 2014 was interrupted during the months of February to April 2017 i.e. on completion of roll out of phases in all the Postal Circles. The details of interruptions in the Circles covered in audit were as follows:

**Table 3**  
**Details of interruptions**

<b>Sl. No.</b>	<b>Name of circle</b>	<b>Period of Interruption</b>
1	Tamil Nadu	Second week of February 2017 to 08 May 2017
2	Karnataka	February 2017 to April 2017
3	Maharashtra	February 2017 to April 2017
4	Punjab	27 February 2017 to 02 May 2017
5	West Bengal	Third Week of February 2017 to last week of May 2017
6	Delhi	March 2017 to April 2017

The problem reported in ECMS included inability to access URL, log on failures, system hanging, problems in converting the manual scanned policies into virtual scanned policies, request not moving to next stage, etc. Regular recurrence of problem and prolonged interruptions in functioning of ECMS in the last quarter of financial year has negative impacts on the insurance business since it affected activities like issue of policy bond, settlement of maturity cases/death cases/loan, change of address/



nomination, assignment of policy, issue of new policy etc. leading to backlogs and customer dissatisfaction.

Ministry stated (October 2017) that the FSI vendor has since provided with an alternate solution for uploading the scanned copy of docs in the ECMS process during outages/interruptions and the audit observations were communicated to the FSI vendor for necessary action.

### 3.1.14.2 Roll out of CIS in Port Blair HO and Army Postal Service (APS) Circle.

The roll out of CIS in Postal network was planned for 809 HOs in three phases. CIS was rolled out in all HOs included in the roll out plan except Port Blair HO under West Bengal Circle. Port Blair was to be rolled out under phase 2 but not yet rolled out due to connectivity problem.

It was also noticed that Army Postal Service (APS) Circle was not considered for roll out and the policies in APS Circle were still maintained in NIC system. Due to non-roll out of CIS, the policies in Port Blair HO and APS Circle were maintained by National Informatics System (NIC) which caused inconvenience to the Department and the customers.

Ministry stated (October 2017) that PMU Division was being requested for getting the network made available in Port Blair and also for expediting the implementation of complete IT modernization project in APS.

### 3.1.14.3 Adherence to timelines prescribed in Citizen Charter

The Citizen Charter of DoP specified timelines for PLI/RPLI related delivery of services to the customers to sustain its position as the largest network, ensuring customer satisfaction by providing services with speed, reliability and on value for money basis. One of the objectives of implementing CIS was to improve the quality of service being offered to the customers.

Test check of service delivery commitments under Citizens Charter in selected CPCs revealed that there was delay in delivery of various services as detailed below:

**Table 4**

#### Details showing delay in delivery of services

Sl. No.	Service/ transaction	Success Indicator	Service Standards	Delay in Delivery (days)
1	Issue of Acceptance Letter/Issue of policy bond	Time taken from the receipt of completed documents	15 days	1-462
2	Settlement of policy maturity	Time taken from the receipt of completed documents	30 days	1-605

3	Settlement of PLI/RPLI death claims	With Nomination or without nomination (after production of required documents)	30 days	7-1385
4	Paid up value of policy	Time taken from receipt of completed documents	30 days	1-281
5	Revival/ conversion	Time taken from receipt of request	15 days	1-516
6	Loan/change of address/change of nomination/assignment/issue of duplicate bond.	Time taken from receipt of request	10 days	1-378

The delay in delivery of service were attributed to non-functioning of ECMS, problems in work flow, poor network connectivity, delay in generation of letter of acceptance/policy bond, non-digitalization of legacy documents, delay in receipt of case files from respective controlling units, server problems, delay in getting investigation reports, delay on the part of customers in taking payment, etc.

Ministry stated (October 2017) that the problems in functioning of ECMS of the scanned images and workflow cropped up since February 2017 but the FSI vendor could not fix the same within the reasonable time. It was also stated that an alternate solution for uploading the scanned images was provided in June 2017. Till 31 December 2017, scanning of 79,90,226 policies out of more than 2 crore legacy policies was completed but due to storage problem, uploading was disabled. Enhancement of storage is stated to be under the consideration of PMU Division.

The reply indicates poor planning of the implementation of computerization since the requirements were not properly assessed and met resulting in uploading of legacy policies being abrupted midway.

### **Conclusion**

The objective of computerization of Postal Life Insurance was to develop a fully integrated life insurance platform to enable efficient and cost effective service to existing and new customers, besides improving the quality of service being offered to the customers. Deficiencies in software functionalities, computational errors, non-generation of reports, non-integration with other applications, non-roll out in the entire postal network, multiple log on, Lack of sufficient validation controls along with inadequate system based controls and monitoring have exposed the system to fraud vulnerability. DoP should address these inadequacies urgently and review the function of IT controls to achieve the objectives of higher level of excellence.

### 3.2 Stocking of Cash Certificates in Department of Posts (DoP)

**Non-linking of Receipts of Cash Certificates (CCs) from India Security Press (ISP), Nasik with the indents placed by Circle Stamp Depots (CSD) resulted in excess receipt and resultant accumulation of CCs at the CSDs. As the retention of the certificates in the CSDs is prone to misuse, DoP needs to take immediate action to ensure that all the unsold certificates are obtained by ISP Nasik for appropriate disposal.**

Department of Posts (DoPs) discharges an Agency function on behalf of Ministry of Finance (MoF) for sale of Cash Certificates (CCs) viz. National Savings Certificates (NSC), Kisan Vikas Patras (KVP), etc. through Post Offices. Physical CCs have been discontinued with effect from 01 July, 2016.

The Cash Certificates (CCs) of all type and denominations are printed at India Security Press (ISP), Nasik which supplies it to Circle Stamp Depot (CSD). Post Office Savings Bank (POSB) Manual Volume-II stipulates that a quarterly indent to meet the requirements of cash certificates of three months shall be submitted by the Sub Post Office (SO) to its Head Post Office (HO) by the 15<sup>th</sup> of May, August, November and February and by the HO to the Circle Stamp Depot on 1<sup>st</sup> of June, September, December and March. The CSDs in turn are required to send six monthly advance indents for the printing of CCs to ISP Nasik.

National Savings Institute (NSI) under Ministry of Finance is mandated to monitor and arrange an uninterrupted printing and supply of Cash Certificates to Circle Store Depot and also to make payments to ISP, Nasik for the security material supplied to the Depots.

Stocking of Cash Certificates, Postal Stamps and Stationery in Department of Posts (DoP) was reviewed and overstocking of Cash Certificates was commented in Comptroller and Auditor General of India's Report no. 13 of 2012-13. Ministry, in the Action Taken Note, had assured to take corrective action in this regard.

The details of indents placed by CSDs and Cash Certificates supplied by ISP, Nasik are given in the table below:

Table 5

## Details of Indents placed by CSDs and supplies effected by ISP Nasik

Year	Name of items	Total quantity of different denominations indented by CSDs	Total quantity of different denominations supplied by ISP Nasik	Excess quantity of different denomination received in CSDs	Face value of excess quantity of different denominations (₹ in crore)
2014-15	NSC/KVP	4790000	9084430	4294430	5031.54
2015-16	NSC/KVP	1810000	3871000	2061000	1814.34
<b>Total</b>		<b>6600000</b>	<b>12955430</b>	<b>6355430</b>	<b>6845.88</b>

Scrutiny of records in seven<sup>6</sup> postal circles revealed that ISP Nasik supplied 63,55,430 cash certificates with face value of ₹ 6845.88 crore in excess of the indent placed by five CSDs viz. Chennai (₹ 1064.75 crore), Delhi (₹ 1253.50 crore), Lucknow (₹ 670.00 crore), Nasik (₹ 2601.03 crore) and Ernakulum (₹ 1256.60 crore) during the period from 2014-15 to 2015-16. The excess supply of cash certificates resulted in accumulation of CCs in the CSDs.

Further, DoP issued order/instruction (June 2016) for discontinuation of pre-printed NSC/KVP from closing hours of 30 June 2016. The unsold stock of NSC/KVP was to be returned by HOs to CSD and further by CSDs to ISP Nasik.

Scrutiny of records revealed that CSDs did not send CCs of different denomination (2,17,16,184 in number) after its discontinuance to ISP Nasik but retained the same in their stock as on September 2017 as detailed in table below:

Table 6

## Details of NSC/KVP in Stock

Sl. No.	Name of Circle	Name of CSD	Quantity of NSC/KVP	Face value (₹ in crore)
1	Tamil Nadu	Chennai	1493218	964.38
2	Delhi	Delhi	2223866	1575.07
3	UP Circle	Kanpur	17999100	9175.00
<b>Total</b>			<b>21716184</b>	<b>11714.45</b>

CSD Chennai stated (September 2017) that NSI, Nagpur was informed in June 2015 not to supply KVPs until further orders but were supplied by them. Regarding non-return of CCs post discontinuation, it was stated that the matter was referred to Circle Office and order from the Directorate was awaited. CSD Delhi replied (September 2017) that KVP was received due to reopening of KVPs during 2014-15 and the same were issued for sale. It further added that the disposal of certificates was under process. CSD, Lucknow informed (October 2017) that letter in this regard was written to

<sup>6</sup> Tamil Nadu Circle, Delhi Circle, Punjab Circle, Uttar Pradesh and Uttarakhand Circle, Nagpur in Maharashtra Circle and Kerala Circle

Director NSI for diversion of KVPs of denomination of ₹ 50000. CSD, Nasik replied (October 2017) that ISP Nasik sent cash certificates without mentioning indent reference and receipt of excess was also apprised to the Director of NSI time to time. KCSD, Ernakulum replied (October 2017) that the matter was taken up with the Director of NSI, Nagpur in this regard. CSD Kanpur replied (September 2017) that the certificates would be returned to ISP Nasik after receipt of unsold certificates from six HPOs.

The reply confirms the audit observation that the receipts of CCs from ISP, Nasik were not linked to the indents placed by CSDs resulting in excess receipt of CCs at the CSDs and resultant accumulation. Despite the assurances given in ATN, the irregularities were still persisting. No specific reasons were brought out for non-compliance of DoP's instructions and as the retention of the certificates in the CSDs is prone to misuse, DoP needs to take immediate action to ensure that all the unsold certificates are obtained by ISP Nasik for appropriate disposal. DoP should ensure that physical stock shall be reconciled with documented holdings before destruction of cash certificates. DoP also needs to strengthen the control mechanism to ensure that the instructions are fully complied.



## CHAPTER-IV

### PUBLIC SECTOR UNDERTAKINGS UNDER THE MINISTRY

#### 4.1 Telecom services provided by Bharat Sanchar Nigam Limited in North Eastern Region of India

##### 4.1.1 Introduction

North Eastern Region (NER) of India comprises the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. They form part of the East Himalayan region. These eight States have a population of 4.58 crore and cover an area of 2,62,189 sq. km, about 8 *per cent* of the country's total geographical area. The region has a long international boundary and has poor infrastructure like rail, roads, electricity and telecom. Connectivity is the most important key to development of a region; be it road, rail, waterway, air, power or telecom. Hence, robust telecom and broadband connectivity and provision of quality telecom services are an avowed national priority.

At present, there are three Licensed Service Areas (LSAs) for the NER States viz. Assam LSA covering only the State of Assam, North East LSA covering six states viz. Meghalaya, Tripura, Mizoram, Arunachal Pradesh, Nagaland and Manipur and Sikkim is in West Bengal LSA.

BSNL has been providing the following technology-oriented integrated telecom services in the region:

- **Consumer Fixed Asset (CFA) Services** - Wire line Services, Internet and Broadband services including Fiber to the Home (FTTH), Enterprise Data Services such as Leased circuits, Multi Protocol Label Switching (MPLS) Virtual Private Network (VPN), Pre-paid Calling cards etc.
- **Consumer Mobility Services** –Global Services for Mobile (GSM) Services including 2G, 3G and Value added Services (VAS), Wireless Local Loop (WLL) Code Division Multiple Access (CDMA) Services, Worldwide Interoperability for Microwave Access (WiMAX) services, etc.

For providing the above telecom services in the region, BSNL has established its own Telecom network consisting of Trunk and Telephone exchanges for providing landline

services, Mobile Switching Centres (MSCs), Base Station Controllers (BSCs) and Base Transceiver Station (BTS) for providing GSM and CDMA mobile services. Besides, the Company has its own transmission media such as Optical Fibre Cable (OFC), Micro Wave and Very Small Aperture Terminal (VSAT) connecting the telephone exchanges, MSCs, BSCs and the BTS. Apart from these, BSNL has also established an International Gateway (IGW) at Agartala (Tripura) in collaboration with Bangladesh Submarine Cable Company (BSCC) for improving quality of the internet connectivity in NER.

For establishing the telecom network in NE region, BSNL meets the OPEX and CAPEX out of its own funds. Besides, the Company is provided with subsidy from the USOF for specific projects such as the Village Panchayat Telephones, Infrastructure such as BTS, OFC, Broad Band connections and Comprehensive Telecom Development Plan (CTDP).

#### **Status of Telecommunications Network in NER**

The overall status of telecommunications network as provided by BSNL in NER is provided in table below:

**Table-1**

#### **Status of Telecommunications Network provided by BSNL in NER**

<b>Year</b>	<b>Landline</b>	<b>Wireless</b>	<b>VPT</b>	<b>Broadband connections</b>	<b>Working OFC</b>
	<b>Nos</b>	<b>Nos</b>	<b>Nos</b>	<b>Nos</b>	<b>RKM</b>
2012-13	395000	3122100	37993	155220	16166
2013-14	333000	2937700	38140	160289	19908
2014-15	304000	2781900	38220	161393	20270
2015-16	290000	3012200	34564	165186	21126
2016-17	281000	3242700	11614	167196	21620

*(Source: State wise target and achievement given by CP&M Section, BSNL Corporate Office)*

The Subscriber base of BSNL in Assam and NE LSAs vis-à-vis Private Service Providers (PSPs) are as follows:



**Table-2**  
**Details of Subscriber base of BSNL in Assam and NE LSAs vis-à-vis**  
**Private Service Providers**

(in lakh)

As of	Wireless				Wireline			
	Assam		NE*		Assam		NE*	
	BSNL	Others	BSNL	Others	BSNL	Others	BSNL	Others
March 2013	12.36	131.52	17.57	72.04	1.94	0	1.90	0
March 2014	12.81	139.97	15.22	78.89	1.83	0.01	1.40	0
March 2015	12.61	158.90	14.07	89.83	1.66	0.01	1.27	0
March 2016	13.16	172.16	15.37	94.46	1.59	0.02	1.24	0
March 2017	15.07	203.03	15.92	108.99	1.53	0.02	1.21	0

*Source: TRAI Subscription data*

*\* Excluding Sikkim*

It could be seen from Table 2 that as of March 2017, the wireless subscriber base of BSNL in Assam and NE LSA was 15.07 lakh and 15.92 lakh respectively as against 203.03 lakh and 108.99 lakh respectively of PSPs. Further, in the wireline segment the number of subscribers as on March 2017 was 1.53 lakh and 1.21 lakh in Assam and NE LSA respectively.

#### **4.1.2 Organizational set up**

BSNL has 26 territorial Circles all over India of which three Circles are in NE region, viz. Assam Circle, NE-I Circle (Meghalaya, Tripura, and Mizoram) and NE-II Circle (Arunachal Pradesh, Nagaland and Manipur). Sikkim is part of West Bengal Circle.

Each Circle is headed by a Chief General Manager (CGM). Besides, one CGM (CGM North East Task Force (NETF)) is exclusively looking after the installation and commissioning of different transmission projects while another Project circle i.e. Eastern Telecom Project (ETP) headquartered at Kolkata looks after some portion of transmission projects. Further, the maintenance circle i.e. CGM, Eastern Telecom Region (ETR) headquartered at Kolkata is responsible for maintenance of long distance transmission, microwave projects, satellite, etc. in the NER.

#### **4.1.3 Scope of Audit**

The audit covered the telecom services provided by BSNL in NE Region covering states of Assam, Meghalaya, Tripura, Mizoram, Arunachal Pradesh, Nagaland, Manipur and Sikkim. The period of audit coverage is from 2012-13 to 2016-17. Audit was conducted at BSNL Corporate Office, Circle headquarters of Assam, NE I, NE II, NETF, ETR, ETP circles and selected Secondary Switching Areas (SSAs)<sup>1</sup>.

<sup>1</sup> Dibrugarh and Silchar of Assam, Sikkim of West Bengal, Meghalaya, Mizoram and Tripura of NE-I Circle and Arunachal Pradesh, Nagaland and Manipur of NE-II.

#### 4.1.4 Audit Findings

The review covers important facets of the functioning of BSNL in North Eastern Licensed Service Area relating to planning, procurement, utilization and operational performance. These aspects are evaluated against norms/targets set in the project report as well as orders/instructions issued by the Corporate Office, TRAI and DoT, Memorandum of Understanding (MOU) signed between DoT and BSNL and BSNL's own targets.

The significant audit findings are brought out in the succeeding paragraphs.

##### 4.1.4.1 Inordinate delay in implementation of Intra -district OFC network in Assam

BSNL entered (February 2010) into an agreement with USOF for support from USOF for augmentation, creation and management of Intra-District Sub-Divisional Headquarters (SDHQ) - Divisional Headquarters (DHQ) OFC Network for transport of rural/remote area traffic on bandwidth sharing basis in the service area of Assam covering 27 DHQs and 269 SDHQ. The agreement was effective from 12 February 2010 and remain valid for seven years. BSNL was to commission Intra-district OFC transport network within 18 months from the date of signing of the agreement i.e. by 11 August 2011. BSNL could not complete the work within the stipulated time due to tough terrain, frequent bandhs, lack of skilled manpower, non-availability of OFC cable pair from SSA, delay in readiness of the sites and delay in receiving fund. Consequently, USOF, at the request of BSNL extended the roll out period from time to time i.e. August 2012, December 2014, September 2016 and lastly to June 2017. Even as of June 2017, work was completed in 25 districts and pending in the two districts viz. Dima Hasao (erstwhile North Cachar Hills) and Karbi Anglong.

Thus, the complete roll out of connectivity could not be achieved even after a delay of more than six years. The reasons attributed by BSNL for the delay in completion of the project indicate lack of coordination between the Assam Circle, the NE Task Force and the Civil Wing of BSNL as well as between BSNL Corporate Office and its field units on specific requirements of the Project. Due to non-completion of the project, the complete roll out of connectivity in Assam service area could not be achieved and also BSNL could not claim USO subsidy of ₹ 66.72 crore<sup>2</sup>.

Ministry stated (March 2018) that NE Task Force had encountered numerous obstacles like inhospitable terrain, rainy season upto nine months in a year, frequent floods/

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<sup>2</sup> ₹7.38 cr of 40% FLS of two districts + ₹9.89 cr of 10% service area commissioning which would be paid on completion of entire service area + ₹49.45 cr i.e. 50% Equated Annual Subsidy(EAS)

landslides, frequent bandhs and shortage of skilled manpower. It further stated that identification of nodes in some districts consequent to division of districts and non-feasibility of laying OFC, etc. led to delay. At present, only five sites (Sangbar, Amrikhat, Jirikindling, Umrangsu and Digheli) were not commissioned of which four sites were of difficult area and the fifth site was allotted only in March 2016. 99 per cent of the project was completed and these sites would be completed by March 2018. BSNL also stated that payment of 40 per cent subsidy was linked up with commission of network district-wise and BSNL had claimed the subsidy for 24 out of 27 districts. Claim for one district was pending with CCA, Guwahati and the claim for the remaining two districts would be submitted after completion of all nodes in these districts.

The reply is not convincing in view of the fact that BSNL did not complete the work even in the extended time. USOF granted repeated extensions from time to time to BSNL on the grounds cited and despite the extensions, the work remained incomplete.

#### **4.1.4.2 Delay in commencement of implementation of Comprehensive Telecom Development Plan for the North-Eastern Region**

Government of India approved (September 2014) the implementation of Comprehensive Telecom Development Plan (CTDP) for NE Region. As per the approval:

- BSNL was nominated to execute the work related to the provision of mobile services in Arunachal Pradesh and two districts<sup>3</sup> of Assam. The estimated project cost was ₹ 1975.38 crore and USOF would fund Capital Expenditure (CAPEX) and Operating Expenditure (OPEX) net of revenue for a period of five years. 10 per cent centage was payable to BSNL from USO Fund.
- BSNL was also nominated to execute the work related to Transmission Media Plan (i.e. providing OFC Ring connectivity to state capitals and district headquarters and augmentation of transmission media. The estimated project cost was of ₹ 295.97 crore Capex would be funded from USOF.

BSNL was to ensure that bids were invited through a transparent bidding process and actual costs (CAPEX plus OPEX) for five years in case of 2G coverage in uncovered villages and CAPEX in case of Transmission Media Plan discovered through the tendered process were to be submitted for the approval of Telecom Commission.

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<sup>3</sup> Karbi Anglong & Dima Hasao districts

The benefits/ results of the project, the time-frame for implementation and the status as of December 2017 is as furnished in Table 3 below:

**Table-3**

**Details of benefits/results of the project, the time-frame for implementation and the status as of December 2017**

Item	Time frame	Actual position
2G Mobile coverage in uncovered areas  2G seamless mobile coverage along the National Highways  Ensure reliability and redundancy in the transmission network at state capitals and district headquarters	One year after Cabinet Approval for Tendering, Award of Work, Rule Modification and Signing Agreements i.e. September 2015  Eighteen months after signing of Agreements for Rollout for 2G coverage in uncovered areas in NER and seamless mobile coverage along the National Highways	BSNL is yet to commence the nominated works as the tenders called by BSNL were yet to be finalised.
OFC Ring Connectivity and Augmentation of Transmission Media in NER	Two years after signing of Agreement	

**a. 2G mobile coverage in uncovered areas**

BSNL issued (April 2016) Notice Inviting Tender (NIT) for Survey, Planning, Supply, Installation, Testing, Commissioning, Integration with existing core network and Operations & Maintenance for five years of 2G GSM Network in uncovered villages of Arunachal Pradesh and Karbi Anglong & Dima Hasao districts of Assam along with Radio and VSAT backhaul. As per the time-frame stipulated in the sanction by the Union Government, Tendering, Award of Work, Rule Modification and Signing Agreements was to be completed by September 2015. However, the tenders were invited only in April 2016 and discovered price communicated to USOF only in May 2017. Due to delay in inviting of tender and communication of discovered price to USOF, the implementation of the project was yet to commence.

Ministry replied (March 2018) that:

- After nomination of BSNL by USOF in September 2014, BSNL sought clarifications from USOF about VSAT technology, bifurcation of tendered and non-tendered CAPEX & OPEX, EDGE/ GPRS technology, etc. DoT constituted (February 2015) a Committee for looking into the optimization of satellite transponder requirement and the Committee submitted its report in

March 2015. The specifications as finalised by the Committee was incorporated in the tender. As regards bifurcation of tendered and non-tendered CAPEX & OPEX, USOF workout the estimated cost only in November 2015. Thus, USOF delayed the finalisation of specifications and hence, BSNL could not call tender as these were required to be incorporated.

- Regarding delay in finalisation of tender, BSNL stated that USOF finalised the specifications for VSAT, Data facility, etc. by March 2016 only. Thereafter BSNL called the tenders in April 2016 as these specifications were needed to be incorporated in the tender document.
- As regards delay in evaluation of tender, BSNL stated that field testing of the offered equipments was completed in September 2016 and several complaints/representations were received from the bidders whose equipments failed in the field test. A high level committee constituted in BSNL recommended retesting of the equipments and retesting was completed on 8 March 2017. As complaints were received again, opinion of Ld. Attorney General of India on the correctness of process followed was sought. The opinion was received on 20 April 2017, bids opened on 25 April 2017 and submitted the discovered price to USOF on 1 May 2017.

While appreciating the reply of the Ministry, Audit contends that though the project was sanctioned by the Government in September 2014, there was delay on part of both BSNL as well as USOF in finalizing the specifications of the equipments. This delay resulted in the project becoming a non-starter even after more than three years of approval by the Cabinet.

**b. OFC Ring Connectivity and Augmentation of Transmission Media in NER**

As mentioned in para 4.1.4.2 above, BSNL was nominated (September 2014) to execute the work related to Transmission Media Plan (i.e. providing OFC Ring connectivity to state capitals and district headquarters and augmentation of transmission media) at an approved estimated project cost of ₹ 295.97 crore to be funded by USOF. The works to be executed were as detailed in Table 4 below:

Table 4

## Details of Work as per the project and Cost estimated for CAPEX by USOF

Sl. No.	Item of Work	Quantity	Cost estimated for CAPEX by USOF (₹ in crore)
1	Laying of Under Ground (UG) Optical Fibre Cable (OFC)	2122 KMs.	169.79
2	Laying of Aerial OFC	1091 KMs.	87.28
3	Deployment of Dense Wavelength Division Multiplexing (DWDM) equipment	70 Optical Add-Drop Multiplexers (OADMs) and 88 Optical Amplifiers (OAs)	14.90
4		21 nos. of Digital Cross Connect (DXC)	24.00
<b>Total</b>			<b>295.97</b>

The project also envisaged that:

- The ownership of the assets created under the project would vest in BSNL;
- The NIT was to be issued by December 2014 and the Tender evaluation and submission of discovered cost to the Ministry was to be completed by March 2015.

BSNL issued (February 2015) tenders for laying of Under Ground (UG) cable, cable ducts etc. and procurement of DWDM equipment. The estimated cost vis-à-vis discovered cost was as given in Table 5 below:

Table 5

## Details of Item-wise Estimated cost and Discovered price

Sl. No.	Item	Estimated cost	Discovered cost
		(₹ in crore)	
1.	OFC	257.07	498.68
2.	DWDM Equipment	38.90	84.16
<b>Total</b>		<b>295.97</b>	<b>582.84</b>

The cost discovered through open tenders alongwith observations and analysis with reference to discovered cost was intimated (January 2016) to USOF. USOF directed (May 2016) BSNL to decide/ approve the discovered cost and submit clear and categorical recommendations that the tendered rates were reasonable by 6 June 2016 so

as to conclude/complete the entire process and arrive at finalised rates. BSNL furnished (December 2016) its recommendations to USOF stating that the rates were reasonable considering the fact that the same were discovered through open tendering process followed by e-reverse auction and price negotiation and sought approval of USOF for the discovered cost. USOF intimated (April 2017) BSNL that the discovered price of ₹ 582.84 crore was higher than the fund of ₹ 295.97 crore approved by the Cabinet and hence BSNL may go for retendering. BSNL decided (May 2017) to float another tender on turnkey basis. BSNL is yet to finalise (January 2018) the tender called in May 2017. Thus, due to delayed decision making, the tender called in February 2015 was cancelled only in April 2017 and thus, the project was yet to take off. Hence, the objective of ensuring reliability and redundancy in the transmission network in NE region was yet to be realised.

#### **4.1.4.3 Poor progress of rehabilitation work of OFC routes**

The transmission media plays a key role in carrying bulk data traffic from node to node. In NE region data traffic is being carried through the following media:

- (i) Optical Fiber Cable
- (ii) Radio
- (iii) Satellite

BSNL hired OFC media from other PSUs to provide reliable transmission media in view of its own OFC being damaged due to road expansion work causing disruption of service.

Regional Trunk Planning Committee (RTPC) approved (April 2008 and June 2014) 116 OFC routes for rehabilitation work in Assam, NE-I and NE-II Circles. The works were to be executed by North East Task Force (NETF), Guwahati.

Audit scrutiny of the progress reports of rehabilitation work revealed that the progress of work was 10 per cent in Assam and nil in NE-I and NE-II circles as on date though all the works were approved long back and the delays ranged between 3 to 10 years. It was noticed that in every RTPC Meeting, the target date for commissioning of OFC routes were changed without achieving the targets. The poor progress of work was due to work not yet taken up by CGMTF, road-widening issues, delay in tender procedure, right of way awaited and delays in executing the work. The details are as below:

**Table 6**  
**Circle-wise Status of OFC Routes**

Classification/Status	OFC Routes to be completed (In Kms)		
	Assam	NE-I	NE-II
Road under expansion, so not taken up	518.00	82.00	22.00
Route is < 10 Km, so shall not be taken up by NETF	32.50	142.50	4.60
Commissioned by North East Task Force (NETF)	157.05	0.00	0.00
Route in WIP (PLB laid for 58.423 KM)	58.20	94.92	18.40
Route taken up by NETF, No PLB laid	269.30	37.42	276.20
To be taken up by NETF	479.50	271.00	8.80
Done by Eastern Telecom Region (ETR)	0.00	37.00	0.00
ETR requested to delay the route	0.00	10.00	0.00
No decision taken in CPB	0.00	0.00	67.00
<b>Total</b>	<b>1514.55</b>	<b>674.84</b>	<b>397.00</b>

It was observed by Audit during July-August 2017 that out of 1515, 675 and 397 KMs of OFC to be rehabilitated in Assam, NE-I and NE-II circles respectively, NETF took up the work only in 485 KMs (32 per cent), 132 KMs (20 per cent) and 295 KMs (74 per cent) in Assam, NE-I and NE-II respectively of which PLB was not laid in 269 KMs, 37 KMs and 276 KMs respectively. Thus, out of total 2586.39 KMs of OFC routes to be commissioned in NER, only 157.05 KMs (6 per cent) was commissioned by NETF.

Due to poor progress of rehabilitation OFC work in the region, BSNL hired media mostly from M/s Oil India Ltd and M/s Power Grid Corporation of India Ltd (PGCIL).

Ministry replied (March 2018) that fresh laying of OFC was taking considerable time due to the difficult terrain, difficulties in getting Right of Way from State Governments and due to arbitration cases. It further stated that the progress of rehabilitation work improved in 2016-17 with the availability of OF cable.

#### **4.1.5 Non-provisioning of Mobile connectivity in the international border areas**

The Ministry of Home Affairs (MHA) had taken up (July 2014) the issue of installation of mobile towers by BSNL with DoT to cover Border Out Posts and Left Wing Extremism (LWE) region where there was no connectivity of mobile to Central Armed Police Forces (CAPFs) viz. Sashastra Seema Bal (SSB), Assam Rifle, Indo-Tibetan Border Police (ITBP), Border Security Force (BSF) and Central Reserve Police Force (CRPF). The following was decided in July 2014:



- i. Joint survey teams of CAPFs and BSNL would conduct survey for all the site locations required by the CAPFs and the final list would be submitted to DoT;
- ii. The sites getting covered in the normal plans of DoT would be deleted from the list and BSNL would submit the estimate for final list of sites to CRPF.
- iii. CAPFs would submit the proposal for the sites to be implemented by BSNL to CRPF, the coordinating agency; and
- iv. CRPF, in consultation with other CAPFs, was also required to submit proposal for funding for the sites being constructed exclusively for para-military forces.

In accordance with the above decisions, BSNL NE-I Circle (Meghalaya, Mizoram and Tripura states) and NE-II Circle (Nagaland, Manipur and Arunachal Pradesh states) submitted (May 2015) the Detailed Project Report (DPRs) to the BSNL Corporate Office. The DPRs covered the surveyed 144 sites and 122 sites for NE-I and NE-II circles respectively and estimated costs were ₹ 315.83 crore and ₹ 226.33 crore respectively. Subsequently, BSNL Corporate Office submitted (March 2016) a consolidated DPR to DoT for 1683 CAPF sites including those of the North Eastern BSNL Circles (Himachal Pradesh, NE-I, NE-II, Uttarakhand, Jammu & Kashmir, West Bengal, Punjab, Jharkhand, Bihar, Gujarat, Uttar Pradesh (East), Rajasthan, Assam, Chhattisgarh and Maharashtra Circles) at a total cost of ₹ 2899 crore. In a reply to the Audit Query on the progress made on the DPR, BSNL intimated that no further communication had been received from DoT as of July 2018.

In this regard, the following observations are made:

- i. The status of number of towers border-wise in North East region as on 31 March 2014 and 31 March 2018 is given in the table below:-

**Table 7**  
**Details of Number of Towers in Border areas of North Eastern Region**  
**(within 10 km range of International Border)**

Border	State (border length, km)	As on 31.03.2014	As on 31.03.2018	Backbone Media	Remarks
Indo-Myanmar	Nagaland (215km)	0	0		There was no tower within 10 km range of the International Border.
	Arunachal Pradesh (520km)	4	4	OFC(1) VSAT(3)	One Tower at Panchao remained down for last eight months.

Border	State (border length, km)	As on 31.03.2014	As on 31.03.2018	Backbone Media	Remarks
	Manipur (398km)	3	4	OFC	
	Mizoram (510km)	3	3	MW	
<b>Indo-Bangladesh</b>	Mizoram (180km)	2	3	MW(2) /VSAT(1)	
	Tripura (856km)	124	188	MW(72) OFC (116)	

As can be seen from the table above, Nagaland does not have a single tower within 10 Km range of 215 Km long international border with Myanmar while the tower density was 130 Km/tower in Arunachal Pradesh, 99.5 Km /tower in Manipur and 170 Km/tower in Mizoram. Map views of Indo-Myanmar border for Arunachal Pradesh, Mizoram and Manipur are depicted in Annexure VI. MHA had also pointed out (November 2016) that due to inadequate cellular coverage in the region, there was discontentment amongst the general public and also spill-over signals from Myanmar Telephone Service Providers were being utilised in the region. This posed threat to national security/economy.

- ii. MHA proposed (November 2016) to DoT for creation of communication infrastructure in the form of towers in the border areas with the funds available under USOF. However, DoT replied (July 2018) in response to audit observation that DoT/USOF does not propose to fund the provision of mobile services in border and naxal affected areas.

Thus, though MHA initiated the proposal for improving telecom services in border areas of North Eastern Region as early as 2014, there was virtually no progress resulting in spill-over signals from neighboring countries being used by the civilians posing threat to national security/economy.

#### 4.1.6 Quality of Service QoS- (Mean Time To Repair)

Mean time to Repair (MTTR) is the sum of duration of each repair time in hours for all the fault incidences in a quarter divided by total number of fault incidences in a quarter. As per Telecom Regulatory Authority of India (TRAI) notification of March 2009, Mean Time To Repair (MTTR) was stipulated as “less than or equal to eight hours”. Audit observed that the MTTR was higher than the bench mark in Assam, NE-I, ETR Circles and Sikkim SSA during the years from 2014-15 to 2016-17 as detailed in Table below:

Table-8

## Details of OFC Faults in a year and MTTR for the year

Year	Circle/SSA	Number of OFC Faults/ Cuts in a year	Yearly fault duration (in Hours)	MTTR for the year (in Hours)
2014-15	Sikkim (Gangtok)	365	6309	17.29
	NE-II	413	8389	20.31
2015-16	Assam	1624	38887	23.95
	NE-II	254	19307	76.01
	ETR	4132	37213	9.00
	Sikkim (Gangtok)	351	4110	11.71
2016-17	Assam	1717	28367	16.52
	NE-I	662	12991	19.63
	NE-II	286	16701	58.40
	ETR	4354	43803	10.06

(Source: Transmission fault reports)

Ministry replied (March 2018) that MTTR in NER improved from 19 hours in 2014-15 to 15.5 hours in 2015-16 and further to 14.5 hours in 2016-17. The higher MTTR was attributed by BSNL to extensive road widening works and culvert construction by Government agencies which resulted in increased OF cable faults, difficult terrain conditions resulting in the timeline of 8 hours becoming not possible to achieve, frequent landslides in rainy season causing delay in restoration of OFC faults and lower staff strength.

While the constraints stated above are noted, Audit contends that BSNL has to take necessary precautions to ensure that OFC is not damaged during the construction and also should have a time bound plan to restore the fault. Though the MTTR has improved to 14.5 hours, it is still above the benchmark of 8 hours and BSNL has to initiate steps/plan of action for achieving the same.

## **Conclusion**

BSNL failed in implementing Comprehensive Telecom Development Plan (CTDP) for NER approved by the Cabinet in September 2014. This was because of failure of the major tenders under CTDP as given below:

- Tender relating to Survey, Planning, Supply, Installation, Testing, Commissioning, Integration with existing core network and Operations & Maintenance for five years of 2G GSM Network along with VSAT, HUB & radio backhaul to provide coverage in uncovered villages at an estimated project cost of ₹ 1460 crore in April 2016.
- Tender relating to laying of UG cable, cable ducts, etc. issued by CGM Telecom Stores, Kolkata in February 2015 and the tender for procurement of DWDM equipment floated by BSNL Corporate office in February 2015.


Thus, due to failure of the above two major tenders the objective of CTDP i.e. rollout for 2G coverage in uncovered areas of NER and OFC Ring connectivity along with augmentation of transmission media was yet to be achieved.

Regional Trunk Planning Committee (RTPC) approved (April 2008 and June 2014) 116 OFC routes for rehabilitation work in Assam, NE-I and NE-II Circles. The works were to be executed by North East Task Force (NETF), Guwahati. The progress of work was 10 *per cent* in Assam and nil in NE-I and NE-II as on date and the delays ranged between 3 to 10 years. Due to poor progress of rehabilitation OFC work in the region, BSNL hired media mostly from M/s Oil India Ltd and M/s Power Grid Corporation of India Ltd (PGCIL).

Nagaland does not have a single tower within 10 Km range of 215 Km long international border with Myanmar while the tower density was 130 Km/tower in Arunachal Pradesh, 99.5 Km /tower in Manipur and 170 Km/tower in Mizoram. Further, although MHA had proposed to DoT for creation of communication infrastructure in the form of towers in the border areas with the funds available under USOF, DoT stated that DoT/USOF did not propose to fund the provision of mobile services in border and naxal affected areas. Thus, eventhough MHA initiated the proposal for improving telecom services in border areas of North Eastern Region as early as 2014, there was virtually no progress resulting in spill-over signals from neighboring countries being used by the civilians posing threat to national security/economy.

Mean time to Repair (MTTR) is the sum of duration of each repair time in hours for all the fault incidences in a quarter divided by total number of fault incidences in a quarter. MTTR was higher than the bench mark of “less than or equal to eight hours” fixed by Telecom Regulatory Authority of India (TRAI) in Assam, NE-I, ETR Circles and Sikkim SSA during the years from 2014-15 to 2016-17.

New Delhi  
Dated : 27 September 2018

  
(Sangita Choure)  
Director General of Audit  
(Post and Telecommunications)

Countersigned

New Delhi  
Dated : 28 September 2018

  
(Rajiv Mehrishi)  
Comptroller and Auditor General of India



# **Appendix and Annexure**





## Appendix-I

**Summarised position of Action Taken Notes awaited from Departments under  
Ministry of Communications (MoC) and Ministry of Electronics & Information  
Technology (MeitY) as of January 2018**

<b>Sl. No.</b>	<b>Number and year of Audit Report</b>	<b>ATN Due</b>	<b>Not received at all</b>	<b>Under correspondence</b>
<b>Ministry of Communications</b>				
<b>Department of Posts</b>				
Nil				
<b>Department of Telecommunications</b>				
1	4 of 2016	30	Nil	30
2	11 of 2017	7	7	Nil
3	35 of 2017	6	6	Nil
	<b>Total</b>	<b>43</b>	<b>13</b>	<b>30</b>
<b>Ministry of Electronics and Information Technology</b>				
1	21 of 2017	1	Nil	1
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>Grand Total</b>		<b>44</b>	<b>13</b>	<b>31</b>

## Appendix-II

## Summarised position of Action Taken Notes awaited from Public Sector Undertakings under MoC and MeitY as of January 2018

Sl. No.	Number and year of Audit Report	ATN Due	Not received at all	Under correspondence
<b>Ministry of Communications</b>				
<b>Bharat Sanchar Nigam Limited</b>				
1	6 of 2000	2	Nil	2
2	6 of 2001	2	Nil	2
3	3 of 2002	1	Nil	1
4	6 of 2002	1	Nil	1
5	5 of 2003	5	Nil	5
6	5 of 2004	2	Nil	2
7	5 of 2005	3	Nil	3
8	9 of 2006 (PA)	2	Nil	2
9	13 of 2006	7	Nil	7
10	10 of 2007 (PA)	1	Nil	1
11	12 of 2007	9	Nil	9
12	PA 9 of 2008	1	Nil	1
13	CA 10 of 2008	2	Nil	2
14	CA 12 of 2008	7	Nil	7
15	CA 25 of 2009	10	Nil	10
16	PA 27 of 2009	1	Nil	1
17	10 of 2010-11 (PA)	3	Nil	3
18	3 of 2011-12	6	Nil	6
19	8 of 2012-13	1	Nil	1
20	17 of 2014	2	Nil	2
21	20 of 2015	5	Nil	5
22	55 of 2015	4	Nil	4
23	29 of 2016	3	Nil	3
24	21 of 2017	1	Nil	1
	<b>Total</b>	<b>81</b>	<b>0</b>	<b>81</b>
<b>Mahanagar Telephone Nigam Limited</b>				
1	3 of 1999	1	Nil	1
2	5 of 2004	1	Nil	1
3	13 of 2006	1	Nil	1
4	10 (PA) of 2007	1	Nil	1
5	12 of 2007	3	Nil	3
6	CA 12 of 2008	1	Nil	1
7	9 of 2009-10	1	Nil	1
8	25 of 2009-10	1	Nil	1

Sl. No.	Number and year of Audit Report	ATN Due	Not received at all	Under correspondence
9	8 of 2012-13	1	Nil	1
10	17 of 2014	1	Nil	1
11	21 of 2017	2	Nil	2
<b>Total</b>		<b>14</b>	<b>0</b>	<b>14</b>
<b>Indian Telephone Industries Limited</b>				
1	5 of 2003	1	Nil	1
2	5 of 2004	2	Nil	2
3	5 of 2005	2	Nil	2
4	13 of 2006	2	Nil	2
5	10 of 2007	2	Nil	2
6	12 of 2007	1	Nil	1
7	12 of 2008	3	Nil	3
8	24 of 2009	1	Nil	1
9	25 of 2009	1	Nil	1
<b>Total</b>		<b>15</b>	<b>0</b>	<b>15</b>
<b>Ministry of Electronics and Information Technology</b>				
<b>National Informatics Centre Services Inc.</b>				
1	21 of 2017	1	Nil	1
2	55 of 2015	1	Nil	1
<b>Total</b>		<b>2</b>	<b>0</b>	<b>2</b>
<b>Grand Total</b>		<b>112</b>	<b>0</b>	<b>112</b>

Annexure-I (Para 2.1.8.1)

Statement showing annual value of spectrum in 1800 MHz band (additional guard band), not putting to auction

Reserve Price and Sale Price of 1800 MHz band

Sl. No.	Circle	quantum of spectrum that remained unused/idle with licensor (in MHz)	Reserve Price for 1800 MHz band in October 2016 auction (per MHz)	Selling Price for 1800 MHz band in October 2016 auction (per MHz)	Value of spectrum that remained unused/idle with licensor (in crore) for 20 years*
1	AP	0.2	243	243	48.60
2	Assam	0.2	40	40	8.00
3	Bihar	0.2	62	62	12.40
4	Delhi	0.2	399	399	79.80
5	Gujarat	0.2	238	238	47.60
6	Haryana	0.2	47	49	9.86
7	HP	0.2	16	16	3.20
8	J&K	0.2	13	13	2.60
9	Karnataka	0.2	185	-	37.00
10	Kerala	0.2	83	83	16.60
11	Kolkata	0.2	149	151	30.23
12	Maharashtra	0.2	318	318	63.60
13	MP	0.2	83	83	16.60
14	Mumbai	0.2	298	489	97.84
15	North East	0.2	11	11	2.20
16	Orissa	0.2	38	-	7.60
17	Punjab	0.2	77	77	15.40
18	Rajasthan	0.2	91	92	18.38
19	TN incldg. Chennai	0.2	225	-	45.00
20	UP(East)	0.2	115	133	26.63
21	UP(West)	0.2	96	100	20.06
22	West Bengal	0.2	46	46	9.20
	<b>Total</b>	<b>4.40</b>			<b>618.40</b>
<b>Annual value of spectrum not put to auction</b>					<b>₹ 30.92 crore</b>

\*Note- Value of spectrum has been calculated on the basis of selling price, for the circles where selling price was not available reserve price has been considered for calculation.

## Annexure-II (Para 2.1.9.1)

## Statement showing annual value of spectrum in 800 MHz band surrendered by TTSL/TTML not put to auction

Sl. No.	Circle	Spectrum surrendered by TTSL & TTML Kept reserve	Reserve Price Per block of 1.25 MHz (₹ in crore) in November 2012 auction	Reserve Price Per 1.25 MHz (₹ in crore) in March 2013 auction for 20 years	Selling Price Per 1.25 MHz (₹ in crore) in March 2013 auction for 20 years	Value of Spectrum surrendered by TTSL/TTML (₹ in crore) for 20 years*
1	Andhra Pradesh	2.50	372.99	186.49	-	372.98
2	Maharashtra	2.50	341.66	170.83	-	341.66
3	Mumbai	1.25	881.99	441.00	-	441.00
	<b>Total</b>	<b>6.25</b>	<b>1596.64</b>	<b>798.32</b>	<b>0.00</b>	<b>1155.64</b>
<b>Annual value of spectrum not put to auction till October 2016 spectrum surrendered by TTSL/TTML</b>						<b>₹ 57.78 crore</b>

Sl. No.	Circle	Spectrum surrendered by TTSL & TTML Kept reserve	Reserve Price Per block of 1.25 MHz (₹ in crore) in November 2012 auction	Reserve Price Per 1.25 MHz (₹ in crore) in March 2013 auction for 20 years	Selling Price Per 1.25 MHz (₹ in crore) in March 2013 auction for 20 years	Value of Spectrum surrendered by TTSL/TTML (₹ in crore) for 20 years*
1	Bihar	1.25	55.26	27.63	-	27.63
2	Delhi	1.25	900.98	450.49	450.49	450.49
3	Gujarat	1.25	292.29	146.15	146.15	146.15
4	Haryana	1.25	60.47	30.24	-	30.24
5	Karnataka	1.25	429.16	214.58	214.58	214.58
6	Kerala	1.25	84.89	42.45	42.45	42.45
7	Kolkata	1.25	147.84	73.92	73.92	73.92
8	Punjab	1.25	87.47	43.73	-	43.73
9	Rajasthan	1.25	87.20	43.60	-	43.60
10	Tamil Nadu	1.25	397.92	198.96	198.96	198.96
11	Uttar Pradesh (East)	1.25	99.02	49.51	-	49.51
12	Uttar Pradesh (West)	1.25	139.63	69.82	69.82	69.82
	<b>Total</b>	<b>15.00</b>	<b>2782.13</b>	<b>1391.08</b>	<b>1196.37</b>	<b>1391.08</b>
<b>Annual value of spectrum not put to auction till date spectrum surrendered by TTSL</b>						<b>₹ 69.55 crore</b>

*\*Note- Value of spectrum surrendered by TTSL/TTML has been calculated on the basis of selling price, for the circles where selling price was not available reserve price has been considered for calculation. For Rajasthan circle, as reserve price was not available, half of the reserve price of November 2012 auction was taken for calculation, since Reserve prices for March 2013 auction was half of November 2012 auction for 800 Mhz band.*

**Annexure-III (Para 2.1.9.2)**

**Financial impact due to delay in withdrawal of spectrum from BSNL**

Sl. No.	Circle	Spectrum Surrendered (in MHz)	Selling Price Per block of 200 KHz as per 2014 Auction (₹ in crore)	Auction determined price (for 20 Years)	Financial impact due to delay in withdrawal of 4 and half year (upto June 2017) (₹ in crore)
1	Andhra Pradesh	1.8	32.60	293.40	66.02
2	Assam	1.8	7.22	64.98	14.62
3	Bihar	1.8	8.62	77.58	17.46
4	Haryana	1.8	5.40	48.60	10.94
5	Himachal Pradesh	1.8	1.20	10.80	2.43
6	Karnataka	1.8	31.00	279.00	62.78
7	Kerala	1.8	10.40	93.60	21.06
8	Kolkata	1.8	14.60	131.40	29.57
9	Maharashtra	1.8	58.07	522.63	117.59
10	Madhya Pradesh	1.8	10.08	90.72	20.41
11	North East	1.8	1.40	12.60	2.84
12	Orissa	1.8	3.20	28.80	6.48
13	Tamil Nadu including Chennai	1.8	41.60	374.40	84.24
14	Uttar Pradesh (East)	1.8	12.80	115.20	25.92
15	Uttar Pradesh (West)	1.8	18.99	170.91	38.45
<b>Total</b>					<b>520.79</b>

## Annexure-IV (Para 2.1.11.5)

## Statement showing non-achievement of Inspection Targets by six Wireless Monitoring Stations namely Delhi, Kolkata, Nagpur, Hyderabad, Jalandhar and Ajmer

Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	615	347	268	43.58
2012-13	420	113	307	73.10
2013-14	555	132	423	76.22
2014-15	410	119	291	70.98
2015-16	460	170	290	63.04

WMO AJMER				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	120	47	73	60.83
2012-13	120	26	94	78.33
2013-14	120	0	120	100.00
2014-15	120	0	120	100.00
2015-16	120	8	112	93.33

WMO JALANDHAR				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	120	32	88	73.33
2012-13	90	18	72	80.00
2013-14	120	25	95	79.17
2014-15	65	34	31	47.69
2015-16	60	32	28	46.67

WMO NAGPUR				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	105	108	-3	-2.86
2012-13	60	0	60	100.00
2013-14	60	32	28	46.67
2014-15	60	25	35	58.33
2015-16	60	7	53	88.33

WMO HYDERABAD				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	60	60	0	0.00
2012-13	60	45	15	25.00
2013-14	60	47	13	21.67
2014-15	60	45	15	25.00
2015-16	70	58	12	17.14

WMO KOLKATA				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	120	70	50	41.67
2012-13	30	8	22	73.33
2013-14	120	28	92	76.67
2014-15	60	15	45	75.00
2015-16	60	37	23	38.33

WMO DELHI				
Year	Targets	Achievement	Shortfall in achievements	Percentage of shortfall in achievements
2011-12	90	30	60	66.67
2012-13	60	16	44	73.33
2013-14	75	0	75	100.00
2014-15	45	0	45	100.00
2015-16	90	28	62	68.89

Annexure-V (Para 2.1.11.7)

Statement showing details of non-renewal of licenses issued by Regional Licence Offices

RLO	Type of Licenses	No. of cases	Amount(in ₹)
Chennai	USR	182	48,23,991
	Total	182	48,23,991
Delhi	USR	698	1,51,21,615
	AMS	478	85,30,000
	Total	1,176	23651615
Mumbai	USR	1,251	5,04,82,550
	Total	1,251	5,04,82,550
Kolkata	MMS	26	1,83,000
	AMS	25	5,20,000
	Total	51	7,03,000
<b>Grand Total</b>		<b>2,660</b>	<b>7,96,61,156</b>

USR- Ultra High Frequency Short Range licence

AMS- Aero mobile Service

MMS- Maritime Mobile Service



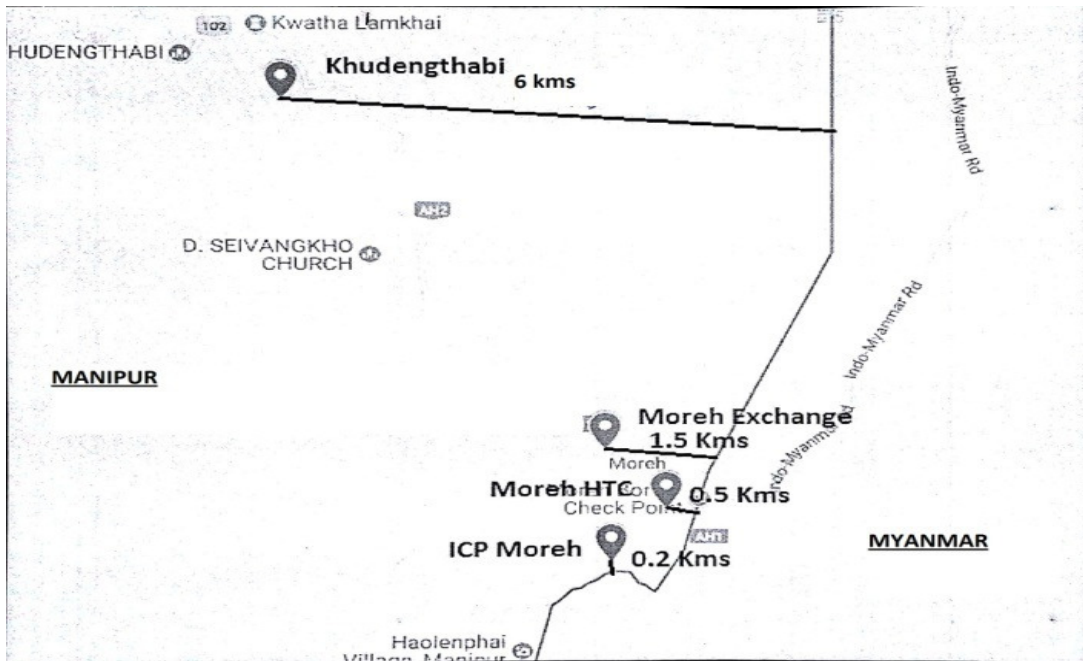
Annexure-VI (Para 4.1.6)

Map views of Indo-Mynmar border for Arunachal Pradesh, Mizoram and Manipur

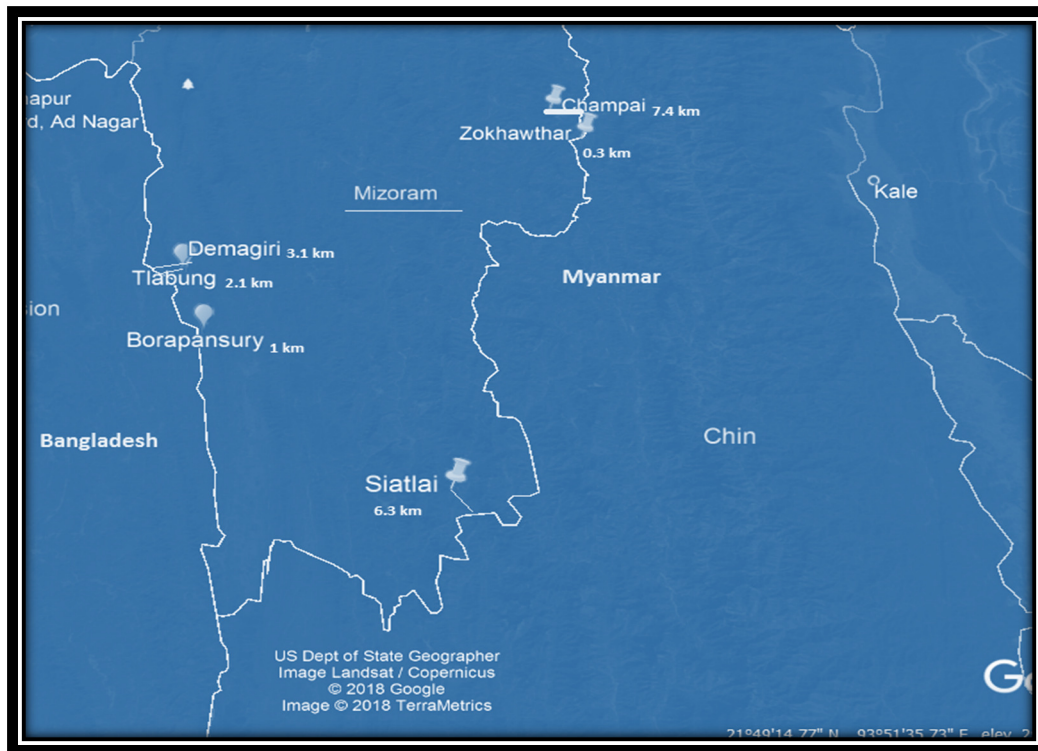
**Arunachal Pradesh**



**Manipur**



## Mizoram



## GLOSSARY OF TERMS AND ABBREVIATIONS

APS	Army Postal Circle
APT	Asia Pacific Telecommunity
ASMS	Automatic Spectrum Management System
BCP	Business Continuity Planning
BPR	Business Process Re-Engineering
BWA	Broadband Wireless Access
CBS	Core Banking Solution
CDMA	Code Division Multiple Access
CEPT	Centre for Excellence in Postal Technology
CIS	Core Insurance Solution
CMRTS	Captive Mobile Radio Trunking Service
CSD	Circle Stores Depot
CTDP	Comprehensive Telecom Development Plan
DB	Defence Band
DIZ	Defence Interest Zone
DR	Disaster Recovery
DSNG	Digital Satellite News Gathering
DWDM	Dense Wavelength Division Multiplexing
EA	Endowment Assurance
ECMS	Enterprise Content Management System
FCFS	First Come First Serve
FDD	Frequency Division Duplex
FM	Frequency Modulation
FSI	Financial Services System Integrator
GPS	Global Positioning System
GSM	Global System For Mobile Communications
IAM	Identity And Access Management
IARSEMS	Institute Of Advanced Radio Spectrum Engineering And Management Studies
ILD	International Long Distance
IMS	International Monitoring Station
IMT	International Mobile Telecommunications
ISMES	International Satellite Monitoring Earth Station
ISP	India Security Press
ITU	International Telecommunication Union
LSA	Licensed Service Area
LTE	Long Term Evolution
MTTR	Mean Time To Repair
MWA	Microwave Access
MWB	Microwave Backbone

NER	North Eastern Region
NFAP	National Frequency Allocation Plan
NFR	National Frequency Register
NIT	Notice Inviting Tender
NLD	National Long Distance
NRSMMS	National Radio Spectrum Management And Monitoring System
NSI	National Saving Institute
NTP	National Telecom Policy
OEM	Original Equipment Manufacturer
OFC	Optical Fibre Cable
PLI	Postal Life Insurance
PMRTS	Public Mobile Radio Trunking Service
RF	Radio Frequency
RFP	Request For Proposal
RKM	Route Kilo Meter
RLO	Regional Licensing Office
RPLI	Rural Postal Life Insurance
SACFA	Standing Advisory Committee On Radio Frequency Allocations
TC	Telecom Commission
TDSAT	Telecom Disputes Settlement and Appellate Tribunal
TRAI	Telecom Regulatory Authority of India
TSP	Telecom Service Providers
UASL	Universal Access Service Licence
UHF	Ultra High Frequency
UL	Unified Licence
USOF	Universal Service Obligation Fund
VHF	Very High Frequency
VSAT	Very Small Aperture Terminal
WFMS	Work Flow Management System
WOL	Wireless Operating License
WOS	Withdrawn Old Series
WMO	Wireless Monitoring Organisation
WMS	Wireless Monitoring Station
WPC	Wireless Planning & Coordination
WPF	Wireless Planning & Finance

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