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(GEORGE FERNANDES)
Raksha Mantri

Report of the Comptroller and Auditor General of India

for the year ended March 1999

Union Government (Commercial)

Public Sector Undertakings

Bharat Earth Movers Limited

No. 5 of 2000

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PREFACE

Audit Boards are set up under the supervision and control of the Comptroller & Auditor General of India to undertake the comprehensive appraisals of the performance of Government Companies and Corporations.

2. The report on Bharat Earth Movers Limited (BEML) was finalised by the Audit Board consisting of the following members:

1.	Shri A.K. Chakrabarti	Chairman, Audit Board and Deputy Comptroller & Auditor General (From January 1998)
2.	Smt. Sudha Rajagopalan	Director General of Audit, Defence Services
3.	Shri P. Narayana Murthy	Principal Director of Commercial Audit & ex-Officio Member Audit Board, Hyderabad
4.	Shri B.B.Pandit	Principal Director (Commercial) & Ex-Officio Member Secretary, Audit Board
5.	Shri Shankar Narayan	Principal Director of Commercial Audit & ex-Officio Member Audit Board, Bangalore
6.	Maj. Gen. Harjap Singh	Part-time Member
7.	Shri K. Dwarkanath	Part-time Member

3. The part-time members were appointed by the Government of India (in the Ministry of Defence, Department of Defence Production and Supplies) with the concurrence of the Comptroller and Auditor General of India.

4. This report as set out in the succeeding chapters is based on studies, made by the Audit Board, of various aspects of the functioning of the Company and the discussions held with the Management of the Company.

5. The report was finalised by the Audit Board after taking into consideration the discussions held with the Secretary, Ministry of Defence, Department of Defence Production and Supplies on 15 November 1999.

OVERVIEW

I. Introduction

1. Bharat Earth Movers Limited (the Company), a Bangalore based Public Sector Undertaking, was incorporated in May, 1964. Since 1992-93, 38.77 percent of its equity was disinvested and is held by various Banks, Financial Institutions and public at large. The Company is managed by a Board of Directors which is comprised of besides CMD, five functional Directors and five non-functional Directors who represent various Ministries/ Departments of Government of India and Government of Karnataka. As of now non-Government shareholders have no representation on the Board. Induction of non-executive Directors from Financial Institutions etc. was under the consideration of the Government. The functioning of the Company for the period 1990-91 to 1998-99 was reviewed by the Audit Board.

2. As of 31 March 1999, paid-up share capital of the Company was Rs.36.87 crore. The Company has also built up reserves and surplus amounting to Rs.549.37 crore. The turn over of the Company, which at the beginning of the present decade was Rs.748.32 crore, has gone up by 62.05 percent and reached the level of Rs.1212.62 crore. But, profit before tax during the same period has declined from Rs.67.14 crore to Rs.2.72 crore. Even though the net worth of the Company has remained more or less steady during this period return on capital employed by the Company declined from 17.87 percent in 1990-91 to 7.14 percent in 1998-99. This apparently divergent picture of the Company's health was examined by the Audit Board to understand and pinpoint the underlying causes. In the opinion of the Audit Board, while the Company has a strong asset base, a wholesome product range, substantial technical manpower and a strong market presence, its profitability has floundered in the last few years largely under the impact of liberalisation and the inability of the Company management to successfully overcome this challenge. Fall during recent years in the level of public expenditure in construction projects and subsequent fall in demand for heavy earth moving equipment also affected the fortunes of the Company adversely.

3. The Company has traditionally relied upon the patronage of Defence Services, Railways and Public Sector Undertakings like Coal India Ltd. Its planning process has been inherently dependent upon the plans of its clients and the uncertainties and infirmities in the client's plans have sent into disarray Company's own projections of production, sales and profit. So far the Company has not really been able to fully anchor its plans on the realities of the market and has, therefore, failed to chart a course independent of its traditional clients. Most of the projects undertaken by the Company some with the backing of foreign collaborators and involving substantial expense in foreign currency have been based on mere assurances of the clients as to the likely size of orders the Company could expect. As orders failed to materialise and indigenisation of technologies could not keep pace with the targets, the losses as well as inventory of finished and semi-finished products of the Company kept mounting. This situation has also resulted in idling of machine and manpower capacity.

The Company has also faced a degree of helplessness in realising outstanding dues which at the end of March 1997 were as high as 62.33 percent of its turnover. This is because most of the current debtors of the Company are Government Departments/ PSUs. While many of the latter are reporting losses Company has been constrained to keep supplying equipment without any guarantee of receiving its dues in the foreseeable future.

The pricing policy has proved to be a hindrance to effective marketing of its products. On the whole marketing function is yet to acquire competitive edge. Despite a series of collaboration agreements for transfer of technology, the Company has not followed a pro-active R&D strategy as a result of which its R&D base continues to be weak. The Company needs to carefully identify its area of core competence and to follow a pro-active strategy with a clear focus on the bottom line. To improve its cost structure the Company needs to be recognised as an enterprise in the infrastructure sector so as to allow it to avail of benefits like tariff reduction and external finance. To this end, the option of managing a Rail Coach Division at Bangalore as an independent enterprise under the control of Ministry of Railways needs to be seriously pursued.

II. The highlights of the Audit Appraisal Report prepared by the Audit Board are as under:

Role of Government Departments and their Nominee Directors

As none of the four corporate plans/perspective plans drawn up by the Company at the instance of Government have been approved till date (October 1999), the Ministry of Defence has failed to play its due role in relation to the Company.

(Para 2.2.1)

The Company has not benefited sufficiently from the patronage of Ministry of Defence on whose plans and projections it had based its own corporate plans. In consequence its planning process lacked realism and it failed to fully achieve the targets set by it for itself. Similarly Railways and the Department of Coal have been less supportive of the Company.

(Paras 2.2.2 to 2.2.5)

Government directors on the Board of the Company were unable to promote rapport between the Company and the Departments represented by them to an extent that could help it in securing more orders or realise outstanding debts or resolve any other matter of consequence. To that extent their role was ineffective.

(Para 2.4.2)

Impact of Fiscal Policy

The Company does not enjoy a level playing field vis-à-vis importers of earth moving equipment as well as other players in the infrastructure sector.

(Paras 2.4.6 & 2.4.7)

Review of Projects

On a total investment of Rs.167.06 crore in various projects, the Company suffered a net loss of Rs.118.23 crore. Major part of loss was attributable to production of Hydraulic Excavators and Electric Rope Shovels which accounted for loss of Rs.142.02 crore and Rs.18.14 crore respectively.

Review of seven projects and four collaboration agreements indicated that in most cases the underlying objectives had remained unachieved; there were time and cost overruns and indigenisation of equipment was only partly successful.

Installed plant and machinery was generally lying idle as orders were often not forthcoming in the expected volumes because imports were cheaper and market intelligence was invariably poor.

(Paras 3.1 to 3.10)

Investment of Rs.64.60 crore for production of 2400 engines per year had not produced desired results; the maximum number of engines (366) produced in any year (1995-96) was only 15.25 *per cent* of the estimated annual production and its import content was as high as 86.57 per cent.

(Para 3.2)

Investment of Rs.34.94 crore in creating infrastructure for production of Kolos Tatra Vehicles without any firm commitment from the Ministry of Defence proved unproductive as the Company continued to import most of the components.

(Para 3.3)

Investment of Rs.4.62 crore on special purpose machines for T-72 Battle Tanks was rendered idle as only a single order of 190 sets was received in the last 5 years against the anticipated demand of 200 sets a year.

(Para 3.5)

Company suffered loss of Rs.150.04 crore up to 1998-99 on production and sale of three out of four models of excavators manufactured by it.

(Para 3.7)

In the absence of any orders commercial production of arc welding robots could not commence resulting in infructuous payment of technical information fee of Rs.4.23 crore to the collaborator.

(Para 3.8)

Company incurred loss of Rs.18.14 crore in the production and sale of 17 rope shovels.

(Para 3.9)

Faulty investment decision by the Company against the advice of the collaborator (Komatsu) resulted in Rs.5.67 crore being blocked up in inventory.

(Para 3.10)

Production Performance

Test check revealed that during 1994-95 to 1998-99 Company had understated available capacity of its various production units by around 15 to 55 *per cent.*

(Para 4.1.3)

The incentive schemes being operated by the Company were not designed to ensure optimal productivity at all work stations or in an assembly line as a whole.

(Para 4.4.3)

Norms for in-house rejections were not fixed on an appropriate basis. The level of rejections in value as well as quantitative terms needed to be defined on rational and steady basis.

(Paras 4.5.1 & 4.5.2)

Material Management and Inventory Control

Total inventory held by the Company went up from Rs.402.89 crore in 1990-91 to Rs.679.61 crore in 1998-99. The spares held by marketing division alone went up by Rs.63.38 crore during the same period.

(Para 5.3.1)

Out of a total inventory of Rs. 419.74 crore of raw materials and spares as on 31 March 1999 the value of inventory of materials, stores and spares not moving for more than 2 years was Rs.29.59 crore. The value of slow moving inventory as on 31 March 1999 was Rs.30.58 crore.

(Para 5.5.1)

Pricing and Marketing of Products

The Company lost 30 per cent of overseas tenders and 23 per cent of domestic tenders during the period 1991-92 to 1998-99 due to uncompetitive prices.

(Para 6.1)

The market share of the Company for excavators, wheel loaders and dumpers which was substantive in 1990-91 dropped drastically in subsequent years.

(Para 6.3.1)

Costing System and Cost Control

According to the existing transfer pricing policy, both transferor and transferee divisions were not functioning as profit centres.

(Para 7.2.2)

Work orders pending closure for more than 5 years were not investigated.

(Paras 7.3.1 & 7.3.2)

In the absence of a system of ensuring timely documentation of costs, managerial decisions on pricing products were likely to be based on incorrect data.

(Para 7.3.2)

Financial Performance

The percentage of Sundry Debtors to Sales increased from 32.31 *per cent* in 1990-91 to 51.59 *per cent* in 1998-99.

(Para 8.4)

Profit on sale of spares declined from 19.7 *per cent* in 1991-92 to 9.4 *per cent* in 1997-98. Though it increased to 13.4 *per cent* in 1998-99, this failed to have any significant impact on the overall profitability of the Company.

(Para 8.3.1)

Research and Development

Reduction in cost was not a stated objective of the Company's (R&D) effort.

The net contribution of products worth Rs.285.18 crore developed by R&D was negative (Rs.15.14 crore).

(Para 9.2)

CHAPTER 1 : INTRODUCTION

1.1 Bharat Earth Movers Limited (the Company), Bangalore, was incorporated on 11th May 1964, as a fully owned Government Undertaking under the Ministry of Defence (Ministry), for the manufacture and sale of heavy earth moving equipment. The Company commenced business from 1st January 1965.

1.1.1. The Company started with the manufacture of scrapers and railcoaches in 1965 and steadily expanded its range of products. Presently the Company is manufacturing the following products at its three production centres:

(i) **Kolar Gold Field (KGF) Complex** - Comprising Earth Moving (EM) and Hydraulic and Power line (H&P) Divisions - heavy earthmoving equipment such as dozers, excavators, transmissions, loaders, rope shovels, walking draglines, longwall mining systems, final drives, hydraulic aggregates, defence aggregates etc.

(ii) **Mysore Complex** - Comprising Truck Division and Engine Division - dump trucks, motor graders, diesel engines, water sprinklers, towing tractors etc., and

(iii) **Bangalore Complex** - railcoaches, overhead inspection cars, DC and AC electrical multiple units (EMUs), rail buses and track laying equipment for the Railways, Tatra vehicles, trailers etc. for Defence.

1.1.2 The major customers of the Company are Coal India Limited (CIL), Ministry of Defence (MOD) and Railways. The Company also caters to the requirements of sectors like steel, irrigation, power etc.

1.2 Capital Structure

1.2.1 The authorised capital of the Company which in 1964 was Rs.7.50 crore comprising of 75,000 equity shares of Rs.1000 each was increased from time to time. By 1994-95 the Company had an equity base of Rs.60 crore comprising of 600 lakh shares of Rs.10 each.

The authorised share capital of the Company is not fully paid up. Its paid-up capital increased from Rs.50 lakh as on 31.3.1965 to Rs.36.87 crore as on 31.3.1999. Till 1991-92, the Government was the holder of 100 *per cent* paid-up share capital of the Company. Consequent on disinvestment of 20 *per cent* of its holding in July 1992 and another 5 *per cent* in December 1994 to various banks/ financial institutions/ mutual funds, the Government's share in the share capital of the Company came down to 75 *per cent*. On issue of partly convertible debentures (PCDs) in January 1995, the share of Government further came down to 60.81 *per cent*; by 31 March 1999; however, it went up slightly to 61.23 *per cent* as a result of forfeiture of shares held by others. The balance of paid-up share capital as on that date was held by Indian banks, financial institutions and corporate bodies (10.29 *per cent*), foreign banks and foreign companies/institutions (0.30 *per cent*),

public in India and/ or outside (28.18 *per cent*). Thus, relatively, the Company is one of the most widely held PSUs in the country.

1.3 Organisational Structure

1.3.1 The Company is headed by a full time Chairman and Managing Director (CMD). The Board of Directors includes, inter-alia, (i) two part-time official Directors representing Ministry of Defence, (ii) one part-time Director representing Ministry of Coal, (iii) one part-time Director representing Railway Board, and, (iv) one part-time non-official Director representing Government of Karnataka.

1.3.2 For day to day management, the CMD of the Company is assisted by five functional Directors who are incharge of Production, Finance, Marketing, Research & Development and Human Resource Development and six Executive Directors incharge of Finance, Sales and Vigilance at Corporate Office, KGF Complex, Mysore Complex and Engine Division. The Bangalore Complex is headed by Chief General Manager. The organisational chart of the Company is placed at Annexure-I.

1.3.3 Though 38.77 per cent of its paid up share capital had been disinvested by the Government to financial institutions, private investors, etc., none of them was represented, individually or collectively on the Board of Directors. Audit Board felt that for better governance of the Company, Government should consider appointment of certain non-executive Directors at Board Level. Secretary, Ministry of Defence, Department of Defence Production and Supplies (DP&S) informed (November 1999) the Audit Board that the names suggested by the Company for the position of Non-executive Directors were being considered and the necessary appointments would be made shortly.

1.4 Audit Coverage

The activities of the Company for the period 1979-80 to 1983-84 were last reviewed in the Report of the Comptroller & Auditor General of India, Union Government Part V (Commercial) 1985, which was examined by the Committee on Public Undertakings (COPU) (1987-88- Eighth Lok Sabha) vide their Forty Fifth Report. Action taken by Government thereon was dealt with in the First Report of the Committee (1990-91 - Ninth Lok Sabha). The present Report covers the working of the Company mainly for the period 1990-91 to 1998-99.

CHAPTER 2 : OBJECTIVES AND PLANS

As none of the four corporate plans/perspective plans drawn up by the Company at the instance of Government have been approved till date (October 1999), the Ministry of Defence had failed to play its due role in relation to the Company.

The Company had not benefited sufficiently from the patronage of Ministry of Defence on whose plans and projections it had based its own corporate plans. In consequence its planning process lacked realism and it failed to fully achieve the targets set by it for itself. Similarly Railways and the Department of Coal have been less supportive of the Company.

Government directors on the Board of the Company were unable to promote rapport between the Company and the Departments represented by them to an extent that could help it to secure larger orders or realise outstanding debts or resolve any other matter of consequence. To that extent their role was ineffective.

The Company does not enjoy a level playing field vis-à-vis importers of earth moving equipment as well as other players in the infrastructure sector.

2.1 Objectives

2.1.1 The Company manufactures heavy earthmoving equipment of all kinds, tractors, other transport vehicles, engines of all types, rolling stock for Railways like coaches, overhead inspection cars, DC & AC electrical multiple units (EMU), rail buses, track laying equipment and conveyors. The corporate targets of the Company as explained (October 1998) to the Audit Board are to (i) attain a high growth of 11 *per cent* in sales and (ii) become self reliant in design and development of earth moving equipment through R&D efforts. The Company could not achieve these objectives as indicated below:

(i) The actual growth rate at an average compounded achieved during the period 1990-91 to 1998-99 was 6.22 *per cent*. This was way below the target of 11 *per cent*.

(ii) Out of 9 products sought to be indigenised through collaboration with foreign parties, indigenisation in only one case had reached a significant level of 83 *per cent*; amongst the rest only 3 had gone beyond level of 50 per cent and in one case progress achieved was 'nil'. (See also para 9.5.1).

(iii) The Company had applied only a miniscule part (0.99 *per cent*) of its aggregate turnover during the last 5 years (1994-95 to 1998-99) towards R&D activities. R&D efforts also did not yield desired results as 5 R&D projects completed at an expenditure of Rs.2.88 crore were not productionised to date. (also see para 9.4.1).

2.2 Corporate Plans

2.2.1 From 1976 onwards the Company drew up a series of corporate plans and perspective plans (See Annexure -II). None of these plans was either rejected or approved by the Ministry of Defence, even though all the four corporate/perspective plans during the last 20 years had been prepared at the instance of the Government.

2.2.2 The Company has been changing its plans frequently. Consequently the targets and goals became so mutative that these were different in different plans for the same year. Moreover, even the revised targets, which were lower, could not be achieved by the Company (Annexure III).

The Management stated (May 1998) that sales figures, profits etc., mentioned in the plan documents were not targets as such but merely an indication for achieving growth and profitability over a time horizon of 5/10 years. Further during discussion (October 1998) with the Audit Board, the Management stated that corporate plans of the Company should not be seen in isolation and would essentially relate to overall projection of growth of its customers business and since the projects and procurement policies of the customers had undergone periodic and abrupt changes, Company's corporate plans would also necessarily reflect those changes and uncertainties. The Management further clarified (August 1999) that in the absence of firm commitment, planning based on trends became inevitable. It is thus evident that production targets of the Company were not based on any firm and committed demand from the customers but tended to correlate to expected growth/projections of the clients. The inherent uncertainties, in the procurement plans of its customers had, apparently, tempered the Management's approach to planning and to that extent, reduced its effectiveness. Audit Board are of the view that, at least, in the post liberalisation phase, the Company should have rectified this in-built weakness in its planning process. This, however, does not appear to have been done till now as even the perspective plan upto the year 2007 prepared by Management is heavily dependent upon commitments/orders from the MOD/Army which are not backed by any definite financial commitments from the Government. This underlines the fact that the Company is not maintaining sufficient inter-action with its customers to know their thinking up front nor are their plans and projections subject to an independent assessment in relation to the threshold of constraints faced by the customers in implementing such plans.

2.2.3 The Audit Board also felt that by failing to clear the Company's plans, Ministry had not lived up to its role and thus rendered the entire planning exercise by the Company meaningless. It would advise the Company not to look up to the Administrative Ministry henceforth, for approval of corporate plans, as by doing so the Board of Directors would be merely side-stepping one of its basic responsibilities. The Audit Board are of the firm view that the responsibility for drawing up plans of any denomination should rest squarely with the Board of Directors. That alone will bring to the exercise of planning a greater degree of realism-an attribute which, it would appear from an analysis of projects implemented by it in the past one decade (see para 3.1 to 3.10), has been lacking hither to fore. Secretary (DP&S) agreed with this view of the Audit Board.

2.2.4 Discussions of Audit Board with the Ministry of Defence and other related Ministries in November 1999 indicated that their own perspective plans were not being

dovetailed to the extent possible, with products and capabilities of the Company. The Secretary (DP&S) explained during these discussions that since orders placed by the Defence Services on the Company constituted only 17 per cent of the total turnover of the latter, perspective plan of the Defence Services could not necessarily form a basis for Company's plans and to that extent Company ought to make an independent assessment of demand for its products and services.

2.2.5 While agreeing with the view expressed by Secretary (DP&S), Audit Board were also of the opinion that with the anticipated rise of the Defence share in the total business of the Company to 25-30 *per cent,* integration of Company's perspective plans with those of Defence services as well as Railways and Department of Coal was essential.

2.2.6 Achievements vis-à-vis objectives set in various plans are evaluated in the respective chapters' hereafter.

2.3 Memorandum of Understanding (MOU)

Every year from 1989-90, the Company has been entering into an MOU with the Ministry of Defence. The performance of the Company vis-à-vis commitments made by it under the MOU for 1998-99 was provisionally rated as 'poor' (December 1999). However, during the earlier seven years i.e. 1991-92 to 1997-98, the Company obtained 'Fair' to 'Very Good' ratings which are worked out under a composite score which covers a total of 15 parameters including gross margin, profitability, turnover, sundry debtors, inventory, quality, technology absorption and development, project implementation etc. It got, however, consistently 'Poor' ratings for its performance on two parameters viz. Sundry Debtors measured in terms of number of days of turnover and inventory measured in terms of number of days of value of production. Since both these factors contribute substantially to the profitability of the Company 'very good' ratings earned by it on its overall performance raises doubts as to the efficacy of MOUs in judging and bench marking performance. During discussion (October 1998) the Management conceded that MOU often did not relate to the dynamic environment in which the Company had to function and to that extent imposed a limitation on the managerial utility of MOUs.

2.4 Role of Government

2.4.1 A general review of Company's project performance revealed that several of its problematic ventures had their genesis in the practice of being overly dependent on orders from a few departments of the Government of India and ad-hocism that has characterised investment decision making both at the level of the Board of Directors as well as the Administrative Ministry. A study of the role played by different Ministries with regard to the affairs of the Company has left the Audit Board convinced that the Company had not benefited sufficiently from the patronage of more than one Ministry of the Government of India as brought out in the succeeding paragraphs.

Role of Government Directors

2.4.2 The role of Government Directors on the Board had not been effective. Despite having representatives of the Ministry of Defence, Department of Coal and Department

of Railways, the Company was unable to maintain with these Ministries the level of rapport as could help it in securing adequate orders from them; nor did representation of these Ministries on the Board appear to have helped in bringing greater realism to the planning process of the Company or in settlement of dues outstanding from such Departments.

The Ministry stated (August 1999) that the role of Government Directors was primarily to secure Government interests as an owner and ensure that the Company was properly managed. Securing orders from the Departments they were representing or expediting payments from them were not part of their duties. Secretary (DP&S) also contended (November 1999) that marketing for the Company was the responsibility of the Board of Directors and the Ministry was only a facilitator and could help the Company only in case of unfair competition. The reply of the Ministry is not acceptable, as by helping Company get more orders or by securing expeditious clearance of its dues Government Directors would also be serving the interests of the owner. If the plant and machinery and the work force remained idle for want of orders, it was in the interest of neither the Government nor the Company. The four Government Directors, representing these departments had therefore not been sufficiently effective in either securing the interest of Company or those of the Government. This is amply borne out by the fact that Ministry of Coal virtually forced the Company to enter into one-sided contracts with sick coal companies like Bharat Coking Coal Limited (BCCL) whereby it was made to supply equipment on priority to the latter without any corresponding commitment towards timely clearance of consequential dues. Thus out of Rs.379.28 crore outstanding as on 31 March 1999 from Coal India Ltd. Rs.74.46 crore was due from BCCL alone and the prospect of realising the amount at any future date was remote. This had severely constrained the liquidity of the Company. Similarly, Railways had completely denied orders to the Company during 1994-95 even as facilities existed in its Bangalore Complex for manufacture of rolling stock (see para 2.4.5). Ministry of Defence has also failed to keep many of its assurances to the Company leaving it completely in lurch.

In none of these situations there was any evidence of Government Directors having played any active part in either preventing such situations or helping the Company in overcoming its predicament.

Secretary (DP&S) agreed that there should be better co-ordination in order to achieve maximum synergy between the plans and activities of the three Ministries vis-à-vis the Company's production plans and targets and to impart greater degree of realism to the planning process of the Company.

Defence Related Projects

2.4.3 The Company took up 3 projects - BMP transmissions (1980), T-72 Stabilizers (1985) and Kolos Tatra (1986)-at the behest of the Ministry of Defence. But after the Company had invested heavily in necessary plant and machinery, the orders expected from the MOD did not materialise. The investment made by the Company eventually became idle. In the absence of promised orders, Ministry of Defence directed the Company to explore alternate avenues so as to utilize the equipment installed at great cost. The Ministry agreed (August 1999) that customer/indentor Departments played an

important role in utilising the established capacity fully.

In the case of T-72 stabilizers, after creation of facilities for its manufacture, MOD allowed BEL, another Defence PSU, to import the stabilizers leaving product specific capacity created by the Company unutilized. The entire concept of indigenisation was thus given a go-by.

Similarly, Government allowed the Company to invest in creation of facilities for manufacture of walking draglines required by Coal India Limited, when another PSU (HEC) already had this facility. Even though the decision was sought to be justified on the ground that Department of Coal, Ministry of Mining wanted to have two sources of supply, both the PSUs i.e. the Company as well as HEC, were saddled with idle capacity. Similarly capacity created by the Company based on the projections given by CIL in regard to D-475 and Rope Shovels remained underutilised.

The Secretary (DP&S) during discussion with the Audit Board (November 1999) agreed that better judgments ought to have been applied and all the Board Members including Government Directors were responsible for any eventual loss experienced by the Company. He also assured that henceforth attempts would be made by the Company to obtain prior commitments from its potential customers and agreed that synergy had to be brought between the capability of the Company and the requirements of the customer.

To an enquiry by the Audit Board (November 1999) whether the Ministry would compensate the Company for the development cost of the projects taken up at the instance of Ministry but not followed up with orders on an economic scale, Secretary (DP&S) stated that ex-post facto compensation in respect of the projects already taken up might not be possible; but he assured the Board that in respect of future projects, the Government would examine the question of compensating the Company for development costs and added that once the development costs were funded, the difference between the cost of the product and the prices these might fetch in the market could not be subsidised further.

2.4.4 Government also delayed approving the Company's corporate plans for a very long period. As already stated in para 2.2.1, none of the corporate or perspective plans of the Company was ever approved by the Government. Approval of the latest plan was held up on the ground (May 1997) that the Company's plans should be made co-terminus with the 9th Five Year Plan. Accordingly the Company revised the plan (1997-2002) in February 1999. The approval of the Government to that was too awaited (October 1999). Without the stamp of the Government these plans were, obviously, taken less seriously by all concerned and the Management of the Company functioned, virtually, directionless.

2.4.5 Till 1993-94, Ministry of Railways gave the Company a fair price for its railcoaches which was remunerative. No order was placed on the Company during 1994-95, forcing it to keep the facilities at Bangalore Complex idle for most of the year. Though limited orders were placed by the Railways during 1995-96 to 1997-98, the prices finally offered (October 1999) were not remunerative. In 1998-99 there was some improvement in regard to placement of order. The prices of products ordered by Railways have not been finally determined on the basis of actual fabrication cost of the coaches as

furnished by Railway Production Units.

In the meantime provisional prices, which are pegged at a lower level, are being paid to the Company. In consequence Company has been booking losses on all items being supplied to Railways since 1995-96. The loss suffered by the company on sale of Railway products during the period 1995-96 to 1998-99 amounted to Rs.47.41 crore; the highest being Rs.31.67 crore during 1998-99.

Ministry of Defence agreed (August 1999) with audit that the Company could not absorb the ongoing losses forever. It averred that Ministry of Railways should consider the issue realistically.

During discussion with the Audit Board (November 1999) the Secretary (DP&S) as well as the representative of Railway Board accepted the need for a study to compare cost structure of the Company with that of Railway Production Units to assess the reasonableness of the prices offered by the Railways to the Company for the coaches manufactured by it.

2.4.6 Impact of Fiscal Policy

Recent changes in the fiscal policy of the Government also had hurt the Company. Till 1998, while customs duty for fully imported EM equipment was 25 *per cent,* raw material and components imported for indigenous manufacture of EM equipment attracted customs duty at rates ranging from 30 *per cent* - 40 *per cent* plus 5 *per cent* additional duty and 4 *per cent* special additional non-modvatable duty. The Company was thus denied a level playing field vis-à-vis importers. This had an adverse impact on the economics of projects like Arc-welding Robots. The Company's drive for indigenization had thus run aground in the changed economic environment. Though, the disparity had been by and large reduced with the levy of countervailing duty on the finished equipment in Budget 1999, the company informed audit that it still lacked a level playing field in respect of sales tax and customs duty on imports of generic nature. Company, however, was yet to take up the matter with the State Government (November 1999).

2.4.7 Earth moving and road construction equipment manufactured by the Company is being used in various infrastructure projects like power generation, road building & ports, mining, multi purpose projects, oil exploration etc. In view of the various fiscal and other incentives presently available to the infrastructure sector, Company would be benefited if the earth moving industry is also included in the infrastructure sector. Secretary (DP&S) stated (November 1999) that there was a prima facie case for including the Company in the infrastructure sector and that the matter would be taken up with the Finance Ministry before the next budget.

2.4.8 The Audit Board was of the view that the role of the Government in the affairs of the Company was of vital importance for its financial health and would become more forth coming and positive if following steps were taken by the Government/Management:

(i) Ministry of Defence to make sure that the Company gets orders for Defence equipment commensurate with capacities envisaged at the time of approval of project reports of Kolos Tatra, T-72 stabilizers & BMP transmissions.

(ii) Ministry of Railways to give the Company larger orders for railcoaches from within the Railways or in the export market, at a fair price so that potential of Bangalore Complex is adequately utilised. The Ministry of Railways could also consider taking over the Railcoach Division of the Company for its integration with its own manufacture units.

(iii) Ministry of Coal to help the Company in realising outstanding debts from Coal India Ltd. and to ensure, simultaneously, that more orders were placed on the Company by different coal PSUs.

(iv) The fiscal policy of the Government should allow the Company a level playing field, more so, in the context of anticipated growth in the infrastructure sectors, so that it can utilise its capacity optimally.

(v) As a corollary to recommendation at Sl.No. (iv) the Company should also be reckoned as an infrastructure company by the Ministry of Finance so as to enable it to avail of the various fiscal and other incentives presently available to the infrastructure companies.

The Ministry agreed (August 1999) with the above Audit observations. Secretary (DP&S) informed the Audit Board (November 1999) about the initiatives already taken by the Government/Management for sustaining the growth of the Company in future which *inter-alia* included

(i) appointment of consultants for advising the Board on the restructuring on micro and macro level for short term and long term with regard to (a) maximising stock holder's interest, (b) organisational restructuring, (c) optimum working capital requirement and (d) identification of strategic areas of alliances globally to maintain market leadership.

(ii) constitution of a committee under the Chairmanship of Additional Member (Mechanical), Railway Board to examine option of managing Railcoach unit as an independent Company with joint stakes from Railways and Rail India Technical & Economic Services (RITES), with a view to cater to the Railway Board's requirements of products with optimum cost and reasonable price.

(iii) implementation of market driven transfer pricing policy to focus on the weak areas.

(iv) to start dialogue with leading multi national companies (MNCs) for a strategic alliance in an effort to hive-off Engine Plant at Mysore in course of time (because the high cost of engines manufactured by the Company could not be absorbed by the equipment produced in-house thus effecting its marketability).

(v) to evolve new marketing strategy for introduction of more profitable products and reorienting the Company's product mix towards the needs of infrastructure sector.

(vi) reduction of staff by voluntary retirement scheme.

CHAPTER 3 : REVIEW OF PROJECTS

Review of seven projects and four collaboration agreements indicated that in most cases the underlying objectives had remained unachieved, there were time and cost overruns and indigenisation of equipment was only partly successful. Installed plant and machinery was generally lying idle as orders were often not forthcoming in expected volumes because imports were cheaper and market intelligence was invariably poor.

On a total investment of Rs.167.06 crore in various projects, the Company thus suffered a net loss of Rs.118.23 crore. Major part of loss was attributable to production of Hydraulic Excavators and Electric Rope Shovels which accounted for loss of Rs.142.02 crore and Rs.18.14 crore respectively.

Of the seven projects, three were taken up at the instance of the Ministry of Defence. Large orders anticipated in these projects did not materialise forcing the Company to explore alternative means of utilising the established capacities.

3.1 Projects - Overview

The Company executed projects to set up manufacturing facilities for the following products.

(i) Diesel engines, (ii) Kolos Tatra vehicles, (iii) Walking draglines, (iv) Hydraulics for T.72 stabilizers, (v) BMP transmissions, (vi) Hydraulic excavators, (vii) Hydraulic cylinders.

Some of the above projects had varying degrees of backing from different foreign collaborators. In addition the Company also entered into full-fledged collaboration/component supply agreements with foreign collaborators for manufacture of following products:

(i) Arc welding robot, (ii) Electric rope shovels, (iii) D-475 dozers and (iv) Road headers.

3.1.1 The details of projects, collaborators, investments made, actual expenditure, return on investments, extent of indigenisation etc. are indicated in Annexure IV.

3.1.2 An analysis of the above mentioned projects by the Audit Board indicated several deficiencies relative to one or more of these projects. Briefly stated the deficiencies were as under:

- Objectives were not achieved in the engine and Kolos Tatra projects.
- Indigenisation targets were only partly achieved in the manufacture/assembly of engines, Kolos Tatra vehicles, T-72 stabilizers, electric rope shovels and D-475 dozers.

- There was time and cost overruns in the engine project and T-72 stabilizers project.
- Large unsold inventories were a feature of Kolos Tatra, T-72 stabilizers and D-475 dozer projects.
- Poor market intelligence and failure to assess the demand levels were evident in the walking draglines, hydraulic excavators, arc welding robots and D-475 dozer projects.
- The hydraulic excavators and rope shovels projects resulted in major losses to the Company.
- In Kolos Tatra, BMP transmissions and T-72 stabilizers projects, all taken up at the instance of the Ministry of Defence and in anticipation of large orders which ultimately did not materialise. Moreover, imported versions of these equipment became cheaper. Both these factors rendered established capacities idle and investment already made infructuous.

During discussion with the Audit Board (November 1999) Secretary (DP&S) confirmed that while opting for import of equipment (that was also available with BEML) the loss likely to be suffered by the Company on account of such development costs and through it by the Government was being presently ignored. He, however, informed the Board that in the past such costs were loaded on the cost of imported items in one form or the other.

Audit Board also feels the need for loading on equipment prices available through import route, a suitable 'security premium' to factor-in the cost of maintaining a domestic option for strategic reasons. This, they feel, would be utterly essential in the event of sanctions being imposed by the Governments of the supplier's country. During discussion with the Audit Board (November 1999) Secretary (DP&S) agreed that domestic production base should be kept alive to meet the emergency requirements. Audit Board were, therefore, of the view that the existing facilities in the Company in relation to critical requirements of Defence Services need to be periodically updated with latest technology and that such upgradation should invariably be funded by the MOD.

3.1.3 A detailed analysis of six of the seven projects and three of the four collaborators/ component supply agreements mentioned in para 3.1.1 is given in succeeding paragraphs.

3.2 Manufacture of Diesel Engines

Investment of Rs.64.60 crore for production of 2400 engines per year had not produced desired results; the maximum number of engines (366) produced in any year (1995-96) was only 15.25 *per cent* of the estimated annual production and its import content was as high as 86.57 per cent.

3.2.1 Initially the Company was manufacturing earth moving equipment using engines manufactured by Kirloskar Cummins Limited (KCL). As it faced number of complaints from the customers, which included Coal India Limited, about performance, deficiencies and servicing, the Company conceived (March 1983) a project to manufacture 2400 diesel engines in collaboration with M/s Komatsu Limited, Japan.

3.2.2. The project was sanctioned by the Government in July 1988. Scheduled to be completed by December 1996, it was still incomplete till October 1999. The sanctioned project outlay (February 1995) was Rs.49.87 crore but the actual expenditure up to the end of March 1999 was Rs.64.60 crore. This included Rs.15.27 crore actually sanctioned for Kolos Tatra Vehicle Project, another project of the Company, but diverted on the plea that composite facilities would be created in the Engine Division of the Company for manufacturing diesel engines as well as Tatra engines. As the projected cost of Tatra engines turned out to be more than the import cost of similar engines from the collaborator (M/s Omnipol) indigenisation process of the Tatra vehicles was discontinued from August 1992 when it had attained the indigenisation level of 50.65 per cent. Consequently no Tatra engines could be produced. The Management attributed (October 1997) direct import of Tatra engines by the Ministry of Defence to the fact that imports effected by Ministry of Defence were exempt from levy of custom duty. Ministry confirmed (August 1999) the reply of the Management which only goes to underscore the tendency of the Management to make huge investments without proper market assessment.

3.2.3 The objectives of setting up Diesel Engine Project were (i) to integrate engines with the earth moving equipment already being manufactured by the Company (ii) to ensure better after sales service to customers (iii) reduction of product costs of its earth moving equipment (iv) achievement of higher technological base for further diversification and (v) to sell these engines for other applications like diesel generator sets, original equipment fitting on heavy transport vehicles and re-powering of certain military equipment. Though a series of 4 models of the engine was introduced by the Company between April 1991 and December 1994 the objectives of project remained largely unachieved as indicated below:

- At the maximum, only 45 *per cent* of other equipment manufactured by the Company was compatible with diesel engines by the stabilisation year of the project i.e. 1995-96.

- The Company could neither sell the engines to outside parties nor diversify its activities in the project as envisaged.

- The customers found the engines produced by the Company at Rs.10.42 lakh a piece costlier and preferred the cheaper KCL engines. This is evident from the fact that Company had projected that with an import content of 30.76 per cent, production cost of its diesel engines in 1995-96 would be merely Rs.1.87 lakh a piece. Since the import content remained at a much higher level, the production cost too remained high. In 1998-99 the import content was 65.94 *per cent* and the cost per engine was Rs.13.09 lakh. The Management stated (October 1997) that a direct comparison between the Company's and KCL's engines could not be made because of the superior nature of Company's engines. The collaboration with M/s Komatsu Limited, Japan expired in July 1998 and, owing to a policy decision by collaborator, was not extended further.

3.2.4 Thus, the objective of investing a sum of Rs.64.60 crore in the engine project could not be achieved to a satisfactory degree. Secretary (DP&S) informed Audit Board

(November 1999) that high cost of engines also affected the marketability of other products (in which such engines are fitted) manufactured by the Company. Hence it had been decided to start a dialogue with leading MNCs for a strategic alliance in an effort to hive-off of engine plant in course of time.

3.3 Kolos Tatra Vehicles

Investment of Rs.34.94 crore in creating infrastructure for production of Kolos Tatra Vehicles without any firm commitment from the Ministry of Defence proved unproductive as the Company continued to import most of the components.

3.3.1 The Department of Defence Production, in May 1986, identified the Company as supplier of heavy transportation vehicles to be manufactured in India. Accordingly, the Company, in March 1987, entered into a collaboration agreement with M/s Omnipol, Czechoslovakia for manufacture of 3 models of heavy transportation vehicles (hereafter Tatra vehicles) and paid to the collaborator a technical documentation fee of Rs.5.49 crore. An additional investment of Rs.29.45 crore was made between 1986-87 and 1990-91 on creation of necessary infrastructure. This included capital expenditure of Rs.15.27 crore in Engine Division, Mysore; Rs.11.25 crore in H&P Division, Kolar Gold Fields (KGF); and Rs.2.93 crore in Bangalore Complex. The Company had expected to start producing 250 vehicles per annum with effect from 1988-89 and to attain maximum indigenisation (80%) of components by 1991-92. These targets, in respect of production as well as indigenisation were, however, never achieved as indicated by the table below:

Table: Production of Kolos Tatra Vehicles

Year	Target for production	Actual production	Target for indigenisation	Indigenisation achieved	Profit/Loss(-) from sale (Rs. in crore)
1987-88	200	86	20%	5.06%	1.72
1988-89	250	142	24%	24.45%	2.03
1989-90	250	191	40%	37.04%	0.91
1990-91	250	104	67%	40.56%	2.70
1991-92	250	2	80%	50.65%	0.11
1992-93	250	12	80%	50.65%	0.41
1993-94	250	7	80%	50.65%	0.31
1994-95	250	138	80%	50.65%	-0.73
1995-96	250	44	80%	50.65%	0.50
1996-97	250	133	80%	50.65%	0.91
1997-98	250	118	80%	50.65%	0.57
1998-99	250	159	80%	50.65%	0.86

3.3.2 The indigenisation programme was virtually abandoned after 1991-92 when the order level dropped drastically from an average of 146 during the preceding three years to just 2 and indigenisation attained was 50.65%. The order position continued to be dismal up to 1993-94 (See table) whereafter it picked up but never touched the order level of 191 vehicles attained in 1989-90. The situation was compounded by the fact that

the import of aggregates[#] had become cheaper as a result of economic liberalisation. In consequence of low order level, incomplete indigenisation of Tatra engines (at Mysore Complex) and cheaper import of aggregates, the facilities created at all the three Divisions, which included body building at Bangalore Complex, remained underutilised. In addition, two special purpose machines installed at H&P Division, KGF in October 1988 and September 1990 at an aggregate cost of Rs.59.96 lakh also could not be put to use. While the first machine was used only upto April 1990, the second machine was not used at all. The Company also accumulated non-moving inventory (748 items) valued at Rs.1.07 crore and slow-moving inventory (182 items) valued at Rs.20.81 lakh. Out of the former, 450 items valued at Rs.49.95 lakh had not moved for more than five years.

The Management attributed lack of progress on indigenisation to low level of orders. The position, however, remains unchanged even though the order level improved in the subsequent years. For the year 1999-2000 the Army had placed orders for 285 Tatra vehicles. The Ministry admitted (August 1999) that this situation could have been averted if the users i.e. Army and other Departments of Ministry of Defence (MOD) had maintained a regular flow of orders. It also stated that it had repeatedly requested the user departments within the MOD to place orders on the Company so as to utilise the installed capacities before resorting to imports.

The Ministry's reply only brings to focus the fact that its different Departments have not been working in full concert as a result of which huge investment made by the Company on the specific understanding that sufficiently large orders would be received on a regular basis, has proved to be substantially infructuous. The Audit Board is particularly surprised at the fact that the Company has been allowed to suffer inspite of umbilical relationship between it and the Ministry which had prompted the Management to take up projects of specific interest to the user Departments/ Services of MOD without a definite commitment to economic order levels.

3.3.3 In regard to Special Purpose Machines, the Management stated that the machines were being reconditioned and put to use as production of Tatra vehicles had restarted in H&P Division. Similarly, the capacity created at Bangalore Complex was being put to use for manufacture of loaders and other earthmoving equipment. On verification in audit it was found that none of these claims was justified as the number of loaders manufactured in Bangalore Complex had drastically fallen from 65 in 1996-97 to 4 in 1998-99 while no other earthmoving equipment was manufactured in any of these years. The Management, however, did not refute under-utilisation of facilities in the Mysore Complex.

3.3.4 The profit made by the Company on manufacture of Tatra vehicles had also been insignificant. As against an estimated return of 17.7 *per cent* on capital employed in the year of stabilisation (1990-91), the Company could manage only a return of 8.28 *per cent.* During 1996-97 and the subsequent two years the return on its investment was less[*] than 6 *per cent.* Audit observed that while the Company earned an average profit of

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[#] ***Aggregates are the essential components for manufacture of equipment like engine, transmission, cylinder etc.***

[*] ***1996-97: 3.41%, 1997-98: 2.46%, 1998.99: 5.11%***

Rs.4.67 lakh per vehicle on sale of different models of vehicles to Vehicle Research and Development Establishment (VRDE) and Bharat Dynamics Limited (BDL) during the years 1995-96 to 1997-98, it suffered loss of Rs.0.88 lakh to Rs.1.85 lakh per vehicle sold to Army in 1993-94, 1994-95, 1997-98 and 1998-99. During 1995-96 and 1996-97 company earned a nominal profit of Rs.0.80 lakh and Rs.0.04 lakh per vehicle respectively. Thus vehicles being supplied to Army were being, virtually, cross-subsidised by VRDE/BDL. The Management/Ministry stated (August 1999) that the differential pricing in relation to Army was due to difference in specifications and relatively larger size of orders received. The Audit Board, however, find this argument unconvincing because it is abnormal for the Company to find itself constrained to sell products to its largest customer at a loss. They urge the MOD to take a serious look at the pricing mechanism so that the Company stood adequately compensated for costs incurred by it with periodic increase in costs especially when the sales were made in pursuance of long term contracts.

3.3.5 Audit Board was informed that the Company had claimed (December 1992) a sum of Rs.28.70 crore from the Ministry of Defence to compensate it for the Ministry's failure to place orders assured before the project was taken up. The Ministry rejected the claim (July 1993) and asked the Company to explore alternative means of utilising the established facilities. In the meanwhile the collaborator of the Company for the project has set up (June 1998) a private company called Tatra Udyog in collaboration with some private parties in India with a view to exploit the civilian segment of the market. This would indicate that possibility of servicing demand in the civilian segment of the market did exist and could have been tapped by the Company. The Ministry stated (December 1999) that if the Company was to produce the civil version of the Tatra vehicle, it would entail additional investment.

The Audit Board recommend that in order to take full benefit of investment already made the Company management must make a serious effort to capture a part of the civilian segment of the market for heavy transport vehicles.

3.4 Walking Draglines

At the instance of the Department of Coal the Company made an investment of Rs.4.15 crore for production of walking draglines. The investment was imprudent as only 2 draglines have been produced and sold so far whereas the capacity has been created for producing five.

3.4.1 Walking draglines are machines used for open cast mining of coal. Though the facilities for manufacture of walking draglines available with Heavy Engineering Corporation (HEC) were grossly under-utilised, the proposal of the Company to manufacture 1 to 4 draglines during 1985-90 and 5 to 6 up to 2000 AD was approved by Government (July 1988) on the plea that the Department of Coal desired to have two sources of supply. However only two walking draglines could be manufactured and supplied up to 1994-95 whereafter no dragline was manufactured. The Company however, received orders for 3 more walking draglines during 1998 and proposed to manufacture and supply one each during 1999-2000 and the next two years.

3.4.2 As the profit of Rs.72.71 lakh earned on the sale of first set of draglines for Rs.89.11 crore was a mere 0.82 per cent, it is doubtful if the investment of Rs.4.15 crore can be recouped in the near future. It is thus apparent that the decision of the Government (July 1988) in allowing the Company to invest in walking draglines without commensurate demand for the equipment and more so when similar capacity in another PSU was lying idle was imprudent.

Management stated (August 1999) that as few firms in the world were manufacturing walking draglines this high value equipment had the potential to be exported to third world countries; besides the facilities created for walking draglines were being used for manufacture of rope shovels. Ministry endorsed (August 1999) the reply of the Management. The reply of the Management/Ministry is not acceptable because rope shovels were being manufactured by the Company from 1988-89 which is much before the facilities for manufacture of walking draglines were created (December 1992). Moreover, the Company has not received any order from any third world country so far (October 1999).

3.5 Stabilizers for T-72 Battle Tanks

Investment of Rs.4.62 crore on special purpose machines for T-72 Battle Tanks was rendered idle as only a single order of 190 sets was received in the last 5 years against the anticipated demand of 200 sets a year.

3.5.1 Bharat Electronics Limited (BEL), entrusted with the job of production of stabilizers for T-72 battle tanks, identified (December 1985) the Company for the manufacture and supply of hydraulic portion of the stabilizers. A letter of intent to this effect was issued to the Company in June 1987. The projected requirement of stabilizers was 200 sets a year. Requirement of spares was anticipated at 12½ *per cent* per annum. Scheduled to commence with 50 sets in 1989-90 the production was to stabilise at 200 sets per annum in 1992-93. The project report, however, envisaged establishment of all production facilities by March 1992 at a capital cost of Rs.10.85 crore. The revised cost of the project was Rs.13.55 crore. The project was actually completed in April 1996 at a cost of Rs.13.77 crore.

3.5.2 The only order received by the Company (June 1989) from BEL for supply of 250 sets of hydraulic portion of T-72 stabilizers was due for delivery before 1994. Though the order size was subsequently reduced to 190 (April 1993), the Company was not able to complete the production facilities before 1996 as the project itself was behind schedule by 24 months (over the revised completion month of March 1994). To meet the agreed delivery schedules, the Company imported 125 pieces of equipment and supplied these to BEL. Another lot of 65 pieces of equipment was supplied to BEL after integrating the basic components (supplied by BEL) with some indigenous components. Consequently the Company could not utilise 55 sets of components of the equipment imported from M/s Omnipol in January 1993; the components and other related material valuing Rs.1.24 crore were lying with the Company (October 1999).

3.5.3 Though at a subsequent stage, BEL received from the Army a further order for 120 sets in March 1995, it preferred to import the hydraulic systems because owing to

delay in planning and execution of the project the Company was not in a position to supply any hydraulic system. In November 1996 when BEL received an order for 277 hydraulic sets it preferred to import the equipment, though the Company was in a position to supply the sets, leaving the capacity created by the Company (specifically for meeting the requirements of BEL) completely unutilised. Special purpose machines valuing Rs.4.51 crore and test rigs valuing Rs.11.00 lakh, procured exclusively for this project, were thus lying idle for want of orders from customers. The Company's claim (December 1992) amounting to Rs.9.23 crore towards compensation for low off-take of equipment was rejected by the Ministry (July 1993).

3.5.4 It is surprising that Ministry of Defence allowed import of 277 sets of hydraulic systems by BEL when the facility for their manufacturing was already available with the Company, particularly, when both the Company and BEL happened to be under the administrative control of the same Department in the Ministry of Defence.

3.5.5 The Ministry explained (November 1999) that the price of BEML's equipment was higher than that of the imported equipment owing to low level of indigenisation, which itself was a consequence of low off-take by BEL. It further stated that both the Company and BEL had been advised to mutually discuss the issue to arrive at an agreed price which was around the imported price so as to utilise the capacity already created.

3.6 BMP Transmissions

Owing to cheaper imports special purpose machinery obtained specifically for manufacture of BMP transmission remained idle after initial years of production.

3.6.1 Department of Defence Production identified (November 1980) the Company as the agency for the manufacture of transmission and allied assemblies of the powerline system required to be integrated into the Infantry Combat Vehicle BMP-2 (Boyevaya Machine Pekhoty) of the Army.

3.6.2 Based on a projected requirement of about 500 transmissions and allied assemblies as well as an additional requirement of 12.5 *per cent* per annum towards spares, the Government, in July 1985, approved establishment of necessary facilities at a total estimated cost of Rs.30.90 crore. The project was completed in March 1990 without any time and cost overrun. Even though by 1991-92 capacity was created for manufacturing 540 BMP transmissions and allied assemblies and further increased to 562 in 1992-93, the Company manufactured and sold only 326 transmissions during all the years between 1991-92 and 1995-96 which was even less than what could be produced in just one year. The highest production in a year was 95 (1991-92) and the lowest was 15 (1993-94). No transmission were manufactured between 1996-97 and 1998-99. In addition the company imported, assembled and sold 363 transmissions during 1995-96, 1996-97 and 1998-99.

3.6.3 The total profit earned on sale of transmissions during the 8 years between 1991-92 and 1998-99 was Rs.33.19 crore. This, however, did not take into account the annualised financial costs of the projects. Profit during the years (1991-92 to 1994-95) when no imports were effected averaged at Rs.3.09 lakh a piece. As against this during

1995-96 when both imported and indigenously manufactured transmissions were sold profit averaged at Rs.6.16 lakh a piece and during 1996-97 when only imported transmissions were sold it averaged at Rs.5.12 lakh a piece. It is thus evident that in house production of the equipment by the Company was less profitable and its production was comparatively costlier by Rs.3.59 lakh.

3.6.4 It is evident that even full indigenisation had not helped in making domestic production of transmissions competitive. Moreover, a special purpose machinery valuing at Rs.1.09 crore and installed specifically for the project was lying idle since April 1996. Though the Company had claimed (December 1992) compensation of Rs.30.84 crore from the Ministry for the low off-take of equipment the claim was rejected by the Ministry (July 1993).

3.6.5 The Ministry admitted (August 1999) the facts and attributed low off take of the equipment to reduction in the requirement of the Army.

3.6.6 During discussion with the Audit Board (November 1999) Management informed that there would be a continuous requirement of existing transmissions for the next 5 years, and since the Company had been identified as nodal agency for supply of spares demand for spares would continue for next 20 years. It further stated that capacity was being used for the manufacture of transmissions for non-defence equipment also. The fact, however, remains that the project was set up without any firm commitment from the Army and the facilities were not being used for the purpose intended.

3.7 Hydraulic Excavators

Company suffered loss of Rs.150.04 crore up to 1998-99 on production and sale of all but one model of excavators.

3.7.1 The Company manufactures 4 models of high capacity excavators (PC-220, PC-300, PC -650 and PC-1000) in collaboration with M/s Komatsu Ltd., Japan (Komatsu). Heavy losses were suffered by the Company on production and sale of all models of excavators productionised at various stages upto 1990 except in PC-1000 model, as shown in the table below:

Table: Production of Hydraulic Excavators

Model of excavator	Commencement of production in	Total number produced and sold till March 1999	Net Profit(+)/Loss (-) (Rs. in crore)
PC 220	April 1986	888	-66.88
PC 300	April 1983	277	-12.45
PC 650	April 1983	303	-70.71
PC 1000	April 1990	25	+8.02

3.7.2 Besides incurring heavy losses, the Company's market share of PC 220 declined from 22 per cent in 1994-95 to 14 per cent, for PC 300 it declined from 26 per cent to as low as 6 per cent in 1996-97 and for PC 650, from 62 *per cent* to 52 per cent in the same year.

The Management confirmed (August 1999) that while sale of excavators had resulted in loss, the manufacture of equipment had helped the Company, in absorbing, to some extent, the fixed overheads and other expenses, besides generating considerable sale of spare parts. Since model-wise details of sale of spares were not available with the Company its averment about sale of spares was not verifiable. Further, increase in the sale of spares appears to have had no significant impact on the overall profitability of the Company (see para 8.3.) Secretary (DP&S) concurred (November 1999) with the view of Audit Board that the Company had not been adequately cost-competitive in the current market and steps, therefore, needed to be taken to overcome this handicap.

Review of Collaboration Agreements

3.8 Collaboration with M/S.IGM Roboter System - Austria for arc welding robot

In the absence of any orders commercial production of arc welding robots could not commence resulting in infructuous payment of technical information fee of Rs.4.23 crore to the collaborator.

3.8.1 The Government of India issued an industrial licence to the Company (August 1988) for setting up capacity for manufacture of 10 arc welding robots every year. The licence was received on the basis of appropriate studies conducted during 1986 and contacts made with potential collaborators for the manufacture of robots. But, a market survey conducted by the Company during 1989 revealed that demand existed for only 4 to 5 robots per year.

3.8.2 The Company entered into a collaboration agreement (April 1991) with M/s. IGM Roboter System, Austria, which was valid for a period of 10 years i.e. up to March 2002. A fee of Rs.4.23 crore was paid to the collaborator during May 1992 to June 1996 for obtaining technical information which remained unused as no facilities were actually created for commercial production of robots. Though a prototype has been developed, the Company had failed to procure any orders for the product despite contacting 26 potential customers which included TELCO, L&T, Hindustan Motors, etc.

3.8.3 The Management stated (October 1997) that in view of very high rates of custom duty capital import was difficult at the stage when the Company ventured into the collaboration. But later, due to changes in industrial policies and reduction in custom duty, fully imported systems became more attractive which again extinguished demand for an indigenous robot. Secretary (DP&S) admitted during discussion with the Audit Board (November 1999) that proper market survey should have been conducted well before the collaboration agreement was executed. Thus due to lack of proper market assessment the investment of Rs.4.23 crore became totally unproductive.

3.9 Collaboration/Component Supply Agreement with M/s. Marion, USA for the manufacture of electric rope shovels

Company incurred loss of Rs.18.14 crore in the production and sale of 17 rope shovels.

3.9.1 Based on anticipated requirements of the coal industry over a period of five years from 1985-86 to 1989-90, Company projected (September 1985) a demand of 40 rope shovels. To service the demand a component supply agreement was executed in June 1990, with Marion Rope Shovel Division, Dresser Industries (Marion) USA (collaborator) one for the purchase of components and the other for the manufacture of rope shovels. The agreement was valid for 10 years and stipulated return of all documents to the collaborator at the end of this period i.e. by June 2000. In September 1998 Company entered into another collaboration agreement with M/s Bucyrus International Inc., who had by then taken over Dresser Industries. This agreement was valid for a period of 5 years i.e., up to 2003.

3.9.2 In addition Company also concluded (June 1990) a MOU with the collaborator for the purchase of components for the manufacture of rope shovel to the extent of not less than 20 *per cent* of the price of each completed machine so as to compensate the collaborator for its contribution in the development of technology.

3.9.3 It was noticed in audit that as against the envisaged demand of 40 rope shovels during the 10 year period from 1988-89 to 1998-99 Company manufactured and sold during this period only 17 and incurred a net loss of Rs.18.14 crore. Though it was envisaged that after manufacturing 16 to 21 pieces of equipment the company would attain an indigenisation level of 85.72 *per cent* it could achieve only 52.82 *per cent* indigenisation by the time 17th rope shovel was manufactured. As a corollary to that extent of technical information received at the end of March 1999 was just 50.48 *per cent*. Management attributed (August 1999) shortfall in attainment of indigenisation level to lack of sufficient orders.

3.9.4 The stipulation in the agreement with the collaborator binding the Company to return all the originals and copies of technical information and to cease manufacture and sale of the equipment, components and spare parts thereafter was unusually one sided because it overlooked the fact that collaborator already stood compensated for the technical information provided by it by way of forced imports of components to the extent of 20 *per cent*. During discussion with the Audit Board, however, CMD of the Company informed (November 1999) that return of documents would not effect the technological capability acquired by the Company. However, it was not clear as to how the technological capability acquired in this manner would be useful if the Company was prohibited from manufacturing the equipment after the expiry of the collaboration agreement.

3.10 Collaboration Agreement with M/s Komatsu for manufacture of D-475 dozers

Faulty investment decision by the Company against the advice of the collaborator (Komatsu) resulted in Rs.5.67 crore being blocked up in inventory.

3.10.1 Anticipating (December 1986) a demand for D-475 dozers by the end of Seventh Plan period (1985-90) and to complete its product line in dozers under one roof and also to prevent the entry of imported equipment, the Company decided to manufacture and introduce D-475 model of bulldozers in collaboration with M/s Komatsu, Japan. Although Komatsu advised the Company (1986) that the market requirement for D-475 bull dozers was too small and its production on a small scale would be uneconomical, the Company went ahead and concluded (December 1988) the collaboration agreement (with Komatsu) for manufacture of D-475 dozers. The agreement as approved by the Government was valid for a period of seven years with effect from January 1989. The payment of Rs.73.34 lakh to the collaborator towards technical information fee was made by the Company during May 1989 to June 1993.

3.10.2 As against an envisaged production of 43 dozers between 1989-90 and 1998-99, the actual production during 1991-92 to 1994-95 was only 7 dozers. There was no production thereafter due to lack of orders from the customers. Imported components (Rs.3.39 crore) and work-in-progress (Rs.2.28 crore) together valued at Rs.5.67 crore were lying in inventory since March 1994. The 7 dozers produced till 1994-95 were sold by September 1999.

3.10.3 As against the envisaged indigenisation level of 89.51 *per cent* (1994-1995), the actual achievement at the end of March 1999 was only 46.58 *per cent*. Due to low off-take of the equipment the Company has not placed much emphasis on its further indigenisation.

3.10.4 Venturing into the manufacture of these equipment, despite indications to the contrary by the collaborator, resulted in blocking up of Rs.5.67 crore in idle inventory and work in progress. The Management/Ministry informed (November 1999) that the components lying in unfinished state would be liquidated/utilised.

CHAPTER 4 :PRODUCTION PERFORMANCE

Test check revealed that during 1994-95 to 1998-99 Company had understated available capacity of its various production units by around 15 to 55 *per cent.*

The incentive schemes being operated by the Company were not designed to ensure optimal productivity at all work stations or in an assembly line as a whole.

Norms for in-house rejections were not fixed on an appropriate basis. The level of rejections in value as well as quantitative terms needed to be defined on rational and steady basis.

4.1 Capacity Determination

4.1.1 The Committee on Public Undertakings (COPU), of the Eighth Lok Sabha in their 45th Report (1987-88) on the working of the Company had recommended that the Company should introduce the system of machine utilisation cards for high value, special purpose and critical machines and assess the actual machine utilisation. It also recommended that for product mix and spares capacity norms should be fixed in terms of standard man hours (SMH). The Management constituted (July 1988) a task force to study these recommendations and suggest methods for implementation. This led to issue of suitable instructions (October 1988) to all the units for fixation of capacity for spares. Audit revealed that these instructions had not been followed by any of the units. The Management explained (April 1997) that since capacity was available for manufacture of either complete equipment or both equipment and spares as per demand, determination of capacity for equipment and spares separately was not advisable. It further stated (October 1997) that it was prudent to adopt a flexible approach in allocation of capacity for production of equipment and spares keeping in view the demand pattern. It was, however, noted by audit that these arguments of the Company had already been considered (April 1988) by the COPU before making its recommendations and, therefore, did not constitute an adequate explanation for not acting upon the same. Ministry stated (August 1999) that the Company was being asked to follow the recommendations of the COPU.

4.1.2 On test check of production performance of nine years in audit it was found that in five years actual production had exceeded available capacity in various production units (See Annexure-V) indicating that in all these years available capacity had been understated. Again, against the allowance of 8 *per cent*, 14 *per cent* and 8 *per cent* given by the Company for non-availability of machines, operator absence and delay, respectively, the actual figures worked out with reference to the average of the highest performance in the 4 divisions turned out to be 3.45 *per cent,* 4.17 *per cent*, and 2.03 *per cent,* respectively. Thus, the allowances made by the Company for these contingencies were far more liberal than warranted. Another reason for error in the Company's method of determining the available capacity was that at Mysore Truck Division, the factor considered for analysing capacity variance for many machines was more than the norm of 70 *per cent* for good machines and 50 *per cent* for old machines as adopted by the

Company.

4.1.3 Given this understatement of available capacity, audit tried to compute the actual available capacity. For the purpose of comparison, the method adopted by another Bangalore based PSU (HAL) and also a Ministry of Defence undertaking, was adopted. The results of the comparison as given below clearly brings out the inadequacies in the methods of capacity determination followed by BEML.

Sl. No.	Norms	HAL	BEML
1	Machine Availability	CNC Machines - 89% High Value - 80% Low Value - 71% Special Purpose- 53%	Good Machines - 70% Old Machines (i.e. condemned but still used)- 50%
2	Shifts worked	3 shifts	2 shifts
3	No. of days	25 days per month	Actual working days
4	Labour Hours taken	160 hours per month	140 hours per month

It is thus clear that in respect of both machines and manual capacity, BEML's norms for capacity determination were much on the lower side. On applying the norms adopted by the HAL to BEML, it was found that during the four years from 1995-96 to 1998-99, the Company had understated the available capacity of various production units from 15 to 55 *per cent* as indicated by the table below:

	1995-96	1996-97	1997-98	1998-99
Bangalore	-	22.32	25.44	24.83
Mysore	14.67	14.86	14.31	14.86
H&P	30.78	26.87	51.27	54.98
EM	18.39	19.59	23.11	45.19

The Ministry has offered no comments on this observation of audit.

The Management contended (August 1999) that comparison with the other PSU may not be appropriate since the factors obtaining in a heavy engineering unit like BEML were different from those of a light engineering unit like HAL. The reply is not acceptable. The comparison was made between PSUs which were both categorised by the Department of Public Enterprises as 'Transportation Equipment' manufacturing industries.

4.1.4 Audit's observation is further strengthened by the fact that in Truck Division at the Mysore Complex, capacity utilised exceeded the available capacity (as worked out by the Company) in seven out of nine years between 1990-91 and 1998-99 (1993-94 and 1994-95 being the exception). In 1996-97 capacity utilised almost equaled available capacity as computed by audit; in 1997-98 and 1998-99 it exceeded the available capacity

as computed by audit by 12 *per cent* and 18 *per cent,* respectively.

4.1.5 The productivity norms for assessing the available capacity were fixed long ago when highly productive and numerically controlled and computer controlled machines had not been put to use. The need for making the productivity norms more stringent and accordingly reassessing the available capacities is, therefore, obvious.

4.2 Capacity Utilisation

The details of capacity utilisation as worked out by the Company are given in Annexure V. The following observations can be made from this Annexure.

- The available capacity (in SMH) declined from 102.49 lakh in 1990-91 to 91.26 lakh in 1996-97, but increased slightly to 92.50 lakh in 1997-98 and 92.87 lakh in 1998-99. Management attributed (August 1999) this to (i) variation in total number of available machines from year to year, (ii) variation in direct labour man hours due to superannuation, death, etc. (iii) increase in condemned machines due to ageing of machines, and (iv) non-receipt/delayed receipt of orders for Rail Coaches during 1994-95 and 1995-96. The reply is not tenable as the actual capacity utilisation in five out of nine years was greater than the available capacity. This indicated unrealistic determination of available capacities. The Audit Board would, therefore, suggest a thorough review of the norms for assessment of available capacity.

- The Company's claim that it had achieved the capacity utilisation of 103.41 *per cent* in 1996-97 and 106.28 *per cent* in 1997-98 and 110.70 *per cent* in 1998-99 was not valid because in all these years the percentage of capacity utilisation was lower when compared with available capacity as computed by audit (81.81 *per cent* for 1996-97 and 79.50 *per cent* for 1997-98 and 69.20 *per cent* in 1998-99).

4.3. Machine Utilisation

4.3.1 Overall machine utilisation of the Company and Division-wise details of machine hours planned for production, actual hours utilised, percentage of utilisation and idle hours for the nine years ended March 1999 are indicated in the Annexure VI. It can be seen that during this period the idle machine hours ranged from 9.82% in 1991-92 to 14.58% in 1993-94. The cause-wise analysis of idle machine hours is indicated in Annexure-VII.

4.3.2 Audit observed (November 1998) that Company had not taken into account all the machines for calculation of planned hours of production and reporting on machine utilisation. Test check in audit indicated that during 1997-98 the entire Company (excluding Engine division), had planned for production of only 36.50 lakh hours against the actual available machine hours of 44.13 lakh as worked out by audit. The actual utilisation of machines during 1997-98 thus worked to 74 *per cent* against the Company's claim of 89 *per cent*. In 1998-99, the Company planned for production for only 35.79 lakh machine hours against 45.15 lakh machine hours actually available as per computation by audit; the actual utilisation of machines during that year thus worked to 71 *per cent* against Company's claim of 89 *per cent*.

The Management as well as the Ministry explained the gap between its own computation of available capacity and that of audit by contending (August 1999) that as per a time-honoured practice only machines in good condition (i.e. with specified deration) were being reckoned for the purpose of computing available capacity. The reply is not acceptable as the norms adopted by Company were far below the norms of HAL as discussed in para 4.1.3.

4.4. Manpower Analysis and Utilisation

4.4.1. The number of direct, indirect and supervisory staff of the Company at the end of each of nine years upto 1998-99 was as follows:

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
a) Direct workers	7286	7445	7567	7046	6872	6717	6624	6614	6779
b) Indirect workers	7584	7282	6756	6714	6605	6431	6229	5903	5846
Officers	2430	2692	2842	2644	2625	2570	2687	2832	2846
Total	17300	17419	17165	16404	16102	15718	15540	15349	15471
***Per cent* of (b) to (a)**	104	98	89	95	96	96	94	89	86

4.4.2 Even though Company's Corporate Plan (1976) envisaged reduction in the proportion of indirect workers to direct workers to 57 *per cent* by 1985-86 it can be seen from the above table that the percentage of indirect workers to direct workers was very high in all the nine years under review. At 86 *per cent* of direct workforce in 1998-99 proportion of indirect workers was still very high. The Company did not carry out any reduction of indirect workers or their conversion to direct workers as planned. The Audit Board was informed by the Management (October 1998) that the Company was hopeful of reducing the above ratio through training along with regular work. However, the result of any such effort were yet to emerge (November 1999).

4.4.3 Incentive Scheme

The Company had introduced different incentive schemes in all the three manufacturing complexes at KGF, Bangalore and Mysore from 1970 onwards. These schemes were subsequently reviewed and revised (January 1997). While under the earlier schemes incentive was payable to every worker on attainment of 80 SMH per month subject to maximum of 250 SMH, the new scheme provided for payment of incentive for exceeding an output of 3.5 SMH per employee per day subject to a minimum of 80 SMH per month. The maximum level for any month was, however, limited to 300 SMH.

During their visit to the Mysore Division (October 1998) and discussion with the Management, the Audit Board observed that the existing incentive schemes were not designed to ensure optimal productivity at all work stations or in an assembly line as a whole, as these left enough scope for mismatches between the output at one work station and its utilisation at the next work station. It was suggested to the Management that it must seriously consider the option of adopting (i) a U-line production organization under

which raw material went through all the processes stage by stage till the finished stage leading to increase in productivity and reduction of inventory; (ii) throughput concept of production planning resulting in reduction of inventory of raw material as well as work-in-progress and (iii) group incentive scheme for encouraging symmetry in volumes of production at the shop floor level. The Management agreed (August 1999) to implement suggestions at S.Nos. (i) and (iii), but expressed its apprehensions about the feasibility of adopting the suggestion on "throughput concept" owing to "external factors". Ministry assured (August 1999) that all the suggestions of Audit Board would be implemented.

4.5 In-House Rejections

4.5.1 The Company had not prescribed any firm norms for in-house rejections during the production process. Instead, it had evolved the practice of fixing targets year after year for maintaining level of rejection in terms of value of rejected production. These targets were invariably either under-achieved or widely over-achieved. Also the targets were ever unsteady and inexplicably, several times higher or lower than those of the previous years (See Annexure VIII).

4.5.2 Audit observed that while a system of investigating rejections for remedial action was being followed by the Management, analysis of rejections to identify their extent on account of avoidable and unavoidable causes was not being done. Management stated (October 1997) that doing so was not possible. However, audit on its own analysis observed that rejections on account of avoidable causes like operators' fault, material fault, faulty tooling, faulty planning, faulty drawing, faulty inspection, faulty sub-contracts etc. were invariably greater thus underlining the fact that system of control over rejections could be improved further. During their meeting with Audit Board (October 1998), Management admitted that the scope did exist for bringing down level of rejections.

Audit Board would expect the Company to define the level of rejections not in value terms but in quantitative terms as was the practice with some of its overseas collaborators like M/s Komatsu which measured rejections in terms of parts per million. It would also like the rejection-norms to be worked out on a rational and steady basis. The Ministry assured (August 1999) that the suggestions of the Audit Board would be implemented by the Company.

CHAPTER 5 :MATERIAL MANAGEMENT AND INVENTORY CONTROL

Total inventory held by the Company went up from Rs.402.89 crore in 1990-91 to Rs.679.61 crore in 1998-99. The spares held by marketing division alone went up by Rs.63.38 crore during the same period.

Out of a total inventory of Rs. 419.74 crore of raw materials and spares as on 31 March 1999, the value of inventory of materials, stores and spares not moving for more than 2 years was Rs. 29.59 crore. The value of slow moving inventory as on 31 March 1999 was Rs.30.58 crore.

5.1 Material Procurement

5.1.1 Material management department of the Company was responsible for procuring materials through the purchase department. To have a broad-based approach and to develop alternative potential sources for procuring material, Purchase Manual of the Company provided for calling of global tenders, open tenders, limited and single tenders. But for majority of purchases, the Company had been inviting only single or limited tenders, the choice between the two depending upon the nature and value of items as well as past experience in effecting procurements, particularly those items requiring high quality.

5.1.2 The procurement process was being initiated with a Material Purchase Request (MPR). Test check of the MPRs and Purchase Orders (POs) revealed that in Bangalore Complex the time lag between receipt of MPRs and raising of POs during 1996-97 ranged between 13 and 477 days. In Bangalore Complex the maximum time lag observed was 408 days during 1997-98 and 227 days in 1998-99. In KGF Complex it was 568 days during 1992-96. Further in KGF Complex, during the period 1992-96 delay of as of much as 1856 days was noticed from the date of the MPR to date of receipt of materials. Management admitted (October 1997) long-lead time in some exceptional cases. According to the Management, in the existing market scenario the lead time required for procurement of raw materials like steel plates indigenously was about 45 to 60 days. For the component parts, lead time varied from 120 days to 180 days and in respect of imported items it was about 270 days. Such unusually long lead times indicated poor procurement planning. The Management/Ministry stated (August 1999) that substantial improvement had been made in compressing internal lead time. On items of developmental nature or those requiring to be imported lead time was in the range of 20-26 weeks. Moreover achievement of targets had by and large not suffered on account of delays in procurement of materials. No evidence in support of improvement claimed to have been achieved was, however, forthcoming in audit and delays continued, more or less as before, even during 1998-99.

5.2 Material with Sub-Contractors

5.2.1 According to Purchase Manual raw materials/components issued against sub-contracted orders were to be regulated in accordance with the delivery schedule. Periodical confirmation of the materials issued to sub-contractors was to be obtained and reconciled with Company's own record of such issues. It was observed that unconfirmed balances of the value of materials lying with the subcontractors ranged between Rs.0.97 crore (1998-99) and Rs.6.90 crore (1995-96) representing 19 *per cent* and 80 *per cent* of total material lying with sub-contractors respectively.

5.2.2 Division wise p*ercent*age of unconfirmed balances ranged between 0.03 *per cent* (Truck Division in 1994-95) to 100 per cent (H & P and Bangalore Complex in 1993-94) as indicated below.

Table: Percentage of unconfirmed balances

Year	Truck Division	Engine Division	Bangalore Complex	EM Division	H&P Division
1990-91	N.A.	7.51	48.87	87.68	100.00
1991-92	48.13	80.84	65.50	69.09	100.00
1992-93	21.61	97.56	100.00	53.80	100.00
1993-94	17.72	97.91	100.00	82.15	100.00
1994-95	0.03	67.78	67.85	85.68	32.94
1995-96	1.50	92.46	94.75	89.52	100.00
1996-97	5.01	61.72	89.16	61.34	42.80
1997-98	15.66	12.51	18.37	60.48	58.72
1998-99	1.36	6.53	2.64	20.37	35.32

The Management/Ministry stated (August 1999) that as a result of intensive efforts made by all divisions the position as on 31.03.99 had improved. While this was true, concerted efforts were still needed in EM and H&P Division to obtain such confirmations.

5.2.3 Audit also observed that while the value of bank guarantee being obtained from sub-contractors was only Rs.5,000/-in each case, value of material lying with them in most cases was far in excess of that amount. The Management attributed (October 1997) this to inadequate financial capacity of the Small Scale Vendors (SSV) who could not afford to pay the bank charges for guarantee of higher value. The Audit Board found that during 1995-96 to 1998-99 percentage of SSV to the total vendors ranged between 57 per cent and 90 per cent in Equipment Division, 66 per cent and 85 per cent in Engine Division (Mysore Complex), 54 per cent and 68 per cent in H & P Division (KGF Complex) and 50 per cent and 93 per cent in Bangalore Complex which was obviously high. Given the large numbers of SSVs it was not clear how the Management ensured the safety of materials given to them particularly when they were not able to pay even the nominal charges necessary to provide bank guarantee.

The Management/Ministry informed Audit Board (August 1999) that henceforth return of excess material would be made a pre-condition for settlement of final bills by sub-contractors and by this arrangements the Company would safeguard its interest.

However, this action may not be sufficient because if sub-contractors failed to return the material, the Company would have no security to rely upon. Hence, the prevailing system of dealing with SSVs could not be considered to be fool-proof.

5.3 Inventory Control

5.3.1 The inventory held by the Company went up from Rs.402.89 crore in 1990-91 to Rs.679.61 crore in 1998-99 (Annexure IX). This included spares held by Marketing Division which alone went up by Rs.63.38 crore during the above period.

5.3.2 Audit observed that except in respect of finished stock norms for inventory holding were higher than the norms suggested by the Institute of Cost & Works Accountants of India (ICWAI).The actual inventory levels during the period 1991-92 and 1998-99 were even higher as indicated below:

	Year End Norms		Actual							
	Proposed by ICWAI	Accepted by Company	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Raw materials, components & spares etc. (in terms of no. of day's consumption)	75	125	161	132	129	164	225	148	155	155
Spare parts for resale (in terms of no. of days consumption)	275	320	655	545	377	348	370	457	412	390
Finished Goods (in terms of no .of days sale)	20	12	14	15	26	11	8	13	14	34

5.3.3 The reply of the Management (July 1997) that every effort was being made to control inventory was not borne out by facts. The Company was unable to adhere to the targeted inventory levels for raw materials, components and spares despite norms fixed by it (125 days) being more liberal than those prescribed by ICWAI (75 days). Audit Board felt (October 1998) that since the inventory was being procured on borrowed capital, the Company ought to show more sensitivity to the costs involved.

Management stated (August 1999) that in the current market scenario it was not possible to reduce the inventory levels.

5.4 Inventory of Spares

5.4.1 The percentage of imported, indigenous and manufactured spares included in the inventory during the 7 years ended March 1999 was as follows:

Year	Total Value of spares	Percentage of Spares		
	(Rs. in crore)	Purchased		Manufactured
		Indigenous	Imported	
1992-93	143.42	38.9	60.1	1.0
1993-94	141.45	54.3	44.9	0.8
1994-95	136.47	53.7	44.7	1.6
1995-96	153.40	39.1	58.5	2.4
1996-97	175.93*	36.9	57.6	5.5
1997-98	177.52	31.0	50.5	18.5
1998-99	178.24	31.8	54.7	13.5

(* includes spares in transit-Rs.0.05 crore)

It would be seen from the above table that while the value of the inventory of spares continued to increase year after year, the proportion of the inventory of imported spares was very high in all the years.

The value of inventory of spares as a percentage of annual sales of spares in KGF ranged between 47 *per cent* (1998-99) to 134 *per cent* (1995-96) and in Mysore Complex it ranged between 79 *per cent* (1994-95) to 460 *per cent* (1996-97) but came down to 156 *per cent* in 1998-99.

A committee constituted by Board of Directors (August 1992) to go into the reasons for such heavy accumulation of inventory reported that during 1991-92 regional offices had returned to the marketing centres unsold spares worth Rs.18.18 crore. Of these spares valued at Rs.14.15 crore were accepted back. The remaining spares worth Rs.4.03 crore were rejected. The spares valued at Rs.1.24 crore were declared unserviceable and were recommended for write-off. But only spares worth Rs.1.18 crore were actually written off in 1992-93. The balance spares were taken back into stock (March 1999).

Management stated (August 1999) that the present inventory levels had helped the Company to weed out private individual competitors to a large extent. It further stated that by implementation of Economical Parts Inventory Control System (EPICS) department expected to bring about reduction in inventory levels in respect of imported items. The reply of the Management is not tenable because introduction of EPICS in January 1995 had not resulted in any effective reduction of inventory. On the contrary the inventory level of spares had been increasing since 1995-96.

5.5 *Slow moving and non-moving inventory*

5.5.1 Inventory items not moved for more than two years from the date of last issue were classified by Management as non-moving and items which had not moved between 1 to 2 years were considered as slow-moving. The percentage of non-moving items of raw material and components to total raw materials, components, stores and spares (including goods in transit) increased from 5.1 per cent (1990-91) to 10.06 per cent (1998-99). As on 31.3.1999, 36.52 per cent of the total non-moving inventory of raw materials and stores and 70.96 per cent of the non-moving inventory of spares had not moved for more than 5 years. Out of the total inventory of Rs.419.74 crore of raw materials and spares as on 31-03-1999, the value of the non-moving inventory (of materials stores and spares) more than 2 years old was Rs 29.59 crore. The value of slow

moving inventory was Rs.30.58 crore as on 31.3.1999.

5.5.2 A task force was constituted by the Management to review the levels of inventory in Bangalore complex. On a review of the action taken by Task Force, it was observed that out of non-moving inventory valued at Rs.6.14 crore as on 31.10.1999, the Task Force had recommended (October 1999) use of inventory valued at Rs.3.77 crore and disposal of inventory valued at Rs.0.65 crore. Items worth Rs.1.72 crore were yet to be reviewed by the task force. No task force was set up in the Truck division. In the Materials Department non-moving/slow-moving inventory was being reviewed at periodic intervals every year.

Management agreed (August 1999) to constitute a task force at Truck Division, Mysore during the current year.

CHA PTER 6 : SALES AND MARKETING MANAGEMENT

The Company lost 30 *per cent* of overseas tenders and 23 per cent of domestic tenders during the period 1991-92 to 1998-99 due to uncompetitive prices.

***Percent*age of total orders executed to total orders available for execution during the same period declined from 78 *per cent* (1990-91) to 61 *per cent* (1998-99).**

The market share of the Company for excavators, wheel loaders and dumpers which was substantive in 1990-91 dropped drastically in subsequent years.

The Company needs to carefully identify its area of core competence and to follow a proactive marketing strategy with a clear focus on the bottom line.

To improve its cost structure the Company needs to be recognized as an enterprise in the insrastructure sector so as to allow it to avail of benefits like tariff reduction and external financing.

Option of managing Rail Coach Division at Bangalore as an independent enterprise under the control of Railways needs to be seriously persued.

6.1 Tender Analysis

During the period 1991-92 to 1998-99, the Company participated in 513 domestic and 99 overseas tenders but succeeded in only 56 *per cent* of domestic tenders and 29 *per cent* of overseas tenders. The overall success rate was 52 p*er cent*. Further analysis of tenders lost during the above period revealed that 30 p*er cent* of the overseas tenders and 23 *per cent* of domestic tenders were lost by the Company due to uncompetitive prices.

Management/Ministry stated (August 1999) that tenders, both in domestic as well as in overseas markets, were not lost due to uncompetitive prices alone. The other reasons it enumerated for loss of tenders were (i) under-quoting by MNC's to gain entry into the market, (ii) preference to competitors' products due to standardisation, brand loyalty, attractive financial packages offered by them as well the use of state of the art technology by competitors. The reply underscores the inability of the Company to face competition.

6.2 Sales Performance

The sector-wise percentage of sales during the last nine years ended March 1999 is shown in the following table:

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Total Sales (Rs. in crore)	748.32	799.00	900.66	902.39	1021.13	1011.10	1169.79	1259.71	1212.62
Coal	45%	46%	49%	35%	52%	45%	51 %	54%	44%
Defence	10%	6%	6%	5%	12%	14%	14%	12%	17%
Exports	4%	5%	8%	27%	4%	2%	5%	6%	15%
Railways	12%	10%	9%	9%	-	3%	4%	4%	6%
Steel Mines	17%	22%	13%	8%	10%	8%	7%	7%	6%
Irrigation/Power	4%	4%	3%	4%	4%	4%	1%	-	4%
Cement	-	-	3%	2%	2%	5%	5%	-	1%
Contractors	-	-	5%	8%	9%	9%	4%	-	2%
Others	@8%	@7%	4%	2%	7%	10%	9%	@17%	5%

@ includes sales to cement and fertilisers sectors as well to contractors

It was observed that:

(i) Though the Company was under the administrative control of Ministry of Defence, not more than 17 p*er cent* of the turnover was contributed by the Defence Sector in any year.

(ii) The exceptional performance of exports during 1993-94 was due to supply of high value equipment to M/s. Coal India Limited which was in the nature of deemed exports and export of Defence items manufactured by M/s. Bharat Dynamics Limited which was a one-time contract. Improved performance in exports in 1998-99 was again due to deemed exports to M/s. Coal India Limited.

(iii) The over reliance of the Company on "institutional sales" during the years under review was evident. The Company was unable to optimise sales to the contractor segment. Management stated (August 1999) that introduction of smaller models of equipment had yielded a high growth of 17 per cent in contractor segment in 1997-98. However, Company could not hold on to this trend as growth in sales in this segment during 1998-99 was only 2 per cent.

6.3 Market Share

6.3.1 The percentage of market share (as worked out by the Company) enjoyed by different models of its EM equipment during the nine years ended March 1999 was as follows:

Year	Dozer	Wheel dozer	Excavator	Wheel loader	Dumper	Motor grader
1990-91	92	95	45	38	74	95
1991-92	94	89	40	52	77	90
1992-93	95	91	24	53	65	100
1993-94	95	100	27	23	58	100
1994-95	91	100	40	27	60	95
1995-96	88	100	26	19	54	100
1996-97	91	100	28	14	50	100
1997-98	92	-	14	8	59	83
1998-99	**87**	**-**	**12**	**14**	**46**	**43**

It can be seen from the above that in respect of excavators, wheel loaders and dumpers, the market share of the Company had declined significantly over the period. The market

share of motor graders which was 100 *per cent* in 1995-96 and 1996-97 declined to 43 per cent in 1998-99. Similarly share of wheel dozers which was 100 per cent during the period 1993-94 to 1996-97 dropped to zero in the subsequent years. Management stated (October 1998) that the Company has decided as a matter of strategy not to market low capacity/low value excavators and loaders aggressively and show only a presence in the market. It was also stated that in this segment of the market Company was unable to match packages offered by competitors like Telco which had significantly influenced the customers. The reduction in the market share of graders was attributed (November 1999) to entry of multi-nationals in this field.

The Audit Board feel that Company would need to identify its core competence and prioritise its activities with a very clear focus on its bottom line. It was of the opinion that the Company had to follow a proactive market strategy if it aimed to retain its share of the market relating to earth moving equipment. The Ministry stated (August 1999) that the suggestions of Audit would be taken into account by the Company for further necessary action.

6.3.2 Management further stated (October 1998) that to provide capital equipment and maintenance support to infrastructure development projects like power, mining, irrigation, railways, construction of highways, airports, port trusts etc., the Company needed to be categorised as an enterprise under "infrastructure sector" which would enable it to avail of the benefits like tariff reduction and external financing. This would substantially reduce its interest cost and improve its cost structure. Audit Board was of the view that it was only logical to categorise the Company under the "infrastructure sector". Secretary (DP&S) agreed with the view of Audit Board (November 1999) that there was a *prima facie* case for providing these benefits to the Company and assured that the matter would be taken up with the Ministry of Finance well before the next budgetary exercise began.

6.3.3 It was observed in audit that the Company's share of railcoaches in the total requirement of Railways had decreased year after year. Though the Company had been making profit on the sale of railcoaches up to 1993-94 no orders were received in the subsequent year i.e. 1994-95. The Company ascribed this to: i) reduction in the requirement of Railway owing to better utilisation of existing rolling stock; ii) diversion by Railways of available resources for gauge conversion, and iii) high price of coaches manufactured by the Company as compared with the cost of coaches supplied by Integral Coach Factory (ICF)/ Rail Coach Factory (RCF).

Audit Board feel that the existing facility for manufacture of Rail coaches in the Bangalore Complex should not be allowed to waste away in absence of orders. They are of the view that for optimal utilisation of existing capacity in the country for manufacture of rolling stock, orders should be distributed between different units on an equitable basis irrespective of which administrative ministry controls the facility. It would be necessary, therefore, to make a comparative study of cost structure of each production facility.

Ministry informed Audit Board (November 1999) that a Committee has been constituted under the Chairmanship of Additional Member (Mechanical), Railway Board to examine various options of managing Rail Coach Division as an independent Company with joint stakes from Railways, RITES.

CHA PTER 7 : COSTING SYSTEM AND COST CONTROL

According to the existing transfer pricing policy, both transferor and transferee divisions were not functioning as profit centres.

Work orders pending closure for more than 5 years were not investigated.

In the absence of a system of ensuring timely documentation of costs, managerial decisions on pricing products were likely to be based on incorrect data.

7.1 Costing System - Cost Determination

7.1.1 The Company follows batch costing system in manufacturing departments and job costing system for assembly and overhaul functions. It introduced, in October 1992, a Cost Accounts Manual covering areas of cost determination, pricing, transfer pricing and cost audit. The manual also detailed the documents and the books to be maintained in the cost accounts department.

7.1.2 The present system of cost determination does not take into account the cost of specific facilities put to use in the manufacture of a particular product. All the products are charged at the average man-hour rate of the Division, resulting in undercosting of a product manufactured by using sophisticated equipment and facilities and overcosting of a product using less sophisticated equipment as well as of the products which are more labour intensive. Though the Cost Consultant had advised the Company to adopt machine hour rate in units where capital intensive facilities were installed, the advice was not followed. The Management stated (October 1997) that recovery of overheads on the basis of shop hour rates represented a good basis in respect of products which were labour intensive. This was not acceptable because recovery of overheads based on machine hour rates was considered ideal where capital intensive facilities were developed for manufacture.

Ministry stated (August 1999) that audit observation would be taken into account by the Company for compliance/necessary action.

7.2 Cost centres and Profit centres - Defective transfer pricing practices

7.2.1 Each division of the Company was being treated as a separate profit centre. Division-wise profitability was being worked out and final consolidated accounts were being prepared based on divisional accounts. Thus, the profitability of each division was reckoned to arrive at the overall profitability of the Company.

7.2.2. The Company introduced (October 1992) a transfer pricing policy with the objective of (i) making each division a profit centre responsible for a quantum of profit from its operation; (ii) making equitable distribution of overheads so that assistance

rendered from one unit to another unit of the Company by supply of aggregate and spares is correctly valued, and (iii) ensuring that cost of production and cost of equipment produced and sold are realistic in that they bear overheads identified with and allocable to them.

The stock transfer value from one division to the other was to be reckoned taking into account the manufacturing cost, the non-manufacturing overheads (NMOH) and the element of profit. The policy adopted by the Company was to transfer NMOH such as R&D expenditure, sales overheads, allocable Head Office expenses, finance charges and warranty charges to individual products in proportion to the sales of each product. This has resulted in divisions manufacturing products like engines not receiving full allocation of NMOH as the Company's policy in this regard did not involve allocation of certain directly attributable overheads like warranty charges, finance charges etc. to such divisions where there were no sales. Though under allocation of NMOH may not affect the overall profitability of the Company, in the absence of equitable distribution of overheads as brought out above, the Company had not been able to achieve the objective of transfer pricing policy.

Further, the cost of engines transferred by the Engine Division to the EM Division for being fitted into the earth moving equipment as determined in the manner indicated above, worked out to be higher than the cost which EM Division could afford to include in its price quotations for earth moving equipment because of lower prices offered by its competitors (KCL) for the same engine. This resulted in EM Division being compelled to absorb the difference between the transfer price and the market price. Failure of the Engine division to peg the cost of engines to that of the competitors and in the absence of a policy permitting negotiated transfer pricing, real profitability of both Engine and EM divisions could not be ascertained. This also defeated the very purpose of establishing profit centres. Management admitted (August 1999) that the existing transfer policy, being cost based, was not relevant in a market driven economy and the units were not functioning as separate profit centres in real sense. Management also agreed that the existing policy was unable to distinguish between efficient and inefficient operations and stated that modification of the existing transfer pricing guidelines was under its active consideration.

7.3. Closure of work orders

7.3.1 Under the batch costing system followed by the Company, the manufacture had to take place in batches of convenient/economic quantities and cost thereof was to be recorded in batch work orders. Work orders for production, tooling and development of products which were governed by batch costing methods were normally required to be kept open for one year; other work orders were not to be kept open for more than six months. Work orders not closed as indicated above were to be referred to Production Control and Planning Department for investigation and closure.

A review of work orders pending closure as at the end of March 1999 revealed that work orders valuing Rs.82.08 crore were pending closure for more than 6 months. Of these, work orders valuing Rs.27.01 crore (33 *per cent*) and Rs.4.21 crore (5 *per cent*) were pending closure for periods ranging between one to five years and more than five years,

respectively. Besides, a test-check of work orders as at the end of March 1999 revealed that those pertaining to equipment and pending closure for periods ranging between 1 and 5 years (Rs.13.17 crore) and for more than 5 years (Rs.4.09 crore) represented 49 *per cent* and 97 *per cent,* respectively, of the corresponding total work orders pending closure.

Ministry stated (August 1999) that observation of audit would be taken into account by the Company for further necessary action.

7.3.2 In the files made available to Audit there was no evidence that these work-orders had ever been referred to Production Control and Planning Department for investigation and closure as required. In the absence of investigation it was not known whether quantities actually produced under different work orders conformed to quantities authorised under each work order. Further, during the nine years ended March 1999 cost to the extent of Rs.3.23 crore were booked on work orders even after these were closed. It is thus apparent that sufficient control is not being exercised over work orders pending closure.

The Management stated (October 1997) that booking of cost on closed work orders was attributed to delay in finalisation of documentation and further clarified that the unabsorbed costs were accounted for as prior period adjustments in financial accounts. The reply is not tenable, because by this practice, the unabsorbed costs were reflected only in financial accounts and not in cost records. Thus, in the absence of a system to ensure timely documentation of costs managerial decision on pricing of the products would be based on incorrect cost data.

7.4 Cost Control

7.4.1 It was observed that the extent of materials drawn against various jobs were not being recorded on relevant job cards. The Management stated (October 1997) that material against each order was drawn as per standard bills of materials implying that recording the same on the job card was not necessary. But a test check in EM Division of KGF Complex for the year 1994-95 revealed that actual material drawn for equipment varied considerably from the quantity indicated in the bills of material. The Management admitted (November 1998) this practice but attributed this to (i) drawal of alternate materials (ii) change in the sourcing of materials and (iii) change in drawing/specification. However such variances were not being analysed by the Management.

7.4.2 It was also observed that in respect of certain products relating to EM division, KGF Complex (listed in the Annexure X) standard hours fixed varied from year to year and the actual hours booked for these equipment varied in comparison to standard hours. The Company had also not analysed the reasons for these variances.

7.4.3 Although the commercial production of engines commenced in 1991, no job cards had been introduced for these so far (January 1999). The Management stated (March 1996) that job cards were proposed to be introduced when the plant became operational to full capacity and the project stabilised. But in the absence of job cards, the efficiency

of utilisation of men on the related jobs and cause-wise analysis of idle time distinguishing between avoidable and unavoidable reasons could not be evaluated either in audit or by the Management.

7.5. Cost Audit

The Engine Division of the Company was covered by Cost Audit Rules and was required to maintain cost records prescribed under section 209(1)(d) of the Companies' Act, 1956. It was observed in audit (October 1997) that records like (i) cost centres and the work on which the employees were deployed, (ii) cost centre-wise details of idle time indicating reasons thereof, and (iii) rejection occurring during the course of production, were not maintained. Reply of Management (November 1998) that these records were capable of being compiled from the available records is not acceptable as the maintenance of these records was mandatory.

Ministry stated (August 1999) that the Company was being asked to ensure proper maintenance of the mandatory records.

CHAPTER 8 : FINANCIAL POSITION AND WORKING RESULTS

The return on capital employed by the Company declined from 17.87 *per cent* in 1990-91 to 7.14 *per cent* in 1998-99.

The percentage of Sundry Debtors to Sales increased from 32.31 *per cent* in 1990-91 to 51.59 *per cent* in 1998-99.

Profit on sale of spares declined from 19.7 *per cent* in 1991-92 to 9.4 *per cent* in 1997-98. Though it increased to 13.4 *per cent* in 1998-99, it failed to have any significant impact on the overall profitability of the Company.

8.1 Financial Position

8.1.1 The working results and financial position of the Company for the nine years ended March 1999 are indicated in Annexure XI. Highlights of the same are indicated below:

(Rs. in crore)

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
1. Paid up Share Capital	30.00	30.00	30.00	30.00	36.83	36.86	36.87	36.87	36.87
2. Reserves & Surplus	320.06	350.75	382.60	417.55	526.45	536.15	546.20	548.77	549.37
3. Sales	748.32	798.99	900.66	902.39	1021.13	1011.10	1169.79	1259.71	1212.62
4. Profit before tax	67.14	48.82	48.94	46.03	14.50	22.46	31.16	16.05	2.72
5. Profit after tax	46.14	34.82	36.44	39.53	10.50	12.46	16.16	10.65	0.62
6. Percentage of Profit before tax to Sales	**8.97%**	6.11%	5.43%	5.10%	1.42%	2.22%	2.66%	1.27%	**0.22%**
7. Percentage of Profit after tax to paid up share capital	153.80%	116.07%	121.47%	131.77%	28.51%	33.80%	43.83%	28.89%	1.68%
8. Return on capital employed	**17.87 %**	15.11 %	14.44 %	12.54 %	8.69%	10.21%	11.13%	9.15%	**7.14%**
9. Net worth	349.70	380.66	410.70	441.51	551.98	556.22	568.02	569.22	577.52

8.1.2 It would be seen from the above that the profit before tax as a percentage of sales has declined from 8.97 per cent (1990-91) to 0.22 per cent (1998-99).

8.1.3 The return on capital employed by the Company, which was 17.87 *per cent* in 1990-91 declined to 7.14 *per cent* in 1998-99. The main reasons for the decline were:

i) Investment of Rs.167.06 crore on different projects yielded a net loss of Rs.118.23 crore. The major contributors to loss were projects relating to hydraulic excavator and electric rope shovel, which accounted for loss of Rs.142.02 crore and Rs.18.14 crore, respectively (refer Annexure XII and paras 3.2 to 3.10).

ii) Unprofitable utilisation of working capital (Discussed in para 8.4.3).

iii) Loss making products (see details in Annexure XIII).

Management stated (August 1999) that manufacture of unprofitable products was continued to keep the technology alive. The reply is not tenable as in a liberalised economy, the Company needed to identify its core competence and prioritise its activities with a very clear focus on its bottom line.

8.2. Working Results

The overall working results of the Company and Division wise results for the last nine years ending 31st March 1999 are indicated in the Annexure XIV. An analysis revealed that:

(i) The ratio of profit before tax to sales in almost all divisions was fluctuating over the years.

(ii) Bangalore Complex was earning profit till 1993-94. In the next year it suffered heavy losses (Rs.39.74 crore) as orders for supply of railcoaches fell sharply. Further, in subsequent years and up to 1998-99 losses totalling Rs.96.59 crore were incurred due to unremunerative prices fixed by the Railway Board.

(iii) The EM Division of KGF incurred a loss of Rs.103.72 crore during the period 1992-93 to 1998-99 due to stiff competition faced by it in the field of earth moving equipment and Company's persistence in manufacturing loss-making products like excavators and wheeled loaders.

(iv) The H& P Division made profits in all the years except in 1997-98 when there was no sale due to non-receipt of orders for BMP transmissions and T-72 stabilizers.

(v) The profit of Engine Division from 1994-95 onwards was attributable to their inter-divisional transfer price (See para 7.2.2) and sale of engine spares. During 1998-99, the Company accounted sale of engine spares under the Marketing Division with the result that the Engine Division showed loss of Rs. 0.70 crore.

8.3 Profitability

8.3.1 The year-wise and division-wise details of earth moving equipment and spares sold by the Company are given in the Annexure XV. A review of the prices vis-a-vis the profitability of the equipment for the nine years ended March 1999, revealed that:

(i) In the case of equipment, profit was only 2.3 *per cent* of sales in 1998-99 compared to 7.0 *per cent* in 1990-91 whereas the target was for a profit of 10 to 15 *per cent.*

(ii) Though the sale of spares more than doubled during the period of 9 years ending 1998-99 it failed to have any significant impact on overall profitability of the Company which declined from 9.4 *per cent* in 1990-91 to 6.1 *per cent* in 1998-99. This was because the profit on sale of equipment, after steadily falling from 7.0 *per cent* in 1990-91 to (-) 1.9 *per cent* in 1995-96, stagnated in the region of 2 to 6

per cent and the profit on sale of spares had also declined from 19.7 *per cent* in 1991-92 to 13.4 *per cent* in 1998-99.

8.3.2 The profitability and return on capital employed of the Company as compared to its competitors (Annexure XVI) would also indicate that compared to most of its competitors, BEML's rate of return was much less.

The Management stated (October 1997) that the profitability of earthmoving equipment came down over the years due to stiff competition and the Company had to struggle for the retention of market share as well as to ensure optimum sales and that continuance of the supplies had led to development of spares market where margin was available. The reply is not fully assuring because increased sale of spares has failed to have any significant impact so far on the overall profitability of the Company.

8.4 Sundry Debtors

8.4.1. The position of customer-wise sundry debtors of the Company at the end of March 1999 is indicated in Annexure XVII. The Company had an approved credit policy according to which 10 to 20 *per cent* of the value of order was receivable along with the order. In respect of high value equipment (above Rs.5 crore), the customer was to pay the balance in deferred payments guaranteed by banks/financial institutions or by irrevocable letters of credit in 12 instalments at the maximum, while in respect of other equipment, the balance was payable on despatch and commissioning. As regards spare parts, the sale was to be strictly on cash and carry basis. As against this, the extent of debts and the age-wise analysis of outstanding debt at the end of March 1999 was as follows:

(Rs. in crore)

Debts outstanding	**Government Departments**	**Government Companies**	**Private Parties**	**Total**
Upto 1 year	70.03	391.17	40.33	501.53
More than 1 year but less than 2 years	10.00	57.23	5.46	72.69
More than 2 years but less than 3 years	9.63	17.40	1.35	28.38
3 years and above	5.40	12.09	5.53	23.02
Total	**95.06**	**477.89**	**52.67**	**625.62**

8.4.2 Debtors included Coal India Ltd which alone owed the Company an amount of Rs.379.28 crore and constituted about 60.62 *per cent* of the total outstanding debt. Out of this Rs.74.46 crore was due from BCCL and included Rs.26.75 crore pending for more than one year as on 31st March 1999. Secretary (DP&S) informed Audit Board (November 1999) that the Company did not have any choice in the matter and as per the direction of Coal India Ltd the Company was virtually under compulsion to supply equipment on priority to financially unsound coal companies like BCCL etc. without any corresponding assurance of its dues being cleared within a definite time frame.

8.4.3 Due to large accumulation of sundry debtors and inventory, the Company had to

resort to cash credit and pay heavy interest to meet the working capital requirements which ranged from Rs.28.95 crore in 1991-92 to Rs.67.80 crore in 1996-97. The interest paid by the Company on Cash Credit during 1998-99 was Rs 61.70 crore.

8.4.4 As a result of above constraints the *percentage* of outstanding debtors to sales of the Company had increased from 32.31 *per cent* in 1990-91 to as much as 51.59 *per cent* in 1998-99 and ratio of debtors in terms of number of days to turnover had increased from 144 days (1990-91) to 188 days (1998-99) whereas the norm adopted by the Company was 120 days. Thus the Company's performance in regard to debt realisation was not satisfactory. The Ministry assured (August 1999) that all out efforts would be initiated and continued by the Company to improve sundry debtors position.

8.4.5 Annexure XVIII indicates the Company's position vis-a vis its competitors in respect of sundry debtors and sales. It would be seen that the Company's realisation of debt was far worse than that of its competitors.

8.4.6 Audit Board was of the view that the one-sided nature of contracts with the Coal Companies had been resulting in financial hardship to the Company and urge MOD to take up the matter vigorously with the Ministry of Coal so as to work out a solution to this problem.

CHAPTER 9 : RESEARCH & DEVELOPMENT

Reduction in cost was not a stated objective of the Company's (R&D) effort.

The total turnover of products developed by R&D was Rs.285.18 crore. The net contribution by such products was negative (Rs.15.14 crore)

9.1 Research and Development facilities

The Company had established three R&D centres namely, a centralised R&D Centre (April 1969) at KGF, an R&D unit at Bangalore Complex (October 1979), and, another R&D unit at Mysore (June 1986). The aim of setting up these facilities was to (i) undertake design and development of new equipment, (ii) effect improvements in the models under production, and, (iii) assist in indigenising the manufacture of all components.

9.2 Contribution from R&D developed products

Cost reduction was not a stated objective of the R&D effort of the Company. Even though the Company achieved an additional turnover of Rs.285.18 crore through the sale of R&D developed products during 1990-91 to 1998-99, the net contribution of these products to profit of the company during the above period was negative (- Rs.15.14 crore).

9.3 Expenditure on R&D

Annual expenditure on R & D as a *percentage* of the total turnover of the Company came down from 1.95 *per cent* in 1990-91 to 0.98 *per cent* in 1998-99 which was much lower in comparison with investment in R&D upto 4 per cent achieved by Company's competitors like Caterpillar, Komatsu, JCB, Terex, Samsung, Daewoo and Hitachi.

9.4 Design and Development of New Equipment

9.4.1 The following R & D projects completed at an expenditure of Rs.2.88 crore, were not productionised so far:

	Project	Customer	Year of Development	Expenditure incurred (Rs. in lakh)
1	Track Shovel 8045	No customer	June 1986	44.03
2	Snow cutter & Snow plough	Director General Border Roads	September 1990	128.94
3	Front end loader 6 Cu.M	No customer	June 1986	48.06
4	Medium recovery vehicle	Army	April 1991	40.29
5	Field artillery tractor	Army	April 1991	26.82
	Total			**288.14**

Management stated (October 1997) that the projects were not productionised as there were no orders for these products from the customers at whose instance the projects were undertaken. Management further stated (August 1999) that subsequent changes in customer perception could not be visualised by the Company and such risks were necessary in order to be proactive. The reply is not tenable as the Company neither conducted market surveys to assess the actual demand in respect of products for which there were no known customers, nor did it obtain any commitment from customers at whose instance the projects were undertaken to defray cost of development. Further, Director General, Border Roads has rejected snow cutter and snow plough developed by the Company as these were considered to be based on obsolete technology.

9.5 Indigenisation

9.5.1 The Company claimed to have achieved indigenisation level of 85 *per cent* in the wheeled equipment segment and 90 *per cent* indigenisation in crawler equipment segment. However, in respect of the following products significant shortfalls were noticed.

Product	Indigenisation Per cent Achieved	Numbers produced	Licence Valid upto	Technical Documents received (in per cent)
Rope Shovel	52.82	17	20.06.2000	50.48
WDL	37.00	2	15.11.1997	37.00
PC1000	66.90	26	06.02.1997	100.00
D475	46.58	7	11.01.1996	100.00
D120	33.50	106	12.02.1999	65.00
GD825	83.00	83	03.06.1993	100.00
Tatra	50.65	1090	29.05.1996	100.00
PC 1600	Nil	-	22.11.1991	100.00
Welding Robot	30.00	1	04.04.2001	100.00

9.5.2 It was observed that in respect of products like walking dragline (WDL) and rope shovel, the collaborators had not furnished the complete technical documents (Paras 3.4 and 3.9). In respect of D 475 and PC 1600 the Company did not pursue the indigenisation programme due to lack of orders for these equipment. In respect of Tatra vehicles, the Company had discontinued the indigenisation of components as the cost of indigenisation of Tatra engines was exorbitant as compared cost of imported ones. The shortfall in PC 1000 was due to rejection of indigenous cooling assembly.

9.5.3 It was further noticed that the level of indigenisation indicated by the table represented only the degree of technology absorption and not the actual manufacture of products. Thus, in respect of WDL, even though the *percent*age of indigenisation claimed was 37 *per cent* (1994-1999), the import content in the equipment as of 1994-95 was still as high as 80 *per cent* (there was no sale after 1994-95). In respect of Tatra vehicles, as against indigenisation level of 51 *per cent* the import content in the equipment during 1997-98 and 1998-99 was still high at 76.63 *per cent* and 73.82 *per cent,* respectively.

Management/Ministry stated (August 1999) that imports were necessary to keep product prices competitive particularly when their offtake was low.

(A.K.CHAKRABARTI)
Deputy Comptroller and Auditor General
Cum Chairman, Audit Board

New Delhi
Dated : 11 Dec 2000

Countersigned

(V.K. SHUNGLU)
Comptroller and Auditor General of India

New Delhi
Dated : 11 DEC 2000

List of Annexures

Annexure No	*Description*
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II	Corporate Plan and Perspective Plan
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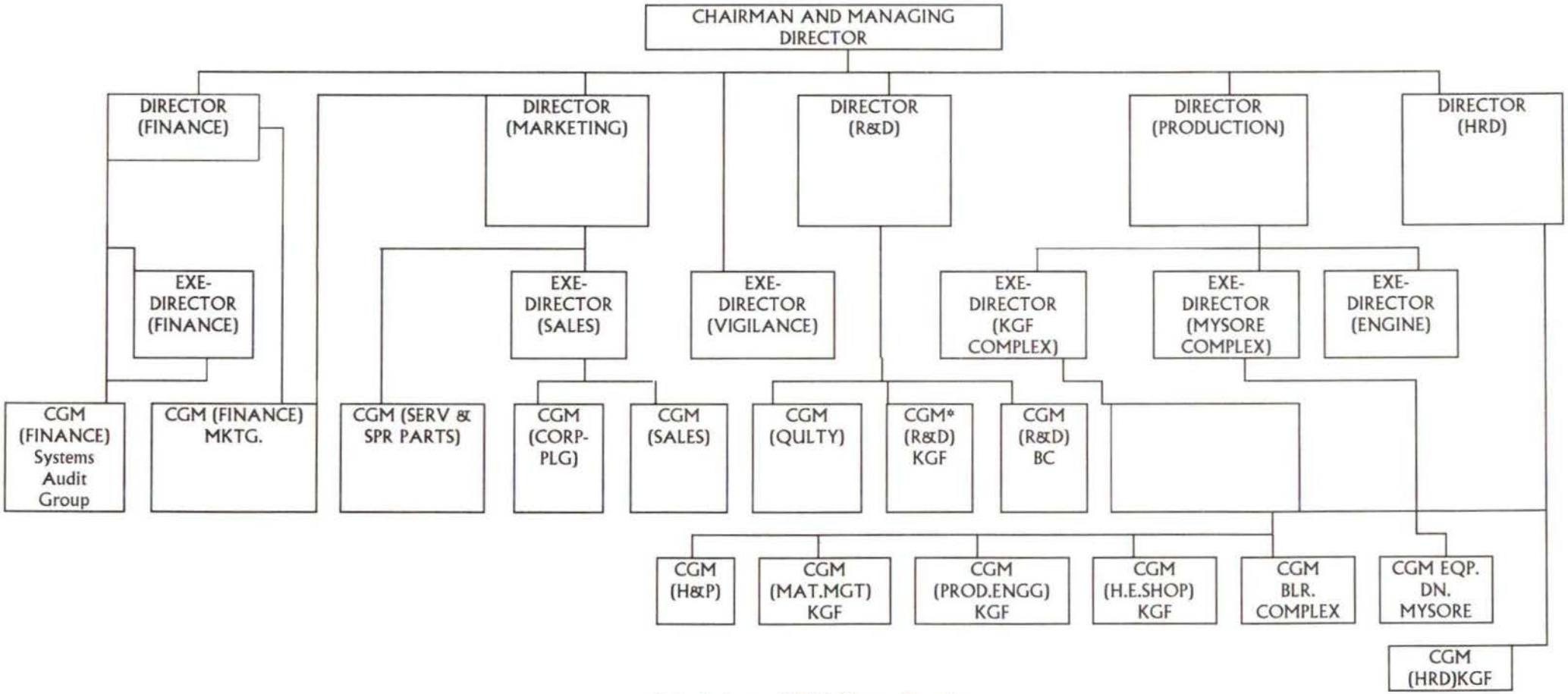
Annexure-I
Organisation Chart
(Para 1.3.2)

CHART SHOWING EXISTING STAFF STRENGTH IN GRADE-X AND ABOVE IN CORPORATE OFFICE, MARKETING HQRS, KGF, BANGALORE, MYSORE COMPLEXES



* also incharge of R&D, Mysore Complex

Annexure-II

(Para 2.2.1)

Corporate Plan and Perspective Plan

Sl. No.	*Plan*	*Period*	*Approved by Board*	*Objectives of preparation/ revision*	*Approval by Ministry*
1.	1st Corporate Plan	15 years (1976-77 to 1980-81 with broad projections for 5 years ending 1985-86 and 1990-91)	December 1976	At the instance of Ministry of Defence	Not approved.
2.	Perspective Plans	(a) 5 years (1985-90)	-	i) Changed environment and ii) to be co-terminus with 7th 5 year plan.	Not approved
		(b) 5 years (1990-95)	November 1989	To be co-terminus with 8th 5 year plan	Not approved
3.	Corporate Plan	10 years (1993-2003)	March 1993	Changed political and economic scenario.	Ministry/ Planning Commission/ DPE wanted modification of the plan.
4.	Corporate Plan	5 years (1995 to 2000)		Based on the comments of Ministry/ Planning Commission/ DPE on the plan mentioned at item at Sl.No.3	The Corporate Plan (1995-2000) brought out earlier in September 1995 was revised to make it co-terminus with 9th five year plan i.e. 1997-2002. It was approved by the Board in their 211th meeting held on 31st October 1998.

Annexure-III

(Para 2.2.2)

Variation between Corporate Plan/Perspective plan and Company's performance

Sl. No.	Particulars	Perspective Plan 1990-1995	Corporate Plan 1993-2003	Corporate Plan 1995-2000	Actual
1.	Sales (Rs. in Crore)				
	1990-91	751	-	-	748
	1991-92	840	-	-	799
	1992-93	955	-	-	901
	1993-94	1070	1050	-	902
	1994-95	1200	1208	-	1021
	1995-96	-	1389	1161	1011
	1996-97	-	1600	1306	1170
	1997-98	-	1840	1468	1260
	1998-99	-	-	1650	1213
2.	Sales Growth (in per centage)				
	1990-91	To increase the turnover of the Company from the present level of Rs.705 crores to Rs.1200 crores by 1994-95.	15 *percent* each year till 2003	12 *percent* each year till 2000	--
	1991-92				6.8 *percent*
	1992-93				12.8 *percent*
	1993-94				0.1 *percent*
	1994-95				13.2 *percent*
	1995-96				(-)1.0 *percent.*
	1996-97				15.7 *percent*
	1997-98				7.7 *per cent*
	1998-99				*(-)3.7 per cent*
3.	Return on Capital employed* (in per centage)				
	1990-91	16 *percent* each year	20 *percent* Each Year Till 2003	15 *percent* Each Year Till 2000	17.87
	1991-92				15.11
	1992-93				14.44
	1993-94				12.54
	1994-95				8.69
	1995-96				10.21
	1996-97				11.13
	1997-98				9.15
	1998-99				7.14
4.	Profit before tax (Rs. in Crore)				
	1990-91	67	-	-	67
	1991-92	68	-	-	49
	1992-93	77	-	-	49
	1993-94	87	84	-	46
	1994-95	99	93	-	15
	1995-96	-	104	52	22
	1996-97	-	123	90	31
	1997-98	-	147	127	16
	1998-99		-	158	3

Annexure-III- (Page -2)

5.	Inventory level (In No. of days)				
	1990-91	To bring			187 days
	1991-92	Down			191 days
	1992-93	from 165			188 days
	1993-94	days of	-	150 days	210 days
	1994-95	VOP to	150		193 days
	1995-96	156 days	150		221 days
	1996-97	of VOP by 1994-95	150		189 days
	1997-98		150		192 days
	1998-99		150		199 days
6.	Net worth*+ (Rs. in Crore)				
	1990-91	347	-	-	349.70
	1991-92	384	-	-	380.66
	1992-93	426	-	-	410.70
	1993-94	476	448	-	441.51
	1994-95	533	488	-	551.98
	1995-96	-	535	606	556.22
	1996-97	-	590	657	568.02
	1997-98	-	658	732	569.22
	1998-99	-	-	828	577.52

* Return on capital employed = Profit before interest and tax to Capital employed.
Capital Employed = Net Block + Current Assets Loans & Advances - Current Liabilities & Provisions
*+ Networth as worked out by the Company-Equity Capital+Reserves & Surplus minus miscellaneous expenditure to the extent not written off.

Annexure-IV-

(Para No.3.1.1)

Details of projects, collaborators, investments made, actual expenditure, return on investments, indigenisation etc. as on 31st March 1999

Sl. No (1)	Project /Product (2)	Year/ Month of GOI Approval (3)	Colla-borator (4)	Month of commencement of production. (5)		Cost Rs. in lakh (6)			Quantity in No. (Cumulative) (7)		Working Result Rs. in lakh (8)			Return on Invest-ment (9)	Indigenisation (Percentage) (10)	
				Target	Actual	Esti-mate	Rev-ised	Actual	Envi-saged	Actual	Profit	Loss	Net	Per centage	Envi-saged	Actual (31.3. 99)
1.	Manufactur e of Diesel Engines	July 1988	Komatsu Ltd., Japan	July 1990	Apr. 1991 Dec. 1994	2530	4987	6459.91	16000	2439	670.32	70.54	599.78	9.29	85.00	80.00
2.	Kolos Tatra Vehicles	Feb.1987	Omnipol	1986-87	1987-88	2945	-	1418.49	3030	1136 (1989-90) max-imum	1111.78	72.55	1039.23	5.11	86.00	50.65
3.	Walking Dragline	July 1988	Dresser Industries (Marion), USA.	Nov. 1987 *	Apr. 1992	400	-	415.00	30	2	132.09	59.38	72.71	17.67	20.00	37.00
4.	T-72 Stabilizer	Dec. 1985 #	USSR, Army, BEL	Apr.1989	Apr. 1989	1085	-	1376.76	1750	190	166.37	115.63	50.74	3.69	100.00	81.10
5.	BMP	July 1985	USSR, Army.	Apr.1987	Apr. 1987	3090	-	3090.00	4577	2413	2289.52	95.40	2194.12	71.00	100.00	100.00
6.	Hydraulic Excavators															
	a) PC 300	Jun 1983	Komatsu, Japan.	1981	Apr. 1983	929	-	928.97	289	277	48.54	1293.17	-1244.63	-	90.00	84.85
	b) PC650	Jun 1983	Komatsu, Japan.	1981	Apr. 1983	-	-	-	353	303	-	7070.75	-7070.75	-	90.00	84.76
	c)PC1600			1981	Apr. 1983											
	d)PC 1000	Jun 1983	Komatsu, Japan.	-	Apr. 1990	-	-	-	38	25	889.45	87.52	801.93	-	90.00	66.90
	e)PC220	-	Komatsu, Japan.	-	Apr. 1986	-	-	-	1113	888	-	6688.42	-6688.42	-	90 .00	84.51
	Total					929	-	928.97			937.99	15139.86	-14201.87			
7.	Hydraulic cylinders	NA	NA	Apr. 1996	$	2046	1185.33	853.73	$	$	$	$	$	$	NA	NA

8.	VIL **	April 1983	NA	NA	NA	NA	NA	260.51	-	-	NA	NA	NA	NA	-	-
9.	Rope Shovel	-	Dresser Industries (Marion), USA.	June 1990 *	Apr. 1988	-	-	-	42	17	205.02	2019.38	-1814.36	NA	85.72	52.82
10.	D475	June 1988	Komatsu, Japan.	Apr. 1989	Apr. 1991	-	-	-	43	6	100.61	13.02	87.59	NA	89.51	46.58
11.	Road Headers	NA	M/s VOEST - Apline-AG, Austria	NA	Apr. 1992	-	-	-	22	4	149.36	-	149.36	NA	NA	18.85
12.	Arc Welding Robot	Aug 1988	M/s.IGM, Austria	NA	Not commenced	-	-	-	10 Per annum		-	-	-	NA	-	-

* month and year of collaboration agreement

$ Project yet to be completed

NA - Not applicable

In respect of Excavators the production and working results are from the year 1985-86.

month of identification for manufacture

** VIL is the subsidiary of the company. Company has not received any dividend for the investment in the subsidiary so far.

Annexure-V

(Para 4.1.2 & 4.2)

Statement indicating the capacity utilisation and other efficiency ratios for the Company as a whole from 1990-91 to 1998-99

		1990-91	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*	*1996-97*	*1997-98*	*1998-99*
1	Available capacity (as worked out by the Company)(in lakhs SMH)	102.49	104.22	101.76	98.78	95.40	93.66	91.26	92.50	92.87
2	Capacity utilised(in lakhs SMH)	105.08	108.20	101.27	94.67	74.31	82.37	94.37	98.31	102.81
3	Variation (in lakh hours) (Col. 1 - 2)	2.59	3.98	(-)0.49	(-)4.11	(-)21.09	(-)11.29	3.11	5.81	9.94
4	Percentage of utilisation (Col. 2 / 1)	102.53	103.82	99.52	95.84	77.89	87.94	103.41	106.28	110.70
5	Direct Labour (in Nos.)	7164	7229	7054	6547	6406	6066	5457	5540	5387
6	Average SMH output per Direct Labour	1467	1497	1436	1446	1160	1358	1729	1775	1908
7	Total available hours (in lakh hours)	159.02	165.67	171.01	176.89	169.56	162.55	131.95	143.60	133.34
8	Gate attendance hours of direct labour (in lakh hours)	122.64	126.80	127.01	130.61	121.52	115.72	116.21	114.52	115.83
9	Absenteeism (in lakh hours) (7-8)	36.38	38.87	44.00	46.28	48.04	46.83	15.74	29.08	17.51
10	Hours booked on job cards (in lakh hours)	112.68	112.92	110.91	110.28	85.81	86.12	93.81	93.04	97.19
11	Idle hours (in lakh hours) (8-10)	9.96	13.88	16.10	20.33	35.71	29.60	22.40	21.48	18.64
12	Percentage of absenteeism (Sl.No.9/ Sl.No.7)	22.88	23.46	25.73	26.16	28.33	28.81	11.93	20.25	13.13
13	Percentage of Idle hours (Sl.No.11/ Sl.No.8)	8.12	10.95	12.68	15.57	29.39	25.58	19.28	18.75	16.09

14	Job card efficiency (%) #(Sl.No.2/ Sl.No.10)	93.26	95.82	91.31	85.85	86.60	95.65	100.53	105.66	105.78
15	Overall efficiency (%) ##(Sl.No.2/ Sl.No.8)	85.68	85.33	79.73	72.48	61.15	71.18	81.21	85.84	88.76

Note:
Available capacity is a capacity worked out by the Company year after year based on number of machines and manpower available at the beginning of the year.
Capacity utilised is the standard time taken for doing a job.
Total available hours is excluding Sundays and holidays.
Gate attendance hours is paid hours for actual physical attendance.
Hours booked on job card is the actual time taken for doing a job.
Job Card efficiency is the measure of actual output turned out in SMH to the hours booked on Job Cards.
Overall efficiency is the measure of output turned out in SMH to the total hours paid for.

Annexure-VI

(Para 4.3.1)

A. Overall Machine Utilization

(in lakh hours)

Year	Machine hours		Percentage of	
	Planned for production	Actually utilised	Utilisation	Idle hours
1990-91	35.97	31.82	88.46	11.54
1991-92	37.58	33.89	90.18	09.82
1992-93	37.34	32.98	88.32	11.68
1993-94	37.65	32.16	85.42	14.58
1994-95	37.52	32.48	86.57	13.43
1995-96	37.25	32.12	86.23	13.77
1996-97	37.19	32.65	87.79	12.21
1997-98	37.02	32.91	88.90	11.10
1998-99	36.31	32.49	89.48	10.52

B. Division-wise details of Machine Hours, planned and utilised and idle hours

(in lakh hours).

DIVISION	Machine Hours planned for Prodn.	Utilised Hours	Idle Hours	Percentage of Utilisation	Percentage of Idle Hours
I.Mysore Complex : Truck Division					
1990-91	2.08	1.94	0.14	93.27	6.73
1991-92	2.09	1.92	0.17	91.87	8.13
1992-93	2.01	1.83	0.18	91.04	8.96
1993-94	2.03	1.81	0.22	89.16	10.84
1994-95	2.04	1.86	0.18	91.18	8.82
1995-96	2.06	1.84	0.22	89.32	10.68
1996-97	2.06	1.87	0.19	90.78	9.22
1997-98	2.04	1.83	0.21	89.71	10.29
1998-99	1.96	1.83	0.13	93.37	6.63
(I) Engine Division/*					
1992-93	0.35	0.21	0.14	60.00	40.00
1993-94	0.56	0.39	0.17	69.64	30.36
1994-95	0.57	0.42	0.15	73.68	26.32
1995-96	0.52	0.35	0.17	67.31	32.69
1996-97	0.52	0.35	0.17	67.31	32.69
1997-98	0.52	0.38	0.14	73.08	26.92
1998-99	0.52	0.39	0.13	75.00	25.00
(II)Bangalore Complex					
1990-91	5.68	5.39	0.29	94.89	5.11
1991-92	5.61	5.36	0.25	95.54	4.46
1992-93	5.04	4.70	0.34	93.25	6.75
1993-94	4.57	4.21	0.36	92.12	7.88
1994-95	4.38	3.68	0.70	84.02	15.98
1995-96	4.26	3.73	0.53	87.56	12.44
1996-97	4.26	3.95	0.31	92.72	7.28
1997-98	4.14	3.94	0.20	95.17	4.83
1998-99	5.02	4.77	0.25	95.02	4.98

ANNEXURE-VI - (page 2)

(III)KGF Complex: **1.Earth Movers Dvn.**					
1990-91	22.36	19.63	2.73	87.79	12.21
1991-92	22.86	20.53	2.33	89.81	10.19
1992-93	22.73	20.05	2.68	88.21	11.79
1993-94	23.38	19.73	3.65	84.39	15.61
1994-95	23.04	20.43	2.61	88.67	11.33
1995-96	22.45	19.72	2.73	87.84	12.16
1996-97	22.74	20.31	2.43	89.31	10.69
1997-98	22.01	19.57	2.44	88.91	11.09
1998-99	20.89	18.87	2.02	90.33	9.67
2.H&P Division.					
1990-91	5.85	4.86	0.99	83.08	16.92
1991-92	7.02	6.08	0.94	86.61	13.39
1992-93	7.21	6.19	1.02	85.85	14.15
1993-94	7.11	6.02	1.09	84.67	15.33
1994-95	7.49	6.09	1.40	81.31	18.69
1995-96	7.96	6.48	1.48	81.41	18.59
1996-97	7.61	6.17	1.44	81.08	18.92
1997-98	8.31	7.19	1.12	86.52	13.48
1998-99	7.92	6.63	1.29	83.71	16.29

(i) *Engine division compiles machine utilisation statements only from the year 1992-93.

(ii) In Mysore Complex, planned hours in Engine division were based on single shift basis whereas it was on two shifts in Truck Division.

(iii) The cause-wise analysis of idle machine hours is given in Annexure-VII (except engine division where it is not available).

Annexure-VII

(Para 4.3.1)

Cause-wise analysis of Idle Machine Hours

(in lakh hours)

Bangalore Complex										
Year	Machine Hours planned for prodn.	No operator Hours	% to planned hours	Break down hours	% to planned hours	Want of MTL hours	% to planned hours	Other reasons hours	% to planned hours	Total % of idle hours
1990-91	5.68	0.14	2.46	0.08	1.41	0.05	0.88	0.02	0.36	5.11
1991-92	5.61	0.11	1.96	0.08	1.43	0.05	0.89	0.01	0.18	4.46
1992-93	5.04	0.11	2.18	0.17	3.37	0.02	0.40	0.04	0.80	6.75
1993-94	4.57	0.11	2.41	0.21	4.59	0.02	0.44	0.02	0.44	7.88
1994-95	4.38	0.12	2.74	0.06	1.37	0.43	9.82	0.09	2.05	15.98
1995-96	4.26	0.11	2.58	0.15	3.52	0.13	3.05	0.14	3.29	12.44
1996-97	4.26	0.01	0.23	0.20	4.70	0.02	0.47	0.08	1.88	7.28
1997-98	4.14	--	--	0.13	3.14	0.02	0.48	0.05	1.21	4.83
1998-99	5.02	0.01	0.20	0.14	2.78	0.05	1.00	0.05	1.00	4.98
Mysore complex (Truck Division)										
1990-91	2.08	0.11	5.29	0.02	0.96	0.00	0.00	0.01	0.48	6.73
1991-92	2.09	0.13	6.22	0.03	1.43	0.00	0.00	0.01	0.48	8.13
1992-93	2.01	0.14	6.97	0.02	1.00	0.00	0.00	0.02	0.99	8.96
1993-94	2.03	0.17	8.37	0.02	0.99	0.00	0.00	0.03	1.48	10.84
1994-95	2.04	0.15	7.35	0.02	0.98	0.00	0.00	0.01	0.49	8.82
1995-96	2.06	0.18	8.74	0.02	0.97	0.00	0.00	0.02	0.97	10.68
1996-97	2.06	0.13	6.31	0.03	1.45	0.02	0.97	0.01	0.49	9.22
1997-98	2.04	0.13	6.37	0.06	2.94	0.02	0.98	0	0.00	10.29
1998-99	1.96	0.07	3.57	0.03	1.53	-	-	0.03	1.53	6.63

KGF Complex

EM Division

1990-91	22.36	0.54	2.42	1.46	6.53	0.34	1.52	0.39	1.74	12.21
1991-92	22.86	0.33	1.44	1.25	5.47	0.39	1.71	0.36	1.57	10.19
1992-93	22.73	0.61	2.68	1.13	4.97	0.35	1.54	0.59	2.60	11.79
1993-94	23.38	0.82	3.51	0.85	3.64	0.7	2.99	1.28	5.47	15.61
1994-95	23.04	0.91	3.95	0.77	3.34	0.49	2.13	0.44	1.91	11.33
1995-96	22.45	1.03	4.59	0.59	2.63	0.5	2.22	0.61	2.72	12.16
1996-97	22.74	1.07	4.70	0.62	2.73	0.34	1.50	0.40	1.76	10.69
1997-98	22.01	1.01	4.59	0.56	2.54	0.4	1.82	0.47	2.14	11.09
1998-99	20.89	0.87	4.16	0.58	2.78	0.37	1.77	0.20	0.96	9.67

H&P Division

1990-91	5.85	0.36	6.15	0.36	6.15	0.10	1.71	0.17	2.91	16.92
1991-92	7.02	0.23	3.28	0.34	4.84	0.12	1.71	0.25	3.56	13.39
1992-93	7.21	0.29	4.02	0.32	4.44	0.04	0.56	0.37	5.13	14.15
1993-94	7.11	0.27	3.80	0.40	5.62	0.13	1.83	0.29	4.08	15.33
1994-95	7.49	0.43	5.74	0.52	6.94	0.14	1.87	0.31	4.14	18.69
1995-96	7.96	0.51	6.40	0.55	6.91	0.12	1.51	0.30	3.77	18.59
1996-97	7.61	0.61	8.02	0.34	4.47	0.10	1.31	0.39	5.12	18.92
1997-98	8.31	0.28	3.37	0.36	4.33	0.11	1.33	0.37	4.45	13.48
1998-99	7.92	0.33	4.17	0.61	7.70	0.22	2.78	0.13	1.64	16.29

Cause-wise analysis of Engine Division not available.

Annexure-VIII

(Para 4.5.1)

Details of Targets, and Actuals of Rejections and Savings/Excess (Division-wise) from 1990-91 to 1998-99

(Rs. in lakh)

	Mysore Complex						Bangalore Complex			KGF Complex					
	Truck Division			Engine Division						Earth moving division			H&P Division		
Year	Target	Actual	Savings/ Excess	Target	Actual	Savings/ Excess	Target	Actual	Savings/ Excess	Target	Actual	Savings/ Excess	Target	Actual	Savings /Excess
1990-91 *	15.20	22.47	(-)7.27 (-47.82)	NA	NA	NA	10.00	6.49	3.51 (35.10)	105.00	142.41	-37.41 (-35.63)	78.45	174.63	-96.18 (-122.60)
1991-92	27.40	15.12	12.28 (44.82)	Not fixed	3.72	NA	6.50	6.52	-0.02 (-0.31)	160.00	257.47	-97.47 (-60.92)	200.00	157.38	42.62 (21.31)
1992.93	19.73	17.07	2.66 (13.48)	Not fixed	1.60	-	5.00	7.88	-2.88 (-57.60)	130.00	228.50	-98.50 (-75.77)	101.25	183.10	-81.85 (-80.84)
1993-94	10.88	30.14	-19.26 (-177.02)	14.30	14.48	-0.18 (-1.26)	8.00	13.01	-5.01 (-62.62)	250.00	160.72	89.28 (35.71)	81.40	89.29	-7.89 (-9.69)
1994-95	9.00	14.87	-5.87 (-65.22)	7.20	3.94	3.26 (45.28)	10.00	5.10	4.90 (49.00)	180.00	165.69	14.31 (7.95)	90.00	43.70	46.30 (51.44)
1995-96	12.80	9.16	3.64 (28.44)	7.20	3.16	4.04 (56.11)	6.00	4.78	1.22 (20.33)	140.00	99.04	40.96 (29.26)	26.50	41.41	-14.91 (-56.26)
1996-97	20.07	7.46	12.61 (62.83)	6.95	23.99	-17.04 (-245.17)	6.00	4.75	1.25 (20.83)	100.00	110.53	-10.53 (-10.53)	40.00	37.37	2.63 (6.58)
1997-98	15.55	2.71	12.84 (82.57)	26.38	32.51	-6.13 (-23.23)	5.00	4.00	1.00 (20.00)	130.00	139.06	9.06 (6.97)	43.00	40.32	2.68 (6.23)
1998-99	16.33	9.58	6.75 (41.33)	35.78	54.39	-18.61 (-52.01)	5.00	5.00	-	140.00	144.83	-4.83 (-3.45)	30.00	37.53	-7.53 (-25.10)

* In respect of Engine division the information was not available for 1990-91. No targets were fixed for 1991-92 & 1992-93 in respect of Engine division.

• The figures in brackets indicate percentage of savings/excesses(-)

Annexure-IX

(Para 5.3.1)

Statement indicating comparative position of inventory holding of the Company and its distribution - 1990-91 to 1998-99

(Rs. in lakh)

Particulars	*1990-91*	*1991-92*	*1992-93*	*1993-94*	*1994-95*	*1995-96*	*1996-97*	*1997-98*	*1998-99*
Raw materials, Components, Stores & Spares (including goods in transit)	17922.50	16990.75	15618.92	15327.53	18748.30	28027.17	22817.67	25034.73	24150.21
Spare parts for resales	11485.55	12699.00	14341.57	14145.25	13646.78	15340.09	17593.18	17751.82	17823.65
Work in progress	8680.27	10330.52	14447.03	17730.39	13100.05	16148.09	15447.39	17342.81	14131.17
Finished Goods	1695.47	3095.77	3807.40	6409.11	3057.89	2107.37	4036.03	4766.18	11131.15
Tools	398.67	387.31	456.07	439.03	385.37	421.56	483.47	527.89	530.90
Scrap	106.84	163.28	122.80	128.08	310.09	223.18	226.79	308.93	194.30
Total	40289.30	43666.63	48793.79	54179.39	49248.48	62267.46	60604.53	65732.36	67961.38
Consumption of raw materials, components and stores and spares	33149.61	38440.38	43049.38	43202.77	41801.85	45400.74	56378.94	59063.45	57040.04
Consumption of spare parts sold	9293.82	7079.65	9611.25	13692.03	14330.58	15116.17	14049.41	15723.65	16697.73
Total	42443.43	45520.03	52660.63	56894.80	56132.43	60516.91	70428.35	74787.10	73737.77
Value of production	78703.62	83336.29	94542.93	94126.52	93312.24	102771.03	117944.00	125412.00	124345.09
Sales (excluding export incentives)	74453.10	79072.29	89714.29	89922.57	101551.53	100751.50	116817.16	125828.41	121191.76
Closing stock of raw materials, components and stores (in terms of no. of days consumption)	197	161	132	129	164	225	148	155	155
Closing stock of spare parts for resale (in terms of no. of days consumption)	451	655	545	377	348	370	457	412	390
Closing stock of work in progress (in terms of no. of days value of production)	40	45	56	69	51	57	48	50	41
Closing stock of Finished goods (in terms of no. of days sale)	8	14	15	26	11	8	13	14	34

Note: 1. Stock of spare parts for resale includes transfers from units in addition to direct purchases in Marketing division. While the consumption of spare parts sold reflects only what is purchased and consumed in Marketing division as transfers are nullified with the transfer out of other divisions at the time of consolidation. To overcome this, consumption of spare parts reckoned at gross level obtaining in Marketing division for purposes of reflecting the closing stock of spare parts in terms of number of days consumption.

2. The figures for 1991-92 has been adopted from the printed annual report of the Company for the year 1992-93 since the figures for 1991-92 have been recasted therein. The figures from 92-93 taken from respective printed annual reports.

3. Figures for spare parts consumption have been arrived from consolidated statement of accounts of the respective years.

Annexure–X

(Para 7.4.2.)

Comparison of IED hours with actual hours booked for manufacture of certain equipment from 1993-94 to 1998-99.

		1993-94			1994-95			1995-96			1996-97			1997-98			1998-99		
	Model	IED	Actual	DIFF	IED	Actual	DIFF	IED	Actual	DIFF	IED	Actual	DIFF	IED	Actual	DIF	IED	Actual	DIF
1	D355	7891	9451	-1560	8311	8486	-175	7784	8085	-301	7784	8092	-308	7784	8231	-447	8215	8214	1
2	D155	7555	6808	747	6809	6844	-35	6505	6390	115	6505	6559	-54	6505	6881	-376	6934	6787	147
3	D80	6126	5040	1086	4986	5499	-513	4278	5139	-861	4278	5018	-740	4278	4525	-247	4728	5113	-385
4	D65	5084	4362	722	4776	4678	98	4096	5056	-960	4096	4536	-440	4996	4548	448	4572	5191	-619
5	D50	4355	2830	1525	3872	3645	227	3087	3202	-115	3087	3446	-359	3087	3260	-173	3339	3404	-65
6	PC 1000	14024	16668	-2644	13349	16704	-3355	13175	30131	-16956	13175	12197	978	13175	17538	-4363	14265	14973	-708
7	PC 650	10411	11978	-1567	10966	11465	-499	10752	13437	-2685	10752	11055	-303	10752	11193	-441	10405	11317	-912
8	PC 300	4800	5091	-291	4894	6622	-1728	5037	6548	-1511	5037	6697	-1660	5037	5818	-781	5304	5755	-451
9	PC 220	4484	5055	-571	4371	5444	-1073	4368	5429	-1061	4199	5240	-1041	4199	5185	-986	4723	5203	-480
10	GD30D	6440	12764	-6324	6159	16320	-10161	6090	10118	-4028	6090	8345	-2255	-	-	-	-	-	-
11	FEL 1420	3943	6347	-2404	4543	6933	-2390	4253	11204	-6951	4253	5717	-1464	-	-	-	4319	4385	-66
12	G14D	3943	4774	-831	4620	4703	-83	4151	6843	-2692	4151	4459	-308	4151	3820	331	4211	4600	-389

Note: (+) indicates savings (-) indicates excess.

Annexure–XI

(Para No.8.1.1)

Statement showing financial position of the Company

(Rs. in lakh)

Particulars	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Liabilities:									
a)Paid-up capital	3000.00	3000.00	3000.00	3000.00	3682.56	3686.42	3686.73	3687.13	3687.22
b) Reserve & Surplus									
i) Free Reserves & Surplus	29944.16	33021.30	36215.13	39718.01	42099.11	42517.10	43047.06	43153.98	43471.64
ii) Share premium	-	-	-	-	10306.91	10390.24	10394.46	10400.85	10401.66
iii) Capital Reserve	2061.53	2053.23	2044.93	2036.63	239.38	708.13	1178.03	1322.22	1063.41
	32005.69	35074.53	38260.06	41754.64	52645.40	53615.47	54619.55	54877.05	54936.71
c) Borrowings from									
i) Government of India	9920.00	8665.00	8710.00	8330.00	6010.00	4825.00	3660.00	2525.00	1440.00
ii) Financial Institutions	2317.59	6932.17	3568.74	4094.88	348.25	433.84	5400.76	5499.96	2984.87
iii) Cash Credit	17358.59	10665.14	26930.94	24882.46	19397.72	35408.56	39919.27	41466.43	47305.16
iv) Others	12950.39	25556.32	23406.77	36302.61	40704.25	26559.78	22876.72	21733.15	19930.16
v) Interest accrued and due	1.66	-	-	-	-	2.26	2.21	13.76	36.42
d) Current Liabilities and Provision	24316.14	32042.39	33778.32	34875.69	29620.84	41068.13	45596.58	46143.36	56090.75
TOTAL	101870.06	121935.55	137654.83	153240.28	152409.02	165599.46	175761.82	175945.84	186411.29
Assets:									
e) Gross Block	31635.44	37020.09	41696.19	43099.86	44143.47	44791.63	45814.70	49707.85	50618.24
f) less Cumulative Depreciation	10834.94	13335.63	16260.82	18835.11	21324.69	23761.29	26267.16	28612.96	31058.27
g) Net Block	20800.50	23684.46	25435.37	24264.75	22818.78	21030.34	19547.54	21094.89	19559.97
h) Capital work-in-progress	4416.58	3229.02	1421.56	547.12	250.40	507.61	1544.22	285.05	971.22

i) Investments	17.41	17.33	17.20	27.20	27.22	27.06	270.56	270.56	262.65
j) Current assets, loans and advances	76599.38	94995.85	110591.14	127797.35	128182.36	142354.74	152895.07	152653.64	164745.70
k) Miscellaneous expenditure not written off	36.19	8.89	189.56	603.86	1130.26	1679.71	1504.43	1641.70	871.75
TOTAL	101870.06	121935.55	137654.83	153240.28	152409.02	165599.46	175761.82	175945.84	186411.29
Debt. Equity ratio	0.60	0.48	0.52	0.51	0.33	0.23	0.23	0.28	0.22
Capital employed (g+j-d)	73083.74	86637.92	102248.19	117186.41	121380.30	122316.95	126846.03	127605.17	128214.92
Net Worth (a+b(i)+b(ii)+b(iii)-k)	34969.50	38065.64	41070.50	44150.78	55197.70	55622.18	56801.85	56922.48	57752.18
Net worth per Rupee of paid up capital (Rupees)	11.66	12.69	13.69	14.72	14.99	15.09	15.41	15.44	15.66
Profit before tax (Rs. in lakhs)	6713.93	4882.14	4893.83	4602.88	1450.19	2245.99	3116.05	1605.09	271.66
Profit before interest and tax (Rs.in lakh)	13062.89	13090.50	14767.83	14697.31	10522.08	12489.80	14120.12	11678.70	9149.16
Return (Profit before interest and tax) on capital employed (%) (As worked out by the Company)	17.87	15.11	14.44	12.54	8.69	10.21	11.13	9.15	7.14

Annexure–XII

(Para: 8.1.3 (i))

Investment in Projects and return as on 31.03.1999.

(Rs. in lakh)

Name of the Project	Cost	Technical Know-how fee	Total	Cumulative Profit (+)/Loss(-)
Diesel Engine*	6459.91	661.64	7121.55	599.78
Kolas Tatra	1418.49	548.92	1967.41	1039.23
Walking Draglines	415.00	-	415.00	72.71
Stabilizers for T72 Battle Tanks	1376.76	-	1376.76	50.74
BMP Transmissions	3090.00	-	3090.00	2194.12
Hydraulic Excavators	928.97	93.70	1022.67	-14201.87
Hydraulic Cylinders	853.73	-	853.73	
Investment in VIL	260.51	-	260.51	-
Arc Welding Robot		415.06	415.06	
Road Headers		109.84	109.84	149.36
Electric Rope Shovels				-1814.36
Dozers**		73.34	73.34	87.59
Total	14803.37	1902.50	16705.87	-11822.70

*Rs. 1526.51 lakhs relating to Tatra Project cost (Rs.2945 lakhs) is added as the investment is made in Engine Project, Mysore.

** Including Export incentives.

Annexure–XIII

(Para 8.1.3(iii))

Product mix Market share & Profit and Loss of BEML.

(Rs. in lakh)

Product Group	1992-93		1993-94		1994-95		1995-96		1996-97		1997-98		1998-99	
	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)	Market Share	Profit/ Loss(-)
1A. Dozers D65E,D115,D475,DC230,D31,D15,D80,D355,D475,D155	95%	1433.76	95%	466.91	91%	2508.35	88%	2017.57	91%	2847.32	92%	3103.91	87%	1035.67
1B, Wheeled Dozers G14D, G30D	91%	-14.60	100%	-33.41	100%	-42.04	100%	(-)4.87	100%	-31.21	-	-	-	-
2. Excavators PC220, PC300, PC650,PC1000,PC650M,PC1000M,PC65000E	24%	-354.39	27%	-1279.91	40%	-1453.60	26%	-2223.37	28%	-2397.62	14%	-1725.43	12%	(-) 1545.08
3A. Loaders BL06,BL03,BL40,BL30,BL200	NA	NA	NA	NA	NA	-	NA	-	NA	-30.67	8%	-	14%	-146.03
3B. Wheeled Loaders WA200,WA400,WL40, FEL3035,FEL1420	53%	-264.40	23%	-350.34	27%	-70.26	19%	-187.36	14%	-6.09	8%	-8.45	14%	-62.78
4. Dumpers H50,HD7852,BH35,BH50-1,BH85,H35,H120,BH40,B35,BH120,210M	65%	-536.44	58%	-1002.79	60%	-548.00	54%	-662.32	50%	1332.31	59%	2168.19	46%	-320.37
5. Motors Graders GD825A,GD685A2,GD605R2,BG605,BG825	100%	301.18	100%	159.41	95%	226.24	100%	124.58	100%	311.10	83%	644.67	43%	315.42

Annexure-XIV

(Para 8.2)

Working results- Division-wise/Company as a whole.

(Rupees in lakh)

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
KGF Complex :									
i) Earth Mover Division:									
Sales*	21225.21	26844.60	33643.12	25631.88	33401.49	27981.89	33405.87	35117.62	30710.51
PBT	401.44	102.33	(485.60)	(2467.23)	(1152.29)	(1926.75)	(678.43)	(885.82)	(2776.23)
Percentage of PBT to sales	1.89	0.38	-	-	-	-	-	-	-
ii) H&P Division									
Sales *	1081.39	1085.48	1393.55	686.37	1361.96	3451.70	1909.98	-	582.58
PBT	328.36	136.81	183.63	154.09	255.26	1567.25	673.48	(101.62)	430.60
Percentage of PBT to sales	30.36	12.60	13.18	22.45	18.74	45.41	35.26		73.91
Bangalore Complex:									
Sales *	11878.58	9025.01	9568.46	12031.65	8961.33	10926.29	14614.40	14388.29	18846.68
PBT	1603.56	771.78	1236.08	1711.19	(3974.14)	(2503.44)	(1421.16)	(3086.73)	(2647.97)
Percentage of PBT to sales	13.50	8.55	12.92	14.22	-	-	-		

Mysore Complex :									
i) Equipment Division:									
Sales*	22230.03	25174.51	21501.53	22732.96	25652.03	24732.72	34647.61	38660.00	34868.22
PBT	1809.12	449.62	271.83	(611.07)	(254.66)	(593.69)	1409.56	2117.28	801.85
Percentage of PBT to sales	8.14	1.79	1.26	-	-	-	4.07	5.48	2.30
ii) Engine Division									
Sales *	0.00	0.00	0.00	0.00	60.53	326.44	633.41	566.44	-
PBT	0.00	0.00	0.00	0.00	81.46	47.93	231.91	232.07	(70.31)
Percentage of PBT to sales	-	-	-	-	***134.59	14.68	36.61	40.97	-
Marketing Division:									
Sales *	18416.48	17769.90	23959.73	29156.25	32675.79	33690.74	31768.08	37238.79	36253.91
PBT	2571.45	3421.60	3687.89	4441.34	6494.56	5654.69	2900.69	3329.91	4533.72
Percentage of PBT to sales	13.96	19.26	15.39	15.23	19.88	16.78	9.13	8.94	12.51
Company as a whole									
Sales *	74831.69	79899.50	90066.39	90239.11	102113.13	101109.78	116979.35	125971.14	121261.90
PBT	6713.93	4882.14	4893.83	**4602.88	1450.19	2245.99	3116.05	1605.09	271.66
Percentage of PBT to sales	8.97	6.11	5.43	5.10	1.42	2.22	2.66	1.27	0.22

*(including export incentives and export of non-BEML products)

** includes profit of Rs.1374.56 lakh shown as profit of Corporate Office.

*** The profit of engine division in 1994-95 includes profit on sale of bought out engine spares also while sale of boughtout spares was accounted in Marketing division.

Annexure-XV

(Para No.8.3.1)

Year wise and division wise details of earth moving equipment and spares sold

		BANGALORE COMPLEX			MYSORE COMPLEX			KGF COMPLEX EARTH MOVER DIVISION			Marketing Division			TOTAL		
YEAR	DETAILS	SALES (excluding Rail coaches)	PROFIT	PROFIT TO SALES (%)	SALES (without escalation	PROFIT	PROFIT TO SALES (%)	SALES (without attach-ment)	PROFIT	PROFIT TO SALES (%)	SALES (excluding Rail coaches)	PROFIT	PROFIT TO SALES (%)	SALES	PROFIT	PROFIT TO SALES (%)
		(RS. IN LAKHS)			(RS. IN LAKHS)			(RS. IN LAKHS)			(RS. IN LAKHS)			(RS. IN LAKHS)		
1990-91	Equipment	2881.73	375.90	13.0	18796.47	1557.68	8.3	18161.58	844.12	4.6	0	0	0	39839.78	2777.70	7.0
	Spares	300.88	155.77	51.8	0.00	0	0	0	0	0	18416.48	2571.44	14.0	18717.36	2727.21	14.6
	Total	3182.61	531.67	16.7	18796.47	1557.68	8.3	18161.58	844.12	4.6	18416.48	2571.44	14.0	58557.14	5504.91	9.4
1991-92	Equipment	924.71	123.57	13.4	21218.40	361.16	1.7	22657.18	1279.29	5.6	0	0	0.0	44800.29	1764.02	3.9
	Spares	287.29	143.38	49.9	0.00	0	0	0	0	0	17769.90	3421.60	19.3	18057.19	3564.98	19.7
	Total	1212.00	266.95	22.0	21218.40	361.16	1.7	22657.18	1279.29	5.6	17769.90	3421.60	19.3	62857.48	5329.00	8.5
1992-93	Equipment	1021.37	236.22	23.1	18157.07	-131.73	-0.7	29231.67	351.18	1.2	0	0	0.0	48410.11	455.67	0.9
	Spares	148.35	54.41	36.7	0.00	0	0	0	0	0	23959.72	3687.89	15.4	24108.07	3742.30	15.5
	Total	1169.72	290.63	24.9	18157.07	-131.73	-0.7	29231.67	351.18	1.2	23959.72	3687.89	15.4	72518.18	4197.97	5.8
1993-94	Equipment	1614.69	192.01	11.9	18889.36	-779.85	-4.1	23538.93	-990.54	-4.2	0	0	0.0	44042.98	-1578.38	-3.6
	Spares	473.67	104.59	22.1	0.00	0	0	0	0	0	29156.24	4441.33	15.2	29629.91	4545.92	15.3
	Total	2088.36	296.60	14.2	18889.36	-779.85	-4.1	23538.93	-990.54	-4.2	29156.24	4441.33	15.2	73672.89	2967.54	4.0
1994-95	Equipment	8122.25	-304.55	-3.7	22448.35	-275.25	-1.2	29786.34	750.85	2.5	0	0	0.0	60356.94	171.05	0.28
	Spares	75.32	58.40	77.5	0.00	0	0	0	0	0	32675.78	6494.55	19.9	32751.10	6552.95	20.0
	Total	8197.57	-246.15	-3.0	22448.35	-275.25	-1.2	29786.34	750.85	2.5	32675.78	6494.55	19.9	93108.04	6724.00	7.2
1995-96	Equipment	6760.64	-138.94	-2.1	21604.50	-465.45	-2.2	25278.40	-418.56	-1.7	0	0	0.0	53643.54	-1022.95	-1.9
	Spares	519.87	55.21	10.6	0.00	0	0	0	0	0	33690.74	5654.68	16.8	34210.61	5709.89	16.7
	Total	7280.51	-83.73	-1.2	21604.50	-465.45	-2.2	25278.40	-418.56	-1.7	33690.74	5654.68	16.8	87854.15	4686.94	5.3
1996-97	Equipment	8119.42	216.84	2.7	30732.08	1744.13	5.7	29924.25	141.88	0.5	0	0	0.0	68775.75	2102.85	3.1
	Spares	1881.60	306.58	16.3	0.00	0	0	0	0	0	31768.48	2900.69	9.1	33650.08	3207.27	9.5
	Total	10001.02	523.42	5.2	30732.08	1744.13	5.7	29924.25	141.88	0.5	31768.48	2900.69	9.1	102425.83	5310.12	5.2
1997-98	Equipment	7743.11	38.49	0.5	33944.82	2878.81	8.5	31340.12	1139.79	3.6	0	0	0.0	73028.05	4057.09	5.6
	Spares	696.34	226.23	32.5	0.00	0	0	0	0	0	37238.79	3329.91	8.9	37935.13	3556.14	9.4
	Total	8439.45	264.72	3.1	33944.82	2878.81	8.5	31340.12	1139.79	3.6	37238.79	3329.91	8.9	110963.18	7613.23	6.9
1998-99	Equipment	9982.33	187.18	1.9	32757.40	2175.64	6.6	29048.34	-817.39	-2.8	0	0	0	71788.07	1620.83	2.3
	Spares	1839.36	554.96	30.2	0	0	0	0	0	0	36253.91	4533.72	12.5	37814.68	5050.93	13.4
	Total	11821.69	742.14	6.3	32757.40	2175.64	6.6	29048.34	-817.39	-2.8	36253.91	4533.72	12.5	109602.75	6671.76	6.1

Note : The entire production of Engine Division, Mysore Complex, is for captive consumption and hence has been excluded. Inter division transfers from H&P Division has also not been considered.

Annexure XVI

(Para No.8.3.2)

Comparison with competitors- Profitability and return on capital employed

(Rs. in crore)

	BEML			Larsen & Toubro			Hindustan Motors			Escorts JCB Ltd			Telco			
Particulars	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1995-96	1996-97	1997-98	1998-99
Profit before tax	31.16	16.05	2.72	473.10	590.04	522.24	44.45	48.31	NA	42.42	28.15	22.34	760.72	1000.46	327.66	4.78
Interest	110.04	100.74	88.77	114.85	74.34	160.66	55.69	58.32		2.57	2.82	2.01	160.78	215.04	272.01	309.57
Profit before Interest & Tax	141.20	116.79	91.49	587.95	664.38	682.90	100.14	106.63	NA	44.99	30.97	24.35	921.50	1215.50	599.67	314.35
Capital Employed	1268.44	1275.92	1281.79	4240.99	4708.28	6064.97	529.28	545.42	NA	80.98	99.27	99.72	2523.55	4464.69	4753.82	4091.65
Return on Invest-ments (%)	11.13%	9.15%	7.14%	13.86%	14.11%	11.25	18.92%	19.55%	NA	55.56%	31.20%	24.42%	37.44%	27.20%	12.6%	7.7%

Annexure-XVII

(Para 8.4.1)

Customer-wise outstandings of the Company as at 31st March 1999

(Rs. in lakh)

a) For EM Equipment:

Customer	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Coal India Ltd.	6319.86	14309.51	12671.53	12471.81	10463.92	8066.85	18151.71	14822.12	**19893.92**
Contr.of Def. Accts.	96.43	95.92	2048.26	703.10	1129.67	162.12	1837.92	2967.18	3625.01
SAIL	728.35	170.07	1202.29	868.95	1289.62	414.16	453.53	703.37	114.30
Singareni Collieries	2062.20	77.50	6974.38	2554.87	2606.69	37.38	2805.92	1795.54	721.13
Hind. Zinc Ltd	293.94	-	-	-	650.07	1346.66	1479.86	351.16	-
Salgaon-kar	225.77	-	-	-	-	-	3.00	3.00	-
ACC	540.39	86.15	-	-	-	1459.70	28.33	12.72	51.05
IISCO	195.52	327.37	-	-	-	-	8.74	8.72	-
T.N.Agro Industries	247.40	-	-	-	-	-	252.75	197.09	249.38
Hind Copper Ltd.	72.22	-	461.94	533.60	-	-	586.72	20.94	20.01
Others	2586.00	5142.81	6303.94	5199.17	5460.98	14676.90	9918.53	6204.07	6405.21
Tehri Hydro Project	129.55	-	-	-	-	-	-	-	-
Cement Corpn of India Ltd.	-	109.77	-	-	-	107.43	105.73	105.73	-
TISCO	-	108.80	-	-	-	-	32.59	0.23	-
BEL, Chennai	122.36	-	-	-	-	71.90	0.33	0.33	-

Annexure-XVII (page 2)

Bolani Ores	-	17.80					-	-	
Neyveli Lignite Corpn	-	387.77	521.75		538.83		807.06	616.15	1065.12
Ranjith Sagar Dam	-			858.24	1459.06	612.74	129.92	2.75	-
Exports	-	1375.37	1729.46	2349.90	2117.60	1121.82	3573.38	1990.89	300.04
Karnataka Agro Industries	-		396.39			14.89	13.38	6.39	-
NMDC	-		369.68	521.40		258.19	270.91	145.22	100.02
RSMM	-		450.37		1380.11	590.89		664.50	584.00
INDAL	-		431.64					446.58	-
Jaiprakash Associates	-		359.22			103.81		55.22	77.50
Rajshree Cements	-			151.03		120.27	104.10	10.24	-
L&T	-			218.41		53.66	37.80	-	-
Continental Foundation	-			249.68			-	-	-
Ferro Scrap Nigam Ltd				372.71	718.58		254.72	184.23	458.03
Gujarat Ambuja Cements	-			721.86		71.21	9.87	5.00	-
KIOCL	-				629.00		0.55	37.42	-
Southern Railway	-				285.82		15.72	6.14	-
Total	13619.99	22208.84	33920.85	27774.73	28729.95	29290.58	40883.07	31362.93	33664.72

Annexure-XVII-(page 3)

b) For EM Spares

Coal India Ltd	6625.89	7592.93	9467.02	13854.04	19567.59	20014.80	18679.92	19854.84	18034.07
Others	3853.59	4339.50	5287.61	6240.09	8380.06	11595.84	11344.07	10092.87	8204.73
Total	10479.48	11932.43	14754.63	20094.13	27947.65	31610.64	30023.99	29947.71	26238.80

c) For Rail Coaches Etc.,

ICF, Chennai	-	349.00	794.89	1226.00	50.27		1043.71	1947.11	2155.43
Dept. of Def. Supply.	10.13	41.23	-	-	-	-	-	-	502.95
Spare Parts	66.05	-	66.43	-	-		737.23	171.33	-
Others	-			380.33	111.36	768.08	-		-
CDA, New Delhi	-	-	-	117.05	-	-	225.46	257.76	-
Total	76.18	390.23	861.32	1723.38	161.63	768.08	2006.40	2376.20	2658.38
Grand Total	24175.65	34531.50	49536.80	49592.24	56839.23	61669.30	72913.46	63686.84	62561.90

Coal India Limited	**1996-97**	**1997-98**	**1998-99**
EM equipment	18151.71	14822.12	19893.92
Spares	18679.92	19854.84	18034.07
Total	36831.63	34676.96	37927.99
Total Sundry Debtors-Gross	72913.46	63686.84	62561.90
Percentage of CIL on Debtors	50.51%	54.45%	60.62%

Annexure –XVIII

(Para No. 8.4.5)

Comparison with competitors – Sundry Debtors and Sales

Company	Sundry Debtors			Sales			% of Sundry Debtors to Sales		
	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
Escorts JCB Ltd. (Rs. in lakh)	3167.84	3329.69	3160.91	26750.92	26756.64	26792.76	11.84%	12.44%	11.57
Escorts CE Ltd (Rs. in lakh)	2628.03	2751.45	2722.35	8767.36	9983.70	9942.76	29.98%	27.56%	25.21
Hindustan Motors Ltd.(Rs.in Lakh)	13847.06	15366.30	NA	125333.61	129873.13	NA	11.05%	11.83%	NA
Larsen & Toubro Ltd.(Rs.in lakh)	88747.00	94611.00	99147.00	530474.00	567677.00	729149.00	16.73%	16.67%	13.60
Telco (Rs. in lakh)	261663	186214	155988	1009659	736279	663705	25.92%	25.21%	23.41
BEML (Rs. in lakh)	72913.46	63686.84	62561.90	116979.35	125971.14	121261.90	62.33%	50.56%	51.59