

Jodhpur Vidyut Vitran Nigam Limited

2.3 IT Audit on computerisation of revenue billing system by Jodhpur Vidyut Vitran Nigam Limited

Executive summary

Jodhpur Vidyut Vitran Nigam Limited (Company) outsourced (2008) work of generation of electricity consumption bills of all the nine circles. It awarded generation of electricity bills of five circles including electricity bills of all HT consumers to K & D Engineers and Consultants and the work of electricity bills of remaining four circles to KLG Systel Limited, Gurgaon (Haryana). An Information Technology Audit on billing system of the Company was attempted to ascertain that the Company before awarding the work of its core activity of revenue realisation has adequately addressed the associated risks of outsourcing. Further, the audit was also conducted to evaluate controls of application software and to ascertain completeness, regularity and consistency of data.

Computerisation of revenue billing of the Company was assessed against the Tariff for supply of electricity-2004, and Terms and Conditions of Supply (TCOS) - 2004, Rules, notifications, directions issued by the Rajasthan Electricity Regulatory Commission

(Commission) and orders and circulars issued by the Company. The data available with the Company was analysed with the help of Computer Assisted Audit Techniques.

Though the system developed by both the service providers was adequate as regards to processing of billing data and generation of electricity bills yet there were many shortcomings leading to incorrect billing as well as not achieving full potential of IT applications. The observations of audit have been categorised as deficiencies of general controls, system design drawbacks, mapping of business rules and lacunae in application controls such as deficient input controls and validation checks. Besides, some contractual deficiencies, non-reconciliation of data available in the system with financial statements of the Company were also noticed. It is also felt that there is a requirement for effective IT application internal control mechanism so as to get the best results of computerisation of billing system.

Introduction

2.3.1 Jodhpur Vidyut Vitran Nigam Limited (Company) was incorporated on 20 July 2000 after unbundling of erstwhile Rajasthan State Electricity Board (RSEB). The activity of the Company is spread in nine* circles. For revenue purposes, the Company is empowered to collect revenue from different categories of consumers for electricity supplied as per latest tariff orders issued by the Rajasthan Electricity Regulatory Commission (Commission).

The Company outsourced (2008) the work of generation of electricity consumption bills of all the nine circles and awarded generation of electricity bills of five** circles including electricity bills of all HT consumers to K & D Engineers and Consultants and the work of electricity bills of remaining four* circles to KLG Systel Limited, Gurgaon (Haryana). Prior to it, the work of generation of electricity bills was outsourced to Aditi Computers. The service providers developed the software using standard RDBMS of SQL/Oracle and Windows as operating system under multi user requirement.

As on 31 March 2009, the Company had 20,77,773 consumers comprising of Domestic, Non-domestic, Street light, Agricultural, Small Industrial Power (SIP), Medium Industrial Power (MIP), Large Industrial Power (LIP) and Mixed load consumers. During 2008-09, the total revenue realised by the Company from all categories of the consumers was ₹ 2,401.69 crore as given in **Annexure-17**.

Scope and methodology of audit

2.3.2 The billing system pertaining to HT and LT consumers of the Company was reviewed by audit during the period from January to June 2010. The data as maintained by the billing agencies *i.e.* by K & D Engineers and Consultants and KLG Systel Ltd. for the period 2008-09 in respect of all HT consumers and data relating to LT consumers of two circles[§] was analysed. Questionnaires were issued to elicit information from the Company to evaluate controls of application software and to ascertain completeness, regularity and consistency of data. Further, two sub-divisions[∇] from each circle were selected for detailed analysis.

Audit methodologies adopted was the use of questionnaire and management response/clarification there upon, scrutiny and verification of manual records, collection of computerised data and analysis thereof with the help of

* Barmer, Bikaner, Churu, Hanumangarh, Jalore, Jodhpur (City), Jodhpur (District), Pali and Sriganganagar.

** Bikaner, Churu, Jodhpur (City), Pali and Sriganganagar.

* Barmer, Hanumangarh, Jalore and Jodhpur (District).

§ Jodhpur district circle (M/s KLG Systel Ltd.) and Pali circle (M/s K & D Engineers and Consultants).

∇ Jodhpur district circle: Luni and Mandore sub-division;
Pali circle : Pali and Sirohi sub-division.

Computer Assisted Audit Techniques (CAATs), issue of preliminary audit observations to the management for response with a view to firming up the audit conclusion and discussion and also interaction with the various officers of the Company and billing agencies.

Audit objectives

2.3.3 Information Technology (IT) audit of computerisation of revenue billing of the Company was carried out to examine, analyse, evaluate and to assess the adequacy and effectiveness of IT policy of the Company, mapping of business rules, completeness and correctness of the data, reconciliation of revenue realised and achievement of overall objectives of the Company.

Audit criteria

2.3.4 IT audit of computerisation of revenue billing of the Company was assessed against the following parameters:

- Tariff for supply of electricity (Tariff)-2004, Terms and Conditions of Supply (TCOS)-2004, Rules, notifications, directions issued by the Commission;
- Orders and circulars issued by commercial wing of the Company; and
- Best practices pertaining to IT system and management.

Audit findings

2.3.5 Audit findings based on scrutiny of records and database are as under:

General Controls

Lack of formulated and documented IT policy and IT security policy

2.3.6 A well formulated and documented IT policy is essential to assess the time frame, key performance indicators and cost benefit analysis for developing and integrating various functions. The Company, however, had not formulated a formal IT policy. Further, the Company has also not constituted a planning/steering committee with clear roles and responsibilities to monitor each functional area in a systematic manner.

The Company also did not have an IT security policy regarding the security of IT assets, its software, its hardware and databank. We observed that in the

absence of IT security policy, modifications made in the master data relating to the consumer service, meters, meter readings, payments, arrears, adjustment in assessments *etc.* by the outsourced agency were not subjected to any supervisory review by the Company staff/officers periodically so as to ensure that the changes were authorised before committing them to the databank. It was also observed that there was no control procedure/system to monitor the cases of creation of new database of consumers, deletion of consumers from the master data bank, acceptance of duplicate or unauthentic records. In absence of these precautions, the possibilities of unauthorised changes made in the master database can not be ruled out.

Business continuity and disaster recovery plan

2.3.7 The revenue billing system is a critical system. If there is any untoward incident or disaster and the consumers' bills are not generated in time, revenue earning capacity of the Company may be substantially affected. It is, therefore, essential for the entity to prepare and document a disaster recovery and 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. We, however, noticed that there was no documentation and testing of business continuity plan detailing the back up and recovery procedures in the Company. There was no offsite storage of backups. Even the retrieval of data from onsite backup had not been tested. The backup data for the year 2007-08 was not available with the Company.

The Government while accepting the facts stated (September 2010) that now billing data back up is being taken in CDs at three different levels and a contract has been awarded to HCL Infosystems Limited to develop the software for each activity. The fact remains that the Company did not have a documented disaster recovery and business continuity plan.

System Design Deficiencies

2.3.8 The system design and its operation by the service providers should be adequate and sound to capture the data from the inputs provided by the Company. In case of deficiencies in the system itself, there are possibilities of generation of incorrect bills. We noticed certain system design deficiencies:

Inaccurate meter reading brought forward

2.3.9 Difference between current reading and previous reading denotes the consumption of energy by a consumer and on the basis of the same the energy bill is computed. As such, previous reading being carried forward should obviously remain unchanged during the process of brought forward during next billing cycle. An analysis of billing data of HT/LT consumers revealed that the system was deficient to the extent that instead of taking the previous reading by default, it accepts the manual intervention hence there was difference in the meter reading being carried forward in previous billing cycle

and brought forward in current billing cycle. Due to this discrepancy it was observed that:

- In HT billing, the system brought forward incorrect meter reading of previous cycle in case of 45 consumers. Further analysis revealed that the system brought forward 21,98,178 units of electricity in excess of previous consumption in 14 cases (11 consumers) during the period between May 2008 and March 2009. Due to this, the bills for the present cycle were prepared for less consumption and therefore the Company short recovered energy charges amounting to ₹ 88.15 lakh.
- In LT billing, differences in carried forward and brought forward meter reading were noticed in 22,821 cases (in 2,072 cases, the opening balance of current month was more than the closing balance of previous month) between April 2008 and June 2008 in selected sub-divisions. The discrepancies noticed in LT consumer database pertained to different categories of consumers and hence the actual financial impact could not be ascertained.

The Government stated (September 2010) that in case of HT consumer's data base, the changes were got done through manual intervention by billing officer whereas in LT consumer's cases, some times due to wrong reporting of readings by meter reader or wrong punching of data by operator, the differences in old and new reading occurs but it could not be corrected/updated in billing back up data. The reply is not acceptable as the system was deficient as it did not take the previous consumption of the consumer by default.

Undue benefit of power factor rebate to consumers

2.3.10 Tariff -2004 provides that consumers having sanctioned connected load more than 25 HP (18.65 KW) shall maintain an average power factor of not less than 0.90 (90 *per cent*). In case the average power factor falls below 0.90, a surcharge at one *per cent* of energy charges for every one *per cent* fall in average power factor below 0.90, shall be charged. Also an incentive of one *per cent* of energy charges shall be provided if average power factor is above 0.95 (95 *per cent*) for each one *per cent* improvement above 0.95.

In a *suo moto* petition in the matter of rationalisation of retail tariff for the Company, the Commission amended the above clause and decided (August 2007) that incentive be provided for each 0.001 (0.1 *per cent*) improvement in average power factor beyond 95 *per cent* (0.950) and surcharge be levied for fall of each 0.001 (0.1 *per cent*) of average power factor below 90 *per cent* (0.900). This facility was, however, applicable only where the installation of the meters at the consumer's premises were compliant to the requirements of Central Electricity Authority (Installation & Operation of Meters) Regulation, 2006 which stipulated that in case of supply of electricity above 33 KV, the accuracy class of meters should be 0.2S. Further the accuracy class of Current Transformers and Voltage Transformers shall not be inferior to that of associated meters.

We observed that the system did not have a field in the table to define the accuracy class of meters in absence of which the system was deficient to compute the power factor incentive as per the applicable provisions and therefore allowed incentive up to three digit of improvement in average power factor beyond 95 *per cent* (0.950). Due to this design deficiency in billing system, the Company allowed ₹ 33.87 lakh pertaining to the period November 2007 to May 2008 in the bills of the consumers. On being pointed out by audit through draft paragraph, the Company debited the amount of incentive against the consumers. Analysis of database, however, revealed that though the incentive allowed up to May 2008 was debited but the measures to control this deficiency were not included in the system as a result the system again allowed incentive of ₹ 27.76 lakh to these consumers during the period June 2008 to March 2009.

The Government while accepting the fact of system deficiency of not indicating accuracy class of meters stated (September 2010) that the rebate was allowed on two digit basis. The reply is not acceptable in view of the fact that the incentive was allowed on three digit basis in the cases pointed out by audit.

Absence of system alert for low power factor

2.3.11 Power factor clause of Tariff -2004 regarding Large Industrial Services provides that if the average power factor falls below 0.70 (70 *per cent*), the installation shall be disconnected and will not be reconnected till the average power factor is improved to the satisfaction of the Company. Section 139 and 140 of Electricity Act 2003 also reproduce the same.

The State of Rajasthan is suffering from power shortage and had to import it from other states. It was, therefore, necessary to adopt measures to save energy from being wasted by providing reactive power compensation throughout the network (as also contemplated in the Indian Electrical Grid Code).

The software designed for billing did not automatically provide alerts by printing notices on the bills. An analysis of data back up of HT consumers for the year 2008-09 by audit revealed that the required action as per the prescribed procedure was not taken in cases ranging between 27 and 48 during May 2008 to March 2009, despite the fact that their power factor was low and ranged between 0.009 and 0.695. Thus, due to not taking the action, the Company sustained an estimated loss of 28.07 lakh units* valued at ₹ 1.13 crore.

The Government accepted (September 2010) the facts of non-issuance of notices/disconnection of power in case of power factor falls below 0.70 in accordance with tariff as well as Indian Electrical Grid Code. The Company, however, did not agree to the loss worked out by audit. The reply is not acceptable in view of the fact that stringent condition imposed in tariff/Indian

* Difference of PF 0.70 and actual PF of the consumer during a month.

Electrical Code for disconnection in such cases itself evident that the Company is bound to lose.

Discrepancies in Delayed Payment Surcharge

2.3.12 Clause 36(1) and 38 of TCOS-2004 provides that all bills for electricity charges may be paid within twelve days from the date of their issue at the concerned sub-divisional office or at other collection centers; either in cash or by pay order/bank draft/bankers cheque or a cheque failing which a Delayed Payment Surcharge (DPS) at the rate of 2 *per cent* and 4 *per cent* on unpaid dues be levied in case of monthly and bi-monthly billed consumers respectively.

Analysis of database revealed that the system was deficient as it did not correlate the bill payment date of previous cycle with reference to the date on which the bill was actually paid by the consumer. Due to this, in case a consumer paid the bill of previous cycle after due date, the system did not indicate alert and generate the bill of next billing cycle without showing the arrear of DPS. It was also noticed that during the period of May and June 2008 out of 43,776 consumers, in 1,060 cases of Jodhpur district circle, the system did not indicate DPS of ₹ 75,431 in the previous arrear column. Thus, due to design deficiency, an amount of ₹ 75,431 was short recovered.

The Government while accepting the design deficiency stated (September 2010) that delay occurred due to extension/change of due date by the billing officer at sub-division where the bills were not distributed timely. The fact remains that the system did not have provision to correlate bill payment date with due date of payment.

Mapping of business rules

2.3.13 The Company frames rules in accordance with the tariff provisions and TCOS, duly approved by the Commission, issues necessary circulars and periodically reviews them. These are communicated to the service providers to update the system. The discrepancies noticed where either the rules framed by the Company were not adhered to or those were not appropriately incorporated in the system are as under:

Rebate in case of defective meters

2.3.14 Clause 30(2) of TCOS- 2004 stipulates that in case a stopped/defective metering system is not replaced within a period of two months of its detection, a rebate of 5 *per cent* on the total bill of the consumer excluding electricity duty shall be allowed from third monthly bill in case of monthly/fortnightly billing and second bill in case of bimonthly billing after such detection till the meter is replaced.

Scrutiny of billing data of LT consumers of selected sub-divisions for the month of April 2008 and March 2009, we observed that out of

69,672 consumers, 1,042 consumers were billed on average basis during 2008-09 indicating that the meters were defective during this period. The legitimate rebate of ₹ 56,106 at the rate of five *per cent* was, however, not allowed to these consumers. Further scrutiny of balance sheet of the Company revealed that in none of the cases, the Company has allowed the rebate of five *per cent* in case of defective meters which remained un-replaced for more than two months indicating that provisions to allow rebate was not incorporated in the system.

The Government while accepting the fact assured (September 2010) to take corrective measures.

Computation of fixed charges

Domestic and non-domestic consumers

2.3.15 Tariff -2004 provides for the 'Fixed Charges', calculated on the basis of average monthly consumption of previous financial year.

Scrutiny of database revealed that the fixed charges computed by the system were not correct as the system while computing the fixed charges did not correlate it with the average consumption of previous year. During the analysis of records of April 2009 it was noticed that an amount of ₹ 17.78 lakh towards fixed charges (which is to be based on average monthly consumption of 2008-09) was charged in excess of tariff in respect of 35,441 domestic consumers of selected circles.

Similarly, in case of Non-domestic consumers, the fixed charges amounting to ₹ 2.26 lakh in respect of 2,447 consumers of selected circles were charged in excess of tariff.

The Government stated (September 2010) that the fixed charges were computed correctly. The reply is not convincing in view of the fact that the fixed charges were charged in excess of the tariff provision in the cases pointed out by audit.

Allowance of rebate

2.3.16 To promote non-conventional sources, Tariff -2004 provides a rebate of five paise per unit in the "Energy Charges" for usage of "Solar Water Heating System". Scrutiny of database of selected circles, however, revealed that this provision of the tariff was not mapped in the system and as a result the system was not allowing the rebate to 102 eligible consumers.

The Government stated (September 2010) that such rebate was allowed under tariff code "1000Y". The reply is not acceptable in view of the fact that data provided did not have tariff code "1000Y". Further the revenue manual of the Company provides tariff code 1400 for such consumers and no rebate was allowed to these consumers.

Non payment of enhanced Security Deposit amount

2.3.17 Clause 16 of TCOS provides that the provisional amount of security for payment of Nigam dues be deposited in accordance with clause 3 of Part II and the security amount may be reviewed at the beginning of each financial year to cover actual average consumption. In case, if the security deposited by the consumer is found insufficient, the Nigam may give a notice to the consumer to deposit the difference within 30 days of service of notice. The Company also paid interest on the security deposit amount at the prescribed rate.

Scrutiny of database, however, revealed that the above provisions were not mapped in the system and therefore the work of assessing the security deposit annually was being done by the Commercial Wing of the Company. Audit scrutiny revealed that the notices for depositing additional security were issued by the Commercial Wing but action under section 56 (1) of the Indian Electricity Act, 2003 to disconnect power supply of such consumers who have not deposited the additional security even after issue of notice was not undertaken by the Sub-divisional office. The details of HT consumers who had not deposited the additional security are given in **Annexure 18**.

Further analysis of system data relating to security deposit and security deposit register maintained at Sub-Division, a difference of ₹ 31.72 lakh was noticed in respect of security deposits of the consumers as detailed in **Annexure 19**.

The Government while accepting the facts stated (September 2010) that notices have now been served to the consumers to deposit additional security.

Application Controls

Input control and validation check

2.3.18 To ensure correctness, completeness and reliability of the database, it is necessary to ensure appropriate input control and data validation during the data entry. This would help in reduction in duplication of efforts and redundancy. The following deficiencies were noticed in audit in this regard.

Input Controls

Rebate for domestic connections in rural areas

2.3.19 Tariff-2004 provides a rebate of ten *per cent* in the tariff for domestic connections in rural areas only. This rebate was, however, not to be allowed in such villages where round the clock supply of electricity was provided. The system has given tariff code '1500' in such villages where round the clock supply of electricity was provided.

Scrutiny of database, however, revealed that:-

- as per Management Information System (MIS), all the 1,058 and 915 villages in Jodhpur district circle and Pali circle have been electrified upto March 2008 and round the clock supply of electricity was provided in these villages. The system was, however, not being updated and therefore it allowed rebate to domestic connections in rural areas amounting to ₹ 17.84 lakh¹ in the month of April 2008;
- in absence of necessary validation check, the system indicated tariff code '1500' in case of urban connection also;
- the rebate of 10 *per cent* was directly reduced from the tariff/energy charges instead of showing it separately in the column of other rebate.

The Government accepted (September 2010) that the rebate was allowed in such villages where round the clock supply was provided.

Security deposit for Meter and CTPT set

2.3.20 Clause 3(2) of TCOS-2004 Part II provides that security towards Meter and Current Transformer Potential Transformer (CTPT) set is required to be charged at prescribed rates* in case metering equipments were provided by the Company.

Analysis of HT database revealed that this provision was not mapped in the system. The system did not contain the information about the ownership of Meter and CTPT set and thus both the fields indicating Meter and CTPT set were found blank in the database. The cases test checked during audit where HT consumers did not deposit the Meter and CTPT security amount of ₹ 2.82 lakh is as given in **Annexure 20**.

The Government while accepting the facts stated (September 2010) that notices have now been served to the consumers to deposit the CTPT charges.

Incorrect insertion of Industrial Code

2.3.21 For the purpose of identifying the HT consumers with nature of their industry the industrial codes 1 to 31 were given to them. These codes were necessary to charge the various Tariff provisions viz; seasonal industries, Arc/furnance industries, oil and ginning industries *etc.* The following deficiencies were, however, noticed:

- In 16 to 84 cases pertaining to different months, Industrial Codes were not found entered.

¹ 1,05,572 consumers of Jodhpur district circle and Pali circle.

* HT Trivector Meter ₹ 8,000, 11 KV CTPT Set ₹ 20,000, 33 KV CTPT Set ₹ 50,000, EHT CT ₹ 2,80,000, EHT PT ₹ 5,80,000.

- In case of Public Health and Engineering Department (PHED) to which Industrial code 11 was allotted, other codes were also found entered. Similar deficiency was also noticed in case of Textile industry to which industrial code 01 was given.

Insertion of wrong code may lead to incorrect calculation of electricity charges in case of seasonal industries and charging of electricity duty in cases of PHED where it was exempted.

The Government assured (September 2010) to take corrective measures to overcome this deficiency.

Completeness of data

Area code and Village code

2.3.22 In HT consumer billing data for the year 2008-09, the area codes of the consumers in various cases ranging between 223 and 238 consumers noticed during different months were not shown. Similarly, in LT consumer billing data of selected sub-divisions of two circles, village code was not found entered in 1,670 cases. Further in 11,726 cases, the village codes were shown as 9999999 in the database.

The Government assured (September 2010) to take corrective measures based on actual condition.

Security deposit from LT consumers

2.3.23 Clause 16 of TCOS provides that the provisional amount of security in respect of electricity to be supplied shall require to be deposited by the person applying for supply of electricity.

In Jodhpur district circle, details of security amount in respect of 59,754 consumers (55,867 regular consumers) were not given in database for the month of April 2008 whereas in Pali circle the details of security amount were not shown in the database provided to audit.

The Government assured (September 2010) to incorporate these fields in new master data creation work which is in process.

Feeder Code

2.3.24 Appendix-A of Revenue Manual, 2004 provides that Feeder Codes should be of eight digits consisting of first two digits as circle code, third digit as division code, fourth and fifth digits as sub-station code, sixth digit as 11 KV feeder number, seventh and eight digits of the transformer number. The feeder code helps the Unit Officer/Junior Engineers in identifying the feeders having pilferage/leakage of electricity by analysing the reports having details of consumers, the consumption actually recorded and computed in the consumers' ledgers and the energy actually supplied on that feeder.

We, however, noticed that in 1,28,815 cases and 2,54,039 cases of Jodhpur district circle and Pali circle respectively, the feeder code was found incorrect. Thus, the very purpose of indicating feeder code was defeated.

The Government assured (September 2010) to take corrective measures.

Discrepancies in Service Connection Order

2.3.25 SCO number and date is required to verify the issuance of release of new connection to a consumer. However, in 96 cases of LT database of Jodhpur district circle for the year 2008-09, the Service Connection Order (SCO) were not shown. Further in 55,257 cases, SCO number field displayed as “000000000” and in 56,787 cases, SCO date shown as “00000000”.

In Pali circle, the SCO number and date were not shown in the database. Further analysis of database revealed that fields in Master files in respect of SCO number were found left blank.

In absence of adequate input control, the system accepted the master data of consumers even without SCO number and “connection date”, “first bill date” and “meter reading date”. In such cases the date of service connection released and subsequently the issuance of first bills to the consumers could not be verified during audit.

The Government assured (September 2010) to rectify this deficiency during creation of new master data which is in process.

Absence of Meter Number

2.3.26 In HT database for the year 2008-09, meter numbers of regular consumers were found absent in several cases ranging between 2 to 17 consumers during different months. In absence of meter numbers any change in meter and its corresponding effect on multiplication factor could not be vouched in audit.

In LT database for the period 2008-09, meter numbers of 358 consumers were found absent. In selected sub-divisions of two circles, duplicate meter numbers in 2,479 cases of regular domestic consumers were also noticed. Further test check of Meter Change Order (MCO) in Mandore sub-division, it was noticed that in various cases² meter numbers mentioned in MCO did not match with the meter number shown in the databases.

The Government accepted the fact and stated (September 2010) that instructions have now been issued to the service provider to take corrective action.

2. Account Number 15150047, 16150184, 22010135, 22020126, 22080028, 22080048, 22080147, 22110075 and 22130002.

Validation Checks

Multiplication factor

2.3.27 Multiplication factor ratio is being calculated on the basis of CTPT and meter value. MF is being used for the purpose of computation of energy charges of the consumer. System did not have the field to indicate the CTPT installed at the consumers' premises with CTPT numbers, in absence of which the system was not able to validate the change in MF in case the CTPT installed at consumers' premises was replaced.

The Government assured (September 2010) to rectify this deficiency during creation of new master data which is in process.

Compliance of tariff provisions

2.3.28 Tariff -2004 provides that if the sanctioned connected load of a SIP consumer exceeds 18.65 KW then the consumer should charge either at the rate of MIP service or the consumer should apply for separate connection under non-domestic services category.

Analysis of database, however, revealed that the system did not validate the sanctioned connected load of the consumer with reference to its category as a result 1,376 consumers* whose sanctioned connected load was more than 18.65 KW were being charged under SIP category. Due to this discrepancy in the system, the energy charges and fixed charges amounting to ₹ 9.40 lakh and ₹ 9.07 lakh respectively were short recovered.

The Government stated (September 2010) that the compliance of tariff provisions are being made. However, it was silent on the issue of conversion of SIP consumers to MIP consumers in case the sanctioned connected load exceeds 18.65 KW.

2.3.29 Acceptance of invalid dates

- The system lacked validation check with reference to dates as it accepted invalidate dates. In HT consumers billing data, the invalid dates such as 1/1/1900, 24/5/2088 were found entered.
- In LT consumers billing data of Pali circle, the connection date, reconnection date and disconnection date field columns displayed as "01/01/1900" in 85,478, 85,430 and 2,49,849 cases respectively.
- In LT consumers billing data for the month of April 2008, the dates after April 2008 were also found entered.

The Government accepted the fact and stated (September 2010) that instructions have now been issued to the service provider to take corrective action.

* 751 consumer in Jodhpur district circle and 625 consumers in Pali circle.

Non-reconciliation of MIS with system data

2.3.30 The Company did not evolve system to reconcile the information provided in the MIS with the system database. The following discrepancies were noticed:

- As per Monthly Progress Report (MPR) for the month of March 2009, there were 858 regular HT consumers whereas the system displayed 878 regular consumers. Similarly, the MPR indicated eight permanently disconnected consumers (PDC) whereas as per the system there were 584 PDC.
- As per LT consumers' data of Jodhpur District Circle, there were 1,63,187 consumers whereas the MPR indicated 1,77,238 regular consumers. Similarly, as per MPR there were 43,804 PDC whereas the system indicated only 7,684 PDC.
- Similar discrepancies in regards to number of consumers of various types were also noticed in LT consumers' data of Pali Circle.
- The category-wise discrepancy in number of consumers in selected circles is given in **Annexure-21**.

The Government assured (September 2010) to take corrective measures during creation of new master data which is in process.

Non-adjusting security deposits against outstanding dues of Permanently Disconnected Consumers

2.3.31 As on 31 March 2009, there were 584 HT consumers, whose electricity connections were permanently disconnected. We noticed that:

- the system data did not contain the date of disconnection and dues outstanding *i.e.* agewise position of dues of these PDC;
- no security deposits was available against 38 PDC having outstanding towards Board dues and Electricity duty amounting to ₹ 148.51 lakh and ₹ 10.58 lakh respectively. In absence of security deposit, the possibility of recovery of dues was bleak.
- The difference in outstanding amount against the PDC as shown in MIS (Board Dues ₹ 502.12 lakh, Electricity Duty ₹ 4.76 lakh) of Revenue Section and as per the system (Board Dues ₹ 497.21 lakh and Electricity Duty ₹ 21.74 lakh) was not reconciled.

It is evident from above that the outstanding balances against PDC as per Revenue section and as per the system were not reconciled which may affect the final accounts being prepared by the Company.

The Government stated (September 2010) that date of disconnection and age wise position of outstanding dues was available in the system. The reply is not accepted in view of the fact that data provided to audit did not have the same.

Compliance of terms and conditions of the work order

Terms and conditions of the work order

2.3.32 The work order for design, maintenance of billing software, data processing of billing data, printing of bills and preparation of various management reports in respect of HT/LT consumers of the Company was awarded in favour of K & D Engineers and Consultants and KLG Systel Ltd. As per terms and conditions of the work order, both the service providers were required to submit deliverables such as:

- the contractor was responsible for proper storage of billing data of last 3 years/available years. The billing data was required to be got insured and insurance charges for safety of data was to be borne by the agency (service provider);
- the flow chart of programme and source code on hard copy as well as on CD of the software along with detailed write up and algorithm before commencement of work;
- enabling the billing software web/net enabled with proper interface for accessing the data and for viewing of consumer wise billing status/outstanding/security deposit and other consumer related information;
- providing requisite operational and other training to the personnel of the Company.

It was, however, noticed that both the service providers failed to comply with the above contractual liabilities and the Company also did not insist that the service provider should comply with the provisions of the contract.

The Government accepted the fact and stated (September 2010) that both the service providers have now been instructed to comply with the various clauses of the contract.

Internal Controls

2.3.33 The activity of billing system comprising of processing and generation of bills of HT/LT consumers was very important as timely assessment, billing and realisation of revenue is critical for survival for the Company and can be considered as backbone system of the Company. This mission critical activity has been outsourced. The Company was expected to exercise prudent controls

over the outsourcing activity as well as on outsourced agency to which this activity was assigned.

It was, however, noticed that the Company did not evolve any mechanism to review the adequacy, efficiency of the billing system with reference to the correctness of mapping of tariff/business rules in the system and to ensure the reliability of outsourced billing system, infrastructure security being maintained by service providers.

Thus, the internal control in respect of IT application was non-existent. The Company also could not address the associated risks of outsourced billing system.

The Government assured (September 2010) to take corrective measures during creation of new master data which is in process.

Release of more than one industrial/non-domestic connection in the same premises

2.3.34 Clause 11(1) of TCOS-2004 provides that more than one industrial/non-domestic connection in the same premises and in the same name shall not be allowed. Further clause 11(4) provides that in cases where more than one industrial/non-domestic connections are existing in the same premises in same or other name, a notice of one month shall be issued to the consumers to get the loads clubbed failing which the connection may be disconnected after expiry of notice period.

Analysis of LT database, however, revealed that the provisions of TCOS were not complied with and more than one connections were released in respect of 92 consumers existed in the same premises and in the same name in the selected sub-divisions.

Hence, the system was deficient to this extent as it accepted the entry in such cases and also generated the bills. The respective sub-divisions also failed to take appropriate action either to issue disconnection notices or to direct the consumers to club the load.

The Government stated (September 2010) that the action in these cases can be taken after physical verification of site and documents of such connections. The fact remains that the system did not have provision to identify such cases.

Conclusion

The Company does not have an IT policy or a business continuity plan as the recovery of data and offsite storage were not ensured. The design deficiencies and inadequate input controls resulted in short realisation of electricity charges, allowance of inadmissible incentives and loss of energy. The outputs generated by the system were not reconciled with MIS of the Company. The Company could not ensure the reliability and

effectiveness of the system as the outsourced billing system was not included under the scope of internal control/audit. Thus, the Company could not enforce the use of technology to its maximum potential for achieving its goal.

Recommendations

The Company should:

- formulate and implement a clear and comprehensive IT policy and periodically review it in view of changing scenario;
- conduct periodical reconciliation of system data and MIS;
- build in adequate input controls and validation checks into the system to prevent duplicate entries and to ensure complete and correct data entries;
- cover the outsourced IT application under the scope of internal control/audit to enhance the reliability and effectiveness of billing system;
- prepare a disaster recovery plan and ensure periodical data backup;
- host billing data of consumers on company website for better transparency.