

**CHAPTER II**

**PERFORMANCE AUDIT REPORTS  
RELATING TO GOVERNMENT  
COMPANIES**

**OPERATIONAL PERFORMANCE OF  
TRAVANCORE TITANIUM  
PRODUCTS LIMITED**

**COMPUTERISED LOW TENSION  
BILLING SYSTEM OF KERALA  
STATE ELECTRICITY BOARD  
LIMITED**

## Chapter II

### 2.1 PERFORMANCE AUDIT ON OPERATIONAL PERFORMANCE OF TRAVANCORE TITANIUM PRODUCTS LIMITED

#### Executive Summary

##### **Introduction**

*Travancore Titanium Products Limited is a PSU under the administrative control of Industries Department, Government of Kerala, engaged in the business of manufacturing Titanium Dioxide through sulphate process.*

*A Performance Audit covering the period 2009-14 was conducted to assess the efficiency, economy and effectiveness in marketing, production, procurement and financing activities of the Company.*

##### **Operational Performance**

*The profit of the Company increased from ₹5.95 crore in 2009-10 to ₹14.74 crore in 2010-11, to ₹30.75 crore in 2011-12 and decreased to ₹1.24 crore in 2012-13. In 2013-14, the Company incurred a loss of ₹0.34 crore.*

##### **Cost of production**

*The cost of production per MT increased from ₹81,063 to ₹1,48,513 over the period due to deficiencies in production, procurement, marketing and utilisation of man power.*

##### **Production performance**

*Production below breakeven point, lower recovery-efficiency, non-achievement of specified quality and excessive consumption of raw materials led to increase in cost of production.*

##### **Procurement of raw materials**

*Failure to ensure maximum procurement of ilmenite from IRE, excess procurement of low quality ilmenite from private sources and system lapses in procurement led to higher cost of raw materials.*

##### **Marketing**

*Absence of market research, defective pricing and discount policy, ineffective stockist network led to decline in sales and accumulation of finished stock.*

##### **Human Resource management**

*The average annual production during the years 2011-2014 decreased by 25 per cent, as compared to that of 2009-2011. Correspondingly, the average man hours utilised per MT of TiO<sub>2</sub> produced increased from 81.94 hours during 2010-11 to 109.94 hours during 2013-14 resulting in payment of unproductive wages of ₹4.66 crore.*

##### **Financial Management**

*Inefficient management of accounts receivable, accounts payable and inventory led to increase in working capital cycle from 40 days to 112 days during the five-year period. Improper system of monitoring receivables /payables and deficient conceptualisation and implementation of Effluent Treatment Project adversely affected the working capital.*

## Introduction

**2.1.1** Travancore Titanium Products Limited (Company), established in December 1946, is engaged in the manufacture of Titanium Dioxide (TiO<sub>2</sub>) through sulphate process. The Company is the sole manufacturer of Anatase grade TiO<sub>2</sub> in Kerala. TiO<sub>2</sub> is mainly used in the manufacture of paints, rubber, textile, paper, cosmetics, ceramic, etc. The major raw materials used in the production process are ilmenite, sulphuric acid and scrap iron. Ilmenite and scrap iron are procured from outside while sulphuric acid is manufactured in-house using sulphur purchased from other sources.

## Organisational Set up

**2.1.2** The Management of the Company is vested in a Board consisting of twelve directors including the Managing Director (MD). The day to day affairs of the Company are managed by the MD who is assisted by Executive Director, General Manager, Finance Controller and Chief Managers.

## Financial Position and Working Results

**2.1.3** The financial position and working results of the Company for the five years from 2009-10 to 2013-14 are shown in *Annexure 7*. The Company has finalised its accounts up to the year 2009-10 only and for remaining period up to 2013-14, provisional accounts have been furnished. The Paid up Capital of the Company as on 31 March 2014 was ₹13.77 crore held by Government of Kerala (₹13.43 crore), Kerala State Industrial Development Corporation Limited (₹0.14 crore) and others (₹0.20 crore). The net profit earned by the Company increased from ₹5.96 crore in 2009-10 to ₹14.74 crore in 2010-11, to ₹30.75 crore in 2011-12 and then decreased to ₹1.24 crore in 2012-13. In 2013-14, the Company incurred a net loss of ₹0.34 crore.

## Scope of Audit

**2.1.4** The working of the Company was last reviewed and the audit findings were included in the Report of the Comptroller and Auditor General of India (Commercial) for the year ended 31 March 2007, Government of Kerala. The Report has not yet been discussed by the Committee on Public Sector Undertakings (CoPU). The present Performance Audit was conducted to assess whether the Company was carrying out its marketing, production, procurement and financial activities in an efficient, economic and effective manner during the five years period from 2009-10 to 2013-14.

### **Audit Objectives**

**2.1.5** The main objectives of the Performance Audit were to ascertain:

- reasons for the increased cost of production by analysing the management of procurement, production and manpower; and
- the effectiveness of marketing management by analysing the pricing policy and constraints in marketing.

### **Audit Criteria**

**2.1.6** The following audit criteria were adopted:

- Financial and Capital Budgets and Detailed Project Reports in respect of major capital works of the Company;
- Monthly targets fixed in respect of capacity utilisation, turnover, etc.;
- Procurement policy, procedures and consumption norms fixed in respect of raw materials and utilities;
- Decisions of Sales Promotion Committee; and
- Market scenario and best practices relating to procurement in the industry.

### **Audit Methodology**

**2.1.7** The methodology adopted for attaining the audit objectives with reference to audit criteria consisted of explaining the audit objectives to top management of the Company, scrutiny of records of the audited entity, interaction with personnel in audited entity, analysis of data with reference to criteria, issue of audit queries, discussion of audit findings with management and issue of Draft Performance Audit Report.

An Entry Conference was held with the Company/Government in August 2014, wherein the scope and objectives of the Performance Audit were discussed. Field audit involving scrutiny of Company's records was conducted during June to September 2014. The findings were reported to the Management and Government of Kerala besides discussing in the exit conference held in November 2014.

### **Acknowledgement**

**2.1.8** Audit acknowledges the co-operation and assistance extended by the management and staff of the Company in the conduct of this Performance Audit.



## Audit Findings

**2.1.9** Audit observations on the production, procurement, marketing and financial management activities of the Company are discussed in succeeding paragraphs:

## Operational Performance

**2.1.10** The production, sales and stock of TiO<sub>2</sub> during the five years from 2009-10 were as detailed below:

**Table 2.1: Statement showing production, sales and stock**

Year	Production (in MT)	Sales <sup>#</sup> (in MT)	Sales value <sup>#</sup> (₹ crore)	Average stock (in MT)	Stock as percentage of sales	Net operating Profit (₹ crore)
2009-10	15273	15470	132.34	666.94	4.31	5.95
2010-11	15749	16175	160.92	702.27	4.34	14.74
2011-12	12701	11801	181.55	658.30	5.58	30.75
2012-13	11550	10682	163.92	1106.98	10.36	1.24
2013-14	10817	10419	152.92	1732.11	16.62	(-) 0.34
<sup>#</sup> Excluding Special Grade, Potassium Titanate, Sodium Titanate and Hydrated Titania. Figures from 2010-11 are provisional						

As may be seen, there was a sharp decline in the profit earned by the Company during 2012-13 and 2013-14. The huge increase in profit during 2009-12 was due to increase in the sale price of TiO<sub>2</sub> per MT from ₹85,000 (April 2009) to ₹1,60,000 (August 2011 to August 2012). The sales volume as well as production of TiO<sub>2</sub> showed a steady decline from 2011-12 and the accumulation of stock showed an upward trend from 2012-13. The sales revenue also registered a continuous decrease from 2012-13 onwards.

The sales of the Company in domestic market also declined from 13583.42 MT in 2009-10 to 10018.61 MT in 2013-14 despite increase from 79561<sup>1</sup> MT to 241136<sup>2</sup> MT in the overall demand of the product in the country during the same period. The poor performance of the Company even in the domestic market indicated failure to thrive in the competitive market.

The Company in their reply (November 2014) admitted their inability to face stiff competition from domestic competitors as well as importers and offer its product at competitive prices due to higher cost of production.

<sup>1</sup> Source: Indian Mineral Yearbook issued by Indian Bureau of Mines, Ministry of Mines.

<sup>2</sup> Source : Import data furnished by Kerala Minerals and Metals Limited, a State PSU engaged in the same industry as enhanced by production of domestic manufactures.

**Analysis of cost of production**

**2.1.11** An analysis of the cost data furnished by the Company revealed that the cost of production per MT increased from ₹81,063 (2009-10) to ₹1,48,513 in 2013-14 (*Annexure 8*). The percentage of total cost to sales rose to more than 100 per cent during 2012-13 and 2013-14.

The cost incurred to generate one rupee of sale fluctuated over the five year period and ranged from ₹0.87 (2011-12) to ₹1.02 (2012-13) as shown below:

**Table 2.2: Details of cost incurred to earn one rupee sale**

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Raw materials	0.31	0.40	0.35	0.46	0.38
Power and fuel	0.20	0.16	0.17	0.18	0.17
Other variable cost including discount	0.08	0.08	0.07	0.07	0.10
Employee cost	0.27	0.22	0.20	0.25	0.29
Finance cost	0.05	0.03	0.02	0.03	0.03
Other fixed cost	0.03	0.02	0.06	0.03	0.04
<b>Total cost</b>	<b>0.94</b>	<b>0.91</b>	<b>0.87</b>	<b>1.02</b>	<b>1.01</b>

During 2012-13 and 2013-14, the Company had to incur ₹1.02 and ₹1.01 respectively to earn sales revenue of one rupee resulting in operational loss. Audit analysed the various elements of cost, taking the average for the period of three years from April 2009 to March 2012 as the base and noticed increase in raw material cost (2012-13), employee cost (2013-14) and other variable cost including discount (2013-14).

The Company stated (November 2014) that it had done a very serious analysis of higher cost of production and had made clear plans for turnaround of its operations. The plan, however, could not be proceeded with due to resource constraints and the matter was being pursued with Government.

The deficiencies in production, procurement, consumption of raw materials, marketing and utilisation of man power that contributed to increased cost of production are discussed below:

<b>Production Management</b>
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**2.1.12** The Company has a Titanium Dioxide Pigment Plant (TDP plant) and Sulphuric Acid Plant (SAP) with installed capacities of 24500 MT and 99000 MT respectively. The achievable capacity of TDP plant was assessed as 15000 MT as

against the installed capacity of 24500 MT. The manufacturing process of  $TiO_2$  is given below:

**Table 2.3: Manufacturing process of  $TiO_2$**

Sl. No.	Stage	Process	Product
1	Digestion	Ilmenite is fed into Ball mills to make it fine powder, digested using sulphuric acid and reduced using scrap iron	Crude liquor
2	Clarification	Reduced crude liquor is dosed with settling agents and sent through settling tanks to remove sludge	Settled liquor
3	Concentration and Precipitation	Clear overflow from settler is concentrated to a specified extent and then charged into precipitation tanks	Pulp
4	Filtration, Leaching and Treatment	The pulp is then filtered over drum type rotary vacuum filters, any ferric iron still present is reduced by leaching the pulp with sulphuric acid	Pulp
5	Calcination and Milling	Pulp is calcined in a rotary kiln and de-agglomerated in pendulum mills to very fine particles.	$TiO_2$

### ***Production planning***

**2.1.13** Production planning helps a manufacturing unit to minimise cost, utilise the available resources optimally and maximise efficiency. Proper planning also helps to co-ordinate the activities of different departments and to maintain proper stock levels of raw materials as also finished products.

### ***Non-achievement of target fixed***

**2.1.14** The monthly production and sales targets are fixed by Titanium Management Council (TMC) comprising heads of all functional wings and headed by MD. The TMC target was fixed after taking into account stock position, market constraints, production constraints, etc. The targeted and actual production of  $TiO_2$  for the period from 2009-10 to 2013-14 was as under:

**Table 2.4: Details of targeted and actual production**

Year	Production (MT)		Percentage of actual to targeted production
	As per TMC Target	Actual	
2009-10	-	15273	-
2010-11	16250	15749	96.92
2011-12	14225	12701	89.29
2012-13	13775	11550	83.85
2013-14	11625	10817	93.05

The actual production was only 83.85 *per cent* to 96.92 *per cent* of TMC target.

The Company replied that the reason for non achievement of TMC target was constraints like feed break caused by power outage.

The reply of the Company is not acceptable since TMC target was fixed after making due allowances for such disruptions in production.

### ***Production below breakeven point***

**2.1.15** Break Even Point (BEP) indicates the minimum production required to match the total cost with revenue. Production and sales above breakeven level would entail profit. By fixing the BEP, the production activities could be adjusted so as to ensure maximum economy of operation. The TMC did not take BEP into consideration while fixing the targets of production. Based on the cost data provided by the Company, Audit worked out the BEP of the Company for the five years up to 2013-14 as shown below and observed that the actual production during 2012-13 and 2013-14 was below breakeven level resulting in short recovery of fixed cost to the tune of ₹10.95 crore:

**Table 2.5: Details of BEP and unrecovered fixed cost**

Year	Production	Break Even Quantity	Shortage in production	Fixed Cost unrecovered (₹in crore)
	<i>(MT)</i>			
2009-10	15273	14060.23	---	---
2010-11	15749	12544.41	---	---
2011-12	12701	8387.62	---	---
2012-13	11550	11679.46	129.46	4.60
2013-14	10817	11729.18	912.18	6.35
<b>Total</b>				<b>10.95</b>

The Company replied that it had recorded profit in 2012-13 and only a marginal loss in 2013-14 and therefore, the question of non-recovery of fixed cost did not arise. It was also stated that stock differential was not considered for BEP calculation by Audit.

The reply is not acceptable since the recorded profit includes non-operating incomes like interest earned, sale of scrap, etc. The Audit observation on BEP is with regard to the production of TiO<sub>2</sub> alone, in which there was operating loss. The contention of the Company that stock differential was not considered for BEP calculation is incorrect as the same was considered.

## **Deficiencies in Production**

### ***Short recovery of TiO<sub>2</sub> due to lower efficiency***

**2.1.16** Scrutiny of monthly production statements during 2009-14 revealed that as against the TiO<sub>2</sub> content of 78142.40 MT fed into Stage I, the output at stage IV was only 66090 MT indicating loss of 12052.40 MT in the production process. Further, the monthly actual overall recovery of TiO<sub>2</sub> varied widely and ranged from 78.14 *per cent* (November 2011) to 85.32 *per cent* (July 2012). Considering the highest efficiency of 85.32 *per cent*, the short recovery during the five years worked out to 1950.77 MT of TiO<sub>2</sub> valuing ₹23.73 crore. In view of high value of TiO<sub>2</sub>, the Company should have analysed and monitored the production efficiency to ensure maximum recovery.

The Company replied that the recovery rate of TiO<sub>2</sub> (85.32 *per cent*) considered by Audit could not be taken as standard since the practically achievable efficiency was only 84 *per cent*.

The reply of the Company is not acceptable as the efficiency was mostly around the lower side of range of 78.14 *per cent* to 85.32 *per cent*.

### ***Loss due to non-achievement of specified quality***

**2.1.17** The Company produces Anatase/Rutile Grade TiO<sub>2</sub> that conforms to the standard specifications prescribed by the Indian Standards Institute (ISI). Quality below ISI grade is marketed as Off Grade/General Purpose (OG/GP) which is sold at a lower price. As per the target fixed (April 2010), 95 *per cent* of the total production should be of ISI grade. However, production of ISI grade Anatase varied from 58.06 to 100 *per cent* while that of Rutile grade varied from 26.09 to 100 *per cent*. Due to non-achievement of targeted ISI grade, TiO<sub>2</sub> had to be sold as OG/GP grade at a lower price. This had resulted in revenue loss of ₹2.05 crore on 905.15 MT of Anatase grade and 696.67 MT of Rutile grade produced during April 2010 to March 2014.

The Company replied that off-grade products get generated mainly due to reasons such as unplanned plant stoppage, process equipment failure, under/over feeding to calciner, variations in raw material quality, etc.

Reply of the Company was not acceptable as the major reasons pointed out were controllable through operational efficiency.

### ***Excessive production of sulphuric acid leading to distress sale***

**2.1.18** The Company produces sulphuric acid, intended for captive consumption in its own acid plant. The production process required a continuous run of the

plant and the minimum level of operation was 180 MT per day i.e. 5400 MT per month. Annual maintenance of the plant required shut down for over one month which was scheduled during April/May every year. The requirement of sulphuric acid per MT of TiO<sub>2</sub> produced was four MT. Excess acid available after captive consumption was being sold in open market based on quotations received/direct enquiries. The details of production, consumption, sales and stock of sulphuric acid during the five years are given below:

**Table 2.6: Details of production, consumption, sales and stock of sulphuric acid**  
(Quantity in MT)

Year	Opening stock	Production	Purchase	Acid sales	Consumption	Closing stock
2009-10	5368.24	64054.86	1410.45	1684.70	64839.36	4309.49
2010-11	4309.49	69764.52	0.00	1683.51	67053.70	5336.80
2011-12	5336.80	60628.69	4967.93	6404.57	55404.72	9124.13
2012-13	9124.13	58947.22	0.00	6811.23	53564.23	7695.89
2013-14	7695.89	61391.71	0.00	12993.70	48056.97	8036.93

Audit found that the captive consumption of acid showed a declining trend from 67053.70 MT in 2010-11 to 48056.97 MT in 2013-14 whereas the actual production decreased from 69764.52 MT (2010-11) to 58947.22 MT (2012-13) and then increased to 61391.71 MT (2013-14). Thus, the monthly production of sulphuric acid was not regulated in line with the requirement for captive consumption. This led to accumulation of stock and on reaching alarming levels, the Company resorted to distress sale in bulk quantities from 2011-12. The sale of sulphuric acid increased steeply from 1684.70 MT in 2009-10 to 12993.70 MT in 2013-14. Due to such distress sale in bulk quantities, the Company could not get competitive offers and during 2013-14, the Company sold 3356 MT of acid below variable cost incurring a loss of ₹16.41 lakh.

It was also observed that the uncontrolled production and bulk sale of sulphuric acid resulted in shortage of sulphur in the month of December 2012. This led to forced shutdown of SAP for the period from 04/12/2012 to 04/01/2013 and consequent excess consumption of 189.50 MT furnace oil costing ₹70.66 lakh for generation of steam and 8.50 Kilo Litre of Superior Kerosene Oil worth ₹4.18 lakh for cold start of SAP. Besides this, the production of TiO<sub>2</sub> during December 2012 was only 426 MT against the targeted production of 850 MT.

The Company replied that due to global glut in the TiO<sub>2</sub> market, in 2012-13 and 2013-14, it was forced to operate TiO<sub>2</sub> plant with small calciner for one month and two months respectively which led to decrease in the captive consumption and resultant accumulation of stock of sulphuric acid.



The reply of the Company is not tenable as the reason for accumulation of sulphuric acid was not the operation of small calciner but the failure of the Company to regulate the production of sulphuric acid to minimum level of production at 5400 MT per month, which was sufficient to cater to reduced production targets of TiO<sub>2</sub>.

### **Procurement of Raw materials**

**2.1.19** In order to ensure optimum level of stock of raw materials and to effect economies, Company should have fixed different stock levels (Maximum, Minimum, Re-order level and Danger level) and adhered to it. In the Company, the procurement of raw materials is managed by Commercial Advisory Committee (CAC). The Purchase Manual of the Company prescribes detailed procedures for the procurement of quality materials from reliable sources in required quantities at appropriate time and at minimum prices. As per the Purchase Manual, the Commercial department has to do the following due diligence:

- monitor the daily/weekly stock position of raw materials and take necessary action for procurement based on re-ordering level fixed from time to time; and
- review the re-ordering levels and quantity based on annual consumption and purchase lead time in the previous two years for updating the data.

The instructions contained in the purchase manual were, however, not followed by the Company. Cost of raw materials accounted for 37.47 *per cent* (2013-14) of the total cost incurred by the Company. The major raw materials used in the production process are ilmenite, sulphur and scrap iron of which ilmenite and sulphur constituted 54 *per cent* and 30 *per cent* respectively of the total annual raw material cost (2013-14). Audit reviewed the procurement of ilmenite and sulphur and deficiencies noticed are discussed below:

#### **Ilmenite**

**2.1.20** Ilmenite, the major raw material, was being procured from Indian Rare Earths Limited (IRE), a central public sector undertaking and from private suppliers. As the Company does not have its own mining facility, it was entitled to supply of ilmenite at concessional rate from IRE. As the allotment of ilmenite from IRE was not sufficient to cater to the full requirements of the Company, procurement from private suppliers was also warranted. The TiO<sub>2</sub> content in the ilmenite supplied by IRE Chavara (Q) and Manavalakurichi (MK) ranged between 55 to 60 *per cent* whereas it ranged between 46.60 to 51.80 *per cent* only in respect of ilmenite supplied by IRE Odisha (O) and private source. The procurement of ilmenite from Private Parties and IRE during 2009-2014 was as shown below:

**Table 2.7: Supplier-wise procurement of ilmenite**

Year	Total Purchase	IRE				Private suppliers	
		MK and Q (55-60 <i>per cent</i> TiO <sub>2</sub> content)	O (46.60 - 51.80 <i>per cent</i> TiO <sub>2</sub> content)	Total	Percentage to total purchase	Quantity in MT (46.60 - 51.80 <i>per cent</i> TiO <sub>2</sub> content)	Percentage to total purchase
		Quantity in MT					
2009-10	32776	22338	0	22338	68.15	10438	31.85
2010-11	33822	21147	963	22110	65.37	11712	34.63
2011-12	26783	13204	4440	17644	65.88	9139	34.12
2012-13	29047	9425	4430	13855	47.70	15192	52.30
2013-14	22369	10505	20	10525	47.05	11844	52.95

Thus, the procurement of ilmenite from private suppliers increased from 31.85 per cent (2009-10) to 52.95 per cent (2013-14) of the total procurement. This was mainly due to allotment of lesser quantity by IRE Q and MK coupled with short-lifting of allotted quantity by the Company. Considering the high quality and price advantage, the Company should have procured maximum quantity from IRE Q and MK. Despite drastic decline in the supply of ilmenite from IRE Q and MK, the Company did not make any concerted effort to get more allotment from IRE. The possibility of entering into long term agreement with IRE as laid down in the Purchase Manual, getting preference in allotment being in public sector, etc., were not explored. Audit further noticed that 76.49 per cent (April 2011 to October 2013) of total ilmenite sale by IRE Q was to a company in private sector.

The Company replied that shortage of funds forced the Company to go for procurement from private suppliers who offer credit facility.

The reply of the Company was not tenable, as funds could have been arranged through working capital loans from banks which could not be availed due to non finalisation of accounts in time.

#### **Short-lifting of allotted quantity from IRE**

**2.1.21** On a test check of allotment and procurement of ilmenite from IRE, it was observed that during July 2012- February 2014, the Company did not lift the entire allotted quantity of ilmenite from IRE Q and MK. The short-lifted quantity was subsequently procured from private sources at extra cost of ₹ 1.56 crore as shown in the table below:



**Table 2.8: Financial impact of short-lifting of ilmenite from IRE**

Period of Allotment	Quantity Allotted	Quantity Lifted	Quantity Short lifted	Direct Impact of short lifting	Financial Impact of short lifting
	(MT)				
July 2012-May 2013	7645.27 (MK)	7142.90	502.37	575.63 MT procured from Private Parties.	Extra expenditure - ₹30.13 lakh.
October 2013	Unlimited (MK)	364.73	Unlimited	Lost allotment due during the period November 2013 to February 2014.	Procurement of 4013 MT from Private suppliers resulting in extra expenditure of ₹1.26 crore.
October 2013-February 2014	2437 (Q)	2124.24	312.76	Lost allotment due in December 2013 and March 2014.	

The reason for the non-lifting/delayed lifting of ilmenite from IRE was inability of the Company to make advance payment. The IRE, thereafter, offered 45 days' credit facility to the Company subject to the opening of irrevocable Letter of Credit, which also could not be availed due to non-finalisation of accounts after 2009-10.

While accepting the audit observation, the Company stated that it was not able to lift the entire quantity allotted due to financial constraints.

#### ***Failure to tap alternate sources***

**2.1.22** The Company has to resort to procuring ilmenite from private suppliers even if their quality is inferior as IRE is not able to supply the required quantity. As per the Purchase Manual of the Company, the Purchase Department has to develop vendors and update the vendor list. Despite this, the Company did not follow a system of vendor development for ilmenite, the major raw material and resorted to procurement from two firms based on open tenders. Audit observed that there were several suppliers of ilmenite in the market and some of the firms had participated in tenders floated by the Company. The Company, however, did not place orders with them for reasons like non-furnishing of samples, etc.

The procurement from sources other than IRE was mainly from VV Minerals up to August 2011 and thereafter from Miracle Sands and Chemicals (MSC) and Textile Dye Chem (TDC). Thus, MSC and TDC continued to be the only suppliers of ilmenite from September 2011/June 2012. Thus, the Company had to depend/compromise on the terms and conditions of supply of these firms to a great extent due to limited sources.

The Company replied that sample analysis played a vital part and since source of material was limited, it was not in a position to widen the supply base.

The reply was not acceptable as the procurement was made from agents only and there were other players also in the field. It was also noticed that selected bidders had also not furnished samples. Since acceptance of ilmenite was subject to testing at the lab of the Company, furnishing of sample along with tender was not important.

### ***Non-execution of agreement with suppliers***

**2.1.23** Execution of formal agreement incorporating the terms and conditions for regulating the deal is essential to conclude a valid contract. The Stores Purchase Manual<sup>3</sup> issued by Government of Kerala stipulates execution of agreement with the suppliers. Audit noticed that the Company invited seven tenders during 2011-12 to 2013-14 and placed 17 purchase orders for 38771 MT of ilmenite. However, no penalty clause or risk purchase clause in case of delay/non-supply was included in the tender. Further, no formal agreement was executed with the suppliers (except four<sup>4</sup> purchase orders) as a result of which the Company failed to ensure compliance of the terms and conditions of the tender/order and legal validity of the contract in the event of default by the supplier.

In respect of the tender dated 7/12/2011, though Ind Chem, Cochin, the L1 bidder, supplied only 203.35 MT of ilmenite out of ordered quantity of 5000 MT and the Company had to procure the remaining quantity of 4800 MT from MSC and TDC at higher rate incurring an extra expenditure of ₹2.21 crore, no risk purchase clause could be invoked. The Company, however, did not initiate any legal action against the defaulted supplier. On being pointed out by Audit (March 2013), legal notice was issued to the defaulted supplier on 8 May 2013 (after 11 months from delivery schedule). In the absence of formal agreement, chances of recovering risk and cost were remote.

The Company stated that at present agreements were being executed for high value items and that legal action against Ind Chem is being pursued.

The reply confirms that there was no enabling clause either in the Purchase Order or Tender. In the event of non-execution of the agreement, chance of recovery was remote. As such, the Company should enter into agreements with the suppliers to avoid any loss.

### ***Post tender dilution of terms and conditions***

**2.1.24** The Company invited tenders for procurement of 10000 MT and 5000 MT of ilmenite in June 2011 and May 2012 respectively. The tender invited in June

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<sup>3</sup> Paragraph 55.

<sup>4</sup> PO Nos. 5150 dated 30/5/2013, 7156 dated 15/6/2013, 7204 dated 28/11/2013 and 7205 dated 6/12/2013 .

2011 stipulated for rejection of material if TiO<sub>2</sub> was below 50 *per cent*. The next tender invited in May 2012 stipulated a minimum 50 *per cent* TiO<sub>2</sub> content in the ilmenite with acceptance up to 48 *per cent* content on *pro rata* reduction of prices and rejection if below 48 *per cent*. The Company, however, while placing six<sup>5</sup> purchase orders modified the condition in favour of the suppliers that ilmenite with 48-46 *per cent* TiO<sub>2</sub> content would be accepted on *pro rata* reduction of price, with rejection of below 46 *per cent* content. The Company accepted 9392 MT of ilmenite with TiO<sub>2</sub> content ranging between 46.40 - 49.99 *per cent* without effecting *pro rata* recovery in prices resulting in extension of unintended benefit of ₹15.78 lakh to two suppliers<sup>6</sup>.

The Company stated that the source of origin of the only one bidder was Srilanka and that the deviation of two *per cent* in TiO<sub>2</sub> content was recommended by CAC since the TiO<sub>2</sub> percentage was generally lower for Srilankan ilmenite.

The reply was incorrect as the guaranteed TiO<sub>2</sub> content as per Lanka Mineral Sands, the sole mining agency in Srilanka, was 53 *per cent*.

### **Modification of tender conditions**

**2.1.25** Audit found dilution of other terms and conditions from time to time in favour of the suppliers as detailed below:

**Table No. 2.9: Details of changes in terms and conditions of tenders and impact**

SI No.	Terms and Conditions		Impact/Implication
	Earlier tender	Subsequent tender	
1	Minimum daily/monthly supply quantity	No minimum fixed	There would be non-synchronisation of supplies with production requirement.
2	Security deposit of five <i>per cent</i> of the cost of material	Security deposit of ₹2 lakh	Being very nominal amount, it did not serve the purpose of security for due performance of contract.
3	Rejection level - TiO <sub>2</sub> content below 48 <i>per cent</i>	Rejection level – TiO <sub>2</sub> content below 46 <i>per cent</i>	Compromise in quality of ilmenite.
4	Maximum limit of moisture content to be 0.5 <i>per cent</i>	No such condition included	Compromise in quantity of ilmenite since there were many instances of higher moisture content ranging upto 0.86 <i>per cent</i> .

The Company replied that Serial numbers 1, 3 and 4 were altered in favour of the Company. Regarding security deposit, the supplier had supplied as per the tender conditions.

<sup>5</sup> PO no.2919 dated 13/10/11, 2935 dated 10/12/11, 2940 dated 02/01/2012, 2949 dated 17/02/12, 3890/ dated 02/06/12 and 3891 dated 06/06/12.

<sup>6</sup> Miracle Sands & Chemicals Limited and Textile Dye Chem.

The reply was not tenable as the alterations were detrimental to the interest of the Company which calls for fixing of responsibility. Completion of supply which falls at a later date was not valid ground for reduction in security deposit.

### ***Non-inclusion of price reduction clause***

**2.1.26** As the price of ilmenite is subject to high variation, the Company while placing repeat orders/giving extension for delivery period should have incorporated a condition that 'price applicable would be existing price or price as per next tender whichever was lower'. The Company, however, failed to include price reduction clause leading to extra expenditure of ₹1.05 crore as detailed in **Annexure 9**.

The Company stated that the price reduction was not made as the supplies of the amended/extended orders were completed before finalising the next tender.

The reply was not acceptable as the tendering process was started much before placing amendment/extension orders.

### **Lapses in procurement of sulphur**

#### ***Failure to ensure timely supply***

**2.1.27** As the price of sulphur was subject to wide fluctuations, the Company should have regulated the procurement in accordance with production requirement so as to avoid excess procurement at higher rate and consequent accumulation of stock. Audit found that the Company placed purchase orders with Mincore Resources Private Limited (Mincore) without assessing the requirement and accepted the supply beyond delivery schedule which led to unwarranted procurement as detailed below:

**Table 2.10: Statement showing delayed supply of sulphur**

(in MTs)

PO No.& date	Quantity Ordered & (delivery schedule)	Quantity supplied		
		within delivery schedule	after delivery schedule	Total
1672 dated 8/12/2010	6000 (within 14/02/2011)	2958	2372	5330
5101 dated 1/12/2012	6000 (3000 MT within 20/01/2013 and balance within 19/02/2013)	No supply within 20/01/2013 and 4492 MT within 19/02/2013	1485	5977

It was noticed that the failure of Mincore, to deliver sulphur in time against PO No.5101 dated 01/12/2012 led to shutting down of SAP for 14 days. There was no penalty clause in purchase order for delayed supplies to ensure prompt supply.

Though Mincore did not adhere to the schedule, the Company accepted the entire quantity supplied though there was no requirement at that time considering the supply from BPCL. Had the Company regulated the purchase of sulphur to the required minimum of 1782 MT per month, procurement of 5349 MT<sup>7</sup> of sulphur worth ₹6.88 crore and consequent blocking up of funds on accumulated stock could have been avoided.

The Company stated that the belated supply (PO 1672) from Mincore was due to delay in getting NOC and documentation. The fact, however, remains that the Company failed to ensure timely supply by executing agreement with penal provisions for delayed supply.

The above serious lapses call for investigation and fixing of responsibility.

***Lack of penalty clause for non supply/short supply of ordered quantity***

**2.1.28** As per Stores Purchase Manual of Government of Kerala, an agreement should be entered into with successful tenderer for the satisfactory fulfilment of contract embodying the conditions of the order and providing the necessary penal clauses for any breach of the conditions of the contract. The Company had not incorporated risk and cost/penalty clause in the purchase order that could be invoked to safeguard its interest in case of failure to perform the contract. Moreover, security deposit and performance guarantee was also not insisted for ensuring supply of materials as per delivery schedule. Non incorporation of penalty clause led to short supply and consequent financial loss to the company as detailed below:

**Table 2.11: Statement showing quantity ordered and supplied by two firms**

PO No.& date	Name of supplier	Quantity ordered (MT)	Rate/ MT (₹)	Quantity Supplied (MT)	Quantity short supplied (MT)	Remarks
9822 dated 18/09/2009	SPIC	6000	5344	1864.38	4135.62	Supplied during October to December 2009. Stopped supply citing steep rise in international price of sulphur.
228 dated 25/01/2010	Mincore	2000	11825	846.92	1153.08	Purchase Order was placed due to short supply by SPIC. However, the firm supplied during February to April 2010 only and balance quantity not supplied.

<sup>7</sup> 2372 MT at the rate of ₹11300/MT in PO No.1672 and 2977 MT(1492+1485) at the rate of ₹14100/MT in PO No.5101.

Consequent upon the above short supplies, the Company procured<sup>8</sup> a further quantity of 1988 MT from SPIC and Mincore at a higher rate of ₹14625 per MT. Thus, failure of the Company to ensure supply of entire ordered quantity of sulphur, led to procurement of 846.92 MT (Mincore) at the rate of ₹11825 per MT and 1988 MT (SPIC and Mincore) at the rate of ₹14625 per MT incurring extra expenditure of ₹2.40<sup>9</sup> crore. Since the act of non-incorporation of penalty clause in purchase order is very serious, the Government needs to take action against the Company officials for such lapses which resulted in loss of ₹2.40 crore to the Company.

### Consumption of raw materials

**2.1.29** Control over consumption of raw materials merits special attention of the management in view of the high cost involved. The Company had fixed the standards for consumption years back which were not reviewed rendering the same unrealistic.

#### *Excess consumption of raw materials*

**2.1.30** The TiO<sub>2</sub> content in the ilmenite procured from various sources varied widely and consequently the consumption per MT of TiO<sub>2</sub> produced also differed. Further, the quantity as well as the quality of ilmenite was the deciding factor for consumption of other raw materials. An analysis of the consumption of major raw materials viz., ilmenite, sulphuric acid and scrap iron revealed that the actual consumption during the review period varied from year to year. Considering the maximum efficiency of 2.133 MT, 4.245 MT and 0.218 MT achieved in consumption of ilmenite (2009-10), sulphuric acid (2009-10) and scrap iron (2013-14) respectively for production of one MT of TiO<sub>2</sub> as basis, the excess consumption during the review period worked out to ₹6.85 crore, ₹4.05 crore and ₹2.88 crore respectively as shown in **Annexure 10**. The specific consumption of ilmenite and sulphuric acid is related to the TiO<sub>2</sub> content in ilmenite and in case of scrap iron, it depends on both ferric iron content and TiO<sub>2</sub> content in the ilmenite. Hence, the excess consumption of the raw material was due to poor quality of ilmenite procured from private parties.

The Company accepted Audit observations stating that the raw material consumption varies widely with the type of ilmenite used.

The Company should minimise the procurement of low quality ilmenite so as to optimise the consumption of raw material.

<sup>8</sup> PO No.248 dated 20/03/2010 (SPIC) and 249 dated 23/03/2010 (Mincore).

<sup>9</sup> (₹11825-₹5344) x 846.92 MT = ₹ 0.55 crore + (₹14625-₹5344) x 1988 MT = ₹1.85 crore.



### ***Concealment of shortage of material***

**2.1.31** As per the norms, 0.33 MT of sulphur was required for producing one MT of sulphuric acid. An analysis of consumption of sulphur revealed that the Company has been accounting the consumption not on actual weighment basis but based on the norm only. During the period from October 2012 to December 2012, the consumption of sulphur per MT of sulphuric acid produced was, however, reckoned as 0.34 MT, 0.35 MT and 0.35 MT respectively. Thus, there was excess consumption of 197.32 MT of sulphur than the norm. Considering the net cost of ₹13150 per MT of sulphur from BPCL during the above period, the extra expenditure incurred on account of this worked out to ₹25.95 lakh.

The Company while accepting the audit observations stated that the variation in consumption norm was necessary to adjust the physical stock.

The reply of the Company is not acceptable as Company can not adjust such shortage of material by showing the same as issued from physical stock.

### **Marketing**

**2.1.32** The Company produces mainly (84 *per cent*) Anatase grade TiO<sub>2</sub> and a meager quantity of Rutile grade TiO<sub>2</sub> and sells it in domestic (91.87 *per cent*) as well as international market. The Company sells its products through stockists and directly to customers.

### ***Sales performance***

**2.1.33** The sales performance of the Company for the five year period was as given below:

**Table 2.12: Statement showing sales performance**

Year	Sales ( <i>in MT</i> )			Sales Value (₹ crore)	Average stock ( <i>in MT</i> )
	TMC Target	Actual	Percentage of Actual to Target		
2009-10	15750	15470	98.22	132.34	666.94
2010-11	16350	16175	98.93	160.92	702.27
2011-12	13800	11801	85.51	181.55	658.30
2012-13	13400	10682	79.72	163.92	1106.98
2013-14	13125	10419	79.38	152.92	1732.11

As seen from the table above, the actual sales was only 79.72 and 79.38 *per cent* of the targeted sales during 2012-13 and 2013-14 respectively. The Company was not able to achieve even the monthly target fixed by TMC at very lower levels, after considering the various constraints.

Audit analysed the market-wise and customer-wise sales of the Company taking 2009-10 as the base year as detailed in the following table:

**Table 2.13: Statement showing Performance of the Marketing Department**

Year	Sales (MT)								Per cent
	Domestic					Export		Total Sales (MT)	
	Stockist		Direct		Total Domestic Sales (MT)	MT	Per cent		
	MT	Per cent*	MT	Per cent					
2009-10	12424.70	100.00	1158.72	100.00	13583.42	1897.80	100.00	15481.22	100.00
2010-11	12670.00	101.97	1665.68	143.80	14335.68	1848.00	97.38	16183.68	104.54
2011-12	9882.53	79.54	1383.92	119.44	11266.45	542.95	28.61	11809.40	76.28
2012-13	9443.53	76.01	772.75	66.69	10216.28	508.00	26.77	10724.28	69.27
2013-14	9044.55	72.79	974.06	84.06	10018.61	458.15	24.14	10476.76	67.67
Total	53465.31		5955.13		59420.44	5254.90		64675.34	

\* 2009-10 taken as the base year.

It has been noticed that over the review period, the total sales decreased to 67.67 per cent of the sales of 2009-10. The export sales decreased to 24.14 per cent as compared to 2009-10. The domestic sales through stockists and direct customers decreased to 72.79 per cent and 84.06 per cent respectively over the review period.

It was replied that import of TiO<sub>2</sub> from Chinese market affected the overall demand for the product which resulted in poor sales performance of the Company.

The reply was not tenable since the overall demand for TiO<sub>2</sub> in India had increased from 79561 MT (2009-10) to 241136 MT (2013-14) and also the anti-dumping duty imposed on the imported TiO<sub>2</sub> enables the domestic manufacturers to compete with importers. By reducing the cost of production and through effective marketing targeted sales could have been achieved.

### ***Lack of professionalism in marketing***

**2.1.34** An effective and regular market research is essential for identifying the market demand and supply conditions, price trend, competitors' pricing strategy, etc. so as to adopt short term pricing strategy to avoid accumulation of stock. The marketing department, however, did not have an established mechanism to this effect. Though, the Company entered into agreement with stockists and they were required to submit above details, it failed to collect the data from the stockists or other sources for creating a data base. The absence of a reliable and accurate market database resulted in wrong pricing decisions affecting the profitability of the Company as discussed below.



### ***Defective pricing mechanism***

**2.1.35** The Company had not adopted a long term marketing/pricing policy. The Sales Promotion Committee (SPC) (till November 2011)/ Marketing department/Commercial Advisory Committee (CAC) periodically fixes base price for TiO<sub>2</sub> and formulates discount schemes, separately for stockists and direct customers. The price revision, however, was not on any scientific and systematic basis but was resorted to on grounds of ‘favourable/unfavourable market condition or increased competition or accumulation of stock or increased cost of production’. Though the Company was mandatorily required to maintain cost records, this was not being complied with. The Marketing department did not consider the marginal cost of production as well as breakeven level for taking pricing decisions. This coupled with absence of accurate market data base resulted in fixing higher prices.

A comparison of the periodical price revision effected by the Company with the Wholesale Price Index (WPI) of TiO<sub>2</sub> published by Economic Advisor to Government of India revealed that the price revision was unscientific and arbitrary leading to decrease in sales turnover as shown below:

**Table 2.14: Statement showing price deviation**

Year	Monthly Average of Wholesale Price Index	Monthly Average of Actual Price <sup>10</sup> Index	Average Price Deviation	Sales (MT)
2009-10	120.73	133.33	12.60	15470
2010-11	130.99	154.19	23.20	16175
2011-12	181.86	240.74	58.88	11801
2012-13	184.47	236.27	51.80	10682
2013-14	175.64	227.20	51.56	10419

It was seen that the price revision during 2011 to 2014, was abnormally high compared to the market price of TiO<sub>2</sub> which led to the Company’s inability to push the product in to the market and consequent poor financial performance during the years 2012-14.

The Company stated that it was unable to offer competitive price for the products due to higher cost of production and constraints of a PSU in fixing market responsive pricing.

The reply of the Company is not acceptable since the Company is free to fix the selling price for its products.

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<sup>10</sup> Base year for the WPI as well as actual price index of the Company is 2004-05.

***Ineffective stockist network***

**2.1.36** During the years 2009-2014, 82.67 *per cent* of the sales of the Company were through stockists. As per the terms of agreement, stockists were to lift minimum quantity of 18 MT of TiO<sub>2</sub> per month and 250 MT annually, failing which the dealership of the stockists were to be cancelled. Though the Company had 24 stockists, the number of active stockists who adhered to the minimum qualifying off take of 250 MT *per annum* was only 11 in 2009-10 which was reduced to 9 in 2013-14. Further, off take by these active stockists also declined from 10650 MT in 2010-11 to 7410 MT in 2013-14. Since the Company mainly depends on the stockists, the failure in developing and growing an effective dealership network had adversely affected the overall performance of the Company.

The Company in its reply accepted the need for establishing wide network of stockists/dealers in domestic market.

***Ineffective and irrational discount scheme***

**2.1.37** The Company offers trade discount to its customers to augment the sales. The periodical discount scheme was designed by the SPC/CAC. Different rates of discounts were applicable for stockists and direct customers. The stockists were eligible for special quantity discount and additional special discount based on their off take, in addition to flat trade discount. The sales performance *vis-a-vis* the trade discount offered to the stockists and direct customers were as shown below:

**Table 2.15: Statement showing discount allowed**

Year	Sales (MT)	Increase in sales (Per cent)	Discount (₹ in crore)	Discount /MT (₹)	Increase in discount/ MT (Per cent)	Ineffective discount/ MT (₹) <sup>11</sup>	Total ineffective discount (₹ crore)
2009-10	15470	---	5.48	3540	---	---	---
2010-11	16175	4.56	5.81	3590	1.41	---	---
2011-12	11801	-23.72	4.48	3794	7.18	254	0.30
2012-13	10682	-30.95	6.47	6054	71.02	2514	2.69
2013-14	10419	-32.65	9.64	9249	161.27	5709	5.95
<b>Total</b>			<b>31.88</b>				<b>8.94</b>

Note: Discount per MT for the year 2009-10 of ₹3540 being the lowest, was taken as the base.

During the year 2013-14, the effective discount per MT sold increased by 161.27 *per cent* and the sales volume decreased by 32.65 *per cent*, as compared to 2009-10. This indicated that the increase in discount offered to the customers/stockists

<sup>11</sup> Discount per MT for the respective year as reduced by discount per MT for 2009-10.

had not benefited the Company by way of increased sales. Out of the total discount of ₹31.88 crore offered to the stockists/customers, an amount of ₹8.94 crore (28.04 *per cent*) became ineffective due to defective discount schemes as discussed below:

1. The flat discount per MT was not linked with the sale price per MT. Up to January 2013, the flat discount was ₹2500 per MT (1.69 *per cent* of sale price). This was increased to ₹4000 per MT (2.71 *per cent*) in February 2013 and to ₹5000 per MT (3.36 *per cent*) in July 2013. Despite the increase in flat discount, the sales quantity decreased from 15470 MT (2009-10) to 10419 MT (2013-14).
2. Additional Special discounts were also offered to stockists for encouraging higher sales volume. With effect from October 2013, the monthly sales quantity required for the additional special discount was fixed at 70 *per cent* of the maximum monthly off take during the last one year. The fixation of qualifying quantity for the additional special discount, much below the normal monthly off take did not serve the purpose of encouraging the stockists to procure higher quantity.
3. Special Quantity Discounts of ₹500 to ₹6500 per MT were allowed to stockists for off take above eight MT based on different slabs. The quantity discount offered was applied based on non-telescopic method. When the quantity off take exceeded specific slabs, higher discount was given for the entire quantity, instead of on the incremental quantity, as done by another PSU<sup>12</sup> in the same industry. The special discount scheme applicable to stockists for March 2014 and impact of the irregular discount scheme was as given below:

**Table 2.16: Statement showing impact of non-telescopic discount scheme for March 2014**

Slabs of Monthly off-take (MT)	Discount (₹/MT)	Maximum discount in the slab (₹)	Discount when one MT is lifted above maximum quantity in the slab (₹)	Effective discount for the extra one unit (₹)
1	2	3	4*	5 (4-3)
0 – 17	Nil	Nil	36000	36000
18 – 35	2000	70000	108000	38000
36 – 53	3000	159000	216000	57000
54 – 99	4000	396000	500000	104000
100 – 149	5000	745000	862500	117500
150 – 199	5750	1144250	1300000	155750
200 and above	6500	-	-	-

\*When one MT is lifted above the maximum quantity in one slab, the entire quantity becomes eligible for higher discount as per the next slab.

<sup>12</sup> Kerala Minerals and Metals Limited, Kollam.

The non-telescopic discount scheme resulted in higher sales promotion expenditure for the Company without any significant increase in the sales volume. Majority of the stockists took advantage of this defective scheme by marginally increasing their off take to barely reach the next slab. A test check of the sales activity of 17 stockists during the month of March 2013 revealed that due to the irregular discount scheme, ₹6.35 lakh was allowed as discount to 13 stockists for achieving 22 MT of additional sales (*Annexure II*).

In the reply, Management justified the discount scheme stating that the present system might motivate the stockists/customers to reach the next slab as they get more benefit.

The reply of the Company is not acceptable as the discount scheme was skewed in favour of stockists as it offered more benefit to the stockists whereas benefit for the Company by way of increased sale was negligible.

### ***Accumulation of stock of TiO<sub>2</sub> pigment***

**2.1.38** The steady decline in the sales volume and defective production planning resulted in accumulation of stock. The average stock held over the five year period increased from 667 MT to 1732 MT; the maximum accumulation being during 2012-13 and 2013-14 representing 10.36 *per cent* and 16.62 *per cent* of sales respectively. Had the production been optimised subject to the BEP level as well as marketing plan or orders in hand, the accumulation of finished goods could have been minimised. Considering the minimum BEP production levels and actual sales, Audit worked out the loss of interest as ₹1.64 crore on account of accumulation of stock and working capital blocked as shown below:

**Table 2.17: Statement showing interest loss due to stock accumulation**

Year	Average Monthly Accumulation (MT)	Monthly average of Working Capital Blocked (₹ in crore)	Interest loss (₹ in crore)
2009-10	445.42	2.36	0.20
2010-11	653.51	4.32	0.37
2011-12	609.16	5.49	0.46
2012-13	481.48	5.17	0.44
2013-14	205.82	2.00	0.17
		<b>TOTAL</b>	<b>1.64</b>

It was accepted by the Management that production level was planned based on the availability of raw material in view that sales could be developed further.

## Human Resource management

**2.1.39** Employee cost forms the second major element of the total cost incurred by the Company. The average annual production during the years 2011-2014 was reduced by 24.64 *per cent*, as compared to that of 2009-2011, resulting in steady increase in the employee cost per MT of TiO<sub>2</sub> produced from ₹23227 in 2009-10 to ₹42850 in 2013-14. The major factors that contributed to the increase were as below:

### *Payment of unproductive wages due to poor labour productivity*

**2.1.40** The Company had deployed 567 workmen for its operations as on 31 March 2014. Audit reviewed the utilisation of man power in Production department and found that the average man hours utilised for production of one MT of TiO<sub>2</sub> increased from 81.94 hours during 2010-11 to 109.94 hours during 2013-14. Reckoning the man hours utilised in 2010-11 (81.94) as optimum, the unproductive wages paid during 2009-2014 due to lower labour productivity worked out to ₹4.66 crore as detailed below:

**Table 2.18: Statement showing unproductive wages**

Year	Production (MT)	Capacity utilisation (Per cent)	Man hours utilised	Man hours /MT	Excess man hour /MT	Excess man hours used	Total wages paid (₹ crore)	Labour Hour Rate (₹)	Unproductive wages (₹ crore)
(1)	(2)	(3)	(4)	(5)=(4/2)	(6)	(7)=(6x2)	(8)	(9)=(8/4)	(10)=(7x9)
2009-10	15273	101.82	1257350	82.33	0.39	5956.47	6.43	51.14	0.03
2010-11	15749	104.99	1290427	81.94	...	...	7.25	56.18	--
2011-12	12701	84.67	1270859	100.06	18.12	230142.12	7.42	58.39	1.34
2012-13	11550	77.00	1136523	98.40	16.46	190113.00	8.26	72.68	1.38
2013-14	10817	72.11	1189180	109.94	28.00	302876.00	7.49	62.98	1.91
<b>TOTAL</b>									<b>4.66</b>

Thus, the failure of management in operating the plant at optimum level resulted in payment of unproductive wages. Further, a comparison with another PSU (Kerala Metals and Minerals Limited) engaged in the same industry revealed that the man hours utilised per MT of TiO<sub>2</sub> produced by the Company was exorbitant ranging from 82 to 109 as against 27 to 33 for the other PSU. The monetary impact of this worked out to ₹24.98 crore.

The Company did not submit any specific reply to the observation.

## Financial Management

**2.1.41** The Finance Department is headed by Finance Controller who is assisted by Finance Manager. Audit found that the deficient financial management adversely affected the overall performance of the Company during the years 2012-2014 as detailed below:

### *Working Capital Management*

**2.1.42** An efficient management of Accounts Receivable, Accounts Payable and Inventory constituting working capital would ensure reduced cost of capital and better operational performance. A detailed analysis of the working capital position for the five years up to 2013-14 is given below:

**Table 2.19: Statement showing working capital cycle**

Particulars	(in days)				
	2009-10	2010-11	2011-12	2012-13	2013-14
1. Average Debtors Collection Period	28	30	37	65	76
2. Average Stock Holding Period	56	48	54	76	89
3. Average Creditors Payment Period	44	28	23	24	53
<b>Working Capital Cycle (1+2-3)</b>	<b>40</b>	<b>50</b>	<b>68</b>	<b>117</b>	<b>112</b>

Audit observed that:

- Due to inefficient management of working capital constituents, the working capital cycle<sup>13</sup> increased from 40 days (2009-10) to 112 days (2013-14) resulting in reduction in cash and cash equivalent<sup>14</sup> by 71.45 per cent<sup>15</sup> leading to working capital crisis.
- The actual average collection period which was 28/30 days during 2009-10 and 2010-11 had increased up to 76 days (2013-14). Consequently, funds locked up in debtors resulted in interest loss of ₹62.81 lakh (*Annexure 12*) during the period from 2011-12 to 2013-14.
- The high inventory holding period of 89 days (2013-14) indicated excessive accumulation of inventory.
- The creditors' management was also very poor during 2010-2013. Though the position had improved in 2013-14, the credit period available to the Company was much lesser than that allowed by the Company.

<sup>13</sup> The time required to convert investment in working capital into cash.

<sup>14</sup> Cash in hand and at Bank.

<sup>15</sup> Cash and cash equivalent of ₹14.08 crore during 2009-10 reduced to ₹4.02 crore during 2013-14.



### ***Arrears in finalisation of accounts***

**2.1.43** Preparation and analysis of periodical financial statements are essential for effective Financial Management. Section 210 of the Companies Act, 1956 read with Section 166 of the Act provides for finalisation of annual accounts by 30 September. The Company, however, had finalised its accounts only up to 2009-10. The non-preparation of financial statements for the years 2010-2014 was in violation of provisions of the Act which resulted in defective Management Information System and consequent defective decision making.

The Management stated that earnest efforts were taken to make the accounts up to date.

### ***Non-maintenance of cost records***

**2.1.44** Being a process oriented manufacturing company, maintenance of cost records is mandatory as per Section 209 of the Companies Act, 1956 and existence of a robust and reliable costing system is essential to make available information essential for cost control and managerial decisions. The main objectives of cost accounting are ascertainment of cost, cost control, cost reduction and assistance in decision making on pricing, production plan, budgeting, etc. The Company, however, had not maintained cost records which resulted in wrong managerial decisions in respect of fixation of optimum activity level, price revision, regulating labour efficiency and accumulation of raw material stock, etc.

It was replied that the cost records would be maintained after the completion of statutory audit for the respective years.

### ***Monitoring of receivables***

**2.1.45** Accurate recording of the debtor's transaction and periodical reconciliation of the balance with the debtors' books of accounts is one of the major functions in debtors' management. It was, however, noticed that the debtors' transactions were not being recorded regularly by the Finance wing resulting in poor monitoring of the debtors collection as evident from the following:

- In respect of Asian Paints Limited (APL), a major direct customer, books of accounts were not maintained. In order to reconcile the differences in balance, regular transactions had to be temporarily cancelled during the period April to October 2011. This has resulted in loss of business to the tune of 210 MT amounting to ₹3.41 crore during the period. Admitting the observation the Company stated that the fall in general demand also contributed for the drop in sales.

- The Company had made arrangement with MSC, an ilmenite supplier to settle the dues by supplying  $\text{TiO}_2$  to them. The non-maintenance of books of accounts of MSC led to excess lifting (30 September 2013) of  $\text{TiO}_2$  worth ₹1.91 crore by MSC and this was set off by subsequent purchases (October/December 2013) of ilmenite. This situation forced the Company to purchase high priced low quality ilmenite from private parties, forgoing the offered quantity of 1508 MT of high quality ilmenite from IRE resulting in loss of revenue amounting to ₹1.55 crore.

The Company replied that the dues were cleared and the accounts were reconciled.

Though the dues were cleared later the fact remains that there was a lapse in regular monitoring of the receivables, which led to loss of ₹1.55 crore for which accountability may be fixed.

### ***Monitoring of payables***

**2.1.46** There was no system for effective monitoring of the advance payments made to the suppliers. In respect of IRE, there had been many instances of excess advance payments resulting in blocking up of funds with the supplier. The excess advance of ₹63.62 lakh remained with IRE for a period ranging from three months to one year.

## **Environment and pollution control measures**

**2.1.47** The major effluents generated in the production process of  $\text{TiO}_2$  viz., waste ferrous sulphate and waste sulphuric acid were discharged into the sea. With the enactment of the Water (Prevention and Control of Pollution) Act, 1974, treatment of effluent was made mandatory. Accordingly, the Company decided to implement Effluent Treatment Project (ETP) comprising of Acid Recovery Plant (ARP), Copperas Recovery Plant (CRP) and Neutralisation Plant (NP) cum modernisation activities in 2004. The Company engaged (June 2004) MECON Limited as Project Management Consultant (PMC). As per the proposal (January 2005) of the Consultant, total estimated cost of implementation of the package for pollution control and expansion in two phases was ₹256.10 crore. The Company awarded (February/March 2006) the work relating to ARP/CRP (package 1) and NP to Chematur Ecoplanning Oy, Finland and VA Tech Wabag Limited respectively and proceeded with import of critical equipments for CRP/ARP. In June 2007, MECON intimated escalation in the project cost to ₹414.40 crore (161.81 per cent of original estimate). The Board of Directors decided (October 2007) to abandon the ARP as it was not financially viable, rendering the investment of ₹58.45 crore infructuous. It was also decided to defer phase II of the project in view of the huge financial commitment involved and unviability of the project.



The details of investment up to March 2014 are given below:

**Table 2.20: Details of expenditure incurred for ETP**

Particulars	Payment made (₹ crore)	Remarks
Acid Recovery Plant	58.45	Abandoned; provision created in accounts.
Copperas Recovery Plant	16.48	Kept in abeyance.
Neutralisation plant	36.76	To be commissioned. Trial run in progress.
MECON (consultant)	5.56	...
Interest on Loan	21.36	Bank loan of ₹49.40 crore. <sup>16</sup>
<b>Total</b>	<b>138.61</b>	

Due to delay in completing the ETP project, the Company also incurred committed liability as detailed below:

- Due to the failure to implement the ETP, the major effluents generated in the production process are being discharged in to the sea which is detrimental to the environment. It had also resulted in non compliance of the Water (Prevention and Control of Pollution) Act, 1974 as well as High Court order for setting up of the ETP before 01/07/2010.
- Demand for the repayment of availed import subsidy of ₹17.33 crore, under EPCG<sup>17</sup> scheme together with interest at the rate of 15 *per cent* consequent upon the failure to achieve the prescribed export obligation within 8 years, against which appeal is pending with CESTAT<sup>18</sup>, Bangalore.
- The demand for Service Tax for technical component of the project amounting to ₹2.55 crore, against which an appeal is pending with CESTAT, Bangalore.
- The compensation claim of ₹1.01 crore by the contractor, VA Tech Wabag Limited towards loss incurred by them due to delay on the part of the Company in completing the project.
- Loss of envisaged benefit of ₹4.82 crore and ₹2.34 crore per year on account of water and copperas respectively to be recovered in the treatment process.

The ARP proposed by MECON envisaged regenerated/recovered acid having a lower concentration than being used in the existing TiO<sub>2</sub> plant. The Company did not have the technical know-how to process the regenerated acid to the required concentration level and the contractor was also exempted from providing the required technical know-how. The deficiencies in the conceptualisation and

<sup>16</sup> Federal Bank- ₹4.40 crore, Union Bank of India- ₹45 crore.

<sup>17</sup> Export Promotion Capital Goods scheme.

<sup>18</sup> Central Excise & Service Tax Appellate Tribunal.

implementation of the project have contributed to the failure of ETP project and consequent loss of ₹58.45 crore invested in the abandoned project. The infructuous investment has adversely affected the liquidity position of the Company in addition to the non compliance to the statutory requirement.

Company while admitting the observation added that it was unable to continue with the Acid Recovery Plant due to high cost; that Copperas Recovery Plant would be commenced when the financial position improves and that Neutralisation plant has been completed.

### **Conclusion**

- The Company failed to maintain cost records and fix breakeven level of production. Production below breakeven level resulted in short recovery of fixed cost during 2012-2014.
- Lower efficiency in production led to under-recovery of  $\text{TiO}_2$ .
- Company violated its own purchase procedure leading to excess procurement of ilmenite and dilution of terms and conditions of tenders.
- Company had not adopted a dynamic marketing/pricing policy.
- Failure of the Management in operating the plant at optimum level resulted in payment of unproductive wages.
- Finalisation of annual accounts of the Company is in arrears from 2010-11.

### **Recommendations**

The Company may:

- maintain cost records to fix breakeven level of production;
- take measure to improve efficiency;
- follow the approved purchase procedure strictly and take measures to obtain maximum allotment of ilmenite from IRE;
- have dynamic pricing mechanism and effective discount schemes;
- initiate action to operate the plant at optimum level to avoid payment of unproductive wages; and
- finalise the accounts in a time bound manner to clear arrears.

## 2.2 PERFORMANCE AUDIT ON COMPUTERISED LOW TENSION BILLING SYSTEM OF KERALA STATE ELECTRICITY BOARD LIMITED

### Executive Summary

#### **Introduction**

Kerala State Electricity Board Limited (Company) distributes electricity to 1.08 crore Low Tension (LT) consumers in the State of Kerala. The Company uses application software called Open Resource Utility Management Application (ORUMA) for the billing of sale of electricity to LT consumers which was developed by the IT wing of the Company.

#### **Registration of Consumers**

Audit pointed out deficiencies in registration of consumers like ineligible consumers were classified as Non Paying Group and supplied electricity free of cost. Audit also noticed absence of inbuilt control to map each consumer with correct transformers.

#### **Billing of Consumers**

Audit noticed deficiencies in the System due to non mapping of business rules. Initial security deposits from new consumers were not collected at prescribed rate resulting in short collection of ₹1.76 crore. The first bill in respect of 68341 consumers was issued with delay upto 54 months. Audit also noticed that bills were not issued to 1.61 lakh consumers since the installation of ORUMA. Audit pointed out wrong mapping of

purposes with lower tariffs resulting in short collection of ₹1.69 crore. The Company did not collect interest at twice the bank rate for instalments allowed to the consumers resulting in loss of ₹0.50 crore. The System also did not produce MIS reports to inform the management about unauthorised additional load of consumers.

The Company collected Electricity Duty from exempted category of consumers amounting to ₹2.39 crore. Interest payable on security deposit was worked out at rate lesser than Bank rate resulting in short payment of ₹12.54 crore in respect of 52.88 lakh consumers for the year 2012-13. Similarly, higher rate of interest was not applied for delayed credit of interest on security deposit resulting in short payment of ₹1.77 crore to 5.75 lakh consumers.

#### **Recommendations**

Audit recommended that the Company may streamline the process of mapping the business rules in the LT billing system effectively so as to plug the leakage of revenue and shall initiate steps to utilise the data in ORUMA, optimally, to help effective planning and decision making.

## Introduction

**2.2.1** The Kerala State Electricity Board Limited (Company) was incorporated under the Companies Act, 1956 on 14 January 2011. The Company started independent operations with effect from 31 October 2013 when the Government of Kerala (GoK) transferred the assets and liabilities of erstwhile Kerala State Electricity Board (KSEB), a statutory corporation, to it. The Company is engaged in generation, transmission and distribution of electricity in the State. Sale of energy and its billing is regulated by Electricity Act 2003, rules and regulations<sup>19</sup> and orders/ circulars issued by Government/ Kerala State Electricity Regulatory Commission (KSERC)/ KSEB or the Company. The consumers are classified into three viz., Low Tension (LT), High Tension (HT) and Extra High Tension (EHT) consumers based on their connected load and energy requirement. A consumer is classified as LT, HT or EHT consumer if he avails supply at a voltage of less than or equal to 650 volts<sup>20</sup>, between 650 volts to 33000 volts and exceeding 33000 volts respectively under normal conditions. The details of the consumers' energy consumption, revenue from sale of power, etc. for the year 2012-13<sup>21</sup> were as given in the *Tables* below.

**Table 2.21: Details of consumers and revenue from sale of energy**

Category	No. of consumers		Connected load		Consumption		Revenue	
	( lakh )	Percentage	In MW	Percentage	In MU	Percentage	₹ crore	Percentage
LT consumers	108.03	99.96	17182.99	93.44	12258.66	72.80	4738.26	65.60
HT & EHT	0.04	0.04	1206.47	6.56	4579.58	27.20	2484.20	34.39
Sale through power exchange							0.93	0.01
<b>Total</b>	<b>108.07</b>	<b>100.00</b>	<b>18389.46</b>	<b>100.00</b>	<b>16838.24</b>	<b>100.00</b>	<b>7223.39</b>	<b>100.00</b>

<sup>19</sup> Kerala Electricity Supply Code 2005 issued by Kerala State Electricity Regulatory Commission and Terms and Conditions of Supply 2005 issued by KSEB.

<sup>20</sup> Kerala Electricity Supply Code (Clause 4(2)) specified the voltage of LT supply as 240 volts and 415 volts for single phase and three phase respectively.

<sup>21</sup> The Company has not prepared the Annual Accounts for the period ending 31 March 2014, so far (as of December 2014).

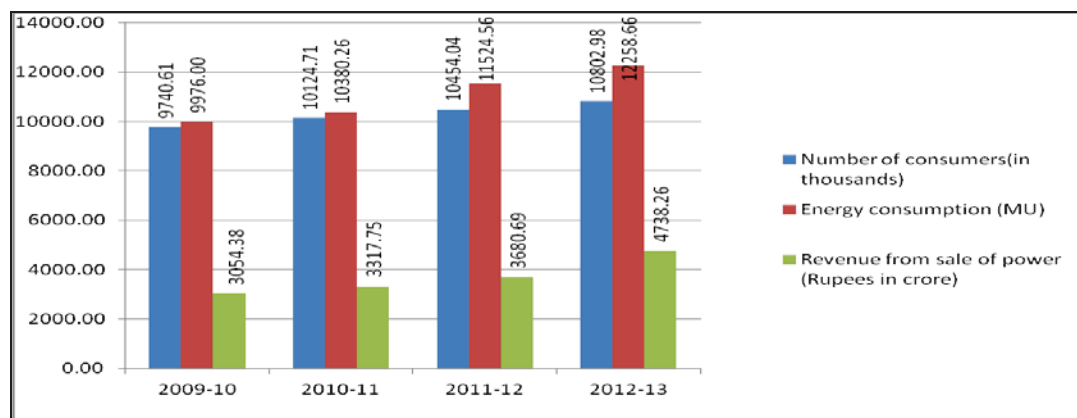
**Table 2.22: Details of LT consumers and revenue from sale of energy**

Category	No. of consumers		Connected load		Consumption		Revenue	
	( lakh )	Percentage	In MW	Percentage	In MU	Percentage	₹ in crore	Percentage
Domestic	85.74	79.36	11842.34	68.92	8313.36	67.82	2154.16	45.46
Commercial	16.34	15.13	2738.94	15.94	2224.06	18.14	1855.38	39.16
Industrial	1.32	1.22	1539.24	8.96	1101.96	8.99	587.12	12.39
Agricultural	4.60	4.26	956.77	5.57	306.08	2.50	47.28	1.00
Street Lights	0.03	0.03	105.70	0.61	313.20	2.55	94.32	1.99
<b>Total</b>	<b>108.03</b>	<b>100.00</b>	<b>17182.99</b>	<b>100.00</b>	<b>12258.66</b>	<b>100.00</b>	<b>4738.26</b>	<b>100.00</b>

The billing, collection and accounting for HT & EHT consumers are done centrally by Special Officer (Revenue). Billing in respect of LT consumers is done at 748 Electrical Sections attached to 70 Electrical Divisions (August 2014).

### *Trend of sale of power to LT consumers*

**2.2.2** The details of sale of power to LT consumers during the period from 2009 to 2013 are depicted in the graph below:



The Electrical Sections are the basic units for distribution of electricity to the consumers which function under the Assistant Engineers. Business process in Electrical Section involves Registration, Billing, Collection and Accounting and Disconnection functions.

### ***Open Resource Utility Management Application (ORUMA)***

**2.2.3** With a view to automate key revenue billing and collection activities in the Electrical Sections erstwhile KSEB introduced (August 2007) an application software called Open Resource Utility Management Application (ORUMA). ORUMA is an in-house software application developed in free and open source software platform. Complete life cycle of the project, viz., requirement analysis, design, development, testing, implementation, maintenance, etc. is being carried out by the IT wing of the Company. The business rule changes from time to time as per Supply Code/KSERC orders/ Board Orders, etc. are also incorporated in the software. It was installed in all the Electrical Sections in Kerala by 2009.

PostgreSQL was selected as Relational Data Base Management System (RDBMS) for ORUMA. Debian Linux and Ubuntu Linux are used as server operating system and client operating system respectively. As a platform independent tool for development, PHP was selected as the programming language. Both the server operating system and client operating system are located in Electrical Section.

### **Audit Objectives**

**2.2.4** Audit was taken up to assess whether:

- The IT system has achieved the intended objective of supporting the business process and ensures compliance with the applicable rules and regulations in registration, billing, collection, accounting and disconnection of LT consumers.
- The database provides sufficient, complete, reliable and authorised information for management to identify areas of potential revenue loss and to maximise the revenue.

### **Audit Criteria**

**2.2.5** The Audit of computerised LT billing system was conducted with reference to:

- The provisions of the Electricity Act, 2003;
- Kerala Electricity Supply Code, 2005;
- Kerala State Electricity Board Terms and Conditions of Supply, 2005;
- Board Orders/Circulars/Instructions issued by KSEB, the Company and KSERC; and
- Schedule of Tariff and Terms and Conditions for Retail Supply of Electricity.

## Scope and Methodology of Audit

**2.2.6** The Audit was conducted by collecting the computerised data for the period from August 2007 to September 2014 from 710 Electrical Sections in 68 Electrical Divisions. The data was analysed using IDEA<sup>22</sup> Software and PostgreSQL queries. The results of the analysis were examined to identify loss/omission of revenue and to ensure comprehensiveness of the software.

## Interaction with Government/ Management

The scope, methodology and objectives of Audit were discussed in the Entry Conference conducted on 7 August 2014. Subsequently, audit findings were reported to the Company and the State Government (October 2014) and discussed in an Exit Conference conducted on 12 November 2014. The Entry and Exit Conferences were attended by the representatives of the Company/ State Government. Reply from the Company was received (December 2014) and has been considered while finalising the Report. Reply from State Government is awaited (December 2014).

## Acknowledgement

**2.2.7** Audit acknowledges cooperation and assistance extended by the staff and management of the Company in conducting this performance audit.

## Audit Findings

Audit findings are discussed in the following paragraphs:

### Registration of Consumers

**2.2.8** As per the Kerala State Electricity Board Terms and Conditions of Supply, 2005, the owner of any premise may apply to the Assistant Engineer of Electrical Section concerned by remitting the prescribed fee<sup>23</sup> for electricity connection. The Company, after examining the relevant documents<sup>24</sup> and inspecting the premises, works out the amount to be remitted towards Own Your Electric Connection (OYEC) Charges and security deposit. The Company is expected to release the connection within one month<sup>25</sup> from the date of remittance of required amount.

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<sup>22</sup> Interactive Data Extraction and Analysis.

<sup>23</sup> Application fee for electricity connection for LT, HT and EHT consumers is ₹25, ₹1000 and ₹5000 respectively.

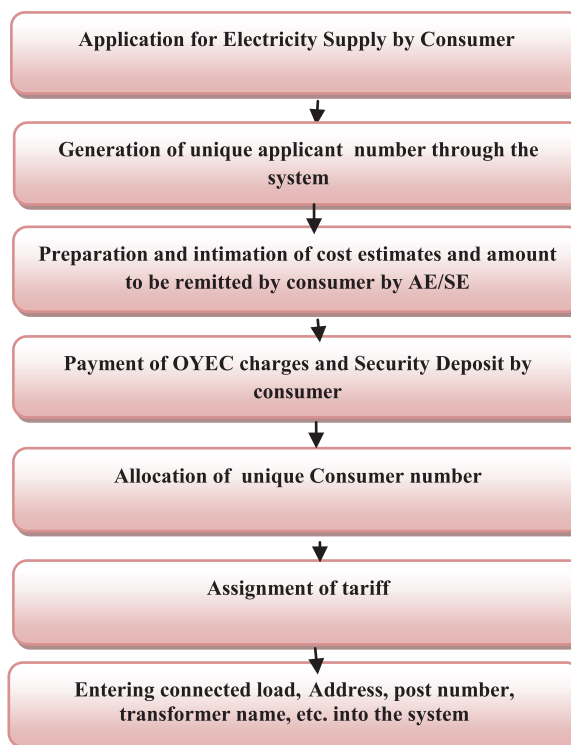
<sup>24</sup> Completion Report of the Consumer's installation, Test Report of the consumer's installation of the licensed electrical contractor, a neat sketch of the premises showing the position of all lamps and other fittings, if the intending consumer is not the owner of the premises to be electrified, he shall furnish a consent agreement.

<sup>25</sup> Where extension of LT line or 11 kV line is required, connection shall be provided within 30 days or 4 months per KM or part thereof of additional line respectively.



### ***Registration Process***

The registration process is depicted below:



Following deficiencies were noticed in consumer registration:

#### ***Absence of essential details of consumers***

**2.2.9** As per clause 21 of Kerala Electricity Supply Code, 2005 (read with clause 35 of Terms and Conditions of Supply, 2005), every bill issued to consumers for recovery of charges for supply of electricity shall contain name and address of the consumers. It is, therefore, important to maintain the database of basic details such as name and address of consumers. On scrutiny of database, it was observed that in the case of 2.59 lakh consumer records in 629 Electrical Sections (2.19 *per cent* of the total live consumers), names as well as complete address of consumers were not available in the database. Audit noticed that the absence of necessary controls in the system allows the relevant fields to be left blank. This has resulted in preparation of incomplete bills violating the provisions of Kerala Electricity Supply Code and Terms and Conditions of Supply, 2005. In addition, this leaves the Company without the essential details of consumers which would make the revenue recovery proceedings, if any, against defaulted consumers difficult.

The Company replied (December 2014) that at the time of introduction of ORUMA some old consumer details were not traceable from the records available at the section offices. The reply is not acceptable since the meter readers are



regularly visiting the premises of the consumers for issue of spot bill, the required details should have been collected and entered in the system.

***Assigning of excess connected load to transformers***

**2.2.10** At the time of registration, details of transformers from which electric connection has been provided to the consumer have to be entered in the database. This helps to identify the location of consumers and generating MIS on capacity utilisation/ overloading of transformers, etc. Analysis of data indicated that, 35820 transformers out of 69301 transformers in 681 Electrical Sections, were overloaded as the total load connected to those transformers was in excess of the maximum capacity. Audit observed that the system does not have inbuilt control to map each consumer with correct transformers and to generate MIS report to alert the management on overloading of transformers beyond their capacity.

While accepting Audit observations, the Company replied (December 2014) that feeder-transformer-consumer mappings were not envisaged in ORUMA software. It was also stated that ORUMA software was being modified and renamed as ORUMANET software, the rolling out of which was in progress and was scheduled to be completed by May 2015.

***Categorisation of ineligible consumers under Non Paying Group***

**2.2.11** As per Government order<sup>26</sup>, the economically backward domestic consumers having connected load not exceeding 500 watts and monthly consumption not exceeding 20 units are exempted from payment of electricity charges. These consumers are classified as Non Paying Group (NPG). Audit noticed that consumers with connected load exceeding 500 watts and consumers other than domestic consumers were classified as NPG and electricity was supplied free of cost. The ineligible concession thus extended to them worked out to ₹0.42 lakh in respect of 57 consumers in 41 Electrical Sections during the period June 2008 to June 2014. It has been observed that business rule pertaining to classification of NPG consumers was not mapped properly in the System. As a result classification of consumers as NPG was done manually and the ineligible consumers availed supply free of cost.

While concurring with the Audit observation, the Company replied (December 2014) that steps are being taken to implement the validation in the new software in respect of classification of NPG consumers. However, actions need to be taken to correct the data in the existing database.

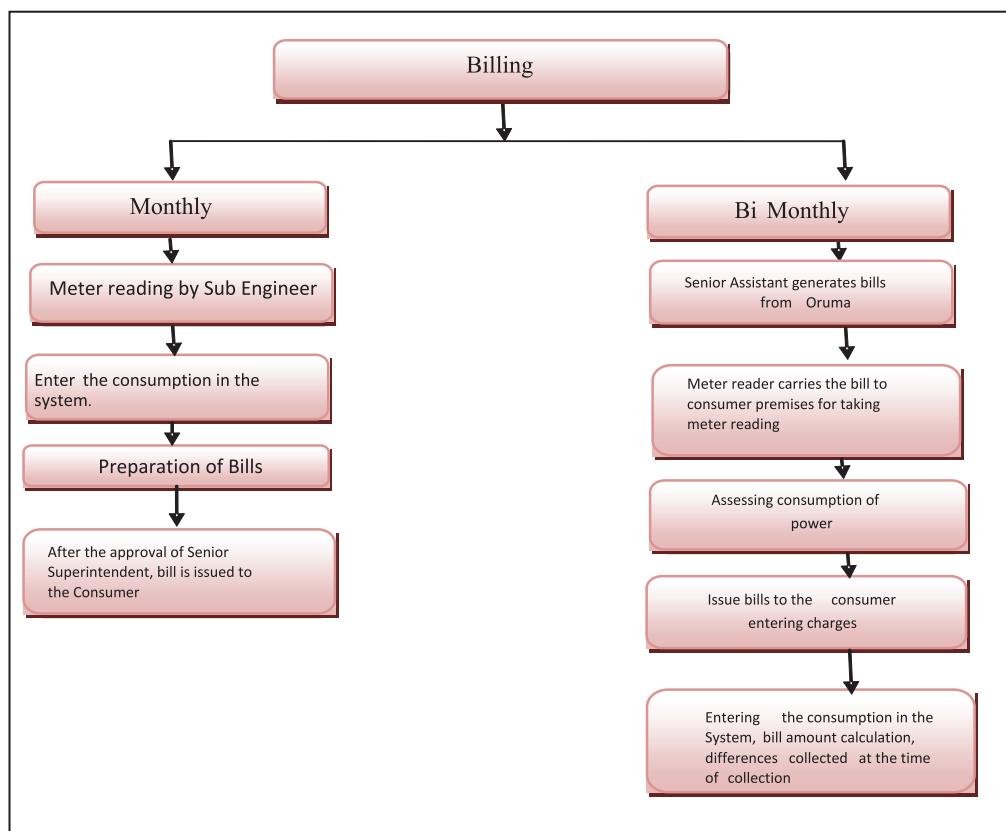
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<sup>26</sup> GO (MS) No 27/2013/PD dated 20 June 2013.

## Billing of Consumers

**2.2.12** The Company issues bills to the consumers on the basis of consumption recorded by meters installed at the premises of the consumers. The Company issues monthly and bi-monthly bills to consumers. Monthly bills are issued to LT Industrial and Commercial consumers having connected load above 10 KW. Domestic consumers having connected load more than 20 KW are also coming under monthly<sup>27</sup> billing. In the case of all other LT categories of consumers, bi-monthly billing is applicable.

The LT billing process is depicted below:



IT wing is responsible for making necessary changes in the software regarding the tariff revisions, introducing power restrictions, fuel surcharge, etc. rolled out by the Company from time to time. Changes made in the system are implemented in the field offices by respective System Supervisors.

Analysis of data received from the Electrical Sections revealed the following deficiencies in the software and billing:

<sup>27</sup> vide order dated 11<sup>th</sup> May 2010 authorised Chief Engineer (Commercial & Tariff).

### ***Non-mapping of business rules***

**2.2.13** To make the system fool-proof and efficient, all the business rules need to be mapped properly in the system. Audit, however, noticed non-mapping of important business rules as discussed below.

#### ***a) Short collection of initial Security Deposit***

Audit observed that business rules pertaining to the calculation of Initial Security Deposit was not mapped in the system which led to manual calculation of the same. This has resulted in short collection of ₹1.76 crore during the period from April 2009 to March 2014 in respect of 6916 consumers in 651 Electrical Sections. The Company replied (December 2014) that steps are being initiated to provide auto-generation facility in the software for the calculation of initial security deposit amount, instead of user input method.

#### ***b) Non-mapping of rule regarding issue of first bill***

As per clause 18 of Supply Code, the licensee shall issue the first bill in case of new installations within two months of providing connection. Audit analysed the data on new connections and found that first bill to 68341 consumers was issued after periods ranging from four months to 54 months from the date of providing electric connection as given in the *Table* below:

**Table 2.23: Statement showing details of delayed issue of first bill**

<b>Sl. No.</b>	<b>Delay in issue of first bill</b>	<b>No. of consumers</b>
1	4 months to 1 year	65764
2	1 year to 2 years	1960
3	2 years to 3 years	577
4	3 years and above	40
<b>Total</b>		<b>68341</b>

As per the service connection procedure, area code, day code, next billing month, etc. have to be entered in the system for effecting new service connection. Entering of incorrect details/ non entering of details are the reasons for delay in issue of first bill. Due to delay in issue of first bill, the realisation of revenue to the Company was also delayed. It was replied (December 2014) that a new report would be provided in the software to identify newly connected but un-billed consumers, if any, in the system.

#### ***c) Non issue of bills:***

It was also noticed that 474 Electrical Sections had not issued bills in respect of 1.61 lakh consumers since the installation of ORUMA, though their status were shown as “*Connected and Using*” in the system. Audit noticed that the Company

did not try to trace out the whereabouts of these consumers to ensure the actual status and either bill or exclude the consumers from database.

The Company replied (December 2014) that during data entry for implementation of ORUMA and migration from legacy system to ORUMA, consumers which are actually in the status of Dismantled/ Not Using/ Account Closed, etc. may be entered as “*Connected and Using*”. The Company also stated that action was initiated to verify present status of these consumers and to correct the same in the system. Action was also initiated to provide a report in the software to identify unbilled consumers in the system with status as “*Connected and Using*”.

***d) Non-mapping of business rules with regard to compounding of an offence for theft of energy***

Clause 4 (4) (e) & (f) of Kerala Electricity Supply Code (first amendment) Regulations, 2005, permits compounding of an offence of theft of electricity by accepting compounding charges at prescribed rates which discharge the person from all criminal proceedings<sup>28</sup> in connection with that offence. The compounding of an offence shall be allowed only in respect of the first offence committed by any person or consumer. Any person who is convicted of an offence punishable under the Electricity Act, 2003 shall be debarred from getting any supply of energy for a period which may extend to two years but which shall not be less than 3 months. This rule should have been mapped properly in the ORUMA system so that the system automatically gives an alert to the authorities when a debarred consumer applies for fresh electricity connection or a discharged consumer applies for compounding the offence of theft of energy on a second occasion. Audit noticed absence of such an input control in the system.

The Company replied (December 2014) that action is being initiated to introduce a control mechanism in the ORUMA system so as to get an alert to the authorities to rectify the above deficiency.

***e) Non mapping of provisions regarding higher rate of interest on security deposit for delayed credit***

As per the Supply Code<sup>29</sup>, the accrued interest on security deposit for each financial year shall be credited to consumer’s account during the first quarter of the subsequent financial year and adjusted against electricity bills. The Licensee shall pay interest at twice the bank rate for the delay in making the adjustments for interest on security deposit. Analysis of data revealed that there were delays in crediting interest ranging from one day to 1870 days. Non-mapping of the above provisions in the system resulted in non- payment of penal interest of ₹1.77 crore to 5.75 lakh consumers during July 2009 to August 2014.

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<sup>28</sup> Punishable with imprisonment for a term which may extend to three years or with fine or with both.

<sup>29</sup> Clause 16(9)(2) and (3).

The Company replied (December 2014) that the provision regarding twice the bank rate for delayed credit of interest on Security Deposit to consumers is now implemented in the LT billing software. The fact, however, remains that the Company has not taken any steps to pay penal interest to the consumers for the delayed credit of interest on security deposit.

***f) Short collection due to application of wrong tariff to advertisement boards***

The tariff applicable for display lighting, hoarding, external illumination of building for publicity and sales promotion was changed from LT-7A to a higher tariff of LT-10 with effect from 01 May 2013. The IT wing of the Company, however, did not make suitable changes in the software in this regard. As a result, the system continued to bill the consumers whose purpose of usage was “advertisement boards” under lower tariff of LT-7A and sold 7.43 lakh units of electricity resulting in revenue loss of ₹ 0.70 crore in respect of 1788 consumers in 238 Electrical Sections during the period from May 2013 to August 2014. Audit observed that out of 1788 consumers, the Electrical Sections subsequently changed the purpose of 1313 consumers as hoardings, display boards, etc. to make the system to apply LT-10 tariff while the remaining 475 consumers continued to be billed under LT-7A tariff.

The Company replied (December 2014) that whenever Regulatory Commission/Board issues orders to change the purpose from one tariff category to another the same change would also be effected in the system. In the case of existing consumers tariff should be changed individually through the system by identifying the consumer. It was also stated that a control mechanism is being introduced in the software to overcome the situation. The reply cannot be accepted as the purpose “advertisement boards” has been wrongly mapped to LT-7A tariff instead of LT-10 which resulted in wrong application of tariff and the fact remains that the Company is yet to recover the short assessment due to the application of lower tariff. Being in a computerised environment, the company should have developed automated solution to change the tariff according to their purposes instead of individually changing the tariff.

***g) Short collection due to application of wrong tariff to workshops with automobile service stations***

As per the tariff approved (December 2007) by KSERC, Workshops with Automobile service stations were to be billed under LT-7A. The CE (IT) did not make provisions in the system and the system continued to generate bills for Workshops with Automobile service stations under the lower tariff of LT-4A. This resulted in short collection of ₹0.81 crore during February 2008 to September 2014 in respect of 12.76 lakh units of electricity consumed by 123 consumers in 69 Electrical Sections. Audit observed that out of 123 consumers, 119 consumers are still being billed under lower tariff (LT-4A).

The Company replied (December 2014) that action was being taken to verify the above consumers with purpose as “workshop with automobile service station”, so as to find out whether they have actually segregated their workshop load to avail the benefit of industrial tariff.

***h) Short collection due to application of wrong tariff to paying guest facility for students along with owner***

Tariff notification which came into effect from 1 July 2012 excluded the ‘paying guest facility for students along with owner’ from LT-6B tariff. As per the notification, LT-6B tariff is applicable to “.....hostels of educational institutions affiliated to Universities or under the control of the Director of Technical/Medical Education/Public Instruction or such other offices of Government or run by the Government or State Social Welfare Board, hostels run by institutions that are registered under Cultural, Scientific and Charitable Societies Act and exempted from payment of income tax.....”. Therefore, ‘paying guest facility for students along with owner’ was to be billed under higher tariff of LT-7A applicable for private hostels. The CE (IT), however, did not make necessary changes in the system and the system continued to bill these consumers in LT-6B resulting in a short collection of ₹0.18 crore during July 2012 to July 2014 from 413 consumers in 77 Electrical Sections. Total sale of electricity to above mentioned consumers in lower tariff is worked out to 10.75 lakh units. Audit observed that out of these consumers, the Company had not changed the purposes of 303 consumers and continued to bill them under LT-6B.

The Company replied (December 2014) that action was being taken to verify the purpose of above mentioned consumers, so as to find out their actual purpose of usage of electricity to include them in appropriate tariff.

***Short assessment due to application of reduced rate of interest on instalments allowed***

**2.2.14** As per clause 8 of Supply Code, 2005, the Company may allow the consumer to remit the cost of electric line extension/ substation construction for new connections on instalment basis and interest at twice the bank rate shall be applied for instalments. The maximum period for instalments shall be 60 months. Audit noticed that RBI changed the bank rate during February 2012 to January 2014 as shown below:



**Table 2.24: Bank rates declared by Reserve Bank of India**

Period		Bank Rate	Rate to be applied
17/02/2012	19/04/2012	9.50	19.00
20/04/2012	31/01/2013	9.00	18.00
01/02/2013	21/03/2013	8.75	17.50
22/03/2013	02/05/2013	8.50	17.00
03/05/2013	18/07/2013	8.25	16.50
19/07/2013	19/09/2013	10.25	20.50
20/09/2013	10/10/2013	9.50	19.00
11/10/2013	31/10/2013	9.00	18.00
01/11/2013	30/01/2014	8.75	17.50
31.01.2014 onwards		9.00	18.00

The CE (IT), however, did not make necessary changes in the system and the system continued to generate bills charging interest at 12 *per cent*<sup>30</sup> *per annum*. This resulted in short collection of ₹0.50 crore during February 2012 to June 2014 in respect of 9656 consumers in 505 Electrical Sections.

The Company replied (December 2014) that a mechanism was initiated to get the bank rate as and when there is a change in rate, and implement the same in software. The fact, however, remains that the Company has not taken any action to recover the short assessment due to application of lower interest rate on instalments allowed by the Company.

***Absence of inbuilt system to identify and bill unauthorised additional load***

**2.2.15** As per Clause 51(1), (3) and (4) of Terms and Conditions of Supply, 2005, if the actual load of a LT Consumer exceeds the authorised connected load<sup>31</sup>, the unauthorised additional load shall be got regularised by the consumer within a period of three months from the date of detection. The unauthorised load would derail the distribution plan of the Company and adversely affect the quality of power supplied. As such, the system should have an inbuilt control mechanism to calculate maximum consumption as per the connected load and generate an alert to the authorities for physical verification of the premises of the consumer to detect unauthorised additional load, if any. Audit, however, noticed absence of such an inbuilt control in the system to automatically identify and raise an alert to the authorities and the system continued to bill the consumer at normal rate. Analysis of data revealed that there was unauthorised additional load in respect of 9.45 lakh consumers in 704 Electrical Sections and 85.44 crore units were consumed through unauthorised additional load. Further, loss to the Company on

<sup>30</sup> Twice the Bank rate of 6 *per cent* = 12 *per cent*.

<sup>31</sup> 'Connected Load' means the sum of rated capacities in terms of KW or KVA of all connected energy consuming devices in the consumer's installation.

account of non-collection of fixed charges during January 2008 to August 2014 worked out to ₹ 0.24 crore<sup>32</sup> pertaining to consumers whose fixed charges were based on connected load.

The Company replied (December 2014) that an inbuilt control mechanism to calculate maximum consumption as per the connected load and to generate alerts to the authorities for physical verification of the premises of the consumer to detect unauthorised additional load will be provided in the system. It was also stated that the audit observation regarding the loss to the Company on account of non-collection of fixed charges is unrealistic in respect of domestic and agricultural consumers as fixed charge is not based on their connected load, and in the case of other category of consumers steps are initiated to verify the connected load. Audit has worked out the short collection of fixed charges only in respect of consumers whose fixed charge is based on connected load and hence realistic.

***Loss of revenue due to supply at single phase where connected load exceeded five kilo watts***

**2.2.16** As per Clauses 4 (a) and 5 of Supply Code, 2005, read along with Clause 46 of Terms and Conditions of Supply, 2005, single phase supply at 240 V shall be effected to installation having connected load up to five kilo watts (KW) and supply shall be effected only at 415 V three phase for installations having connected load in excess of five KW. Analysis of data revealed that the Company had effected connection in single phase to consumers having connected load exceeding five KW. There were differences in fixed charges for single phase and three phase in following tariff categories.

**Table 2.25: List showing fixed charges for single and three phase consumers**

Tariff	Monthly fixed charge (₹)	
	Single phase	Three phase
LT 1 A ( Domestic)	20 per month	60 per month
LT VI (E)	20 per month	60 per month
LT VII A & LT VIII	60 per KW	120 per KW

This deprived the Company revenue of ₹3.83 crore from 26076 consumers on account of fixed charges during December 2007 to September 2014 in respect of 606 Electrical Sections.

The Company replied (December 2014) that as per general guidelines to officials issued by the Company, service connection to domestic consumers in single phase for connected load above 5000 watts can be effected if three phase four wire distribution main is not available in the area. In the case of other category of

<sup>32</sup> Short collection of fixed charges is worked out for consumers whose fixed charges is based on connected load.

consumers, steps are being initiated to identify and convert the service connection to three phase. The fact, however, remains that the system does not prevent a single phase connection for consumers with connected load in excess of 5000 watts in areas where three phase distribution lines are available.

***Levy of Electricity Duty on exempted category of consumers***

**2.2.17** Section 12 of the Kerala Electricity Duty Act, 1963, exempts power sold to or consumed by Government of India (GoI) or consumed in the construction, maintenance or operation of any railway by GoI from levy of Electricity Duty (ED). Further, Section 4 of the said Act exempts public lightings from levy of ED. These provisions were not mapped into the system and the system wrongly levied ₹2.39 crore towards ED during January 2008 to September 2014 in respect of 5468 exempted consumers in 652 Electrical Sections as shown below:

**Table 2.26 Statement showing collection of ED from exempted consumers**

Sl. No.	Purpose	No. of Consumers	Electricity Duty (₹ in lakh)
1	All India Radio Offices/Institutions	34	4.60
2	Central Government Department	486	40.93
3	Central Government Excise Office	104	11.12
4	Central Government Offices and Institutions	479	29.57
5	Central Government Tax/Revenue Collection Department	1	0.20
6	Customs Office	43	2.30
7	Doordarshan Offices/Institutions	35	18.93
8	Income Tax Office	121	12.05
9	Postal Services	1072	19.10
10	Public Lighting (Metered)	2401	56.59
11	Public Lighting (Unmetered)	258	18.52
12	Railway Level Cross Gates	177	1.80
13	Railway Station	65	9.77
14	Railways/Railway offices	108	6.19
15	Tax/Revenue Collecting Offices Central Government (Excluding Local Bodies)	84	7.77
	<b>Total</b>	<b>5468</b>	<b>239.44</b>

The Company replied (December 2014) that steps are being taken to provide an inbuilt mechanism in the software so as to exempt the specified category of consumers from payment of ED automatically. The fact, however, remains that the Company has not taken any steps to refund the ED collected from the exempted consumers in violation of the Kerala Electricity Duty Act, 1963.

***Short payment of interest on consumers' security deposit***

**2.2.18** Clause 16 of the Supply Code stipulates that the Licensee shall pay interest on security deposit to the consumer at bank rate<sup>33</sup> prevailing as on 1st April of the financial year for which interest is due. Analysis of data revealed that the Corporate Office (Finance Wing) of the Company and CE (IT) failed to make necessary changes in the system in line with increase in bank rate and wrongly fixed interest rate as 8 *per cent* instead of 9.50 *per cent* in 2012-13. As a result, the system worked out the interest payable to the consumers at the rate of 8 *per cent* only. This resulted in short payment of interest amounting to ₹12.54 crore in respect of 52.88 lakh consumers for the year 2012-13.

The Company replied (December 2014) that due to fluctuations in the bank rate, interest for fixed deposit of State Bank of India was taken for calculating interest payable to consumers. The reply is not acceptable as the Supply Code clearly stipulates that the licensee shall pay interest on security deposit to the consumers at the bank rate.

***Absence of MIS on Faulty meters***

**2.2.19** As per Clause 33 of Terms and Conditions of Supply, 2005, "If the Board is unable to raise a bill on meter reading due to its non-recording or malfunctioning, the Board shall issue a bill based on the previous six months' average consumption. In such cases, the meter shall be replaced within one month". Analysis of data revealed that there were delays ranging from one month to 79 months in replacing 30.21 lakh faulty meters indicating failure of the Company to utilise the data available in the system to replace the faulty meters within the stipulated period of one month. Further, it was also noticed that there are still 6.87 lakh faulty meters as given in the *Table* below.

**Table 2.27 : Number of faulty meters not rectified**

Period of delay	Number of Meters
1 month to 1 year	249016
1 year to 2 years	161823
2 years to 3 years	90260
3 years to 4 years	57916
4 years to 5 years	56470
More than 5 years	71597
<b>Total</b>	<b>687082</b>

While accepting the audit observations, the Company replied (December 2014) that the faulty meters belonging to high value consumers would be given priority for replacements so as to minimise the loss of revenue. The fact, however, remains that the system does not generate any report of faulty meters.

<sup>33</sup> 'Bank rate' means the rate at which the Reserve Bank of India discounts bills.

**System allows the disconnected consumers to continue the status for more than 12 months**

**2.2.20** As per Clause 41(4) of Terms and Conditions of Supply, 2005, no service shall remain disconnected continuously for a period exceeding six months for non-payment of amount due to the Licensee. If the dues are not paid within six months from the date of disconnection, the service shall be dismantled and agreement terminated immediately after giving fifteen days' notice to the consumer. It is also stipulated that if a request is received from the consumer within six months of disconnection on *bona fide* grounds to keep the service disconnected beyond six months, the Assistant Executive Engineer concerned may consider each case on its own merits and extend the period of disconnection up to a maximum of 12 months, provided the consumer undertakes the responsibility for the safe custody of service mains, equipments and pay the prescribed charges. Audit observed that the system did not produce any report to alert the management on existence of consumers with '*disconnected*' status for a period in excess of permissible limit. Analysis of data revealed that in respect of 4516 consumers in 446 Electrical Sections, the status was shown as '*disconnected*' for periods exceeding 12 months, violating the provisions contained in KSEB Terms and Conditions of Supply, 2005.

The Company replied (December 2014) that steps are being initiated to dismantle the disconnected consumers as per the relevant provision in the Supply Code/ Regulations/ Board Orders, etc.

**Data Integrity**

**2.2.21** Complete, accurate and relevant data in the system is necessary to ensure the data integrity. Audit, however, noticed abnormally high consumptions in some of the bills entered into the system. Some of the examples are given in the Table below:

**Table 2.28: Statement showing some of the abnormal consumptions entered into the system**

Sl. No	Section code	Section name	Consumer number	Connected load (watts)	Bill number	Bill Date	Billing month	Abnormal Consumption (Units in lakh)
1	5649	Koratty	6623	54000	291542	01/10/2010	October 2010	194.87
2	6604	Westhill	8967	38000	32532	14/07/2009	July 2009	186.35
3	6754	Kizhakkanchery	4196	5025	45777	12/08/2009	August 2009	10.00
4	5733	Eroor	12344	5990	36113	18/07/2013	July 2013	10.00

As the meter readings are vital for accurate computation of the energy bills, adequate control should be exercised to ensure its accuracy. The Company should have compared abnormally lower or higher readings with connected load of the consumers as well as consumption pattern while processing the bills.

The Company replied (December 2014) that the abnormal consumption may be due to incorrect data entry. It was also replied that steps are being initiated to provide an inbuilt control mechanism to calculate maximum consumption based on registered connected load and generate alerts to the authorities to eliminate these kind of issues.

### **Conclusion**

- The system is not properly mapped to the business rules. The omission to effect the changes in tariff in line with the tariff revisions has resulted in short collection.
- The data generated during the preparation of energy bills was not utilised for analysis of the consumption pattern to detect unauthorised additional load, delay in issue of bills and non issue of bills, etc. for attainment of optimum revenue realisation.
- Faulty meters were not changed in time to avoid leakage of revenue and delay ranged upto 79 months.

### **Recommendations**

#### **The Company should**

- Streamline the process of mapping the business rules in the LT billing system effectively so as to plug the leakage of revenue.
- Initiate steps to utilise the data in ORUMA, optimally, to help effective planning, decision making and plugging of leakage of revenue.