

~~Company failed to meet the supply estimates in all the years. Despite allocation of special appropriation amount by SERC for improving the safety of distribution network, the Company had not prepared safety plans. Due to delay in redressal of grievances to the satisfaction of consumers, the complaints registered at CGRF have increased from 25 in 2011-12 to 378 in 2015-16.~~

Recommendations

The Company may consider:

- ~~➤ ***preparing annual plans for development of distribution network and for utilisation of the amount approved by SERC;***~~
- ~~➤ ***periodical assessment and installation of capacitor banks to save energy;***~~
- ~~➤ ***adhering to the sales volume approved in Tariff Order, recovery of subsidy from the State Government as per Tariff Orders and implementation of full cost tariff in the event of non-receipt of full subsidy;***~~
- ~~➤ ***adhering to the terms and conditions of Projects/ Schemes of Central and State Governments to derive the intended benefits;***~~
- ~~➤ ***preparation of plans for improving the safety of distribution network and accounting the expenditure under a separate accounting head to monitor the investment on safety.***~~

Information Technology Audit Report on Billing Systems in Northern Power Distribution Company of Telangana Limited (TSNPDCL)

2.7 Introduction

Electricity consumers are divided into two broad categories i.e. High Tension⁴¹ (HT) consumers and Low Tension⁴² (LT) consumers. HT and LT consumers are further classified into various categories as per the provisions of the Tariff Orders issued by the concerned State Electricity Regulatory Commission (SERC) from time to time.

Electricity distribution network in the State of Telangana is governed by two Distribution Companies (DISCOMS) viz., Northern Power Distribution Company of Telangana Limited (TSNPDCL) and Southern Power Distribution Company of Telangana Limited (TSSPDCL). TSNPDCL (Company) was incorporated in March 2000 and caters to the needs of 51.78 lakh (HT-0.03 lakh and LT-51.75 lakh) consumers as at the end of March 2016 in the

⁴¹ High Tension consumer means a consumer (other than those of LT III industrial categories) with a contracted load of 70 kVA and above and/ or having a contracted load exceeding 56 kW/ 75 HP. For LT-III industrial category having contracted load more than 100 HP, HT tariffs are applicable

⁴² Low Tension consumer means a consumer with a contracted load of 56 kW/ 75 HP and below except for LT-III category which has a threshold of 75 kW/ 100 HP.

northern districts of Telangana viz., Warangal, Khammam, Karimnagar, Adilabad and Nizamabad districts.

2.8 Organisational Setup

The Company functions under the administrative control of Department of Energy, Government of Telangana. General Manager (IT), who heads the IT Department, reports to the Chief General Manager (Projects) and is assisted by a Senior Accounts Officer at Corporate Office. While the billing of LT consumers is the responsibility of the Assistant Accounts Officers at Electricity Revenue Offices (EROs), billing of HT consumers is done by Senior Accounts Officer (HT) at each circle office.

2.9 Billing Applications

Energy Billing System (EBS) (LT Consumers)

Prior to introduction of Energy Billing System (EBS) (at a cost of ₹ 6.68 crore), the LT consumers were billed through Private Accounting Agencies (PAAs) who maintained the data in different formats like simple text format, dbase files or excel sheets, based on their convenience. EBS, which brought the billing of all LT consumers on one platform, was developed in-house in the year 2013 in Oracle 11g as distributed processing system placed on IBM P750 servers having AIX 6.1 Operating System with windows based desktops at EROs acting as clients.

As at the end of July 2016, the data pertaining to LT consumers, other than those in R-APDRP towns, is maintained in the EBS. The data pertaining to the previous month is uploaded to the spot billing machines which is then used to generate bills for the current month based on the current month consumption. The billing information and the payment information are processed at the Data Centre located in the Corporate Office at Warangal to update the consumer ledgers.

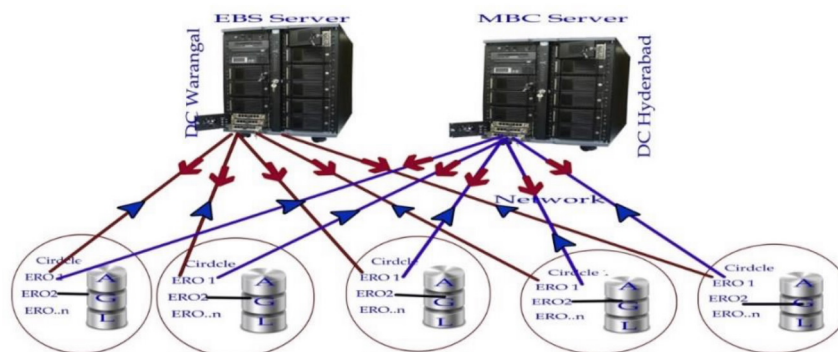
EBS (Agricultural Consumers)

The software was developed in-house on Sun Solaris 8 Operating System with Oracle 7 database and Oracle Forms V4 as back-end and front-end respectively and Pro*C as programming language.

The billing information pertaining to agricultural consumers (LT-V category) is fed by the EROs and is then sent to the Circle Office concerned. The same is processed by the Circle Office and the generated bills are sent to the consumers by the EROs.

Metering, Billing and Collection (MBC) Module (HT Consumers)

The HT consumer data is maintained along with the data pertaining to LT consumers covered under Restructured Accelerated Power Development and Reforms Programme (R-APDRP) in a Data Centre located at Hyderabad in the Metering, Billing and Collection (MBC) module developed under R-APDRP. The billing module is an application with centralised processing at the Data Centre and decentralised data feeding at Circle Offices. The processed bills are then sent to the consumers. A database architecture diagram of these billing applications is shown below:



2.10 Scope of Audit and Audit Methodology

The results of an IT audit on the HT billing systems of the Company was earlier included in the Commercial Audit Report, Government of Andhra Pradesh for the year ended 31 March 2007.

During the present Audit, sample billing data from the databases of LT, HT and Agricultural consumers for the period from 2011-12 to 2015-16 were analysed using CAATs⁴³ during the period April to August 2016. The results of queries on the databases were cross-verified with physical records at Circle Offices/EROs to evaluate the adequacy of IT controls as well as to identify loss/ leakage of revenue and to examine comprehensiveness of the System.

Sample Selection

There are five⁴⁴ Circle Offices, 23 Division Offices and 48 EROs spread over five districts. Among 45 EROs⁴⁵ (in these five Circles) where EBS is in use, 10 EROs (two offices from each circle) were selected using simple random sampling technique. Out of the total of 51.75 lakh consumers as at the end of March 2016, the sample selected works out to 17.18 lakh consumers (33.20 per cent). Further, the billing data of all 2516 HT consumers (to the end of March 2016) was covered in Audit.

2.11 Audit Objectives

The objectives of the Audit were to see whether

- the Company prepared and implemented IT Policy;
- the IT application for billing implemented by the Company was economical, efficient and effectively addresses business needs and compliance requirements;
- effective internal controls exist to ensure data integrity, safety and business continuity;
- effective controls exist in asset creation/usage, outsourcing and training aspects.

⁴³ Computer Assisted Audit Techniques

⁴⁴ Adilabad, Karimnagar, Khammam, Nizamabad, Warangal Circles

⁴⁵ All consumers of 3 EROs out of the total 48 EROs were covered under R-APDRP.

2.12 Audit Criteria

The audit criteria adopted for ensuring the achievement of audit objectives were:

- Provisions of Electricity Act, 2003, the National Electricity Policy and the schemes sponsored by Ministry of Power;
- Tariff Orders issued by SERCs of Andhra Pradesh and Telangana States;
- Guidelines and directions issued by Ministry of Power, SERCs, State Government;
- Norms fixed by various agencies with regard to operational activities;
- Adherence to directions issued by Information Technology & Communications Department vide G. O. RT. No. 268, dated 08 August 2008 for implementation of e-governance projects in PSUs/ Government Departments/ Agencies.

The audit objectives and criteria were explained to the Company during the Entry Conference (6 June 2016). The replies of the Government furnished during the Exit Conference (26 October 2016) have been considered while finalizing the Report.

Acknowledgement

Audit acknowledges and appreciates the co-operation and assistance extended by the officers and the Management of the Company at various stages of conducting the Information Technology Audit.

2.13 Audit Findings

2.13.1 Lack of formulated and documented IT and Security Policies

As per the guidelines issued (August 2008) by the erstwhile Government of Andhra Pradesh (Unified), all Departments/ PSUs were to develop an IT vision and a road map identifying various objectives and services to be provided, milestones to be achieved etc., within a fixed time frame. However, the Company had neither framed a road map nor formed a Steering Committee to guide the development of IT assets till date (August 2016).

Though the Company was utilising IT applications like EBS, MBC, SAP ERP etc., for managing its various operations, it is yet to formulate and document a formal IT policy and a long/ medium-term IT strategy incorporating the time frame, key performance indicators and cost benefit analysis for developing and integrating these applications, resulting in duplication of work as detailed in *Para 2.13.3* infra. This indicates lack of strategic planning in effectively using IT. Further, the Company does not have an approved Information Security Policy for protection of its application/ database as well as the data residing therein as detailed in *Para 2.13.22*.

In this context, a reference is also invited to Para no. 2.5.6 of the „Review on HT billing“ in erstwhile APNPDCL and erstwhile APCPDCL (included in the CAG’s Audit Report, Commercial, Government of Andhra Pradesh for the

year ended 31 March 2007) wherein similar comment was included, from which it is evident that the Company did not take any action for the last nine years.

The Government accepted (October 2016) the audit observations and stated that suitable policies would be formulated.

2.13.2 Lack of Blueprints

The Company had not prepared System Requirement Specifications and User Requirement Specifications for its in-house developed “Energy Billing Software” used for billing of LT and agricultural services. Non-preparation of these blueprints would pose a hindrance in making systematic changes in the software as and when needed. Detailed objectives of the software and its achievement could not be verified in Audit.

The Government accepted (October 2016) the audit observation.

2.13.3 Lack of interface between various IT Applications

The Company is utilising SAP ERP for accounting purposes and HT billing system (MBC) for billing of HT consumers. Individual ledger accounts were created in SAP for each of the HT consumers while lumpsum totals were maintained for all LT consumers as a single ledger account.

Audit observed that though the bills were being generated in the HT billing system based on the meter readings fed into the system, the data has to be manually downloaded and then uploaded into SAP due to lack of interface between the SAP ERP and the HT billing system. Further, the data pertaining to payments received from the HT consumers was manually fed for each of the consumer in MBC and SAP separately. Thus, absence of interface between SAP ERP and HT billing system resulted in duplication of work as well as scope for errors (as detailed in *Para 2.13.10*), which might adversely affect the integrity of the databases.

Further, it was also observed that there was no interface between the three billing systems viz., MBC, EBS (LT) and EBS (Agri) utilised for billing of various categories of consumers, which would hinder generation of consolidated MIS from these applications.

The Government accepted (October 2016) the audit observation and stated that an interface between HT billing system and SAP is under development.

2.13.4 Lack of functionalities resulting in manual interventions

Audit verified the records of the Circle Offices and EROs and observed that certain billing components were excluded from the softwares, necessitating manual calculations/ interference, thereby affecting the integrity of the system and completeness of the databases as detailed below:

2.13.4.1 HT Billing

1. Temporary HT service connections were being billed manually till they were regularised and not routed through the HT billing application (MBC) resulting in lack of completeness of the database.
2. Though the data pertaining to the consumers including the date of agreement was included in the application, the application did not

provide for capturing the minimum agreement period, based on which demand could be raised for such minimum period, in case of deration of contracted load/ termination before the expiry of the agreement. Due to non-provision of this functionality, the Company had to manually verify and raise demand in such cases.

3. As per the Regulation No. 6 of 2004, consumers who fail to remit the Security Deposit (SD) within 30 days from the date of intimation thereof, have to pay a surcharge of 18 *per cent* per annum on such amounts. Though the data pertaining to the amount of Security Deposit due from the consumer was available in the system, the application did not provide for automatic calculation of the surcharge and was manually calculated and uploaded to the system.
4. The Application did not provide for revision of bills of the open access consumers⁴⁶ through the system. The bills were manually revised and the subsequent bill was adjusted through a Journal Entry. However, the other parameters like units billed etc., were not revised, thus, affecting the integrity of the data utilised for review of adequacy of SDs held.
5. In case of seasonal consumers who utilise power for their main plant during the off-season period, the billing system did not provide for automatic revision of the previous bills and raising of subsequent demand by disallowing the concession available for seasonal consumers.
6. The legacy HT billing application did not provide for billing of HT services on proportionate basis for new consumers, due to which bills for the first month from the date of supply were prepared manually. This lack of functionality was not addressed in the new application also.

Further, the new MBC billing system was incorrectly designed to generate the first bill from the date of supply to the date of bill, thus, inflating the bill. This necessitated manual withdrawal of the excess amounts for every such first bill. Similar was the case with the first bill of the consumers who were converted from LT III (Industrial) to HT category.

7. Provision for inclusion of assessed amounts in malpractice or theft cases was not provided in the system.

As the above changes were being recorded by way of posting a Rectification Journal Entry due to lack of required functionalities, the database continued to depict the old and incorrect data and did not show the revised billing particulars (meter data etc.) except for the amounts, wherever revised. As a result, the reports generated would be incorrect and the database would continue to carry the incorrect data. As manual processing results in lesser transparency and may lead to errors, the above processes need to be automated.

⁴⁶ Consumers utilising the distribution system of the Company for receiving the supply of electricity from a party other than the Company

2.13.4.2 EBS (LT Billing)

1. In case of billing of LT category-III consumers with a contracted load of 75KW/100 HP and above, the energy charges, fixed charges and Time of Day (TOD) charges were manually calculated and then entered into EBS through in-house computer's EBS login giving scope for errors.
2. Whenever the adequacy of SD of the consumers was reviewed annually, previous SD review data was replaced with the current data due to which historical data was not available in the application. Further, the application neither provided for levy of penal interest on additional SD demanded but not paid by the consumers nor facilitated manual posting of such interest. These shortcomings hindered the ability of the Company to review the payment history of the consumers in respect of SD in addition to undue benefit to the consumers and loss to the Company due to non-levy of penal interest.
3. Manual revision of bills was necessitated due to incorrect logic for calculation of adequacy of SDs from new consumers for whom previous 12 months data was not available.
4. The application was incorrectly designed to generate the first bill from the date of supply to the date of the bill, thus, resulting in excess demand on the consumers. However, these bills were not manually reviewed to verify the accuracy of the bill and to withdraw excess amounts as done in HT billing.

The Government accepted (October 2016) the audit observations and stated that the Company would provide suitable modifications to the software.

2.13.5 Non-migration of legacy billing data

Audit observed that the billing data pertaining to LT consumers is available in EBS from the date of implementation of EBS only i.e., April/ December 2013. This indicated that the Company had not migrated the billing data available in the legacy system into the new application. Further, it was also observed that the legacy applications were not installed in any systems available in the Company, due to which the Company cannot verify the past history of the consumers.

The Government stated (October 2016) that historical data of legacy LT billing systems would be migrated in due course.

2.13.6 Verification of balances on migration

Though the data in the legacy HT billing system was migrated to the MBC system, there were no records to indicate that the migrated data was verified and certified to be error-free.

The Government replied (October 2016) that the data was migrated after thorough verification.

However, no documents were furnished in support of the reply.

2.13.7 Usage of Production Environment for testing in MBC

It is an industry standard practice to test the changes to software in test environment before migrating to production environment to mitigate the probable bugs as well as to ensure that the reliability and integrity of the existing data is not affected. A review of the master tables of the MBC showed that the master tables contained few test consumers, which reflected the fact that the production server is also used for testing, instead of migrating the new features after testing in test environment.

The Government stated (October 2016) that testing was done in stages before moving to production.

However, fact remained that the production database had test data which indicated failure in segregation of testing and production databases.

2.13.8 Design Errors in MBC Master Tables

A review of the structure of the MBC master tables showed that the field definitions were incorrect, and were coupled with lack of proper input validations which gave scope for errors. For instance, Mobile number of SC No. KMM899 was only of 9 digits (excluding the prefix 0) instead of minimum 10 digits. These errors could have been avoided by preparation of the blueprints as mentioned at *Para 2.13.2 supra*.

The Government accepted (October 2016) the audit observation and stated that action would be taken to rectify the errors.

2.13.9 Failure to control dues from consumers exceeding their Security Deposits

HT consumers of the Company should maintain SD equivalent to two months of their average consumption of the previous year. A review of the records at the end of March 2016 showed that the Company allowed accumulation of dues of 508 HT consumers amounting to ` 201.19 crore, though they maintained a SD of only ` 36.12 crore i.e., an excess of ` 165.07 crore, which in turn is equivalent to 9.15 times of the existing SD of these consumers. Though a default by these consumers would lead to financial loss to the Company, the system was not designed to generate alerts whenever the dues of a consumer crossed SD by a predetermined threshold limit.

The Government accepted (October 2016) the audit observation and stated that the above 508 consumers pertained to Government services and mostly Emergency services and that efforts were being made for realization of dues.

2.13.10 Variations between Financial (SAP) and Consumer Ledgers (MBC)

The Company is maintaining financial data of the HT consumers in SAP while maintaining the billing data in MBC i.e., HT billing application. A comparison of the data pertaining to SDs in both the applications showed that there was a difference of ` 5.06 crore between the two applications at the end of March 2016, rendering the database undependable.

The Government accepted (October 2016) the audit observation and stated that these differences pertained to period prior to implementation of SAP and that efforts would be made to reconcile the differences.

2.13.11 Incorrect levy of Electricity Duty

A review of the billing data of the HT consumers showed that the application is incorrectly designed to levy Electricity Duty (ED) on the kWh units instead of kVAh units, as detailed in *Para No. 2.6.4.8*. Further, in case of consumers whose consumption was less than the minimum demand, the ED was levied only on the actual units consumed and not on the minimum units billed which was in deviation to the provisions of APED Act.

The Government stated (October 2016) that ED was levied on kWh units as GTCS defined “unit” as kWh.

The reply is not acceptable as the GTCS defined a unit as kWh units indicated by the energy meter for billing purpose while ED Act provided for levy of ED on energy sold. As kVAh is being used as the unit of measurement for billing, ED should be levied on kVAh.

2.13.12 Non-review of Security Deposits of Seasonal Industries as per Regulations

As per the provisions of Regulation No. 6 of 2004 (clause 8), the adequacy of the SD of seasonal industries is to be reviewed twice during the year, once before the commencement of the declared season and again after the completion of the season. It was, however, observed in Audit that the Company was reviewing the adequacy of the SD of its 265 seasonal consumers only once a year along with other consumers which is against the SERC Regulations.

The Government agreed (October 2016) to make necessary changes to the software.

2.13.13 Failure to credit Interest on Security Deposits (ISD) of Bill-stopped Consumers

An analysis of the interest given to the consumers on their SD for the year 2015-16 showed that the Company had not credited interest on SDs (ISD) of ` 2.57 crore to 43 HT consumers whose bills were under „BILL STOP“ status in the month of April 2015. However, as the clause 7 of Regulation 6 of 2004 which govern the ISD does not differentiate between the regular and bill-stopped consumers, the action of the Company was incorrect.

The Government stated (October 2016) that security deposit along with interest thereon, would be adjusted at the time of termination of service.

The reply is not tenable as the Regulations stipulated that the ISD should be credited every year.

2.13.14 Non recovery of full cost tariff from consumers

A reference is invited to *Para 2.6.4.5* wherein the non-receipt of subsidy from the State Government was commented upon. As per the tariff orders, the subsidy was to be received in advance every month, failing which SERC rates contained in the full cost recovery tariff (FCRT) would be operative. In this context, it was observed that though the Company had not received the entire subsidy for the years 2014-15 and 2015-16 as per the tariff orders, it could not recover the FCRT from the consumers as the billing applications did not have the functionality to recover FCRT in such eventualities.

The Government replied (October 2016) that the release of pending subsidy from Government is being pursued by the Company.

The reply is not tenable as the Company failed to provide necessary functionalities in the billing system to adhere to the instructions of the SERC.

2.13.15 Incomplete Data in Master Tables

A review of the data in the consumer master tables of all the three billing applications viz., MBC (HT Billing), EBS (LT Billing) and EBS (Agriculture) showed that the data capturing was incomplete in various columns like address, email ID, phone number etc.

The Government replied (October 2016) that the missing data would be collected and updated in the database.

2.13.16 Delay in Spot Billing of LT consumers

A review of the billing of the consumers showed that there was a considerable time lag between two consecutive bills in both monthly and bi-monthly billing. For instance, analysis of ledger data of Jagityal ERO for the month of April 2011 revealed that billing in 70,148 records out of 86,494 bi-monthly records and 14,626 out of 16,562 monthly records was delayed by 4 to 59 days and 4 to 29 days respectively. This delay in spot billing was also continued even after implementation of EBS as indicated by delay in 23,66,794 cases (20.52 per cent) out of 115,38,595 total monthly/ bimonthly spot billings of the ten test-checked EROs during the period from May 2013 to March 2016. As the delay in spot billing results in shifting of the consumers to a different slab category based on their average consumption, there is a scope of loss to either consumer or to the Company.

The Government replied (October 2016) that the delays were avoided during the current year and that a new software is implemented to avoid loss to the consumer on account of shifting to higher slab due to delay in billing.

2.13.17 Failure to adhere to guidelines of SERC

An analysis of the billing data of Agriculture consumers showed that the Company had not adhered to the guidelines issued by SERC in its tariff orders as detailed below:

1. SERC vide Para No. 4.1 of Regulation No. 5 of 2004, directed the Company to issue all bills at a periodicity of not more than two months. Audit, however, observed that billing of Agriculture (free) consumers, from whom only customer charges were recoverable, was done only once in six months.
2. Though the tariff orders prescribed different tariffs for different groups of agricultural consumers based on various parameters⁴⁷, the same were not captured in the application, thereby requiring manual intervention and giving scope for bias and errors.
3. Though all new agricultural connections were to be given only with meters and after implementation of Demand Side Management (DSM) measures like frictionless foot valve, capacitor of adequate rating, HDPE or RPVC piping at

⁴⁷ Land holdings and number of connections held by the agricultural consumer along with the data on the second crop grown

suction and/ or delivery and ISI marked mono-block or submersible pump-sets, out of the 1,33,692 free agricultural connections issued during the period of Audit i.e., April 2011 to March 2016, only 59,894 connections were provided with meters. However, readings were not captured in the application even from these meters.

Further, a test check of the records of Warangal Circle showed that 18,511 consumers released during the period under review were without DSM measures. Audit, however, could not verify similar cases in other four Circles as necessary data was not captured in the relevant tables.

The Government replied (October 2016) that these services pertain to unmetered free agricultural services from which only customer charges are collected and that all free services were released only after installation of DSM measures.

The reply is not acceptable as Warangal Circle data showed that new agricultural services were released without DSM measures. Further, issue of free agricultural connections without meters and issue of bills at six-monthly intervals were against the instructions of SERC.

2.13.18 Billing on the basis of incomplete data

The Company levied additional tariff on HT and LT III consumers (with load above 100 HP) for consumption between 6 pm to 10 pm of everyday as TOD Charges. Audit observed that though TOD charges were correctly levied on HT consumers as per the actual data obtained from the meters, the same were levied at one-sixth of the month's consumption from LT III consumers due to lack of TOD readings. Thus, the Company resorted to billing of LT III consumers on the basis of incomplete data which rendered its billing inaccurate.

The Government replied (October 2016) that TOD is not applicable to LT services.

Audit observed that HT tariff is applied to LT III consumers with load more than 100 HP as per the tariff approved by ERC which included TOD charges. As such, levy of TOD on these LT consumers on approximation due to non-availability of compatible tri-vector meters, rendered billing inaccurate and unreliable.

2.13.19 Weak user authentication

Passwords are used as a mechanism for user identification, authentication and non-repudiation. It was observed that the Company neither had password policy approved by competent authority nor enforced any restrictions on password usage by the users/ administrators. Therefore, there was a risk of unauthorized access and data modification that could not be traced.

The Government stated (October 2016) that password policy would be formulated.

2.13.20 Lack of Backup Policy

The Company did not have any approved Backup Policy. Though the Management stated that backups were taken on daily basis and maintained for 20 days in addition to the backups taken on monthly basis before and after

processing of the ledger, a verification of the backups available with the Company showed that the Company was having only weekend backups and not daily backups. Further, the Company could not produce any record to show that the backups taken at any point of time were actually tested to review its ability to recover data in case of any eventuality.

The Government accepted (October 2016) the audit observation and stated that a backup policy would be formulated.

2.13.21 Deficiencies in Change Management Controls

Modifications made to both master data and the application to accommodate the changes in business rules were not documented. This was evident from the fact that the Management had not maintained any records to indicate that the HT bills generated were test-checked by higher authorities whenever there was a revision in tariff. In this connection, a reference is invited to Para no. 2.5.8 of the Review on HT billing in erstwhile APNPDCCL and erstwhile APCPDCL (included in the CAG's Audit Report, Commercial, Government of Andhra Pradesh for the year ended 31 March 2007) wherein similar comment on failure to test check the HT bills was included. Further, a formal policy for authorising changes made and for testing their accuracy did not exist.

The Government accepted (October 2016) the audit observation and stated that change management procedures would be formulated. It was also stated (October 2016) that the bills were test checked across all categories and that records would be maintained in future to substantiate the same.

2.13.22 Lack of Data Security

2.13.22.1 Though the Finance Wing of the Company, after implementation of EBS, instructed the EROs to submit the legacy data to the IT wing, the same was retained with the PAAs, which is a security lapse on part of the Company in maintaining its data. Being the data owner, it was the responsibility of the Company to keep the data, which is critical and confidential, under its control rather than leaving it in the hands of outsourced service providers.

The Government stated (October 2016) that legacy data is being obtained.

2.13.22.2 Further, it was seen in Audit that the HT billing data was maintained by a third party in a Data Centre at Hyderabad along with the data of another DISCOM viz., APSPDCL. The data given to the Audit for analysis included data pertaining to APSPDCL which signifies the fact that the data was not segregated and maintained properly at the Data Centre.

The Government stated (October 2016) that HT billing data is presently maintained in a separate server.

2.13.23 Lack of 'Business Continuity and Disaster Recovery Plan'

The billing system being mission critical for the Company, would impact its revenue earning capacity substantially if the consumer bills are not generated on time. The Company, however, had not prepared any business continuity plan, outlining the action to be undertaken immediately after a disaster and to effectively ensure that information processing capability can be resumed at the earliest. It did not have a disaster recovery plan outlining identities of

personnel, their roles/ responsibilities and plan/ procedure to support such a critical IT system in the event of a failure.

The Government accepted (October 2016) the audit observation and stated that a suitable DR plan would be formulated.

2.13.24 Non-availability of the Source Code with Company

Though the MBC billing software developed under the R-APDRP project is owned by the Company, the source code of the software is yet to be obtained from the implementing agency (M/s TCS Limited). In the absence of the source code with the Company, Audit could not verify the adherence to the guidelines of SERC regarding adjustment of the payments received against arrears/ current dues and annual review of SDs of the consumers.

The Government accepted (October 2016) the audit observation and stated that the source code would be obtained.

2.13.25 Lack of protection from Viruses and Trojans

An analysis of the systems available at EROs where EBS (LT) was installed showed that anti-virus solutions were not installed thus exposing the systems to risk from viruses and trojans.

The Government stated (October 2016) that anti-virus solutions were deployed on all desktops.

However, Audit observed that anti-virus applications were not available in some of the test checked offices.

2.13.26 Lack of documented Training Policy

Audit observed that the Company did not have any training policy for the employees utilising IT billing systems and that none of the users of EBS at two offices⁴⁸ were trained till date. Further, the Company did not have any records to indicate that there was an approved evaluation and review mechanism regarding the effectiveness of the trainings imparted to its staff and its utilisation.

The Government accepted (October 2016) the audit observation and stated that training policy would be formulated.

Conclusion

The Company was utilising three billing systems for billing of its HT, LT and Agricultural consumers. In spite of specific instructions from the State Government to develop an IT vision/ road map, the Company had not even developed an IT policy/ strategy to guide its IT activities due to which there was no interface between the IT applications resulting in duplication of work. Further, the Security Deposit balances maintained in the HT billing system differed from those recorded in the books of accounts. Manual processing of several activities resulted in lesser transparency and gave scope for errors. In spite of availability of suitable functionalities in the HT billing application, the Company resorted to manual calculations, thereby affecting the integrity of the

⁴⁸Narasampet and Hanmakonda (Rural) EROs

system and completeness of the database. The systems were vulnerable to internal as well as external attacks due to poor controls.

Recommendations

The Company should:

- *formulate and document IT and backup policies;*
- *formulate and implement a comprehensive Business Continuity Plan;*
- *include all activities of the billing process in the applications to reduce dependence on manual processing and attendant errors creeping into the system;*
- *integrate the IT applications to prevent duplication of work and scope for errors;*
- *formulate and implement a comprehensive security policy to safeguard IT assets and fix the existing vulnerabilities; and*
- *build appropriate IT controls for data integrity and reliability.*