REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA

UNION GOVERNMENT
No. 7 (COMMERCIAL) OF 1995

INSTRUMENTATION LIMITED

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 Instrumentation Limited Kota 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 1st July 92 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 to 20th March 1995
4.Shri Kanwal Nath	Principal Director of Commercial Audit and Ex-Officio MAB-III, New Delhi.
5.Shri S.B.Pillay	Principal Director of Commercial Audit and Ex-Officio Member,Audit Board, Madras.
6.Shri K.S.Menon	Principal Director (Commercial) and Member Secretary, Audit Board from 2nd July,1990 to 1st August,1993.
7.Shri R.Chandramouli	Asstt.Comptroller and Auditor General(Comml. and Secretary,Audit Board from 2nd August,1993 till date.

8.Dr. Prem Vrat Part time Member	Professor of Industrial Engineering, IIT New Delhi.
9.Shri C.Prasad IRSSE Part time Member	Divisional Railway Manager South Central Railway Secunderabad

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 Ministry of Industry on 21st 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

I. Instrumentation Limited was set up in 1964 with the main objective of establishing self reliance in the field of instrumentation. The Company's share of the Control & Instrumentation (C&I) systems requirements of the country which was 70 per cent in 1980, came down to 23.5 per cent in 1992-93.

(Para 1)

II. The post of Director (Finance) remained vacant for 14 months in 1987, 1988 and again for 21 months in 1991, 1992 and 1993. Other key posts also remained vacant for long periods.

(Para 3)

III. In the absence of generation of internal resources, the Company had to resort to intensive borrowings; the interest burden increased from Rs.638.16 lakhs in 1987-88 to Rs. 2371.76 lakhs in 1992-93. The Company defaulted in repayment of principal (Rs. 259.78 lakhs) and interest (Rs.258.28 lakhs) in respect of Government loans during 1991-92 & 1992-93 and became liable to pay penal interest of Rs. 48·22 lakhs.

The Company also had to pay penal interest amounting to Rs. 146.63 lakhs for overdrawal beyond the sanctioned cash credit limit.

(Paras 4(i) and 4(ii)

IV The Company's failure to anticipate the trends in market, growth of competition, Government policies etc., resulted in business going away to competitors.

(Para 5.2)

V. Due to delay in selection of appropriate technology/collaborators, the Company could not take up schemes amounting to Rs. 11.90 crores, out of the sanctioned outlay of Rs.36.35 crores for Seventh Five Year Plan. The actual utilisation of funds against sanctioned outlay worked out to only 49 per cent.

(Para 6.2)

VI.(i) There was short fall in production of almost the complete product range as compared to installed capacity. The bulk of production activities were carried out in the last quarter of each financial year.

(Paras 7.1 & 7.2)

VI.(ii) In the case of Kota Unit the percentage of idle hours for machine utilisation due to other reasons ranged between 30 and 39. No detailed analysis of idle hours due to other reasons was made by the Management.

(Para 7.3)

VII.(i) Failure of the Company to complete the supply, erection and commissioning of turnkey projects on schedule resulted in withholding of funds by the customers; Rs. 156.90 lakhs towards liquidated damages and Rs. 376.62 lakhs for other reasons as on 31st March 1993.

(Para 8.2)

The Company incurred an extra expenditure of Rs. 38.71 lakhs because it undertook to arrange import licences for computer based systems in contravention of Government policy under which only the actual user could apply for import licence.

(Paras 8.2.2 & 8.2.3.)

Delays in obtaining import licences coupled with prolonged period taken in completing the manufacture and supply of 3 analog control systems for Captive Power Plant for Vizag Steel Project resulted in an extra expenditure, of Rs. 103 lakhs.

(Para 8.2.5)

The Company had to absorb an expenditure of Rs.90.88 lakhs because of delay in supply of various C&I equipment to NTPC (Dadri Project).

(Para 8.2.6)

VII(ii) The physical exports turnover of the Company which increased from Rs.15.23 lakhs in 1988-89 to Rs.793.51 lakhs in 1989-90 sharply declined to Rs. 109 lakhs in 1991-92 and again marginally increased to Rs.150.89 lakhs in 1992-93.

(Para 8.3)

(VII)(iii) In 1992-93 sundry debtors amounted to 56 per cent of the sales.

(Para 8.4)

VIII. A consignment of Distributed Digital Control System for Madras Refineries Limited was air lifted on grounds of urgency at an additional cost of Rs. 22.45 lakhs but the purpose was defeated because the forwarding agent booked the consignment through 15 different flights over a period of 15 months.

(Para 9.2)

IX. The inventory level of Rs.3005.44 lakhs in 1987-88 which substantially increased to 5852.30 lakhs in 1991-92 has come down to Rs. 5559.57 lakhs in 1992-93. The Company had written off inventory items amounting to Rs.1157.07 lakhs mainly on account of obsolescence and cancellation of orders by the customers during the period from 1982-83 to 1990-91.

(Para 9.3.1)

X. The profits gradually decreased from Rs.302.34 lakhs in 1987-88 to 51.34 lakhs in 1989-90 and the Company incurred losses i.e. Rs.622.55 lakhs in 1990-91, Rs.1791.54 lakhs in 1991-92 and Rs. 1295.72 lakhs in 1992-93. The net worth per rupee of paid up capital declined from Rs. 2.17 in 1987-88 to Re. 0.31 in 1992-93.

(Paras 10.1 and 10.3)

XI. In the absence of predetermined norms for labour, the costing system is not catering to the analysis of labour productivity.

(Para 11.1)

XII. Inspite of the deteriorating production performance and financial position of the Company no critical appraisal of systems and operational procedures was done by Internal Audit.

(Para 12.2)

XIII. The Company has a surplus of over 1500 employees on which it incurs an expenditure of Rs. 1438.80 lakhs per annum. It introduced the Voluntary Retirement Scheme in February 1991. Only 262 employees have taken voluntary retirement upto 30th November 1993.

(Para 13.2)

XIV. Actual expenditure of R&D was generally less than two per cent of annual turnover.

(Para 14.2)

XV.(i) Production by Rajasthan Electronics and Instruments Limited (REIL) - a subsidiary of the Company showed that the entire product range was less than the licenced capacity (except in 1987-89 for solar photo voltaic systems).

(Para 16.2)

XV.(ii) Percentage of profit after tax to net worth which was 32.35% in 1987-89 came down to 8.95% by 1992-93.

(Para 16.4)

TABLE OF CONTENTS

CHAPTER - 1

INTRODUCTION

To serve as an indigenous source for supply of control and instrumentation systems to core industry viz., power, steel, oil & gas, refineries, petro-chemicals and chemicals, the Government set-up Instrumentation Limited (IL) as a wholly owned Central Government Company on 21st March, 1964.

The Kota Plant of the Company commenced with production of Control and Instrumentation (C&I) Systems comprising of temperature transmitters, magnetic & electro-magnetic instruments etc., in September, 1968. The production of hydraulic, pneumatic and mechanical instruments, was started at the Kota plant in 1967. The production of process control valves and allied items like valve positioners, actuators and accessories which formed an integral part of the control instruments was started in 1975 in the second plant at Palakkad. Apart from this, the manufacture of new and hi-tech products of C&I in electronics and allied areas viz., Contronic-3 (for power plant automation) and Distributed Digital Control (DDC) range (for the process industries) was undertaken in Digital Electronic Unit (DEU) setup in October, 1986 at Kota. In May, 1991 the manufacture of Uninterrupted Power Supply System (UPS) which started from CKD/SKD components at Kota in February, 1989, was shifted to the fourth manufacturing unit at Jaipur.

The Company has one subsidiary company namely Rajasthan Electronics and Instruments Limited, located at Jaipur, which was incorporated in June, 1981.

During the early stages Thermal Power Stations and Plants used analogue electronics instrumentation manufactured by the Company and process industries used pneumatic instruments supplied by the Company and a few private sector firms. Till the

mid-70s the Company contributed significantly to Indian industry with 60 per cent of the nation's power generation capacity being equipped with IL control systems; IL also supplied control automation systems including DDC systems to most of steel plants of the country.

During the late 70s and early 80s, a number of licences were issued to both public and private sector companies which resulted in competition and sharing of the market. As a result the Company's share in the total C&I systems requirement for country as a whole, which was about 70 per cent in early 1980, came down to 23.5 per cent in 1992-93 as shown below:-

(RS.in crores)

Year	Estimated C&I market in the Country	C&I being imported with projects	C&I market for Indian suppliers	IL Share of C&I market *	Percentage of IL share to total C&I
1990-91	360	30	330	108.06	32.7
1991-92	400	40	360	86.01	23.9
1992-93	450	45	405	95.08	23.5

* Excludes orders booked for Telecommunication & Defence products.

Owing to substantial losses of Rs.16.67 crores and Rs.11.60 crores incurred by the Company during the years 1991-92 and 1992-93 respectively and net worth becoming negative, the Company has become a sick company under Section 3(i) (0) of the Sick Industrial Companies (Special provision) Act 1985 (SICA). Accordingly, an application was made (October 1993) to the Board for Industrial and Financial Reconstruction (BIFR) for its rehabilitation. BIFR has declared (January 1994) the Company a sick company.

The working of the Company was last reviewed by the Comptroller and Auditor General of India and results included in the Report of the Comptroller and Auditor General of India Central Government (Commercial) part-V for the year 1969-70. The present report deals with the activities of the Company from 1987-88 to 1992-93.

CHAPTER - 2

OBJECTIVES

The Company was set up with the main objective of establishing self-reliance in the field of instrumentation in the country.

In pursuance of Government instructions that the public enterprises should frame their micro objectives consistent with the broad objectives spelt out in the Industrial Policy Statement of December, 1977, the Company formulated its micro objectives and forwarded them to the Ministry in April, 1980; the Ministry's approval had not been received (February, 1994).

The Ministry stated (February, 1994) that the relevant records seeking Government approval to micro-objectives were not traceable and this approval now did not seem to be necessary since the aims and objectives of the Company were being covered and monitored through the Memorandum of Understanding (MOU). It may be mentioned, however, that MOUs covered only a one year span at a time and were not sufficient to define a Company's general direction, especially technologically.

The micro objectives, inter-alia included:

- long range planning, product updating, diversification, appropriate product mix;
- remaining abreast with the latest developments in the world in order to meet the requirements of both domestic and export markets;
- co-operation and collaboration with all major educational and research institutions to derive maximum benefit in C&I field in addition to in-house R&D efforts;

- generation of internal resources for updating the technology, expansions and diversifications;

Analysis made in the subsequent chapters would indicate that by and large, the Company has not achieved its objectives of long range planning, remaining abreast with the latest developments in the world, and generation of internal resources for updating the technologies, expansion and diversification.

The Company contended (March 1994) that C&I industry was a derived demand and so it has to make plans commensurate with the country's Five Year Plans; therefore long term corporate plans of 10-15 year duration would not be realistic. It was also contended that the Company kept pace with the market demand and users readiness to accept the new hi-tech and there was generation of funds from internal resources.

CHAPTER - 3

ORGANISATIONAL SET UP

The affairs of the Company are managed by a Board of Directors headed by a Chairman-cum-Managing Director (CMD). The executive and administrative functions of the Company are vested in CMD, who is assisted by three functional Directors viz., Director (Production), Director (Finance), Director (Commercial), and two executive directors. In addition, there are six General Managers (four for manufacturing Units, one each for Commercial, and Marketing) and a Company Secretary.

The post of Director (Finance) remained vacant from 4th July, 1987 to 14th September, 1988 (14 months) and again from September, 1991 to 24th June, 1993 (21 months). The post of Director (Production) also remained vacant from 1st February, 1993 to 27th September, 1993 (7 months).

The posts, of ED Palakkad, and GMs (Corporate Planning, R&D and Finance) were also vacant from 1992. The Management stated (March, 1994) that in view of the present business environment and the fact that the Company had been referred to BIFR, the post of ED (Palakkad) would not be filled up till the revival of the Company. Similarly the post of GM (CP) had also been surrendered and corporate planning was presently headed by a Deputy GM; the functions of G.M. (Finance) and G.M. (R&D) were presently looked after by AGM (F&A) and AGM (R&D) respectively.

In addition to manufacturing units, the Company has four marketing branch offices (at Delhi, Madras, Calcutta and Bombay), four regional offices (at Secunderabad, Calcutta, Bokaro and Unchahar) and fifteen site offices. The branch and regional offices are headed by Branch Managers and Regional Managers respectively.

CHAPTER - 4

CAPITAL STRUCTURE

(i) The authorised and paid-up capital of the Company were Rs.25 crores and Rs.19.67 crores respectively as on 31st March, 1993 and the paid up capital was wholly subscribed by the Government of India. The Company had also obtained long term loans from the Government from time to time for meeting its planned expenditure on various schemes and also working capital, loans from Public Sector Undertakings and others and public deposits. The outstanding balance of these borrowings was Rs.59.55 Crores as at the close of 1992-93 as shown below:

(Rupees in lakhs)

Particulars	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Borrowings						
1.Govt. of India	501.84	778.33	908.83	957.11	1147.47	1304.38
2.Inter Corporate Loans						
Maruti Udyogh	700.06	2000.00	2200.00	2378.57	2025.84	2025.85
NMDC	--	--	--	--	490.41	455.71
Pawan Hans	--	--	-	--	500.00	521.64
3.Others						
Public Deposit Scheme	847.61	960.08	1064.05	1071.22	589.26	604.54
AFGIS (Air Force Group Ins. Society)	---	--	--	--	418.50	418.50

(Rupees in lakhs)

Particulars	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
RIICO	--	--	--	--	86.64	107.69
IDBI/ Foreign Loan	-	--	--	--	204.65	427.03
IDBI/KSIOC-	--	--	--	--	90.00	90.00
Total	2049.51	3738.41	4172.88	4406.90	5552.77	5955.34
Equity Plus Reserves and Surpluses	2800.00	3060.43	3341.37	2899.19	2127.45	2193.51
Debt/ Equity Ratio	0.73:1	1.22:1	1.25:1	1.52:1	2.61:1	2.71:1

In this connection it was observed that:

(1) the outstanding balance of borrowings (excluding cash credit) increased from Rs.20.50 crores in 1987-88 to Rs.59.55 crores in 1992-93;

(2) the Company defaulted in repayment of principal (Rs.259.78 Lakhs) as well as interest (Rs.258.28 lakhs) in respect of Government loans during the years 1991-92 and 1992-93 as a result of which it became liable to pay penal interest of Rs. 48·22 lakhs. The Company approached (November, 1990) the Government for the grant of moratorium for Government loans, which was not agreed to (April, 1991) by the Government.

(3) In the absence of generation of internal resources, the Company, in order to meet its working capital requirements and for repayment of loans, had to resort to intensive borrowings. As a result the interest burden has increased from Rs. 638.16 lakhs in 1987-88 to Rs. 2371.76 lakhs in 1992-93. The debt-equity ratio of the Company which was 0.73:1 in1987-88 had sharply increased to 2.71:1 by 1992-93.

(ii) Overdrawal of funds from cash credit facility

In order to meet its working capital requirements, the Company obtained a cash credit facility from a consortium of five banks with State Bank of Bikaner and Jaipur as the lead bank. The cash credit limit was raised from Rs. 3400 lakhs to Rs. 4500 lakhs in July, 1991. As a result of continuous overdrawal beyond the sanctioned limit from April, 1990 onwards, the lead bank enhanced the rate of interest by one per cent over the normal rate of interest resulting in an extra expenditure of Rs. 91.84 lakhs (approx.) during the period from 1990-91 to 1992-93. Besides, the Company also paid penal interest amounting to Rs. 146.63 lakhs for the period from 1990-91 to 1992-93 (2.25 per cent over the enhanced rate) on account of overdrawal over the sanctioned limit. The Management stated (March 1994) that the post-Gulf war scenario led to economic force majeure conditions.

Considering the performance of the Company i.e. loss of Rs.16.67 Crores during the year 1991-92 and overdrawal of cash credit beyond the sanctioned limit the consortium of bankers desired the Company to undertake a viability study so that further course of action including revival package could be considered.

The Company engaged (January 1993) M/s A.F. Ferguson & Co., Bombay, to conduct a study of its operations and to identify the reasons for adverse performance and suggest a suitable package for revival of its operations. The consultants submitted their report on 18th February, 1994, which is under examination by the Management (March, 1994).

(iii) Financial assistance from Government

With a view to repay the amount drawn in excess of the cash credit limit and for payment of interest due on inter corporate loans/public deposits, the Company requested (March, 1992) the Government either to grant a non-plan loan of Rs.25 crores for a period of 7 years with a moratorium period of two years or to give a backup

guarantee to the financial institutions/mutual funds for raising the loan. The Ministry stated (February, 1994) that the matter would be processed further after the Company submitted projections for the performance expected to be achieved with the help of the guarantee. Non realisation of sizable dues from debtors and locking up of a large amounts in inventory, as described in succeeding paragraphs, also contributed to the deteriorating financial position of the Company. The Management stated (March, 1994) that all efforts were being made including the setting up of a Task Force for realisation of outstanding dues and reduction of inventory.

CHAPTER - 5

CORPORATE PLANNING

5.1 The Committee of Public Undertakings in their 72nd report (5th Lok Sabha) held that every enterprise would have to prepare a corporate plan which should clearly indicate its objectives, tasks, goals, programmes and techniques. The Company for the first time, formulated (December, 1984) a corporate plan for the period 1985 to 1990. This, however, was not sent to the Government, BPE and Planning Commission for approval. The Management stated (March, 1994) that the Company had been submitting complete projections for five year durations commensurate with the country's Five Year Plans since November 1981. The Management referred to such projections as its Corporate Plan. However, the projections prior to 1985-90 did not contain data relating to production/turnover growth, manpower growth, and profitability as contemplated in the Govt./Management letters of June, 1978.

The Corporate plan covering the Seventh Five Year Plan period approved by the Board of Directors envisaged investment of Rs. 57.14 crores (excluding Fluid Control Research Institute (FCRI) scheme); Government approved an outlay of Rs. 36.35 crores.

Inspite of specific instructions (November, 1985) of the then Secretary (PE) that the existing Corporate Plan be modified taking into account the allocation of funds, as this would have an impact on production as well as profitability for each of the years, the impact of the reduced outlay on production/profitability from time to time was not worked out by the Company.

Further, Inspite of the decision of the Management that corporate planning wing would ensure the preparation of feasibility reports to establish the viability of projects and to shelve the unviable projects, the corporate planning wing has neither been associated with the preparation of feasibility reports nor has it conducted any study to

identify the unviable projects. The Management stated (April, 1993) that corporate planning wing is rendering all assistance and guidance to the Project Manager and some products have not been taken up due to non-availability of funds or suitable Collaborators. It was noticed that individual Project Managers were, infact, putting up detailed project reports directly, without the increase in project cost, over and above the approved outlay being analysed.

5.2 The Administrative Staff College of India (ASCI), Hyderabad, engaged by the Company in June, 1976, had observed, inter-alia, that environmental audit which essentially included development of economic indices for growth of various process industries, Government policies, emerging trends in product ranges of leading international firms, expansion plans of competitors and inter-firm comparison of technical capabilities with other competitor firms was the back-bone of the Corporate Planing and should be taken care of while formulating long term/annual corporate plans. However, Corporate Planning wing failed to find out about the trends in the markets, growth of competition, Government policies etc., and to initiate timely remedial actions viz., development of new products either by in-house R&D or by new collaborations. This failure, coupled with the entry of new competitors who had a tendency to under cut prices to establish themselves in the market, resulted in business going away to competitors between 1979-80 and 1981-82.

5.3. Government constituted an inter-departmental Task Force in July, 1979 to examine the performance of the Company in relation to the various tasks assigned to it, indigenisation programme and updating of technologies to study its system engineering, manpower requirements, corporate strategies etc., and to recommend measures to be undertaken by the Company to make itself self-reliant in the C&I industry and also to generate export business. The Task Force was to submit its Report to the Ministry of Industry by 15th September, 1979. However, no report containing the final recommendations of the Task Force with regard to the deficiencies and gaps in the product

range and corporate strategies etc., has been forwarded to the Company to initiate the measures for improving the working of the Company.

5.4. Task Force - Constituted by the Company

In view of the urgency for entering into new areas of technologies so that growth of the Company was not hampered, the then CMD constituted (January, 1981) a Task Force, with GM (Marketing) as Chairman for the finalisation of diversification schemes. The Task Force was to complete the assignment by October, 1981. However, not even a single meeting of this Task Force took place till October, 1981. The Government, based on the Company's request permitted (May 1982) the Company to diversify into new areas where utilisation of capital assets could be more optimal and diversification cost effective. The Company, Inspite of an urgent need to take quick decisions on diversification proposals, could finalise the modernisation/diversification schemes only in December, 1984. The absence of a monitoring system in corporate planning resulted in delay in selection/implementation of diversification schemes.

5.5. Non-implementation of Management's decision

The Company, again with a view to strengthen the working of its Central Corporate Planning, decided (April, 1984) that the functioning of Corporate Planning of BHEL, NTPC, ONGC be examined so that the Company's Corporate Planning wing could be organised in the same manner. The Management stated (March, 1994) that matter was taken up with BHEL, NTPC, ONGC etc., but these enterprises had not responded to the Company's requirements.

5.6. Implementation of Corporate Plans

The table below indicates the growth rate of actual turnover achieved by the Company for the six years ended 1992-93:

Year	Sales (including other services (Rupees in lakhs)	Actual Growth rate in percentage
1987-88	8621.12	19.2%
1988-89	10083.53	17.0%
1989-90	10255.66	1.7%
1990-91	12401.39	20.9%
1991-92	12720.69	2.6%
1992-93	14825.55	16.6%

It would be seen that the growth in turnover was very low during the years 1989-90 and 1991-92.

5.7 Memorandum of Understanding

The Company has, for the first time, signed a MOU with the Department of Heavy Industry, Government of India, for the year 1991-92 on 21st October, 1991. The MOU for the year 1992-93 was signed with the Government on 6th June, 1992.

The table below indicates that the targets envisaged in MOU for the year 1991-92 and 1992-93 were largely not achieved:

(Rs. in lakhs)

Particulars	Targets	Actuals	Targets	Actuals
		1991-92		1992-93
1. (a) Turnover (Rs. in lakhs)	13600	12721	15400	14826
(b) Exports (in Million US $)	7.50	6.8	7.50	3.07
2. Gross Margin (Rs. in lakhs)	1845	533	1602	1206
3. Debtors (including retention money) in terms of days turn-over)	210	236	178	197
4. Inventory (in terms of no. of days turnover)	135	168	128	137
5. Technology absorption (a) FE Outgoing (Million US $) on Collaboration	17.00	13.4	16.5	7.83
(b) Production through Research & Development. (Rs. in lakhs)	850.00	976.86	900	970

CHAPTER - 6

IMPLEMENTATION OF DIVERSIFICATION SCHEMES

6.1 Upto the Fifth Five Year Plan period, the Company had a monopoly in C&I and its total investment was only Rs. 12.53 crores. In the late 1970s and early 1980s, a number of licences were issued to both Public and Private Sector Companies, which resulted in competition and sharing of the market. Imports were heavy due to low volume of requirement, tailor-made specifications and non-availability of professional grade components in the country. Reduction in selling prices and increase in input costs led to erosion of margin of profit and reduced generation of internal resources. Indian instrumentation was predominantly pneumatic for process plants and electronic analogue for thermal power and partly steel etc., whereas the developed world had suddenly switched over to micro-processor based systems and distributed digital control system during the Sixth Five Year Plan period. However, there were delays on the part of the Company in keeping pace with the developed world and introducing the latest technologies.

The Management stated (April, 1993) that making a plan and submitting it to Government is one issue but implementation depends upon (a) sanction from Government (b) availability of a suitable collaborator (c) availability of funds and (d) market demand.

It was seen, however, that schemes were included in the Five Year Plan proposals without identification of likely collaborator and delays occurred because no action was taken for implementation of schemes till all clearances had been obtained.

6.2 Delay in Implementation

(I) Since competition from the private and public sector C&I system manufacturers had led to stagnation in the output of the Company, Corporate Plan for implementation of various schemes during Seventh Five Year Plan period were prepared with a stress on

diversification. Out of the reduced outlay of Rs.36.35 crores approved by Government for the Seventh Five Year Plan, five schemes accounting for an outlay of Rs. 11.90 crores could not be taken up during the Plan period. Out of the balance of Rs. 24.45 crores, Rs. 18.29 crores were got released and of this, only Rs.17.83 crores were spent on the various schemes, upto 31st March 1990. The actual utilisation of funds against the total sanctioned outlay for various diversification schemes during the Seventh Five Year Plan, therefore, worked out to only 49 per cent.

The Management stated (March, 1994) that Annual Plans had to be revised from time to time due to non-generation of internal resources, non-availability of suitable collaborators and lack of market demand for some products and thus the Company utilised all the funds made available to it as per revised requirements. However, the fact remains that the Company could not implement the schemes as envisaged in the sanctioned outlay of the Seventh Five Year Plan.

Projections in the Eighth Five Year Plan envisaged an outlay of Rs. 63.50 crores which included Rs.25 crores for diversification in communication systems. However, as a result of delay in the approval of Eighth Five Year Plan proposals, there was a plan holiday for the years 1990-91 and 1991-92. The actual expenditure in the implementation of various schemes during the years 1990-91 and 1991-92 was only Rs. 3.28 crores and Rs. 3.33 crores against the approved annual plan outlays of Rs. 8 crores and Rs. 6.50 crores respectively. Apart from this, the actual expenditure for the year 1992-93 (i.e. the first year of the Eighth Five Year Plan) was only Rs. 2.95 Crores against the approved Annual Plan outlay of Rs. 11.70 crores.

Due to lack of adequate budgetary support from the Government and lack of internal resources, the Company concentrated mainly on ongoing schemes and no action was taken towards modernisation of manufacturing units/new schemes.

One of the problems faced by the Company was to identify the technological gaps and the inputs required to absorb, adopt and upgrade the technology. There were long

delays in the selection of appropriate technology/collaborator coupled with delay in implementation of the schemes. Cost over-runs in various schemes taken up during the Eighth Five Year Plan are indicated in Annexure-I. Inordinate delays in preparation of the DPRs for new schemes coupled with slow progress in their implementation resulted in cost over-run ranging from Rs.3 lakhs to Rs. 174 lakhs in implementation of some of the schemes.

The Management stated (March, 1994) that cost over-runs were mainly due to foreign exchange appreciation against the rupee which could not be envisaged at the time of finalising collaboration.

(II) Even though the Management was aware that the rate of obsolescence in C&I was extremely high and the life span of generation of instruments was not more than three to five years, there were inordinate delays in the selection/adoption of appropriate latest technologies by the Company with reference to the adoption of such technologies by its competitors as per details given below:

S.No.	Name of Competitors	Product	Month & Year of adopting technology by competitors	Product of same technology. adopted by IL	Month and year of agreement	Period of delay
1	2	3	4	5	6	7
(1)	Keltron	ACS-9020 Bailey France	July 1978	Contronic-3	1980	18 Months
(2)	Rosemonnt (I) Ltd.	Electronic Transmitters	1982	Fuji Electronic Transmitters	May 1985	28 Months
(3)	Keltron	UPS	1982	Fuji UPS	October 1987	57 Months
(4)	Yokogawa Blue Star	Centum	February 1984	Tosdic August 1986	29	Months

1	2	3	4	5	6	7
(5)	Keltron Yokogawa Blue Star	HIACS-3000 Centum	December 1985 February 1984	Contronic-E	December 1989 do	47 Months 69 Months
(6)	Uptron Ltd.	Micro processor based Recorders & Indicators (Leeds & North Co. USA)	July 1985	BBK Micro processor recorders & controllers	January 1988	30 Months

It would be seen that delays on the part of the Company in the introduction of the latest technologies with reference to its competitors ranged from 18 months to 69 months. The Management stated (March, 1994) that collaboration agreements call for heavy investment, therefore, it was necessary to assess the market demand and share available to the Company and new technologies were introduced when it was felt absolutely necessary to go in for them.

However, the fact remains that due to delays in the selection of appropriate technologies, the Company could not maintain its lead over its competitors .

Two cases are dealt with in the succeeding paragraphs.

(1) DDC system for Power Industry

To update its product range, the Company entered into a collaboration agreement with Hartmann & Braun (H&B), West Germany in December, 1989 for technology transfer documentation for Contronic-E system (DDC - system) for Power industry. A lump sum fee of 1.7 million DM was to be paid to M/s H&B for the technology transfer documentation. The first instalment of Rs. 60.83 lakhs was paid in September, 1990. Even though the foreign collaborator M/s. H&B had already supplied a major part of the system engineering documentation for manufacturing work in January, 1991 and Rs. 162.45 lakhs being the amount of second, third and fourth instalments of

know-how fee had also become payable to M/s. H&B, the Company had not prepared the feasibility report for the implementation of the scheme (May, 1993). The Management stated (March, 1994) that due to introduction of trade reforms and liberalisation by the Government in July, 1991, the investment in power generation drastically reduced and further investment would be reviewed after crystallisation of the business scenario which was very fluid at that time.

As the foreign collaborator had already fulfilled all his obligations the inordinate delay in the implementation of project would result in cost over-run.

(2) Fault Tolerant Control Systems

The Company entered into a collaboration agreement with M/s. August Systems UK in September, 1989 for the manufacture of Fault Tolerant Control Systems (FTCS). The lump sum fee payable to the foreign collaborator was Pounds sterling 200,000 payable in 5 equal instalments of Pounds sterling 40,000 each. The foreign collaboration agreement was approved by the Government in February, 1990. As a result the first instalment of know-how fee of Pounds sterling 40,000 (Rs. 13 lakhs) after adjusting 30 per cent towards income tax was released to the foreign collaborator in June, 1990. The foreign collaborator, in September, 1990, despatched the technology transfer documentation for FTCS. As a result, the payment of the second instalment of Pounds sterling 40,000 also become payable to the foreign collaborator. However, the Company inspite of the expiry of a period of more than 4 & 1/2 years had not started the implementation of this scheme so far (March, 1994). The detailed project report for the FTCS had also neither been prepared nor got approved from the Board of Directors.

The Management stated (March, 1994) that considering the changing business scenario, a hold was put on seeking the balance of the know-how from the collaborators till such time the business scenario improves in respect of triple redundant fault controllers.

6.3 Absence of Joint Ventures facility

Because of the policy of permitting joint ventures with their respective multinational foreign collaborator firms, various competitors of the Company in the private sector such as Rosemount (India) Ltd., Taylors, Yokogawa-Keonics, Tata - Honeywell, and Siemens (India) Limited etc., were placed in an advantageous position as there was continuous updation of their product range. On the other hand, the Company was in a disadvantageous position since it had only technology transfer arrangements with the various foreign collaborators under which the advantage of continuous updation of product was not available. The Company approached (August, 1991) the Government for allowing it to have joint ventures with their respective foreign collaborators. The Ministry stated (February, 1994) that as the proposal sent by the Company was not for a specific joint venture, the Company was advised to send specific details as and when finalised.

CHAPTER - 7

PRODUCTION PERFORMANCE

7.1 Under-utilisation of Capacity

The installed capacity vis-a-vis the actual achievement there against in respect of various products manufactured by the Company for the last six years upto 1992-93 are given in **Annexure-II**.

There was shortfall in the production of almost the entire product range as compared to installed capacity. Non-utilisation of the optimum capacities was mainly due to the following reasons:

(i) Delay in absorption of imported technology and fast technological obsolescence;

(ii) Shortage/non-availability of quality components and consequently more dependence on imported components;

iii) Noticeable shortfall in demand for pneumatic range of instrumentation due to the fact that industries like fertiliser, chemicals, refineries etc., which were using pneumatic range of instruments started using electronic systems for monitoring and control;

(iv) Shortfall in the case of safety relief valves, mainly on account of non-standardisation of this product by any of the international certifying agencies.

The Management stated (March, 1994) that in the C&I industry which involves assembly of instruments from various components, purchased and manufactured, the concept of installed capacity is rather vague because changes in product mix can be incorporated by addition of limited dedicated manufacturing and testing equipments.

Figures of installed capacities have not been revised even though the product mix has been changed. However, the fact remains that the existing installed capacities remained under utilised due to paucity of orders.

In August 1990, Government asked Public Sector Undertakings to formulate action plans highlighting not only the profitability but also other factors like capacity utilisation, improving productivity, reducing cost of production and making the product internationally competitive. It was specifically mentioned that the last criterion, namely, international competitiveness should be given special importance so as to enable Public Sector Undertakings to export their products. The Action Plan was to be submitted to the Standing Committee of Secretaries and Chief Executives of Public Sector Undertakings, constituted to review such Action Plans.

No Action Plan indicating the factors as contemplated in the Government letter of August, 1990 was prepared and sent to the Government (May, 1993).

7.2 Targets and Achievements

The product-wise targets fixed by the Company and achievements thereagainst for the last five years upto 1991-92, are given in **Annexure-III**.

The instances of major product where the actual production in terms of value was less than the original target in different years are tabulated below :

S.No.	Name of Products	Year of shortfall
1.	Miscellaneous and defence equipments	1987-88 to 1991-92
2.	Orifice plates/flow measuring devices	1987-88 to 1991-92
3.	Annunciators System & Sequence control system	1988-89 to 1991-92
4.	EPABX/RAX	1988-89, 1989-90 and 1991-92

5..	Uninterrupted Power Supply system	1989-90 to 1991-92
6.	Micro processor recorder	1989-90 to 1991-92
7.	Railway signaling	1989-90 to 1991-92
8.	Contronic-3	1989-90 to 1991-92
9.	Instruments for Temperature measurement	1987-88 and 1988-89
10.	Electronic range of Instruments	1987-88 and 1991-92
11.	Pneumatic range of Instruments	1987-88 and 1988-89
12.	Miscellaneous items and accessories	1988-89 and 1991-92
13.	Control Panels & Control Desks	1989-90 and 1990-91
14.	Process control valves	1988-89
15.	Safety relief valves	1988-89
16.	Gas analysers	1987-88
17.	Distributed Digital Control (Process Industry)	1991-92

The shortfall in production as compared to targets was attributable to the following factors:

1. prolonged delay in supply of material by the foreign collaborators;

2. delay in customs clearance and despatch of materials from the port;

3. delay in placement of orders on foreign as well as indigenous suppliers;.

4. delay in finalisation of specifications; and

5. delay in loading of production programmes

The Management stated (March, 1994) that in addition to the aforesaid reasons for shortfall the following reasons were also relevant:

1989-90

(i) This was the first full year of production of UPS and hence teething problems existed.

(ii) Shortfall in Railways Relays was on account of it being the first year of production and non-receipt of orders. Short-fall of EPABX was attributed to its being at the establishment stage

(iii) Due to disturbed conditions in Kota for considerably long time the production was affected.

1991-92

(i) Due to change in Govt. policies and restrictions by the banks the opening of LCs for imported components was delayed.

(ii) Due to delayed bulk clearance by Defence Authorities.

(iii) Target of Telecom production was set ambitiously high and there was paucity of orders.

The analysis of the production performance of the Company further revealed that bulk of production activities were carried out in the last quarter of each financial year as compared to the production activities for the first three quarters of each financial year.

The table below compares the cost of production during the first three quarters with that in the last quarter for six years upto 1992-93:

(Rs. in lakhs)

Year	Cost of production		Total cost of production	Percentage of cost of production during last quarter to total cost of production
	during first three qtrs.	during the last qtrs.		
1987-88	2572	1663	4235	39.3
1988-89	5335	3977	9312	42.7
1989-90	4903	5344	10247	52.1
1990-91	6086	5902	11988	49.2
1991-92	6040	5658	11698	48.4
1992-93	7541	6093	13634	44.7

The Management stated (March, 1994) that bulk of the production was being done during the last quarter on account of (i) issue of import licence on annual basis, as a result of which the production used to be completed towards end of the year after the receipt of imported inputs and (ii) trend of receipt of orders.

7.3 Machine Utilisation

The following table indicates the extent of machine utilisation at Kota and Palakkad Units separately alongwith analysis of idle hours for the six years upto 1992-93:

(Hours in Nos)

Year	Total Available Hours	Hours Utilised	Idle Hours		Percentage of Idle Hours	
			Due to Machine Break Down	Due to other Reasons	Due to Machine Breakdown	Due to Other Reasons
KOTA UNIT						
1987-88	643617	420667	20943	202007	3.3	31.4
1988-89	651816	413575	36456	201785	5.6	31.0
1989-90	629208	410931	28231	190046	4.5	30.2
1990-91	604707	371351	18948	214408	3.1	35.5
1991-92	609403	370599	20107	218697	3.1	35.9
1992-93	601206	355330	12153	233723	2,2	38.8
PALAKKAD UNIT						
1987-88	283861	277189	717	5955	0.3	2.2
1988-89	127222	122450	367	4405	0.3	3.5
1989-90	245536	239828	480	5228	0.2	2.1
1990-91	248636	241440	1273	5923	0.5	2.4
1991-92	254368	246737	1175	6456	0.5	2.5
1992-93	243776	234513	1200	8063*	0.5	3.3

*Includes idle hours of 5120 due to lock out.

In the case of Kota Unit no detailed analysis of idle hours due to other reasons was made. The idle hours due to machine break-down were mostly on account of:

(i) Non-availability of operators because of leave/absenteeism;

(ii) Power failure; and

(iii) Insufficient loading of production programmes.

The Management stated (June 1993) that due to change in product mix these machines were fully surplus to their requirements. It added (March 1994) that during the period from 1991-94 (upto January 1994) surplus machinery amounting to Rs. 21.48 lakhs had been disposed off.

CHAPTER - 8

PRICING POLICY AND SALES PERFORMANCE

8.1 Pricing Policy

The prices of products of the Company by and large, were fixed according to market trends. The Company had not laid down any procedure for fixing sale prices and a flexible system was allowed in overall sale prices for turnkey projects. For indigenous and imported bought-out items, sale prices were arrived at by adding a profit margin of 5 to 10 per cent on the total cost price to the Company. Erection and commissioning charges were quoted depending upon the quantum of job, facilities being provided by the customers at site, proximity of site, project schedule and competitors' prices etc. For deemed export projects, the Company was to compete with the domestic suppliers as well as international companies and the sale prices were decided keeping in view the export incentives available to the Company.

8.2 Sales Performance

8.2.1 The Company could not keep pace with its competitors in bringing the latest technologies into its product range, and as a result the Company lost a substantial share of the market in the power and industrial sectors.

The table below indicates the overall percentages of the market share of the Company's major products (excluding supplies for power/steel sector projects) vis a vis share of its competitors for the three years ended 1992-93:

(Figures in Percentage)

Name of Firms	1990-91	1991-92	1992-93
(a)	**Control Valve**		
IL	73	67	62
Fouress	6	7	10
Masoneilan	14	15	15
Others	7	11	13
(b)	**Gas Analysers**		
IL	31	28	20
Rosemount	35	34	37
LGB	10	8	7
Others	24	30	36
(c)	**DDC-System for process industry**		
IL	13	7	6
Yokogava	30	44	45
Tata Honeywell	20	22	35
Others	37	27	14
(d)	**FC Series Transmitters**		
IL	26	28	30
Rosemount	40	36	40
Taylor	18	20	8
Others	16	16	22
(e)	**Uninterrupted Power Supply (UPS)**		
IL	11	5	5
NELCO	50	35	60
D.B. Elects	5	11	10
Others	34	49	25
(f)	**Micro Processor Recorders/Controllers**		
IL	15	12	6
Laxon	37	35	40
Yokogawa	15	16	20
Others	33	37	34

It would be seen that the Company's share in the market for DDC System, UPS and Micro Processor Recorders/Controllers was only upto 6 percent and in the cases of control valves and Gas analysers its shares which were 73 and 31 percent in 1990-91 had come down to 62 and 20 percent respectively in the year 1992-93. Except for FC series transmitters there was a declining trend in the entire product range. The Management stated (March, 1994) that due to liberalisation of licensing policy new entrants entered the domestic market with very attractive entry price to gain the market share. These companies being very young as compared to IL were able to offer attractive prices because of low over-heads. However, the Company was also gearing up to meet competition by reducing manpower, and costs, and improving operational efficiency.

Delay in the completion of orders for different turn key projects, led to the customers withholding upto 5 percent of the value of orders towards liquidated damages as per terms of the supply orders. Besides liquidated damages, the customers withheld payments of the bills raised by the Company not covered as per terms and conditions of the supply orders. This resulted in blockage of funds amounting Rs.533.52 lakhs (Rs. 156.90 lakhs on account of liquidated damages lakhs and Rs. 376.62 lakhs for other reasons) as on 31st March, 1993. Further the Company had to incur loss on belated supply of imported systems as customers in the cases of fixed rate contracts either refused to accept exchange rate variations (ERV) or agreed to ERV only upto the contracted date of delivery. Some of the instances noticed during test check of records have been dealt with in the succeeding paragraphs.

8.2.2 Supply of process training simulator system to Madras Refineries Limited (MRL) Madras

In June, 1987 MRL placed a detailed purchase order on the Company for the supply of Process Training Simulator. The final cost agreed to was Rs.81.69 lakhs. The order was on a firm price of Rs 81.69 lakhs with delivery scheduled for December, 1987. The main system was to be imported from USA. MRL did not agree to an ERV

clause and advised the Company to obtain forward cover for the foreign exchange involved.

According to the Government's Computer Policy of November, 1984, only actual users could submit the application for import licence; yet the Company agreed (June, 1987) to arrange for the import licence. However, the Company's application was rejected and a subsequent application by MRL was also rejected by the Deptt. of Electronics on the plea that the Company had no proper industrial licence and phase manufacturing programme and also no collaboration agreement was in existence for computer based simulator system at the time of submitting the application. Ultimately the import licence was issued to MRL by Government in October, 1988. The Company, without an import licence could not procure forward exchange cover, and incurred an expenditure of Rs.104.07 lakhs against which MRL paid only Rs.78.46 lakhs. The Company, therefore, had to bear the extra expenditure of Rs.25.61 lakhs because it undertook to obtain an import licence in contravention of Government policy. The Management stated (March, 1994) that the matter was still under negotiation with the customers and the Company hoped to get at least part payment.

8.2.3 Supply of Computer to Bharat Petroleum Corporation Limited (BPCL)

The Company made the same mistake in February, 1987 by undertaking the responsibility for arranging the import licence for supply of computer and computer interface equipments to BPCL. After efforts of over an year their application was rejected in March, 1988 by the Chief Controller of Imports & Exports (CCI&E). Subsequently CCI&E cleared BPCL's application within a month. In this case the Company had to bear an extra expenditure of Rs.13.10 lakhs towards ERV. The Management stated (June, 1993) that the extra expenditure incurred on this order had been amply compensated in subsequent orders. In this case also, had the Company, keeping in view the then existing computer policy, not undertaken to procure the import licence, the extra expenditure could have been avoided.

8.2.4 Supply of Instrumentation and Control (I&C) System to Bhilai Steel Plant

Computer Maintenance Corporation Limited (CMC) placed an order on the Company in May, 1990 for LD Automation project at a firm price of Rs.155 lakhs . All the I&C systems were to be supplied by March, 1991. The Company failed to adhere to this date on account of delay on its part in obtaining the import licence, coupled with slow progress of work and non-finalisation of engineering design.

The Company's request for enhancement of the contract price by Rs.66 lakhs (November 1991), has not been accepted by CMC in the absence of back-up papers. (The amount is likely to increase further as supplies under the contract are yet to be completed). Even the Company's own Marketing Division pointed out that the claim was not viable because reputed competitors were ensuring better deliveries for technically compatible systems at 40 percent less cost. The Management stated (March, 1994) that due to considerable delays in supplies owing to the Gulf War, the customer was reluctant to consider escalation beyond March, 1991; however, the Company was still in close touch with the customer (March 1994).

8.2.5 Loss in the execution of C&I system for Captive Power Plant (CPP) for Vizag Steel Plant (VSP)

BHEL placed a letter of intent on the Company in November, 1983 for supply of C&I systems and released an interest free advance of Rs.106 lakhs in December, 1983 for timely completion of work. The firm order was placed for Rs 11 crores in June 1985. The import licence received in November, 1985 was for two analogue control systems (ACS) to be imported as completed items and for components for the remaining three systems to be imported from the foreign collaborator in semi-knocked down (SKD) condition. Instead of initiating action for the import of all the five sets of ACS together, (i.e. 2 ACS as completed items and 3 systems in SKD form) the Company placed the order for the import of only two systems which were supplied to CPP at Vizag. Manufacturing action for the remaining three systems was withheld because of an estimated increase in expenditure of Rs.111.08 lakhs on account of customs/excise duties and ERV. Supply of

the remaining 3 ACS was finally completed at a total cost Rs.327 lakhs (base price Rs.135 lakhs, and impact of ERV and custom duty Rs.192 lakhs). Of the additional cost on account of ERV of Rs.118 lakhs BHEL paid only Rs.15 lakhs. The inordinate delay in obtaining the imports and completing the manufacturing action for the supply of 3 ACS resulted in extra expenditure of Rs.103 lakhs (Rs.118 lakhs - Rs.15 lakhs) to the Company.

8.2.6 Supply of C&I Package for NTPC (Dadri)

The National Thermal Power Corporation Limited, (NTPC) placed (March, 1989) a letter of award (LOA) with the Company, for system design, manufacture and supply of equipments, shop testing, inspection etc., for four units of National Capital Power Project (4x210MW) at a firm price of Rs. 27.02 crores. The LOA provided that NTPC would reimburse ERV actually paid before or upto the scheduled or extended fob delivery dates.

There was delay in arranging the import licence and in supply of various C&I equipments to NTPC with reference to the extended delivery dates. As a result ERV to the extent of Rs.90.88 lakhs had to be borne by the Company.

8.3 Export Performance:

The Company established in April, 1983 the Export Division as a separate profit and accounting centre. The Company achieved a major break-through in exports during May, 1989 when it received a large export order worth Rs.1600 lakhs from USSR for the supply of Analogue Control System for a Refinery Project on turnkey basis. As a result the Company achieved good export turnover during 1989-90 and 1990-91, but it could not maintain the tempo of its exports in the subsequent years as is evident from the table given below:

(Rs. in lakhs)

Year	Total Target	Physical Exports	*Deemed Exports	Percentage of growth of Physical Exports	Deemed Exports
1987-88	1165.00	53.79	653.74	(-)56.0	(-)26.6
1988-89	1300.00	15.23	859.91	(-)71.7	31.5
1989-90	1550.00	793.51	962.67	5110.2	11.9
1990-91	1750.00	784.70	1433.20	(-)1.11	48.9
1991-92	1800.00	109.00	1751.80	(-)86.1	22.2
1992-93	1500.00	150.89	872.34	38.4	(-)50.2

*Deemed Export activities are dealt with by the commercial unit and Export Division is not involved in these projects.

The Management stated (March, 1994) that export of C&I products is subject to stiff competition from world renowned suppliers from USA, Japan and Europe. Further opportunities for direct export of C&I are limited as main equipments suppliers execute the project including supply of C&I equipments. Apart from this, instrumentation industry is not well developed in India and the Middle East, African and other countries have the impression that brands from developed world are superior in performance particularly for process plant. Not withstanding these factors, export offers for Rs. 54 crores were made to erstwhile USSR, Middle East and African countries during 1991-93 but the Company could get orders worth Rs.7.75 crores only.

8.4 Sundry Debtors

The following table indicates the sales made and the book debts outstanding at the year-end, during the six years ended 31st March 1993:

(Rs.in Lakhs)

Years	Book Debts		Total Debtors	Sales	Percent-age of book debts to sales	Debtors in terms of months' turnover
	Good	Doubtful				
1987-88	4561.18	118.54	4679.72	8621.12	54.3	6.5
1988-89	5181.83	145.94	5327.77	10083.53	52.8	6.3
1989-90	6894.62	189.85	7084.47	10255.66	69.1	8.3
1990-91	7758.64	196.33	7954.97	12401.39	64.1	7.7
1991-92	8212.07	206.61	8418.68	12720.69	66.2	7.9
1992-93	8139.12	210.51	8349.63	14825.55	56.3	6.7

The Management stated (March, 1994) that a vigorous drive had been launched to reduce the Sundry debtors and special attention was being given to old and disputed debts and that a Task Force comprising of Director (Production), Director (Fin.) and Director (Comm.) reviews the position every fortnight and monitors the progress.

CHAPTER - 9

MATERIAL MANAGEMENT AND INVENTORY CONTROL

9.1 Material Management

The Board of Directors delegated powers to the Chairman-cum-Managing Director (CMD) to incur expenditure on the purchase of raw materials, components etc., on the basis of the production programme. The CMD, who was also given the powers of sub-delegation, issued orders for sub-delegation of powers from time to time in respect of all the Units. The latest delegation of powers was issued on 23rd August, 1988.

Purchase procedure of the Company for indigenous purchases provides for open tenders for purchases more than Rs.15 lakhs. As regards import purchases, the Company has collaboration agreements with most of the foreign suppliers. Items to be imported from abroad are mostly proprietary items of the collaborators for which they provide price list and discount structure every year. For imports other than collaborators' products enquiries are floated.

9.2 Avoidable expenditure due to change ofmode of transportation from sea to air

For the purchase of Distributed Digital Control (DDC) system the Company called for quotations from its foreign collaborator on CIF Bombay sea freight basis. As a result of discussions in September, 1988, the foreign collaborator quoted 163.32 million Japanese Yen (Rs.193.86 lakhs).

Keeping in view the tight delivery schedule, airlifting of the consignment was proposed and the foreign procurement division of the Company enquired (February, 1989) from the foreign collaborator about the difference between sea and air freight. The foreign collaborator offered to reduce its rates by 2 *per cent* of total CIF value i.e., 3.27 million J Y (Rs 3.92 lakhs) in case the delivery clause was amended from CIF Bombay to FOB price basis. With a view to expedite delivery the competent authority approved the extra

expenditure on account of change of mode of transport from sea to air. However, the forwarding agent engaged by the Company instead of sending the entire consignment through one flight, despatched it through fifteen different flights spread over fifteen months from August 1989 to November 1990, thereby defeating the very purpose of change in mode of delivery from sea to air and involving an extra expenditure of Rs.22.45 lakhs towards air freight and higher rate of customs duty . The Management stated (May, 1994) that the mode of shipment was changed from sea to air not only for urgency of deliveries but also because of the delicate nature of items. At the time of getting approval from the competent authority, however, only the tight delivery schedule was indicated as the reason for the change of mode of transport from sea to air.

9.3 Inventory

9.3.1 The following table indicates comparative position of the inventory for the six years upto 1992-93:

(Rs. in lakhs)

Sl. No.	Description of Items	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
1.	Stores, Spares, Loose Tools and Implements	179.62	213.48	235.81	251.56	268.23	274.47
2.	A.Finished goods	512.16	463.85	523.01	618.61	672.76	563.96
	B.Completed Items	385.80	255.25	432.81	329.16	467.46	204.46
3.	Work-in-progress	271.79	413.17	644.38	1007.86	816.40	1034.40
4.	A.Raw Material	152.00	133.96	149.96	145.26	141.71	120.41
	B.Boughtout Components (incl. manufactured components)	1504.07	1479.58	1824.54	2858.88	3485.74	3361.87
Total inventory		3005.44	2959.29	3810.51	5211.33	5852.30	5559.57

(Rs. in lakhs) Sl. No.	Description of Items	1987-88	1988-89	1989-90	1990-91	1991-92	1992
	Stores, spares and loose tools consumed (Rs. in lakhs)	206.76	258.63	252.89	333.01	381.53	333.
	Stock of stores, spares and loose tools in terms of months' consumption	10.4	9.9	11.2	9.1	8.4	9.8
	Sales (including other services) (Rs. in lakhs)	8621.12	10083.53	10255.66	12401.39	12720.69	14825
	Finished Inventory in terms of months'sales	0.7	0.6	0.6	0.6	0.6	0.5
	Consumption of Completed Items (Rs.in lakhs)	2184.59	2843.30	2533.91	2484.63	2853.37	2424
	Stock of completed Items in terms of months' consumption	2.1	1.1	2.0	1.6	2.0	1.0
	Value of Production (Rs. in lakhs)	8702.07	10279.63	10665.71	13001.24	12830.31	15082
	Stock-in-process in terms of months' value of production	0.4	0.5	0.7	0.9	0.7	0.
	Consumption of Raw Materials (Rs. in lakhs)	81.72	91.81	114.93	120.91	129.07	83.

(Rs. in lakhs)

Sl. No.	Description of Items	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
	Stock of Raw Materials in terms of months' consumption	22.3	17.5	15.7	14.4	13.2	17.3
	Consumption of bought-out items (including own manufactured) (Rs. in lakhs)	2202.95	2430.29	3046.71	4274.36	3911.16	4966.27
	Stock of bought-out components (including own manufactured) in terms of months' consumption	8.2	7.3	7.2	8.0	10.7	8.1

It would be seen that :

i) the total inventory which increased from Rs.3005.44 lakhs in 1987-88 to Rs.5852.30 lakhs in 1991-92, has marginally come down to Rs.5559.57 lakhs in 1992-93

ii) The Stock of raw materials in terms of months' consumption had come down from 22.3 months in 1987-88 to 13.2 months in 1991-92 but has again increased to 17.3 months in 1992-93.

The Management stated (March, 1994) that the main factors responsible for abnormal increase in inventory during 1989-90 and 1990-91 were:

long procurement cycle for import from Japan due to statutory requirement of approval from Ministry of International Trade & Industry (MITI) Japan.

- addition of new products such as DDC, UPS resulting in additional inventory

- non availability of balancing items due to various restrictions.

Besides the Company during the period from 1982-83 to 1990-91 has written off/written down inventory items amounting to Rs.1157.07 lakhs. Analysis of inventory written off/written down revealed the following:

1) An amount of Rs.35.22 lakhs was written off due to non-receipt of orders. The action for the manufacture/procurement of materials was initiated by the Company on forecast basis, the orders for which did not materialise subsequently.

2) In the absence of a proper system of configuration of the basic instrumentation and inter-linkage of various components, procurement of materials was made, on forecast basis, in excess of requirements which resulted in accumulation of huge inventories amounting to Rs.606.38 lakhs, which subsequently as a result of obsolescence became surplus and had to be written off.

CHAPTER - 10

FINANCIAL POSITION AND WORKING RESULTS

10.1 Financial Position:

The table below summarises the financial position of the Company under broad headings for the last six years upto 1992-1993.

(Rs. in lakhs)

		1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Liabilities							
a)	Paid up capital	1277.53	1454.53	1692.03	1872.03	1967-03	1967.03
b)	Reserves & Surplus						
	i) Free reserves & surplus	1496.92	1584.81	1627.31	1003.77	130.97	123.97
	ii)Committed reserves	25.55	21.09	22.03	23.39	29.45	102.51
c)	Borrowing:						
	i) from financial Institns. and Banks	2596.57	1287.56	2958.90	4766.00	5735.79	6687.67
	ii)from Govt. of India	501.84	778.33	908.83	957.11	1013.11	1013.11
	iii)Public Deposits	847.55	958.60	1063.62	1070.68	588.14	595.65
	iv)Others	820.71	2045.98	2200.00	2100.00	3078.58	3078.58
d)	Current liabilities & provis.	4637.00	4641.39	4775.28	6272.62	7895.96	6459.91
		12203.67	12772.29	15248.00	18065.60	20439.03	20028.43

(Rs. in lakhs)

		1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Assets							
e)	Gross Block	2927.26	3444.03	3756.43	4092.23	4320.13	4825.18
f)	Less: Cumulative Depreciation	1428.18	1600.18	1817.62	2095.39	2399.04	2658.13
g)	Net Fixed Assets	1499.08	1843.85	1938.81	1996.84	1921.09	2167.05
h)	Cap. work-in-progress	128.28	124.13	243.70	221.06	298.68	396.39
i)	Current Assets	10544.32	10772.32	13033.50	15815.71	17218.62	15946.36
j)	Investments	31.99	31.99	31.99	31.99	41.49	32.23
k)	Deferred revenue expenditure	—	—	—	—	37.37	18.89
l)	Accumulated losses	—	—	—	—	921.78	1467.51
		12203.67	12772.29	15248.00	18065.60	20439.03	20028.43
	Capital employed (g+i-d)	7406.40	7974.78	10197.03	11539.93	11243.75	11653.50
	Net worth {a+b(i)-k-l}	2774.45	3039.34	3319.34	2875.80	1138.85	604.60
	Net worth per rupee of capital	2.17	2.09	1.96	1.54	0.58	0.31

It would be seen that the net worth per rupee of paid-up capital had steadily been decreasing year after year and has come down from Rs 2.17 per rupee in 1987-88 to Rs 0.31 per rupee in 1992-93 with a considerable drop in the last two years.

10.2 Sources & Utilisation of funds

The table given below indicates that the generation of funds from internal sources decreased year after year. In fact during the years 1990-91 to 1992-93 generation

of funds from internal sources was negative and external sources were utilised to off set the negative effect:

(Rupees in lakhs)

		1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
	Generation:						
A)	Internal sources						
i)	Funds from operations	165.55	83.42	43.44	–	—	–
ii)	Add depreci-ation	170.97	172.00	217.45	277.78	303.65	259.09
	Total	336.52	255.42	260.89	277.78	303.65	259.09
(B)	External sources						
a)	Paid-up-capital	200.00	177.00	237.50	180.00	95.00	.....
b)	Borrowings	1257.64	305.18	2059.82	1762.44	1521.83	1053.19
	Total Generation	1457.64	482.18	2297.32	1942.44	1616.83	1053.19
	(A+B)	1794.16	737.60	2558.21	2220.22	1920.48	1312.28
	Utilisation						
i)	Gross block including capital work-in-progress	511.43	512.62	431.97	313.16	305.52	602.76
ii)	Other Assets	1282.73	224.98	2126.24	1907.06	1614.96	709.52
	Total	1794.16	737.60	2558.21	2220.22	1920.48	1312.28

10.3 Working Results:

The table below indicates the profitability analysis of the Company for the last six years upto 1992-93:

(Rs. in lakhs)

Particulars	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Sale value of production	8012.44	9494.09	9898.53	11988.23	11698.18	13634.03
Material consumed	4676.02	5624.04	5948.45	7212.91	7275.13	7805.27
Value Added	3336.42	3870.05	3950.08	4775.32	4423.05	5828.76
Conversion Cost						
Salaries & Wages	1533.41	1784.61	1827.24	2360.29	2473.72	2954.30
Depreciation	176.00	195.67	243.62	292.58	318.23	280.40
Other Expenses	1240.35	1474.09	1469.39	1567.48	1784.56	1875.55
R&D Expenses	63.03	71.91	32.93	12.77	16.00	23.18
Less: Other Income	553.01	656.06	763.67	841.28	384.52	516.31
Net conversion cost	2459.78	2870.22	2809.51	3391.84	4207.99	4617.12
Profit before interest Income tax and prior period adjustment	876.64	999.83	1140.57	1383.48	215.06	1211.64
Interest	638.16	737.16	929.60	1369.95	1882.46	2371.76
Profit after interest but before tax and prior period adjustment	238.48	262.67	210.97	13.53	(-)1667.40	(-)1160.12
Prior period adjustments	(Cr)63.86	(Dr)67.66	(Dr)159.63	(Dr)636.08	(Dr.)124.14	(Dr.)135.60
Profit (+)/Loss (-) after prior period adjustments	302.34	195.01	51.34	(-)622.55	(-)1791.54	(-) 1295.72

It would be seen that the profit of the Company after taking into account interest on loans and prior period adjustments, gradually decreased from Rs.302.34 lakhs in 1987-88, to Rs. 51.34 lakhs in 1989-90, and the Company incurred substantial losses amounting to Rs.622.55 lakhs in 1990-91, Rs.1791.54 lakhs in 1991-92 and Rs. 1295.72 lakhs in 1992-93. The main reason for decrease in profits was the element of interest

which increased from Rs.638.16 lakhs in 1987-88 to Rs.2371.76 lakhs in 1992-93. The losses were attributed (March 1994) by the Management to:

- stiff and increased competition from 1985-86 onwards;
- increase in interest cost on account of the increase in borrowings compounded by an increase in the effective interest rates from 14 per cent to 21.75 per cent;
- deployment of borrowings to increase fixed assets as equity was not adequate.

10.4 Unit-wise profitability analysis

The following table showing the unit-wise profitability of the Company (before tax and prior period adjustments) indicates that Kota Unit, Digital Electronic Unit (DEU), and Jaipur Unit were incurring heavy losses (except during 1988-89 in case of Kota unit and 1989-90 in respect of DEU). The Commercial unit, and Marketing units which earned profits upto 1990-91 and 1991-92 also started incurring losses from 1991-92 and 1992-93 respectively. Even in the case of the Palakkad Unit the amount of profit which increased from Rs.140.09 lakhs in 1987-88 to Rs.632.49 lakhs in 1991-92 has substantially come down to Rs.367.01 lakhs in 1992-93.

(Rs. in lakhs)

Unit	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Kota	(-)14.32	141.63	(-)456.53	(-)497.02	(-) 862.72	(-) 302.30
DEU	(-)115.97	(-)261.28	163.91	(-)367.00	(-) 719.06	(-) 464.03
Commercial Unit	223.00	124.04	7.71	191.96	(-) 545.63	(-) 438.76
Marketing Unit	5.68	33.93	53.13	70.74	22.07	(-) 110.97
Palakkad Unit	140.09	224.35	442.75	614.85	632.49	367.01
Jaipur Unit					(-) 194.55	(-) 211.07
Total	238.48	262.67	210.97	13.53	(-) 1667.40	(-) 1160.12

Note : There was a change in the policy regarding accountal of interest on investment of HQ funds in the year 1992-93. Had this change not been effected the loss of Kota, DEU, Commercial Unit, Marketing Unit & Jaipur Unit would have been increased by Rs.63.52 lakhs Rs. 39.66 lakhs, Rs.77.30 lakhs Rs.41.87 lakhs & Rs.17.34 lakhs respectively and Profit of Palakkad Unit would have been increased by Rs.239.68 lakhs.

The substantial losses during the years 1991-92 and 1992-93 were attributed by the Management to:

- steep devaluation of the rupee affecting the cost of all imported inputs;
- introduction of heavy margin money for establishment of letter of credit;
- blocking of substantial funds in inventory;
- supplies to customers and realisation of outstandings being seriously affected by delay in production on account of non-availability of imported inputs;
- substantial increase in interest liability;
- non realisation of escalation claims from various customers.

CHAPTER - 11

COSTING SYSTEM

11.1 The Company has adopted the Job-cum-Batch Costing Method. Work orders are opened for a particular batch of components, sub-assemblies and final assemblies of instruments. The Company has not fixed any norms for the consumption of raw materials, labour and overhead charges for the products manufactured by it due to varied specifications of products and requirements of numerous variants for the manufacture of each instrument.

A Bill of Material (BOM) is prepared for each product and material is issued by the 'Stores Department' as per the BOM. The material is booked at weighted average price and labour at the average hourly rate. The overheads are charged for each work-order on the basis of predetermined overhead rates for each production shop.

The total cost booked on the work order is then divided by equivalent production units against that work order to arrive at unit rate/cost. The cost of finished goods is taken in respect of finished instruments deposited into "Finished Goods Stores", and the remaining amount is taken as work-in-process under the Head `Inventory'.

In the absence of fixation of any predetermined norms for labour, the costing system is not catering to the analysis of labour productivity. However, issue of material in excess of BOM is controlled through "Excess Material Issue Requisition".

The Management stated (April, 1993) that the Company compiles product wise total cost (labour, material and overhead charges) which it compares with the sale value of production to work out product wise profitability. Contract/Project wise comparison of actuals with approved estimates, however, is not carried out.

11.2 Deficiencies in costing

The following deficiencies have been noticed in the costing procedure followed by the Company:

1) The Costing Manual followed by the Company needs revision/updation.

2) After the contract is received a detailed estimate is prepared and got approved by the competent authority showing estimated material cost, labour cost and overheads and profit estimated. However, no analysis of the actual cost incurred vis-a-vis the estimated cost is being done as no proper costing records are maintained to work out the actual cost of production;

11.3 Product Profitability analysis

Inspite of the fact that the Company has been incurring losses in production of most of its product ranges the product profitability analysis was not brought to the notice of the Board for deciding the corrective action The table below indicates the profitability (Profit +/Loss -) of major products of the Kota/DEU units, as compiled by the Company for the last four years from 1989-90 to 1992-93.

(Rs. in lakhs)

	Product category	1989-90	1990-91	1991-92	1992-93
1.	P-3000 range of instruments	(-)23.60	(-)38.44	(-)43.40	(-)3.02
2.	Gas analysers/ Zirconia probe	(-)10.50	(-)19.81	24.80	46.97
3.	Temperature transmitters	(-)3.04	(-)10.60	(-)17.93	(-)6.44
4.	Electric indicators	(-)9.49	(-)9.46	(-)11.21	(-)5.13

(Rs. in lakhs)

	Product category	1989-90	1990-91	1991-92	1992-93
5.	Soviet range of Instruments	0.76	1.18	(-)8.52	(-)11.11
6.	Micro processor recorders	7.90	(-)2.39	(-)10.45	18.26
7.	F.C. range of instruments	28.54	1.78	(-)18.26	13.27
8.	Flexel instruments	17.76	(-)8.85	(-)0.66	39.33
9.	DELTA PI-N instruments	(-)11.95	(-)32.12	(-)11.74	(-)0.67
10.	Fuji trans-mitters	(-)259.88	(-)274.77	(-)210.60	58.59
11.	Defence Equipment	(-)89.33	(-)123.18	(-)199.67	(-)112.81
12.	Railway signalling relays	(-)2.51	(-)21.68	(-)63.20	(-)69.99
13.	Panels	(-)52.25	(-)79.83	(-)254.73	(-)309.56
14.	Annunciators	0.47	(-)20.34	(-)18.67	16.12
15.	Telecom products	(-)32.39	(-)26.52	(-)79.21	(-)199.02
16.	UPS	(-)22.29	(-)24.18	(-)113.48	N.A
17.	DDC	131.24	(-)285.16	(-)466.09	(-)199.12
18.	Contronic-3	(-)43.69	(-)195.43	(-)253.56	(-)264.91

It would be seen that the Company had incurred losses in respect of P-3000 range of instruments, Temperature transmitters, DELTA PI-N instruments, Defence equipments, Railway signalling Relays, Panels, Telecom Products, UPS and Contronic-3.

Although the Company earned profits in DDC range in 1989-90, it started incurring losses in this product from the year 1990-91 onwards.

The Management stated (March, 1994) that reason for loss in product categories has been that sale price did not increase commensurate with increased cost.

CHAPTER - 12

INTERNAL AUDIT

12.1 The Internal Audit Wing was established in April, 1968. The Internal Audit Manual of the Company, initially prepared and approved in 1968, when the Company was in its initial stages of operation, was revised in August, 1977 However, inspite of drastic changes in the mechanism of maintenance of financial accounting, costing and stores accounting records during the subsequent period as a result of computerisation of these systems, the Internal Audit techniques have not been revised by the Company.

The overall control of Internal Audit upto the period ended December, 1991 was vested with DGM (IA). The post of DGM (IA) has been lying vacant since December, 1991 and thereafter the overall control of internal audit is vested with Manager (IA) independently reporting to the Director (Finance).

12.2 Non-conducting of critical appraisal

In terms of COPU's recommendations contained in its 27th Report (5th Lok Sabha) the Internal Audit Wing was required to conduct critical appraisal of the systems procedures and operations as a whole rather than merely doing accounting work. Inspite of the deteriorating production performance and financial position of the Company no critical appraisal of systems, procedures and operations was done by Internal Audit.

The Management stated (March, 1994) that Internal Audit regularly carries out appraisal of the systems and procedures such as inventory control, work-in-progress. Such appraisals, however, are only routine and not critical in nature; even these appraisals were not being submitted to the Board.

CHAPTER - 13

HUMAN RESOURCES DEVELOPMENT

13.1 To identify and develop human resources at various levels, a Human Resources Development (HRD) division was created in the Company in May, 1991. The major objectives of HRD division were:-

(i) to have manpower planning, training and development of employees;

(ii) to identify and develop human resources at various levels in the organisation;

(iii)to identify training programmes for development and improvement of technical and non-technical skills at all levels;

(iv) to run certificate courses and arrange trade tests for upgrading the unskilled and skilled workers in various trades;

(v) to advise Management on proper utilisation of manpower ; and

(vi) to have close coordination with the Ministry of HRD for obtaining the latest information and guidance on the new aspect.

The HRD division, apart from initiating action to identify and develop human resources at various levels in the organisation, has also been arranging training programmes for technical and non-technical officers/staff.

13.2 Implementation of Voluntary Retirement Scheme

The Company, to achieve optimum manpower utilisation and improve the overall skill level, introduced a Voluntary Retirement Scheme (VRS) from 1st February

1991 for a period of 2 years; which was further extended upto March, 1994. However, though the Company had surplus manpower of over 1500 employees in trades such as turners, machinists, welders, press operators etc., (on whom the Company was incurring proportionate recurring expenditure of Rs.1438.80 lakhs per annum towards salary, PF contribution, HRA, leave encashment) it could not implement the VRS vigorously because of its acute liquidity problem. The Company requested (July, 1992) the Ministry of Industry for the release of Rs. 5 crores from the National Renewal Fund (NRF) for implementation of VRS. It was also brought to the notice of the Government that if the Company was able to get Rs.5 crores every year from the NRF, it would motivate approximately 300 employees every year, on which it was incurring proportionate recurring expenditure of Rs.287.75 lakhs per annum, to opt for VRS. The Company received Rs.3 crores from the Government towards the implementation of VRS scheme during 1992-93. Only 262 employees took voluntary retirement upto 30th November 1993 out of the surplus manpower of 1500 employees. Thus, the Company had to absorb the substantial amount of (Rs. 1187.65 lakhs approximately) towards salary and allowances etc. for the excess manpower of 1238 employees. On the other hand the Company's competitors were in an advantageous position on account of having less manpower compared to their turnover as given below:

Company	**Total No.of employees**	**Turnover per annum**	**Turnover per employee**
	(Nos)	**(Rs. in lakhs)**	
Tata Honey well	315	4200	13.33
Yokogava	300	4400	14.67
Taylor (India)	738	5800	7.86
GI (India) Co.	63	1000	15.87
Bells Control	450	2800	6.22
Instrumentation Ltd.	4156	12700	3.06

The Management stated (March, 1994) that competitors having commenced their activities in 1985-86, their manpower as well as salaries and wages would be very low compared to Company whose manpower is about 2 to 3 decades old resulting in higher wages, salaries etc.

13.3 Manpower Analysis:

The following table indicates the manpower of the Company during the last six years upto 1992-93.

(Figure in Nos.)

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Officers	592	649	692	691	695	685
Supervisors	819	874	1018	1001	1073	1117
Workers	1970	1980	1811	1860	1839	1742
Semi Skilled Workers	291	349	360	352	355	345
Unskilled Workers	267	247	245	232	194	146
Casuals	691	516	436	452	358	287
Total	**4630**	**4615**	**4562**	**4588**	**4514**	**4322**

While the strength of officers and supervisors increased from 592 & 819 in 1987-88 to 685 & 1117 in 1992-93, the strength of workers decreased from 1970 in 1987-88 to 1742 in 1992-93. The Management stated (March, 1994) that the decrease in the strength of workers was mainly due to promotion.

The table in **Annexure IV** indicates the number of employees, salaries & wages paid and value added in respect of the Company as a whole, as well as

manufacturing units of the Company for the years 1987-88 to 1992-93. It would be seen from **Annexure IV** and IV(i) that while value addition in respect of the Company as a whole and Kota Unit showed an increasing trend during 1992-93 over the preceding year's performance, the value addition in the case of DEU came down from Rs.3.68 lakhs in 1991-92 to Rs 2.19 lakhs in 1992-93.

CHAPTER - 14

RESEARCH & DEVELOPMENT

14.1 To achieve self-reliance in all areas related to Process Control Instrumentation, by way of absorption of imported technology, updating and making improvements in existing products and development of new products a Research and Development (R&D) Centre was set up right from the Company's inception. The R&D centre was headed by an officer of the rank of Group General Manager upto December, 1991, and is now headed by an officer of the rank of Addl. General Manager.

The in-house R&D centre of the Company has facilities for literature survey, research and development, fabrication and calibration and a team of specialists/scientists. The R&D Centre of the Company has also been recognised by the Department of Scientific & Industrial Research (DS&IR), Government of India. The prestigious projects of Technology Absorption of imported technology under the Technology Absorption and Adoption Scheme (TAAS) of DS&IR have also been implemented in the R&D centre. Besides, the R&D Centre has also won NRDC awards and the import substitution award of DGTD and has a number of patents to its credit.

The performance of R&D Centre in the absorption, updating and improvement of imported technologies and the development of new products/instruments were quite satisfactory, yet, without the specific approval of the Board of Directors, the Company withdrew (July, 1985) the activity of absorption of imported technology from the scope of R&D and entrusted it to the concerned manufacturing units. This change deprived the Company of knowledge about the pace of absorption and also did away with the second check on technology absorption which was being exercised by the manufacturing units, while productionising the product. The Management stated (March, 1994) that one of the important reasons for shifting this activity to manufacturing units was to reduce the period of indigenisation.

14.2 Expenditure on R&D activities

The actual expenditure incurred on R&D activities was low as will be seen from the table below.

(Rs. in lakhs)

Particulars	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
Capital Expenditure	9.14	30.85	3.70	12.76	1.01	--
Revenue Expenditure	110.26	125.08	84.72	84.05	76.95	72.76
Total Expenditure	119.40	155.93	88.42	96.81	77.96	72.76
Annual Turnover	8621	10084	10256	12401	12721	14826
Percentage of total R&D Expenditure to annual turnover	1.38	1.54	0.86	0.78	0.61	0.49

R&D expenditure, as a percentage of annual turnover was 1.54 in 1988-89 and came down to 0.49 in 1992-93, which showed that involvement of in-house R&D centre in the absorption of new technologies, updating and improvement of the existing products and development of new products was decreasing year after year. The number of products for which patents were got registered by the Company during the three years ended 31st March 1992 was Nil.

The Management stated (March, 1994) that fundamental design and development of the C&I systems could not be carried out in India by any one due to lack of the micro-electronic components base. Therefore, Indian industry was not geared for basic design and development of contemporary C&I.

The products developed vis-a-vis those productionised during the last five years ended 1990-91 are indicated in **Annexure V**. It would be seen that out of 16 products developed by the in-house R&D during the period from 1986-87 to 1990-91, only 7 products were productionised by the Company. The Management stated (March, 1994), that the Company has striven to develop several products through in house efforts and a number of special application control automation equipments were developed by the Company with a turnover of over Rs 9 crores per annum in the three years ended 1993-94.

CHAPTER - 15
QUALITY CONTROL

15.1 Quality is a constant concern in the electronic instrumentation field. Reliability in a process control system is of vital importance and the elements of systems are subject to stringent and competent quality surveillance.

A number of laboratories having modern and accurate testing devices and equipments have been provided in the manufacturing units of the Company. The standard testing equipments and facilities are updated to keep pace with the improvements made in process control systems.

The major functions of the Quality Assurance (QA) Department are:

- to evolve quality plans right from the design stage upto packing and despatch stage;
- to ensure that all products, components and sub assemblies conform to customers requirements; and
- to provide maximum customer satisfaction and ensure reliability of products manufactured by the Company.

In March, 1992 the Marketing Unit of Company, based on site analysis, brought out the following deficiencies in internal QA and FAT to the notice of DEU/Director (Production) for taking corrective action in the matter:

all critical functions are not checked during FAT;

most of the times the customer is asked to carry out FAT without full checking done by QA. System is offered for FAT without complete hardware;

- items used in FAT are diverted and new replacements are sent which have not been tested with the system, which resulted in mismatches;

- after FAT is carried out, back up floppies are not prepared; and

- short supply items are sent in piecemeal as and when they are manufactured with the result that it was difficult to keep track of material received at site.

The Management stated (May, 1993) that all functions as desired and mutually agreed upon with customers are checked during FAT; the items used in FAT were not diverted; however, if an item failed or was found defective during FAT, it was replaced. Back-up floppies were always prepared and efforts were made to supply materials as per customer's requirements but if some items fell short, these were supplied as soon as they were manufactured or received from foreign collaborators.

ISO 9000 Certification

To make the Company's products competitive both in domestic and international markets, the Company has been striving to obtain ISO 9000 Certification. Several steps for getting ISO 9000 Certification have been completed by the Kota, DEU and Palakkad Units but the three Units have not been able to obtain ISO 9000 Certification so far (March 1994).

CHAPTER - 16

Working of Subsidiary Company

16.1 Rajasthan Electronic and Instrumentation Limited (REIL) was set up by the Company as its subsidiary company in collaboration with Rajasthan State Industrial Investment Corporation Limited - a State Public Enterprise in June 1981 with the main object of undertaking the production of electronic milk testers and other items of rural electronics so as to achieve the upliftment of rural masses. The Company has 51 *per cent* paid-up share capital in the subsidiary company.

16.2 Production performance

The main products of the subsidiary company are electronic milk testers, solar photo voltaic systems and pollution monitoring instruments. The table below indicates the actual production vis-a-vis licenced capacity for the last five years ended 31st March, 1993.

Product	1987-89*			1989-90			1990-91			1991-92			1992-93		
	L	A	%	L	A	%	L	A	%	L	A	%	L	A	%
1.Electronic Milk Tester	2000	1998	0.1	2000	1368	31.6	2000	1638	18.1	2000	1469	26.6	2000	1450	27.5
2.Solar Photo Voltaic Systems	10000	10686	–	10000	7408	25.9	10000	8349	16.5	10000	4400	56.0	10000	6257	37.4
3.Pollution Monitoring Instruments	–	–	–	–	–	-	100	3	97.0	100	NIL	100.0	100	NIL	100
4.RAX/GIST Cards	–	–	—	–	–	–	–	–	–	–				158	–

*Financial year was changed from October-September to April-March from 1989-90 onwards, this being the 18 months accounting year.

L=Licenced capacity

A=Actual production

%=Percentage of shortfall in actual production with respect to licenced capacity.

Licenced capacity as specified above is on the basis of maximum utilisation of plant and machinery.

It would be seen that the production of almost the complete product range was less than licenced capacity (except for Solar Photo Voltaic Systems in 1987-89). The Management attributed (March, 1994) the short utilisation of licenced capacity to the fact that the Company's product range catered to single focussed market segment of dairy development and rural electronics.

16.3 **Financial Position**

The table below summaries the financial position of the subsidiary Company for the last five years:

(Rs. in lakhs)

		1987-89*	1989-90	1990-91	1991-92	1992-93
	Liabilities					
a)	Paid-up Capital	40.00	40.00	40.00	40.00	40.00
b)	Reserves and Surplus:					
	i) Free Reserves	115.16	157.83	191.83	204.40	222.53
	ii) Committed Reserves	36.65	36.65	36.65	36.65	36.65
c)	Borrowings:					
i)	Financial Institutions and Banks	10.74	35.02	102.13	373.71	339.68
	ii) Others	--	38.31	--	50.00	--
d)	Current liabilities and provisions	205.61	244.04	370.62	191.73	374.44
	Total	408.16	551.85	741.23	896.49	1013.30
	Assets:					
e)	Gross block	256.77	295.79	330.43	394.13	410.86
f)	Less:Cumulative depreciation	166.48	192.35	217.50	248.64	275.80
g)	Net block	90.29	103.44	112.93	145.49	135.06
h)	Capital work-in-progress	--	0.66	17.00	--	
i)	Current Assets	317.87	447.75	611.30	751.00	878.24
j)	Investments	--	--	--	--	--
k)	Deferred revenue expenditure	--	--	--	--	--
l)	Accumulated losses	--	--	--	---	--
	Total	408.16	551.85	741.23	896.49	1013.30
	Capital employed (g+i-d)	202.55	307.15	353.61	704.76	638.86
	Net worth [a+b(i)-k-l]	155.16	197.83	231.83	244.40	262.53
	Net worth per rupee of Paid-up Capital	3.9	4.9	5.8	6.1	6.6

* Financial year was changed from October-September to April-March from 1989-90 onwards; thus the accounting period for the year 1987-89 was for 18 months.

16.4 Working Results

The working results of the Company for the last five years are tabulated below:

(Rs. in lakhs)

		1987-89	1989-90	1990-91	1991-92	1992-93
a)	Turnover	995.49	795.56	849.43	957.06	1319.53
b)	Profit before tax	70.19	64.49	68.41	40.98	43.49
c)	Less:Provision for tax	20.00	15.00	30.00	25.00	20.00
d)	Net profit after tax	50.19	49.49	38.41	15.98	23.49
e)	Dividend paid to Holding Company	4.08	2.55	2.55	2.04	2.55
f)	Percentage of profit before tax to					
	i) Net worth	45.24	32.60	29.51	16.77	16.57
	ii)Capital employed	34.65	21.00	19.35	5.81	6.80
g)	Percentage of profit after tax to					
	i) Net worth	32.35	25.02	16.57	6.54	8.95
	ii)Equity Capital	125.48	123.73	96.03	39.95	58.73

*Financial year was changed from October-September to April-March from 1989-90 onwards; thus the accounting period for the year 1987-89 was for 18 months.

It would be seen that the percentage of profit after tax to net worth which was 32.35% in 1987-89 came down to 6.54% in 1991-92, and again marginally increased to 8.95% in 1992-93. The Management stated (March 1994) that the decline in profit was due to high finance costs. Further, market competition had increased manifold and to sustain the growth rate the profit margin had been reduced.

16.5 Sales and Marketing

The main product, viz, electronic milk tester is required for the dairy development programme. The table below indicates the budgeted and actual sales of all the products for the last five years ended 31st March, 1993:

(Rs. in lakhs)

Year	Budgeted Sales	Actual Sales	Percentage of Actual Sales to Budgeted Sales
1987-89*	1165	995.5	85.5%
1989-90	900	795.5	88.4%
1990-91	975	849.4	87.1%
1991-92	1155	957.1	82.9%
1992-93	1500	1319.6	87.9%

*Financial year was changed from September-October to April-March from 1989-90 onwards; thus, the accounting period for the year 1987-89 was for 18 months.

It would be seen that budgeted sales were never achieved and the percentage of actual sales to budgeted sales decreased from 85.5% in 1987-89 to 82.9% in 1991-92 it again increased to 87.9% in 1992-93.

The Management stated (March, 1994) that the Company catered to a single focussed market segment i.e., dairy sector and rural electronics and the business of the Company depended upon the picking up of demand which was directly linked with investments and development in the rural sector.

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

New Delhi
The 5 MAY 1995

Countersigned

New Delhi
The 8 MAY 1995

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

ANNUXURE I

(Referred to in para no.6.2 at page. 18)

STATEMENT INDICTING THE DETAILS OF VARIOUS DIVERSIFICATION SCHEME AS UNDERTAKEN BY THE COMPANY DURING VIITH FIVE YEARS PLAN

Sl.No.	Name of Project/ Scheme	DPR Cost	Approved Cost	Revised/ latest budget estimates scheme/ 31.3.93	Actually spent upto the close of to original DPR	Cost over-run with reference proposal	Completion year as per DPR/ 7th plan	Actual/ likely date of completion	Time Over-run
1.	Adv. Electn. Control system	300.00	346.29	458.50	453.42	107.13	1986-87	1988-89	2 years
2.	Balancing Range of Valves	80.00	80.00	100.00	112.14	32.14	1985-86	1990-91	5 years
3.	Safety Relief Valves	40.00	40.00	68.00	42.94	2.94	1986-87	--	--
4.	Modernisa-tion of Kota Unit	197.95	197.95	217.50	203.32	5.37	1989-90	--	--
5.	New Electns Transmi-tters	163.70	163.70	173.00	172.75	9.05	1986-87	1990-91	4 years
6.	Distributed Digital Control System for Process Industries	340.00	340.0	495.00	513.88	173.88	1988-89	--	--
7.	Electronic Private Automatic Branch Exchange (EPABX)	49.0	49.00	49.00	42.52	--	1986-87	1990-91	4 years

8.	Research & Development Phase-II	367.00	367.00	367.00	21.45	---	1989-90	--	--
9.	Un-interrupted Power System	330.00	330.00	330.00	307.80	--	1989-90	--	--
10.	Railway Singnalling System	150.00	150.00	150.00	30.56	--	1989-90	--	--
11.	Zirconia Probe Modernisa-tion of Gas Analysers	130.00	130.00	130.00	39.28	--	1987-88	--	--
12.	Micro-processor based Recorders & Controllers	60.00	60.00	60.00	33.34	--	1993-94	--	--
13.	Electrical Actuators	70.00	70.0	70.00	48.27	--	1990-91	--	--
14.	RAX/MAX	200.00	200.00	200.00	63.35	--	1990-91	--	
15.	DDC for Power Industries	300.00	300.00	480.00	191.43	--	1990-91	--	--
16.	Pulse-code Modulation Terminal and Repeater Equipments	--	--	--	--	--	1990-91	--	--
17.	De-Super-heater and Pressure Reducing Valves	180.00	100.00	100.00	--	--	1989-90	--	--

18. Field Mounted Contro-llers Magnetic Flow Meters	200.00	200 00	200.00	--	--	1989-90	--	--
19. Ball Valves etc.	--	--	--	--	--	1989-90	--	--

ANNEXURE-II
(Referred in para no 7.1 at page 23)

STATEMENT INDICATING THE DETAILS OF LICENCED CAPACITY, INSTALLED CAPACITY AND ACUTAL ACHIEVEMENT THEREAGAINST IN RESPECT OF VARIOUS PRODUCT RANGES OF THE COMPANY FOR THE LAST SIX YEARS ENDED 31ST MARCH, 1993

SL. NO.	PRODUCT	Unit	1987-88				1988-89				1989-90			
			L	I	A	%	L	I	A	%	L	I	A	%
1.	Electronics Range of Instru-ments	Nos.	40000	20000	18048	9.8	40000	20000	15824	20.4	40000	20000	13327	33.4
2.	Pneum-atics Range of Instrum-ents	Nos.	8000	5000	1281	74.4	8000	5000	628	87.4	8000	5000	457	90.8
3.	a) Control Panels Control Desks	Nos.	As Reqd		1661		As reqd.	As reqd.	1030		As reqd.	As reqd.	665	
	b) Annun-ciation System & Sequence Control Systems	Nos.	1000	As reqd.	107		1000	As Reqd.	124		1000	As Reqd	70	
4.	Gas Analysars	Nos.	640	300	203	32.3	640	300	91	69.7	640	300	106	64.7
5.	Misc. Defence Instrum -ents	Rs. in lakhs		As reqd.		57888	As reqd	As reqd		113925	As reqd	As reqd	2344	--
6.	Process Control Valves	Nos.	10000	4000	2187	45.1	10000	4000	2679	33.0	10000	4000	3737	6.6

7.	Safety Relief Valves & Pressure Reducing Valves	Nos.	4000	400	490	-	4000	400	41	89.8	4000	400	239	40.3
8.	Misc. Items & access-ories	Rs. in lakhs	As reqd.	3811	3811	-	As reqd.	-	3075	-	As reqd.	-	1141	
9.	Orific Plates/ Low Measuring Devices	Nos.	1000	500	211	57.8	1000	500	163	67.4	1000	500	79	84.2
10.	Micro Processor based DDC System	Rs. in lakhs	-	-		1000	1000	630	37.0	1000	1000	1299		
11.	PABX/ RAX/MAX	Lines	-	-	-	20000	20000	2052	89.7	20000	20000	4976	75.2	
12.	Railway Signall-ing	Rs. in lakhs	-	-	-	2000	As Reqd.	0.27	--	2000	As Reqd.	116	--	
13.	UPS System	Rs. in lakhs	-	-	-	850	As Reqd.	-	-	850	As Reqd.	391	--	

Sl. No.	Product	Unit	1990-91				1991-92				1992-93			
			L	I	A	%	L	I	A	%	L	I	A	%
1.	Electrs Range of Instrum-ents	Nos.	40000	20000	12821	35.9	40000	20000	16302	18.5	40000	20000	16486	17.6
2.	Pneum-atics Range of Instruments	Nos	8000	5000	502	90.0	8000	5000	281	91.4	8000	5000	24	99.5
3.	a) Control Panels Control Desks	Nos.	As Reqd.	1021	-		As required	963	-		As reqd.	1319	-	
	b) Annun-ciation System & Sequence Control System	Nos	1000	As Reqd.	52	-	1000	As Reqd.	70	-	1000	As Reqd.	53	-
4.	Gas Analysers	Nos.	640	300	159	47.0	640	300	97	67.7	640	300	121	59.7
5.	Misc. Defence Instrum-ents	Rs. in lakhs	-	-	-	-	-	-	-	-	-	-	-	-
6.	Process Control Valves	Nos.	10000	7500	1600	38.75	10000	7500	3916	47.8	10000	7500	3438	54.2
7.	Safety Relief Valves & Pressure Reducing Valves	Nos.	4000	2000	425	78.08	4000	2000	599	70.01	4000	2000	665	66.7
8.	Misc. Items & Access-ories	Rs. in lakhs	As Reqd.	-	1459	-	As Reqd.	As Reqd.	93	-	As Reqd.	As Reqd.	1522	-

9.	Orific Plates/ Low Measuring Devices	Nos.	1000	500	104	79.2	1000	500	93	81.4	1000	500	35	93.0
10.	Micro Processor Based DDC System	Rs. in lakhs	3000	3000	1536	48.8	3000	3000	1032	65.6	3000	3000	753	73.9
11.	PABX/ RAX/MAX	Lines	70000	20000	8488	57.6	70000	20000	17024	14.9	70000	20000	48392	-
12.	Railway Signalling	Rs. in lakhs	2000	As Reqd.	135	-	2000	As Reqd.	49	-	2000	As Reqd.	35	-
13.	UPS Systems	Rs. in lakhs	850	850	298	64.9	850	850	441	48.1	Rs 850	Rs 850	Rs 460	45.9

L = Licenced Capacity
I = Installed Capacity
A = Acutal Production
% = Percentage of shortfall in actual production as compared to installed capacity

ANNEXURE - III
(V = Rs. IN LAKHS)
(Q = QUANTITY IN NUMBERS)

Statement showing product-wise targets fixed by the company vis-a-vis achievement thereagainst for the period from 1987-88 to 1991-92

Product	UNIT	1987-88 Q.T	R.T	ACTUAL	1988-89 Q.T	R.T	ACTUAL	1989-90 Q.T	R.T	ACTUAL
1. INSTRUMENTS FOR TEMP. MEASUREMENTS	Q	1450	2200	1443	2500	1000	1086	--	1000	1312
	V.	50.00	40.00	38.45	50.00	25.00	29.15	--	35.00	42.44
2. ELECTRONIC RANGE OF INSTRUMENTS	Q	11200	10665	9799	9500	8950	8878	8995	6050	6241
	V	1375.00	1200.00	168.72	1075.00	1230.00	1368.27	1000.00	1095.00	1203.62
3. PNEUMATIC RANGE OF INSTRUMENTS	Q.	1130	1400	1281	1250	585	628	365	480	457
	V.	260.00	220.00	189.18	200.00	120.0	145.50	75.00	95.00	88.74
4. A-CONTROL PANELS & CONTROL DESKS	Q.	500	1185	1629	1165	1030	996	700	780	708
	V.	300.00	380.00	428.92	375.0	475.00	483.45	225.00	260.00	187.47
B-ANN. SYS. & SEQ. CONTROL SYSTEMS	Q.	50	90	107	85	120	124	80	70	70
	V.	40.00	80.00	88.82	75.00	60.00	58.45	50	40	40.43
5. MISC & DEFENCE EQUIPMENTS	Q.	2600	125	---	5500	1200	---	4450	3600	2344
	V	160.00	15.00	---	500.00	75.00	0.71	475.00	300.00	154.83
6. GAS ANALYSERS	Q.	220	165	203	150	110	191	70	65	106
	V.	330.00	270.00	290.77	250.00	230.00	275.94	150.00	210.00	272.83
7. EPABX/RAX	Q.	NIL	NIL	1	50	40	27	100	75	54
	V.	NIL	NIL	1.48	60.00	60.00	41.26	150.00	150.00	116.26
8. UPS	Q.	NIL	NIL	NIL	NIL	75	2	110	110	97
	V.	NIL	NIL	NIL	NIL	250.00	76.94	550.00	550.00	300.68

9. MICRO PROCESSOR RECORDERS	Q.	NIL	NIL	NIL	NIL	50	NIL	229	NIL	166	
	V.	NIL	NIL	NIL	NIL	20.00	NIL	80.00	NIL	63.74	
10. RLY. SIGNALLING	Q.	NIL	NIL	NIL	NIL	NIL	17	6000	2600	50	
	V.	NIL	NIL	NIL	NIL	NIL	0.27	100.00	40.00	0.79	
11. PROCESS CONTROL VALVES	Q.	2600	2800	2197	3000	3100	2679	3200	3200	3737	
	V.	638.50	650.00	648.59	705.00	790.00	578.91	800.00	875.00	1217.84	
12. SAFETY RELIEF VALVES	Q.	200	150	490	160	175	41	210	210	239	
	V.	32.58	25.00	54.91	30.00	40.00	10.66	40.00	40.00	57.09	
13. ORIFICE PLATES/ FLOW MEASURING DEVICES	Q.	177	160	211	170	180	163	200	200	79	
	V.	97.35	80.00	43.79	85.00	95.00	50.32	100.00	100.00	35.60	
14. MISC. ITEMS & ACCESS-ORIES	Q	–	–	3811	–	–	3075	–	–	2192	
	V.	431.57	445.00	472.91	480.00	525.00	446.36	580	585	646.24	
15. CONTRONICS- 3 ~~17896~~ ALPCB MODULES	Q	17963	10727	10042	7103	25861	23139	20796	25000	17876	
	V	650.00	556.80	681.99	381.00	600.00	672.44	856	700	309.65	
16. DDC	Q.	–	–	–	Figure	402	630	Fig Not	452	1250	
	V.	–	–	–	Not avail-able	1260.00	344.53	abavilable	1000.00	954.81	
17. C 3 - I	Q.	–	–	–	–	–	–	–	–		
	V.	–	–	–	–	–	–	–	–		

	Product		1990-91 Q.T	1990-91 R.T	1990-91 ACTUAL	1991-92 Q.T	1991-92 R.T	1991-92 ACTUAL
1.	INSTRUMENTS FOR TEMP. MEASUREMENTS	Q.	400	700	894	--	175	362
		V	20.00	25.00	27.26	--	10.00	12.80
2.	ELECTRONIC RANGE OF INSTRUMENTS	Q.	4800	5700	6288	5600	4075	3641
		V.	850.00	1030.00	1197.77	950.00	820.00	941.06
3.	PNEUMATIC RANGE OF INSTRUMENTS	Q.	210	400	502	--	265	281
		V.	40.00	30.00	103.91	--	56.00	64.06
4.	A-CONTROL PANELS & CONTROL DESKS	Q.	700	500	1020	500	1000	1009
		V.	230.00	200.00	21.69	200.00	260	229.71
	B-ANN. SYS.& SEQ CONTROL SYSTEMS	Q.	80	100	52	100	50	70
		V.	50.00	50.00	34.88	50.00	50.00	36.82
5.	MISC & DEFENCE EQUIPMENTS	Q.	1000	3500	3193	1200	4450	2136
		V.	565.00	400.00	206.06	500.00	323	119.20
6.	GAS ANALYSERS	Q.	70	60	159	85	120	97
		V.	250.00	280.00	391.76	300.00	400.00	334.88
7.	EPABX/RAX	Q.	100	386	95	460	200	154
		V.	200.00	240.00	228.0	880.00	1290.00	626.13
8.	UPSQ.	Q.	140	213	62	245	238	85
		V.	700.00	780.00	297.95	900.00	1200.00	440.66
9.	MICRO PROCESSOR RECORDERS	Q.	--	425	331	--	425	331
		V.	--	160.00	129.94	--	160.00	120.94
10	RLY. SIGNALLING	Q.	8000	1650	892	1000	1000	1063
		V.	120.00	25.00	17.80	100.00	21.00	26.67
11.	PROCESS CONTROL VALVES	Q.	3350	3600	4600	4000	4000	3738
		V	915.00	1200.00	1506.34	1350.00	1400.00	1917.00
12.	SAFETY RELIEF VALVES	Q.	270	270	425	250	250	585
		V.	55.00	80.00	74.51	100.00	100.00	121.25
13.	ORIFICE PLATES/ FLOW MEASURING DEVICES	Q.	225	125	104	150	150	103
		V.	110.00	40.00	22.95	50.00	50.00	46.40

14.	MISC. ITEMS & ACCESSORIES	Q.	–	–	–	–	–	–
		V.	670	880	805.19	1000	1050	673.23
15.	CONTRONICS - 3 ALPCB MODULES	Q.	60000	31905	48314	39391	16973	31126
		V.	900.00	430.00	344.76	650.00	615.00	405.09
16.	DDC	Q.	610	1136	2182	1963	341	451
		V.	1250.00	2100.00	1535.92	2300.00	1085.00	1032.43
17.	C 3 - I	Q.	–	–	–	2272	1055	–
		V.	–	–	–	400.00	800.00	–

(ANNEXURE - IV)

Referred to in para no.13.3

STATEMENT INDICATING THE NUMBER OF EMPLOYEES, SALARIES AND WAGES PAID AND VALUE ADDED IN RESPECT OF COMPANY AS A WHOLE

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
No. of employees	4134	4181	4217	4588	4514	4322
Employment cost (Rs. in lakhs)	1533.41	1784.61	1827.24	2360.29	2473.71	2954.90
Value of Production (Rs. in lakhs)	8702.07	10279.63	10665.71	13001.24	12830.31	15082.24
Value Added (Rs. in lakhs)	3336.42	3870.05	3950.08	4775.32	4423.05	5828.76
Per Emp. Per annum						
Emp. Cost (Rs. in lakhs)	0.37	0.43	0.43	0.51	0.55	0.67
Value of Production (Rs. in lakhs)	2.11	2.6	2.53	2.83	2.84	3.43
Value Added (Rs. in lakhs)	0.81	0.93	0.94	1.08	0.98	1.33
Percentage of value added to value of Production	41.64	40.8	39.9	36.9	34.47	38.65

ANNEXURE -(IV) (i)

Referred to in para 13.3

STATEMENT INDICATING THE NO OF EMPLOYEES, SALARIES & WAGES PAID AND VALUE ADDED IN RESPECT OF KOTA UNIT

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
No. of employees	2309	2231	2216	2232	2135	2042
Emp. cost (Rs. in lakhs)	799.13	895.31	904.42	1205.28	1185.24	1396.18
Value of Production (Rs. in lakhs)	2500.59	2773.83	2759.55	3466.90	3260.68	5343.00
Value Added (Rs. in lakhs)	1274.66	1445.22	1033.55	1744.26	1278.73	2108.74
Per Employee Per annum						
Employee cost (Rs. in lakhs)	0.35	0.40	0.41	0.54	0.56	0.68
Value of Production (Rs. in lakhs)	1.08	1.24	1.25	1.55	1.53	2.62
Value Added (Rs. in lakhs)	0.55	0.65	0.47	0.78	0.60	1.03
Percentage of Value Added to Value of Production	50.97	52.10	37.45	50.31	39.21	39.47

ANNEXURE IV (ii)

Referred to in para no.13.3

STATEMENT INDICATING THE NO OF EMPLOYEES, SALARIES & WAGES PAID AND VALUE ADDED IN RESPECT OF PALAKKAD UNIT

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
No. of employees	544	545	574	592	620	655
Employee cost (Rs. in lakhs)	145.77	174.29	189.73	252.23	292.80	338.53
Value of Production (Rs. in lakhs)	1478.92	1564.20	2127.39	3031.69	3361.13	3453.48
Value Added (Rs. in lakhs)	676.05	760.50	1107.31	1516.68	1522.55	1602.32
Per Employee Pe annum						
Employee cost (Rs. in lakhs)	0.27	0.32	0.33	0.43	0.47	0.52
Value of Production (Rs. in lakhs)	2.7	2.9	3.7	5.12	5.42	5.27
Value Added (Rs. in lakhs)	1.2	1.4	1.9	2.56	2.46	2.45
Percentage of value Added to value of Production	45.7	48.6	52.0	50.03	45.29	46.40

ANNEXURE IV (iii)

Referred to in para no.13.3

STATEMENT INDICATING THE NO OF EMPLOYEES, SALARIES & WAGES PAID AND VALUE ADDED IN RESPECT OF DIGITAL ELECTRONIC UNIT

	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
No. of employees	121	13	156	193	185	191
Employee cost (Rs. in lakhs)	44.19	59.27	70.55	102.20	107.73	137.90
Value of Production (Rs. in lakhs)	1812.52	2461.33	1752.76	2129.23	2457.92	2459.52
Value Added (Rs. in lakhs)	510.64	477.52	743.37	433.43	680.54	417.85
Per Employee Per annum						
Employee cost (Rs. in lakhs)	0.37	0.43	0.45	0.53	0.58	0.72
Value of Production (Rs. in lakhs)	14.98	17.84	11.24	11.03	13.29	12.88
Value Added (Rs. in lakhs)	4.22	3.46	4.77	2.25	3.68	2.19
Percentage of Value Added to Value of Production	28.17	19.40	42.41	20.36	27.68	16.99

ANNEXURE V

Referred to in para no.14.2

LIST OF PRODUCTION DEVELOPED AND PRODUCTIONISED DURING THE LAST FIVE YEARS:

(REFERRED TO IN PARA 14.2)

Year		Products Developed	Whether productionised
1986-87	i)	Removeable shell, sample cooler RSC-03	YES
	ii)	Removeable shell, sample cooler RSC-04	YES
	iii)	Power supply unit for TOSDIC Controller	YES
1987-88	i)	Electronic Amplifier	YES
	ii)	Updated Bargraph indicator for Flexel controller	NO
	iii)	Water Quality monitoring station	NO
	iv)	Air pollution	NO
	v)	Zener Barrier	NO
1988-89	Solenoid Valves SV. 04		YES
1989-90	i)	EPABX of C-DOT Design	YES
	ii)	Indigenisation of C-3 Automation System of H&B, West Germany	YES
1990-91	Products developed under FOSAPP activities		
	i)	REMOPTERM-I	NO
	ii)	FOX - 30	NO
	iii)	TRANSPORT - P	NO
	iv)	OPTRANSC EDER I & II	NO
	v)	Splice joint termination box	NO