

08 . ON . TS

336.54
C739A

REPORT OF THE COMPTROLLER AND AUDITOR GENERAL
OF INDIA : UNION GOVT: (COMMERCIAL), 1982 PART V
COCHIN SHIPYARD LTD.

NAL

राष्ट्रीय अभिलेखागार पुस्तकालय
National Archives Library

भारत सरकार
Government of India

नई दिल्ली

New Delhi

आह्वानांक सं०

Call No.

336.54 C739 R

अवाप्ति सं०

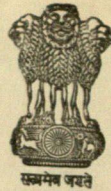
Accession No.

135208

10,000 NAL/12

85
7/11/8

53
8/15



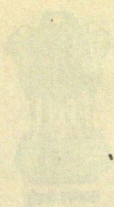
**REPORT OF THE
COMPTROLLER AND AUDITOR GENERAL
OF INDIA**

UNION GOVERNMENT (COMMERCIAL)

1984

PART V

COCHIN SHIPYARD LIMITED



REPORT OF THE
COMPTROLLER AND AUDITOR GENERAL
OF INDIA

UNION GOVERNMENT (COMMERCIAL)

Price : (Inland) Rs. 20.00 (Foreign) £ 2.33 or \$ 7 20 Cents.

1985

PART V

TABLE OF CONTENTS

PREFACE	Page
Para No.	iii
1. Background	1
PART I	
PRODUCTION PERFORMANCE ETC.	
2. Overview	5
3. Production performance	
3.1 Capacity and production	8
3.2 Steel consumption and wastage	9
3.3 Manpower-needs and actuals	9
3.4 Labour productivity	10
3.5 Idle time	11
3.6 Overtime	12
3.7 Machine utilisation	13
4. Material Management	
4.1 Standardisation and codification	14
4.2 Deficiencies in inventory control system	14
4.3 Inventory level	14
4.4 Non-moving stores	15
4.5 Purchase manual	15
5. Financial Performance	
5.1 Working results	16
5.2 Financial position	17
5.3 Return on capital	17
5.4 Credit Control	18
5.5 Dues for ship repairs	19
5.6 Cash credit	19
6. Costing system	20
7. Pricing policy and subsidy	22
8. Order book position	23
9. Designs organisation	24
10. Internal audit	25
11. Objectives	26
PART II	
CONSTRUCTION OF SHIPS	
SUMMARY	29
12. Construction of ships	
12.1 Ship 001 (Rani Padmini)	30
12.2 Ship 002	31
12.3 Ships 003 to 006	32
12.4 Ship repairs	32
PART III	
PROJECT FORMULATION & IMPLEMENTATION	
SUMMARY	35
13. Project Formulation and implementation	
13.1 Collaboration agreement—Shipyards construction	36
13.2 Ship designs—agreement with Scott Lithgow	38
13.3 Other consultants	38
13.4 Project estimate	40
13.5 Construction of ship building dock, repair dock, etc.	43
13.6 Cranes supplied by Chitram & Co.	44
13.7 Other cranes	45
13.8 Premature award of contract	45

PART I
PRODUCTION PERFORMANCE ETC.

- 1. Overview
- 2. Production performance
- 3. Capacity and production
- 4. Stock control and storage
- 5. Manpower levels and needs
- 6. Labour productivity
- 7. Idle time
- 8. Overtime
- 9. Machine utilization
- 10. Material Management
- 11. Standardization and codification
- 12. Techniques of inventory control system
- 13. Inventory level
- 14. Non-moving items
- 15. Purchase pattern
- 16. Financial Performance
- 17. Working capital
- 18. Financial position
- 19. Return on capital
- 20. Cash Control
- 21. Expenses for ship repair
- 22. Cash flow
- 23. Control system
- 24. Pricing policy and strategy
- 25. Order book position
- 26. Design organization
- 27. Internal audit
- 28. Objectives

PART II
CONSTRUCTION OF SHIPS

- 29. SUMMARY
- 30. Construction of ship
- 31. Ship 001 (Rural Pattern)
- 32. Ship 002
- 33. Ship 003 to 005
- 34. Ship repair

PART III
PROJECT FORMULATION & IMPLEMENTATION

- 35. SUMMARY
- 36. Project formulation and implementation
- 37. Collaborative agreement—Shipyard construction
- 38. Ship design—agreement with Bost. Indus.
- 39. Other considerations
- 40. Project estimate
- 41. Construction of ship building dock, repair dock, etc.
- 42. Finance supplied by Charan & Co.
- 43. Other items
- 44. Presenting terms of contract

135208
26/5/86

Account
National

PREFACE

1. This report on Cochin Shipyard Limited was prepared by an Audit Board consisting of the following members:

SHRI R. C. Suri	Chairman, Audit Board and Ex-officio Additional Deputy Comptroller & Auditor General (Commercial) upto 30th April, 1984.
SHRI M. PREM KUMAR	Chairman, Audit Board and Ex-officio Additional Deputy Comptroller & Auditor General (Commercial) from 1st May, 1984.
SHRI M. V. BHATT	Member, Audit Board & Ex-officio Director of Commercial Audit, Bangalore upto 31st December, 1983.
SHRI K. RAM MOHAN	Member, Audit Board & Ex-officio Director of Commercial Audit, Bangalore from 1st January, 1984.
SHRI M. K. BEHL	Member, Audit Board & Ex-officio Director of Commercial Audit, Bombay.
SHRI S. PARAMANANDHAN	Formerly Director General of Naval Designs, Naval Headquarters and presently working with Cochin University as visiting Professor—Part-time Member.
SHRI S. S. DOTIWALA	Consultant, Mazgaon Dock Limited, Bombay—Part-time Member.

2. The Report was finalised by the Audit Board after :

- (a) considering the comments of the Ministry of Shipping and Transport (February 1985) on the draft report;
- (b) discussing the report with the representatives of the Ministry and the Company on 15th and 16th February 1985 at Cochin;
- (c) considering the additional information sent by the Ministry and the Company in March 1985.

3. The Comptroller & Auditor General of India wishes to place on record his appreciation of the work done by the Audit Board and acknowledges with thanks the contribution, in particular, of the two Part-time Members, Shri S. Paramanandhan and Sri S. S. Dotiwala who are experts on ship-building and not officers of the Indian Audit and Accounts Department.

1. BACKGROUND

1.01 For setting up a second Indian shipyard a Technical Mission from United Kingdom recommended a site in Cochin as the most suitable (April 1958).

1.02 From May 1960 onwards, negotiations were held with shipyards in United Kingdom, Germany and Japan for technical and financial collaboration in the Project. In October 1962, negotiations were held with MHI of Japan whose team of technical experts visited India and submitted two reports—in 1963 regarding the type and scale of production, the plan for the site area, construction work schedule and shop layout.

1.03 In February 1965, a contract was signed with MHI for doing a basic survey, preparing preliminary design, cost estimates and project report for construction of shipyard.

1.04 In April 1966, MHI gave a project report for a shipyard with two building docks, each dock building yearly two ships of 33000 DWT and 53000 DWT respectively. (This was later changed to one dock.) In addition, there was to be a repair dock for ships upto 53000 DWT.

1.05 The scope of the Project was modified shortly after considering world trends in size of bulk carriers and tankers, future needs of Indian shipping, etc. Government of India decided to have one dock for building ships of 66000 DWT and one dock for repairing ships upto 85000 DWT. By increasing the length of the building dock from 246 M to 255 M the size of the largest vessel that could be built in the building dock could be raised to 85000 DWT and by increasing the length of Repair Dock from 255 M to 270 M, the size of the largest vessel that could be docked and repaired could be raised to 100,000 DWT.

1.06 For preparing the "Revised Project Report (RPR) and Revised Preliminary Design" another contract was signed with MHI in July 1968. The RPR submitted in March 1969 and approved in August 1971 by GOI estimated the cost at Rs. 45.42 crores.

1.07 In August 1970, a contract was signed with MHI for preparing drawings and specifications and technical collaboration in constructing of the shipyard. This came into effect on 1st October 1970.

1.08 A field office was set up at Cochin in 1961 and an officer on special duty was appointed in 1968 and sent to Cochin, to establish a site office. In May, 1970 a Chief Project Officer was appointed to establish a full-fledged project office as a department of the Government of India.

1.09 Cochin Shipyard Limited (CSL) was incorporated on 29th March 1972, as a fully owned Central Government Company and took over the assets and liabilities of the Cochin Shipyard Project.

The following report is in three parts. The first part, beginning with an overview, assesses the recent performance of CSL in its various aspects, such as productive efficiency, financial performance, cost-efficiency, labour productivity, machine utilisation, inventory control, material management, etc. It also probes the main current problems and weaknesses of the shipyard.

The second part starting with a summary, deals with the building of the first two ships in detail.

Part III deals with the earlier past i.e. with the building of the shipyard, the formulation and implementation of the project. This part is also preceded by a brief summary.

REPORT

PART I

	Page
2. Overview	5
3. Production Performance	8
4. Material Management	14
5. Financial Performance	16
6. Costing System	20
7. Pricing Policy and Subsidy	22
8. Order Book Position	23
9. Designs Organisation	24
10. Internal Audit	25
11. Objectives	26

2. OVERVIEW

2.1.1 The installed capacity of the ship-yard is two ships a year of Panamax type bulk carriers of 75,000 DWT each. This annual capacity was expected to be achieved within a period of 10 years from 1975.

2.1.2 The first ship (75,000 DWT) which was to have been completed in three years, took over five years. The average annual production of the ship-yard was about 35% of the installed capacity in 1981-82 and 1982-83 but came down further to 23% in 1983-84, mainly due to labour trouble.

2.1.3 So the first problem is : why has the ship-yard not achieved the target of 2 ships in a year ?

2.1.4 The Management's view is that two ships a year is quite unrealistic with the existing facilities and that the installed capacity should be **derated**.

2.1.5 Even if we concede that it is not realistic to expect two ships a year with present facilities (including single shift working for the most part), it is clear that the present level of production is far too low and can be raised substantially. At the 1983-84 level of production the entire overheads of about 2 years (about Rs. 20 crores) would be loaded on the cost of production of each ship.

For the first two ships produced by the ship-yard, the international parity price fixed by Government plus escalation was only Rs. 19.45 crores and Rs. 21.27 crores respectively. The **direct** costs of production of each ship came to about Rs. 17 crores while the total cost of production was Rs. 34.67 crores and Rs. 34.24 crores respectively. Clearly the burden of overheads on each ship needs to be reduced by getting more orders and stepping up production.

2.1.6 A steep increase in output is clearly necessary, and as shown below, is also feasible by improved organisation and better productivity. For instance—

— The ship-yard is constructing 5 Panamax type bulk carriers of 75000 DWT with the same designs and hence the drawings are largely repetitive; it should therefore, be possible to provide composite plans at unit fabrication stage and carry out advance outfitting, thus cutting down completion time. But the ship-yard had not yet been able to gear up the organisation to achieve this.

— Nor is the planning and coordination of drawing and design work, preparation of bill of

materials, ordering of materials and the sequencing of interconnected operations done efficiently enough to keep idle time (of machinery and labour) to the minimum. Complete bills of material were not prepared in time. Machine utilisation data was not available for 275 out of 350 machines; complete compiled data was available for 31 machines in which machine idleness was as high as 71% in 1983-84 and the main reason was "want of job". Labour idleness was 2.9 lakh man-hours in 1983-84 (and this may well be an underestimate) and the main reason was "want of work".

2.1.7 While idle manhours remained high, overtime payments came to as much as **43% and 35%** of salaries and wages in 1981-82 and 1982-83 respectively, coming down to 15% in 1983-84.

2.2.1 While the men in position were about 17% more than the requirement as re-assessed in 1974, productivity of labour has not been improving fast enough. The manhour required for fabrication of a tonne of steel, as envisaged in the Revised Project Report (RPR) for the first ship was 200 and the actuals came to 384; for the fourth ship, the man-hours envisaged in RPR was 128 whereas the present anticipation is 230, which is higher than the RPR figure for the first ship.

2.2.2 Thus there is a clear need to monitor and improve labour productivity continuously and for this purpose it is necessary to ensure that direct labour does not remain unbooked merely because the cards have not been prepared in some cases. Therefore, the total time paid for, needs to be reconciled periodically with the time booked on jobs, plus idle time etc. This basic control is not being exercised by the ship-yard.

2.2.3 The manhours booked as direct labour upto 31-3-84 cannot be considered as quite reliable and could be misleading, especially as the costing system is based entirely on direct manhours booked. Management have said that the system of booking labour hours has improved after 4-4-1984. (But reconciliation is yet to be done).

2.2.4 The Management also stated that labour problems have been serious and frequent in the past.

2.2.5 The cost of material is estimated to be about 40% of the cost of a ship. **Steel plate is**

mostly imported. Strict control on utilisation is therefore called for but norms for wastages in various stages have not been prescribed.

2.2.6 As mentioned above, machinery is seriously under-utilised. The investment in machines is of the order of Rs. 36 crores but log books showing hours used are maintained only for 75 machines out of 350. Compiled information available in respect of 31 machines costing Rs. 4 crores showed that these machines were used only for 29% of the available hours in 1983-84; and of the idle time 55% was due to "want of jobs".

2.2.7 Low utilisation of capacity, low productivity of labour, prolonged period of ship-building and insufficient control over materials increased the cost of the ships far above the international parity price.

2.2.8 The shipyard which was estimated to be completed in five years at a cost of Rs. 45 crores took twelve years and Rs. 117 crores to complete. The increase in the cost of the project has increased the incidence of overheads on each ship built in this yard.

2.3.1 The design department of the shipyard is not yet capable of designing ships and there is no central design organisation in the country capable of designing ships for the five nationalised shipyards in the country. CSL is obliged to go for new foreign collaboration for each new class of ship.

2.3.2 The cost of design and knowhow in construction of ships is now a substantial element of the cost of ships, depending upon the number of ships constructed out of a single design.

2.3.3 CSL signed an agreement with M/s. SRS of Norway at a cost of Rs. 110.71 lakhs for designs and knowhow in the construction of 67,000 DWT bulk carriers for which Shipping Corporation of India (SCI) had given a letter of intent. After a commitment of Rs. 86.59 lakhs had been made by CSL to the Norwegian firm, SCI changed its decision about purchasing 67,000 DWT bulk carriers. The amount of Rs. 86.59 lakhs is proposed to be written off.

2.4.1 The policy followed for pricing ships, while largely safeguarding the interests of the shipowner, does not have sufficient built-in incentives for improving the efficiency of the ship-yard. The Ministry has stated that a proposal has been drawn up for a pricing formula based on the normative cost of ship-building in India i.e. based on norms of capacity utilisation and efficiency.

2.5.1 CSL has been working at a loss since commencement of production in 1975-76; except that in 1980-81 and 1981-82 the accounts showed profits (of Rs. 288 lakhs and Rs. 2 lakhs respectively) due to write-back of interest liabilities and payment of ship-building subsidy by Government.

2.5.2 The major portion of the loss was in ship-building. As mentioned earlier, the cost of production of each ship has so far been far above the selling price. As the output is much less than envisaged, the incidence of overheads on each ship is enormous. But apart from this, even the **direct costs** of the first two ships have been high and not much below the international parity price (IPP) plus escalation. For instance, on ship 001, direct costs (direct materials, direct labour and "direct expenses") added up to Rs. 16.87 crores; the IPP plus escalation came to Rs. 19.45 crores (out of which Rs. 2.75 crores has been deducted by the customer as liquidated damages). Similarly on ship 002, direct costs added up to Rs. 17.43 crores; while the IPP plus escalation came to Rs. 21.27 crores.

2.5.3 The inventory of raw materials, bought-out components and stores and spares as on 31-3-84, was roughly equivalent to about 2 years consumption. The carrying costs of this inventory, including interest charges, add to the overheads on each ship.

2.6.1 The ship-yard needs to make a major effort to bring down costs of ship-building and avoid losing money on ship-repair jobs. For this, it is essential to have a costing system that is relevant to CSL's decision-making needs and tailored for that purpose. As far back as 1977, Price Waterhouse Associates of U.K. pointed out that the costing system followed by the shipyard is "most unsatisfactory" as it is based on a "blanket" recovery rate i.e. covering entire production function and **based entirely on direct labour hours expended**. As a result, jobs which pass mainly through machine-oriented cost centres and do not incur many direct labour hours attract little overhead, so that CSL gets a misleading figure of the true cost of such jobs.

2.6.2 The consultants also pointed out that responsibility for controlling costs is not assigned to the individual who is in charge of a particular area; and this means that there is no financial yardstick against which an individual's performance can be measured, resulting in lack of financial awareness on the part of non-financial managers. Costs are not budgeted cost-centre-wise and compared with actual costs.

2.6.3 Another deficiency of the costing system is that the shipyard does not know the true incremental cost of any job. This is essential data for many day-to-day decisions, especially if CSL is not in a position to charge full costs for ship repair jobs (as its cost levels are very high, and some jobs are covered by standard tariff rates) and at the same time has much unutilised capacity and needs more jobs to reduce the incidence of overheads.

2.7.1 On ship-repair jobs, there is no arrangement for regular comparison of costs with income job-wise to examine reasons for loss, although CSL earns profits on some jobs and loses heavily on others.

2.8.1 CSL has at present no orders on hand beyond the 5th ship for which the keel was laid in January 1985. Once this ship is completed, the building dock and most of the shipyard will have no work (except repairs) until new orders are received and arrangements made to obtain the necessary designs and knowhow, order materials etc. all of which may take over 2 years. In view of the lead-time of over 2 years for starting work on a new class of ships, vigorous management action was, and is, necessary to get orders in time.

3. PRODUCTION PERFORMANCE

3.1 Capacity and production

3.1.1 The project was originally expected to be completed in all respects by September 1975, but shipbuilding facilities were fully completed only in 1980-81. However, the yard started building ships in 1976-77.

The shipyard has (i) a hull shop (ii) an assembly shop and (iii) an outfitting department.

3.1.2 The table below compares the build-up of capacity as per RPR with the actual production since 1976-77 :

Year	Installed capacity (DWT)	Pro-duction envisaged in RPR (DWT)	Actual pro-duction (DWT)	Percentage of 4 to (2) (3)	
1	2	3	4	5	6
1976-77	..	18,750	9,500	..	50.66
1977-78	..	26,250	10,400	..	39.61
1978-79	..	36,625	10,400	..	28.40
1979-80	..	42,000	23,300	..	55.47
1980-81	150,000	53,000	36,574	24.38	69.00
1981-82	150,000	65,000	53,056	35.37	81.62
1982-83	150,000	77,000	51,057	34.04	66.31
1983-84	150,000	92,000	35,662	22.77	38.76

3.1.3 Installed capacity according to RPR is two ships a year in terms of Panamax bulk carriers of 75000 DWT. This capacity was to be achieved within ten years (from 1975). As CSL does not consider it feasible to achieve this production with existing facilities the Ministry said during discussion (February 1985) that there is a proposal to derate the installed capacity to a realistic level.

To the extent that capacity is derated, the shipyard has to give up the hope of reducing the incidence of overhead costs on each ship. For instance, if the capacity is derated to one ship a year, the entire year's overheads (now of the order of Rs. 10 crores) will be borne by one ship. Besides, with the international parity price of Rs. 19 crores to Rs. 23 crores, about half of this would be taken up in overheads.

3.1.4 Actual production was much less than the RPR targets. CSL constructed and delivered only one ship during the 5 years 1976-77 to 1981-82 against the RPR target of 3 ships of 75000 DWT by 1981-82.

3.1.5 Reasons given by the Management were :

- Delay in completion of project facilities.
- Non-availability of raw materials and equipments in time.
- Inclement weather conditions with rainy season lasting for almost half of each year.
- Power cut.
- Labour troubles, non-achievement of desired productivity and resistance to sub-contracting, low level of infrastructure facilities available in Cochin, etc.

3.1.6 The rainy season in Cochin and the low level of infrastructure facilities were known when the site was selected and would have been taken into account while determining the capacity in the RPR. Further, by advance planning and early action for buying materials, the delay in getting them could have been reduced.

3.1.7 Management said during discussion (February 1985) that it was not possible to have complete bill of materials as the drawings were not comprehensive in certain areas. As the drawings for the first four ships had been completed, the advance planning system for material could not be implemented and it would be possible to do it in constructing the 5th ship. (It is not clear why this could not be done for 3rd and 4th ships.)

3.1.8 Layout of the shipyard is designed to handle 2080 tonnes of steel per month (for ship-building) and matching outfit works of two ships per year. As per RPR this capacity is to be attained during the 10th year of production and on building 11 ships. Annual targets were not fixed for each shop (such as hull shop, assembly shop and outfitting warehouse) and compared with actual production periodically nor were details of manhours used recorded to ascertain efficiency of performance of the shops.

3.1.9 The Ministry stated (January 1985) that "formulation of norms require certain stabilisation of the production process.... It is expected that reasonable production norms at various shop floor level will be formulated based on their past experience and commensurate with principles of industrial engineering".

3.2 Steel consumption and wastage

3.2.1 Actual steel used for construction of ships 001 and 002 is given below :

Ship No.	Qty. issued	Actual steel used	Balance
		M.T.	
001	14270	13700	570
002	14182	13400	782

3.2.2 In discussion (February 1985) Management said that SLL had not given any norms about steel utilisation; however, the quantity of steel that could be used according to SLL standards would be about 10,500 MT for hull and 1200 MT for out fit. Norms for wastage in each stage of production have not been fixed by the Management. In the absence of such norms the reasonableness of the wastage could not be ascertained.

3.2.3 Included in the balance quantity of steel was 1062.255 tonnes (value Rs. 31.88 lakhs) of imported plates which were noticed lying in open yard during physical verification conducted by the Design Department in June 1983. Most of this had been imported and had been in stock for 6 to 7 years and were affected by corrosion/pitting. The plates were considered unsuitable for ship building. During discussion (February 1985), Management said that as there was delay in the construction of the first ship the surplus could not be determined in time and used for other ships.

3.2.4 The cost of the steel declared unusable was Rs. 31.88 lakhs and the customs duty paid (provisional) on debonding was Rs. 22.73 lakhs in addition to interest payable amounting to Rs. 2.17 lakhs on the delayed payment of customs duty and other expenses Rs. 0.27 lakh. The total quantity was sold for Rs. 51.05 lakhs and the cash loss incurred was Rs. 6.00 lakhs in addition to which there was loss on account of interest on the money blocked up and the cost of storage.

3.2.5 The Management stated (February 1985) that "the practice followed for ordering and utilisation of steel is as follows :—

- Plates are ordered in tailor made sizes allowing suitable cutting margin to the exact requirement of individual hull block/unit.
- Each Plate size is decided after making a detailed design including development and nesting of other parts to keep scrap generation to the minimum. At the time of fabrication each plate is identified with reference to a particular use as per design and the plate is used only for the purpose.
- Longer cut pieces generated during fabrication are marked "Store for reuse" and are separately kept and reused for fabrication of smaller parts like brackets, machinery/equipment seating, etc.
- The actual wastage for ship 001 was 12% and for ship 002—11%. On the first and second ships there was a lot of rework. The wastage is expected to come down to about 10% in course of time subject however, to the condition that tailor made sizes of plates can be procured for future ships to be built".

3.3 Manpower-needs and actuals

3.3.1 RPR envisaged employment of 1996 persons to attain target production of two ships (of 66000 DWT each) a year and an annual ship repair capacity upto 7,50,000 GRT to be achieved in 10 and 9 years respectively after start of production.

3.3.2 In 1971, manpower requirements were assessed in consultation with MHI at 2032 persons (to be positioned by the time production started in 1975-76) including 400, persons for ship-repairs.

3.3.3 Considering larger size of vessels of 75,000 DWT proposed to be constructed as against ships of 66,000 DWT envisaged in the RPR, in 1974 the requirement was reassessed as 2166. The table below compares RPR assessment with 1971 and 1974 assessments and finally with actuals :

Table 3.3.3 A

	Technical Staff	Supporting staff and Officers	Total
RPR	1608	388	1996
Assessment (1971)	1418	614	2032
Reassessment (1974)	1520	646	2166

Table 3.3.3A—Contd.

	Technical Staff		Supporting Staff and Officers		Total	
	No. sanctioned	No. in position (including of production staff)	No. sanctioned	No. in position	No. sanctioned	No. in position
As on						
1st April 1972	95	33	168	149	263	182
31st March 1973	102	54	242	203	344	257
31st March 1974	187	137	336	305	523	442
31st March 1975	258	210	394	363	652	573
31st March 1976	693	478	474	453	1,167	931
31st March 1977	1,058	797	605	543	1,663	1,340
31st March 1978	1,466	1,061	668	609	2,134	1,670
31st March 1979	1,540	1,283	704	646	2,244	1,929
31st March 1980	1,568	1,463	742	680	2,310	2,143
31st March 1981	1,763	1,561	784	725	2,547	2,286
31st March 1982	1,746	1,656	760	737	2,506	2,393
31st March 1983	1,787	1,689	793	741	2,580	2,430
31st March 1984	1,881	1,809	785	728	2,666	2,537

3.3.4 The actual number of persons employed (2286) exceeded the 1974 manpower assessment from the end of 1980-81 onwards, although the actual level of production was always much less than that assumed in the assessment of manpower requirement.

3.3.5 ASCI was asked to evolve a manpower plan for CSL and initiate a management development programme. The first part of the work was completed and a report was submitted (July 1980). But this has not been implemented so far. The Board was not kept informed (February 1985).

3.3.6 Asked why the ASCI report was not implemented, Management stated (January 1983) "..... in the meantime the Company had drawn up its objectives for the period till 1985, which was to produce seven ships in five years. It had also embarked on large scale shiprepair activities. All these necessitate changes in the organisational set-up as also manpower requirements. Consideration of the report of the ASCI on the first part has, therefore, been kept pending for a clearer picture of the organisational set up and manpower requirements on the

basis of the revised scale of activity to emerge. ASCI has been requested to defer the second part of their assignment viz. management development for the time being for the same reason. It may be noted that frequent changes in the organisational set-up and manpower positioning creates administrative difficulties".

3.3.7 In October 1981, a committee was constituted with Chief Manager (Ship building) as Chairman to look into manpower problems and to submit recommendations within a fortnight. The report submitted in June 1982 has not yet been submitted to the Board (February 1985).

3.3.8 The Process of rationalising of manpower is thus still pending.

3.4 Labour productivity

3.4.1 The table below compares total estimated manhours as given in RPR (extrapolated to 75,000 DWT) as indicated by the company and the actual manhours used for the construction of the first 4 ships. Ships 001 and 002 have been completed. For the other two, which are in progress manhours upto 31-3-1984 have been given.

Table 3.4.1A

(In million hours)

Ship No.	Total manhours as per RPR	Total manhours estimated	Actual manhours used	Excess
001	2.2	2.6	4.15	1.55
002	1.8	2.0	3.15	1.15
003	1.2	1.8	2.61 (in progress)	
004	1.07	2.48	1.59 (in progress)	

As shop-wise break-up of these hours is not available, reasons and area of over-run of manhours could not be analysed even for the two completed ships.

3.4.2 It is essential that the management should have shop-wise man-hour norms/targets and monitor the actual manhours and labour productivity continuously. To ensure that the actual manhours reported are reliable, a first check is that the total time paid for should be reconciled periodically with the time booked on the jobs, idle time, etc. This basic check is not being exercised by the shipyard.

(During discussions (February 1985) the Management said that in respect of those persons to whom job cards had been issued had only been booked and that there were persons who had not maintained job cards and their time was not booked as direct manhours. This again underlines the importance of overall reconciliation of hours).

3.4.3 The number of manhours required for fabrication and erection of a ton of steel on average as envisaged in the RPR is compared with actuals (or latest anticipated in the case of ships under construction). CSL stated that for this purpose about 1800 hours per man per year is taken as standard i.e. 150 hours per month. Hull weight is taken as 10800 MT.

Ship No.	Manhours as given in RPR	Actual/anticipated
001	200	384 actual
002	170	290 actual
003	146	250
004	128	230

3.4.4 There is no indication that the shipyard has been able to reduce manhours sufficiently even on the fourth ship. The RPR figure of 200 manhours per tonne for the first ship is not expected to be reached even at the stage of the construction of the fourth ship.

3.4.5 Based on the rate of 384 manhours for erection of a tonne of steel for the ship 001, the total quantity of steel that could have been erected for 4.15 million hours works out to 10,807 tonnes; on the same basis for 002, the quantity of steel erected works out to 10,787 tonnes. The total quantity of steel fabricated for these ships (hull and outfit) was 13,700 tonnes and 13,400 tonnes for 001 and 002 respectively.

3.4.6 The total production hours, as given by CSL and the total production hours available calculated on the basis of the production staff included in para 3.3.3 A (at the rate of 1800 hours per man per year) are given below :

Table 3.4.6A

Year	Production staff Hours* (in lakhs)	Available production hours* (in lakhs)	Available production hours as given by the CSL plus authorised absence (in lakhs)	Difference (in lakhs)
1981-82	1,018	18.32	17.77	0.55
1982-83	1,051	18.92	16.07	2.85
1983-84	1,010	18.18	15.60	2.58

*Calculated at the rate of 1800 hours per man per year.

Thus the difference represents unaccounted manhours and therefore the figures booked as the actual manhours for 001 and 002 are presumably underestimated.

3.5 Idle time

3.5.1 Table below shows the percentage of idle time wages to total wages of production staff for the past five years :

Year	Total wages of production staff (Rupees in lakhs)	Idle time wages	Percentage
1979-80	102.49	12.60	12.3
1980-81	154.98	14.64	9.4
1981-82	145.87	17.81	12.2
1982-83	142.21	11.33	8.0
1983-84	150.88	26.36	17.5

3.5.2 Payment for idle time increased from Rs. 12.60 lakhs in 1979-80 to Rs. 26.36 lakhs in 1983-84. The high quantum of idle time wages indicated that efforts are called for to minimise idle time. As mentioned earlier the actual idle time may have been higher.

3.5.3 Idle time analysed cause-wise is tabulated below :

Table 3.5.3A

(Manhours in lakhs)

	1979-80	1980-81	1981-82	1982-83	1983-84
Total hours	15.54	17.57	17.77	16.07	15.60
Less authorised absence	0.65	1.34	2.16	1.80	1.53
Total available hours	14.88	16.23	15.61	14.27	14.07
Production hours	12.97	14.57	13.44	12.99	11.17
Idle hours	1.91	1.66	2.17	1.28	2.90
On account of :					
(i) waiting for raw materials, consumables and tools	0.45	0.07	0.04	0.03	0.07
(ii) waiting for semi-finished materials within the depts.	0.09	0.09	0.19	0.13	0.16
(iii) waiting for utilities	0.11	0.13	0.04	0.06	0.07
(iv) waiting for transport material handling facilities	0.09	0.11	0.11	0.12	0.15
(v) waiting for other workers	0.04	0.05	0.04	0.02	0.10
(vi) waiting for instructions	0.04	0.02	0.04	0.02	0.03
(vii) waiting for want of job	0.42	0.74	0.90	0.65	1.15
(viii) waiting due to breakdown of equipment	0.09	0.09	0.07	0.09	0.10
(ix) waiting due to inclement weather	0.41	0.15	0.27	0.11	0.15
(x) Labour trouble	0.13	0.15	0.43	0.01	0.85
(xi) Other reasons	0.04	0.06	0.04	0.04	0.07

(i) to (viii) could have been improved by management efforts.

3.5.4 The main reason for idle time is waiting for want of job. This could be minimised by better planning and efficient organisation.

3.5.5 Another cause for idle time is chronic labour trouble which has been one of the major problems of CSL.

3.5.6 Yet another reason is waiting for semi-finished materials within the departments and waiting for transport, material handling facilities. The idle time on these could be minimised by advance planning.

It may be observed that idle hours could have been reduced considerably by proper planning.

3.6 Overtime

3.6.1 Notwithstanding satisfactory manpower position (compared with RPR) expenditure on payment of overtime was very high as may be seen from the

table below :

Year	Percentage of overtime to salaries and wages
Shipbuilding staff	
1979-80	12.04
1980-81	24.71
1981-82	43.41
1982-83	34.78
1983-84	14.73
Ship repair staff	
1979-80	4.55
1980-81	20.95
1981-82	25.53
1982-83	48.60
1983-84	28.10
Other Technical & Administrative staff	
1979-80	11.25
1980-81	18.23
1981-82	16.81
1982-83	22.96
1983-84	11.31

3.6.2 Even though actual production was much lower than what was envisaged in RPR, overtime payments had been rising from year to year from 1979-80 onwards (especially in shipbuilding) except in 1983-84 when the workers declined to work overtime.

3.6.3 Ministry and Management told the Audit Board (February 1985) that in ship-repairs certain amount of overtime was inevitable and that in some cases certain amount of overtime was paid as incentive.

3.6.4 It is seen that the percentage of overtime allowance to salaries and wages is as high as 43 to 48 percent in some years. This calls for detailed examination of individual cases. (This could not be done in Audit as details of overtime hours were not readily available). Hence there is an urgent necessity for management to review the matter and to reduce the incidence of overtime.

3.7. Machine Utilisation

3.7.1 At the beginning of 1983-84 CSL had about 350 machines valued at Rs. 36.41 crores. Optimum utilisation of men and machines would maximise output and bring down the cost per ship.

3.7.2 To watch the utilisation of machinery, log books have to be maintained for each machine and reviewed periodically to find out whether any idle time is excessive.

3.7.3 Log books are maintained for only 75 machines out of about 350 machines and even for some of the costlier machines log books were not maintained. Information regarding the number of hours for which the machines were used and the number of hours for which they remained idle, classified according to reasons, are recorded daily. The information, consolidated monthly through the computer, is included in the Management Information System, but there were no periodical reviews of the information.

3.7.4 A review of total time available, production time and idle time during 1983-84 in respect of 31* machines costing Rs. 4.42 crores, showed that out of 65293 available hours, the utilisation was only 18902 hours i.e. 29% (five machines were not used at all and four machines were used for less than 10% of the time available). Causewise break-up of the idle time (below) show that most of the idleness was due to "want of job".

*for the remaining 44 machines for which utilisation was noted, compiled figures for the periods were not available.

	No. of hours	% of total time
(i) Waiting for material, consumables, tools, semi finished material within the department	512	1
(ii) Waiting for transport & material handling facilities.	206	..
(iii) Waiting for instructions	113	..
(iv) Waiting for want of jobs	35,793	55
(v) Waiting for preventive maintenance	448	1
(vi) Other reasons	9,320	14
	46,392	71

The Management stated (February 1985) that "for all costly equipments machine utilisation records are being maintained by the company. However due to labour agitation for some period the utilisation reports in respect of some machinery and cranes are not maintained. . . . the machinery and equipment are intended for full capacity operation and CSL is yet to reach the optimum level of performance. Certain equipment in the ship repair complex will also be used depending upon the works that arise in the course of repair of vessels".

3.7.5 Galvanising Plant

In March 1980, the Company decided to set up a galvanising plant as the existing arrangements for galvanising pipes through outside sources in and around Cochin were having frequent plant breakdown and labour trouble and sending pipes outside the State was considered uneconomical. The CMD ordered that a galvanising plant should be installed urgently and made operational in 4 weeks time. The work was completed in January 1981 at a cost of Rs. 8.08 lakhs as against estimated cost of Rs. 6.25 lakhs.

3.7.6 In the meanwhile, 67 tonnes of zinc valued at Rs. 9.59 lakhs were also purchased for galvanisation work through Minerals and Metals Trading Corporation of India in April/May 1980.

3.7.7 Though the plant has been ready since January 1981 the work of galvanisation was entrusted to two outside firms viz. M/s. Kerala Electrical & Allied Engineering Company Limited at Mamala and M/s. TGK Industries at Sreemulan Nagar again in May 1981 by calling for quotations.

3.7.8 Of the total quantity of 67 tonnes of Zinc purchased, 5 tonnes were sold, 7 tonnes used in the shipyard and 47 tonnes given on loan against cash deposit to the two firms mentioned above.

3.7.9 The plant has not been put to use. The Ministry (February 1985) stated that "operation of the galvanising plant involves a minimum cost for each charge which is disproportionately high because of the small quantities of galvanising work required by us from time to time on a regular basis. Hence the work is got done through local parties".

4. MATERIAL MANAGEMENT

4.1 Standardisation and Codification

4.1.1 No action was taken towards standardisation and codification of ship items till November 1981, when codification work for 60,000 items of stores was entrusted to M/s. Techno Management and Computers Service Private Limited, Cochin to be completed within a period of three months. CSL stated in February 1983 that "the work of Techno Management and Computer Services is stated to be practically over (January 1983) and they have given us the tapes required for all the groups. The Final review is being conducted and the code list will be released shortly".

4.1.2 The Ministry stated (January 1985) that "CSL needs to implement a codified system of material accounting on a time bound programme and strengthen the system of periodical review and physical verification of stock, etc."

4.1.3 Although the codification was stated to be "practically over" in January 1983, the codified system is yet to be implemented (February 1985).

4.2 Deficiencies in Inventory Control System

4.2.1 The following deficiencies were noted in material management :—

- (a) The Financial and Accounting Manual requires the Controller of Contracts and Stores to verify the stock periodically to ensure that the up-to-date quantity balance of each item of stores as shown in the bin cards agrees with the actual physical stock balance of each item. (This is in addition to physical verification of stores by the Internal Audit). Such verification is to be done invariably by an officer other than the one in charge of the stores and the work is to be so programmed that all items of stores are verified once a year. However, no such verification was conducted at all by Controller of Contracts and Stores.

- (b) The table below shows the physical verification of stores by internal audit from 1978-79 to 1983-84 (as furnished by the Company) :

Table 4.2.1(b)-A

Year	Total No. of stores items	No. of items verified	Percentage of 3 to 2	Balance (2-3)
1	2	3	4	5
1978-79	5,522	3,308	59.91	2,214
1979-80	7,514	2,903	38.63	4,611
1980-81	7,159	886	12.38	6,273
1981-82	11,325	1,597	14.10	9,728
1982-83	13,049	1,450	11.11	11,599
1983-84	13,955	650	4.66	13,305

The percentage of items subjected to physical verification by internal audit came down from 59.91 in 1978-79 to 4.66 in 1983-84.

- (c) The Company Auditors have reported (on the accounts from 1976-77 onwards) that they were not satisfied with the system of physical verification. No physical verification was conducted by the Management during the years other than stock verification conducted by the internal audit department of the company on a selective basis. The system of physical verification is evidently unsatisfactory and the scope and coverage has to be enlarged. No effective remedial action seems to have been taken in this regard.
- (d) The system of continuous agreement of book figures with the stock in hand (known as "perpetual inventory"), is now in vogue in the Shipyard. This needs to be extended to cover more items of materials.

4.3 Inventory Level

4.3.1 The table below shows the year-end inventory levels, (excluding work-in-progress and loose tools) of the last five years as a percentage of the annual consumption.

Table 4.3.1-A

Year	(Rupees in lakhs)				
	Raw Materials	Stores and Spares	Bought out Components	Goods in transit and pending inspection	Total
1	2	3	4	5	6
1979-80					
Average yearly consumption	120.73	67.62	n.a.	..	..
Closing stock	365.47	229.67	n.a.	90.03	685.17
Percentage	303%	340%	..	..	..

Table 4.3.1A—contd.

	1	2	3	4	5	6
1980-81						
Average yearly consumption		139.01	188.47	560.48	..	..
Closing stock		558.06	338.71	50.60	562.35	1509.72
Percentage		401%	180%	9%	..	..
1981-82						
Average yearly consumption		524.79	111.88	602.38	..	..
Closing stock		772.58	448.08	258.06	420.59	1899.31
Percentage		147%	400%	43%	..	..
1982-83						
Average yearly consumption		395.49	126.77	577.33	..	..
Closing stock		802.52	418.12	443.65	462.38	2126.67
Percentage		203%	330%	77%	..	..
1983-84						
Average yearly consumption		467.07	116.12	475.98	..	..
Closing stock		747.79	423.04	611.25	423.46	2205.54
Percentage		160%	364%	128%	..	..

Note : Work-in-progress and loose tools have been left out.

4.3.2 The ship yard has no order on hand after the fifth ship. Materials are ordered specifically for each ship. In the light of this, the total stock on hand as on 31-3-1984 (equivalent to over 2 years consumption) was on the high side. Since the ship-building work of the yard has so far been repetitive it was possible to carry out advance planning in detail and order materials accordingly (except for the uncertainties caused by labour problems) avoiding ordering of quantities too far ahead of requirements, as carrying costs add heavily to the burden of over-heads. Management have said that the material needed for each ship is divided into two categories, the second category being ordered later as it is needed later in the later stage of production.

Progress in Computerisation of Inventory

4.3.3 To keep inventory costs low while ensuring availability of the right materials at the right time (the sine qua non of efficient ship building), computerised inventory control and material planning can be invaluable. Although CSL has a computer, and can greatly improve material planning and management, (especially when the same design is repeated) substantial man-hours were lost every year for want of materials, consumables and tools. (see figures in paragraph 3.5.3).

4.3.4 As mentioned in para 4.1.1 the standardisation and codification of ship items was entrusted to a consultant in November 1981. This has not been implemented as yet.

4.4 Non-moving Stores

4.4.1 Stores balance of Rs. 423.04 lakhs as on 31-3-1984 included stores and spares valued at

Rs. 189.96 lakhs which had not moved for three years or more. As shown below, the bulk of these (by value) are steel items and pipe items.

	No. of items	Value (Rupees in lakhs).
Steel items and pipe items	1,657	118.33
Electrical items	152	4.65
Paint & Electrodes	41	1.20
Tools	389	2.92
Spares	2366	51.17
General Stores	483	9.42
Bought out items	4	2.27
	5,092	189.96

4.4.2 There was no systematic review of each of item of store to classify them as slow moving/non-moving for taking further action. Stock statements maintained by EDP do not contain particulars like date of receipt of materials.

4.5 Purchase Manual

4.5.1 No manual on procedures and methods for purchase and custody of materials has been drawn up so far (February 1985).

4.5.2 It was suggested by Chairman-cum-Managing Director in April 1979, while releasing the Financial and Accounting Manual, that a comprehensive review should be undertaken after a period of two years for updating and improving procedures based on experience gained. No such review has yet been conducted (February 1985) even after lapse of five years.

5. FINANCIAL PERFORMANCE

5.1 Working Results

CSL has incurred losses since commencement of production in 1975-76, except for the profits shown in the years 1980-81 and 1981-82 which were mainly

due to adjustment of additional ship building subsidy and interest subsidy sanctioned by the GOI. Major portion of the loss is in ship building.

5.1.1 Working results of the Company for last five years are tabulated below :

Table 5.1.1-A

	(Rupees in lakhs)				
	1979-80	1980-81	1981-82	1982-83	1983-84
Income					
(i) Ship building	..	..	1,945	..	2,127
(ii) Ship repairs	37	47	240	552	219
(iii) Other services	7	6	9	12	11
(iv) Interest subsidy from GOI	252	482	655	332	338
(v) Other income	31	59	105	86	40
(vi) Accretion (+)/Decretion(-) in work in progress	(+987)	(+1,906)	(-)10	(+2,177)	(-)439
(vii) Subsidy for ship building	..	..	360	..	381
	1,314	2,500	3,304	3,159	2,677
Expenditure					
(i) Salaries and other benefits to employees	278	387	459	554	532
(ii) Raw materials and components consumed	121	139	525	973	943
(iii) Interest on loans	635	603	783	901	959
(iv) Depreciation	293	359	319	375	390
(v) Provisions	520	187	..	685	383
(vi) Other expenditure*	330	1,105	1,337	668	544
(vii) Cost of miscellaneous items	18	12	15	53	32
	2,195	2,792	3,438	4,209	3,783
Deduct†	176	97	123	98	43
Net expenditure during the year	2,019	2,695	3,315	4,111	3,740
Loss for the year	705	195	11	952	1,063
Adjustment relating to previous year	(-)84	(+483)	(+13)	(-)16	(+32)
Net Loss	789	..	..	968	1,031
Net Profit	..	288	2	..	..

*This includes cost of ship repair and sub-contract.

†Expenditure relating to capital assets has been deducted from the Revenue expenditure.

5.1.2 The net loss of Rs. 9.68 crores in 1982-83 was attributed by CSL to :

- an unprecedented power cut (20% from 1-12-1982 and 40% from 16-1-1983);
- protest action by the officers and supervisors; and
- resistance and non-availability of appropriate contractors in certain fields of specialisation.

5.1.3 The loss in 1983-84 was Rs. 10.31 crores after taking into account interest subsidy of Rs. 3.38 crores and shipbuilding subsidy of Rs. 3.81 crores.

Without these subsidies, the loss would have been Rs. 17.50 crores, with further possible additions on account of the following :

	(Rupees in Crores)
(i) A tug costing Rs. 33.1.19 lakhs was sold to CPT who have agreed to pay Rs. 2.17 lakhs. The difference on this account	1.14
(ii) Sales-tax demanded by the State Govt. but disputed by the Company	7.15*
(iii) Wage claims pending settlement	0.58
(v) Interest subsidy claimed by CSL in respect of a loan sanctioned against outer channel dredging but not accepted by GOI	0.15
	9.02

*The Sales-tax Authorities have assessed sales of ships 001 and 002 for Sales-tax totalling Rs. 7.15 crores. The Company has urged that ship building is a works contract and filed appeals. Pending decision, Rs. 100-92 lakhs have been deposited with the State Govt. and have been treated as Advance recoverable.

5.1.4 The cumulative loss of CSL as on 31-3-1984 was Rs. 33.09 crores, after taking into account subsidies of Rs. 43.12 crores (subsidy received/receivable on ship construction Rs. 11.70 crores and reimbursement of interest charges Rs. 31.42 crores).

Out of the total loss of Rs. 33.09 crores the major portion of the loss was in ship building activity (Rs. 24.96 crores).

5.1.5 The main causes for the losses are labour unrest, low labour productivity and organisational inefficiency and managerial deficiencies high overhead costs arising partly from delay in construction high interest charges on borrowed funds partly due to de-

layed stage payments and pricing policy for ships based on international prices.

5.1.6 In the absence of shop-wise comparisons of estimated and actual costs it has not been possible to pinpoint the causes of losses in particular shops activities. Similarly, in ship repair activities, CSL does not compile and compare job-wise cost and income and thus cannot easily locate the major sources of loss.

5.2 Financial position

5.2.1 Heavy losses year after year have undermined CSL's financial position in spite of the relief and subsidies given by GOI. Financial position as at the end of last five years is indicated below :

Table 5.2.1 A

	(Rs. in lakhs)				
	1979-80	1980-81	1981-82	1982-83	1983-84
(a) Paid-up Capital	5,411	5,411	6,203	6,203	6,203
(b) Borrowings from					
(i) Govt. of India	5,578	6,223	5,979	5,979	6,104
(ii) Banks (short-term)	656	664	1,171	991	1,168
(c) Trade dues and other current liabilities	631	568	897	1,532	2,591
	12,276	12,866	14,250	14,705	16,066
(d) Net fixed assets	5,570	8,296	8,481	8,661	8,960
(e) Capital work-in-progress	3,083	566	730	511	127
(f) Current assets and loans and advances	1,965	2,692	3,726	3,117	3,492
(g) Miscellaneous expenditure	58	—	3	137	178
(h) Cumulative loss	1,600	1,312	1,310	2,279	3,309
	12,276	12,866	14,250	14,705	16,066

5.2.2 Some of the financial ratios are as follows :

- The percentage of current Assets, Loans and Advances to total Net Assets varied from 16 in 1979-80 to 21 in 1980-81 to 26 in 1981-82, to 21 in 1982-83 and to 22 in 1983-84.
- The percentage of Currents Assets, Loans and Advances, to Current Liabilities (including provisions and short term loans) varied from 153 in 1979-80 to 219 in 1980-81, to 180 in 1981-82, to 124 in 1982-83 and to 93 in 1983-84.
- The percentage of quick Assets (Sundry Debtors cash and Bank balances and Loans and Advances) to current liabilities varied from 76 in 1979-80, to 285 in 1980-81, to 220 in 1981-82, to 86 in 1982-83 and to 70 in 1983-84.

These ratios indicate the trend in the solvency and liquidity position of the Company. As on 31st March 1984, ready cash available with the Company was only Rs. 10 lakhs; and the Company has to resort to short term loans from banks for financing working

capital. The undisputed interest liability to GOI as on 31-3-1984 was Rs. 14 crores.

5.3 Return on capital

5.3.1 GOI has subscribed the entire paid-up capital and has also given long-term loans and short-term loans to CSL. The normal rate of interest payable on the loans was 10½% per annum; the difference between this and the SDFC rate of interest (viz. 4½%) was payable to the Company as subsidy. Short-term loans given for discharging interest obligations on long-term loans were also put under moratorium upto 31st March 1980 and were repayable in 5 years; the rate of interest was 10% per annum.

5.3.2 As the Company was facing difficulties in generating funds for working capital requirements, GOI gave the following reliefs (October 1981) to ease CSL's financial position :

- interest holiday on all loans sanctioned/to be sanctioned upto 31st March 1982.

(ii) moratorium on repayment of long-term loans and on loans for working capital to be given upto 31-3-1982 and the repayment was to commence after 1-4-1982.

5.3.3 The Company also arranged for cash credit from State Bank of India and State Bank of Travancore upto Rs. 1200 lakhs, against Government guarantee. As on 31st March, 1984 Rs. 1163.65 lakhs on this account was outstanding.

5.3.4 As a result of interest holiday on all loans upto 31-3-1982, the interest foregone by Government of India and treated as subsidy to CSL upto that date amounted to Rs. 2472.22 lakhs.

5.3.5 The cumulative loss as on 31-3-1984 was Rs. 33.09 crores which works out to 53% of the paid-up capital. The annual interest liability on GOI loans, after allowing for interest subsidy, is of the order of Rs. 4 crores and CSL is also paying interest to banks on cash credit facilities. There is, therefore, a need to review the pattern of financing the Company.

5.3.6 Ministry stated in February 1985 that the financial position of CSL is being looked into so as to decide on the pattern of financing and pricing policy.

5.4 Credit control

5.4.1 System of Stage payments.—Delays in getting stage payments from ship owners had added to the cash problems of CSL. Ship owners made stage payments towards sale price. The system laid down in December 1974 by GOI was followed for ships 001 and 002; and marginal changes were made in the contracts for ships 003 to 005.

5.4.2 Under the tripartite agreement between Shipping Development Fund Committee (SDFC), CSL and ship owners, 95% of price was settled by SDFC and balance by ship owners. Though the revised percentages are advantageous to CSL in earlier stages, settlement of stage payment was delayed due to too many stage payments resulting in claims for interest charges on belated payments. To avoid delays in release of instalments to shipyards, the pattern of stage payments was streamlined (October 1981).

5.4.3 Again, in November, 1981, SDFC reviewed the matter and, to spare ship owners from cash flow problems, recommended a revised schedule of stage payments to public sector shipyards. The recommendations were accepted (March 1982) by GOI for adoption for all future constructions in these yards, from October 1981 onwards. No fresh contracts were concluded by CSL after this date.

5.4.4 Table below gives stage payments due from shipowners and other debts outstanding for four years ending 31st March 1984 :

(Rupees in lakhs)

	Stage payments	Other debts
As on 31st March		
1981 . . . . .	..	54.79
1982.	(1373.39)	214.03
1983.	(37.49)	337.74
1984.	(702.87)*	671.09

*The dues are from Chowgule Steam Ships Ltd. and Surendra Overseas Ltd.

Stage payments due from shipowners are accounted for on actual receipt basis from 1980-81.

5.4.5 Agewise analysis of debts outstanding for more than one year as on 31st March 1984 is given below :

(Rupees in lakhs)

	Govt. Department	Govt. Companies	Others
(i) Debts outstanding for over one year but less than 2 years	0.07	199.00	3.95
(ii) Debts outstanding for more than two years but less than three years	20.38	14.96	8.37
(iii) Debts outstanding for three years and above . . . . .	..	..	0.44

5.4.6 While stage payments for ship 001 constructed for SCI were received by CSL generally in time, payments for ship 002 and 003 were generally delayed especially for the former for periods ranging from 11 months to 3 years.

5.4.7 Ship-construction is financed by SDFC to the extent of 95 per cent of the price. The Loan is disbursed in instalments to coincide with the instalments of price payable by the ship-buyer to CSL after buyer has met initial 5% of the price from own resources and furnished in favour of SDFC adequate and acceptable interim security as provided in the loan agreement. But shipping companies were unable to furnish the acceptable security with the result the stage payments were delayed for an year or so.

Rate of interest on such stage payment released directly to CSL was 8% whereas loan sanctioned to shipping companies by SDFC carried 4½% interest only.

5.4.8 Based on agreement entered into with the concerned shipping company for ship 003, CSL received Rs. 105 lakhs as first instalment in March 1977 and Rs. 160 lakhs as the next two instalments

of Rs. 80 lakhs each in August 1980. However, as the shipping company was not prepared to pay interest at 8% for the period for which there was no security provided by it, subsequent instalments were not released.

5.4.9 As per terms of shipbuilding contract, the Company is entitled to interest on the amount of defaulted instalment at the rate of 1% above the ruling minimum rate of lending by scheduled banks as stipulated by Reserve Bank of India as on the date of instalment due until payment of instalment concerned. Accordingly, interest charges amounting to Rs. 139.40 lakhs were due from Shipping Company in respect of ship 002 on belated six instalments of stage payments. The claim is still pending settlement (February 1985).

5.4.10 As regards ship 003 interest charges at 8% on the amount of Rs. 265 lakhs drawn by the Company from SDFC amounted to Rs. 36.47 lakhs. As the amount was drawn on account of the shipping company's failure to arrange for stage payment, CSL

required the shipowner to reimburse interest charges. The latter refused but offered to reimburse CSL 4½% interest only on the loan on the plea that this was the rate of interest levied by SDFC on loans to shipping companies. This claim is also pending settlement (February 1985).

5.4.11 According to CSL, stage payments due from shipowners continue to create cash problems. A sum of Rs. 702.87 lakhs was pending recovery as on 31st March 1984. The Company's continued dependency on bank finance for its working capital was attributed to such delay in receipt of payments from shipowners.

5.4.12 The present arrangements for stage payments are cumbersome and cause serious delays and thus, cash problems for CSL.

5.5 Dues for Shiprepairs

5.5.1 Comparative figures of shiprepair dues from public sector undertakings and other parties at the end of last three years are given below :

Table 5.5.1-A

(Rs. in lakhs)

	1981-82		1982-83		1983-84	
	Public Sector units	Others	Public Sector units	Others	Public Sector units	Others
Debts outstanding for less than one year	177.88	21.46	269.94	9.00	76.39	17.44
Debts outstanding for more than one year but less than two years	12.11	..	38.80	1.10	158.31	..
Debts outstanding for more than two years	..	0.44	..	0.44	24.71	8.51

5.5.2 Though CSL allows a credit period of 15 days from date of presentation of bills, credit period has been exceeded invariably in all these cases. CSL informed (February 1983) GOI in reply to a questionnaire "considerable difficulties are experienced in the collection of ship repair dues even when the shipowners happen to be Public Sector Units. Bank credit is expensive and for a fledgling unit like CSL the inordinate delay in dues causes financial hardship and consequent slowing down of physical activities".

5.6 Cash Credit

5.6.1 Due to financial difficulties and in order to meet requirements of working capital, the Company has been having cash credit arrangement with State Bank of India since 1977-78. Overall cash credit limits and amount outstanding at the end of 1977-78 through 1983-84 have been gradually increased as

indicated below :

Table 5.6.1-A

(Rupees in lakhs)

	Cash Credit			Total interest paid during the year
	Overall limit	Amount outstanding	Maximum availed	
At the end of March				
1978	300.00	..	**	10.37
1979	600.00	412.49	**	39.28
1980	770.00	545.48	644.00	76.21
1981	1200.00	658.63	837.00	121.32
1982	1200.00	1166.13	1103.00	128.03
1983	1200.00	985.96	1269.00	172.82
1984	1200.00	1163.65	1215.22	186.86

** not available.

5.6.2 As dues are not collected in time CSL had to go in for more and more bank loans for working capital, thus raising its interest liabilities.

6. COSTING SYSTEM

6.1.1 CSL follows the system of job costing under which costs which are directly attributable to a job are charged to the job and the rest of the expenses are allocated as overheads.

6.1.2 Under the British Technical Co-operation, Price Waterhouse Associates of U.K. were engaged (January 1977) to carry out a study of financial management and accountancy procedures at Cochin Shipyard. In their report submitted in June 1977, following deficiencies were noted in the existing system :—

- (a) A job order costing system is in operation at the shipyard but application of over-heads to jobs is most unsatisfactory. The system provides for a 'Blanket' recovery rate i.e. covering entire production function and based entirely on direct labour hours expended. This will lead to an inequitable charge to jobs. For instance, some jobs would pass mainly through machine-oriented cost centres and would not incur many direct labour hours. Therefore, very little overhead would be charged to such jobs under the present system because no consideration has been given to principal determinant of throughput in cost centre. By operating this system it would not be possible to determine within an acceptable level of accuracy, the true cost of e.g. any particular shipbuilding job or of a ship repairing or outside processing job done in the shipbuilding area.
- (b) Responsibility for controlling costs is not assigned to the individual who is in charge of a particular area. This leads to a loss of control as there is no financial yardstick against which an individual's performance can be measured. It follows that there can be a lack of adequate financial awareness on the part of non-financial managers.

6.1.3 The report inter alia contained following recommendations :—

- (a) A system of costing should be introduced for shipbuilding based on full absorption of overheads. Under the proposed system actual direct cost would be reported for control purposes. Indirect costs would be reported by cost centre and by contract.
- (b) Special procedure should be introduced to provide daily and weekly returns of labour

and material usage on ship repairing work. These returns would be used for invoicing purposes and to provide a close control both on the cost of repair contracts and on the utilisation of labour.

6.1.4 Following defects/deficiencies were noticed in the existing costing system and control :

- (a) Costs are not budgetted cost-centerwise and compared with actual costs with a view to contain costs within budget parameters.
- (b) Monthly material price variance and usage variance reports based on estimated price and quantities required as per sanctioned estimates and work instruction memos issued by CC&S and Planning Department respectively are not prepared to analyse performance and take corrective action.
- (c) Mandays paid for as per time cards are not reconciled with those allocated to job cards. Management stated (February 1983) that reconciliation being a time consuming job, had not been attempted so far.

As indicated in paragraph 3.4.6 the direct man hours booked were under-estimated, sometimes seriously (as on ships 001 and 002). Therefore, over heads calculated as a percentage on direct labour costs is also badly distorted.

- (d) Variance reports on direct and indirect overheads are not being prepared periodically for control purposes.
- (e) Standard labour hour rate for each category of labour is not computed as per Manual. Instead, a comprehensive labour hour rate is being worked out common to all categories of labour.
- (f) Separate overhead recovery rate is not fixed for work done mainly by machine-oriented cost centres although this defect was specifically pointed out by consultants.

Thus the existing system cannot be considered as providing accurate assistance to Management in ascertaining true cost of its products/services and in controlling costs.

6.1.5 On an enquiry from Audit regarding periodicity of cost reports submitted to the Management for control purposes CSL said in February 1985

that cost reports are prepared only at the time of annual closing of accounts.

6.1.6 The Ministry stated (February 1985) that "once reasonable production norms at various shop floor level are formulated by the ship yard based on their past experience and commensurate with principles of industrial engineering the ship yard should be in a position to have cost centre shop wise and exercise cost control cost centre wise".

6.1.7 The Company has not so far introduced standard costing. In reply to a query in this regard by the Committee on Public Undertakings it has been stated (February 1983) that standard cost of ship-building and ship repair would have to be evolved

during a period of time as it has so far the data and experience relating to construction of one ship only.

6.1.8 As CSL needs badly to cut down its losses in ship building and in ship repair jobs it is crucial that it should shape its costing systems to the needs of its decision-making especially in the areas of :

- (a) cost control by pinpointing problem areas,
- (b) planning for cost minimisation in the future,
- (c) billing for ship repair jobs.

The present costing system does not, even broadly, isolate the truly incremental costs in order to enable Management to quote competitive rates for ship repair jobs and other engineering works using the machines, men, etc. which would otherwise be partially idle.

7. PRICING POLICY AND SUBSIDY

7.1.1 CSL started shipbuilding in 1976-77. GOI's pricing policy for ships built at Hindustan Shipyard Limited (HSL) during the period from 1-4-1971 to 31-3-1976 and operative beyond 1-4-1976 pending decision on the new pricing policy, was made applicable to CSL also in January 1978.

7.1.2 The following revisions to pricing policy were made (February 1981) to be effective from 1-4-1979, to be reviewed after Sixth Five Year Plan period.

- (a) Direct subsidy payable by GOI to shipyard will be 20% of international parity price;
- (b) Shipowners will pay to shipyards 10% over and above international parity price; and
- (c) Effective date will be related to date of signing of contract and subsidy will be payable by GOI on completion of 50% erection of steel as at present.

7.1.3 Fixation of International Parity Price: International parity price is fixed by GOI, Ministry of Shipping and Transport. According to the procedure laid down (May 1975) by GOI for getting valuation of ships, valuation are to be obtained from three valuers by rotation out of panel of seven foreign firms specified by GOI. For this purpose, complete specification of ships as agreed between the shipyard and shipowners and proposed delivery period are furnished by the Company and shipping companies direct to Director General (DG) of Shipping who is required to obtain valuation from Ship valuers and to communicate the same to GOI for fixing price of ships under pricing formula. (Valuation fee for getting valuation is payable by CSL to valuers direct).

7.1.4 Prices based on international parity price were fixed for ships 001 and 002. For ships 003 and

005 (according to CSL February 1983) the price was fixed with reference to the maximum price of Rs. 22.50 crores as per terms of the contract. For Ship 005, contract was signed in November 1980 for delivery in June 1984. Pending finalisation of price, provisional price of Rs. 27.00 crores was fixed for this ship. The price of ship 004 was fixed at Rs. 32.527 crores (on the basis of international parity price plus 10% subsidy payable by the ship owner) but was not accepted by the Shipowner. A provisional price of Rs. 22.50 crores was therefore fixed for the purpose of regulating stage payments.

7.1.5 The fixation of the price of the ship with reference to international parity price ensures that the buyers (who have to compete with foreign shipping companies) do not have to pay much more than the international price. But from the point of CSL a price based on specific norms of performance in each aspect of production, might act as a more effective goad to improved efficiency and productivity. In that case, CSL's profit or loss in a year will be largely a reflection of its efficiency in achieving such norms.

7.1.6 The Ministry has stated (February 1985) that a revised pricing formula has already been prepared by the Ministry of Shipping and Transport suggesting that while the price to be paid to the Shipyard should be based on the normative cost of the ship, the price to be paid to the shipping company should be related to the international parity price and the difference should be given as subsidy by Government.

7.1.7 This is based on the view that the price to be paid to the Shipyards should be appropriately linked to the actual cost of production at a reasonable level of percentage utilisation of capacity plus a normal rate of return on the investment.

8. ORDER BOOK POSITION

8.1.1 CSL has now no order in hand apart from the 5th ship for which the keel was laid in January 1985. The Board of Directors in their report of 27-9-1984 stated that "during the year Cochin Shipyard Limited entered into an agreement with SRS of Norway for the transfer of technology relating to the design of a 67,000 DWT Bulk Carrier for which letters of intent had been received from Shipping Corporation of India. However, SCI have now indicated that CSL might consider building tankers in

lieu of 67,000 DWT bulk carriers. The entire issue is under examination".

8.1.2 After new orders are received CSL has to negotiate for collaboration in design work, obtain drawings and technical data and order materials, etc. As all these may take over 2 years, and ship 005 would in the normal course be completed well before this, this may well result in lack of work in the building dock and most of the shipyard, which would be serious situation to avert which management has to take vigorous action now.

9. DESIGNS ORGANISATION

9.1.1 As the Company's own design organisation is yet to build up competence in designing ships and as there is no central designs organisation for Indian shipyards, CSL is obliged to go in for foreign collaboration at high cost for the design of each new series of ships. The first agreement of this type was signed with SLL at a cost of Rs. 204 lakhs, which has to be distributed over the 5 ships of 75,000 DWT series.

9.1.2 Thereafter CSL signed a similar agreement for 67,000 DWT series with M/s Shipping Research Services, Norway (SRS) at a cost of Rs. 110.71 lakhs. After a commitment of Rs. 86.59 lakhs, this was given up as there was no demand for 67,000 DWT

bulk carriers. This amount is proposed to be written off as it has become infructuous. Now the Company is in search of collaborators for 86,000 DWT tankers. (Please see also para 12.3.2.).

9.1.3 As the cost of each Collaboration is very high, and this kind of purchase is repeated frequently with every change in class of vessel, it is necessary to build a number of ships to reduce the unit cost of collaboration for the design of the ships. In the absence of a central designs organisation to cater the five nationalised ship-yards in the Country, this has now to be arranged from foreign collaborators at high cost.

10. INTERNAL AUDIT

10.1.1 The Internal Audit Department (IAD) was first formed in January 1975. Internal Audit Manual laying down annual audit programme and quantum and scope of checks to be exercised was also prepared in the same month.

10.1.2 IAD is headed by a Manager (Finance) assisted by an Accounts Officer, an Accountant, two stock verifiers and one clerk under overall control of Financial Controller to whom report of findings of internal audit is submitted (Important cases are also reported to C&MD).

10.1.3 IAD is also in charge of continuous stock verification, the extent of check prescribed being 10 percent of items and value each year. The Statutory Auditors have, however, in their report on accounts of 1975-76 through 1983-84 pointed out the need

to cover a large quantum of materials each year. They have also stressed the need to strengthen IAD commensurate with nature of operations. Action is yet to be taken to strengthen IAD (February 1985).

10.1.4 Irregularities noticed by IAD are communicated to departments through Audit reports. These are not put up to the Board. There has also been some delay on the part of concerned departments in furnishing replies to observations of Internal Audit.

10.1.5 The B.P.E. had issued instructions in 1967 for the introduction of comprehensive and effective system of internal audit which should include a critical review of the system and procedures and operation as a whole, rather than merely of accounting work. The internal audit in CSL has not covered any of these areas.

11. OBJECTIVES

11.1.1 The Government of India (GOI) asked all public sector undertakings in November 1970 and in May 1979 to formulate their financial and economic objectives/obligations early. No such statement was formulated by the Company so far (February 1985).

11.1.2 However, in August, 1978 the Company submitted a draft outline of Corporate Plan to GOI providing for

- optimisation of investment already made;
- optimum level of expansion of shipyard by establishing additional ship-building and ship-repair facilities;
- diversification into other fields in order to optimise commercial returns; and
- establishment of consultancy organisation in the sphere of marine engineering, ship design, etc.

11.1.3 GOI wrote to CSL in November 1979 that "the Ministry of Finance, Bureau of Public Enterprises. . . . were of the opinion that it would be useful to discuss the corporate plan of Cochin Shipyard when the yard is fully commissioned. Till that time it might not be possible to take a view as to the corporate capabilities, strength of various shops, competence developed to achieve certain targets, etc."

11.1.4 CSL has not reappraised its Corporate Plan yet (February 1985) though the shipyard was fully constructed and equipped by the end of 1981-82 as against the original target of September 1975. CSL ascribed this to the fact that the production (ship-building and shiprepair) has not been established.

REPORT

PART II

		Page
	Summary	29
12.	Construction of Ship	
12.1	Construction of Ship 001	30
12.2	Construction of Ship 002	31
12.3	Construction of Ship 003 to 006	32
12.4	Ship repairs	32

1. The first ship (001) was delivered to SCI on 24-7-1981 as against the scheduled date of 30-6-1978. Actual cost was Rs. 34.67 crores, whereas the estimated cost was Rs. 24.06 crores (Revised to Rs. 32.73 crores). The selling price, subsidy and escalation amounted to Rs. 23.05 crores. SCI claimed liquidated damages to the extent of Rs. 2.75 crores and the Company has claimed Rs. 2.04 crores from SCI towards escalation and extra charges. These are pending. The loss was Rs. 11.62 crores.

2. Second ship (002) which should have been delivered in June 1979 (revised to April 1982) was delivered only in October 1983. Delay in purchase of the main engine was one of the main reasons of the delay. The cost of the ship was Rs. 34.24 crores

and the selling price subsidy and escalation amounted to Rs. 25.08 crores. The loss was Rs. 9.16 crores.

3. The shipyard has no firm orders on hand after the keel for the fifth ship was laid on 22-1-1985.

4. Repair dock was commissioned in February 1981. Even before the completion of the repair dock, on stream repairs were undertaken from 1977-78. The shipyard earned profits on some ship repair jobs and lost heavily on others but had no arrangement for regular job-wise analysis of costs and incomes to ascertain reasons for loss. Foreign exchange earnings in ship repair during 1982-83 was nil and was not significant in 1983-84 (as against Rs. 21.90 lakhs in 1981-82).

Actual overheads were very much higher than the original estimate.

The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.

The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.

The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.

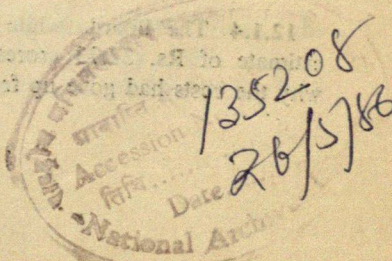
The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.

Table 1.1.1.1

Particulars	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Revenue	10.00	12.00	15.00	18.00	20.00	22.00	25.00
Expenses	12.00	15.00	18.00	22.00	25.00	28.00	32.00
Profit/Loss	(2.00)	(3.00)	(3.00)	(4.00)	(5.00)	(6.00)	(7.00)

The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.

The Government decided to purchase 100% of the ship cost. The cost of the ship was Rs. 34.24 crores and the selling price was Rs. 25.08 crores. The loss was Rs. 9.16 crores.



12. CONSTRUCTION OF SHIPS

12.1 Ship 001 (Rani Padmini)

12.1.1 The first ship (a Panamax type bulk carrier of 75000 DWT) was constructed for Shipping Corporation of India and the contract was signed on 17th July 1975. The keel was laid in February 1976, even as the shipyard project was in progress. The ship was to be delivered by 30th June 1978 (i.e. in 3 years) but was finally completed and delivered to SCI on 24th July 1981 (i.e., after five years).

12.1.2 In a report to the Board on 15th March 1982, Management said that the delay was due to the prolonged monsoon of 1981-82, non-availability of matching sections for steel and the labour unrest during the first quarter of the year prior to the finalisation of the long-term settlement with labour, etc.

12.1.3 CSL's estimate of cost of construction of Ship 001 was Rs. 24.06 crores (June 1976). This was revised to Rs. 32.73 crores in August 1980. The rise was attributed to prolongation of the construction period. The total amount received/receivable towards selling price subsidy, escalation claims, etc. worked out to Rs. 23.05 crores. Thus loss on construction of ship 001 was anticipated from the beginning. The actual cost and the estimates are indicated below :

Table 12.1.3 A

(Rs. in crores)

Item of cost	Original estimate	Revised estimate	Actual cost
Direct materials	14.96	13.22	13.30
Direct labour	00.80	00.99	1.30*
Direct expenses	1.15	1.56	2.27
Overheads	0.80	7.33	9.20
Depreciation written off.	4.85	5.19	6.72
Interest on working capital	1.50	4.44	1.88
	24.06	32.73	34.67

*Note.—This amount was for 3.3 million manhours; the manhours indicated by the Management now (February 1985) is 4.15 million manhours, but the amount has not been changed.

12.1.4 The Board while approving the revised estimate of Rs. 32.73 crores said that the reasons why the costs had gone up from the original estimate

should be examined in greater detail and submitted. Such an analysis was not made and submitted to the Board (December 1983).

12.1.5 The basis on which the quantity and price of direct materials were compiled was not available and detailed comparison with actuals was not possible.

12.1.6 The details of actual overhead are as follows :

	(Rs. in crores)
(i) Stores and spares	1.74
(ii) Salaries, allowances, etc. of indirect employees	4.14
(iii) Repairs and maintenance	1.17
(iv) Fuel and power	0.88
(v) Travelling	0.18
(vi) Insurance	0.15
(vii) Security	0.14
(viii) Other common expenses	0.80
	<hr/> 9.20

Actual overheads were very much higher than the original estimate.

12.1.7 The Management stated (January 1984) that "Rs. 80 lakhs originally included in the estimate was ad hoc since there was no precedent or data and that it was tentatively taken to be 100% of direct labour cost. The construction of the first ship took a very long time i.e. 60 months, and for about two years, the entire overheads had to be allocated to the first ship."

12.1.8 The total cost of construction of ship 001 was Rs. 34.67 crores. Against this the selling price was Rs. 18.90 crores and the subsidy received from the Government of India was Rs. 3.60 crores and the wage escalation receivable upto 30-6-1978 (the contracted date of delivery) was Rs. 0.55 crore. The loss is Rs. 11.62 crores.

12.1.9 SCI has claimed liquidated damages of Rs. 2.75 crores (August 1981) for delay in delivery by 970 days and this has not been taken into account for arriving at the loss. CSL requested SCI to withdraw the claim on the ground that the delay was caused by delay in commissioning the 150 T gantry

crane and made a counter claim from SCI (September 1981) for Rs. 2.04 crores vide details given below :

	(Rs. in crores)
(i) Extra payable on account of additions and alterations of certain items	0.22
(ii) Price escalation in terms of change in pricing policy	0.90
(iii) Labour escalation upto the date of delivery (inclusive of Rs. 0.55 crore mentioned above)	1.00
	2.12
Less : Rebate on account of deletion/alteration of certain items	0.08
	2.04

12.1.10 SCI agreed to study the claims on additions and alterations, etc. but rejected the request for waiver of liquidated damages (October 1981) stating that the delay could not be covered under *force majeure* clause of the contract.

12.1.11 Under GOI's revised pricing policy (February 1981) the buyers of ships built in Indian public shipyards, were to pay the shipyard 10% over and above the international parity price (instead of the earlier 5%). Therefore in September 1981, CSL claimed Rs. 90 lakh from SCI, who rejected the claim (October 1981) as "totally untenable and unacceptable".

(The GOI's orders were applicable with effect from 1-4-1979).

12.1.12 Regarding CSL's claim for wage-based escalations, SCI agreed to escalations upto 30th June 1978 only and asked CSL to revise the claim. These claims have not yet been settled (February 1985).

12.2 Ship 002

12.2.1 A contract for the construction of the second ship was signed with M/s Ratnaker Shipping Company, Calcutta on 14th November 1975 for delivery by the end of June 1979. The target date fixed for keel-laying (April 1977) was postponed due to the delay in the float out of the first ship (January 1980) and the construction period was therefore revised from 24 months to 27 months from January 1980. Although all infrastructural facilities including 150 T crane (which was stated to be the main reason for the delay in the first ship), were ready, float out of the second ship was delayed by 7 months (November 1981) and the ship was delivered on 16th October 1983 against revised scheduled date of April 1982. The main reasons given for the delay were :

- delays in completion of project facilities
- delay in completion of first ship
- delay in purchase of main engine and
- agitation by supervisory staff and officers in the first quarter of 1982.

12.2.2 Delay in the purchase of main engine resulted from delayed start in construction of ship 002, due to slippage in completion of ship 001. The original validity period quoted by MAN 'A' engine supplier (same engine as in 001) expired on 30-11-1979. This was revalidated upto 31st January 1980, with an escalation clause. As import licence and sanction of GOI could not be obtained even by 31-1-1980, validity again expired. In March 1980, when CSL finally obtained sanction, etc. the suppliers raised prices by 30% over the original price of Rs. 3.37 crores (approximately). They also offered (as an alternative) a more fuel-efficient engine viz. MAN 'B' type at a price of Rs. 3.93 crores. Meanwhile, the Company was also considering Sulzer engine (cost Rs. 2.16 crores) whose price happened to be lower than MAN 'B' and the revised price of MAN 'A' engine and the delivery schedule was also more favourable.

Modification required to be carried out in engine room would be same both in respect of MAN 'B' and Sulzer engines. After taking into account the cost of modification, final savings worked out to Rs. 2.00 crores when compared with MAN 'A' engine and Rs. 1.39 crores when compared with MAN 'B' engine. Accordingly the Company decided to go in for Sulzer engine. Slippage on account of this was estimated to be 4 to 5 months. Much of this could have been avoided if ship 001 had been delivered in time and GOI sanction for import licence obtained in time.

12.2.3 Cost.—The original estimated cost, subsequent revision and the actual cost are given below :

Table 12.2.3-A

(Rupees in crores)

Item of Cost	Original estimate	Revised estimate	Actual cost
Direct materials	11.37	12.02	13.41
Direct labour	0.71	0.82	0.80
Direct expenses	0.80	0.90	3.22
Overheads	4.49	7.44	10.18
Depreciation	3.00	4.30	3.68
Interest	3.67	5.78	2.95
	24.04	31.26	34.24

Against the total cost of Rs. 34.24 crores, the price with escalation and subsidy work out to Rs. 25.08 crores and the loss on this basis is Rs. 9.16 crores.

12.2.4 The actual expenditure on direct expenses have far exceeded the estimates; but causes have not been analysed.

Actual overheads have been more than four times the original estimate.

12.3 Ships 003 to 006

12.3.1 CSL got orders for construction of four more ships of 75000 DWT for deliveries due 1983, 1984 and 1985 as shown below :

Table : 12.3.1 A

Ship No.	Name of the ship owner	Date of agreement	Date of delivery	Progress of work
003	Chowgule Steam Ships Ltd.	30-12-1976	30-9-80 Revised to 30-9-1983	Basin trial carried out on 8-12-1984
004	Chowgule Steam Ships Limited	14-5-1981	30-9-1984	Launched in January 1985
005	Surendra Overseas Limited	29-11-1980	30-6-1984	Keel laid on 22-1-1985
006	Chowgule Steam Ships Limited	14-5-1981	30-12-1985	Cancelled

12.3.2 The original estimate for ship 003 was Rs. 26.87 crores, later revised to Rs. 28.60 crores. Up to 31st March 1984 Rs. 26.86 crores was spent on the construction which was in progress. The total of price plus escalation and subsidy works out to Rs. 27.42 crores.

12.4 Ship repairs

12.4.1 One of the main activities of CSL is ship-repairs. The size of the Repair Dock is 270 M × 45 × 12 M and it is capable of taking in ships upto 100000 DWT. The ship repair complex also includes quays of length 208 M and 100 M on either side of the dock with crane and power facilities for berthing of ships coming for repairs and also well equipped workshops for undertaking major repairs.

Ship repair dock was expected to achieve an yearly volume of 10,00,000 GRT within nine years from commencement of production.

12.4.2 Repair dock was commissioned in February 1981. Even before the completion of repair dock, on-stream repairs were undertaken by the Company from 1977-78. The table below gives the targets for ship repair for 1981-82, 1982-83 and 1983-84 and the actual expenses booked and bills raised

thereagainst :

Table : 12.4.2 A

(Rs. in lakhs)

Year	Original target	Revised target	Actual expenditure	Amount billed
1981-82	100.00	150.00	280.69	239.79
1982-83	375.00	375.00	443.26	552.21
1983-84	600.00	350.00	370.51	219.50

12.4.3 On a review of the bills raised in 1981-82, 1982-83 and 1983-84, it was seen that out of 59 jobs the loss in 23 jobs in 1981-82 was Rs. 70 lakhs and out of 39 jobs, the loss in 11 jobs in 1982-83 was Rs. 56 lakhs and in 1983-84, out of 46 jobs, the loss in 24 jobs was Rs. 129 lakhs. The precise reasons for the losses in individual jobs are not known.

12.4.4 As the Company needs to know where it is losing or gaining in ship repair jobs, it is necessary to make a detailed analysis of jobs where losses were incurred.

While the foreign exchange earnings in 1981-82 was Rs. 21.90 lakhs, it was 'nil' in 1982-83 and Rs. 6000 in 1983-84.

12.4.5 To an enquiry from Audit, whether the causes for losses have been analysed and brought to the notice of the top management, the Company stated (February 1985) that "the tariff rates quoted for ship repair are based upon the prevailing rates in other ship yards in the Country. However since the project cost of the ship repair complex is very high the fixed overhead cost can be fully absorbed only when CSL reaches a very high level of performance. Until then some losses are unavoidable."

REPORT

PART III

	Page
Summary	35
13. Project Formulation & Implementation	
13.1 Collaboration Agreements	36
13.2 Shipdesigns : Agreement with Scott-Lithgow	36
13.3 Other consultants	38
2nd Agreement with MHI :	38
Ship repairs collaboration	38
13.4 Project estimate and actuals	38
13.5 Construction of docks	40
13.6 Cranes supplied by Chitram	43
13.7 Other cranes	44
13.8 Premature award of contract	45

SUMMARY

1. GOI signed an agreement with M/s. MHI of Japan for technical co-operation in designing, and advising on the construction of a shipyard. This was valid from 1970 to 1975 and was extended till March 1976. Despite, the extension, Consultants had to leave before the works were fully complete and could not therefore advise on some aspects of construction, although all designs and drawings were given to CSL.

2. Negotiations were held with MHI for technical assistance in ship design, shipbuilding and shiprepair but as the rate quoted by MHI was high, and as CSL had obtained an order for Panamax type bulk carriers, CSL entered into an agreement with SLL (May 1973) for technical assistance in shipbuilding. On this consultancy Rs. 203.76 lakhs were spent against the original estimate of Rs. 183 lakhs.

3. In retrospect it is clear that there was lack of interface between the Japanese layout and facilities of the shipyard (presumably designed with Japanese shipbuilding techniques in mind) and the services rendered by SLL. It was found that, compared to MHI, Scott Lithgow had limited capability in latest shipbuilding techniques. Thus, collaboration with SLL did not enable CSL to utilise facilities to optimum or adopt latest shipbuilding practices for increasing productivity. Planning and control systems obtained under SLL agreement were found inadequate.

4. CSL, therefore, in February 1982 signed another agreement with MHI for shipbuilding consultancy for 30 months (Estimated cost : Rs. 142 lakhs).

5. For ship repairs, CSL signed a collaboration agreement with another Japanese Company (IHI) in July 1981. This was to remain in force upto December 1983, with an estimated cost of Rs. 125 lakhs.

6. RPR of Rs. 45.42 crores approved by GOI in August 1971 was revised to Rs. 109.21 crores in August 1977 and to Rs. 130.74 crores in May 1981. Actual expenditure as on 31st March 1984 was Rs. 128.63 crores.

7. Project was largely completed by January 1983. Escalation of cost was substantial in the work of Building Dock, Assembly Shop Foundation, Repair Dock and quays No. 1 to 3.

8. The works were awarded to a private contractor in excess of the estimated cost by over Rs. 878.05 lakhs. Total escalation charges paid so far (February 1985) were Rs. 456.30 lakhs. Final bills for building dock and repair dock are still to be settled (February 1985).

9. Against the scheduled completion date of 30-9-1975, the Building Dock, Quay No. 3 and Assembly Shop Foundation were completed in June 1978 and the Repair Dock, Quays No. 1 & 2 completed in April 1980.

10. The main reason for the 6-year delay in completion of the project was the delay in supply and erection of the massive 150 tonne gantry crane. This work was given to a contractor who ran into financial difficulties and the Company had to give him advances totalling Rs. 67 lakhs though there were no provisions in the contract therefor. Besides suffering delay of three years, the Company had to pay Rs. 554.53 lakhs against original tender amount of Rs. 276.50 lakhs.

11. Even in respect of other three cranes ordered on the same contractor, there was delay of over six years in respect of two and the third was cancelled.

12. In respect of an order for supply of two LLTT cranes of 20 tonnes and 50 tonnes capacity, placed on another contractor (PSU) there were delays of over 35 months and 27 months respectively. The Company levied liquidated damages as per contract. Contractor claimed escalation, though not provided in the contract. Despite legal advice that these claims were not tenable the BPE acting as informal arbitrator, settled the matter in favour of M/s. Jessops. As against contractual payment of Rs. 137.08 lakhs plus taxes the Company paid Rs. 221.15 lakhs. Rs. 3 lakhs remained to be paid (February 1985).

13. In respect of contract for fabrication and erection of superstructure for Hull shop at a cost of Rs. 1.02 crores, the contractor backed out after completing a portion of work and the work was completed by two other contractors at an extra cost of Rs. 50.81 lakhs. The Company could not recover any damages from the old contractor. The Company had apparently called for tenders prematurely, with the result the contractor backed out.

13. COLLABORATION AGREEMENTS

13.1 Shipyard Construction

13.1.1 According to the contract signed between GOI and M/s. MHI on 13th August 1970 (later on assigned to the Company), the collaborator's Kobe Shipyard (MKS) were appointed as consultants for the preparation of designs, drawings and specifications and consultancy during shipyard construction. The contract became operative from 1st October, 1970.

13.1.2 The agreement provided, *inter alia*, that :

- (i) MKS shall prepare designs, drawings and specifications, as necessary, for invitation of tenders by the Project Organisation for the purpose of shipyard construction.
- (ii) MKS shall associate Indian team fully during preparation of design & drawings and give full co-operation.
- (iii) MKS shall provide technical consultancy services with their knowledge and experience in shipyard construction and depute engineers of adequate knowledge and experience to India to serve as experts with the Project Organisation.
- (iv) Basic period of technical co-operation is full five years after effectuation of the contract, but could be extended for not more than one year after completion of Master Construction Schedule.

13.1.3 For supply of specifications and drawings to be prepared by MKS, lump sum payment of Japanese Yen 363,388,000, free of Indian Income Tax, was to be made in four instalments. Technical consultancy fee was Japanese Yen 141,527,000, also free of Indian Taxes, payable in four equal instalments. In addition, salaries and travelling expenses of MKS engineers from Japan to India and back and for travel in India were payable in accordance with scale laid down in the contract. Expenses of Indian team deputed to MKS were to be met by Government of India.

13.1.4 Contract with MHI covered a period of five years (from 1-10-1970) which could be extended by mutual agreement for not more than one year. In December 1974, the need for extension of the consultancy services was reviewed and it was considered

"highly desirable that consultancy should be continued at least till building dock with associate facilities is completed and the 150 T crane is erected and commissioned". The period of the contract was extended till 31st March 1976 (i.e. one year from the date of the completion of Master Construction Schedule).

13.1.5 By the time the contract expired and the consultants returned to Japan, work on building dock had progressed to 64.3% and on the repair dock site nearly 2/3rd of the excavation had been completed and nearly 80% of the steel sheet piles driven. However, no work had begun on reinforced concrete works, service tunnel, concrete coping, pavement, crane rail fixing and 5 T crane beam. The construction of building dock commenced in May 1974 and was completed in June 1978 and 150 T crane was erected and commissioned in October 1979. As the project was not completed within Master Construction Schedule and the extended period of contract with consultants, the full benefit of consultancy services could not be obtained.

13.1.6 The Ministry said during discussion (February 1985) that the intention of the contract was to see that the consultants would give necessary designs and drawings for the construction of the shipyard and also help in its construction. But due to time over-run the Consultants had to leave before completion of the works. But all designs and drawings etc. had been fully obtained from them well before this.

13.1.7 In terms of Article XVII (1) & (2) of the agreement with MHI, they were not only required to prepare drawings and specifications and offer technical cooperation, but were also required to advise of their own, whenever they come across any fault in docks, quays and accessories and major machinery and equipment.

13.2 Ship Designs-agreement with Scott Lithgow

13.2.1 After conclusion of agreement (13th August 1970) with MHI for technical co-operation in construction of shipyard, they were contacted (during June 1971 to January 1973) for further technical assistance in ship design, shipbuilding and shiprepairs. As the quotation was considered high and as extension of the quotation upto 31st March 1973 was not agreed to, the offer lapsed on 31st January 1973.

13.2.2 Meanwhile, as the Shipping Corporation of India placed an order for 2 ships of Panamax type (each of 75000 DWT) on the British firm, Messrs Scott Lithgow Limited (SLL), CSL started negotiations with SLL for technical assistance in shipbuilding. Their offer was considered more advantageous than that of MHI in that :

- (i) Panamax 75000 DWT bulk carriers are more popular with Indian ship owners than 61000 DWT recommended by MHI.
- (ii) There is an assurance of a series order of four to five ships of 75000 DWT class whereas prospects for 61000 DWT class beyond the first vessel is negligible.
- (iii) Language is not a barrier with UK firms.
- (iv) SLL's price was more reasonable than that of MHI.

13.2.3 The Company signed an agreement (20th May 1973) with SLL under which the latter was to give technical assistance in shipbuilding, including the following services :

- (i) Training of the Company's personnel at SLL's shipyard in Port Glasgow, UK,
- (ii) Supply of drawings, specification and other technical documentation, and
- (iii) Provision of technical consultancy at Cochin stationing SLL experts during an agreed period.

13.2.4 The agreement was originally for a period of five years from the effective date of the contract (i.e. upto 15th August 1978). But the consultancy agreement was extended by an addendum and a second addendum upto 30-6-1981. Total expenditure on this consultancy was of the order of Rs. 204 lakhs as against the original estimate of Rs. 183 lakhs.

13.2.5 The Ministry said (February 1985) that the Comparative merits of the two offers were considered and the offer of SLL was accepted due to :

- The offer of MHI was Rs. 3.41 crores and that of SLL was Rs. 1.97 crores.
- The Govt. was keen on constructing a vessel which would give optimum utilisation of the shipyard capacity.
- The design offered by SLL was for 75000 DWT and SCI had placed orders on SLL for two ships.

- The prospect of repeat orders of 61000 DWT was not too high and that by acquiring the design for 75000 DWT, there would be repeat orders and that the cost of know-how could be spread over a large number of ships.
- If there was no repeat order for the first ship design, there would be a necessity to go into the market for getting the designs of a second ship; this would not be the case if the design of 75000 DWT was obtained and that they would get enough time to look new designs or develop their own.
- Language may not be a problem in training and consultancy.

It may, however, be pointed out that the total payments made to SLL was Rs. 2.04 crores as against Rs. 3.41 crores asked by MHI. But this has to be viewed in the light of the cost increases and the time over run in the construction of the ships, besides loss of improved technology of the Japanese, for which the shipyard went later.

13.2.6 In July 1981, the Board of Directors reviewed the shipbuilding consultancy and the progress of shipbuilding performance and observed "even though MHI had prepared a project report for the shipyard and planned facilities, the basic concepts such as the functioning of various departments, the means to achieve effective co-ordination between them, scheduling of works in proper sequence, proper utilisation of machinery, etc. have been left unsaid. Further it was initially contemplated to get the ship design also from MHI. However, the design of the ship and shipbuilding consultancy was obtained from Messrs Scott Lithgow, U.K. Although as a result of our association with Scott Lithgow, we have developed our shipbuilding skills to some extent, still the productivity level has not come upto the rate as envisaged in RPR. Shipbuilding consultancy with Scott Lithgow has also now expired. In hind sight, it can be said that our collaboration with M/s. Scott Lithgow has not proved very useful, in utilising the facilities to the optimum by adopting the latest shipbuilding practice and in increasing productivity. This is because Scott Lithgow themselves are no where near Japanese yards in latest shipbuilding technology".

13.2.7 In retrospect, the following deficiencies were noticed in the consultancy agreement with Scott Lithgow :

- (i) There was lack of interface between the Japanese layout and facilities of the shipyard and facilities and the services to be rendered

by SLL. While the shipyard was designed by MHI with Japanese techniques in mind their advice was not obtained on shipbuilding techniques and know-how, planning of various related operations, and planning for optimal use of machinery, etc., etc.

- (ii) High productivity techniques like one side welding in building dock, CO 2 welding, line heating in fairing and forming operation, provision of composite plans at unit fabrication stage, modular construction of deck house, jumboising of aft-end, fore-end and engine room units, advance outfitting, pipe modules, etc. were not adequately covered during training of the company's engineers under SLL consultancy.
- (iii) Planning and control systems obtained under SLL agreement was found inadequate.
- (iv) There was no specific mention of delivery of drawings and pipesheets during training.
- (v) Pipesheet was not supplied as the pipe work was done by sub-contractors for SLL.

13.2.8 The GOI during a meeting held in February 1981 to review performance of Cochin Shipyard "also emphasised that the shipyard should have the services of a foreign consultant preferably from Japan who have the latest shipbuilding technology, especially as the facilities at Cochin Shipyard have been designed with the help of Japanese collaboration".

The problem of matching the facilities of the shipyard and the shipbuilding techniques could perhaps have been solved, if the agreements for both had been entered into at the initial stage itself.

13.3 Other consultants etc.

13.3.1 CSL entered into another shipbuilding consultancy agreement with MHI on 12th February 1982, which would remain in force for 30 months. Salient features of this agreement are :

- (i) Upgrading of basic technique.
- (ii) Training of Company engineers in Japan.
- (iii) Maximum utilisation of shipbuilding facilities.

Total financial commitment on the part of the Company on this contract was estimated at Rs. 142 lakhs.

The benefits of this agreement to CSL are still to be assessed.

13.3.2 During 1983-84, the Company entered into an agreement with Shipping Research Services (SRS) of Norway for the transfer of technology relating to design of 67000 DWT bulk carriers for which letters of intent had been received from SCI in February 1982. The total amount payable (exclusive of income tax) for the documents to be supplied by SRS is Rs. 110.71 lakhs, of which documents worth Rs. 54 lakhs had already been received by the Company and further amount payable for documentation including time loss/cancellations is Rs. 32.15 lakhs. The SCI has now requested the shipyard to consider the possibility of building tankers in lieu of 67000 DWT bulk carriers. During discussion the Ministry stated that as the cost of operation of 67000 DWT bulk carriers, would be uneconomical, it was decided to go in for 86000 DWT tankers. The Company is proposing to write off the amount paid/payable to SRS as the scheme for the construction of 67000 DWT bulk carriers had not materialised. The payment made to SRS is quite high and is infructuous.

13.3.3 Ship-repairs : Collaboration with IHI, Japan.—The Company entered into (July 1981) a collaboration agreement with M/s. Ishikewagima Harima Heavy Industries Limited (IHI), Japan for technical collaboration in ship-repair works, covering the following services :

- (i) Preparation of progressive detailed project report for repairs to ships upto 1,00,000 DWT.
- (ii) Training for shipyard engineers in Japan.
- (iii) Provision of the service of experts.

For the above services, total financial commitment was estimated at Rs. 125 lakhs. The agreement was to remain in force upto December 1983. The benefits of this agreement to CSL are still to be assessed.

13.4 Project estimate and actuals

13.4.1 In pursuance of the agreement of 24th July 1968 MHI prepared RPR (March 1969) and further supplementary explanations thereto (June 1969). RPR of Rs. 45.42 crores (approved by GOI in August 1971) formed the basis for implementation of the Project.

13.4.2 The following table compared RPR actual expenditure upto 1983-84 : estimates of cost with revised CSL estimates and

Table 13.4.2A

(Rupees in lakhs)

Particulars	Cost as per RPR	I Revised estimate August 1977	II Revised estimate May 1981	Actual expenditure as on 31st March 1984
1. Civil Engineering Works				
(a) Building dock	480.15	1145.41	1145.41	1220.99
(b) Repair dock	500.13	1403.94	1403.94	1708.22
(c) Quay	177.66	265.47	265.47	181.42
(d) Pump rooms & Dock gates	106.21	164.16	164.16	115.95
(e) Other items	257.39	623.25	882.34	866.55
2. Building Works	619.04	1070.94	1246.26	1228.05
3. Machinery & Equipment				
(a) Cranes	604.63	946.09	1385.18	1337.16
(b) Machinery & Other items	515.03	1453.48	1603.48	1506.73
4. Electrical facilities	261.50	454.88	454.88	441.01
5. Vessels, Vehicles, Tools etc.	182.15	360.44	862.14	814.94
6. Works to be undertaken in 6th and 10th year	325.00	310.00	418.91	364.28
7. Other costs				
(a) Land acquisition	184.00	315.00	415.82	381.15
(b) Project Report & consultancy	168.00	207.00	197.87	197.87
(c) Project Establishment	50.00	260.00	557.00	613.32
(d) Income tax liability . . . . .	..	217.00	217.00	94.06
(e) Ship repair consultancy . . . . .	..	..	125.00	63.81
(f) Deferred Revenue Expr., and other contingencies	111.00	406.00	561.54	575.32
8. Short term loans . . . . .	..	918.00	668.00	651.91
9. Working capital loans . . . . .	..	400.00	500.00	500.00
	4541.89	10921.06	13074.40	12862.74

13.4.3 RPR of Rs. 45.42 crores was revised to Rs. 74.29 crores in 1973 and submitted (October 1973) to GOI for approval. GOI directed CSL (May 1975) to update the estimate, which was revised (June 1975) to Rs. 93.86 crores mainly due to increase in cost. On the basis of subsequent correspondence with Government the estimate was further revised (1976) to Rs. 109.21 crores to include short term loans for discharging interest liability, income-tax liability, on fees payable to consultants and working capital requirements. This was approved by Government in August 1977.

13.4.4 The estimate was again revised (April 1979) by CSL to Rs. 130.74 crores. The increase over the previous estimate was mainly due to escalations in cost, additional items, changes in design, etc.

13.4.5 In view of interest holiday granted (October 1981) by GOI on all loans upto 31st March 1982 there would be savings to the extent of Rs. 668

lakhs towards short term loans provided in the revised estimate. Taking this into account, the second revised estimate would work out to Rs. 124.06 crores as against which the actual expenditure to the end of March 1984 was Rs. 122.11 crores; excluding short term and working capital loans, the cost would work out to Rs. 117.11 crores. The estimate has not been closed.

13.4.6 The estimate of Rs. 45.42 crores as per RPR has gone up by Rs. 73.64 crores or 162 percent (as per the latest approved estimate less provisions for short term and working capital loans). The cost of delay in completion of the project was to the extent of Rs. 13.87 crores besides the increase due to other reasons.

13.4.7 Work started on 1st October 1970 and, as per the Master Construction Schedule (drawn up in consultation with MHI) to be completed in all respects by 30th September 1975. Date of completion

of entire project was, however, revised to December 1976, March 1978, March 1979, March 1980 and finally to late 1981-82. The project was completed in all respects by January 1983 except some spill-over works proposed to be executed during 1982-83 and 1983-84.

13.4.8 Delay in completion was attributed to :

- (i) Special nature of work like construction of docks.
- (ii) The soil was such that piles had to be driven to depths as low as 125 feet and the piles number several thousands and machinery had to be imported for deep piling.
- (iii) Inadequate and unsatisfactory response to the tenders for construction of building and repair docks and quays when the tenders were floated.
- (iv) Want of requisite type and size of steel necessitating import.
- (v) General shortage of cement owing to power scarcity.
- (vi) Abandonment of work by some contractors.
- (vii) Slippage on the part of some suppliers of major equipments.
- (viii) Delay in completion of erection and commissioning of 150 T gantry Crane.

Delay in completion of the project was over six years. This resulted in steep escalation of capital cost of the project besides affecting ship building schedules.

Some cases noticed in Audit which have contributed to the delay and escalation in costs are given below :

13.5 Construction of building dock, repair dock etc.

13.5.1 Tenders for construction of Building Dock, quay No. 3 and Assembly Shop Foundation were invited by the Chief Project Officer of the Shipyard Project on 3rd July 1971 fixing the last date of receipt of tenders as 11th October 1971. Though tender documents were purchased by six firms, only one firm (M/s. Tarapore and Company in collaboration with M/s. Simplex Concrete Piles (India) Private Limited) submitted (October 1971) duly priced and valid tender. A Tender Committee found the tender technically deficient in as much as the item of piling work was beyond the capability of the firm with plant and equipment available with their collaborators. The Committee therefore recommended (December 1971) that the tenders should be re-invited with a clear clause in the tender

documents indicating that the tenderers would be allowed to import necessary equipment for execution of the piling work.

13.5.2 In February 1972, the tenders were re-invited fixing the last date of receipt as 15th March 1972, and tenders were invited for construction of Repair Dock Quay No. 1 and 2. Since the nature of work involved in both the tenders was identical and one of the tenderers (M/s. Tarapore & Company) having quoted for both the works, the Tender Committee took up examination of tenders for both the works simultaneously. NBCC had quoted for building dock, Quay No. 3 & Assembly shop foundation only.

13.5.3 The Japanese consultants to whom the tenders were referred for technical advice remarked (June 1972) that in respect of offers made by M/s. Tarapore & Company the proposed 5 Ton Drop Hammer was not adequate for 500 mm and 600 mm piles and that 7 Ton Single Acting Steam Hammer with the blow energy of 8.4 t.m. was slightly less than the required capacity for 600 mm piles or was critical to the required capacity for 600 mm pile. As regards the tender of NBCC the consultants stated among other things that from the method offered by the contractor it was difficult to obtain the ultimate bearing capacity since it was proposed to stop driving casing tube of cast-in-situ pile where the 'N' value reached to 40 whereas the relevant technical specifications called for the 'N' value not less than 50.

13.5.4 As somewhat heavier plants were required to be provided for the pile driving work and also as the tenders were conditional and indefinite in technical aspects, series of discussions were held with both the tenderers during May, June and July 1972 and as a result revised quotations were obtained from the tenderers for both the works.

13.5.5 Offer of NBCC (Rs. 1497.96) lakhs with the reduction of Rs. 1 crore towards hire charges of plant and equipment being higher than the offer of M/s. Tarapore and Company (Rs. 1080.78 lakhs) was not considered for acceptance by the Tender Committee.

13.5.6 Offer of M/s Tarapore & Company (Rs. 1080.78 lakhs) for the Building Dock, Quay No. 3, and Assembly shop Foundation was in excess of the estimated cost (Rs. 632.79 lakhs) by Rs. 447.99 lakhs and that of Repair Dock Quay No. 1 and 2 (Rs. 1126.67 lakhs) was in excess of the estimated cost (Rs. 696.61 lakhs) by Rs. 430.06 lakhs excluding insurance, escalation charges, etc. payable extra. Though these offers were also considered high, the Tender Committee felt that a further re-tendering was not likely to yield better results owing to poor response to the tender calls.

13.5.7 In this connection it may be mentioned that the main difficulty for the tenderers was in selection of equipment for the complex piling job and as a result no firm offers were received and offers had to be revised after discussions. Also specifications of the plant and equipments suitable for installing the piles were not specified in the technical specifications in the tender and the matter was left to be decided by the tenderers at their own risk. Further there was also urgency, for these works were already considerably behind Master Construction Schedule (the target date for awarding contracts was 15-11-1971 for Building Dock and 1-4-1972 for Repair Dock) and any delay in completion of these Docks was likely to upset the time schedule in respect of various other items of work including the time-bound contract for technical co-operation with the Japanese consultants.

13.5.8 The Board decided (September 1972) to accept the offers of M/s Tarapore & Company for the two works subject to the modification since agreed to by the contractor. Government was also approached for approval of the award of the two contracts and concurrence to the consequent excess over the sanctioned estimate. On receipt of Government approval, the contracts were signed on 29th January 1973.

13.5.9 Salient features of the tenders accepted were :

- (i) A rebate of Rs. 30 lakhs on tendered cost of repair Dock in consideration of awarding both the works.
- (ii) The works to be completed in all respects by the end of September 1975. Penalty for delay in completion was at the rate of $\frac{1}{2}$ % per week subject to a limit of 5% contract value.
- (iii) Selection of piling equipments will be done by the contractor in consultation with the shipyard and they shall be procured by the contractor.
- (iv) Tendered rates were based on the prices of labour and materials and on the rates of taxes prevailing on the 16th April 1972. Any variation in the prices, rates of taxes and/or new taxes would be payable to the Contractor extra and suitable formula shall be agreed upon before finalisation of the contracts.

13.5.10 As per terms of the contract, the rebate of Rs. 30 lakhs offered by the contractor in the work of Repair Dock was recoverable from the bills payable every month in equal instalments from the fifth month after commencement of work so that the entire recovery would be completed by the scheduled date of completion of the work i.e. the 30th Septem-

ber 1975. However, a sum of Rs. 9.70 lakhs only was recovered between July 1973 and November 1974. Recovery of the balance amount (Rs. 20.30 lakhs) however, commenced only from May 1978 and was completed in April 1979.

13.5.11 As there was delay in arrival of Pile driving equipment, the piling works in Building Dock was started in May 1974, nearly 14 months after the site was handed over to the contractor. The work was completed in all respects except some back filling work by 30-6-1978 behind schedule by 33 months.

13.5.12 According to Legal opinion obtained by the Company in February 1978, this work should have been completed by the contractor by the end of March 1977 taking into account reasons such as delay in the arrival of piling equipments (10 months) time taken for additional piling work (6 months) abandoned piles (1 month) and stoppage of work at quay No. 3 for facilitating delivery of certain equipments (1 month), totalling 18 months, beyond the control of the contractor. However, considering all the various factors and in particular that the site for carrying out some remaining works could be handed over to the contractor only after erection of 150 Tonne gantry crane by M/s. Chitram & Company, the Board decided (August 1978) that the work on the Building Dock could be treated as having been completed on 30th June 1978 without any penalty being levied for delay in completion of the work.

13.5.13 In the case of Repair Dock and Quay No. 1 & 2 though the piling works commenced in May 1974, soon after the arrival of pile driving equipments (April 1974), the Company decided to shift all the RCC piling rigs to the Building Dock to speed up completion of that Dock in order to lay keel for the first ship. After the piling work in Building Dock was completed, the rigs were shifted to Repair Dock and the actual piling operation was started only by end of May 1976. Extensions of time were also given to the contractor from time to time for completion of the work subject to the condition that such extensions were without prejudice to the rights of the shipyard to levy compensation for delay in completion of the works on the contractors' part.

13.5.14 In June 1979, the Board directed that an assessment should be made of the factors which necessitated extension of the completion dates and implications should be examined including penal action with reference to the contract. Management reported to the Board in August 1979 that major factors which caused delay in completion of the work

were the delay in arrival of pile driving equipment, priority given for Building Dock works, extra time taken for driving additional length of piles, suspension of work for repairing and strengthening the coffer dam and additional other works, indicating that a realistic assessment and apportionment of delays attributable to the contractor, shipyard, *force majeure* condition, etc. could be made only towards the close of the work.

13.5.15 The matter was discussed in the Board Meeting held on 9th August 1979. One of the Directors stated that it was likely the Company had lost the benefit of warranty and other protective clauses on various equipment received at site but not commissioned as a result of non-completion of civil works. The Board was informed in February 1980 and subsequently (in 9/80, 10/80, and 5/81) that 10 items of machinery costing Rs. 187.84 lakhs were installed and commissioned after delays ranging from 22 months to 73 months. The Management stated (February 1985) that there were no problems during the guarantee period. (In some cases machinery was stored for as long as five years and this adversely affected the financial position of the shipyard as apart from storage costs and maintenance expenditure interest liability on the investments on these machines also devolved upon the shipyard during such periods).

13.5.16 It was also reported to the Board that last extension for completion of work was given upto 30-9-1979 and that the contractor had given programme to complete the work by October 1979. However, the work was actually completed only during April 1980 and extension of time upto the date of completion was also granted by the Management in the meanwhile.

Claims in dispute

13.5.17 Contract for Building Dock provided for back filling of excavated area either with the excavated material or good quality material brought from a source within 3 Km. from the work site. As sufficient quantity of good quality soil was not available from the site excavations or within 3 Km. radius, it had to be brought from sources beyond 3 Km. for which there was no specific rate in the contracts. Since a rate could not be settled for this work, CSL arranged for supply of the material through other agencies, so that the refilling could be done by the contractor at contractual rates. The contractor objected to this and the dispute was referred to a sole arbitrator in April 1976.

13.5.18 The award (April 1977) was that the contractor was entitled to damages for breach of contract by the Company in having arranged supply of

about 60,000 cu. metres of earth through other contractors and damages were payable and that the contractor was entitled to execute the balance work at the rates mentioned in the award, suitably increased by the escalation as provided under the contract.

13.5.19 The Company contested the award in Court which dismissed its petition (February 1979). The CSL appealed (March 1980) to the Kerala High Court which set aside that portion of the award relating to damages for breach of contract, but sustained the contractor's entitlement to execute the balance work at the rates specified in the award. Appeal filed by the contractor in Supreme Court on the decree of the Kerala High Court was dismissed in May 1983 and so the decree of the Kerala High Court has now become final.

13.5.20 Actual quantity of work done by the contractor was 42,387 cu. metres and this was payable at the rate of Rs. 38.80 per cu. metre with escalation thereon as per the award. Computed with reference to the rate (Rs. 14.77/cu. metre) at which this work was executed through other contractor, extra expenditure on the work was Rs. 14.37 lakhs.

13.5.21 The contractor also claimed compensation on account of increase in the cost of imported pile driving rigs and technical know-how fees. The claim was referred to arbitration (April 1976) under the provisions of the contract and the Arbitration (July 1977) held that the contractor was entitled to a compensation of Rs. 99 lakhs on this account with interest at 9½% per annum from the date of award till the date of decree or payment whichever was earlier. The Company challenged the award in the Subordinate Judge's Court, Ernakulam, and the Court upheld (March 1979) the award of the Arbitrator.

13.5.22 After obtaining the opinion of the Solicitor General of India that the case was fit for appeal, the Company filed an appeal before Kerala High Court on 15th October 1979 against the judgement of the Subordinate Court. Kerala High Court in its judgement on 21st August 1980 set aside the decree of the lower Court. On a special leave petition, preferred by the contractor in the Supreme Court, the Award of the Arbitrator as confirmed by the sub-court was upheld setting aside the judgement of the High Court and the Company was ordered to pay the contractor the award amount of Rs. 99 lakhs plus interest at 6% p.a. from 5-7-1977 till date of payment and costs throughout. Accordingly, an amount of Rs. 140.58 lakhs (Rs. 99 lakhs plus interest at 6% p.a. from 5-7-1977 till date of payment i.e. 5-7-1984) was paid to the contractor.

13.5.23 In RCC pile driving work in the Building dock, Assembly shop and quay No. 3 claims amounting to Rs. 199.66 lakhs were made (June 1977 and November 1977) by the Contractor for increase in the cost of piling as the piles had to be driven deeper than what was contracted for and to exacting set requirements not specified in the contract.

13.5.24 After protracted correspondence between the Company and the contractor regarding terms of reference procedure to be followed in making the reference to the arbitrator, etc. the case was finally referred to arbitration. In October, 1980, the Arbitrator awarded Rs. 6,03,210 as against Rs. 199.66 lakhs claimed by the contractor as compensation. The Contractor went in appeal to the Sub-Court, Ernakulam in March 1981 against the award of the arbitrator. The Company filed its objections in July 1981. The case was pending (February 1985).

13.5.25 Similar claims (Rs. 168.10 lakhs) for increase in the costs of RCC piling work in the Repair Dock and quay No. 1 & 2 were made (August 1979) by the contractor together with interest (Rs. 25.72 lakhs) at 16% from 2-9-1978. These claims were referred (April 1981 and July 1981) for arbitration. The Arbitrator gave the award on 2nd March 1984, for the payment of Rs. 13.60 lakhs to the contractor as compensation and the award is pending confirmation in the Sub-Court (February 1985).

13.5.26 Payments of the order of Rs. 3001.03 lakhs have been made to the contractor on these two works and the final bills for both the works are still pending settlement (February 1985).

13.6 Cranes supplied by Chitram & Company

13.6.1 RPR envisaged installation of 22 travelling tower cranes and gantry cranes of different sizes. Largest of these viz. a 150 T gantry crane which spans the Building Dock and the Assembly shop, was one of the most important equipment intended to be made use of in lifting and positioning of assembled hull blocks for hull construction.

13.6.2 Tenders for manufacture, supply and erection of 150 Tonne gantry Crane (Estimated cost : Rs. 239.29 lakhs) were invited (December 1971) fixing last date as 28th February 1972, later extended to 14th March 1972. Only two tenders were received—one from Jessop & Company Limited, Calcutta, a Public Sector Undertaking and the other from Chitram & Company Pvt. Limited, Madras—the latter being lowest of the two.

13.6.3 Based on recommendations of the special Committee, GOI decided (January 1973) to accept the tender of M/s. Chitram & Company. In the same month, the Company placed an order with the

firm for manufacture, supply and erection of the crane at a cost of Rs. 276.50 lakhs. The price was firm and no variation in price whatsoever was payable extra except variation in price of steel and variation in excise duty, Sales Tax, customs duty imposed by Central and State Government on purchase of electrical components. Formal agreement was executed with the firm in February 1973.

13.6.4 As per the agreement, complete crane brought at site, erected, tested and commissioned should be handed over to the Company on or before 24th January 1975 subject to receipt of requisite quality of steel for fabrication of the crane within a period of nine months.

13.6.5 Since a quantity of 1145 Tonnes of steel both imported and indigenous targetted to be procured by July 1973 to begin the work could actually be procured only by April 1975 i.e. after a delay by 21 months, scheduled date for delivery of the cranes was fixed as October 1976. Pace of execution was, however, very slow even at the time fixed for delivery of the crane. Progress of work was also affected by financial problems of the contractor from early 1976.

13.6.6 Request for immediate financial accommodation to the extent of Rs. 40 lakhs was first received from the contractor in April 1976. Though such assistance was outside the scope of the contract, the Board decided (June 1976) in the interest of work to sanction an interest bearing advance and the amount was paid to the contractor in two instalments of Rs. 15 lakhs against bank guarantee (with 15% interest) and Rs. 25 lakhs against promissory note and hypothecation of materials (with 16% interest) in July 1976.

13.6.7 In December 1977, the contractor raised various claims on account of escalation etc. totalling Rs. 87.97 lakhs which according to legal opinion sought by the Company were totally untenable. Considering, however, the need for financial assistance without which the work on the crane would come to a stand still with all its wider repercussions, the Board agreed (December 1977) to sanction advance of money to the contractor to the extent required for erection and commissioning of the crane within the ceiling of the sum (Rs. 73 lakhs) indicated by the contractor as required for completing the balance work and also reduced the rate of interest (to 9.5%) on the advance of Rs. 40 lakhs.

13.6.8 Between December 1977 and May 1978, ad hoc payments totalling Rs. 27.36 lakhs were paid to the contractor against promissory notes (without any security) and further payments were stopped from 6th May 1978 under instruction from GOI pending examination of the problem in its entirety by

a committee. Based on final recommendations (October 1979) of the Committee, a package agreement was entered into with the contractor on 30th March 1981. In terms of the package agreement the total price (Rs. 554.53 lakhs) accepted for supply of 150 tonne Gantry crane exceeded original tender amount (Rs. 276.50 lakhs) by Rs. 278.03 lakhs. Similarly excess over tender amount in respect of 10 Tonnes and 5 Tonnes LLTT crane was Rs. 30.40 lakhs. Order for 40 Tonnes LLTT crane was treated as cancelled without any liabilities or obligations on either side.

13.6.9 The particulars (under broad heads) relating to original estimate and the payments recommended by the Committee relating to 150 T Crane and accepted by the Company, are given below :

	(Rupees in lakhs)	
	Original estimate	Amount recommended by the committee
A. Manufacture and supply	174.95	319.27
B. Erection	48.75	110.38
C. Foreign collaboration fee design and supervision charges	18.00	83.89
D. Profit	34.80	34.80
E. Excise duty . . . . .	..	6.19
	276.50	554.53

Total payments made to the contractor towards value of Crane, balance items of work and sales tax amounted to Rs. 597.90 lakhs.

In all, orders for supply of four Cranes worth in all about Rs. 4 crores were placed on the same supplier. The 150 T crane was actually completed in October 1979 after a delay of nearly three years.

13.6.10 The 40 tonne LLTT crane (to be completed by April 1976) was never taken up for construction and the contract was cancelled in March 1981. The 10 tonne and 5 tonne LLTT cranes, originally scheduled to be completed in April 1975, were not completed even by the extended period of completion upto October 1981 and December 1981. These two cranes were completed only in November 1982, over 6 years behind the original schedule at a cost of Rs. 82.93 lakhs (excluding erection charges) as against the original accepted cost of Rs. 57.53 lakhs (inclusive of erection charges).

13.7 Other cranes

13.7.1 Orders for design, supply, erection and commissioning of one each of 20 Tonne and 50

Tonne LLTT cranes at a cost of Rs. 137.08 lakhs were placed (December 1972) on Jessop & Company Limited, Calcutta.

13.7.2 As per purchase orders, the 20 tonne crane was to be commissioned 22 months from date of purchase order (i.e. by October 1974) and the 50 tonne crane within 24 months, i.e. by December 1974. However, the cranes were actually commissioned in September 1977 and March 1977 after a delay of over 35 months and 27 months respectively.

13.7.3 According to CSL "in spite of follow-up action taken by CSL, Jessops had done practically nothing to fabricate the cranes till the delivery periods were over". As reported by GM of CSL who visited Jessop's works at Calcutta during November 1974, the contractor attributed slippage to delay in getting drawings from collaborators and difficulty in arranging indigenous steel in required quantities (which had not till then been brought to the notice of CSL.)

13.7.4 As per purchase order, liquidated damages were leviable at one per cent of the order value per month or part of month's delay in delivery subject to a maximum of 5 percent of value of the order. CSL accordingly withheld liquidated damages to the full extent from bills of Jessops for both the cranes.

13.7.5 Jessops raised wage escalation claims for Rs. 42.12 lakhs for 20 tonne crane and Rs. 66.25 lakhs for 50 Tonne crane. As per terms of wage escalation, for every rupee or part thereof increase in wage supply price excluding escalated claims was to be adjusted by 0.4 per cent and such adjustment was to be applied to supply price of the crane covered by work-passes dated not earlier than 4 weeks after the variation occurred. As the earliest work pass issued was dated 7-12-1975 i.e. one year later than original date of delivery of the crane, no escalation was payable, the entire claim being outside the schedule date of delivery. CSL's legal adviser also confirmed (April 1978) that the claim was not sustainable as per contract terms.

13.7.6 However, on repeated requests from Jessops (Public Sector Undertaking) CSL suggested that the case should be examined by a Government agency. Jessops agreed and the Bureau of Public Enterprises proposed (as informal arbitrator) that in addition to whatever has been paid, withheld, recovered or adjusted (which may all be deemed to have been validly paid, validly withheld, validly recovered or validly adjusted) CSL should pay an amount of Rs. 65 lakhs to Jessops & Company in full and final settlement of all outstanding charges towards escalation. CSL and Jessops agreed.

13.7.7 Thus on the one hand, liquidated damages for delay in supply was deemed to have been validly recovered, on the other hand, wage escalations even beyond scheduled date of delivery which, though not validly due were conceded by the Bureau of Public Enterprises as Arbitrator. Final cost of the cranes to CSL was thus increased by Rs. 65 lakhs.

13.7.8 Total payments made to Jessops for supply of two cranes amounted to Rs. 221.15 lakhs as against Rs. 137.08 lakhs plus taxes fixed originally. Rs. 3 lakhs remained to be paid (February 1985).

13.8 Premature award of contract

13.8.1 Based on tenders invited in November 1971, the work of fabricating and erecting the superstructure for Hull Shop was entrusted in March 1972 to M/s. K. J. Varghese & Company at a cost of Rs. 1.02 crores. The work was to be completed in 10 months.

13.8.2 The contractor abandoned the work after completing a part and unilaterally terminated the contract in April 1973 on the ground that detailed drawings and materials were not supplied in time and as

a result of this delay, the remaining work could not be executed unless enhanced rates were allowed. Further, the foundation work of Hull Shop (on which the fabricated structure was to be erected) had been entrusted to another contractor in July 1972 and the same had not been completed (It was actually completed in June 1974 only i.e. well beyond the time fixed for completion of superstructure).

13.8.3 The contractor's claims for damages (Rs. 17.86 lakhs) and CSL's counter claim for extra cost in getting the remaining work executed were both in August 1974 referred to an arbitrator whose award in October 1976 required CSL to pay Rs. 13,925 to the contractor in settlement of all claims and counter claims.

13.8.4 The remaining part of the work was awarded to M/s. Richardson and Cruddas and M/s. Harrison Crossfield in November 1973 and as against the contract date of August 1974 for completion, the work was finally completed in March 1975 and January 1976. The extra cost to CSL getting the work done through these two contractors was Rs. 50.81 lakhs.

New Delhi

The 12th September, 1985.

K. N. Row

(K. N. ROW)

**Chairman, Audit Board and Ex-Officio
Addl. Deputy Comptroller and Auditor
General (Commercial)**

Countersigned

T. N. Chaturvedi

(T. N. CHATURVEDI)

Comptroller & Auditor General of India

New Delhi

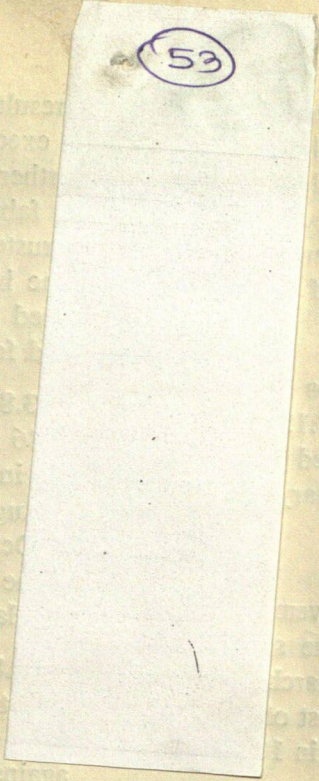
The 12th September, 1985.

53

...of the delay, the remaining work could not
excepted unless...
...the foundation work of Hill Street (on which
...estimated amount was to be credited had been
...to another contractor in July 1977 and it
...had not been completed (it was actually com-
...ed in June 1974 only) it will be beyond the
...for completion of the structure).

8.33 The contractor's claims for January
(and later) and CIL's counter claims for ex-
...in getting the remaining work executed were for
...August 1974 related to an arbitrator whose award
...October 1976 required CIL to pay Rs. 13.9
...contractor in settlement of all claims and con-
...claims.

8.4 The remaining part of the work was
...to M.A. Richardson and Charles
...Harrison Crossfield in November 1973 and
...against the contract date of August 1974 for com-
...tion, the work was finally completed in March 19
...and January 1976. The extra cost to CIL for
...the work done through these two contractors
...Rs. 50.81 lakhs.



...This on the one hand, while
...to which was found to be
...on the other hand, was the
...of date of delivery which
...was cancelled...
...as a condition...
...was thus cancelled by the

...Total payments made to...
...amount amounted to Rs. 27.11
...of 1977...
...amounted to Rs. 10.00

...The work was to be completed in 1
...The contractor abandoned the work after
...ing a part and ultimately terminated the con-
...in April 1975 on the ground that detailed draw-
...and materials were not supplied in time and as

[Handwritten signature]
General (Commercial)
Chairman, Audit Board and Ex-Officio
Additional Deputy Comptroller and Auditor
General (Commercial)

12th September 1982

Commissioner
T. W. Chaturvedi
Comptroller & Auditor General of India

ERRATA

Page	Column	Para No.	Line of the Para	<i>For</i>	<i>Read</i>
11	2	Table 3. 4. 6-A	5th Column of table	(in lajhs)	(in lakhs)
12	1	Table 3. 5.3-A	item (iv)	handlng	handling
18	2	Table 5. 4. 5	item (i)	lss than 2 years	less than 2 years
38	2	13. 3. 3	10th line	service	services
42	1	13. 5. 17	8th line	contracts	contract

राष्ट्रीय अभिलेखागार पुस्तकालय,
नई दिल्ली

National Archives Library
New Delhi

यह पुस्तक निम्नांकित तारीख तक इस पुस्तकालय
को वापस कर दी जाए।

This book must be returned to the Library
on the date stamped below.

NAI/12-10,000 - 10/09/12