

Chapter-III

Reviews relating to Statutory corporation

3 Maharashtra State Electricity Board

3.1 Fuel Management

Highlights

The extra expenditure of Rs.276.25 crore incurred on consumption of oil in excess of norm during 2000-05 was not investigated to ascertain whether proper measurements were being taken and whether the quality was being checked when oil was received from oil companies. Recorded consumption of gas in excess of norm worked out to Rs.101.16 crore.

(Paragraphs 3.1.40 and 3.1.41)

The Board appointed liaisoning agents having no official role in supply of coal nor in loading of wagons to liaise with coalfields and railways and paid Rs.76.33 crore to them.

(Paragraph 3.1.8)

Benefit of Rs.18.40 crore was passed on to the washery operators due to non recovery towards short supply of washed coal with reference to the norm for yield.

(Paragraph 3.1.17)

The sampling of coal for ascertaining its quality done by private contractors was not as per the prescribed procedure. The samples were not drawn correctly and consequently there was wide variation in sampling results at loading and unloading points.

(Paragraphs 3.1.22 and 3.1.23)

The Board failed to recover Rs.23.92 crore towards stones and shales and Rs.23.93 crore towards excessive moisture from the coal companies.

(Paragraphs 3.1.25 and 3.1.28)

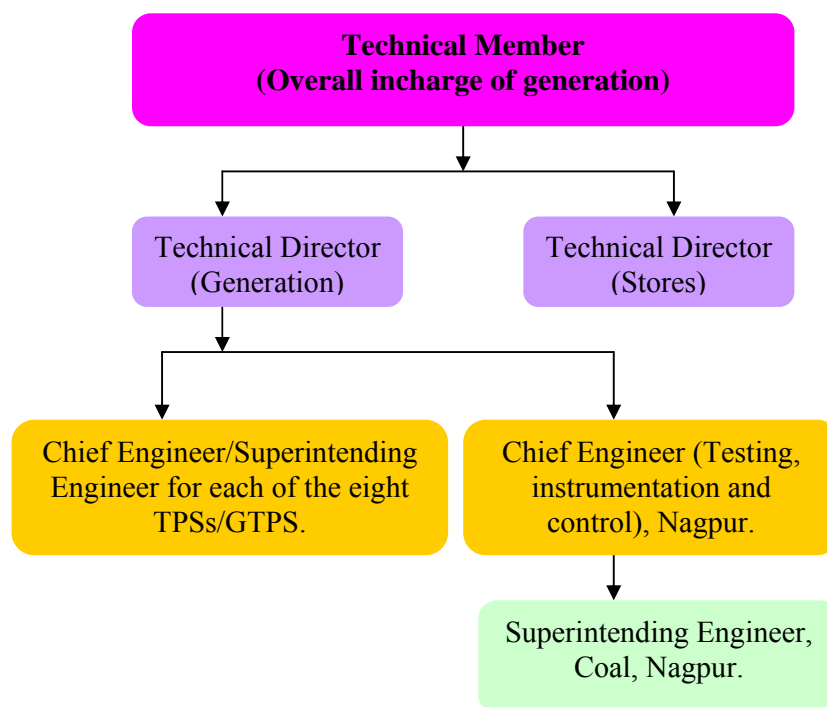
Delay in investigation of huge transit losses resulted in overpayment of Rs.16.05 crore.

(Paragraph 3.1.38)

Introduction

3.1.1 Maharashtra State Electricity Board (Board) has seven[●] thermal power stations (TPS) with total installed capacity of 6,425 MW and one[§] gas turbine power station (GTPS) at Uran with a capacity of 912 MW. The fuels used are coal, oil and gas. The total generation by the Board during 2000-05 was 2.45 lakh[#] million units (MUs). The details of installed capacity and generation achieved in respect of TPSs and GTPS are given in **Annexure-8**.

The organisational chart of the Board relating to generation of power is as under:



The procurement of coal was last reviewed in the Report of Comptroller and Auditor General of India for the year ended 31 March 1995 (Commercial), Government of Maharashtra which was discussed by the Committee on Public Undertakings (COPU) in December 1998.

● Bhusawal, Chandrapur, Khaperkheda, Kordi, Nashik, Parli and Paras.

§ Uran.

2.06 lakh MUs thermal, 0.20 lakh MUs hydel and 0.19 lakh MUs gas.

Scope of Audit

3.1.2 The present review conducted during November 2004-March 2005 covers the fuel management of all the TPSs (except Parli) and GTPS for the period from 2000-01 to 2004-05.

Audit objectives

3.1.3 The audit objectives were to ascertain whether:

- the Board effectively monitored the quantity and quality of coal, oil and gas procured from public utilities;
- the functions outsourced relating to liaisoning with the coal fields and railways, sampling of coal and washing of coal effectively safeguarded the Board's interest relating to quantity and quality of coal;
- the monitoring of transportation of fuel has been effective in ensuring minimisation of transit losses and minimising cost of transportation; and
- the consumption of fuel was as per the norm fixed and the controls with regard to stock verification of fuel were effective.

Audit criteria

3.1.4 The following audit criteria were adopted to assess/evaluate:

- procurement of coal with reference to the quantities allocated by the Standing Linkage Committees (SLCs);
- outsourcing functions with reference to agreements entered into and also the utility of outsourcing functions with regard to principles of economy, efficiency, effectiveness and transparency;
- transportation cost of coal with reference to minimum cost per unit transported;
- transit losses with reference to norm; and
- utilisation of fuel with reference to norm laid down for consumption of fuel per unit of power generated.

Audit methodologies

3.1.5 Audit used a mix of the following methodologies:

- examination of the organisational records both at head quarters and field offices;
- scrutiny of Board decisions;
- analysis of data collected by Audit; and
- meetings with the officials of the organisation.

Audit findings

3.1.6 The audit findings were reported to the Government/Board in April 2005 and discussed in the meeting of the Audit Review Committee for State Public Sector Enterprises (ARCPSE) held on 27 June 2005, where representatives of the State Government and the Board were present. Views of the Government/Board have been incorporated in the review.

The audit findings are discussed in the succeeding paragraphs:

Procurement of coal

3.1.7 The Board receives coal from collieries of Western Coalfields Limited (WCL), South Eastern Coalfields Limited (SECL), Mahanadi Coalfields Limited (MCL) and Singareni Collieries Companies Limited (SCCL).

Liaison contracts

3.1.8 Allotment of coal is made by the Standing Linkage Committees (SLC) consisting of officials of Coal Companies, Railways, Ministry of Coal and Power *etc.* The Board had appointed liaisoning agents to liaise with coalfields and railways. As per the terms of contract, the scope of work stipulated:

- Linkage materialisation (it means maximum supply of coal by the coalfields with reference to the quantity allotted by the SLC).
- Shortage minimisation (which means optimisation of loading of wagons with a view to minimising idle freight charges due to underloading of wagons).

- Quality monitoring[@] (which means minimisation of stones and shales *etc.* in coal).

The details of liaison contracts awarded and payments made to agents during September 1999-March 2005 were as under:

Power stations	Liaisoning agents	Period of contract	Actual payment (Rupees in crore)
TPS, Chandrapur and Nashik	Nair coal services	Regular (September 1999-March 2005)	37.44
		Korea Rewa [#] (October 1998-March 2005)	7.13
TPS, Koradi, Khaperkheda and Parli	K.C. Thapar and Brothers	Regular (September 1999-March 2005)	22.05
		Korea Rewa (April 1999-March 2005)	5.02
TPS, Bhusawal and Paras	Nareshkumar	Regular (September 2001-March 2005)	4.69
Total			76.33

Linkage materialisation

3.1.9 The allotment of coal is decided by the SLC, whose members are officials of Government of India from the Ministries of Coal, Power and Railways, Central Electricity Authority, Planning Commission and Coal India Limited. The liaisoning agents are not members of the SLC and hence have no official role in allocation of coal.

The allotment of railway wagons is done by the Railways and payment was made towards liaisoning with railways.

The actual supply of coal depends on the production at the coalfields and availability of railway wagons. The liaisoning agent does not have any official role in this. Thus the expenditure of Rs.76.33 crore incurred on the services of liaisoning agents lacked justification.

The Board stated (June 2005) that to improve coal materialisation coal liaisoning contracts were awarded. It was stated that linkage materialisation had reached a satisfactory level *i.e.* most of the times between 95 to 105 *per cent* of the quantities allotted. It was further stated that transit losses had reduced to around one *per cent* and the average wagon loading of coal reached around 60-61 MTs per wagon. The reply is factually incorrect. The receipt of coal with reference to the quantities allotted by the SLC came down from 95.61 *per cent* in 2000-01 to 89.03 *per cent* in 2004-05. Moreover, the liaisoning agent is not a member of the SLC and has no control over supply of coal by the coalfields.

The Board paid Rs.76.33 crore to liaison agents who have no official role in ensuring linkage materialisation and availability of wagons.

[@] This was introduced from September 2003.

[#] A coal mine of SECL.

Dilution of the linkage materialisation criteria

3.1.10 Prior to September 2001, the liaisoning agents were eligible for linkage materialisation charges only if the receipt was 90 *per cent* or above of the quantity allotted by the SLC. From August 2001, the threshold limit was lowered from 90 to 85 *per cent*.

Audit analysis revealed that:

Due to dilution of the linkage materialisation criteria, a benefit of Rs.39.01 lakh was passed on to the liaisoning agents.

- Due to the change in the threshold limit there was decrease in the receipt of coal compared to allocation by the SLC, the receipt of coal came down from 95.61 *per cent* in 2000-01 to 89.03 *per cent* in 2004-05 (July 2004).
- Due to lowering of the limit from 90 *per cent* to 85 *per cent*, an extra benefit of Rs.39.01 lakh was passed on to the liaisoning agents during September 2001-March 2005.
- The eligibility criteria set for the bidders stipulates experience in liaisoning for loading, despatches and monitoring the movement of coal by railways. As actual loading is done by the collieries, the criterion set is not relevant. It was noticed that even when the norm for linkage was lowered from 90 to 85 *per cent* there was no reduction in quoted rates as the same contractors participated in the bids.

The Board stated (June 2005) that there was no extra payment as the basic rate for linkage materialisation had come down from Rs.4.55 to Rs.1.30 per MT.

The reply is not tenable as the composite rate for linkage materialisation and optimisation of loading remained the same and there was decline in the weightage given to linkage materialisation. The audit observation relates to the extra expenditure arising out of dilution of the norm from 90 to 85 *per cent* and the computation is with reference to the rate of Rs.1.30 per MT.

Loading of wagons to the optimum capacity

3.1.11 The tariff charged by railways is fixed and paid according to the carrying capacity of wagons even if under-loaded. Hence, there is a need to load the wagons to their full carrying capacity. It was observed during audit that the Board paid Rs.9.11 crore in six* TPSs as idle freight to the Railways due to underloading during 2000-05 and failed to recover the same from the liaisoning agents due to absence of any enabling clause in the agreement.

The Board did not recover Rs.33.77 crore from the liaisoning agents towards underloading/overloading of wagons.

Railways levy penalty if wagons are loaded beyond their carrying capacity. Due to failure of contractors in supervising loading of wagons, the Board paid penalty charges of Rs.24.66 crore on account of overloading of wagons. The penalty could not be recovered from the liaisoning agents due to absence of enabling clause in the agreement.

*Bhusawal, Chandrapur, Khaperkheda, Koradi, Nashik and Paras.

The Board stated (June 2005) that if a penal provision is included in the contract for overloading the quoted rates would be exorbitantly high. This reply is not acceptable as the purpose of the contract is for loading the wagons to optimum capacity in order to minimise freight charges. In the absence of penal provisions the Board had to pay the penalty for overloading. As regards idle freight due to underloading, the Board stated (June 2005) that idle freight was borne by WCL as per the fuel supply agreement. The reply is not acceptable as the receipt of coal from WCL had not been excluded from the scope of the liaisoning contract and the inefficiency of the contractor led to idle freight being borne by WCL, another PSU.

When new bids were called in September 2001 the rate for the work relating to optimisation of loading of wagons went up from Rs.1.95 to Rs.5.20 per MT. This resulted in the extra expenditure of Rs.6.44 crore during September 2001 -March 2005.

The Board stated (June 2005) that the increase in rate was due to higher weightage to the component relating to optimising loading. The reply is not tenable. The task assigned to the liaisoning agent consisted of linkage materialisation and shortage minimisation. Prior to September 2001, the shortage minimisation was given lower weightage of 30 *per cent* and a higher weightage of 70 *per cent* was to given linkage materialisation. Linkage materialisation is important as less receipt of coal results in lower power generation. Surprisingly the shortage minimisation criterion was given a higher weightage of 80 *per cent* against 30 *per cent*.

Payment towards monitoring quantity of stones and shales in coal

3.1.12 The Board paid Rs.2.51 crore to liaisoning agents for monitoring quantities of stones and shales and uncrushed coal. The quality of coal is as supplied by the coal companies. The liaisoning agents have no official role in this task and hence payment of Rs.2.51 crore during September 2003 -March 2005 was irregular.

The Board stated (June 2005) that only a nominal 10 *per cent* of contract rate (Rs.6.50) was payable towards quality of coal and percentage of stones and shales received at TPSs had reduced. The reply is not correct as the quantity of stones and shales had not decreased (March 2005). The fact remains that the liaisoning agent has no control over quality of coal.

Dilution of contractual condition relating to lumpy coal

3.1.13 Prior to September 2003 (from September 2001) there existed a provision to levy penalty for lumpy/overburden/extraneous material received. This condition was diluted from September 2003. The non payment in case of receipt of such material was restricted to cases where the limit exceeded five *per cent* of the total receipt. The additional benefit to the liaisoning agents was Rs.2.43 crore, as no payment would have been made for the lumpy coal of 37.35 lakh MT under the earlier contractual conditions.

The Board stated (June 2005) that it was not practicable to levy penalty. The reply is not tenable as lumpy coal causes serious operational problems and having entered into an agreement for levy of penalty a suitable method should have been evolved to compute the penalty.

Liaisoning charges on unconnected wagons

3.1.14 The Board made payments of Rs.1.68 crore (Khaperkheda : Rs.69.21 lakh, Chandrapur : Rs.9.54 lakh, Nashik : Rs.37.04 lakh, Koradi : Rs.50.81 lakh and Bhusawal : Rs.1.42 lakh) to the liaisoning agents during 2000-05 for material received through unconnected wagons.

The Board stated (June 2005) that the payment to the liaisoning agents was made on the basis of power station-wise quantity (total tonnage) received in the month. The reply is not acceptable. The payment of liaisoning charges on unconnected wagons should have been adjusted while releasing the payments to the liaisoning agents.

Award of liaisoning contracts for coal from Korea-Rewa collieries

3.1.15 The liaisoning contracts for movement of coal from Korea-Rewa collieries of SECL by railways to TPSs Nashik and Koradi were placed (September 2001) with Nair Coal Services and Karam Chand Thapar at Rs.14.50 per MT.

Audit scrutiny revealed the following:

- The contract was awarded on the basis of limited offers. There was lack of transparency as no open tenders were called for. In the absence of competition, the offers received were much above those received through open tenders for other coalfields. As against the prevailing rate of Rs.6.50 per MT obtained through competitive bidding, the contracts were awarded at an exorbitantly high rate of Rs.14.50 per MT in a non transparent manner.
- The extra expenditure due to acceptance of a rate higher than the normal rate by rupees eight per MT worked out to Rs.7.49 crore for 93.63 lakh MT of coal received from Korea-Rewa.
- The receipt of coal was only 56.07 *per cent* of the quantity assured by the supplier and hence no linkage materialisation charges were payable to the liaisoning agent. The Board, however paid Rs.3.62 crore to the contractor. The liaisoning agent was thus given undue benefit of Rs.3.62 crore due to release of payments despite shortfall in the performance.

The Board stated (June 2005) that the coal received during September 2001 -August 2003 was 105 *per cent* for Koradi TPS and 115 *per cent* for Nashik TPS against SLC linkages. The reply is not acceptable. While taking the approval of the Board for the contract it was clearly envisaged that the quantity assured by the bidder shall be received regardless of SLC linkages. This should have been mentioned in the contract but was not done.

Preparation of Stores Receipt Notes

3.1.16 As soon as coal is received at TPS, grading is done and Store Receipt Notes (SRNs) are prepared and sent to Coal Procurement Unit, Nagpur for adjustment of advances paid to coal companies. On the basis of SRNs, coal supply bills are finalised and recoveries for losses, moisture, grade *etc.* are effected.

In TPS Koradi, it was observed during audit that during October 1999 -November 2003 the delay^{\$} in preparation of SRNs ranged from two to 22 months in respect of SECL and MCL. Due to delay in finalisation of coal supply bills, the advances paid were not adjusted in time, resulting in blockage of the Board's funds from two to 22 months and consequential loss of interest amounting to Rs.1.87 crore[#].

The Board stated (June 2005) that care would be taken to minimise such delays in future.

Contract for washing of coal

Non recovery despite yield below norm

3.1.17 As per the terms and conditions of the contract, if in a particular month, percentage yield was less than 80 *per cent* then raw coal cost equivalent to percentage yield less than guaranteed yield was recoverable from the washery operators. During March 2004-March 2005 the Board received coal of 2.16 lakh MT (Chandrapur : 1.21 lakh MT and Koradi : 0.95 lakh MT) which was less than guaranteed yield. The Board did not recover Rs.18.40 crore from the washery operators for short supply.

The Board stated (June 2005) that recovery was based on yearly yield instead of monthly yield. The reply is not acceptable. This methodology was in violation of contractual terms and resulted in benefit to the washery operators. The Board had not effected recovery so far (July 2005).

Quality of coal

Advance payments to coal companies

3.1.18 Chandrapur Super TPS was receiving coal from Ghugus colliery of WCL. As per fuel supply agreement (FSA) if the grade of fuel was consistently lower for six months, the sellers would take required steps to regrade the fuel as per actual grade for the purpose of advance payment. The

^{\$}The delay has been worked out after allowing normal period of two months for preparation of SRNs.

[#] Worked out at the rate of 10 *per cent* per annum.

The Board suffered loss of interest of Rs.5.58 crore due to advance payments not linked to grade of coal.

advance payment for coal was made as per 'E' grade whereas TPS was receiving coal of 'F' grade. The advance payment was on the higher side by Rs.223.05 crore during October 2000-March 2005 resulting in loss of interest amounting to Rs.5.58 crore[@].

The Board stated (June 2005) that advance payment was made to WCL as per the FSA and the policy of the Ministry of Coal. The reply is not acceptable because the Board did not initiate action to get the grade revised as provided in the FSA.

Non lodging of claims for lower grade of coal

3.1.19 The declared grades of Wani (WCL) and Junadi (SECL) mines were of 'E' and 'F' respectively. So, advance payment was made to WCL and SECL for raw coal supplied to washery operators as per declared grade.

Audit scrutiny revealed that the coal supplied by WCL from Wani in July, August, November, December 2004 and January 2005 and SECL from Junadi in November 2004 was of 'F' and 'G' grade respectively. This resulted in excess payment to coal companies to the extent of Rs.20.61 crore (WCL: 19.18 crore and SECL : Rs.1.43 crore).

The Board stated (June 2005) that there was no loss on account of grade slippage with regard to coal issued to washery operator for washing. The reply is not acceptable. The Board failed to lodge a claim for refund of the excess payment on account of receipt of lower grade coal.

Sampling for grade/quality

3.1.20 Sampling is undertaken to decide the grade and quality of coal and hence is a critical operation for effecting payment to coal companies.

Selection of agency for sampling

3.1.21 The Board invited (November 2000) tenders for appointment of common third party agency for sampling and analysis of all rail borne supplies from subsidiaries* of Coal India Limited at loading and unloading points on rake to rake basis.

The lowest offer received was Re.0.29 per MT from Calcutta Industrial Supply Company (CISC), but the contract was awarded (June 2001) to L-2[§] at Re.0.40 per MT. The Board thus incurred an extra expenditure of Rs.72.92 lakh.

[@]Worked out at the rate of 10 per cent per annum for three months.

* WCL, SECL and MCL.

[§] S K Mitra.

The Board stated (June 2005) that the L-1 party was not awarded the contract as Karnataka Power Corporation Limited (KPCL) had cancelled the contract relating to sampling awarded by it to CISC.

The reply is not acceptable. The previous contract of the Board was to expire in March 2001. The tenders should have been immediately opened (November 2000). This was not done. Instead, the previous contractor was given extension. Although the price bids were opened in June 2001 there was further delay in awarding the contract to L-1 party and no decision was taken till KPCL cancelled the contract to CISC (26 July 2001). As per the documents submitted by the L-1 party its performance was certified as satisfactory by three different organisations.

Sampling and analysis of coal by private party

3.1.22 Sampling is done at the loading and unloading ends by a third party entrusted with both the tasks. Sampling is to be conducted as per provisions of Indian Standard 423 (part-1) 1964.

It was observed during audit that sampling by the third party agency (TPA) suffered from the following deficiencies:

Sampling was not done as per the prescribed procedure.

Prescribed procedure	Procedure followed	Remarks
Total wagons are to be divided in sub-lots and 25 per cent wagons from sub-lots are to be selected for testing	Samples from 25 per cent wagons from total wagons are selected for testing without dividing in sub-lots	Selected samples were not representative.
Samples are to be collected at every selected point by taking the material from top till it reaches to bottom.	Samples are collected by digging a hole up to 0.5 meter only.	The upper layer of the coal in wagons contains less moisture than the moisture in bottom layer due to evaporation during transportation <i>etc.</i> The test reports would hence be unrepresentative. The TPA is benefited due to less labour efforts put in. The added draw back is that the Board's payments to coal companies are incorrectly regulated with regard to the moisture content.

The Board incurred expenditure of Rs.2.67 crore in drawing of samples which were not drawn correctly.

The Board admitted (June 2005) that the prescribed procedure was not being followed and stated that while awarding the new contract the party would be asked to follow the ISI[#] procedure scrupulously.

Wide variations in sampling results at loading and unloading point

3.1.23 The cases in which variations are more than five per cent are referred to a referee for testing. It was noticed in audit that, though the same private

[#] Indian Standards Institute (ISI) has now been renamed as Bureau of Indian Standards (BIS).

party did the sampling at both ends the variations in useful heat value (UHV) between loading and unloading point ranged between 200 to 2,000 UHV during February 2002-January 2004. This was due to non adherence to the prescribed sampling methodology.

Regulation of payment in case of disputed sampling reports

3.1.24 In case the number of samples referred to the referee in any month exceed 25 per cent in respect of any coal company, the third party agency was entitled for only 30 per cent of testing charges. It was observed that at TPS Koradi, Chandrapur and Bhusawal though the samples sent to referee in some months exceeded 25 per cent, the payments were made to the extent of 40 per cent during April 1999-March 2005 instead of 30 per cent resulting in overpayment to the extent of ten per cent. The loss could not be worked out in audit in the absence of details.

Stones and shales

3.1.25 Power station receives stones and shales along with the coal. As per the prevailing agreement, coal should be free from stones and shales. Compensation for stones and shales received along with coal is recoverable from the coal companies. The value[§] of stones and shales recoverable during 2000-05 is given below:

(Amount: Rupees in lakh)

Name of the coal companies	2000-01	2001-02	2002-03	2003-04	2004-05	Total
WCL	147.79	51.25	780.19	523.91	277.27	1,780.41
SECL	53.74	65.92	80.55	128.45	42.86	371.52
MCL	21.22	53.49	54.86	59.40	51.44	240.41
Total	222.75	170.66	915.60	711.76	371.57	2,392.34

The Board failed to recover Rs.23.92 crore towards stones and shales.

The Board did not recover Rs.23.92 crore for stones and shales from the coal companies.

The Board stated (June 2005) that there was no fuel supply agreement with SECL and MCL. The Board should have ensured that agreement was entered into with respect to stones and shales as in the case of WCL.

Non-claiming of sales tax paid on stones and shales

3.1.26 The payment to coal companies for coal includes cost of coal plus sales tax. During 2000-05, the Board received stones and shales alongwith the coal supplied by the coal companies (WCL, SECL and MCL). It was observed in

[§] Sales Tax excluded.

audit that the coal payments to coal companies included Rs.95.70 lakh paid for sales tax on stones and shales during 2000-05, which was not recovered from the coal companies.

The Board stated (June 2005) that there was no provision to recover the sales tax from the coal companies. The reply is not tenable. The agreement provided that the amount paid towards receipt of stones and shales was refundable to the Board. The Board should have insisted for explicit mention in the agreement that sales tax along with base price was refundable.

Non recovery towards crushing of coal

3.1.27 According to the FSA, coal companies are required to supply crushed/processed coal up to 250 mm size. If the power stations receive coal above 250 mm size, crushing/processing charges at the rate of Rs.20 per MT are recoverable from the coal companies. During 2000-05, the Board received 2.73 lakh MT lumpy coal (beyond 250 mm size) in Koradi and Nashik TPSs. The Board, however, had not recovered crushing charges of Rs.54.62 lakh from coal companies so far (July 2005).

Moisture content in excess of norm

The Board made excess payment of Rs.23.93 crore towards moisture exceeding norm.

3.1.28 The agreement with WCL provided for recovery for moisture in excess of the norm of 12.5 *per cent*. Coal received by the Board during June 2002 -July 2003 had excessive moisture with respect to the norm. Audit scrutiny revealed that the Board did not recover Rs.22.92 crore on this account from WCL. Similarly, moisture in the coal received (during June 2000-August 2003) from SECL and MCL was in excess of norm and the excess payment towards coal worked out to Rs.1.01 crore.

The Board stated (June 2005) that there was no fuel supply agreement for the intervening period from June 2002 to July 2003 with WCL and there were no agreements with SECL and MCL. There is a need for entering into agreements to protect the Board's interest.

Imported coal

3.1.29 During 2003-05, the Board procured 9.06 lakh MT of imported coal valuing Rs.380.67 crore through MMTC and Adani.

Payment of sales tax

Payment of Rs.13.85 crore towards sales tax on imported coal was irregular.

3.1.30 The Board paid Rs.13.85 crore sales tax on the coal imported during 2003-05. According to the provisions of Section 5(1), 5(2) and 5(3) of the Central Sales Tax 1956, a sale can be affected in case of import on the high seas and the sale so effected is exempted from central sales tax. The Board should have verified with the Sales Tax Department whether the tax was

actually remitted to the Government treasury and that the party had not subsequently claimed refund.

The Board stated (June 2005) that imported coal was purchased on FOR destination basis as the sale was concluded in India and sales tax was payable on these transactions. The reply is not acceptable as the Board could have availed the benefit by concluding the sale on the high seas as was done by other SEBs.

Excess payment due to short supply

3.1.31 The Board placed (September 2003) purchase orders for supply of 1,03,595 MT on Adani and 75,000 MT coal on MMTC. The delivery was to be completed by November 2003.

Procurement of the short supplied quantity at higher rate from the same parties resulted in excess payment of Rs.3.05 crore.

As per the terms of the contract, if the supplier failed to deliver the goods in the stipulated period, the Board could terminate the contract and procure the undelivered quantity at the risk and cost of the defaulting supplier. The risk purchase clause in the contract should have been supported by adequate bank guarantee (BG) so that in the event of default in supply the Board would get immediate relief to the extent of BG obtained. The Board, however, had not obtained such BG.

Quantity short supplied by the contractors[#] was Rs.26,654 MT. The Board procured the quantity of coal short supplied at a higher rate from the same parties, which resulted in excess payment of Rs.3.05 crore.

The Board stated (June 2005) that the contractual quantity in respect of Adani Exports Limited was 2.25 lakh MT and the shortfall of 10,019 MT was within the tolerance limit of five *per cent* provided in the contract. The reply is not acceptable as there were two separate orders of 1,12,500 MT and 1,03,595 MT placed in April 2003 and September 2003. The audit observation relates to shortfall in supply of order placed in September 2003. Clubbing of two orders for the purpose of five *per cent* tolerance limit was not correct. As regards the supply by MMTC, the recorded reason for short closure was a request received from MMTC. This request for short closure should not have been agreed to as MMTC was not the actual supplier of coal but an intermediary and short closure only facilitated in benefiting a third party.

Non recovery of liquidated damages

The Board did not recover liquidated damages of Rs.2.05 crore.

3.1.32 As per the terms of the contract, liquidated damages (LD) of a maximum of 10 *per cent* of contract value were to be recovered for delay in supply. The Board however, did not recover LD of Rs.2.05 crore (Adani : Rs.1.16 crore and MMTC: Rs.89.31 lakh) from the parties (March 2005) for delayed supply of coal during May-August 2003.

The Board stated (June 2005) that there was delay on its part in releasing the payments and hence LD was not levied. The reply is not acceptable. There is

[#] Adani 10,299 MT and MMTC 16,355 MT.

a need to delink levy of LD from delay in payment by the Board by providing for additional payment of interest for the delayed period.

Procurement of oil

3.1.33 The Board procures furnace oil (FO), light diesel oil (LDO) and low sulphur heavy stock (LSHS) from Indian Oil Corporation Limited (IOC), Hindustan Petroleum Corporation Limited (HPCL) and Bharat Petroleum Corporation Limited (BPCL).

As per the Board's acceptance (May 2001) to the IOCs offer for renewal/extension of current contract the rates of Rs.12,190 and Rs.7,420 per KL in respect of LDO and FO respectively were on ex-Mumbai basis. Hence the expenditure to bring the material to Mumbai was to be borne by IOC. Audit scrutiny (December 2004) revealed that the Board paid Rs.3.19 crore towards entry tax paid by IOC to Mumbai Municipal Corporation, which was to be borne by the IOC.

The Board stated (June 2005) that the assumption made that oil companies were to give fuel from Mumbai only is not factual. The reply is not acceptable. Regardless of the source from which supply was made the price ex-Mumbai should have been charged as per the contract.

Absence of penalty clause for short supply of gas

3.1.34 The Board entered into (10 February 1998) an agreement with Gas Authority of India Limited (GAIL) for supply of 3.5 million cubic meter natural gas per day (MMCMD) to Uran Gas Turbine Power Station. GAIL supplied only up to 2.5 MMCMD of gas to the power station as against the demand of 3.5 MMCMD during 2000-05. The short supply had resulted in reduction in generation of 6,407.411 MUs as detailed in **Annexure-9**.

The Board stated (June 2005) that the supply was less than the contracted quantity. The Board did not safeguard its interest by insisting on a firm supply clause and levy of penalty in case of short supply of gas.

Transportation of coal

High transit losses

3.1.35 Transit loss of coal represents difference between the billed and actual quantity of coal received at power stations. These losses are borne by the Board. Audit analysis revealed that the transit losses at TPS Nashik varied from 0.25 to 2.56 *per cent* and the transit losses at TPS Bhusawal were 0.98 to 2.68 *per cent*. During 2000-05, transit loss suffered by Bhusawal TPS was Rs.10.51 crore more as compared to Nashik TPS.

The Board stated (June 2005) that the higher losses could be due to several reasons like pilferage, theft, surface moisture of coal, accuracy of weighbridge and distance of mines from power station. The reply is not acceptable because specific reasons for the higher transit losses need to be investigated regularly for taking timely corrective measures.

Transit losses due to belated action

There was delay in investigation of increase in transit losses.

3.1.36 The transit losses in TPS, Khaperkheda increased from 1.42 *per cent* in September 2001 to 6.69 *per cent* in October 2001. Although there was abnormal increase in transit losses the Board did not investigate immediately to find out if weighbridges at loading or unloading point were in order. This would have revealed whether the difference was due to faulty weighbridge at unloading or loading point. Since the payments in case of faulty weighbridge at loading point are regulated on the basis of weighment at unloading point, printouts for weighment are required to be submitted within one month. It was noticed in audit that the Board took action at a belated stage. The inspection was carried out on 31 December 2002 and it was found that the weighbridge at loading point was faulty. The Board could not recover shortage of coal amounting to Rs.5.93 crore during October 2001-December 2002 due to delay in inspection.

The Board stated (June 2005) that it could not check immediately the Railway Receipts (RRs) with electronic printout (EPO) as it took as much as 45 days for RRs to reach the concerned staff at power station. The reply is not acceptable. The Board should have initiated action on the basis of RRs received with consignments for ascertaining the shortfall without waiting for the copy of RR sent through post.

Loss due to delay in submission of weighment details

3.1.37 The weighbridge of WCL at Patansaongi end ceased to function from August 2003. As per the agreement, the TPS was to submit to WCL the printouts of weighment within 30 days from the date of RR. It was observed during audit that the Khaperkheda TPS failed to submit the printouts of weighment within the specified time. As a result, WCL considered RR weight (carrying capacity + two MT) for payment of coal instead of actual receipt at TPS end. Thus, due to delayed submission of printouts the Board sustained a loss of Rs.80.83 lakh.

The Board stated (June 2005) that the delay was due to initiating action only after receipt of copy of RRs sent by post. The reply is not tenable as action should have been initiated on the basis of the copies of RR received with consignments.

Delay in investigation of abnormal transit losses

Delay in investigation of huge transit losses resulted in overpayment of Rs.16.05 crore.

3.1.38 The Chandrapur TPS was receiving coal from Padmapur open cast mine, which is five km away through the Board's Unit Train System (UTS). During 1999-2002 the transit losses ranged from 4.30 *per cent* to 8.21 *per cent*. The matter should have been immediately investigated. Exact tare weight* of wagons is an important factor for measurement of coal. Audit scrutiny (November 2004) revealed that the tare weight printed on UTS wagons was less than the actual tare weight of UTS wagon by two MT per wagon. So, net weight of coal was erroneously shown higher by two MT per wagon during 1999-2002 which resulted in overpayment of Rs.16.05 crore due to delay in investigating the matter.

The Board stated (June 2005) that the matter was investigated immediately. The reply is not correct. Although, discrepancies were noticed from 1999-2000, investigation was done belatedly in May 2002.

Missing and unconnected wagons

3.1.39 Rakes, which are originally assigned to the TPSs but diverted elsewhere, are referred to as missing wagons. Similarly, the TPSs also receive occasionally rakes meant for other destinations referred to as unconnected wagons. The Board had not received Rs.100.36 crore (Chandrapur : Rs.12.95 crore; Khaperkheda : Rs.21.86 crore and Nashik : Rs.65.55 crore) from railways towards coal not received due to missing wagons. This included claims of Rs.97.69 crore (Chandrapur : Rs.11.58 crore; Khaperkheda : Rs.20.98 crore and Nashik : Rs.65.13 crore) for more than three years. Similarly, the value of coal in unconnected wagons received at TPSs as of March 2005 was Rs.73.69 crore, the reconciliation of which was still pending (September 2005).

The Board stated (June 2005) that matter had been taken up with the Railways. Though the matter is under pursuance by the Board, there is a need to have an effective mechanism for timely reconciliation of unconnected wagons and settlement of claims.

Consumption of oil

3.1.40 The Central Electricity Authority (CEA) has prescribed norms for consumption of oil based on the installed capacity and the plant load factor of the unit. Review of six TPSs revealed that the recorded consumption of oil was higher than the norms fixed by CEA, which resulted in extra expenditure of Rs.276.25 crore during 2000-05. Investigation should have been done to ascertain whether proper measurements were being taken and quality checked when oil was received from oil companies.

* Tare weight = Weight of empty wagon.

In Chandrapur TPS, 727.40 KL and 392.47 KL of LDO and FO respectively were found short during 2003-04. Shortages valued at Rs.1.77 crore (LDO : Rs.1.27 crore and FO : Rs.50.05 lakh) were detected during the physical check of inventory conducted in 2003-04. The Board had written off the losses without investigation of shortages.

The Board stated (June 2005) that the oil consumption depends upon a number of factors such as boiler outages, coal mill condition *etc.* The reply is not acceptable as the reasons given are very general in nature and the difference in oil consumption cannot be solely attributed to the operational problems. There is a need to ensure proper verification of oil stock.

Consumption of gas

3.1.41 During 2000-05, 0.19 lakh MUs were generated at GTPS, Uran. Based on actual average of CV of gas the consumption should have been 4,196.66 million standard cubic meter (MSCM) during 2000-05. The average consumption of gas as intimated by the Board was 4,564.72 MSCM. Thus, there was excess consumption of gas by 368.06 MSCM (8.77 *per cent*) resulting in extra expenditure of Rs.101.16 crore. The Board did not investigate the reasons to take corrective action.

The Board stated (June 2005) that the excess consumption was due to the age of the machine and receipt of gas less than required to operate the units on rated load. The reply is not tenable. The fact remains that the actual achievement has been less than the norm fixed by MERC taking into account the site conditions. Compared to the MERC norm, the extra expenditure works out to Rs.25.15 crore.

Disposal of coal mill rejects[@]

Loss due to sale of coal mill rejects (CMR) at less than contracted rate

3.1.42 TPSs Bhusawal and Khaperkheda awarded (November 2000 and April 2002) contract to Agrawal Trading and D. N. Agrawal for sale of coal mill rejects of 39,400 MT and 60,000 MT respectively. The risk sale clause of the contracts for disposal of coal mill rejects provided for sale by the Board of any unlifted quantity of coal mill rejects during the permitted time period, at the purchaser's risk and cost. The risk sale clause was however, not covered by adequate BG so that in the event of default, the Board could get immediate relief.

[@]Such materials which are thrown out by the coal mills during the process of pulverisation of coal are called "coal mill rejects".

There was loss of Rs.1.41 crore in the disposal of coal mill rejects.

The contractors failed to lift the CMR during the permitted time but the Board did not invoke the risk sale clause and sold the short lifted CMR subsequently at reduced rate. This resulted in loss of Rs.1.41 crore*.

It was also observed in audit that the subsequent sale of CMR Khaperkheda TPS and Bhusawal TPS was to the same contractor at a reduced rate. Khaperkheda TPS also refunded the security deposit of Rs.11.34 lakh to the contractor despite his failure to lift the quantity.

The Board stated (June 2005) that risk sale clause was not in the contract. This reply is factually incorrect as the contracts had a risk sale clause.

Shortfall in penalty relating to non adherence to the time schedule for lifting of CMR

3.1.43 Penalty clause of the sale order stipulated that the agency had to lift the CMR as per monthly schedule failing which the amount towards balance quantity of coal reject for that month would be forfeited. Audit scrutiny revealed that the contractor[#] did not lift the CMR as per the monthly schedule. The penalty recoverable on this account amounted to Rs.49.41 lakh (Khaperkheda : Rs.13.86 lakh and Koradi : Rs.35.55 lakh) which was not recovered (March 2005).

The Board stated (June 2005) that a penalty of Rs.8.26 lakh was recovered in respect of the contract at Khaperkheda. The reply is not acceptable as the penalty worked out by the Board was lower due to considering of shortfall on yearly basis instead of monthly basis as per the agreement. As regards the contract relating to Koradi the Board stated that sufficient quantity was not available. This reply is factually incorrect as the records revealed that there was sufficient quantity of CMR at Koradi TPS.

Short recovery of fuel cost

3.1.44 The cost of coal consumption is recovered from consumers through fuel and other cost adjustment (FOCA). Hence, furnishing of correct data to MERC is of utmost importance.

Due to furnishing of incorrect data to MERC, there was loss of revenue of Rs.74.42 crore.

- Based on the heat rate intimated by TPS Chandrapur, Maharashtra Electricity Regularity Commission (MERC) approved (July 2001) the heat rate[§] norm to be charged to FOCA. Audit scrutiny revealed that the heat rate intimated (November 2000) initially by CSTPS to MERC was 2,553 kcal/kwh whereas the correct heat rate was 2,613 kcal/kwh. Due to intimation of incorrect heat rate to MERC, the Board sustained a loss of revenue of Rs.61.97 crore during 2000-05.

* Agrawal Trading Rs.63.68 lakh and D N Agrawal Rs.77.79 lakh.

[#] Swastik coal agency.

[§] Calories contained in coal required for generation of one unit.

- Against the actual transit losses of 1,00,702 MT coal, the Chandrapur Super TPS in 2000-01 booked 35,396 MT coal to FOCA. This resulted in loss of revenue of Rs.5.68 crore. The actual transit losses of 54,973.347 MT coal during 2004-05 were not incorporated for adjustment in FOCA which resulted in short recovery by Rs.6.77 crore.

The Board stated (June 2005) that an affidavit praying MERC for revising heat rate allotted to Chandrapur Super TPS had been submitted to MERC.

Internal control

3.1.45 Internal control mechanisms needs to be strengthened in the following major areas:

- Transit losses need to be monitored closely so that immediate remedial action can be taken in case of abnormal transit losses. Effect of lack of monitoring has been brought out in paragraphs 3.1.35, 3.1.36, 3.1.37 and 3.1.38.
- As fuel cost comprises 95 *per cent* of the cost of generation, there is a need to closely monitor whether the power generated is commensurate with the quantity of fuel consumed. The deviations with reference to norms for consumption have been detailed paragraphs 3.1.40 and 3.1.41.
- As payments are being made in advance towards supply of coal, the work relating to preparation of claims for refund from coal companies needs to be streamlined to minimize the delays in submission of claims and pursuance for obtaining refund. The slackness in obtaining refunds from coal companies has been brought out in paragraphs 3.1.16, 3.1.25 and 3.1.27.

Conclusion

The Board appointed liaisoning agents to liaison with coalfields and railways. The payments are linked to quantity of coal received with reference to that allocated by the Standing Linkage Committee, minimising idle freight due to underloading of wagons and monitoring quality of coal. The actual supply of coal depends on the production at the coalfields and availability of wagons. The liaisoning agent does not have any official role in any of the three tasks specified in the liaisoning contract.

The sampling agents deployed for testing the quality of coal did not follow the prescribed sampling methodology.

The recorded consumption of oil and gas were on the higher side. A large number of irregularities with substantial financial implications like

overpayments for linkage materialisation, stones and shales, lower quality of coal received and transportation losses were also noticed during audit scrutiny.

Recommendations:

- **The Board should review the need for continued appointment of liaisoning agents.**
- **The Board should ensure that the sampling for quality of coal is done by the outside agency strictly as per the prescribed procedure.**
- **As the recorded consumption of oil and gas is in excess of norm the same needs to be investigated for remedial action.**

The matter was reported to the Government (April 2005); the reply had not been received (December 2005).

3.2 Implementation of information technology in the low tension billing system

Highlights

The low tension billing system, a mission critical in nature installed by the Board lacked some of the important controls like administrative, input and processing controls.

(Paragraph 3.2.1)

There was no system for changes to the program on account of tariff revision and formal acceptance of changes etc.

(Paragraph 3.2.7)

Effective control over meter reading, the vital input for computation of energy bills, was lacking as the system did not monitor compliance to the Board's rules for test check of meter reading.

(Paragraph 3.2.9)

There were flaws in programming logic for calculation of bills.

(Paragraph 3.2.12)

The billing system was not effective in achieving the objectives of timely issue of bills, collection of shortfall in security deposits and recovery of dues from consumers.

(Paragraphs 3.2.15 to 3.2.18)

Introduction

3.2.1 The Board was incorporated in 1960 under Section 5(1) of the Electricity (Supply) Act, 1948^s with the main objective of generating, transmitting and distributing electricity in the state of Maharashtra. The Board's consumers are broadly divided into two categories viz. high tension (HT) consumers and low tension (LT) consumers. There are 1.53 crore LT consumers (March 2004). LT consumers contributed Rs.5,738.98 crore (43 per cent) to the Board's revenue during 2003-04. The computerised LT

^s Since replaced by the Electricity Act, 2003.

<http://www.cag.gov.in>

Low tension billing system is mission critical in nature.

Billing system was implemented in 1985 in COBOL* on UNIX** platform through A.F. Fergusson and Company. The total investment in information technology system was Rs.12.94 crore as on 31 March 2004. Considering the large number of consumers, significant contribution to the Board's revenue, wide dispersal of Information Technology (IT) centres and dependency of the Board on the system for raising bills and monitoring collection of revenue, the LT billing system is mission critical in nature.

Objectives of low tension billing system

3.2.2 The main objectives of the LT billing system as set out by the Board were as under:

- to reduce the time lag between meter reading and issue of bills;
- to provide accurate and up to date billing and accounting information;
- to provide means to effectively control billing operations and to initiate prompt follow up action in case of non payment of energy bills; and
- to review security deposit on a regular basis and to collect shortfall in deposit whenever required.

Organisational set up

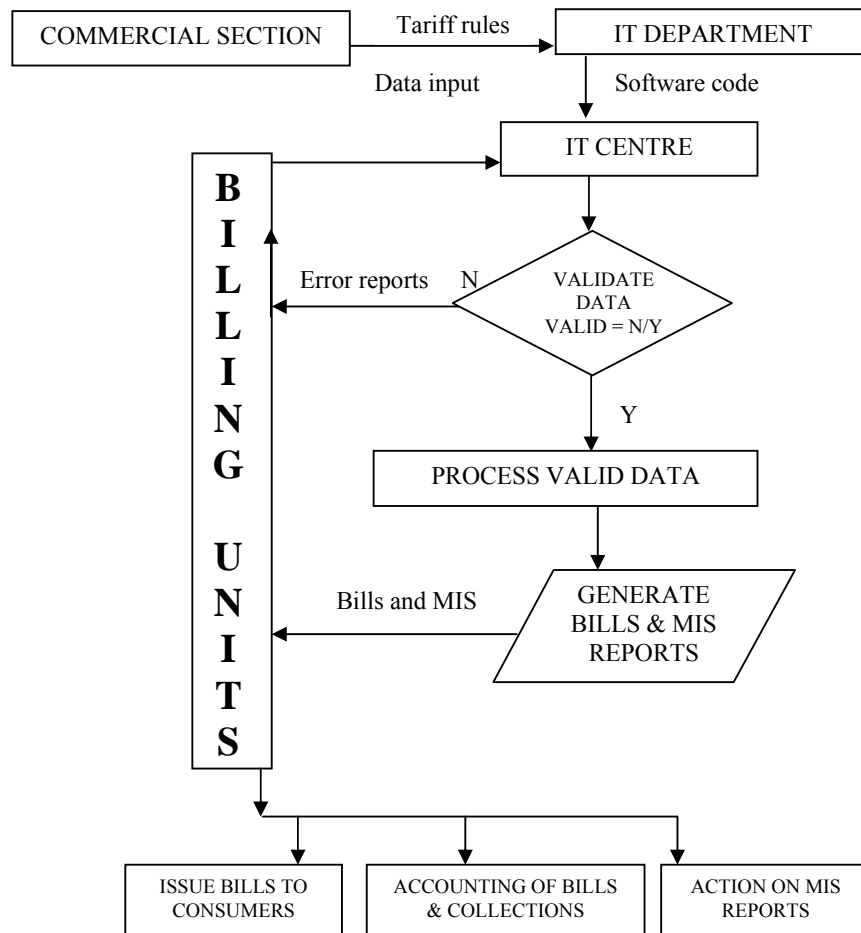
3.2.3 The overall management of the Board rests with the Board of Members constituted by the State Government. The IT department functioning under the Accounts Member is responsible for the IT functions of the Board. A Director heads the department and is assisted by one Additional Director and three Joint Directors at Head Office and by Joint Director/System Analyst at 25[●] IT centres. The IT department is responsible for monitoring the implementation and maintenance of LT billing system while the IT centres are responsible for processing the data and generation of bills/reports.

* COBOL – Common business oriented language.

**UNIX – Operating system developed by UNIX.

●Pune, Nashik, Nagpur, Bhandup, Pen, Vashi, Vasai, Kalyan, Kolhapur, Aurangabad, Akola, Jalgaon, Ratnagiri, Chandrapur, Satara, Nanded, Dhule, Sangli, Amravati, Buldhana Yavatmal, Ahmednagar, Solapur, Bhandara and Latur.

A chart showing functional set up is given below:



The Commercial Section headed by a Technical Director (Commercial) is responsible for communicating to the IT department the changes required in the LT billing system consequent upon changes in tariff rules. The IT department is responsible for carrying out modifications to the system and communicating the same to the IT centres. The billing units (sub divisions) are responsible for submitting data relating to billing activities such as release of new connection, meter reading, replacement of faulty meters, collection of revenue *etc.* to the IT centre. The IT centres are responsible for processing the data, generation of bills and to furnish accounting and Management Information System (MIS) reports to the billing units and management.

Scope and methodology of audit

3.2.4 During November 2004-February 2005, Audit reviewed the IT system using Control Objectives for Information and Related Technology (COBIT) rules and evaluated the effectiveness of the system in achieving the

organisational objectives of reduction in time lag for issue of bills, provision of accurate billing and accounting information, proper follow up action for recovery of dues and collection of shortfall in security deposit. This was done through evaluation of management controls and analysis of data, using 'IDEA'[§], in respect of 62 *per cent* of LT consumers for the period June 2001 -March 2005[#] in 13* out of 25 IT centres.

Salient features of LT billing system

3.2.5 The LT billing system covers all functions starting with sanction of new connection to a consumer, periodical meter reading, preparation and issue of bills to consumers, collection of amounts billed, collection of shortfall in security deposit and meter cost *etc.* The salient features of LT billing system are as under:

- Basic inputs comprise master, static and transaction data. Master data relate to data pertaining to each consumer *viz.* consumer number, billing unit, processing cycle, details of address, applicable tariff code, duty code *etc.* Static data refers to data in respect of the connection such as date of connection, connected load *etc.* as well as details regarding the meter installed for measuring consumption. Transaction data relate to the periodical data pertaining to the meter reading, status of meter, payments by consumers *etc.* Master, static and transaction data are linked to each other by consumer number.
- Data input is done in batch mode. Separate batch cards are prescribed for different types of data and for their modification. Batch cards are prepared by the sub divisions giving batch totals for prescribed key fields and data entry is got done through outside agencies.
- Data furnished by the billing unit is validated at IT centres and errors, if any, are got corrected through the sub divisions. Validated data are then to be processed at IT centres in the LT billing system through sequential program operations.
- The output of the LT billing system comprises bills to be issued to the consumers, data regarding billing and collection to be passed on to accounts section for accounting and MIS reports for effective control over billing operations such as replacement of faulty meters, verifications of consumption, disconnection of supply in case of non payment of dues and follow up of recovery *etc.*

[§]Interactive Data Extraction and Analysis – a software developed by CASEWARE IDEA INC as a computer assisted auditing tool.

[#]Data was not uniformly available in all cases up to March 2005, therefore latest available data has been used.

*Pune, Nashik, Nagpur, Pen, Vashi, Vasai, Jalgaon, Bhandup, Aurangabad, Kalyan, Akola, Kolhapur and Ratnagiri.

Data integrity

3.2.6 Data integrity refers to the completeness, accuracy and relevance of the data in the system. Existence of adequate controls is necessary to ensure data integrity. A control is a system that prevents, detects and/or corrects unlawful events. An unlawful event can occur if unauthorised, inaccurate, incomplete, redundant, ineffective or inefficient input enters the system. An unlawful event can also arise if the system transforms the input in an unauthorised, inaccurate, incomplete, redundant, ineffective or inefficient manner. Audit tested the LT billing system for existence and adequacy of management controls, input controls and processing controls. Deficiencies noticed are discussed in the following paragraphs.

Management controls

Lacunae in change management control

3.2.7 Change management control refers to controls to be exercised in carrying out changes to the system. It *inter-alia*, covers authorisation for changes to the system to incorporate tariff changes and for effecting improvement in the system, monitoring progress in making such changes to the system, use of systematic approach to program design, documentation standards to ensure that program can be easily read and understood and testing of program *etc.*

There was no documented delineation of duties and responsibilities for modifications to the system.

Changes in tariff have a significant bearing on revenue. A proper documentation of changes made to the system is necessary so that the same could be readily understood and to facilitate further modification as and when necessary. Audit scrutiny revealed that there was no formal documentation procedure describing the manner in which changes made to the program are to be documented such as record of program code, use of charts to show the structure of program in terms of its major components and the relationships among these components, flow of logic in calculation of various charges.

The Board stated (August 2005) that minute details of changes would be maintained.

In view of the mission critical nature of the system it is essential that modifications to the system to incorporate changes in tariff are tested to ensure that the bills generated are in accordance with the tariff rules. Further the changes should be formally accepted by the commercial section before implementation. Testing of modifications to programs was done using test data. It was, however, observed during audit that there was no documented testing methodology indicating the basis for selecting test data. Sample bills for major changes were generated and sent to the commercial section, but there was no system of obtaining formal acceptance to the changes made to the system from the Commercial section.

Audit trail for control over modifications to the system was lacking.

The Board stated (August 2005) that a system is being put in place to obtain formal acceptance from commercial section. Absence of effective control measures for changes to the system and testing of modification to programs necessitated multiple revisions to the program. As seen from **Annexure-10** amendments to rectify the deficiencies in implementation of tariff revision of January 2002 continued up to October 2003. Likewise there was delay in correct implementation of the tariff order of December 2003. Such belated revisions giving effect from prospective dates was detrimental to the Board's interest.

The Board stated (August 2005) that though in some cases amendments were issued prospectively instructions were issued to re-process wherever possible. It was further stated that where re-processing involved more steps to be carried out, programs were issued to generate adjustments without the need to carry out entire re-processing. During local inspection by audit the departmental staff failed to produce the documents in support of reprocessing being done systematically wherever amendments were issued with prospective date.

Modifications to the program were sent as amendments to IT centres. Though amendments were sequentially numbered, it was observed during audit that there were several version changes to one amendment, which were sent under original amendment numbers. In the absence of system of feedback from IT centres there was no effective control to ensure that the latest version of a particular amendment was sent to IT centres and actually incorporated by each IT centre.

The Board stated (August 2005) that for effective version control latest software tools in the market would be used. The reply is not relevant as the audit observation is not about latest software tools not being used but a system in place to ensure that latest version of amendments was incorporated.

Input controls

3.2.8 Input to the LT billing system comprises data and instructions for processing. Data entry is done manually via keyboard through private agencies. Effective control over both these types of inputs is critical as they involve considerable human intervention and are, therefore, error prone and susceptible to fraud.

Absence of effective control over energy consumption data

3.2.9 A meter provided by the Board at the consumer's premises records energy consumed by the consumer. Periodical meter reading is done by a meter reader and details thereof are entered in the LT billing system. As the meter reading is vital for accurate computation of the energy bill, adequate control should be exercised to ensure its accuracy. This could be done in two ways *viz.* periodical test check of meter reading by an authority other than the meter reader or identification of abnormally lower or higher readings *vis-a-vis* pre defined parameters while processing the bills.

There was no monitoring mechanism to ensure test check of meter readings as per quantum prescribed.

The Board's rules provide for test check of meter readings (5 per cent of first 1,000 consumers and two per cent of remaining consumer) by sectional heads and one per cent of consumers by sub divisional officer. The sub divisional officer is responsible for comparing the meter readings as provided by meter reader with the reading obtained during test check and to take appropriate action in case of any variation. The LT billing system does not, however, provide for monitoring whether the sub divisional officer has carried out the prescribed quantum of checking.

The Board stated (August 2005) that test readings taken by authorities higher than the meter reader are considered for billing purpose. The reply does not answer the specific issue of monitoring the system of prescribed quantum of checking by higher authorities in respect of meter reading.

In the absence of effective control over data relating to energy consumption data integrity is not ensured.

Processing controls

3.2.10 Processing of bills in the LT billing system at IT centres involves operations such as validation of data received from the billing units, updation of master records, performing calculations and generation of bills. The following deficiencies were observed during audit:

Absence of monitoring mechanism for rectification of errors

3.2.11 Error reports covering about 30 types of errors such as consumer number/meter details not available in master, data relating to change of meter not updated *etc.* are generated through the LT billing system and furnished to billing units for rectification before generation of bills. It was, however, observed that there was no mechanism to monitor the rectification. An illustrative list of cases of errors not rectified in respect of one billing unit is given below:

Error message	Remarks
Details of change in meter not updated.	Till the details of changed meter are fed, billing is done on average basis instead of recorded consumption.
Mismatch between meter identification code and tariff code.	The first two digits of meter number indicate the category of consumer. This should tally with the tariff code for which a separate field is provided. In case of mismatch the same needs to be investigated since billing will be erroneous if the tariff code is wrong.
Permanently disconnected consumers having meter	This indicates that the report of meter disconnection in respect of permanently disconnected consumer has not been fed into the system. There is a need to investigate and take action to remove the meter.

Mere reporting of errors without a suitable mechanism for ensuring rectification renders the validation checks ineffective.

The Board stated (August 2005) that if the errors reported in billing are not attended, the errors are reported again till rectified. The reply is not acceptable. There is a need to have a proper monitoring mechanism so that the errors are rectified immediately when brought to notice.

Flaws in programming logic

There were flaws in programming logic leading to incorrect computation of bill.

3.2.12 Accuracy in programming logic is essential to ensure that the bills generated are in accordance with the terms and conditions of the tariff. Audit scrutiny revealed the following flaws in programming logic leading to incorrect computation of bills:

Defect in programming logic for computation of energy charges

There was short recovery of energy charges due to non adjustment of slabs for bill period less than 30 days.

3.2.13 As per the Board's tariff, energy charges are recoverable at rates per unit prescribed for each slab of consumption. The slabs are prescribed for a period of one month consisting of 30 days.

While there were *pro-rata* changes in the slabs for bill periods exceeding 30 days there was no downward adjustment when the bill period was less than 30 days. The short recovery noticed in audit was Rs.30.93 crore from 28.55 lakh consumers.

The Board stated (August 2005) that the matter had been referred to the commercial section for taking necessary action on the audit observation.

Flaw in programming logic for billing for the month when faulty meter is replaced

3.2.14 A meter is changed when it is faulty. The principle as incorporated in the system for calculation of energy chargeable for the month in which a meter is replaced was found to have a flaw. Energy is billed only for the consumption from the date of replacement of the meter to the last date of the billing period. The period from the start of the billing period to the date of replacement also ought to be charged on the basis of average consumption by the program but this is not being done. An illustrative case is given below:

Particulars	Bill details
IT centre and billing unit	Vashi IT centre
Consumer number	000228090891
Meter replacement date	13 April 2005
Bill period	02 March 2005 to 03 May 2005
Consumption after installation of new meter (units)	143 (13 April 2005 to 3 May 2005)
Units billed	143
Period for which not billed	02 March 2005 to 13 April 2005 (42 days)
Units short billed	160 (based on average consumption of 228 units for two months)

The Board stated (August 2005) that the matter had been referred to the Commercial section for taking necessary action on the audit observation.

Effectiveness of LT billing system

3.2.15 Effectiveness of LT billing system depends on its ability to enable the Board to achieve the objectives for which the system was introduced. Audit examined the LT billing system to determine the extent to which the system enabled the Board in achieving its main objectives to reduce time lag in issue of bills, to provide accurate billing and accounting information, to collect shortfall in security deposit and to initiate follow up action for recovery of dues. The shortfalls in achievement of objectives are discussed below:

Delay in processing of bills

3.2.16 The norm fixed for generation of bills is 12 days from the date of meter reading. Early issue of bills to the consumers would result in early realisation of revenue. It was observed in audit that there were delays in processing of bills beyond the prescribed period of 12 days in respect of 8,835 processing cycles (bill amount: Rs.15,630.09 crore) and in some cases the delays were as high as 91 days. Thus, one of the main objectives of the LT billing system *i.e.* timely issue of bills has not been achieved. There was no effective mechanism to record the actual time taken for each stage of operation, identify and analyse delays in each operation and to take appropriate remedial measures.

There was no effective mechanism to monitor delays in processing of bills for remedial action.

As per the Board's conditions of supply, time allowed for payment by consumers is 20 and 30 days from the issue of monthly/bi-monthly and quarterly bills respectively. It was observed in audit that the billing units arbitrarily decided the due date for payment of bills without ensuring that the consumers were given the full benefit of prescribed period for payment; the period allowed for payment was only one to 18 days in the bills issued for 15,584 processing cycles.

Consumers were denied the full benefit of prescribed period for payment.

The Board stated (August 2005) that the billing units decide the due dates. The reply is not tenable. There is a need to ensure that the consumers get the benefit of full period prescribed for payment.

There was no monitoring mechanism to identify delays in issuance of first bills and to fix responsibility.

The first bill of a newly connected consumer is required to be issued in the next billing cycle after the release of a new connection. Audit scrutiny revealed that out of 4.69 lakh first bills issued, 2.51 lakh bills (54 *per cent*) were issued after delays of 63 to 202 days, which resulted in loss of interest of Rs. 3.21 crore[#]. There was no mechanism to monitor delays in issue of first bills. There was also no system of reporting such delays for fixing responsibility and to take action against the officials concerned.

[#]Computed at 11 *per cent* being the average of cash credit rate of interest for the period from 2001-05.

The Board stated (August 2005) that the delay in issue of first bill was due to delay in feeding the data into the computer system. There is a need to ensure monitoring in issue of first bills so that the delay is avoided.

Shortfall in collecting security deposit

The low tension billing system did not ensure that security deposit was adequate.

3.2.17 The Board's tariff and conditions of supply stipulate recovery of security deposit equivalent to average amount of energy bills for three months or for one billing cycle (monthly, bi-monthly *etc.*) whichever is less. Every year, in the month of March, the security deposit available *vis-a-vis* average amount of energy bill for one billing cycle based on billing for one year was to be reviewed and any shortfall in required security deposit was to be demanded from the consumer. This was not being done. Audit analysis revealed that the shortfall in security deposit collected as on 31 March 2004 was Rs.840.72 crore from 47.85 lakh consumers. Adequate security deposit was essential to safeguard the Board's interest in the event of non payment of dues by the consumer. Therefore, demand for shortfall in security deposit should be automatically generated and issued to the consumers without fail.

The Board stated (August 2005) that guidelines had been issued to field offices to generate additional security deposit bills. The reply is not acceptable. The large shortfall in security deposit as pointed out above is a clear indication that the guidelines were not followed.

Low tension billing system not being effectively used for monitoring recovery of dues

Effective control mechanism to monitor follow up action for recovery was lacking.

3.2.18 One of the main objectives of the LT billing system is to initiate prompt follow up action in case of non payment of energy bills. Follow up action comprises temporary disconnection, permanent disconnection and legal action for recovery. The system generates reports of consumers whose connections are liable for disconnection for non payment of dues and the same is provided to the billing units. It was observed in audit that there was no reporting mechanism for identifying disconnections not carried out and the number of months for which action for disconnection was pending and to report the same to higher authorities for fixing responsibility. It was further observed that there was no procedure to feed into the LT billing system the details regarding date of filing suit for recovery, status of suit filed, date of decree obtained, amount for which decree obtained, date of filing decree for execution, date of recovery, amount recovered, reasons for not being able to obtain decree or not being able to recover decreed amount and amount written off. The aggregate dues (March 2005) from permanently disconnected consumers amounted to Rs.900.23 crore from 11.29 lakh consumers, of which, Rs.266.64 crore were due for more than three years from 3.56 lakh consumers. Effective control mechanism to monitor follow up action for recovery through the LT billing system was lacking as was evident from the increase in arrears from Rs.2,760 crore in 1999-2000 to Rs.5,388.78 crore in 2003-04.

The Board stated (August 2005) that reports are generated for the purpose of monitoring. The reply is not acceptable. The monitoring mechanism was ineffective as detailed above.

Low tension billing system though critical in nature not reviewed by internal audit

3.2.19 LT billing being mission critical in nature needed the attention of the Internal Audit wing. The Internal Audit had, however, not audited the LT billing system.

The Board stated (August 2005) that the LT billing system was being audited at the time of inspection of field offices. The reply is not acceptable as the present inspection did not cover audit of LT billing using COBIT frame work or similar acceptable methodology.

Conclusion

The low tension billing system installed by the Board did not have effective management controls such as separation of duties and change management controls. There were several deficiencies in input controls and processing controls in the system. Consequently, the system failed to ensure data integrity. Lack of effective controls resulted in generation of erroneous bills and non recovery of dues thus failing to safeguard the Board's assets. The system was not effective in achieving the Board's objectives of computerising the LT billing operations.

Recommendations:

- **There is a need to have a system in place providing for detailed documentation to ensure that re-processing is carried out without fail.**
- **There is a need to investigate mismatch between meter identification code and tariff code and take action to rectify the deficiencies.**
- **Demand for shortfall in security deposit should be automatically generated and issued to the consumer without fail.**

The matter was reported to the Government (March 2005); the reply had not been received (December 2005).