REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA

UNION GOVERNMENT
No. 8(COMMERCIAL) OF 1995

H M T LIMITED
(MACHINE TOOL BUSINESS GROUP)

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PREFACE

Audit Boards are set up under the supervision and control of the Comptroller and Auditor General of India (CAG) to undertake comprehensive appraisals of the performance of the Companies and Corporations subject to audit by CAG.

2. The report on HMT Limited (Machine Tool Business Group) was prepared by an Audit Board consisting of the following members:

1.	Shri N.Sivasubramanian	Deputy Comptroller and Auditor General-cum-Chairman, Audit Board from Ist July 1992 to 31st May 1993.
2.	Shri U.N.Ananthan	Deputy Comptroller and Auditor General-cum-Chairman, Audit Board from 1st June 1993 to 30th November 1993.
3.	Shri C.K.Joseph	Deputy Comptroller and Auditor General-cum-Chairman, Audit Board from 13th December, 1993 till date.
4.	Smt. Sudha Rajagopalan	Principal Director of Commercial Audit & Ex-officio Member Audit Board, Bangalore from 19th August 1992 to 16th August 1994 F.N.
5.	Shri K.G.Mahalingam	Principal Director of Commercial Audit & Ex-officio Member Audit Board, Bangalore from 16th August 1994 A.N. till date.

6.	Shri A.K.Chakraborti	Principal Director of Commercial Audit and Ex-officio Member, Audit Board-II, New Delhi from 15th July, 1991 to 28th June, 1993.
7.	Shri Shailendra Pandey	Principal Director of Commercial Audit and Ex-officio Member, Audit Board-II, New Delhi from 26th July 1993 till date.
8.	Shri K.S.Menon	Principal Director (Commercial) and Member Secretary, Audit Board from 2nd July 1990 to Ist August, 1993.
9.	Shri R.Chandramouli	Asstt. Comptroller and Auditor General (Commercial) and Secretary Audit Board from 2nd August, 1993 till date.
10.	Shri M.K.Khosla Part- time Member	Ex-Chairman, RITES.
11.	Shri S.S.Basu Part-time Member	Resident Director & Adviser (Marketing) ACC -Babcock Limited, New Delhi.

The part time members are appointed by the Government of India (in the respective Ministry or Department controlling the Company or Corporation) with the concurrence of Comptroller and Auditor General of India.

3. The report was finalised by the Audit Board after taking into consideration the discussions held with the Department of Heavy Industry on 23rd February 1994.

4. The Comptroller and Auditor General of India wishes to place on record his appreciation of the work done by the Audit Board.

OVERVIEW

1. This Appraisal is confined to the Machine Tool Business Group of HMT Ltd. Based on the recommendations of JICA and in order to recruit funds for strategic investments the Government is contemplating restructuring of the Company.

(Paras 1.1.1, 1.3.3 and 1.4).

2. At the end of March 1992 the authorised capital was Rs.100 crores and the paid-up capital Rs.87.73 crores which was wholly subscribed by the Government of India. In 1992-93 and 1993-94 the Government disinvested Rs.8.50 crores in favour of certain specified Financial Institutions and Mutual Funds.

(Para 1.2.1)

3. The Committee on Public Undertakings had recommended that installed capacity was to be fixed on a scientific basis; however, the Company still evaluates performance with reference to annual targets (in numbers) and utilisation of capacity with reference to the established infrastructural facilities has not been evaluated.

(Paras 2.1.1 and 2.1.2)

4. Growth rate and value added envisaged in the Corporate Plans could not be achieved.

(Paras 2.4.1 and 2.4.2)

5. The Group's share of the domestic market which stood at 40 per cent in 1986 declined to 35 per cent in 1992.

(Para 2.5.1)

6. The capacity of 3 out of 5 foundries were derated due to certain uncontrollable and controllable factors but even the derated capacities could not be fully utilised.No norms were fixed for processes in some foundries.

(Paras 2.6.1 and 2.6.6)

7. No norms for machine utilisation as well as labour utilisation were laid down. The percentage of machine utilisation has come down from 68.1 per cent in 1984-85 to 62.8 per cent in 1991-92.

(Paras 3.1.1, 3.2.1 and 4.3.1)

8. There was overall surplus of manpower.

(Para 4.7)

9. The Board approved (January 1991) capital expenditure of Rs.397 lakhs to augment the capacity for CNC Systems from 300 to 800 and Rs.73 lakhs was spent on buildings, but the in-built capacity of the Division was assessed as 1133 systems per annum by the National Productivity Council in October 1991.

(Paras 5.3.2.5)

10. The Company acquired technical know-how for the manufacture of advanced products meant for use in the automobile industry, two years after recession hit the automobile industry and the actual demand for the advanced products did not materialise as anticipated, resulting in three new product-lines not picking up demand and the fourth one being abandoned.

(Para 5.9)

11. For Rs.60.55 lakhs the Company obtained know-how for the manufacture of Plastic Extrusion Machines, a product for which there was no firm demand, resulting in infructuous expenditure.

(Para 5.10)

12. Various R&D Plans are overlapping in nature; certain products were developed and commercialised without being included in any specific plan; periods for development were indirectly extended.

(Paras 6.5 and 6.6)

13. Vendor ratings were not updated regularly. Norms were not fixed for inventory holdings. Targets for inventory holdings could not be achieved. Work-in-progress has not been physically verified. Thirteen per cent of raw material and components was slow moving/ non-moving and 12 per cent had been declared surplus.

(Paras 7.1.2, 7.4.1, 7.5.4 and 7.6.1)

14. The Group had been able to get only 15 to 30 per cent of the orders for which quotations were submitted by it.

(Para 8.6)

15. The Group lost a substantial amount because of its failure to get earnest money while accepting orders or to forfeit earnest money when the products were not lifted by the customers.

(Para 8.7)

16. The envisaged annual turnover growth rate was not achieved.

(Para 8.9)

17. The prices approved by CMD are held firm during the financial year without any escalation clause even where the delivery is delayed because of reasons attributable to the client.

(Para 8.15)

18. The Group has not laid down any credit policy and the percentage of sundry debtors to sales varied from 22.0 (1984-85) to 31.8 (1992-93).

(Paras 8.22.1 and 8.23)

19. The exports of the Group were affected by non-competitive prices, technological obsolescence, etc. The Company's share of the international market was only about 0.05 per cent.

(Paras 9.2 and 9.2.1)

20. The Company has evolved an uniform costing system only from October 1990. Fixation of standard costs is not scientific.

(Paras 10.1.1 and 10.1.2)

21. The Group has incurred losses from 1987-88 to 1989-90. It has made a profit of Rs.45 lakhs in 1990-91, Rs.299 lakhs in 1991-92 and registered a loss of Rs.1984 lakhs in 1992-93.

(Para 11.2)

CHAPTER 1

INTRODUCTION

1.1.1 Hindustan Machine Tools Limited was incorporated as a company in 1953. As its operations expanded to include diversified products such as watches, tractors etc., the name of the Company was changed to 'HMT Limited' in 1978 and in order to effectively manage its operations 'Management by Business Groups' was introduced in 1978-79. Machine Tool Business Group (MTBG) had 16 units by the end of March 1994.

1.1.2 The Group has been manufacturing more than 40 types of machines under categories of General Purpose Machines (GPMs), Special Purpose Machines (SPMs), CNC Turning Centres, CNC Machining Centres, CNC Turret Punch Press etc., in its various units to cater to the needs of several user industries like the automobile industry, Railways, Defence and power equipment. It held a share of 35 per cent in 1992 in the machine tool production in the country as shown in Figure 1.

1.1.3 GPMs constitute a major portion of the product-mix of the Group despite a reduction in its share of the total production (in terms of the value) of the Group from 66%(1984-85) to 47% (1992-93). The growth of production of CNC machines of the Group vis-a-vis production in the country from 1985 to 1992 is indicated in Figure 2.

1.2 CAPITAL STRUCTURE

1.2.1 The authorised capital of the Company was Rs.100 crores at the end of March 1993. The equity shares which were of the face value of Rs.1000 each earlier were sub-divided into Rs.10 each in December 1991. The paid up capital of the Company was Rs.8773.44 lakhs as on 31st March 1993. In 1992-93 and 1993-94 the Government disinvested shares with a face value of Rs.849.64 lakhs in favour of certain specified financial institutions and mutual funds.

1.3 CORPORATE PLAN AND MEMORANDA OF UNDERSTANDING

1.3.1 The Company has been planning its activities by a system of Corporate Plans since the year 1977-78. Currently, the IV Corporate Plan (Roll-on 1992-97) is under implementation. The performance of the Group against the goals set in the Corporate Plans in terms of specified parameters has been assessed in later chapters.

1.3.2 The Company has also been entering into Memoranda of Understanding (MOU) with the Government of India every year commencing from the year 1988-89. The Company has conducted a SCOT (Strength, Constraints, Opportunities and Threats) analysis between October 1987 and January 1988 and found major constraints such as, too wide a product range, delay in commercialisation, inadequacy of design personnel and inadequate pre and after sales services, which the Company was not able to overcome due to resource constraints.

1.3.3 Based on the recommendations of Japan International Co-operation Agency (JICA) and also in order to obtain funds for strategic investments for modernisation, to increase flexibility in market-oriented management and to give more autonomy and responsibility the Government is contemplating restructuring of HMT . The Audit Board was also informed (February 1994) that due to shortage of funds, JICA's recommendations could not be implemented and therefore Government had permitted HMT to explore the possibilities of joint ventures with foreign collaborators even with majority participation, if necessary.

1.4 The activities of the Company as a whole were last reviewed in Part IX of the Report of the Comptroller and Auditor General of India - Union Government (Commercial) for the year 1969-70. The Committee on Public Undertakings examined the activities of the Company in their 38th Report (April 1973); the action taken by the Government thereon is contained in their 58th Report (1974-75 - 5th Lok Sabha).

The present report deals with the working of the Machine Tool Business Group (MTBG) from 1984-85 till 1992-93.

CHAPTER 2

PRODUCTION PERFORMANCE

2.1 Installed Capacity

2.1.1 COPU in their 38th Report (April 1973) recommended that the installed capacity was to be fixed on a scientific basis so as to serve as a suitable parameter to evaluate the production performance of the Company.

2.1.2 However, the Company reckons the targets fixed (in numbers) for production for each year on single/double shift operation as its installed capacity. The method adopted by the Company in assessing the capacity would not provide for ascertainment of actual idle capacity, with reference to facilities installed, nor would it enable comparison of capacity utilisation from one year to another.

2.1.3 The details of targeted and actual prodution (in terms of standard hours of output) are indicated in Annexure I. The Group could not achieve the target in any of the years covered by the review.

2.2 Production planning

2.2.1 The projected sales and production for the Group as per the Corporate Plans and Operational Plans in terms of value for the period 1984-85 to 1992-93 are indicated in Annexure II.

2.2.2 The targets set for production under Operational Plans were always lower than those set for sales during the period. This, according to the Ministry, was to reduce inventories of finished products. However, the finished goods in terms of number of months sales were more than the norms fixed in 1991-92 (2.2 against 0.8) and 1992-93 (3.9 against 0.99).

2.2.3 Annexure III shows that the actual production was more than the projections under the Corporate Plans as well as Operational Plans in the years 1984-85, 1987-88, 1989-90 and 1990-91, more than targets under Corporate Plans in 1991-92 and less than the targets under both the Plans in other years. Unit-wise targets have not been fixed in the Corporate Plans from the year 1990-91 onwards. However, unit wise Operational Plans are prepared every year and performance monitored against targets.There was downward setting of targets in the Operational Plans when compared to the preceding year in a few cases eg. PRH in 1991-92, MTB and DCB in 1987-88.

2.3 Execution of production

2.3.1 Annexure-III shows that even the set targets could not be achieved in 1992-93 except by MTP.

2.3.2 A review of the production of the years 1984-85 to 1992-93 for the Group revealed that the percentage of production varied between 56.5 and 43.5 in 1984-85 and 63.9 and 36.1 in 1992-93 for the first nine months and last three months respectively. Only in 1985-86 and 1986-87 was the actual production properly phased out during the first nine months and the last three months. The impact of the uneven production pattern on the inventory holdings of the Group and consequent locking up of funds in the inventory could not be worked out in audit as the details were not readily available (March 1994).

2.3.3 The Company indicated that reduction in order flow due to recession, difficulty in procurement of critical components, deferring of R&D production due to inadequate demand etc. and shortfall in capital investment were some of the reasons for short fall in production.

2.3.4 COPU in their 94th Report (April 1984) had specifically looked into such problems pertaining to Press Division (like higher cost of production, imports allowed and longer delivery times etc.) and requested the Government to pay special attention to these aspects and give necessary guidance to the Company in this regard. Accordingly, the Company entered into a collaboration agreement (September 1982) for the design and manufacture of a new range of cost effective presses for a payment of US $2,00,000 (Rs.21.34 lakhs). Even though the design techniques were stated (September 1992) to have been used in presses, the cost effectiveness could not be ascertained in audit in the absence of a 'detailed and quantified report' on the actual benefits derived in practice.

2.4 Growth rate and value added

2.4.1 The annual growth rate in production expressed as a percentage increase in value over the previous years' targets envisaged in the Coporate Plans vis-a-vis the actual growth at current prices and constant prices is indicated in Figure 3. It would be seen therefrom that there was downward setting of growth rate targets during the years 1987-88, 1989-90, 1991-92 and 1992-93 and even the lower targets could not be achieved in 1991-92 and 1992-93. Even though the compounded growth rate recorded during the period of review was 8.06 per cent at current prices, it was only -3.70 per cent at constant prices.

2.4.2 The projections for value added were made only in the III(extended) Corporate Plan and the IV Corporate Plan. The Group could not achieve the projections in any of the years. The variations of actuals vis-a-vis Corporate Plan targets were stated (February 1994) by the Ministry to be due to change in the resources, inputs and also in product-mix based on market constraints etc. In the absence of cause-wise analysis of the variations, the reply of the Ministry could not be verified in Audit.

2.5 Market share

2.5.1 According to estimates the Company's share would be approximately 40 per cent of the total machine tools demand by the year 1984-85 while the market share in subsequent years was as follows:

Calendar year	Country's production	HMT's production	Market share %	Growth rate Country's production	Growth rate HMT's production
	(Rs. in lakhs)			(Percentage)	
1985	34200	13200	39%	NA	NA
1986	37200	14700	40%	8.8%	11.4%
1987	41700	16000	38%	12.1%	8.8%
1988	46300	16000	35%	11.0%	0.0%
1989	55500	18900	34%	19.9%	18.1%
1990	69900	23200	33%	25.9%	22.8%
1991	77500	24300	31%	10.9%	4.7%
1992	78418	27381	35%	1.2%	12.7%

2.5.2 According to the Company (September 1992) even though the market share had come down in absolute terms, the Company still "maintains the growth rate which is in line with the industry". This is, however, not found to be correct as may be seen from the table. As a matter of fact, while high growth rate has been registered in the country's production of machine tools it was observed that in 1988 there has been no growth at all in the Company.

2.6 Performance of foundry

2.6.1 The Company had set up captive foundries in each of its five major machine tool units, viz., MTA, MTB, MTH, MTK and MTP. However, subsequently the capacities of foundries in MTB, MTH and MTK were derated for certain controllable factors such as non-availability of consistent load and limited capacity of input, shot blasting facility etc. and certain non-controllable factors such as power cut. Even these derated capacities were not fully utilised in any of the years by any of these units.

2.6.2 In MTK, the shortfall in utilisation of derated capacity was attributed to unsuitability of the foundry and due to technical difficulties.

2.6.3 A test check in two units (MTA & MTB) of the actual production vis-a-vis the targets fixed revealed that the percentage of actual production to targets was lowest at 53% in 1988-89 and highest at 90% in 1990-91 in MTB.

2.6.4 In MTA, the targets fixed in all the years were lower than the rated capacity, and even these lower targets

were not achieved in any of the years and fettling and other jobs were got done from outside parties by incurring an expenditure of Rs.6.04 lakhs, Rs.10.42 lakhs, Rs.13.82 lakhs, Rs.17.21 lakhs and Rs.5.38 lakhs during 1988-89 to 1992-93 respectively. This was stated (September 1992) to be due to not recruiting the required man power as was envisaged in the DPR. In MTB the targets fixed were equal to the rated capacity upto 1986-87 and thereafter equal to the derated capacity which gradually declined by 1992-93. Even the lower targets were not achieved by the unit. The reasons for non-achievement were stated (February 1994) to be non availability of raw materials, power cuts, reduction in manpower due to retirement/deaths, frequent breakdown of aged equipment etc.

2.6.5 Rejections in foundry

The year-wise/unit-wise percentage of loss of metal to metal charged, rejection at foundry to yield of good castings and machining rejections to net output in foundry are given in Annexure IV.

2.6.6 Of the five units, only MTB and MTP have fixed norms for melting loss and rejections in foundry and at MTB in machine shop. While MTP could achieve these norms fixed in all the years, MTB could achieve norms for only melting loss in all the years and machine rejections in 1985-86 and 1986-87 only. However, it could be seen that percentage of melting loss and rejections in foundry have been maximum in MTA among all the units in all the years. Percentage of

machining rejection was the highest in MTP in all the years as compared to other units. This was stated (September 1992) to be due to the intricacy and quality requirements of MTP castings which are more stringent than in other units. The Management further stated (September 1992) that the main reasons for rejections is the basic deficiency of the dry sand process which is obsolete in all foreign countries for which a modernisation plan is being worked out using the latest technology available in the world. However, as a short term measure sand mullers are being replaced and a new jolt squeeze moulding machine is being procured.

2.6.7 Cost of good castings

From a review of cost details for the years from 1984-85 to 1992-93 it is seen that the cost of production per tonne was on the increasing trend in MTB, MTH and MTK (except in MTH in 1988-89). The cost of production was the highest in MTB in 1992-93 at Rs.31,003 per tonne. Further, an analysis of cost per tonne (element wise) in MTH revealed that work expenses and salaries and wages constituted as much as 71 per cent.

CHAPTER 3

MACHINE UTILISATION

3.1 Percentage of utilisation

3.1.1 Machine utilisation computed as a percentage of the available hours (Number of the machines available for production multiplied by the number of working hours), among various units and for the Group as a whole from 1984-85 to 1992-93 is indicated in Annexure V. Machines surplus, obsolete and identified for disposal and those which were not planned for use due to non-requirement of a specific component or operation were not considered for computation of available hours.

3.1.2 Thus, the percentage of machine utilisation computed each year is not indicative of utilisation of the total plant and machinery available in the Group.

3.1.3 As compared with the general utilisation of machines in the machine tool industry which ranges from 70 to 80 per cent, machine utilisation in the Group was a maximum of 68.1 per cent in 1984-85, decreasing gradually to 62.8 per cent in 1991-92 with a marginal increase to 63.1 per cent in 1992-93. Also in all units except for a marginal increase in DCB, MTP, PRH, MTA and HMB the machine utilisation has come down in 1992-93. It was the lowest in MTB in all the years (except 1984-85). The marginal increase in the Group as a whole in 1992-93 was due to change in the

method of computation of machine hours available on the basis of operators available from the last quarter of 1992-93. The percentage of machine hours utilised in 1992-93 would again be less if the available hours are computed by the pre-revised method.

3.1.4 The Ministry attributed (February 1994) the low utilisation to high separation of direct workmen, age of plant and machinery etc.

3.2 Norms for machine utilisation

3.2.1 No norms for machine utilisation have been fixed. However, certain targets are indicated in the Operational Plans of the respective units. On a test check in MTB it was seen that there was :

(a) variance in the targeted available hours as per the Operational Plans and the actual available hours as per the Plant Utilisation Statements . The Company stated (September 1992) that the Operational Plans and Plant Utilisation Statements cannot be compared with each other as capacity hours for fabrication etc. which are indicated in the Operational Plans are not considered in the Plant Utilisation Statement.

(b) Inspite of lower targeted utilisation at 65 per cent and 63 per cent for the years 1989-90 and 1990-91, the actual utilisation was 51 to 55 per cent respectively. The

unit has not fixed any target for machine utilisation for 1992-93.

3.3 Idle machine hours

3.3.1 The cause-wise break-up for idle machine hours (total available hours - utilised hours) is given in Annexure VI and includes want of job, want of operators, mechanical and electrical repairs and other causes.

3.3.2 Idle machine hours ranged from 16.7 per cent(HMB 1984-85) to 49.5 per cent (MTB 1992-93). The Company stated (September 1992) that it had retrained persons and tried to deploy surplus manpower (48 in MTP and 6 in MTH) in deficit areas, in order to overcome idle machine hours for lack of operators. This, however, does not appear to be sufficient for reducing the idle machine hours. The Audit Board was also informed (February 1994) that high percentage of idle hours was due to including "regular absence" in computation of idle hours and that the present concern was lack of jobs to utilise the machines.

3.3.3 It is also observed that around 40 to 52 per cent of targeted production for the year was taken up only during the last three months. As a result, while idleness on account of 'want of job' has decreased during the last three months as compared to the first nine months, idleness for want of operators increased in the last three months.

3.4 Preventive maintenance

3.4.1 On a test check conducted in MTA(March 1992) it was found that preventive maintenance of machines was short by as much as 14 per cent of the required number. The Company stated (September 1992) that this was because the machines in MTA could not be spared for maintenance as they were occupied for production purposes.

3.4.2 However, a subsequent test check in MTP, MTH and MTB showed that preventive maintenance was short by as much as 25 to 33 percent during 1992-93. The Management has neither prepared its own manual of preventive maintenance nor obtained the manuals from the manufacturers.

3.5. Machine Productivity.

3.5.1 As in the case of machine utilisation, no norms for productivity of machines have been fixed by the Company. Machine productivity worked out on the basis of value added per machine hour utilised is found to range from as low as Rs.70 (PRH 1986-87) to as high as Rs.1063 (PRH 1990-91). The Company has attributed lower productivity to acceptance of orders at competitive prices. It may be noted that the slight increase of value added per machine hour over the years from 1989-90 onwards till 1992-93 was mainly due to reduction in the utilized hours rather than any real increase in machine productivity.

3.6 Modernisation, Renewals & Replacement

3.6.1 With a view to creating additional capacities in various machine tool units through selective replacement and modernisation, the Company had taken up a scheme of renewals and replacement of machinery commencing from 1979-80 in four units i.e., MTB, MTP, MTK and MTH and spent Rs.3464.15 lakhs by 1985-86. The scheme was discontinued due to funds constraints stated to have arisen on account of inadequacy of internal resources generation and Government budgetary support which resulted in non-creation of envisaged additional capacities fully.

3.6.2 Eventhough, the productivity (both machine and labour) showed an improvement after implementation of the renewals and replacement schemes, the real impact could not be assessed due to lack of details like envisaged investment and the proportional increase in value added on account of renewals and replacements.

CHAPTER 4

LABOUR UTILISATON AND MANPOWER ANALYSIS

4.1 Labour utilisation

4.1.1 Labour utilisation is computed as a percentage of utilised hours to net available hours i.e.,total available hours, (No. of direct workmen x number of working days in a year x number of working hours per day) less absenteeism.

4.1.2 Annexure VII indicates labour utilisation of MTBG and its constituent units. The utilisation was very low in MTB and DCB throughout the period of review and in PMK during 1986-87 and 1987-88.

4.1.3 The COPU in their 94th Report (April 1984) observed that there was heavy loss of production hours to the extent of 33 per cent of the total available hours. One of the main causes for it was high absenteeism. While agreeing with the COPU, the Government advised (September 1984) the Company to intensify efforts and keep close and continuing control over the factors that contribute to loss of production hours with a view to achieving higher production and productivity. Yet absenteeism ranged between 46.9 and 56.3 percent of the production hours lost during the period 1986-87 to 1992-93.

4.2 Idle hours

4.2.1 The cause-wise break up of idle hours is given in Annexure VIII. The percentage of idle hours (net available hours less utilised hours) to the net available hours of the Group during the period of review was as high as 24.4 (1987-88) and as low as 17.4 (1991-92). The major causes for idleness of labour included 'No job', 'No machines' and 'mechanical and electrical' repairs. 'Other causes' have been found to be a major cause for idleness in MTB from 1989-90 and onwards.

4.2.2 A test check in MTB and DCB of idle hours for want of job for the years 1989-90 to 1992-93 revealed that the idleness for want of job has decreased during the last quarter in 1992-93 in line with the production pattern of the Company.

4.3 Norms for Labour Utilisation

4.3.1 No norms for labour utilisation have been laid down by the Company. However, targeted levels of labour utilisation based on the planned level of production are being indicated in the Operational Plans of the respective units. A review of targets vis-a-vis the actual utilisation of labour hours as per the Man Power Utilisation Statements in MTB for the years 1989-90 to 1992-93 revealed that the targeted hours for utilisation have been less than the

targeted net available hours indicating the lack of load and also that the targeted percentages of utilisation have not been achieved during the period.

4.4 Labour Productivity

4.4.1 No norms have been fixed by the Company for labour productivity. Labour productivity worked out on the basis of value added per labour hour utilised has been found to range from as low as Rs.28 (1986-87 PRH) to as high as Rs.492 (1992-93 DCB). In MTH the productivity ranged from Rs.90 (1985-86) to Rs.232 (1992-93).

4.5 Labour Efficiency

4.5.1 Labour efficiency is computed as a percentage of standard hours to actual hours utilised. Standard time is fixed by the Management on the basis of time and motion study for an average skilled workman.

4.5.2 A study conducted in (September 1988) by an external consultant, revealed that in different units of the Group various allowances due to batch quantity, shop variation, rejections were being added to basic standard hours. It was also found that some units included set up time as a part of basic standard time while others did not include it. The Company stated (September 1992) that since there were variations in local conditions, product-mix etc.,

divergent practices were followed. The Ministry also endorsed (February 1994) the reply of the Company stating that since the load was fixed in terms of standard hours comparison of labour efficiency among different machine tool units was not vitiated. However, as a result of these divergent practices in the computation of standard hours, it was not possible to assess or compare the efficiency of labour among different units.

4.5.3 Neverthless, a test check conducted in six units of MTBG revealed that labour efficiency ranged from 59.36 (MTA 1989-90) to 138.6 per cent (DCB 1991-92).

Manpower Analysis

4.6 The Company assesses its manpower requirements each year on the basis of industrial engineering studies conducted at various units of the Company for which a system of standard time for manufacturing, assembly and other operations is followed.

4.7 The Company, however, decided to review the requirement of manpower in accordance with the directions of COPU in the 38th Report (April 1973). For this, a "Man Power Committee" (MPC) was constituted in December 1987 under the overall guidance of an external consultant which covered the period upto 1990-91. This Committee was also expected to suggest

the use of man power rendered surplus through training/retraining and other measures. According to MPC there was an overall surplus of manpower of 997, 989 and 951 in the Group during the years 1988-89, 1989-90 and 1990-91 respectively. The Ministry stated (February 1994) that the level of technology, the processes and procedures followed varied slightly from unit to unit and that the Manpower Committee went into the details of all the units and evened out the differences in practices followed by different units.

4.8 Subsequent to the report of MPC the Company had initiated necessary action like ban on recruitment, introduction of a system of voluntary retirement, retraining of personnel etc., to bring down the excess man power. 1126 persons had availed the Voluntary Retirement Scheme upto 15th April 1993.

4.9 Average outgo, average value of production, average value added and the ratio of average value added to average outgo per employee per annum for the last nine years ending 31st March 1993 are indicated in Annexure IX.

4.10 Incentive Scheme.

4.10.1 A scheme of payment of incentives to workmen has been in vogue in the Company and the latest such scheme was applicable from 1st December 1991 and upto 31st August

1994. Under this scheme, direct and indirect incentives are paid.

4.10.2 The direct incentives are paid based on standard hours beyond the minimum level of performance.

4.10.3 The observations of the MPC (July 1988) in this regard are relevant.

"Direct operators are protected for their idle time due to no job/no machine in the incentive scheme, and paid indirect incentive which is not related to their effort. The payment of incentive for the idle hours is not justified as the operator is paid his wages for his attendance".

4.10.4 However, Management stated (September 1992) that "the workers should not be penalised for 'no job' or 'machine break down' conditions", and thus, the practice of payment of incentive for idle time due to no job/no machine continues even under the new scheme.

4.10.5 Indirect incentives for indirect employees are based on the average per capita standard hour at the rate of average incentive earnings of direct workman beyond a certain level of output subject to a certain minimum amount.

4.10.6 The MPC had also suggested (July 1988) that "a certain percentage of incentive payment to indirect personnel be related to savings in overhead expenses in their respective sections/cost centres". However, no action for modification of incentive scheme has been taken even under the new scheme. However, the Company stated

(September 1992) that the overhead expenses could not be controlled in view of high degree of uncertainty and consequent uneven loading/scheduling in the Machine Tool Division and felt that the direct workers should not be penalised for this reason.

4.10.7 Further, on a test check in MTA and MTP, it was observed that the percentage of indirect incentive to direct incentive under the scheme in vogue was very high as detailed below :-

(Percentage of indirect incentive to direct incentive)

Unit	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
MTA	102.29	158.53	145.26	135.82	133.84	236.50	130.50
MTP	150.56	156.41	155.39	150.29	154.98	212.48	141.38

4.10.8 The benefits derived by the Company on account of introduction of incentive scheme by way of reduction in cost of production were not ascertainable. The Management during the Audit Board meeting (February 1993) had stated that break-even required at least 104 hours of output. From the details furnished (April 1993) it was observed that the figure had been worked out at an assumed break-even point of 75 per cent (details not furnished) which was stated to vary

from unit to unit and also from year to year. Thus, the reduction in cost of production consequent on the introduction of the successive incentive schemes was neither envisaged nor evaluated.

CHAPTER 5

DIVERSIFICATION

5.1 Objectives

5.1.1 To reduce substantially the dependance on imports the Company launched an expansion scheme in January 1960 on the basis of 'a new factory every year' programme and set up 4 Machine Tool factories (Unit II at Bangalore, Unit III at Pinjore, Unit IV at Kalamassery & Unit V at Hyderabad) with an annual capacity of 1000 standard machines. The commercial production in these units commenced during 1962-63, 1964-65, 1965-66 and 1966-67 respectively. The Management stated that keeping in view the trend and demand, one unit each had to be set up in east, central and north India. However, no detailed cost benefit analysis for setting up of units in these areas was made available by the Management. In 1975, Machine Tool unit at Ajmer (MTA-HMT VI) was formed by amalgamation of Machine Tool Corporation of India Limited, Ajmer.

5.1.2 However, in the context of falling demand and under utilisation of capacity of the various Machine Tool Units and based on the recommendations of a sub Committee (September 1968), various diversification projects were taken up at the units (Annexure X). The Audit Board was informed (February 1994) that the reasons for the Company losing pre-eminence in the machine tools industry were :

a) Inability of the harnessed technologies to keep pace with international developments.

b) Absence of state-of-the-art technologies.

c) Low key contribution in joint-working strategies.

d) Low demand for CNC technologies.

5.1.3 In support of the diversification, the Management stated "The machine tool business is an area where there are cyclic changes in the demand pattern and the machine tool industry is the first to be affected when there is a slackness in demand of the engineering goods itself. Therefore, we have diversified not only in the machine tool area, but in other business also, so that if the demand pattern is not in the same cycle, they cancel each other's negative effects and the Company has greater stability". The Audit Board was also informed (February 1994) that to make profits, in order to survive to make advancements, the Company looked for diversifications during a recession in the machine tool industry. It was also mentioned that the Company's wide range of products had actually proved to be a disadvantage as smaller competitors venturing into specialised areas had been able to develop a high level of excellence and compete effectively with the Company both technologically and on price.

5.1.4 The details of Business Groupwise production, sales, net profit, average capital employed and the return thereagainst are indicated in Annexure XI.

5.1.5 The COPU advised (April 1984), in their 94th Report that the Company should increasingly concentrate on its primary function of development and production of machine tools involving higher precision and advanced technology. As a follow-up, the Government while indicating action taken on the recommendation of the Committee stated that "having regard to the growing trend of import of machine tools into the Country, HMT should increasingly concentrate, as indeed the Company is now doing, on development and manufacture of machine tools involving higher precision and advanced technology."

5.1.6 However, the average capital employed in MTBG has been gradually declining (Annexure XI). Further, as against the approved estimate of Rs.2103 lakhs envisaged for diversification in the MTBG upto III Corporate Plan, the actual expenditure incurred upto the end of 31st March, 1993 worked out to Rs.1489 lakhs. Further, as against the investment of Rs.3696 lakhs envisaged in the IV Corporate Plan for diversification projects only an expenditure of Rs.71 lakhs was incurred to the end of March 1993. Though the contribution of some non-MTBG areas to the Company's profitability cannot be denied, the Company did not increasingly concentrate on machine tools.

5.2 Review of projects

5.2.1 The Company's various diversification projects fall into 3 categories as mentioned below :

Category	Particulars	Projects/products taken up under the category
A	Investment intensive projects calling for establishment of separate divisions/profit centres.	i) Computer Numerical Control System in "CNC Division (CNC)" established at Bangalore. ii) Ball Screw Porject as a part of machine tool division (MTB) Bangalore. iii) Electronic Measuring Instruments, in "Instrument and Control Systems Division" (ISB)
B	Balancing investments for capacity balancing for enhancement of production of new products/components not requiring establishment of new division/profit centres.	i) Precision instruments project (Mechanical Measuring Instruments) ii) Lamp making machinery project iii) Single and Two colour Printing machines
C	Technology acquisition programme for new technologies/products not requiring capital investment towards infrastructural and productive facilities.	i) Multi-Spindle Automatics (MSAs)-GS/GF series. ii) High Speed Gear Shapers -WS I iii) High Speed Gear Hobber- L200 iv) Advanced version of Internal Grinding Machines v) Manufacture of plastic Extrusion Plants.

5.2.2 Progress of individual projects is described in the following paragraphs.

5.3 Computer Numerically Controlled Systems (CNC)

5.3.1.1 The Company had been manufacturing Numerically Controlled (NC) machines with imported NC/CNC Systems since the early seventies. The Perspective Plan for machine tools estimated a production of 800 to 1000 CNC machines per year by 1992-93. The Audit Board was informed (February 1994) by the Company that the CNC technology which was expected to pick up rapidly in India had not done so - against an expectation of CNC machines comprising about 40 per cent to 50 per cent of machine tools used in industry by now, it had just reached 27 per cent compared to about 80 per cent in Japan.

5.3.1.2 The Company's proposal for manufacture of CNC systems in collaboration with M/s.Siemens, AG, West Germany, was approved by the Board in March 1984. However, due to low demand projections, the Company decided to reduce production and revised its capital investment to Rs.261 lakhs for 300 systems per annum as against the earlier proposal of Rs.376 lakhs for 700 systems.

5.3.2 Project implementation

5.3.2.1 The Company submitted a Phased Manufacturing Programme(PMP), according to which the project was to be

implemented in three phases. However, the last two phases were completed with delays ranging from 6 months to 18 months. The delays were ascribed to certain changes in technological input which resulted in delay in the issue of the export licence by the Federal Republic of Germany.

5.3.2.2 The following table indicates the production level envisaged under Detailed Project Report (DPR), committed to Govt. through PMP, targeted in the Operational Plans (OPs) of the Company and actuals thereagainst:

Quantity in Nos: Value Rs.in lakhs

Year	DPR		PMP		OP	Actual
	Qty.	Value	Qty.	Value	Value	Value
1985-86	144	267	-	-	-	-
1986-87	445	824	-	-	142	177
1987-88	520	963	100	499	175	280
1988-89	600	1109	200	963	328	549
1989-90	700	1292	275	1320	590	982
1990-91	800	1477	350	1677	861	1525
1991-92	900	1661	450	2141	1401	1473
1992-93	1000	1839	-	-	1510	1152

5.3.2.3 While the PMP envisaged levels of production which were far lower than those contemplated in the DPR, the levels in the Operational Plan and actuals were much less than those projected in the PMP in all the years (in value) excepting in 1992-93.

5.3.2.4 The Board approved (November 1990) the conduct of an Industrial Engineering Study by National Productivity Council (NPC) Bangalore Chapter:

1. To set up the time-standards for work being done in the work centres of CNC shop and
2. To assess the capacity of the manufacturing section and to suggest broad approach to be followed for increasing the production to 600 systems per year.

5.3.2.5 Subsequently, in January 1991 the Board accorded their approval "in principle " for augmenting the capacity from 300 to 800 systems per annum at a capital investment of Rs.397 lakhs. The maximum target of 800 numbers was to be achieved over a period of 5 years (1990-91 to 1994-95). However, the NPC undertook the study of production and submitted (October 1991) the I phase report which, inter-alia, stated:

1. The plant capacity is worked out to 1133 systems,
2. To produce 1133 systems a manpower of 15 is required which includes leave reserves also.

As the capacity as assessed by the NPC stood at 1133 systems, the capital investment sanction of Rs.397 lakhs to augument the capacity from 300 to 800 systems was not called for. Upto March 1993 the unit has spent Rs.73 lakhs against this sanction.

5.3.2.6 Further, in view of the fast rate of technological obsolescence in the electronics sector, the collaborator was phasing out production of collaborated items, and in its place newer systems (810 GA3/820 GA3) were being offered to the Company and the Company had decided (November 1993) to amend the existing agreement envisaging payment of DM 4 lakhs and extending the original agreement upto April 2003 in respect of new products. It was agreed that the lumpsum payment of DM 4 lakhs as originally proposed was to be paid in yearly instalments of DM 50000 over the period of the agreement with a royalty of 5 per cent. In case the additional product becomes obsolete and/or its marketability ceases, the Company will have an option to terminate the agreement and stop further payment of instalments and royalty.

5.3.3 In-house development of advanced CNC systems

5.3.3.1 The Company decided to take up in-house development of Advanced CNC Systems as such systems had

already been developed and brought to market by other manufacturers including its collaborators. The project was proposed to be carried out in two phases at a total outlay of Rs.180 lakhs. A grant of Rs.30 lakhs was sanctioned by Government of India against which Rs.25 lakhs was received. To end March 1993, a sum of Rs.95.67 lakhs was spent on the project. The project started in March 1989 should have been completed in February 1992 but was completed only in October 1993; a time over-run of 19 months.

5.3.3.2 The Board decided (November 1992) to amend the existing agreement to include newer systems (810 GA3/820 GA3) offered by the collaborator at a technical know-how fee of DM 4 lakhs. As a result, the project of in-house development of Advanced CNC systems is likely to become redundant and the sum of Rs.95.67 lakhs spent upto March 1993, infructuous. The Ministry stated (February 1994) that 'many Machine Tool Builders were importing Advanced CNC Systems 850 and 880 and that with a view to offer an equivalent configuration indigeneous systems at a lower cost, development of Advance CNC System 4200 was taken up. This offered an indigenous solution to replace the systems 850 and 880 in good number of applications and at an economical price compared to the imported ones. These systems (viz 4200) were undergoing field trials at Widia(customer) and the feed back from Widia was good. The Division was also manufacturing System 3100 and System 2100,

GAI version in collaboration with M/s.Siemens, Germany. These were for a different range of application. Due to rapid change in technology the GAI version was updated to GA3 version by the collaborators. The Company negotiated to obtain a fresh collaboration for this version of System. Therefore, indigenous development of Advanced CNC Systems should be seen as distinct from the collaboration for GA3 versions. The expenditure on development of Advanced System 4200 has helped the Company to develop an alternate indigenous substitute 850 and 880'.

5.4 Ball screw project

5.4.1 On the basis of the requirements of 5000 numbers of ball screws in the Indian market and the Company's own requirement of around 500 numbers per annum and to reduce the dependence on imports, the Company decided to venture into this product line essentially for its own captive consumption. The Company finalised the collaboration with M/s.Carl Zeiss, GDR by March 1984 (as they possessed the acceptable level of technology and their fee was the lowest) for the manufacture and marketing of internal circulating ball screw of sizes from 25 to 80 mm diameter for a lumpsum fee of Rs.20 lakhs (net). The agreement was taken on record by the Government of India on 27th November 1984, valid for a period of 6 years.

5.4.2 According to the Detailed Project Report (DPR) (approved in July 1984) the production of ball screws was to commence by December 1985 at the rate of 100 nos. per annum and was to attain a capacity of 1000 nos. per annum by 1988-89 at a capital investment of Rs.392 lakhs. The project could commence trial production only by July 1988. Due to the time overrun, the project cost was revised (September 1987) to Rs.528 lakhs.

5.4.3 As against the assumption of production of 1000 nos. by 1989, the installed capacity virtually came down to 500 nos. per annum which was stated (September 1992) to be due to non-procurement of one Internal Ball Track Grinding Machine, for want of funds, non-favouring of the collaborated design of ball screws in the Indian market due to its different specifications and other indigenous machine tools manufacturers obtaining the know-how for CNC machine tools from different sources resulting in the use of ball screws of other designs. Though the project was set up keeping in view the in-house requirements also, even this could not be met fully due to the requirements not falling in the production range resulting in purchase from outside sources to the extent of 1632 numbers from 1988-89 to 1992-93.

5.5 Electronic measuring instruments

5.5.1 In order to manufacture electronic measuring instruments indigenously the Company entered into (May

1983) a collaboration agreement with M/s.Federal Products Corporation, United States of America, for a period of seven years paying a technical know-how fee of Rs.57 lakhs (in three instalments). During March 1985 a separate Division (ISB) was formed to manufacture the collaborated products. The Management did not prepare any project report but only a detailed note was submitted to the Board which did not contain any details of the estimates of projected turnover, cost benefit analysis or even the need for establishing a separate division for this purpose.

5.5.2 ISB division started production of the collaborated products, Digital Read Outs (DROs) developed by R&D (metal cutting) Centre and CNC systems for Train Master Lathe (T-70) during 1986-87. However, as the forecast orders materialise , there was a drop in actual sales as compared to the targets. In respect of DROs, defects were reported by the customers and finally the Company withdrew the product from the market, and closed down the division in May 1990. It was reported to the Board (April, 1993) that inventory worth Rs.9.88 lakhs would be converted as chucking gauge for grinding machines.

5.6 Precision instrument project (Mechanical measuring instruments).

5.6.1 Though the then Chairman of the Company had expressed (February 1981) a doubt about the viability of the project because a lot of changes were taking place in

measuring techniques and a substantial number of basic measuring instruments were available at low prices, the Company entered into a collaboration agreement (March 1984) with M/s.VEB Carl Zeiss Jena, of GDR paying technical know-how fee of Rs.13.9 lakhs.

5.6.2 The Company took up the manufacture of collaborated items partly at Horological Machinery Division at Bangalore (HMB) and partly at Watch Factory Srinagar (WFS) to minimise the investment.

5.6.3 There was inordinate delay in implementing the project and the Company could produce only inadequate quantities of instruments. With the unit at Srinagar being almost closed, chances of improvement in the production of these items are bleak. No substantial production took place in Horological Machinery Division also.

5.6.4 COPU had stated in its 94th Report that with the setting up of this project the country would get the capability in this highly sophisticated field of precision technology, but in reality the project did not materialise as expected.

5.7 Lamp making machinery project:

5.7.1 Lamp making machinery project was set up in 1978 to utilise the surplus capacity available at MTH. COPU in its 94th report, observed that no specific projections were made before establishing the project and the total production in 5 years (1978-83) was not equal to the annual

capacity and recommended the need to upgrade the technology for the manufacture of lamp making machinery. The Government accepted the recommendations of the Committee.

5.7.2 The Management stated (October 1991) that the upgradation of technology was limited as it was based on the feedback from customers and there had been no quantum jump in the upgradation of technology which was done with the expertise of HMT and not with any foreign assistance or collaboration.

5.7.3 Against the annual capacity of 8 chains, the division manufactured a total of 15 chains from 1978-79 to 1992-93 out of which three chains were installed in the Company's own lamp unit, (two in March 1980 and one in February 1983) and twelve chains were sold.

5.8 Colour Printing Machines

5.8.1 The Company entered into a collaboration agreement for eight years with M/s. Koenig and Bauer, West Germany, for manufacture and sale of single and two colour sheet fed offset printing machines (KR-02) for a technical assistance fee of Rs.34.23 lakhs. The Govt. approved (Feb. 1982) the Phased Manufacturing Programme of 224 nos. of machines upto 1986-87. The Company produced only 16 numbers (2 in 1983-84 and 14 in 1984-85) and further production was discontinued.

The unit developed SOM-230 two colour sheet fed offset printing machine based on the knowhow available for KR-02 Machines. This Machine was proposed to be marketed at an ex-factory price of Rs.13 lakhs during the project stage. However, due to a steep increase in the parity value of the German Mark against the Rupee as well as a substantial increase in input cost, the price had to be fixed at Rs.18 lakhs. As the market potential at this price was very low, the Product Development Committee decided(Dec. 1988) not to commercialise it. A sum of Rs. 6.51 lakhs was incurred for the development of SOM-230 and a prototype was sold for Rs.18 lakhs.

5.9 Projects taken up to meet the requirements of the Automobile Industry:

5.9.1 In accordance with the projections made by the Indian automobile industry in 1981 the Company had taken up the manufacture of advanced versions of multispindle automatics, gear shapers, gear hobbers and internal grinding machines to meet the market demand. It was reported to the Board(February 1989) that within a year of making such demand projections i.e. by 1982 the commercial vehicle industry was faced with a recession due to slackening of demand on account of a credit squeeze. Inspite of this the Company entered into four collaboration agreements between 1983 and 1985. The details of these four collaboration agreements are given in Annexure XII.

5.9.2 None of these collaboration agreements could be implemented effectively.

5.9.3 The main reasons attributed by the Management (February 1989) were:

i) retarded growth in the automobile sector

ii) high price of the machines due to lower indigenisation on account of low volume.

iii) Non realisation of the demand shift from conventional versions to the advanced versions as anticipated due to the shift in technology (1986-89) to CNC versions which allow greater operational flexibility and

iv) liberalisation of imports.

5.9.4 The project for the manufacture of advanced version internal grinding machines could not take off due to the collaborator scrapping all their product lines after supply of 75 per cent of the technical documents during the tenure of the collaboration agreement (1985-93). The collaboration agreement was terminated in January 1991 owing to non-accrual of any benefits rendering a payment of Rs.8.62 lakhs infructuous. It was stated (Sept.1992) that the internal grinding machines developed with the technical documents received from the collaborator were being offered to the market for which active enquiries were stated to exist. But the Unit had not produced any internal grinding machines till 1992-93.

5.10 Manufacture of plastic extrusion plant

5.10.1 The Company entered into a Memorandum of Understanding (MOU) in March, 1981 with M/s Reifenhauser K G, West Germany, for the manufacture of two sizes of Twin Screw Plastic Extrusion Machines of 80 mm and 100 mm screw diameter for the production of pipes in the diameter range of 63 mm to 400 mm on payment of DM 12.5 lakhs (Rs.60.55 lakhs). However, a collaboration agreement was entered into (September 1981) for the manufacture of pipes in the range of 200 mm to 400 mm diameter on the grounds that such pipes were envisaged for application in major user sectors like water supply, irrigation and sewerage disposal.

5.10.2 The project could not take off as the envisaged demand for the products did not materialise. Meanwhile, market indications revealed the preference for the plastic extruders with a screw diameter of 80 mm.

5.10.3 Thus going in for a new line without confirmed demand for the product resulted in idle investment of Rs.97.91 lakhs (including Rs 37.36 lakhs spent on obtaining a pipe plant and imported cable plant with accessories). Of this amount, the Company could realise Rs.39.36 lakhs upto 1992-93 by selling the Pipe Plant and the down stream equipment. The Ministry stated (February 1994) that the technology was acquired in anticipation of the growth

projected for consumption of large size pipes(200 mm-400 mm dia) for potable water supply and agricultural applications. However, the anticipated growth did not take place.

CHAPTER 6

RESEARCH AND DEVELOPMENT AND INDIGENISATION

6.1 In HMT, the production of machine tools was taken up in collaboration with renowned manufacturers of machine tools. The Company realised the need for product alterations, standardisation etc. and approved establishment of the following centres :

a) Design and Development Department, Bangalore, (1960) for designing machine tools,

b) R&D (Metal-Cutting) Centre, Bangalore (1978), (Central R&D) at a cost of Rs.81 lakhs to cater to the product/ technology development in high technology areas and lending specialist support to the manufacturing units R&D departments, and

c) Research and Development Departments in all machine tool manufacturing units responsible for updating and introducing newer variants of existing product lines.

6.2 A Development Committee has been formed to guide, co-ordinate, review, monitor and control all the activities related to development and commercialisation of products.

6.3 The COPU in its 94th Report (1983-84) on HMT Limited emphasised the need to intensify the R&D activity with a view to developing new products and updating of the

technologies and hoped that adequate attention would be paid to R&D activities for all product lines.

6.4 The Company in its II Corporate Plan (1977-82) to IV Corporate Plan (1992-97) provided for R&D expenditure ranging from 2 per cent to 4.5 per cent of the sales turnover, and the actuals ranged from 2.1 per cent to 4.5 per cent. When attention was drawn by the Audit Board (February 1994) to the low percentage of R&D expenditure viz., 2 per cent of the turnover which was perhaps too low to achieve tangible results, the Company conceded the need for greater R&D effort and stressed that the first priority was to generate resources, specially since banks do not generally advance loans for expenditure on information technology or R&D.

6.4.1 The Company undertook R&D activities under Comprehensive R&D Plan (1983-84 to 1992-93), Ten Year Product Development Plan (1985-1995)and Product and Technology Development Plan(1990-91 to 1994-95). In preparing these Plans the strategy adopted by the Company was stated to be that the bulk requirements were met through in-house R&D while the remaining cases where highly sophisticated technologies were involved or deliveries of products were required urgently, technical know-how would be acquired through selective collaboration. The percentage of achievement of development/commercialisation under the Plans ranged from 21 per cent to 86 per cent.

6.5 It is observed that various R&D activities were undertaken simultaneously and the Plans were overlapping in nature and certain products were developed and commercialised without being included under specific Plans. Nine market requirement based R&D products developed and commercialised were not included under any Plan. The Management's reply which the Ministry endorsed (February 1994) was that the projects to be taken up under R&D were formulated well in advance to meet the projections of market demand. However, the market demand, at times, did not materialise as envisaged and R&D work for products having a smaller market was kept in abeyance and priorities were changed to products having/projected to have good demand. Under such circumstances, over-lapping of projects and delays in execution were unavoidable.

6.6 It was also seen that the products envisaged to be developed under each Plan, if not developed, were shifted to the purview of the subsequent Plan indirectly extending the period alloted for development of the product.

6.7 Under each Plan the various products were to be developed within the specific time frame. It was found that there were time overruns in development of many products, ranging from less than one year to more than three years. Needless to say any delay would also result in cost

escalation and non acceptance of the final product as a result of changing technology and market conditions.

6.8 Though the various R&D projects are to be monitored with reference to time schedule and costs, it was seen that only delay in implementation of the projects was reported and that complete cost data were not compiled as contemplated in the 10 years Product Development Plan. The Ministry stated (February 1994) that the cost data in respect of individual products taken up by R&D (Metal-cutting) centre were being compiled and compared with the estimates. This reply could not be verified as the centre did not furnish any details in support.

6.9 The Audit Board was informed (February 1994) by the Company that it would not be right to say that the Company's R&D efforts were wanting or that the Management lacked foresight as the Company had achieved a lot through its R&D; nearly 70 per cent of its product range was attributable to indigenous efforts, and the Company would have been in dire straits but for this R&D effort. It was admitted, however, that the R&D efforts had been seriously constrained by:

(i) lack of funds,

(ii) non-acceptability internationally, of its indigenous developments and

(iii) non-availability of all components domestically.

It was further clarified that the Company did not have the 'totally state-of-the-art technologies' which the users wanted.

6.10 Indigenisation

6.10.1 The Company has not laid down any specific programme for indigenisation either in the Corporate Plans or in the Annual Operational Plans so far. Besides, there was no specific commitment in this regard in the MOUs signed with the Government so far (from 1988-89 to 1992-93). It was noticed that the percentages of imported components had increased from 35% in 1985-86 to 46% in 1991-92. However, since 1991-92 specific annual targets for import substitution had been laid down in the units and were being monitored separately. To an observation of the Audit Board (February 1994) about the mechanism available with the Ministry for monitoring the projects undertaken, for giving guidance and why indigenisation was not mentioned in the MOUs, the Ministry explained that the contents of the MOU were based on the recommendations of a Committee which discussed the performance targets with the Management before drawing up the MOU. The Ministry reiterated the Company's observations that with the fast changing technology, perhaps indigenisation may mean being left behind or left out completely. The Company also pointed out that the General Purpose Machines (GPMs) had been indigenised almost completely.

CHAPTER 7

MATERIAL MANAGEMENT AND INVENTORY CONTROL

7.1 Material Procurement

7.1.1 Even though the Bureau of Public Enterprises (BPE) while communicating the recommendations of COPU suggested through their circulars in 1967 and 1972 that all Public Sector Undertakings (PSUs) should prepare a comprehensive manual for material management covering areas of purchases, inspection, storage, issues, disposal etc., no such manual was prepared by the Company. Even the guidelines issued by the Company in 1974 cover only the aspects relating to purchases.

7.1.2 A test check of the purchase procedure followed in one unit (MTB) revealed that

(a) No monetary limits were fixed for issue of global tenders. The amounts beyond which open tenders were required to be invited in respect of indigenous purchases were not laid down. The Unit while stating (May 1991) that the fixation of monetary limits was not practicable, did not adduce any reasons why it could not be done.

(b) No approved lists of suppliers as contemplated in the purchase guidelines was maintained and the materials were being procured more or less from the same source of supplies by placing repeated orders on the ground that the majority of the materials were obtained from PSUs or collaborators or were proprietary in nature.

(c) Regarding vendor rating, it was stated (February 1993) that there had been a system of vendor rating but the rating was not updated regularly. Since no updated vendor register was maintained it could not be ensured that the purchases were effected at lowest rates consistent with quality.

7.2 Procurement of materials is not centralised. An attempt in this direction was made (March 1984) for creating a 'Spares Bank' at MTH for several types of hi-tech machines used in the various units of the Group. However, spares valued Rs.31.66 lakhs (FOB value) landed at Madras Airport between February 1985 and May 1987 were abandoned in May 1991 due to ambiguity and uncertainty about the role of the Units in funding the 'Spares Bank'.

7.3 Inventory Holdings

7.3.1 The comparative position of inventory and its distribution in respect of MTBG as well as the Company as a whole during the last nine years ended 31st March 1993 is indicated in the Annexure XIII. It would be seen therefrom that around 47 per cent of the inventory of the Company is held by the Group as on 31st March 1993.

7.4 Inventory Control

7.4.1 The Company has not fixed any norms for inventory holdings. However, certain targets for control of inventory have been laid down in the Operational Plans of the Company. A comparison of such targets with actuals is indicated in the table below :-

		Materials (number of months' consumption)	Work-in-progress (number of months' value of production)	Stock-in-trade (number of months' sales)
1984-85	T	NA	NA	NA
	A	6.5	2.6	3.6
1985-86	T	5	2	2
	A	6.3	3.3	4.1
1986-87	T	6	2	3
	A	6.2	3.5	3.1
1987-88	T	4	2	2
	A	6.3	3.5	3.0
1988-89	T	NA	NA	NA
	A	5.4	3.4	2.0
1989-90	T	4.2	2.5	1.4
	A	5.1	3.0	1.4
1990-91	T	3.3	2.2	1.5
	A	5.1	2.0	1.1
1991-92	T	3.4	2.0	0.8
	A	5.1	1.8	2.2
1992-93	T	4.4	1.7	1.0
	A	7.5	2.2	3.9

'T' indicates projections as per Operational Plans of the Company.

'A' indicates actuals as worked out by Audit.

7.4.2 The Group could achieve the targets set in respect of work-in-progress in 1990-91 and 1991-92 and in respect of finished stock in 1989-90 and 1990-91 only. Specific year-wise analysis was not available.

7.4.3 However, the inventory holdings in absolute terms have gradually increased as shown in Annexure XIII and the stock of raw materials and components etc., held at the end of each of the years from 1988-89 to 1992-93 were in excess of the targets fixed in the Operational Plans for those years.

7.5 Raw Materials and Components

7.5.1 The holdings of raw materials and components represented 24 to 36 per cent of the total inventory of the Group and were never within the targeted levels. The holdings in terms of months' consumption in the constituent units in the Group ranged from 9.7 (1988-89) to 15.0 (1991-92) in HMB, 7.0 (1985-86) to 11.87(1992-93) in MTB and 4.6 (1991-92) to 15.4 (1992-93) in DCB. It was highest in CNC in 1992-93 at 79.2 months.

7.5.2 The Company in its Finance and Accounting Guideline 7/90 of 31st December 1990 had classified the inventories into slow-moving (no issues for more than one

year but less than three years), non-moving (no issues for more than three years) and surplus. The stores were declared as surplus if materials were specific to individual products which have neither been manufactured during the year nor were planned for production during the ensuing year and/or materials in excess of maximum stock level wherever these had been fixed. The classification was intended primarily for purposes of corrective action to regulate unexecuted purchase orders/work orders, for fixing maximum, minimum and reorder levels.

7.5.3 Maintenance of the levels was found, by the Company, to be not feasible due to the volume of individual items of stock in machine tool units. However, the material planning was stated (September 1992) to be done by review of stocks periodically under ABC classification. Yet slow-moving and non-moving inventories as a percentage of the total of the inventories under raw materials, components, stores, spares etc. was on the increase from 1986-87 to 1991-92.

7.5.4 The total value of raw materials and components etc., of the Group which was Rs.6418.91 lakhs as on 31st March 1993 included Rs.838.60 lakhs (13 per cent) represented by slow moving (Rs.421.70 lakhs - 7 per cent) and non moving (Rs.416.9 lakhs - 6 per cent) items., 12 per cent of the slow moving and non moving inventory was declared surplus and awaiting further action.

7.5.5 The total value of slow-moving and non-moving items as on 31st March 1993 as a percentage of the total value of raw materials etc. of the constituent units varied from 0.31 per cent in CNC to 100 per cent in CMFI.

7.5.6 A test check conducted in MTP and MTK revealed that the following items have not moved since their purchase and action to put the material to alternate use/disposal is yet to be initiated (October 1993):

Year of Purchase	No.of cases	Quantity (in Nos.)	Value (Rs. in lakhs)
1986-87	7	8	5.47
1987-88	2	2	1.36
1988-89	6	8	6.25
1990-91	7	46	9.24
Total			22.32

7.6 Work-in-Progress(WIP)

7.6.1 The WIP which represented about 23 to 40 per cent of the inventory of the Group during the period under review has not been physically verified by the Management during the entire period. It was stated (February 1993) that a system would be evolved for verification of the WIP at the year end. This has however, not been fully implemented since physical verification has been done at final assembly stage only and that too only in certain units. The WIP has been valued at standard/actual cost or estimated net realisable value whichever is lower as per the declared Accounting Policy of the Company.

7.6.2 No norms for holdings under WIP were laid down. WIP as on 31st March 1993 amounting to Rs.4865.99 lakhs represented 2.2 months' value of production as against targeted levels of 1.7 months'.

7.6.3 17 per cent of the WIP as on 31st March 1993 (Rs.837.19 lakhs) was represented by the expenditure booked in MTH under code Serial-3 in respect of which details like job-order or machine were not available. This represented 29.10 per cent to 72.60 per cent of the WIP of the Unit over the period of review. A Committee constituted to study the system of code Serial-3 based on the observations of Audit (July/August 1991) observed certain deficiencies in departments in accounting of receipt and issue notes and maintenance of bin cards. It recommended (April, 1992) that

all the receipt and issue entries should pass through EDP. The Unit plans to equip itself with the necessary infrastructure over the next couple of years; meanwhile the deficiencies pointed out by the Committee persisted (February 1994).

7.6.4 2 per cent of the WIP manufactured (Rs.102.49 lakhs) as far back as 1982-83 was found to be obsolete and pending disposal as indicated below:

Unit	No. of work orders	Amount included in work-in-progress as on 31.3.1993 (Rs.in lakhs)	Oldest work order pending	Remarks
MTH	55	37.02	1985-86	
PRH	7	44.37	1983-84	Work orders (valued Rs.30.55 lakhs) suspended
MTB	3	21.10	1982-83	Provision made in the accounts in 1991-92.
	65	102.49		

7.6.5 5 per cent (Rs.219.67 lakhs) of the WIP as on 31st March 1993 was slow moving and 1 per cent (Rs.33.55 lakhs) was non moving.

7.7 Finished goods

7.7.1 Finished stock of the Group at the end of 31st March 1993 was Rs.7161.05 lakhs which represented 3.9 months' sales as against 1.0 months' sales targeted. The Audit Board was informed (February 1994) that the reasons for rising inventory in the last three years and for finished goods not covered by orders (Rs.30 crores) were:

(i) production was made in anticipation of orders and

(ii) defence orders came down by 31 per cent.

It was stated that the Company now produced machines only against orders.

7.7.2 Four per cent of the finished stock of the Group as at the end of 31st March 1993 included prototypes manufactured right from 1987-88 valued at a cost of Rs.280.31 lakhs and pending identification of customers. The Company evolved (July 1993) an accounting policy to make a provision for obsolescence of prototypes remaining undiposed of for over five years; during 1992-93 a provision of Rs.1.77 lakhs was made.

7.7.3 The finished stock of the Group as on 31st March 1993 also included a Linear Transfer Machine valued at Rs 10.32 lakhs in stock from 1985-86 in HMB and an SPM for HAPP valued at Rs 2.01 lakhs lying in stock from 1988-89 in MTK. The Ministry stated (February 1994) that in respect of

Linear Transfer Machine components worth Rs.4.64 lakhs had been used in the manufacturing of Auto Jewelling Machine and the balance would be sold as spares; and in respect of SPM for HAPP modification was under progress to convert the machine.

7.7.4 Six per cent (Rs.420.08 lakhs) of the finished goods was slow moving and 2 per cent (Rs.115.94 lakhs) was non moving.

7.8 Material-in-transit(MIT)

7.8.1 The value of MIT in respect of MTBG as on 31st March 1993 (Rs.2084.60 lakhs) constituted 47 per cent of the value of MIT (Rs.4401.36 lakhs) in respect of the Company as a whole and was 10 per cent of the total value of inventory of the Group (Rs.20948.44 lakhs) as on that date. A major portion of the MIT of the Group was in respect of four units viz., Rs.316.20 lakhs,(MTH), Rs.956.58 lakhs(MTB), Rs.386.90 Lakhs(MTK) and Rs.163.49 lakhs(MTP). Only an amount of Rs.34.45 lakhs (Rs.32.99 lakhs, Rs.1.46 lakhs in respect of MTH and PRH respectively) has been provided towards obsolescence of MIT of the Group.

7.8.2 The MIT of MTH included imported materials (January 1985) costing Rs.4.13 lakhs damaged due to delay in clearing the consignment stated (March 1988) to be due to paucity of funds and abandoned.

7.9 Obsolete Inventories

7.9.1 As against Rs.18445.95 lakhs representing raw materials & components etc., WIP and finished stock as on 31st March 1993, a provision of Rs.472.75 lakhs (3 per cent of the above) was made for obsolescence as on 31st March 1993 which constituted 74 per cent of the provision made in respect of the Company as a whole indicative of the high incidence of obsolescence in the Group. The provision for obsolescence made was as high as 34.9 (MTK), 18.9 (MTH), 11.6 (PRH) and 12.6 (MTB) per cent of the total provision for the Group. The Company stated (October 1993) that the actual value of obsolete inventory was Rs.410.64 lakhs in MTBG.

7.9.2 Though the general guidelines envisage the analysis of the inventory for obsolescence by a technical evaluation committee, in one division (MTM) the provision for obsolescence had been made as a management policy based on the age of stocks only. The amount thus provided for ranged from Rs.15.76 lakhs to the end of 31st March 1985 to Rs.0.11 lakh to the end of 31st March 1993. The practice followed was stated (September 1992) to be under review.

7.9.3 Further, in one unit (MTB) it was observed that the suggestions of the Inventory Task Force Committee (May 1990), comprised of technical personnel constituted in September 1989 to write off inventory value Rs.182 lakhs,

identified prior to 1st June 1989 as non-moving stock, in a phased manner over a period of five years was not accepted on the ground that it needed further technical evaluation.

CHAPTER 8

SALES MANAGEMENT, PRICING POLICY AND CREDIT CONTROL

Sales Management

8.1 The Marketing Division of Machine Tool Business Group has a network of Regional Sales Offices, Sales and Service Centres for rendering pre-sales and after-sales services. The Division gets sales commission from the constituent units as a fixed percentage of actual sales. The Company has a subsidiary company namely HMT(International) Ltd. for the promotion of export sales. The subsidiary company was acting as a sole export agent upto 1988-89 and has been a purchaser from 1989-90 onwards;the commission payable was 9 per cent of the value of the invoice which was reduced to 5 per cent from 1st January 1988.

8.2 According to the Company the import of capital goods in the case of new projects and expansion of existing units with foreign equity threatens their machine tool business with second hand machines from Taiwan and Korea.

8.3 A study conducted by the Marketing Division revealed that even though HMT was the leading manufacturer of machine tools in the country with a very wide range of products to cater to the needs of the entire spectrum of manufacturing industry, it faced intense competition for almost all of its products. The competitors offer machine tools not only with quality but also with competitive prices and flexible commercial terms. Many of HMT's General Purpose

Machines have lost their uniqueness in quality due to less attention paid to update their design and technology (product upgradation). Inadequacy of service support is an added cause.

8.3.1 The Management stated (March 1992) that the general purpose machines (GPMs) were the basic machine tools offered by HMT since the 1960s and over the last three decades intense competition had developed due to simple machine tool building technology and low prices. With the advent of CNC machine tools, and establishment of CNC machine technology in the country, in line with the trend in developed countries, HMT placed emphasis on R&D efforts towards CNC machines. HMT had also offered GPMs with certain product modification.

8.4 Sales Promotion

The measures taken by the Company to promote its products are:

1) Product advertisement campaign

2) Participation in International Fairs and Exhibitions in India and

3) Demonstrations at Regional Show Rooms.

8.4.1 Between 1984-85 and 1992-93 the Machine Tool Marketing Division participated in 33 International Trade Fairs and Exhibitions held in India and conducted 28

demonstrations at its Regional Show Rooms. The total amount spent on advertisement, publicity, public relations, demonstrations and exhibitions was Rs.285 lakhs.

8.5 The Management stated (Sept.1992) that no norms either in absolute terms or in terms of percentage of sales had been fixed for expenditure on advertisement since the advertisement policy of the Company was need oriented for machine tools.

8.6 Review of Enquiries received

The number of quotations confirmed as orders ranged from 15 per cent to 30 per cent of the total number of quotations submitted. The Company informed the Audit Board (February,1994) that it had a detailed mechanism for analysing lost opportunities. The Company lost several tenders on account of its uncompetitive price (more than 75 per cent of the tenders) and this proportion was growing; technological inferiority and delayed deliveries had also cost the Company some orders. The Company recognised the need to reduce manpower and expressed a difficulty in achieving the reduction. Therefore, the Company had been looking at new sectors like petro chemicals, non-conventional energy sources, etc. to get the best out of its resources. Manufacturing of components and reconditioning were two new areas that were yielding good results for the Company. However, the first year of operation of Central

Reconditioning Division, Bangalore indicated a turnover of only Rs.27.15 lakhs (W.I.P).

8.7 Order Book Position (Inland)

8.7.1 The value of orders cancelled during 1991-92 was the highest (Rs.1523 lakhs). Also, the orders pending as at the end of 1992-93 include sick orders for delivery for 173 machines valued at Rs.1352 lakhs some of which were received in early 1980. The general terms and conditions of sales stipulated that along with the order the customer should arrange to deposit 20 to 30 per cent of value of order as earnest money . It was observed in audit that the Group was not strictly forfeiting the deposit in case of all sick orders. A test check in Machine Tools Division, Bangalore revealed that in respect of sick orders of the value of Rs.570 lakhs (April 1991), the Division had adjusted Rs.12.85 lakhs and a sum of Rs.40.73 lakhs was shown under advance account.

8.7.2 The Ministry stated (February 1994) that the Company would be legally justified in forfeiting the advance received alongwith the order in the case of sick orders. However, such a drastic step would result in losing a customer forever in the highly competitive environment and commercially such a step would be suicidal; therefore, in the larger interest of the Company and in the interest of

maintaining a good business relationship with the customer, the customer was induced to place orders for other machines and the advances were adjusted accordingly.

8.8 The sales projections for the Business Group made in the Corporate Plan, Annual Operational Plan and actual sales during the years 1984-85 to 1992-93 are indicated unit-wise in Annexure XIV. The percentage of variance compared to the Annual Operational Plan target ranged from (-)32% to (+)15%. The turnover was the lowest (Rs.12455 lakhs) during 1985-86 when it was 70 per cent of the Operational Plan target.

8.9 The envisaged turnover growth as per III Corporate Plan was 115 per cent (from 1981-82 to 1986-87). The actual turnover growth was however only 93 per cent. During the Plan period the Company could not achieve the growth as estimated in Corporate Plan and there was a shortfall in growth to the extent of 22 per cent. The envisaged annual growth rate for 1991-92 and 1992-93 in respect of machine tools was 13.7 and 15.4 per cent respectively when the actual growth was (-)4 and (-)26 per cent respectively. Some of the reasons adduced for the shortfall in sales were :-

i) lack of despatchable orders,

ii) shortfall in production

iii) delay in customer inspection/trials

iv) non-receipt of customer clearance/trial components

v) production difficulties

vi) market sluggishness

vii) severe competition ,and

viii) product-mix constraints.

The Ministry stated (February 1994) that the other reasons for not achieving the annual turnover growth rate are import of second-hand machines, competition from organised sector with flexible payment terms and high cost of CNC machines.

8.10 Liquidated damages for delays in delivery:

8.10.1 It was revealed that due to slippage in deliveries the liquidated damages and interest on advances claimed/to be claimed by customers as at 31.3.1993 amounted to Rs.802.26 lakhs.

8.10.2 Apart from the liquidated damages, it was noticed that a revenue loss of Rs.121.90 lakhs was suffered by the Group on account of slippage in deliveries during 1990-91 to 1992-93 as the ordered items had to be delivered at pre-revised prices. The Management gave (March 1993) various reasons for the delay in execution of orders in respect of tooled-up machines, Special Purpose Machines and Hi-tech machines such as time taken for import of bought-out items; non-receipt of trial components from the customer in time; delays due to power shut down; labour unrest; infrastructural deficiencies etc.

8.10.3 In executing export orders routed through HMT(I), Die-Casting Division and Machine Tools Division, Bangalore were penalised to the extent of Rs.84.75 lakhs and Rs.8.81 lakhs respectively by foreign purchasers for delay in supply etc.

8.11 Apart from marketing the machine tool products of the Group, the Company, currently, has sales agency agreements with three Indian machine tool manufacturers to whom the Company has given technical know-how to manfuacture the products. Also, the Company has entered into agency sales agreement with M/s.GUILDMEISTER, AG, West Germany, for FOB sales and servicing of some selected products.

8.12 In the case of inland sales agency agreements, the Company had a sales turnover of Rs.3753 lakhs on which it had earned a sales agency commission of Rs.226 lakhs during the period under review. The agreements provided that the commission due should be collected within 30 days from the realisation of sales proceeds. However, it was observed that in all the cases, there was delay in collection of commission and as at 31.3.1993, a sum of Rs.52.13 lakhs was due from the principals.

8.13 Pricing policy

8.13.1 For the purpose of pricing, the products of the Group fall into the following broad categories:

a) Established/Tooled-up Machines,

b) CNC Machines,

c) Special purpose machines

d) Machines manufactured out of Company's own design, and

e) CNC systems.

In respect of machines listed at (a), (b) and (c) the selling prices are fixed with reference to cost of sales and competitors' prices and in respect of (d) with reference to cost of sales including venture allowance at a fixed percentage. In respect of CNC Systems, the selling prices are fixed with reference to cost of sales and/or landed cost of systems from the Company's collaborators. In all these cases, the prices are limited to what the market can bear.

8.14 It was reported (March 1993) that strategic and flexible pricing will be resorted to, to impart greater flexibility to react to market forces and that segments which offer high value addition and high profit will be given additional thrust.

8.15 A Standing Committee recommends the selling prices of the products to the Chairman and Managing Director (CMD) of the Company who approves the selling prices which are firm for delivery during the financial year. The prices

are revised again subsequent to the Central Budget and a percentage increase would be made applicable over the prices already approved depending upon the increase in statutory levies and other input costs. The Ministry stated (February 1994) that 'the prices are fixed after considering the likely price increase in material and are based on various market constraints. Escalation on account of exchange rate fluctuations, duty etc. are taken care of in Order Acceptance. In view of non-availability of alternative orders and not to add to the existing stock-in-trade, the prices are held at ordered value. Some times, the customers have cleared the machines during the subsequent year due to their project delay/finance constraints. This relaxation has to be given to retain our customers'.

8.16 For pricing of presses the Standing Committee decided the following factors to be applied to the cost of production,for deliveries during 1985-86 taking into consideration the severe competition faced by Press Division.

	Factor
100 T Presses	0.77
160 T Presses	1.00
Other sizes of Presses	1.29

8.17 These factors were continued and made applicable for deliveries upto 1991-92. With this decision, in the case of

100T Presses, not even the production cost could be recovered, while for 160T Presses, only the production cost is being recovered. The Management stated (Sept.1992) that the pricing factors were only recommendatory in nature; the actual prices were finalised based on market constraints like competition etc.

8.18 During 1992-93 the selling prices were decided by the unit considering the market situation and the competitors rates.

8.19 The Management further contended that there is no scope for increasing the price because of stiff competition in the market and that although there was a loss in the machine variant, since there was profit in the sale of special accessories and spare parts the product was worth producing despite its higher cost.

8.20 From 1990-91 to 1992-93 pending orders were executed at pre-revised prices and as a result the Group incurred a revenue loss of Rs.121.90 lakhs.

8.21 Unless, the Company reduces the cost of production, the products would continue to incur losses because the Company would be faced with the necessity of selling the products below the cost price at prices that the market can bear.

8.22 Credit Controls

8.22.1 The Company has not laid down any Credit Policy. However, the general terms of payment are laid down in the sale orders.

8.23 The Company had sundry debtors ranging from Rs.2874.35 lakhs as at the end of 31st March 1985 to Rs.7711.64 lakhs as at the end of 31st March 1993. The debtors represented 22.0 per cent of the total sales of the Group in 1984-85 and 31.8 per cent of the total sales in 1992-93 as indicated in Figure 4.

8.24 Even though the sales of the Group constituted 33 to 40 per cent of the sales of the Company as a whole during the period of review the sundry debtors of the Group constituted 30 to 78 per cent of the total debtors of the Company. The doubtful debts of the Group constituted 48 (1988-89) to 93 (1986-87) per cent of the doubtful debts of the Company as a whole during the period of review.

8.25 The total sundry debtors of the Group increased from year to year except for a slight reduction in 1988-89 and 1992-93. The increase in sundry debtors from 1989-90 was mainly due to booking of sundry debtors in respect of export sales in the respective divisions with effect from 1st April

1989 as against the earlier practice of booking such sales under Export Division (Export Division does not form part of the MTBG) and was indicative of lack of efforts in the realisation of old outstanding debtors.

8.26 The norm for total sundry debtors in terms of the months' sale, suggested in the study conducted by the Institute of Costs and Works Accountants of India covering selected Public Sector Undertakings and accepted by the Government (May 1988) in respect of the Company was 31.5 days, i.e. approximately a month's sale. For the Company as a whole from 1988-89 sundry debtors in terms of the months' sale ranged from 1.4 (1990-91) and 4.1 (1992-93) while it was 2.5 (1988-89) to 3.8 (1992-93) in respect of the Group. Within the Group it ranged from 0.4 (1989-90) in DCB to 94.7 (1992-93) in PRH.

8.27 A review of agewise and major customer-groupwise analysis of the debtors revealed that

(i) The outstandings of the Group from Government Departments constituted 89.4 per cent (Rs.936.02 lakhs) of that of the Company (Rs.1047.17 lakhs).

(ii) Government companies owed Rs.384.80 lakhs to MTBG constituting 25 per cent of outstandings of the Company.

(iii) Debts outstanding for more than three years constituted 72.1 per cent (Rs.594.75 lakhs) of the Company's debts (Rs.825.06 lakhs).

8.28 Inspite of the Ministry's acceptance of the recommendation (1973) of the COPU that outstandings with Government Departments should be tackled at the ministerial level, the Company has not made use of the good offices of the Ministry with the result that Government Departments continued to be major debtors.

The Audit Board was informed (February 1994) that the Company had not sought the help of the Ministry to realise dues from Government Departments and that the matter would be taken up thenceforth.

8.29 Doubtful debts

8.29.1 The doubtful debts of the Group which were Rs.89.18 lakhs (3.1 per cent of total debts of the Group) in 1984-85 have gradually increased over the period of the review and stood at Rs.450.98 lakhs (5.8 per cent of the total debtors of the Group) in 1992-93.

8.29.2 In 1989 the Company's Corporate Office began its study of the systems and procedures in vogue for collection

of outstandings in the Group. However, even though the percentage of sundry debtors to the sales of the Group came down from 25.8 in 1987-88 to 20.6 in 1988-89, after the introduction of the scheme of centralised pursuance of sundry debtors in January 1989, it has increased to 27.5, 27.2, 29.8 and 31.8 per cent for years 1989-90, 1990-91, 1991-92 and 1992-93 respectively.

CHAPTER 9

EXPORT PERFORMANCE

9.1 HMT (International) Limited was formed as a subsidiary of HMT Limited in 1974 for promotion of export sales. This Company was acting as a sole export agent upto 1988-89 and as a purchaser from 1989-90 onwards. The commission payable was 9 per cent of the value of the invoice which was reduced to 5 per cent from 1st January 1988.

9.2 The Group did not plan its exports to achieve 20 to 25 per cent of the Group's turnover in any year as envisaged in the Corporate objective adopted as far back as January 1975. However, the maximum value of exports achieved was in 1990-91 amounting to Rs.3287 lakhs constituting 10.8 per cent of the turnover of the Group. It was stated that the Company's share in the international market was 0.05 per cent only.

9.2.1 Some of the reasons for non-achievement of the Corporate objective for exporting 20 to 25 per cent of the turnover were non-competitive prices and technological obsolescence, huge amount of advertisement charges involved, demand for credit facilities, low realisation compared to local markets, problems in getting test certificates, non-attainment of technical status etc.

9.3 The IV Corporate Plan(1992-97 Modified) contemplates exports of 10 per cent of turnover on an average during the Plan period and envisages setting apart a minimum of 0.5 per cent of annual export turnover towards development of exports market. The percentage of sales to HMT(I) (for eventual exports) to the turnover of the Group was lowest at 6.1 per cent in 1992-93.

9.4 Treating sales to HMT(I) as exports for evaluation of the export performance of the Units of MTBG against targets may not be correct as the subsidiary would not have exported all the products purchased during the relevant year. To quote an illustrative case, during the years 1991-92 and 1992-93, sales worth Rs.496.35 lakhs invoiced by the Company to HMT(I), were not lifted/exported (September, 1993) by HMT(I).

9.5 The Corporate Goal (III and III Extended) specified that each business Group should export its products to finance as much of its imports as possible. However, the goal was achieved in 1987-88 only.

9.5.1 The Ministry stated (February 1994) that 'one of the aims in the Corporate Goal is that each Group should finance its imports from the revenue of exports. To achieve the above, the Company has evolved short, medium, long term

and country-wise strategies. Though the aim could not be achieved in full, continuous efforts are being made to achieve this. The economic reforms in Russia and non-materialisation of certain exports to Bulgaria are some of the reasons for short-fall in exports. It may be noted that HMT(I) has also exported projects and services to various countries to the extent of Rs.4,533 lakhs from 1986-90 and MTBG has deputed its technically skilled personnel to these projects. These are invisible exports as far as MTBG is concerned'.

CHAPTER 10

COSTING SYSTEM AND ANALYSIS OF COSTS

10.1 Costing System

10.1.1 The Company has evolved a uniform costing system which is under implementation only from October 1990.

10.1.2 The Company follows the standard costing system. It was observed that the actual costs in most of the cases exceeded the standard costs and that the standard costs were not fixed scientifically. Even the Management felt (July 1992) that the standard costing system is non existent in the MTBG and was found to be a problem being faced by the Group.

10.2 Analysis of Costs

10.2.1. The percentage of cost of sales to net sales realisation in respect of the Group as a whole varied between 97.98% in 1990-91 and 109.66% in 1992-93. While the percentage was on the increase from year to year in MTB, it was fluctuating in other units. The percentage was more than 100% in MTA in all the years, in MTH in all the years except in 1989-90, in MTB from 1989-90 and in PMK upto 1989-90 and in 1992-93 and indicative of losses.

10.2.2 A test check conducted in MTB, MTH and PRH revealed that the units have been under aking the manufacture of some product variants whose selling prices were not adequate to cover even the manufacturing costs. The reasons given by Management (March 1993) were:

(a) Existence of severe competition from other manufacturers which precluded hike in selling prices,

(b) Although selling price was revised every year, the revision did not completely offset the higher in-put costs,

(c) In the case of SPMs, the actual costs were much higher than the costs estimated at the time of fixing selling prices due to unforeseen design changes, import of critical parts at higher cost which were initially planned for indigenous procurement, etc. and

(d) The price escalation clause in the Order Acceptances for SPMs did not cover increase in indigenous input costs.

10.3 Cost of Production

10.3.1 The contribution which was 57.86 per cent of the value of production in 1984-85 declined to 48.89 per cent upto 1990-91 and increased to 56.42 per cent in 1992-93. This was mainly due to increase in the percentage of variable expenses, a major portion of which was on account of increase in the cost of raw materials. This was stated (September,1992) by the Company to be due to change in

product mix, whereby the percentage of material consumption to value of production has increased; the quantum of increase was not ascertainable.

10.4 Employee cost and value added

10.4.1 The employee cost, value added and the percentage of employee cost to value added are given in Figure 5.

10.4.2 It would be seen that the percentage of employee cost to value added had been registering a continuous increase upto 1989-90, then declined during 1990-91 and 1991-92 and marginally increased in 1992-93.

10.5 Underabsorption of costs

10.5.1 The details of costs underabsorbed in respect of MTB, MTH, PRH, MTK and HMB are given in Annexure XV.

10.5.2 The absorption of costs is based on a pre-determined machine hour rate reckoned with reference to the fixed and variable expenses for the planned capacity utilisation expressed in terms of machine hours. One of the main reasons for underabsorption has been the under utilisation of the planned capacity. This results in undervaluation of work-in-progress and stock-in-trade at the end of the year.There is no uniformity in the matter of allocation of costs; in MTB during the years 1991-92 & 1992-93 Rs.171.37 lakhs and Rs.647.00 lakhs were allocated, leaving a net underabsorption of Rs.24.12 lakhs and Rs.151.00 lakhs respectively. The profitability of the units should be read alongwith the underabsorption of costs. However,a test check conducted in MTB revealed that while fixing the standard cost for the subsequent year, the unit took into consideration the underabsorbed cost.

10.6 Cost Control

10.6.1 Even though, analysis of variances for initiating corrective action was envisaged in the guidelines formulated in October 1990, costing departments existing in the production units did not analyse the reasons for the variances.

10.6.2 The Management stated (Sept.1992) that monthly or quarterly comparison of actual costs with the standard costs may not be of much use and cost control suited for the machine tools manufactured by the Company should be at the point of incurrence. However, responding to a query by the Audit Board (February 1993), the Management produced statements (March 1993) indicating variances between the budgeted and the actual cost for the year ended 31st March 1992 in respect of three variants of MTB and standard costs actual costs in respect of six variants of MTK and four variants of PMK. Eventhough the variances were worked out in MTB, reasons for the variances were not indicated. Even the variances were not worked out in MTK and PMK. The Ministry stated (February 1994) that the result of analysis of variance was used as an input for formulation of standards for the subsequent periods.

10.7 Cost Reduction

10.7.1 Even though each production unit was expected to improve its productivity, reduce material consumption, rejections and wastages etc., no specific parameters to evaluate the performance were fixed till 1989-90, while a cost reduction of 10 per cent of total costs to turnover was envisaged over the IV Corporate Plan period (1990-91 to 1994-95). The achievements remain to be evaluated.

10.8 Costing and Pricing

10.8.1 The Company has not been able to estimate the costs at the time of fixation of selling prices properly and

accurately. It is relevant to mention that even the Management has considered (July 1992) that the lack of an effective costing system, which could provide flexibility in quoting prices for various machine tools, was a problem being faced by the Group.

CHAPTER 11

PROFITABILITY ANALYSIS

11.1 The net profit before tax of the Company as a whole and that of the MTBG for the last nine years ended 31st March, 1993 is indicated in Figure 6.

11.2 It would be seen from the figures that the net profit of the Group which was Rs.1537 lakhs (66 per cent of the profit of the Company) in 1984-85 gradually decreased year after year till 1987-88 with the Group incurring a net loss of Rs.326 lakhs in 1987-88. However, there was a slight improvement in 1990-91 with the Group making a marginal profit of Rs.45 lakhs which increased to Rs.299 lakhs in 1991-92 before registering a loss of Rs.1984 lakhs in 1992-93.

11.3 The actual net profit before tax earned by the Group vis-a-vis profit projected in the Corporate Plans and in the Operational Plans for the period under review is indicated in Figure 7.

11.4 It would be seen that:

(a) There were wide variations between targeted profits of the Corporate Plans and Operational Plans in all the years under review. Reasons for such wide variations called for (February 1992) from the Management were not furnished

(March 1993). In 1992-93, target for profit was not fixed in the Corporate Plan .

(b) The Group has not been able to achieve the targets envisaged in the Corporate Plans as well as in the Operational Plans in all the years except the Operational Plan target for the years 1984-85, 1990-91 and 1991-92.

11.5 The break up of net profit/loss before tax of the Group into profit/loss of constituent/ manufacturing units, marketing unit and the net expenditure incurred on R&D Units of the Group during the period of review is given in Annexure XVI.

11.6 The aggregate profit earned by the manufacturing units which was Rs.1584.49 lakhs in 1984-85 had gradually come down and it had turned out to be an aggregate loss of Rs. 142.64 lakhs in 1987-88 which increased to Rs.866.57 lakhs in 1989-90. However, there was substantial improvement in 1990-91 and 1991-92, with the manufacturing units making a profit of Rs.149.18 lakhs and Rs.391.63 lakhs respectively before again incurring a loss of Rs.1473.06 lakhs in 1992-93.

11.7 The marketing unit of the Group had net earnings in all the years, except in 1992-93, representing the excess over its operating expenses, of commission received from sales of machines and spares relating to the constituent units of the Group and from agency sales The profit was the highest in 1990-91.

11.8 The net expenditure on R&D units of the Group had an important bearing on the profitability of the Group. It, however, represented 87, 45, 39 and 26 per cent of the aggregate loss incurred by the Group during the years 1987-88, 1988-89, 1989-90 and 1992-93 respectively.

11.9 The reasons for incurring continuous losses from 1985-86 onwards as stated by the Company were :

(a) High input costs of technology upgradation of products which remain uncovered in the selling prices due to stiff market competition.

(b) Partial switch over from conventional machines to specialised machines resulting in higher material cost.

(c) Decline in productivity on account of age of plant/men.

(d) Carried forward orders being executed at committed selling prices, instead of revised selling prices,to maintain customer relations

(e) The increase in personnel costs due to wage/salary revision announced by Govt. being higher than anticipated.

(f) High incidence of depreciation and interest due to capital investments made in the years 1982-83 and 1983-84.

11.10 The details of turnover, value of production, value added, variable expenses, contribution, fixed expenses and net profit/loss of the Group for the last nine years ended 31st March, 1993 are given in Annexure XVII.

11.11 Despite the increase in turnover every year, the Group has continued to incur losses during 1987-88, 1988-89 and 1989-90.

11.12 There was a reduction in contribution, as a percentage of value of production, from 1984-85 to 1991-92 (57.86 per cent to 51.56 per cent) due to increase in variable expenses from 42.14 per cent of value of production in 1984-85 to 48.44 per cent in 1991-92. The consumption of raw materials and stores and spares constituted the major portion of variable expenses viz., 38.44 per cent of value of production in 1984-85 and 45.36 per cent in 1991-92.

11.13 Fixed expenditure as a percentage of value of production increased from year to year upto 1989-90 (61.57 per cent in 1984-85 to 64.85 per cent in 1989-90) but declined to 55.50 per cent in 1991-92 out of which expenditure towards salaries and wages alone accounted for 32.20 per cent of value of production. However, in 1992-93 fixed expenditure increased to 65.53 per cent and salaries and wages alone accounted for 41.18 per cent.

11.14 The targeted return on Average Capital Employed (in percentage) as per the Corporate Plans, the Operational Plans and the actuals thereagainst for the last nine years ended 31st March 1993 are indicated in Figure 8.

11.15 There were wide variations between the targeted return on Average Capital Employed as envisaged in the Corporate Plans and in the Operational Plans for the years 1984-87.

11.16 The Group did not achieve the targets envisaged in the Corporate Plans in any of the eight years. While the Operational Plans from the year 1988-89 onwards did not indicate the Business Group wise return expected on Average Capital Employed, in the earlier years the targets envisaged were not achieved.

11.17 The return which was 13.88 per cent in 1984-85 gradually declined, coming down to (-)1.57% in 1989-90 but showed marginal improvement in 1990-91 and 1991-92. The return declined drastically to (-)3.26% again in 1992-93. The reasons for lower return on investment were stated (September 1992) to be due to reduced profitability and higher working capital levels. The return on Average Capital Employed was not fixed either in the Corporate Plan or in the Operational Plan for 1992-93; the actual return was negative.

11.18 One of the goals set by the Company in their Corporate Plans (III and III extended) was that each business unit should grow atleast to the extent of compensating for the increasing operating cost through additional value added. However, in the IV Corporate Plan the goal set was to maintain an annual growth in earnings before interest and tax for an average return of 20 per cent on capital employed over the Plan period. The targeted return on capital employed for the MTBG was 11.2 per cent for the year 1991-92. Even though the value added by the Group during the period of review has been on the increase except in 1992-93, it could not compensate for the increasing operational costs.

CHAPTER 12

OTHER TOPICS OF INTEREST

12.1 Avoidable expenditure due to non-revision of tariffs of electricity and water in township of MTA

12.1.1 As a result of not providing separate water and electricity meters to the residents of its township at Ajmer, the Company incurred an avoidable expenditure of Rs.26.24 lakhs.

12.1.2 The Company also continued to charge the occupants of its quarters electricity tariff at pre-revised rates while it paid the Rajasthan State Electricity Board at the revised rates upto 1991-92. However, separate meters were installed from May 1992 and recoveries of the actual tariff had been made from the residents thereafter.

12.2 Delay in conversion of incoming power supply from 11 KVA to 132 KVA in MTH .

12.2.1 As per the amended (September 1981) power supply conditions of Andhra Pradesh State Electricity Board (APSEB), (applicable to all EHT/HT consumers) the voltage at which an EHT/HT consumer was availing power from APSEB had to be converted to a voltage fixed according to the

consumer's contracted maximum demand within a period of six months from 1st September 1981 failing which a penalty of 10 per cent of the monthly bill would be levied. Accordingly, MTH with the Contracted Maximum Demand of 5650 KVA had to avail power at 132 KVA or 220 KVA.

12.2.2 The request of MTH (January 1982) for (a) permission to avail power at 33 KVA instead of 132 KVA or 220 KVA, (b) time of 18 months from 1st March, 1982 to consult, procure, instal and commission a new sub-station to receive power from APSEB at 132 KVA and (c) exemption from paying penal charges of 10 per cent upto August, 1983, was turned down by APSEB (March 1982).

12.2.3 The Management decided (July 1982) to continue to avail power at the then existing voltage by paying additional charge of 10 per cent on the monthly bills (which was estimated at Rs.9 lakhs per annum) instead of constructing a new receiving station at an estimated capital outlay of Rs.80 lakhs.

12.2.4 Meanwhile, APSEB was revising the surcharges/ higher tariff for non-conversion from time to time.

12.2.5 However, MTH estimated (May 1989) that the average excess payment for non-conversion at around Rs.47 lakhs and felt that it would be better to convert the receiving

voltage to 132 KVA at an approximate cost of Rs.150 lakhs. The consultants appointed in October 1989 had also indicated a net gain of Rs.47 lakhs per annum, but estimated the cost of the sub-station at Rs.100 lakhs. However, the Management approved (January 1992) the construction of a new receiving sub-station at an approximate cost of Rs.180 lakhs and a provision for cash expenditure was made in the Operational Plan for 1991-92.

12.2.6 The delay of about 10 years in taking the decision to instal a sub-station for conversion of incoming power supply from 11 KVA to 132 KVA as required by APSEB resulted

(a) in an escalation in the estimated cost of sub-station itself by Rs.100 lakhs while the actual escalation was yet to be assessed.

(b) in payment of additional tariffs on contracted demand as well as on energy consumption from 1st September 1981 till date.

The extra expenditure on this account worked out to Rs.333 lakhs.

12.2.7 MTH did not enter into separate agreement with APSEB for power supply to the HMT township at Hyderabad and was paying APSEB at a flat rate of Re.0.90 per unit as against the tariff of Re.0.70 per unit under item Catagory I-Domestic. The additional payment on this account for the

period from 1st April 1989 to November 1992 alone worked out to Rs.10.12 lakhs. MTH entered into a separate agreement with APSEB for township supply from December 1992 onwards and APSEB started charging the separate tariff for township consumption.

12.2.8 The Company contended (September 1992) that it had made a saving of Rs.136 lakhs by not entering into a separate agreement. It may, however, be noted that the agreement was a statutory requirement, and any saving was only on account of 'interest', which was set off by payment of additional tariff.

12.3 **Avoidable sales tax liability of Rs. 120.86 lakhs.**

12.3.1 Due to failure in collection and submission of C&ST-17-C forms by the MTA Unit Management till the completion of assessment for 1986-87, 1988-89 and 1989-90 the Company suffered avoidable loss of Rs. 120.86 lakhs.

12.4 **Hiring of DG Sets**

12.4.1 In response to MTP's enquiry, a Delhi based firm submitted (August, 1984) a quotation for hiring of 1000 KVA and 500 KVA DG Sets. As no other party responded, this firm, after discussion, submitted a revised quotation (7th December 1984) for hire of 250 KVA DG Sets for a period of six months at the rate of Rs.50,000 per month plus lumpsum payment of Rs.40,000 towards installation and commissioning charges. The rental was inclusive of the services of their operators for running and maintenance, except cost of diesel and other consumables.

12.4.2 The proposal stipulated that after the commissioning of the 1500 KVA imported DG sets the smaller capacity DG sets would no longer be required. To an enquiry by the unit, the firm replied that they could offer the DG sets at the rate of Rs.4 lakhs each after the expiry of the rental period of six months. Orders for hiring 2 MM 250 KVA DG sets was placed on them (16th February 1985) for the period of six months. These sets were commissioned on 16th and 26th April 1985 respectively. However, the imported DG sets could be commissioned only in March 1986.

12.4.3 Notwithstanding (i) commissioning of imported DG sets and (ii) availability of firm's offer to sell the set after expiry of six months, the Management preferred to extend the duration of hiring from time to time on the ground of erratic power supply, resulting in an avoidable expenditure of Rs.38.95 lakhs upto March, 1993.

12.4.4 Two more sets (One 1000 KVA and One 500 KVA) were taken on hire from a sister Company of the Delhi firm at the rate of Rs.1,50,000 and Rs.90,000 respectively per month with effect from 29th August 1987 for a period of six months on the same terms and conditions. Due to acute power shortage, the hiring was being extended from time to time which involved an expeniture of Rs.103.83 lakhs (including commissioning charges of Rs.1.20 lakhs) upto March 1993.

12.4.5 Due to the hiring of DG sets instead of their outright purchase the Unit incurred an avoidable expenditure of Rs.142.78 lakhs upto March, 1993.

12.5 **Delay in clearance of imported machines**

12.5.1 Two separate Purchase Orders were released (June,1985) by the Company for Plano Miller Machine (CIF Value Rs.53.04 lakhs) and Gear Hobbing Machine(CIF value Rs.38 lakhs). While the Plano Miller Machine was for immediate delivery, the Gear Hobbing Machine was to be delivered by the end of 1985. Under the deferred payment terms, 15 per cent of the value of the two machines payable against import licence/shipping documents amounting to Rs.13.66 lakhs was paid between August 1985 and March 1986. 85 per cent of the CIF value carrying interest at 4 per cent was repayable over ten years in 6 monthly instalments.

12.5.2 The Plano Miller Machine was received in Madras Port in January 1986 followed by the Gear Hobbing Machine in March 1986. Both the machines were bonded upto May 1988 in case of the former and upto February 1990 in the case of the later for want of funds for payment of customs duty (Rs.79.64 lakhs). The bond rent and interest on customs duty paid on debonding the two machines amounted to Rs.37.78 lakhs.

12.5.3 Having justified the import of these two machines on grounds of substantial capacity shortage and unrealiability of the sub contractors both as regards quality and delivery, bonding of the machines when received resulted in an avoidable extra expenditure of Rs.37.78 lakhs by way of bond rent and interest on customs duty apart from interest of Rs.6.35 lakhs on deferred instalments paid upto the date of bonding.

12.5.4 The Company sought (December 1991) to justify the action on the ground that during the years 1985-86 to 1987-88 the order book position was very poor and the investment planned was, therefore, deferred due to lack of funds for payment of customs duty.

12.5.5 The Ministry also while endorsing the views of the Company further stated (July 1992) that the normal time required for manufacturing the machines ranged between 12 to 14 months and therefore the orders received during the year cannot be manufactured and delivered that year and specially so of the orders received during second half of year and that in view of this it could not be said that the Company failed to execute the orders already on hand. The replies are not tenable in view of the substantial value of the orders pending at the end of each of these years viz., Rs.585 lakhs, Rs.232 lakhs and Rs.3016 lakhs respectively.

12.5.6 Thus it is evident that the Company after furnishing justification for purchasing these machines to the Board of Directors and obtaining their approval failed to make necessary provision of funds for its clearance which necessitated bonding of these machines.

12.6 **Loss of interest on imported materials not cleared from ports.**

12.6.1 Imported materials valued Rs.184.56 lakhs procured between March 1992 and August 1993 to meet the production programme of CNC (STC 15, 25; SBCNC; ECONO CNC etc.) machines in MTK for the years 1991-92 and 1992-93 were not cleared from the ports resulting in locking up of funds to the extent of Rs.184.56 lakhs in foreign exchange and consequent loss of interest amounting to Rs.16.77 lakhs till August 1993 with an impending liability of Rs.111.08 lakhs towards customs duty. The demurrage paid till September 1993 amounted to Rs.6.5 lakhs.

12.6.2 The Management stated (September 1993) that due to fall in demand for STC 15 and STC 25 machines during 1991-92 and 1992-93, the sales of 1991-92 were met out of stock, and production during 1992-93 was cut by 50 per cent and that the materials procured were estimated (September 1993) to be required only if 60 per cent of the projected production for 1993-94 (which by itself was not very encouraging) was achieved which was expected to be by March 1994.

12.6.3 The reply is not acceptable, in view of the fact that even though sales of 1991-92 and 1992-93 were originally presumed to be in line with those of the previous years, with the poor performance in 1991-92 the unit should have chosen to procure materials for 1992-93 production (orders were placed only from April, 1992 onwards) based on confirmed orders for 1992-93 rather than follow the practice of placing orders based on projections.

(RAMESH CHANDRA)
Deputy Comptroller and Auditor General-cum-Chairman Audit Board

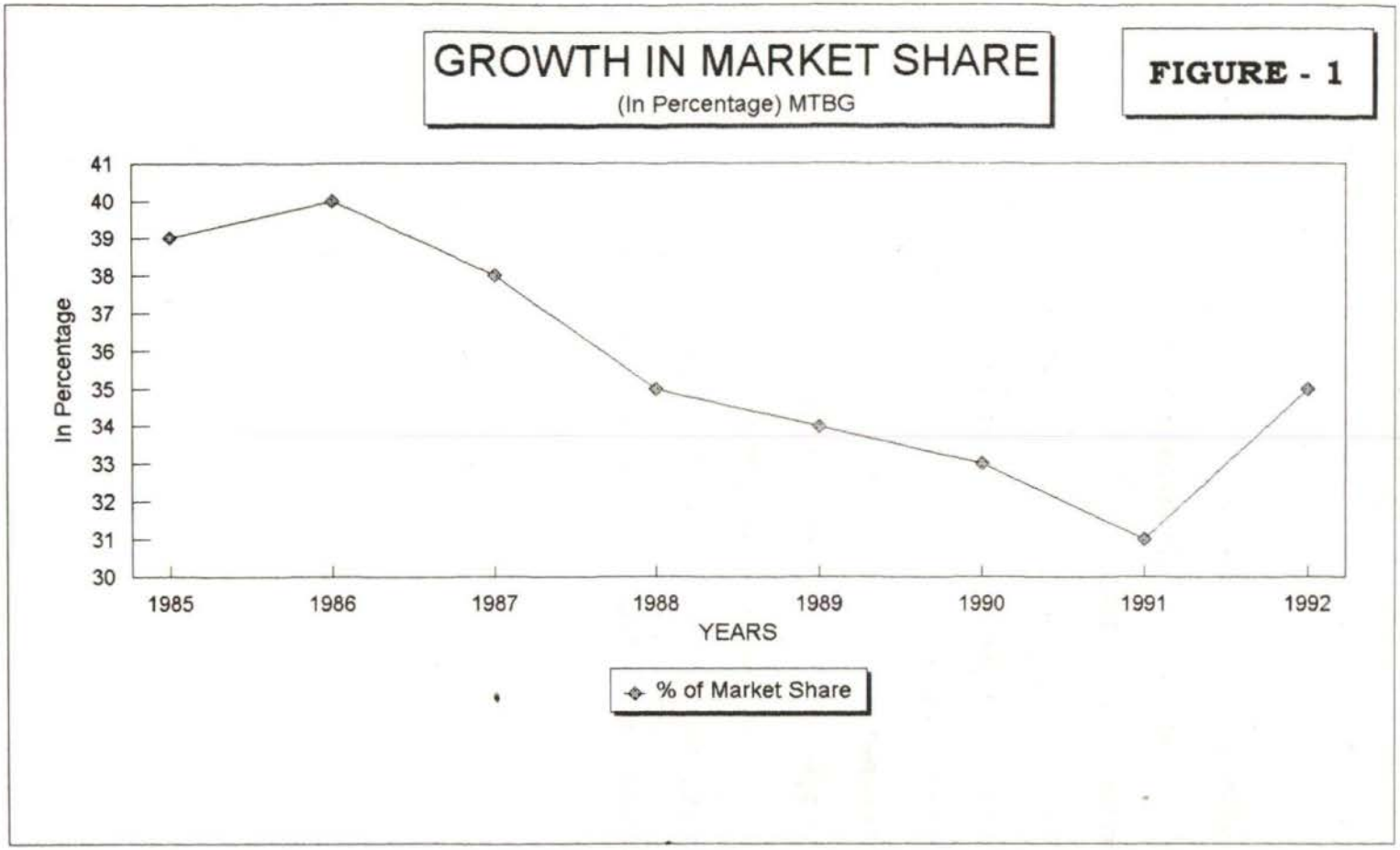
New Delhi
The 04 MAY 1995

Countersigned

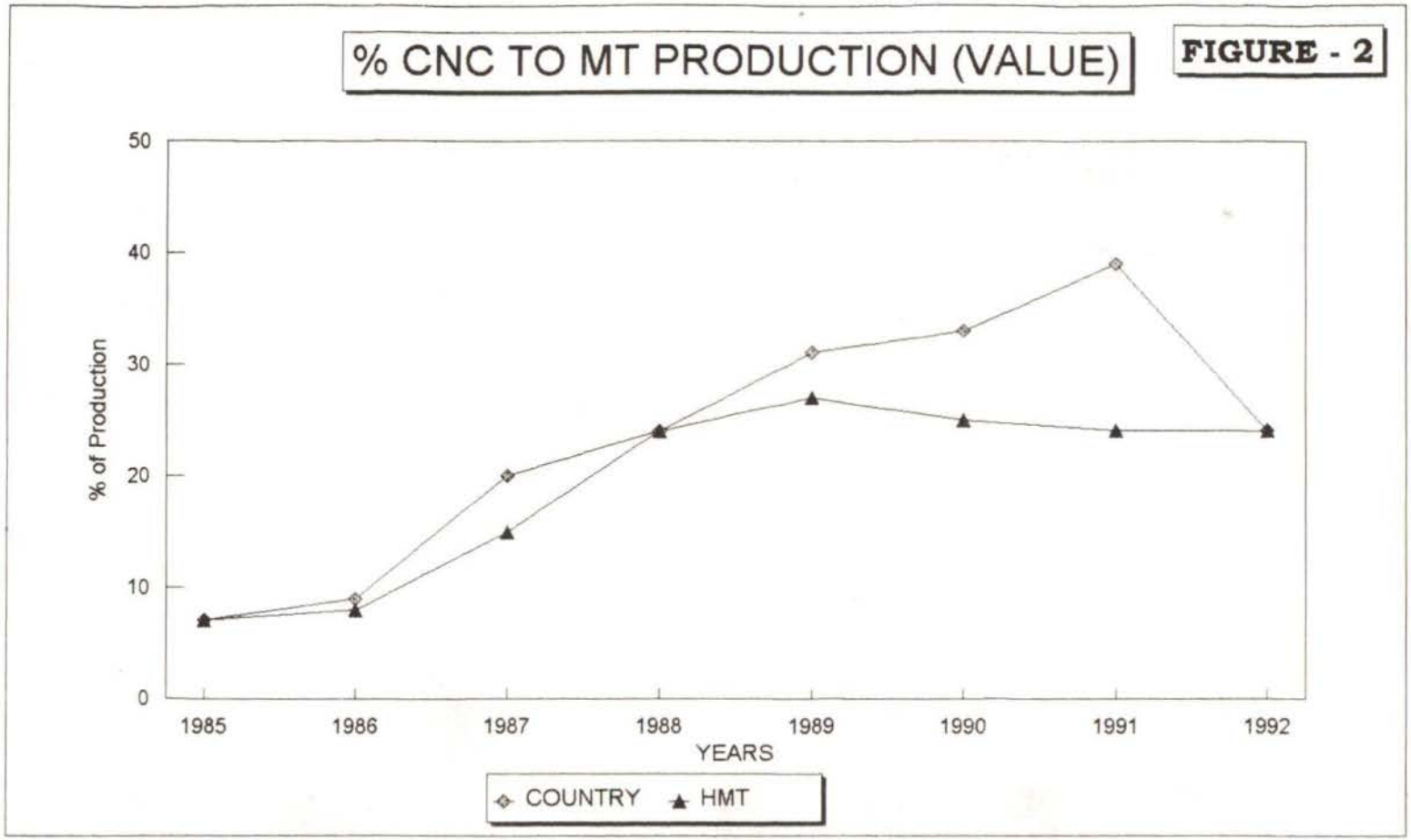
(C.G. SOMIAH)
Comptroller and Auditor General of India

New Delhi
The 04 MAY 1995

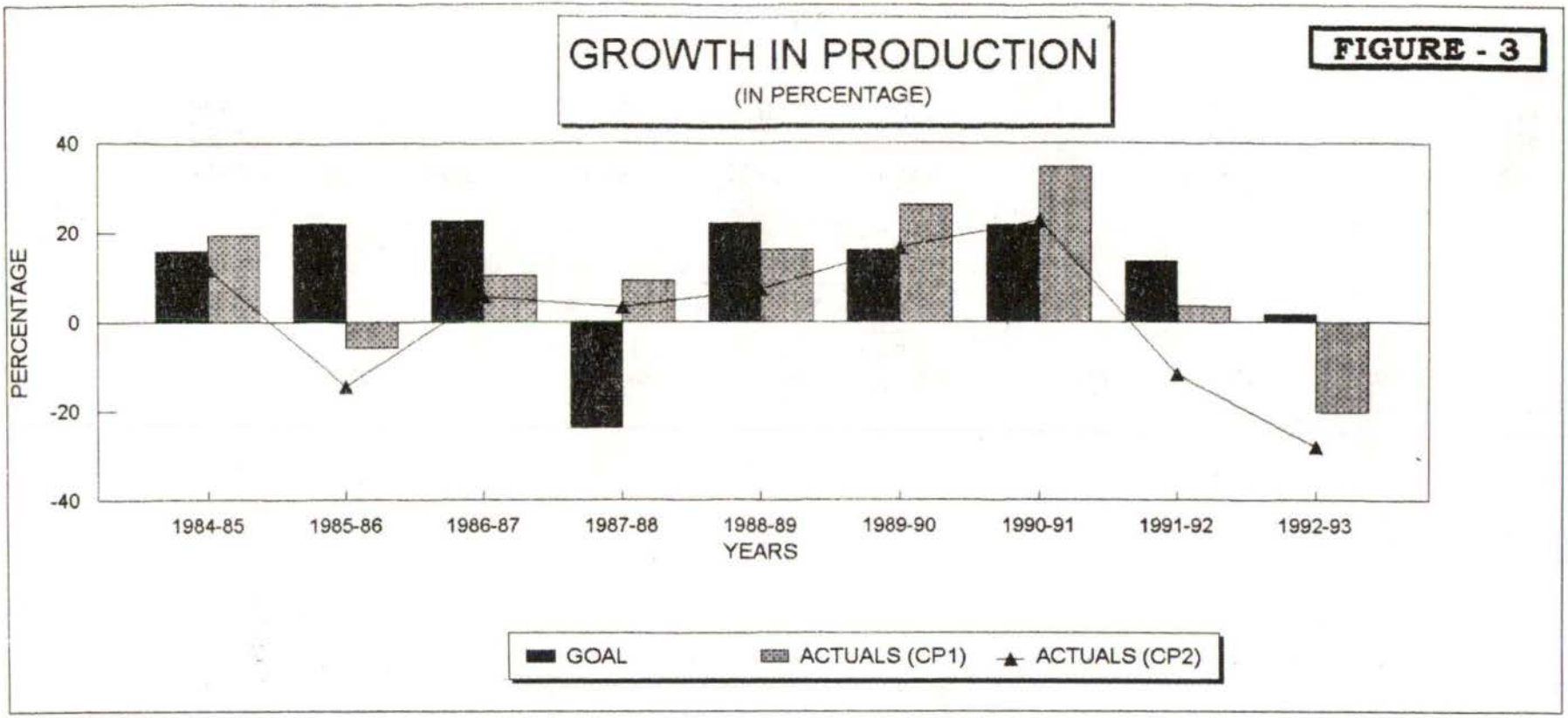
LIST OF FIGURES



YEARS	1985	1986	1987	1988	1989	1990	1991	1992
IN %	39	40	38	35	34	33	31	35



YEARS	1985	1986	1987	1988	1989	1990	1991	1992
COUNTRY	7	9	20	24	31	33	39	24
HMT	7	8	15	24	27	25	24	24

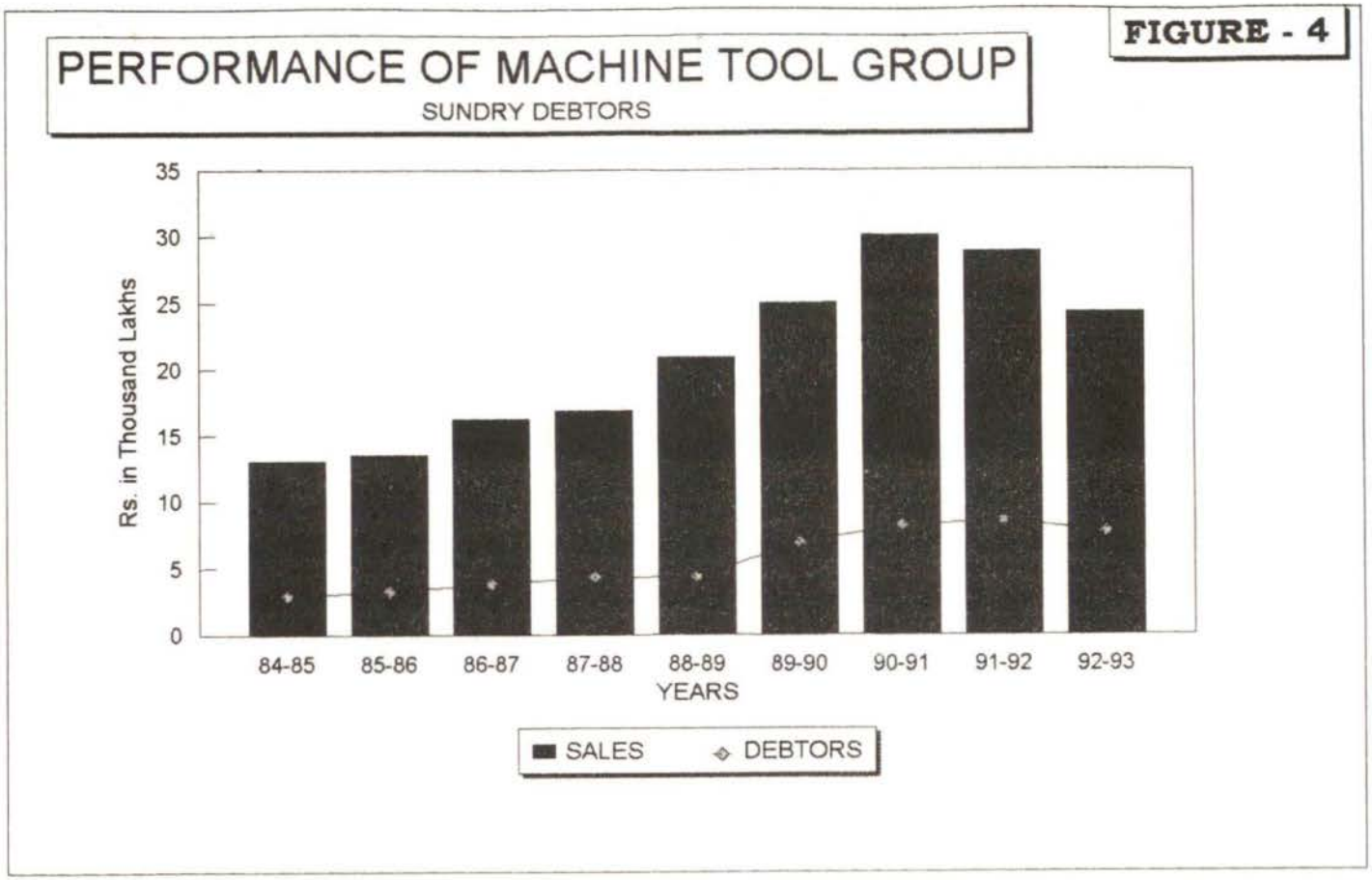


Years	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Goal	15.9	22.1	22.8	-23.8	22.2	16.1	21.6	13.6	1.7
ACTUALS (CP1)	19.52	-5.81	10.46	9.4	16.23	26.29	34.8	3.55	-20.26
ACTUALS (CP2)	11.8	-14.53	5.57	3.21	7.24	16.71	22.78	-11.81	-28.11

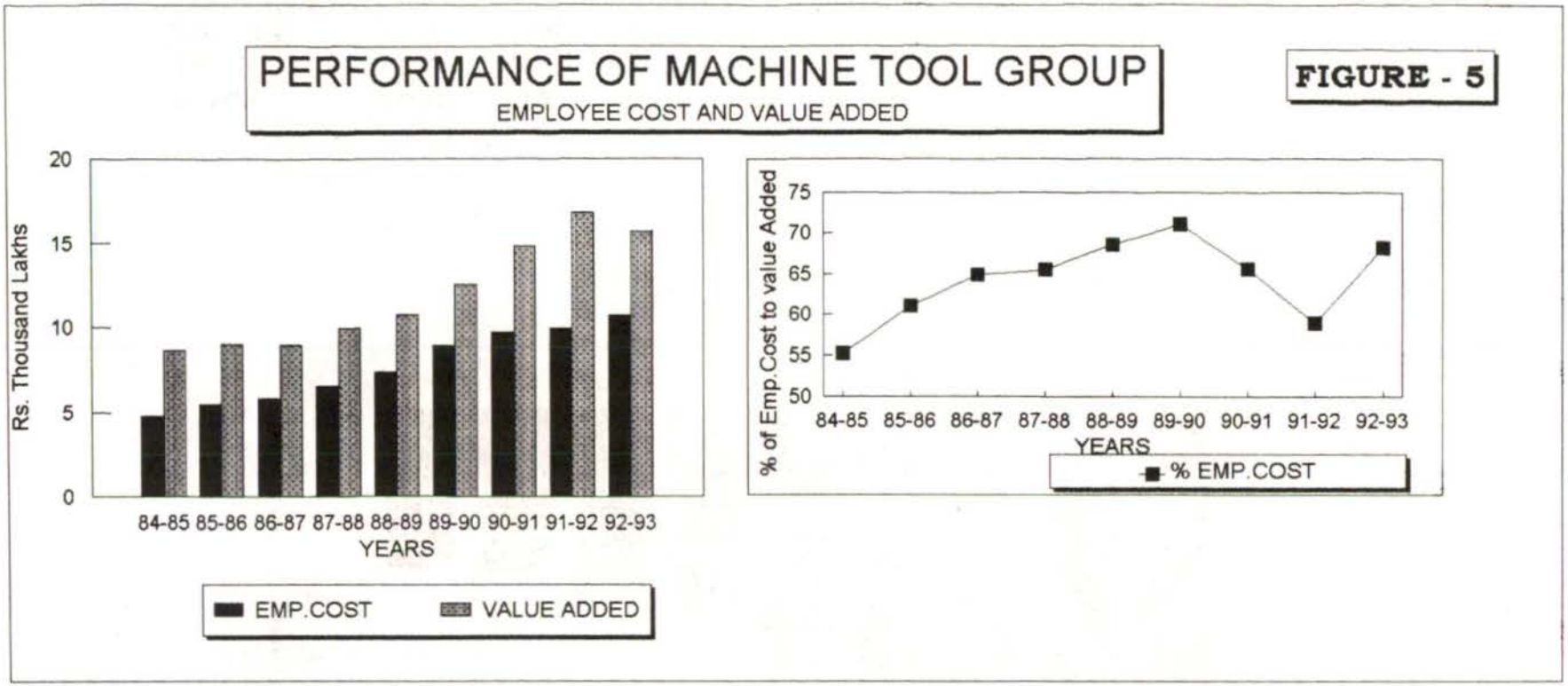
COMPOUNDED RATE : CURRENT PRICES:8.06% CONSTANT PRICES - 3.7%

CP1 - Current prices
CP2 - Constant prices

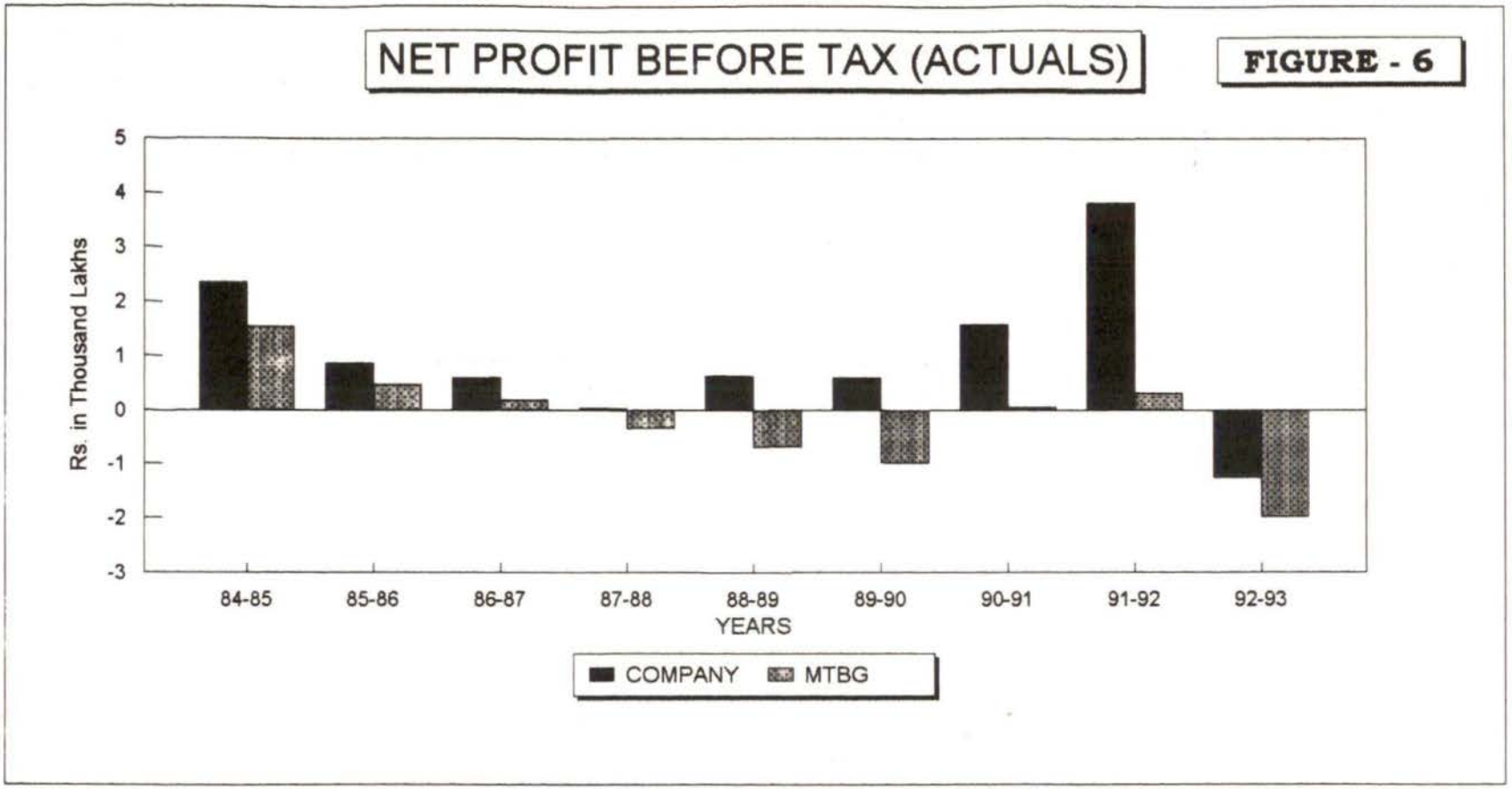
FIGURE - 4



YEARS	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
SALES	13.05	13.54	16.21	16.85	20.89	25	30.08	28.89	24.27
DEBTORS	2.87	3.26	3.75	4.34	4.3	6.87	8.19	8.62	7.71
%DEBTORS	22	24	23.1	25.7	20.6	27.5	27.2	29.8	31.8



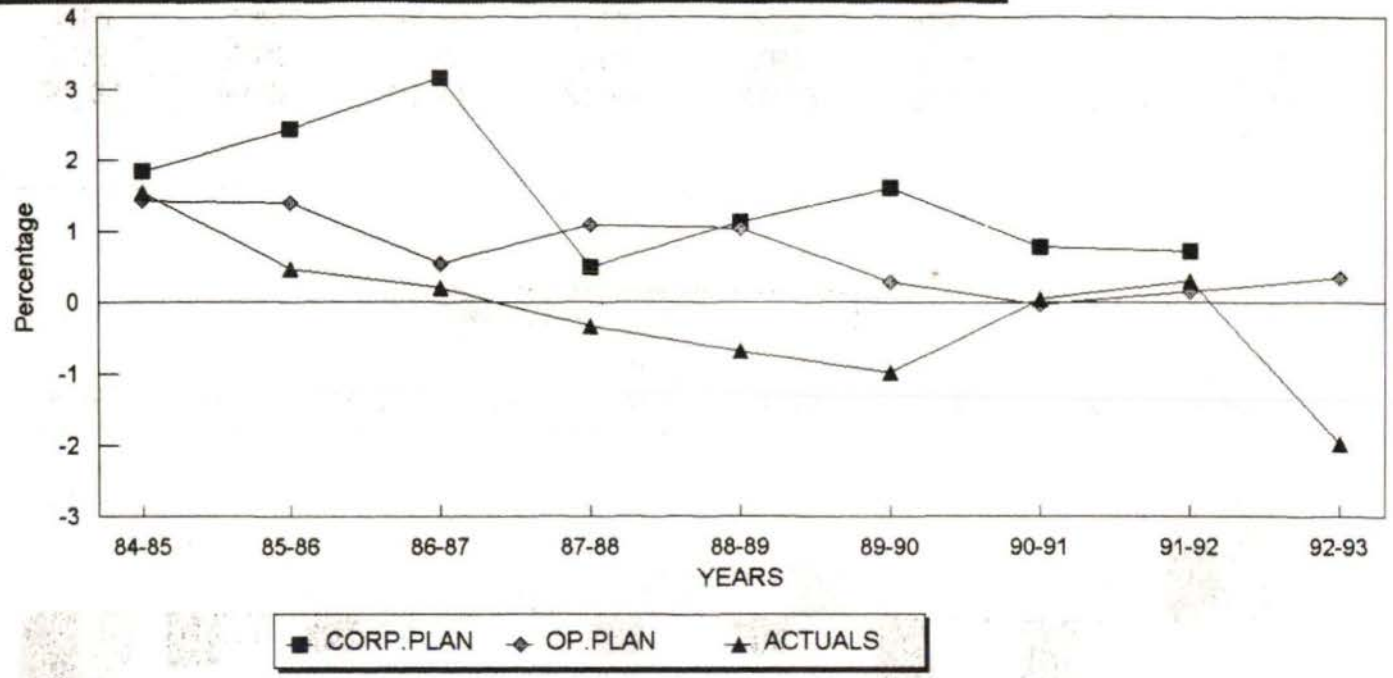
YEARS	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
EMP.COST	4.73	5.49	5.82	6.54	7.37	8.92	9.75	9.94	10.72
VALUE ADDED	8.64	9	8.97	9.98	10.76	12.55	14.87	16.87	15.72
% EMP.COST	55.25	61.04	64.85	65.55	68.5	71.05	65.58	58.93	68.18



YEARS	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
COMPANY	2.35	0.86	0.58	0.03	0.62	0.58	1.56	3.82	-1.25
MTBG	1.54	0.46	0.19	-0.33	-0.68	-0.98	0.05	0.3	-1.98

ACTUAL PROFIT VIS-A-VIS PROJECTION(MTBG)

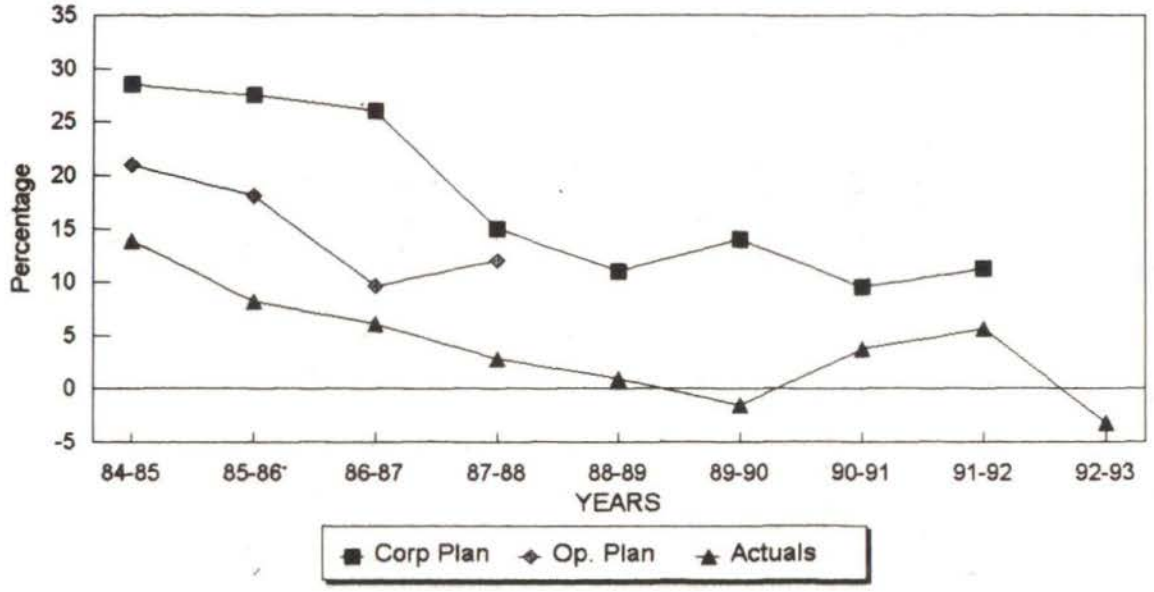
FIGURE - 7



YEARS	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
CORP.PLAN	1.84	2.43	3.14	0.5	1.13	1.6	0.77	0.72	
OP. PLAN	1.42	1.38	0.54	1.09	1.04	0.29	-0.03	0.15	0.35
ACTUALS	1.54	0.46	0.19	-0.33	-0.68	-0.98	0.05	0.3	-1.98

RETURN ON AVERAGE CAPITAL EMPLOYED

FIGURE - 8



YEARS	84-85	85-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93
CORP.PLAN	28.5	27.5	26	15	11	14	9.5	11.2	
OP. PLAN	21	18	9.6	12					
ACTUALS	13.88	8.14	6.07	2.78	0.94	-1.57	3.67	5.53	-3.26

N.B : No targets were set under Op. Plan since the year 88-89 and Corp. Plan for the year 92-93

LIST OF ANNEXURES

ANNEXURE I (Referred in Para 2.1.3)

Statement of targeted and actual standard hours of output

Year	Targets	Actuals
	(in lakhs standard hours)	
1984-85	65.38	56.01
1985-86	64.83	55.26
1986-87	57.40	56.12
1987-88	59.69	54.87
1988-89	59.57	55.87
1989-90	59.15	54.20
1990-91	59.58	55.51
1991-92	58.23	56.69
1992-93	57.11	50.11

ANNEXURE II (Referred in Para 2.2.1)

Statement of projected sales and production

(Rs.in lakhs)

Years	Projections as per Corporate Plan		Projections as per Operational Plan	
	Sales	Production	Sales	Production
1984-85	13892	13892	13562	13150
1985-86	16956	16956	17837	17796
1986-87	20814	20814	17668	16661
1987-88	18529	15855	18495	15855
1988-89	20600	19367	20600	19367
1989-90	24054	22486	22784	22624
1990-91	27338	27338	26297	25900
1991-92	31059	31059	32308	32075
1992-93	31585	31585	36010	35860

ANNEXURE - III (REFERRED IN PARA 2.2.3 and 2.3.1)

UNIT WISE TARGETED AND ACTUAL PRODUCTION

(Rs.in lakhs)

	1984-85			1985-86			1986-87			1987-88			1988-89			1989-90			1990-91			1991-92			1992-93		
Units	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A	CPT	OPT	A
MTB	3553	3710	4242	4569	4876	3901	5645	4787	4249	4401	4401	4469	5045	5045	4954	5807	5822	5632	-	6270	6115	-	7639	7123	-	7941	5139
DCB	365	410	438	473	595	400	624	696	483	477	477	491	550	550	557	635	569	565	-	842	855	-	1300	1346	-	1600	846
MTP	2037	2007	2320	2601	2521	2469	3349	2796	2607	2663	2663	2826	2830	2830	3181	3140	3326	3984	-	3866	4483	-	4720	5795	-	5270	6318
MTK	1936	2010	2380	2169	3005	1991	2485	2386	2275	2420	2420	2915	3290	3290	3502	3650	3841	3857	-	4410	5017	-	5790	6061	-	6875	3249
MTH	2454	2500	2011	2929	3168	1927	3698	2647	2032	2425	2425	2211	3250	3250	1911	3575	3579	3960	-	4300	8241	-	5000	5447	-	5300	4663
PRH	842	501	329	1041	928	459	1267	725	616	687	687	258	1161	1161	1270	1550	1673	1725	-	1850	1563	-	1710	972	-	1800	963
MTA	1047	912	1023	1305	1232	1040	1566	1263	1094	1270	1270	1150	1365	1365	1180	1625	1430	1265	-	1561	1829	-	2200	2118	-	2690	1932
HMB	516	350	441	633	555	505	798	609	503	580	580	571	650	650	602	737	750	621	-	800	761	-	840	639	-	1036	757
PMK	892	750	833	936	879	507	982	566	508	647	647	675	841	841	800	1073	977	809	-	1080	1191	-	1475	1728	-	1838	1059
ISB	-	-	5	-	37	9	-	44	45	110	110	115	57	57	45	109	67	28	-	60	-	-	-	-	-	-	-
CNC	-	-	-	-	-	-	-	142	177	175	175	280	328	328	549	585	590	982	-	861	1525	-	1401	1473	-	1530	1152
EXP	250	-	-	300	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CRB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	13892	13150	14022	16956	17796	13208	20814	16661	14589	15855	15855	15961	19367	19367	18551	22486	22624	23428	27338	25900	31580	31059	32705	32702	31585	35860	26078
Growth Rate(%)				22.06	35.33	-5.81	27.75	-6.38	10.46	-23.83	-4.84	9.40	22.15	22.15	16.23	16.10	16.82	26.29	21.58	14.48	34.80	13.61	26.27	3.55	1.69	9.65	-20.25

CPT : Corporate Plan Targets
OPT : Operational Plan Targets
A : Actuals

Source: Collected from Corporate Plans and Operational Plans of the Company.

ANNEXURE - IV

Particulars relating to Foundry (Referred in Para 2.6.5)

Units	Metal Charged Gross(MT)	Loss of Metal(MT)	Yield of good Castings in foundry (MT)	Rejections in foundry (MT)	Net Output foundry(MT)	Rejections at machine Shop(MT)	Percentages		
							Loss of metal to metal charged (Gross)	Rejections of foundry to yield of good Castings	Rejections at machine shop to net Output in in foundry
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MTA									
1984-85	NA	NA	NA	NA	NA	NA	NA	NA	NA
1985-86	NA	NA	NA	NA	NA	NA	NA	NA	NA
1986-87	1420.00	88.00	824.00	71.60	752.40	89.50	6.19	8.69	11.89
1987-88	1303.00	78.00	731.00	60.90	669.10	68.00	5.99	8.34	10.16
1988-89	1287.00	77.00	734.00	60.30	673.70	61.93	5.98	8.22	9.19
1989-90	1225.00	73.00	686.00	54.20	631.80	52.10	5.96	7.90	8.25
1990-91	1394.00	83.00	804.00	45.60	758.40	56.46	5.95	5.67	7.44
1991-92	1135.00	65.80	660.30	37.10	623.20	31.60	5.80	5.62	5.07
1992-93	958.00	43.00	586.00	45.00	541.00	40.00	4.49	7.68	7.39
MTB									
1984-85	5677.80	113.55	4171.28	166.67	4004.61	307.62	1.99	4.00	7.68
1985-86	5656.00	113.12	4183.97	172.07	4011.90	280.93	2.00	4.11	7.00
1986-87	5663.40	113.27	4175.29	154.26	4021.03	270.37	2.00	3.69	6.72
1987-88	4975.90	99.52	3562.22	172.36	3389.86	264.84	2.00	4.84	7.81
1988-89	3358.50	67.17	2338.45	107.84	2230.61	285.59	2.00	4.61	12.80
1989-90	3598.70	71.97	2482.23	81.27	2400.96	223.68	1.99	3.27	9.32
1990-91	4605.95	92.12	3232.52	83.86	3148.66	239.60	2.00	2.59	7.61
1991-92	3444.46	68.89	2260.62	89.05	2171.57	244.14	2.00	3.94	11.24
1992-93	3140.00	62.80	2130.37	65.93	2064.44	171.40	3.00	3.09	8.30
MTH									
1984-85	1880.80	19.00	1502.30	29.10	1473.20	31.37	1.01	1.94	2.13
1985-86	1981.40	20.00	1325.86	32.48	1293.38	46.39	1.01	2.45	3.59
1986-87	1701.50	17.00	1097.32	17.95	1079.37	138.23	0.99	1.64	12.81
1987-88	1698.00	17.00	1141.18	10.95	1130.23	35.89	1.00	0.96	3.18
1988-89	1776.20	18.00	1241.00	16.60	1224.40	14.61	1.01	1.34	1.19
1989-90	1996.10	20.00	1416.30	15.30	1401.00	5.89	1.02	1.08	0.42
1990-91	2139.10	21.00	1504.60	14.60	1490.00	11.40	0.98	0.97	0.77
1991-92	2197.50	22.00	1524.50	14.20	1510.30	13.71	1.00	0.93	0.90
1992-93	1898.90	12.00	1338.30	12.20	1326.10	29.25	0.63	0.91	2.21

MTK

1984-85	3055.00	213.00	2139.14	88.93	2050.21	178.64	6.97	4.16	8.71
1985-86	2931.00	191.00	1920.07	68.70	1851.37	157.58	6.52	3.58	8.52
1986-87	2810.00	183.00	1838.07	50.00	1788.07	125.01	6.51	2.72	6.99
1987-88	2953.00	193.00	1932.70	24.48	1908.22	91.34	6.54	1.27	4.79
1988-89	2976.00	198.00	1957.10	27.71	1929.39	91.22	6.65	1.42	4.73
1989-90	2727.00	203.00	1767.66	37.68	1729.98	43.78	7.44	2.13	2.53
1990-91	3030.00	237.00	1953.81	42.52	1911.29	54.13	7.82	2.18	2.83
1991-92	3160.00	220.00	2061.18	46.70	2014.48	69.53	6.96	2.27	3.45
1992-93	2975.80	196.80	1931.00	65.40	1865.60	96.80	6.61	3.39	5.19

MTP

1984-85	3521.00	119.00	2220.00	54.00	2166.00	347.00	3.38	2.43	16.02
1985-86	3965.00	106.00	2447.00	61.00	2386.00	406.00	2.67	2.49	17.02
1986-87	3457.00	104.00	2100.00	57.00	2043.00	371.00	3.01	2.71	18.16
1987-88	3442.00	103.00	2076.00	50.00	2026.00	319.00	2.99	2.41	15.75
1988-89	3648.00	141.00	2321.00	49.00	2272.00	302.00	3.87	2.11	13.29
1989-90	3591.00	166.00	2254.00	56.00	2198.00	291.00	4.62	2.48	13.24
1990-91	3678.00	113.00	2259.00	53.00	2206.00	271.00	3.07	2.35	12.28
1991-92	3602.00	108.00	2243.00	55.00	2188.00	325.00	3.00	2.45	14.85
1992-93	3548.00	107.00	3441.00	56.00	3385.00	362.00	3.02	1.63	10.69

ANNEXURE V (Referred in para 3.1.1)

Statement of Machine Utilisation

(in percentategeś)

Unit	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
MTB	62.7	60.7	60.1	58.7	56.8	56.3	54.0	51.3	50.6
DCB	62.0	64.3	66.6	62.5	62.6	56.4	61.7	60.7	67.4
MTP	74.6	78.2	74.8	76.2	74.9	74.9	74.2	72.6	75.4
MTK	65.3	62.4	60.5	62.0	61.7	60.9	63.6	63.0	58.5
PMK	73.8	71.3	65.5	67.1	67.0	66.8	71.2	73.2	69.5
MTH	71.7	68.5	67.4	68.8	69.8	70.3	70.5	70.7	70.2
PRH	66.8	75.6	68.8	61.3	70.2	73.3	70.5	74.3	75.4
MTA	65.7	64.6	65.0	66.2	64.3	63.2	64.8	62.8	63.6
HMB	83.3	78.8	75.0	71.4	71.5	69.4	70.8	67.8	71.3
CNC*	-	-	-	-	-	-	-	-	-
CRB	-	-	-	-	-	-	-	-	NA
CIM	-	-	-	-	-	-	-	-	NA
MTBG	68.1	67.0	65.1	65.0	64.4	64.1	64.0	62.8	63.1

* Machine utilisation statement for this unit is not prepared as it does not manufacture components, and equipments installed are only for assembly and tooling.

ANNEXURE VI (REFERRED IN PARA 3.3.1)

CAUSE-WISE BREAK UP FOR IDLE MACHINE HOURS

(in percentages)

Year/ Units	No Operator	No Job	Mechanical Electrical Repairs	Other causes	Total
(1)	(2)	(3)	(4)	(5)	(6)
1984-85					
MTB	19.1	9.1	6.6	2.5	37.3
DCB	22.4	4.4	9.5	1.7	38.0
MTK	20.6	4.1	6.1	3.9	34.7
PMK	14.3	4.0	6.2	1.7	26.2
MTH	18.5	3.6	3.7	2.5	28.3
PRH	13.5	3.3	11.7	4.7	33.2
HMB	-	-	1.0	15.7	16.7
MTA	NA	NA	NA	NA	NA
MTP	NA	NA	NA	NA	NA
1985-86					
MTB	19.0	8.7	7.1	4.5	39.3
DCB	16.4	8.2	4.5	6.6	35.7
MTK	20.1	7.1	6.1	4.3	37.6
PMK	15.9	5.8	5.8	1.2	28.7
MTH	17.8	8.5	2.9	2.2	31.4
PRH	10.6	0.8	7.1	5.9	24.4
HMB	-	-	1.8	19.4	21.2
MTA	NA	NA	NA	NA	NA
MTP	NA	NA	NA	NA	NA
1986-87					
MTB	19.8	8.5	7.1	4.5	39.9
DCB	21.0	4.3	6.4	1.7	33.4
MTK	18.8	10.3	6.0	4.8	39.9
PMK	15.4	9.8	6.2	3.1	34.5
MTH	17.5	9.7	3.1	2.3	32.6
PRH	9.9	9.7	8.1	3.5	31.2
HMB	-	-	1.2	23.8	25.0
MTA	20.0	4.4	4.2	6.4	35.0
MTP	15.2	1.6	4.2	4.2	25.2
1987-88					
MTB	20.9	8.6	6.6	5.2	41.3
DCB	19.3	4.3	12.4	1.5	37.5
MTK	20.7	8.1	5.2	4.0	38.0
PMK	14.9	10.6	4.5	2.9	32.9
MTH	19.1	3.8	3.3	5.0	31.2
PRH	9.8	12.7	10.4	5.8	38.7
HMB	-	-	2.5	26.1	28.6
MTA	19.7	4.5	5.9	3.7	33.8
MTP	15.8	1.3	4.7	2.1	23.9

1988-89					
MTB	21.4	10.9	7.0	3.9	43.2
DCB	19.1	5.4	7.8	5.1	37.4
MTK	24.4	6.6	4.5	2.8	38.3
PMK	17.1	6.4	3.3	6.2	33.0
MTH	18.9	3.6	3.9	3.8	30.2
PRH	9.1	2.7	11.3	6.7	29.8
HMB	-	-	1.9	26.6	28.5
MTA	20.3	4.4	7.9	3.1	35.7
MTP	17.2	1.1	4.8	2.0	25.1
1989-90					
MTB	24.5	10.9	6.1	2.2	43.7
DCB	22.3	9.5	10.7	1.1	43.6
MTK	22.6	5.9	4.4	6.2	39.1
PMK	17.1	8.2	3.0	4.9	33.2
MTH	19.5	2.8	3.8	3.6	29.7
PRH	8.8	1.7	10.7	5.5	26.7
HMB	-	-	2.8	27.8	30.6
MTA	25.3	3.5	5.1	2.9	36.8
MTP	19.1	0.5	3.4	2.1	25.1
1990-91					
MTB	28.0	9.0	6.1	2.9	46.0
DCB	25.5	4.0	3.3	5.5	38.3
MTK	24.1	4.8	4.4	3.1	36.4
PMK	18.6	5.4	2.7	2.1	28.8
MTH	21.9	1.2	4.3	2.1	29.5
PRH	10.6	3.7	10.6	4.6	29.5
HMB	-	-	2.3	26.9	29.2
MTA	23.7	2.7	6.0	2.8	35.2
MTP	20.3	0.1	3.0	2.4	25.8
1991-92					
MTB	37.5	5.5	4.0	1.7	48.7
DCB	31.1	1.8	4.0	2.4	39.3
MTK	26.0	4.5	4.2	2.3	37.0
PMK	19.5	3.2	2.8	1.3	26.8
MTH	20.7	1.2	5.3	2.1	29.3
PRH	10.7	4.8	5.9	4.3	25.7
HMB	18.6	8.1	1.7	3.8	32.2
MTA	24.3	3.6	6.9	2.4	37.2
MTP	22.3	0.2	3.0	1.9	27.4
1992-93					
MTB	30.9	11.0	4.3	3.3	49.5
DCB	22.6	1.1	7.8	1.1	32.6
MTK	26.6	7.1	4.2	3.6	41.5
PMK	21.9	3.1	3.7	1.7	30.4
MTH	20.7	2.4	3.9	2.8	29.8
PRH	11.2	2.9	5.4	5.1	24.6
HMB	20.6	1.9	1.3	4.9	28.7
MTA	23.7	3.1	7.3	2.3	36.4
MTP	18.6	0.3	3.5	2.2	24.6
CRB	NA	NA	NA	NA	NA
CIM	NA	NA	NA	NA	NA

ANNEXURE - VII (REFERRED IN PARA 4.1.2.)

Statement of Labour Utilisation (Percentages)

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
MTB	63.8	63.5	69.7	63.3	61.7	61.9	64.5	68.4	57.7
DCB	61.8	65.2	75.5	61.4	66.0	60.9	76.0	75.0	71.0
MTP	NA	NA	89.9	91.8	92.9	96.5	95.8	95.2	93.2
MTK	82.6	79.5	77.3	76.1	77.4	84.3	84.3	87.5	77.2
PMK	82.1	79.7	72.7	67.0	81.1	78.5	83.8	89.8	79.0
MTH	83.8	84.8	83.6	86.4	87.0	86.6	87.0	89.3	88.9
PRH	80.5	88.4	78.9	73.6	83.4	83.3	81.7	88.3	86.4
MTA	NA	NA	80.8	79.7	79.0	82.5	81.0	80.6	81.6
HMB	94.9	90.9	85.9	82.7	85.4	84.8	85.2	83.3	89.8
MTBG**	NA	NA	78.2	75.6	76.6	78.2	79.9	82.6	77.8

Note : ** Excluding CNC and ISB, in respect of which labour utilisation statements are not prepared by the Units.

Source: Man power utilisation statements

ANNEXURE - VIII

Cause-wise break-up for idle labour hours (as a Percentage of net available hours).

(Referred to in Para 4.2.1)

Year/ Units	No Job	No Job & No Material	No Material	No Machine	Mechanical & Electrica Repairs	Others	Total
1984-85							
MTB	21.2	--	2.0	1.7	3.0	8.3	36.2
DCB	22.7	--	--	1.6	4.1	9.8	38.2
MTK	--	8.9	--	1.0	5.0	2.5	17.4
PMK	--	11.8	--	--	4.7	1.4	17.9
MTH	5.9	--	--	3.4	2.1	4.8	16.2
PRH	5.0	--	--	2.0	7.2	5.3	19.5
HMB	--	--	--	--	1.4	3.7	5.1
MTA	NA	NA	NA	NA	NA	NA	NA
MTP	NA	NA	NA	NA	NA	NA	NA
1985-86							
MTB	20.7	--	2.1	9.1	3.2	1.4	36.5
DCB	19.9	--	0.1	1.4	2.8	10.6	34.8
MTK	--	12.0	--	1.0	4.7	2.8	20.5
PMK	--	14.7	--	--	4.5	1.1	20.3
MTH	8.0	--	0.3	3.5	1.6	1.8	15.2
PRH	2.6	--	--	1.5	4.5	3.0	11.6
HMB	--	--	--	--	2.2	6.9	9.1
MTA	NA	--	NA	NA	NA	NA	NA
MTP	NA	--	NA	NA	NA	NA	NA
1986-87							
MTB	21.2	--	2.2	2.3	3.5	1.1	30.3
DCB	16.1	--	0.1	0.1	3.5	4.7	24.5
MTK	--	14.4	--	0.8	4.6	2.9	22.7
PMK	--	21.0	--	--	4.5	1.8	27.3
MTH	8.7	--	1.0	2.8	1.7	2.2	16.4
PRH	9.7	--	--	3.3	4.8	3.3	21.1
HMB	--	--	--	--	1.5	12.6	14.1
MTA	8.2	--	0.4	0.5	3.4	6.7	19.2
MTP	4.6	--	0.6	0.2	2.2	2.5	10.1
1987-88							
MTB	21.0	--	2.8	3.1	3.5	6.3	36.7
DCB	20.3	--	--	4.4	6.3	7.6	38.6
MTK	--	6.3	--	0.8	4.0	12.8	23.9
PMK	--	7.6	--	0.1	3.2	22.1	33.0
MTH	4.2	--	0.5	2.3	1.8	4.8	13.6
PRH	14.9	--	--	2.9	4.8	3.8	26.4
HMB	--	--	--	--	2.9	14.4	17.3
MTA	7.9	--	1.2	0.8	3.7	6.7	20.3
MTP	4.5	--	0.3	0.3	2.3	0.8	8.2

1988-89							
MTB	23.5	--	1.8	2.8	3.3	6.9	38.3
DCB	19.5	--	--	5.7	3.1	5.7	34.0
MTK	--	10.3	--	0.7	3.6	8.0	22.6
PMK	--	11.8	--		2.1	5.0	18.9
MTH	4.1	--	0.7	0.6	2.8	4.8	13.0
PRH	3.3	--	--	1.5	7.0	4.8	16.6
HMB	--	--	--		2.3	12.3	14.6
MTA	8.8	--	1.3	0.6	3.8	6.5	21.0
MTP	3.5	--	0.2	0.2	2.4	0.8	7.1
1989-90							
MTB	23.7	--	2.1	2.6	--	9.7	38.1
DCB	26.5	--	--	3.3	--	9.3	39.1
MTK	--	5.6	--	--	3.5	6.6	15.7
PMK	--	8.6	--	--	2.2	10.7	21.5
MTH	3.9	--	0.4	1.7	2.5	4.9	13.4
PRH	3.0	--	--	1.1	6.1	6.5	16.7
HMB	--	--	--	--	3.2	12.0	15.2
MTA	7.3	--	0.8	0.6	3.3	5.5	17.5
MTP	0.8	--	--	0.1	1.8	0.8	3.5
1990-91							
MTB	20.0	--	1.1	2.4	--	12.0	35.5
DCB	16.9	--	--	2.1	--	5.0	24.0
MTK	5.3	--	--	--	3.3	7.1	15.7
PMK	6.6	--	--	--	2.0	7.6	16.2
MTH	4.4	--	--	--	2.3	6.3	13.0
PRH	4.8	--	--	0.8	6.3	6.4	18.3
HMB	--	--	--	--	2.9	11.9	14.8
MTA	9.4	--	0.7	0.4	3.7	4.8	19.0
MTP	1.5	--	--	0.1	1.4	1.2	4.2
1991-92							
MTB	15.3	--	2.2	1.4	--	12.7	31.6
DCB	17.6	--	--	2.0	--	5.4	25.0
MTK	7.3	--	0.1	0.1	3.2	1.8	12.5
PMK	6.7	--	--	--	2.2	1.3	10.2
MTH	4.5	--	--	--	2.8	3.4	10.7
PRH	4.2	--	).8	0.5	3.9	2.3	11.7
HMB	9.9	--	--	0.5	2.1	4.2	16.7
MTA	10.6	--	0.3	0.7	4.4	3.5	19.5
MTP	2.6	--	--	0.1	1.5	0.6	4.8
1992-93							
MTB	23.4	-	2.9	1.5	-	14.5	42.3
DCB	19.2	-	--	0.2	4.9	4.7	29.0
MTK	13.3	-	-	-	3.2	6.3	22.8
PMK	8.8	-	-	-	3.0	9.2	21.0
MTH	5.1	-	-	-	2.1	3.9	11.1
PRH	4.1	-	0.9	0.7	3.3	4.6	13.6
HMB	2.4	-	0.2	-	1.6	6.0	10.2
MTA	9.0	-	0.6	0.6	4.3	3.9	18.4
MTP	4.2	-	-	0.1	1.7	0.8	6.8

NOTE: The figures indicated at column 3 includes causes both at column 2 & 4.

Source : Manpower Utilisation Statements/MIS Reports

ANNEXURE IX (REFERRED IN PARA 4.9)

Statement of Average outgo, Average value of Production and Value Added

Particulars	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
1. Total number of employees average	NA	16194	16102	15875	15602	15283	14891	14447	13913
2. Expenditure on salaries, benefits including welfare expenses (Rs. in lakhs)	4773	5494	5815	6541	7371	8915	9754	9941	10720
3. Value of production(Rs. in lakhs)	14034	14507	15563	16787	19443	23180	28480	30873	26034
4. Cost of raw materials and components, stores & spares etc.(Rs. in lakhs)	5395	5506	6596	6808	8682	10633	13607	14003	10312
5. Total value added (3-4)(Rs. in lakhs)	8639	9001	8967	9979	10761	12547	14873	16870	15722
6. Per employee/per annum:									
a) Average outgo (2/1)in rupees	-	33926	36113	41203	47244	58333	65503	68810	77050
b) Average value of production(3/1) in rupees	-	89583	96653	105745	124619	151672	191256	213698	187120
c) Average value added in rupees (5/1)	-	55582	55689	62860	68972	82098	99879	116771	113002
7. Ratio of value added to outgo (6(c)/6(a)	-	1.6	1.5	1.5	1.5	1.4	1.5	1.7	1.5

Note:Value of production indicates total of sales (excluding excise duty), transfers to plant and jobs done for internal use plus/minus accretion/decretion to wor..-in-progress and finished stock and export incentives.

ANNEXURE - X (REFERRED IN PARA 5.1.2)

Details of diversification projects:

	Product	Business Group	Year of commencement of production	Unit at which diversification was taken-up
i)	Heavy Duty Presses	Machine Tool (MTBG)	1969-70	Unit V, Hyderabad
ii)	Tractors	Agricultural Machinery	1971-72	Unit III, Pinjore
iii)	Printing Pres	Machine Tool (MTBG)	1972-73	Unit IV, Kalamassery
iv)	Lamps & Lamp making machinery and fluorescent Lamps	General Engineering Products	1976-77/ 1977-78	Unit V Hyderabad
v)	Watches	Watch	1961-62	WF I & II, Bangalore
vi)	Dairy Machinery	Agricultural Machinery	1981-82	DMU Aurangabad

ANNEXURE - XI (Referred in para 5.1.4 & 5.1.6)

Statement showing the Business Groupwise production, Sales, Net Profit, Average Capital Employed, Return on Average Capital Employed (in percentages) for years 1984-85 to 1992-93

Year & particulars	Machine Tools	Watches	Agricultural Machinery	Lamps
1	2	3	4	5
1984-85				
P	39	34	23	4
S	38	34	25	3
NP	66	64	11	(-)31
ACP	51	35	9	5
RC	15	16	12	(-)34
1985-86				
P	37	34	25	4
S	37	33	26	4
NP	54	110	33	(-)80
ACP	50	36	9	4
RC	9	11	12	(-)38
1986-87				
P	36	35	26	3
S	38	32	26	4
NP	33	297	58	(-)132
ACP	49	36	9	4
RC	6	16	14	(-)42
1987-88				
P	36	34	27	3
S	37	31	29	3
NP	(-)1050	5127	1654	(-)3087
ACP	49	38	8	3
RC	3	14	19	(-)63
1988-89				
P	35	37	25	3
S	37	33	27	3
NP	(-)110	351	153	(-)175
ACP	48	41	8	3
RC	1	15	32	(-)82
1989-90				
P	38	33	26	3
S	38	31	28	3
NP	(-)169	255	253	(-)129
ACP	44	45	8	3
RC	(-)2	10	46	(-)51

Year & particulars	Machine Tools	Watches	Agricultural Machinery	Lamps
1	2	3	4	5
1990-91				
P	42	31	24	3
S	40	29	28	3
NP	3	47	144	(-)41
ACP	43	48	9	3
RC	4	6	57	(-)39
1991-92				
P	39	34	24	3
S	34	35	28	3
NP	8	37	72	(-)13
ACP	42	49	11	2
RC	6	8	49	(-)27
1992-93				
P	36	34	27	3
S	33	33	31	3
NP	(-)158	(-)86	126	(-)51
ACP	39	48	13	2
RC	(-)3	(-)1	21	(-)42

NOTE:

P: Production) As a percentage to the
S: Sales) Company as a whole.
NP: Net Profit)
ACP: Average Capital employed)
RC : Return (Earnings before interest and tax) on average capital employed in the group.

SOURCE :

(1) Operational Plans of the Company.
(2) Columnar Balance Sheet and Profit and Loss Account of the Company
(3) Corporate Report Supplement forming part of Annual Accounts.

ANNEXURE XII (REFERRED PARA 5.9.1)

Details of Collaboration Agreements

Name of the Product	Year of entering into the collaboration Agreement	Validity of the Agreement (years)	Lumpsum fee paid	Royalty payable under the Agreement	Commencement of production Exp.dt	Commencement of production Act.dt	Order executed Plan upto 1988-89 No.	Order executed Plan upto 1988-89 Value (Rs.in lakhs)	Actuals upto 1992-93 No.	Actuals upto 1992-93 Value (Rs.in lakhs)
i) Multispindle Automatics (MSAs)-GS/GF Series	October 1984	8	DM 1.25 millions (Rs.50.0 lakhs Approx.)	5 per cent for 5 years	Nov. 1986	Dec. 1987	60	2439	9	510
ii)High Speed Gear Shaper-WS I	September 1983	8	DM 7,40,000 (Rs.37.76 lakhs)	3 per cent for 5 years	-	-	70	1427	59	1529
iii)High Speed Gear Hobber-L200	September 1983	8	DM 8,74,100 (Rs.44.64 lakhs)	5 per cent for 5 years	-	-	79	2044	18	796
iv)Advanced version of Internal Grinding Machines	May 1985	8	DM 1,66,667 (Rs.8.62 lakhs)	5 per cent for 5 years	-	-	32*	Nil	Nil	Nil

* Market Potential; Exp.dt - Expected date; Act.dt - Actual date.:

ANNEXURE - XIII

(REFERRED IN PARA 7.3.1)
(Rs.in lakhs)

Particulars of Inventory Holdings

Particulars	1984-85 Company as a whole	1984-85 MTBG	1985-86 Company as a whole	1985-86 MTBG	1986-87 Company as a whole	1986-87 MTBG	1987-88 Company as a whole	1987-88 MTBG	1988-89 Company as a whole	1988-89 MTBG	1989-90 Company as a whole	1989-90 MTBG	1990-91 Company as a whole	1990-91 MTBG	1991-92 Company as a whole	1991-92 MTBG	1992-93 Company as a whole	1992-93 MTBG
1. Raw materials & Components	3903.15	1602.75	3762.90	1657.75	4466.58	1881.88	5737.43	2005.95	5152.75	2205.93	6500.45	2642.78	8345.94	3360.49	8550.51	3527.54	8274.02	3635.72
2. Stores & spares	1763.25	1075.34	1830.15	1019.23	2153.38	1270.79	2300.39	1299.67	2669.13	1410.91	3005.21	1595.67	3496.66	2069.16	3580.29	2102.62	3969.02	2384.89
3. Tools & Instruments	551.80	233.44	598.87	234.58	740.63	236.31	773.54	245.31	831.00	276.46	887.93	273.79	922.49	326.52	1234.05	349.97	1595.35	398.3
SUB TOTAL(1+2+3)	6218.20	2911.53 (47)(28*)	6191.92	2911.56 (47)(24*)	7360.59	3388.98 (46)(26*)	8811.36	3550.93 (40)(26*)	8652.88	3893.30 (45)(28*)	10393.59	4512.24 (43)(30*)	12765.09	5756.17 (45)(36*)	13364.85	5980.13 (45)(34*)	13832.39	6418.91 (46)(31*)
4. Work-in-Progress	4854.15	3046.79 (63)(29*)	6340.74	3979.51 (63)(32*)	7468.35	4569.01 (61)(35*)	8571.87	4918.99 (57)(36*)	9469.21	5538.39 (58)(40*)	10359.13	5831.52 (52)(38*)	10859.21	4825.25 (44)(30*)	10796.43	4563.67 (42)(26*)	12765.14	4865.99 (38)(23*)
5. Finished goods	4908.76	3692.75 (75)(35*)	5578.80	4303.07 (77)(35*)	4987.91	3863.77 (77)(30*)	4952.62	3948.59 (80)(29*)	4732.08	3178.69 (67)(23*)	4711.93	2605.50 (55)(17*)	6339.80	2759.55 (44)(17*)	9610.93	5222.64 (54)(30*)	13188.78	7161.05 (54)(34*)
6. Material-in-transit	1075.90	597.64 (56)(6*)	1540.62	918.96 (60)(7*)	1719.31	853.52 (50)(7*)	1897.26	1016.40 (53)(7*)	2042.06	959.54 (47)(7*)	3541.74	1982.70 (56)(13*)	3833.27	2150.69 (56)(14*)	3355.48	1465.30 (44)(8*)	4401.36	2084.6 (47)(10*)
7. Other-patterns Jigs & fixtures	418.13	251.98 (60)(2*)	436.56	271.99 (62)(2*)	428.10	286.21 (67)(2*)	462.17	290.16 (63)(2*)	547.01	321.28 (59)(2*)	490.97	311.78 (63)(2*)	44.99	290.10 (65)(2*)	459.21	319.12 (69)(2*)	521.83	334.34 (64)(2*)
8. Scrap	--	--	--	--	--	--	--	--	126.43	37.68 (30)	270.10	56.57 (21)	206.74	53.84 (26)	384.93	87.97 (23)	334.99	83.55 (25)(4*)
Total	17475.14	10500.69 (60)	20088.64	12385.09 (62)	21964.26	12961.49 (59)	24695.28	13725.07 (56)	25569.67	13928.88 (54)	29767.46	15300.31 (51)	34049.10	15835.60 (46)	37971.83	17638.83 (46)	45044.49	20948.44 (47)
Value of raw materials, components, stores & tools instruments equivalent to month's consumption	4.30	6.50	3.90	6.30	4.00	6.20	4.40	6.30	3.70	5.40	3.80	5.10	3.90	5.10	3.80	5.10	4.4	7.5
Value of work-in-progress to month's value of production	1.70	2.60	2.00	3.30	2.10	3.50	2.20	3.50	2.00	3.40	1.90	3.00	1.70	2.00	1.50	1.80	2.1	2.2
Value of finished goods to month's sales	1.70	3.60	1.80	4.10	1.40	3.10	1.30	3.00	1.00	2.00	0.90	1.40	1.00	1.10	1.40	2.20	2.1	3.9

Note:1. Figures in brackets indicate percentage of MTBG to Company as a whole

2. Figures in brackets with * indicate percentage of respective constituents of inventory to the total inventory of the Group.

ANNEXURE XIV

(REFERRED IN PARA 8.8)

Unit-wise Sales Perfromance

Value (Rs. in lakhs)

Units	1984-85		1985-86		1986-87		1987-88		1988-89		1989-90		1990-91		1991-92		1992-93	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
MTB	3918	4268	4966	3939	4896	4027	5270	5096	5947	4654	5822	6022	6320	6219	7647	6856	7920	4763
DCB	410	384	590	340	731	558	460	442	552	625	569	550	891	937	1300	1093	1600	570
MTP	2077	2213	2562	2283	2817	2353	2746	2501	2901	3049	3326	4042	3905	4036	4570	5040	5080	5191
MTK	2065	2044	3004	1716	2520	2492	3114	2629	3317	3651	3841	4241	4404	4765	5715	5127	6822	2979
PMK	710	583	830	497	664	692	718	672	882	867	977	911	1071	1153	1495	1646	1862	1031
PRH	507	438	935	498	783	622	829	228	1181	1441	1764	1440	1850	1933	1800	853	1800	728
MTH	2610	1942	3112	1715	2882	2267	3064	2087	3250	2244	3488	3893	4300	7407	5000	4591	5200	5308
MTA	915	971	1260	919	1343	1045	1286	962	1392	1369	1430	1391	1568	1677	2163	1835	2692	1634
HMB	350	379	546	424	700	446	570	536	650	657	750	571	789	586	896	502	1100	818
ISB	--	--	32	--	44	9	108	42	54	68	67	20	58	--	--	--	--	--
CNC	--	--	--	--	130	47	180	32	314	556	590	984	865	1441	1405	1417	1545	1124
MMTK	--	144	--	124	158	143	150	143	160	190	160	176	276	196	317	240	389	307
R&D/PBC																	--	87
Total	13562	13366	17837	12455	17668	14701	18495	15370	20600	19371	22784	24241	26297	30350	32308	29200	36010	24540

Source: Corporate Annual Operational Plans.

ANNEXURE - XV (REFERRED IN PARA 10.5.1)

Details of under absorbed costs

Unit	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
				(.....Rs.in lakhs.....)					
MTB	191.92	NA	NA	NA	81.00	281.84	343.09	24.12	151.00
MTH	173.06	178.73	106.77	87.81	330.59	181.72	483.70	83.99	69.09
MTK	NA	NA	NA	0.71	1.44	1.95	0.98	0.25	0.68
HMB	NA	NA	NA	NA	NA	NA	13.84	5.37	3.3
PRH	88.46	10.04	109.14	103.15	5.52	38.82	163.89	45.33	90.10
PMK	NA	NA	NA	NA	Nil	Nil	0.88	Nil	0.29

ANNEXURE - XVI **(REFERRED IN PARA 11.5)**

Details of net profit/net loss unit-wise and net expenditure on R&D

(Rs. in lakhs)

UNIT	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
A. MANUFACTURING UNITS									
MTB	562.04	468.18	458.41	401.33	-85.35	-606.47	-657.30	-689.80	-1481.02
DCB	83.00	77.20	75.18	72.86	73.83	23.20	93.42	93.41	192.97
MTP	369.43	344.35	262.97	55.91	-16.51	75.50	133.42	709.95	764.42
MTK	195.04	24.61	14.14	38.64	41.85	-239.47	105.04	553.15	-242.98
PMK	37.66	7.35	3.57	-19.02	-11.97	-40.90	160.28	291.34	-47.35
MTH	207.03	-329.69	-371.45	-457.36	-715.14	-75.52	-245.12	-760.22	-543.92
PRH	20.23	-172.97	-278.29	-152.15	216.72	260.91	362.44	-21.96	-309.39
MTA	22.16	3.28	-13.01	-256.37	-439.03	-700.82	-443.90	-383.50	-536.15
HMB	87.90	120.70	127.72	161.30	187.80	155.72	120.48	91.12	193.19
CNC	--	--	5.28	16.73	119.18	310.87	520.42	508.14	475.46
ISB	--	--	3.12	-4.51	-14.85	-29.59	--	--	-
CRB	-	-	-	-	-	-	-	-	0.44
CIM	-	-	-	-	-	-	-	-	61.27
SUB-TOTAL(A)	1584.49	543.01	287.64	-142.64	-643.47	-866.57	149.18	391.63	-1473.06
B. MARKETING UNIT									
MTM	145.83	134.83	146.97	99.73	272.99	271.57	316.48	264.68	-1.74
C. R & D UNITS									
R&D	-82.96	-92.86	-119.31	-148.77	-175.78	-235.95	-236.27	-149.18	-221.88
CMFI	-110.06	-122.36	-123.89	-134.65	-129.78	-151.46	-184.10	-207.86	-286.87
SUB-TOTAL (C)	-193.02	-215.22	-243.20	-283.42	-305.56	-387.41	-420.37	-357.04	-508.75
TOTAL (A+B+C)	1537.30	462.62	191.41	-326.33	-676.04	-982.41	45.29	299.27	-1983.55

ANNEXURE - XVII **(REFERRED IN PARA 11.10)**

Details of turnover, value of production, value added, variable expenses

Particulars	1984-85	%	1985-86	%	1986-87	%	1987-88	%	1988-89	%	1989-90	%	1990-91	%	1991-92	%	1992-93	%
1. Turnover (ii)	12561		12964		15413		16441		19555		23441		29335		28637		23798	
2. Add/Less: Accretion/Decretion to work-in-progress & finished stock	+1473		+1543		+150		+346		-112		-261		-855		+2236		+2236	
3. Value of production (1+2)	14034	100.0	14507	100.0	15563	100.0	16787	100.0	19443	100.0	23180	100.0	28480	100.0	30873	100	26034	100.0
4. Variable expenses (iii)	5914	42.14	6103	42.07	7344	47.19	7795	46.43	9635	49.56	11422	49.28	14555	51.11	14955	48.44	11346	43.58
5. Contribution (value of production minus variable expenses)(3-4)	8120	57.86	8404	57.93	8219	52.81	8992	53.57	9808	50.44	11758	50.72	13925	48.89	15918	51.56	14688	56.42
6. Fixed expenses (iv)	8641	61.57	9910	68.31	10195	65.51	11269	67.13	12685	65.24	15032	64.85	15999	56.18	17134	55.50	17060	65.53
7. Net Profit(+)/ Loss(-) (v)	+1537		+463		+191		-326		-676		-982		+45		+299		-1984	

Particulars	1984-85	%	1985-86	%	1986-87	%	1987-88	%	1988-89	%	1989-90	%	1990-91	%	1991-92	%	1992-93	%
8. Consumption of raw materials, stores & spares (included in the variable expenses)	5395	38.44	5506	37.95	6596	42.38	6808	40.56	8682	44.65	10633	45.87	13607	47.78	14003	45.36	10312	39.61
9. Salaries & Wages (included in the fixed expenses)	4773	34.01	5494	37.87	5815	37.36	6541	38.96	7371	37.91	8915	38.46	9754	34.25	9941	32.20	10720	41.18
10.Value added (3-8)	8639		9001		8967		9979		10761		12547		14873		16870		15722	

NOTE: (i) % indicatess percentages to value of production.

(ii) Turnover includes sales (excluding E.D) transfers to plant, Jobs done for internal use and export incentive.

(iii) Variable expenses include expenses relating to materials, Power & Fuel, Water & Electricity, Rebate on Sales, Advertising and Pulbicity, Sole Selling and Other Agent's Commission.

(iv) Fixed expenses include Personnel Costs, Other expenses (other than considered as variable), Interest and Depreciation.

(v) Net profit/loss represents difference between contribution and fixed expenses plus Excise Duty on sales, other income (excluding servicing income) and plus/minus Inter Unit Adjustments.