C.P.U. No. 516

COMMITTEE ON PUBLIC UNDERTAKINGS (1982-83)

(SEVENTH LOK SABHA)

SEVENTY-FOURTH REPORT

ON

MAZAGON DOCK LTD.—SHIP BUILDING

(Ministry of Defence—Department of Defence Production)

Presented to Lok Sabha
and
Laid in Rajya Sabha on 29.4.1983

LOK SABHA SECRETARIAT
NEW DELHI

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(1982-83)

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STUDY GROUP IV ON COTTON CORPORATION OF INDIA MAZAGON DOCK LTD. (INCLUDING GOA SHIPYARD), HINDUSTAN AERONAUTICS LTD., CENTRAL ELECTRONICS LTD. AND COMPUTER MAINTENANCE CORPORATION LTD.

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4. Shri Narendra Singh
5. Shri M.M. Mishra

INTRODUCTION

I, the Chairman, Committee on Public Undertakings having been authorised by the Committee to present the Report on their behalf, present this Seventy-fourth Report on Mazagon Dock Ltd.—Ship Building.

2. The Committee also examined paragraph XIV of the Report of the Comptroller and Auditor General of India, Union Government (Commercial) 1980, Part V on Mazagon Dock Ltd.

3. The Committee took evidence of the representatives of Mazagon Dock Ltd. on 24 and 28 February, 1983 and of Ministry of Defence (Department of Defence Production) on 12 April, 1983.

4. The Committee considered and adopted the Report at their sitting held on 26 April, 1983.

5. The Committee wish to express their thanks to the Ministry of Defence (Department of Defence Production) and Mazagon Dock Ltd. for placing before them the material and information which they desired in connection with the examination of the subject, They wish to thank in particular the representatives of the Ministry of Defence (Department of Defence Production) and Mazagon Dock Ltd. who gave evidence and placed their considered views before the Committee.

6. The Committee also place on record their appreciation of the assistance rendered to them by the Comptroller & Auditor General of India.

MADHUSUDAN VAIRALE

Chairman,
Committee on Public Undertakings.

NEW DELHI ;
April 28, 1983
Vaisakha 8, 1905 *(Saka)*

I

BACKGROUND ANALYSIS

A. *General*

Mazagon Dock Ltd. was purchased by Government of India in the year 1960 from P & O Co. and British India Steam Navigation Company and was brought under the administrative control of Ministry of Defence, Department of Defence Production. Uptill 1960, the Mazagon Dock Ltd. was mainly a ship repair yard. Subsequently, the shipyard was modernised and expanded for the purpose of building warships as well as merchant ships and increasing ship repair work. The major diversification of the Company in the field of production of off-shore platform for O.N.G.C. started in 1978.

2. The total value (exculding sale of stores and scrap but including cash assistance against exports) of production of the Company during 1977-83 and its break up into various activities was as follows :—

(*Rs. in crores*)

	Ship Building	Off-Shore platforms	Ship repair Gen. Eng.	Total
1977-78	41.58	0.64	11.13	53.35
1978-79	32.25	9.58	10.28	52.11
1979-80	31.68	16.89	8.42	56.99
1980-81	43.53	28.00	13.97	85.50
1981-82	61.84	48.60	14.43	124.87
1982-83	80.25	88.50	13.50	182.25 (Provisional)

3. It will be seen from the above that shipbuilding was the biggest activity of the company till 1981-82. It was in this context that the Committee examined the performance of the Company in this field.

4. The Company is capable of constructing both naval and merchant vessels. The Company is capable of building ships like frigates, destroyers, corvettes etc. for the Indian Navy. It has also undertaken construction of a cadet training ship for the Navy and off-shore patrol vessels for the coast guard. As regards merchant vessels the Company is capable of building a

variety of vessels like cargo ships, passengers vessels, barges, dredgers, tugs, etc.

5. The Committee enquired about the targets *vis-a-vis* actual production in regard to shipbuilding during the last six years. The following figures were furnished by the Company in this regard :

(Rs. in crores)

	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
Original Target	41.86	44.25	31.04	39.80	70.52	64.99
Revised Target	39.75	33.83	27.82	38.15	57.30	64.99
Actuals	41.58	32.25	31.68	43.53	61.84	80.25 (Provisional)

6. In regard to break up of the production for ship building for domestic market and against export orders, the following figures were furnished.

	For domestic Market	Against export Orders	Total
1977-78	27.30	14.28	41.58
1978-79	24.40	7.85	32.25
1979-80	28.54	3.14	31.68
1980-81	43.25	0.28	43.53
1981-82	58.93	2.91	61.84
1982-83	78.17	2.08	80.25 (Provisional)

B. *Capacity Utilisation*

7. The Committee enquired about the capacity utilisation by the Company in regard to ship building. They were informed that M/s. Appledore, the U.K. Consultants had fixed the capacity for shipbuilding in terms of steel fabrication as 7550 tonnes per annum. However, steel throughput by itself is not the total capacity indicator. The utilisation of the berths, the dry docks and the wet basin was also therefore taken into account. The actual performance in respect of utilisation of these facilities during 1977-83 was as follows :—

Year	Capacity utilisation in terms of			
	Steel throughout (10 mm Plate)	Slipways	Kasara Basin	Dry docks
	(%)	(%)	(%)	(%)
1977-78	90	95	97	95
1978-79	31	43	90	88
1979-80	25	30	95	88
1980-81	61	66	90	91
1981-82	93	90	95	90
1982-83	106	95	95	95

8. As regards the reasons for low production and capacity utilisation during 1978-79 and 1979-80, the Managing Director stated in evidence that these were the worst years of recession.

C. *Delivery Schedules*

9. The Committee enquired whether the Company had been able to adhere to delivery schedules agreed to with the customers for ship-building. The Managing Director stated in evidence :—

> "Actually, from 1977-78, more numbers of vessels are delivered on schedule . . . about two weeks late or something like that except two or three vessels. In 1977-78, all were delivered in time including, war-ships and merchant-ships. In 1978-79, one vessel, a dredger for Bombay Port Trust was delayed and the main reason was late receipt of engines from the supplier. The first engine was demaged in an accident and the second engine was delayed by 21 months. As a result of that, the delivery of this dredger was dalayed. One other case occurred in 1981-82. In between, the vessels were delivered in time. In 1981-82, there was a floating crane for Bombay Port Trust. That was delayed by about 16 months because the supplier had delayed the supply of crane by 15 months. There is an important case in the delivery of Tuticorin Port Trust. The authorities wanted to import this tug. Normal delivery was about 20 months in India and about 10½ months from abroad. The Tuticorin Port Trust were paying $ 2500 per day for the charter of imported tug. We took up this challenge and agreed to exactly the same time as the foreigners were doing, and we delivered the tug. The only thing was that we were late by 28 days".

10. Asked whether the Company had to pay any penalty for the delays in construction, the M.D. stated that in one case they had to pay to Bombay Port Trust Rs. 14.62 lakhs for the delay in supply of a vessel, which was delayed on account of delay in supply of crane by M/s. Jessops & Company from whom the Company recovered damages to the extent of Rs. 5-6 lakhs. In another case, where a dredger for BPT was delayed on account of late receipt of engine from the supplier, the matter was under arbitration. In the case of the tug for the Tuticorin Port Trust, MDL paid an amount of about Rs. 2.8 lakhs as liquidated damages.

D. *Profitability*

11. The profitability in regard to production of Naval Ships and Merchant vessels during the years (1977-82) was as follows :—

Profitability Percentages for Naval Ships & Merchant Vessels

(Amts. Rs. in lakhs)

Year	Frigates		Other Vessels		Total	
	Profit	% of Profit to Productian	Profit	% of Profit to Production	Profit	% of Profit to Production
1977-78	99.42	4.4%	(—) 142.86	—	(—)43.44	—
1978-79	39.71	1.9%	(—) 52.03	—	(—) 12.32	—
1979-80	(—) 15.30*	—	132.21	19.2%**	116.91	3.6%
1980-81	85.33	2.4%	(—) 27.81	—	57.52	1.3%
1981-82	77.14	2.3%	12.00	0.4%	89.14	1.4%

* The loss is mainly due to adjustment of under-recoveries af overheads, which were substantial in that year.

** The unusually high percentage is due to adjustment of cash assistance for water tanker delivered during that year.

12. The Committee enquired about the reasons for low profitability. The Managing Director stated in evidence :

"In the ship building industry, low profitability is a common feature. In the entire world, ship building, by itself, is a low profit activity and it is still regarded as such in most of the advanced countries because of its tremendous fall-outs and also because it is a basic industry. It has a tremendous number of auxiliary indstries. There are thousands of items which go into a ship and because of ship building, thousands of other industries are developed. That is why it must be taken into account and we have to take into account the strategic value of having the capability to build the ships and innumberable potential. Subsidies are given in almost all the countries of the world in one form or the other. For example, in U.K. the Government will give the subsidy, Shipbuilders have to take the prior approval of whatever price they can get on order. Cost minus whatever price one can get is subsidised. In Japan even the items that are given to them are subsidised. Even Steel price is different because they are big companies and produce steel also. It is very difficult to find out about steel. They will give it at a much lower price to their own shipyards than they give outside. All over the world it is like that."

13. According to MDL the other reasons contributing to low profitability were :

(i) Frigate Construction for the Indian Navy which constitutes 55% of the total shipbuilding construction turnover is done on cost plus basis. Even though 5% profit margin is provided, the actual profit is subject to an overall limit. Acceptance of orders at cost plus partial recovery of overheads in the earlier years when the Company's order book position was very low on account of recession affected profitability.

(ii) Government have recgonised in the pricing formula for Public Sector shipyards, in respect of cargo vessels built for Indian owners, the need for subsidising the shipbuilding industry with a view to bridge the gap between the indigenous cost of construction and international price. The scheme now allows upto 37% of the international parity price by way of subsidy and indigenisation cost but it is limited to construction of cargo vessels. As the cost of inputs dose not very much vary for the various types of vessels under construction, absence of any form of subsidy for the construction of other vessels inevitably results in partial loss.

It may also be considered that the vessels delivered by the Company are for Port Trusts and other public sector undertakings. MDL has so far not received any subsidy.

(iii) On the construction of internal capital jobs, no profit is charged. This has also accounted partially for the reduced profit margin in respect of ship construction.

14. Asked whether the Company had been able to earn profits as anticipated the M.D. stated in evidence that in the case of six cargo vessels, they expected a profit of Rs. 14 lakhs each but suffered a very heavy loss, whereas in the case of water tankers they made a profit of Rs. 5.26 crores. In 1980-81, they lost Rs. 6 lakhs in barges and Rs. 8 lakhs in fishing trawlers. In the case of floating crane for BPT, there was a loss of Rs. 34 lakhs as against the estimated profit of Rs. 16 lakhs. In the case of the tug for Tuticorin Port also the profit was only Rs. 47 lakhs as agninst expected profit of Rs. 80 lakhs.

15. According to the Ministry the Company was affected by unfavourable and expensive labour practices and production procedures and methods. When pointed out that the percentage of wages and salaries to the total expenditure of MDL was quite high, the M.D, stated that in 1960, the Government had given the undertaking to workmen that the D.A. formula which was applicable to them would continue to apply. Accroding to this formula, D.A. came to about ten times the basic pay for workmen. The case was now in the Industrial Court. The management had taken the stand that the D.A. formula at least for the future and the salary structure should be the same as prevailing in most of the other public sector undertakings.

16. Asked about the extent of over time paid to the workers, the M.D. stated that the overtime was Rs. 4.79 crores in 1981-82. He added :

"In terms of value added, it was 9 to 10 per cent. In terms of value of production, it was about 4% and in terms of the total wages it used to be 19.8%. Now we have brought it down to 17% from Nov. and Dec. 1982 and we as trying to bring it down still further...It is high. I accept it."

17. The Committee enquired about the steps taken by the Ministry to remove constraints which affected profitability in ship building. The Secretary Department of Defence Production stated in evidence :

"As far as we know profitability on ship building generally in most cases depends on the subsidy they receive from the Governments. In addition we have levies and duties which are peculiar to this country which are not applicable anywhere else."

18. As regards the question of subsidy on construction of other ships besides cargo vessels, the Secretary stated :

"The Mazagon Dock has not yet been able to get any subsidy from the Government. In fact we are now negotiating with the Ministry of Shipping and Transport, to extend the same subsidy to the Mazagon Dock for making support vessels for ONGC as for the ocean-going vessels. But, hither to, Mazagon Dock has not received any subsidy."

19. As regards low profit margin on ships constructed for the Navy, the Secretary stated :

"Escalation is allowed on the original cost quoted but profit is not allowed on escalation. Therefore, the profit goes down from 5% to 2%—3½%. I am afraid in my personal view it is not quite fair . . . So where more than one ship has to be built on a series, we want to get on to a system of supplying the first ship on cost basis and the second, third, fourth and so on will be on fixed price basis so as to economise the production cost."

In reply to a further question he added :

"I feel confident that we would be able to pursuade the Naval Headquarters and the Defence Department to accept a more reasonable pricing formula. One of the points they make is that in a ship a large part of the equipment is imported by the Navy, and that is included in the price. For the equipment received and stored by the shipyard and installed, the shipyard has to take the responsibilty, we are suggesting that a differential could be considered for profit margin taking this factor into account."

20. Asked whether the Ministry was satisfied about the cost efficiency of the Company, the witness stated :

"In 1978-79 and 1979-80 the capacity utilisation was affected by recession . . . Wage structure is somewhat irrational, but it is handed down by the previous owners and the matter has been in adjudication for the last 3 years. Sooner or later, I think it will be resolved. But with the diversification, the elements relating to wage content in the total value of production has substantially come down. To that extent the impact of wage structure is neutralised, It has come down from 30.4 per cent in 1978-79 to 29 per cent in 1979-80 to 27 per cent in 1980-81, to 21 per cent in 1981-82 and 15 per cent in 1982-83."

The witness added :

"Looking at it in retrospect, while the Company has grown, but it has not improved upon production planning system the monitoring systems, the design control systems and so on but that again is a function of growth. As it has grown, it has suffered and learnt its lessons and appointed consultants. Much of this in the process of rectification. So far as ship-building is concerned, I would say, by and large taking the environment into consideration, the Company's performance has been reasonable. But you have to take into account the facts that the Company has been making earnest efforts to overcome those problems."

21. When pointed out that the Company was not maintaining any records in regard to machine hours utilisation, the Secretary stated :

"In ship building industry this data is of very little consequence. I find however that the company has already committed itself, and started setting up this record for the machine shop. I think it is unproductive except for very high cost equipment. Here most of the work is labour oriented. The plant and machinery are very limited. In the total value of production, about 76% is accounted by salaries, wages and raw material etc."

22. The Committee enquired whether the company consulted the Department of Defence Production before deciding to diversify to the field of production of off-shore platforms and whether the diversification deprived the company of making full use of its ship building experience. The Secretary of the Ministry stated in evidence that this diversification was allowed by Government. He added that there was really no connection between the shipbuilding activity and the platform activity. They were totally different.

23. As regards the consideration for allowing diversification, the witness stated :

" . . . These platforms were being imported in 1981-82. The import price was $24 million i.e. roughtly Rs. 24 crores. We started making the platforms around the same time, and our cost in 1981-82 was about Rs. 11 to Rs. 12 crores. In 1982-83 the import prices have come down. In any case, we are not meeting the requirements in full. There is import. Today, they are quoting Rs. 14 crores, more in line with ours, but still it is higher then the prices which were there last year. Today, Government has accepted that these have to be considered as deemed exports. It has come through sheer persuasion of the management. We are following up all other requirements which are pretty large for

support vessels as well Jack-up rigs which will cost around Rs. 45 crores. We are bidding against total dumping by foreign firms whose price last year for the same thing was 100% higher than what they are quoting today."

E. Loss of Rs. 554.26 lakhs in the construction of cargo vessels Para XIV - Audit Report (Commercial), Part V—1980

24. In March 1975, the Company entered into six separate contracts for the construction and supply of six cargo vessels of 3800 DWT each at a price of Pounds Sterling 9,06,500 per vessel to a U.K.—based Shipping Company. The vessels were delivered between July 1977 to June 1979 after delays ranging from 12 to 15 months over the due dates.

25. The Company informed Audit (September 1980) that there was delay of about 13 months in the construction of the vessel due to revision of specifications and other reasons and that this delay caused consequential corresponding delays of 12-15 months in respect of all the subsequent vessels.

26. There was also excess consumption of material and mandays. The mandays actually utilised, exceeded the estimates in respect of all vessels, excess over the estimates being in the range of 37 per cent to 63 per cent. No detailed analysis to ascertain the extent of excess consumption of each type of meterial in respect of all the six vessels was made except in case of steel. The excess consumption of steel, was 1937 tonnes in all and ranged from 22% to 27% of the original estimated quantity.

27. The Company had no system of recording and reviewing the quantum of consumption of important items of material and utilisation of labour and comparing them with stage-wise estimates.

28. Prior to the negotiations of the deal for the construction of these vessels, the company had worked out the estimates of cost, according to which cost of construction was estimated at Rs. 192.43 lakhs per vessel. The expected realisation on the basis of the contracted price after taking into account various export incentives was worked out as Rs. 206.55 lakhs giving a profit margin of Rs. 14.12 lakhs per vessel. Because of the additions/ modifications subsequently agreed to, the estimated cost was revised to Rs, 206.40 lakhs per vessel. The actual cost of construction, far exceeded the estimated cost resulting in losses to the extent of Rs. 5.54 crores to the Company as against the anticipated profit of Rs. 84.72 lakhs.

29. A detailed investigation conducted by the Company at the instance of the Ministry of Defence into the losses incurred for the first vessel (presented to the Board of Directors in July, 1978) revealed that the excess expendi-

ture of Rs. 90.80 lakhs (based on the cost known at the time of investigation) over the estimated cost arose because of the following :—

(i)	Under-estimation (Labour Rs. 9.57 lakhs & Material Rs 9.48 lakhs).	19.05
(ii)	Excess expenditure due to excess consumption of materials (9.43 lakhs) and mandays (Rs. 25.59 lakhs) non-provision of expenditure in the estimate etc. (Rs. 8.28 lakhs)	43.30
(iii)	Re-work	11.28
(iv)	Incidentals	17.17
	Total ;	90.80

30. The reasons for the increase in cost and amount attributable to each of the causes were not identified for the remaining five vessels but it was stated that the over-run in respect of remaining vessels was also generally attributable to the same factors as identified for the first vessel as all the six vessels were generally of the same type and design and were also constructed in series.

31. The increase in the cost of construction of these vessels and consequential losses have been attributed by the Management mainly to :

- inexperience of the Company in designing and building cargo vessels for the Merchant Navy to International standards;
- lack of data bank for designing of various types and sizes of cargo vessels which resulted in errors in working drawing causing rework and delay in planning;
- inadequate quality control for procuring and stage inspection necessiting rectifications at higher cost;
- deficiency in production planning and control system;
- lack of closer supervision and control on labour and material consumption;
- inadequate management information system for the purpose of effective control; and
- delay in supply of superstructure units for I and II vessels and hatch covers for II and III vessels by a Public Sector Company [Richardson and Cruddas (1972) Ltd.] mainly due to their labour problems.

32. Accoroding to Audit the first vessel was delivered in July 1977 when the keel of the vessels V and VI was not even laid. The experience gained in the construction of the first vessel had not apparently been made

use of in the construction of subsequent vessels for effecting economy and reduction in cost by analysing the causes for the higher cost of the first vessel at various stages and taking remedial action in respect of the remaining vessels. It was only around July, 1978 when four vessels were already delivered and two were nearing completion that the causes for the losses were investigated for one vessel, at the instance the Ministry of Defence.

33. The Company informed Audit (September, 1980) as under :—

> "..... It was realised only in July, 1977 that there would be a substantial over-run of costs. However, the existing system of recording/reporting of costs does not lend it self to easy and quick analysis ..... Investigation into the losses took considerable time and the report to Government could he submitted only in July, 1978 ..... As the vessels were being designed for the first time by the Company, the deficiencies subsequently experienced could not be foreseen at the time of estimation itself and provided for ..... The order was not accepted on the basis of marginal costs and there was substantial under-estimation of cost in the First instance. . . ."

34. According to Audit the loss arose mainly because of defective estimate, accepting order for construction of a series of vessels at a time in spite of the fact that the Company did not have data bank for designs and estimates of cargo vessels, lack of proper production planning, inedequate supervision, inadequate quality control, absence of adequate organisation to monitor costs and failure to analyse the causes for excessive cost at appropriate stages for taking remedial action in time.

35. In regard to deficiencies mentioned above, the Company explained in a note as follows :—

(a) Defective Estimate

36. The actual utilization of mandays and materials, substantially exceeded the estimate due to shortcomings in actual execution. In case of excess consumption of steel, part of the excess was due to non-availability of correct sizes of materials as required. There was, however, an under-estimation to the extent of about 150 M.T. of steel fabrication and certain other items due to lack of experience in and lack of data bank for designing various sizes of cargo vessels involving an amount of Rs. 19.05 lakes per vessel covering both materials and labour.

(b) Series Construction

37. Series construction of ships does not contribute to losses but is in

fact one of the most effective means of effecting economy in cost. Series construction not only helps in combining of design and drawing office work, but also enables bulking of orders which, in most cases, enables the Company to achieve economy for the bought-out components. Series construction also gives the advantage of learning curve and repetitive production on the berth and in the production shop with resultant economy of effort for the same qunatum of output.

(c) Lack of proper production planning, inedequate supervision and inadequate quality control

38. It is agreed that a contributing factor leading to the loss in the construction of the vessels was lack of proper production planning, inadequate Supervision and quality control in the actual execution of work. This not only resulted in excess utilisation of mandays but also excess consumption of steel and other materials. These areas have been specially studied by a team of Consultants and remedial measures are in hand.

(d) Absence of adequate organisation to monitor costs and failure to analyse the cost for higher cost at proper stages and taking remedial action in time

39. It is agreed that adequate system for monitoring costs their analysis and remedial action at appropriate stages had not been properly developed during the period when the construction of the vessels was undertaken. Our experience in execution of the orders highlighted the areas which required improvement and the organisation is being strengthened at various levels to ensure that there is no recurrence of such cases in future.

40. Apart from the points brought out by the Audit, one of the extremely important factors which leads to over-run in cost is the delays which occur in receipt of the component inputs from various indigenous suppliers. The position becomes particularly acute in cases where delays of 6 to 8 months or even longer are not unusual. In order to meet delivery commitments, all efforts are made to absorb the delays on the part of the suppliers to the meximum extent, but it often means that extra labour effort has to be put in on account of change of sequence for fitting-out, alterations, overtime work, etc.

41. Another important factor which has not been fully highlighted in the reamarks of the Audit is the relative inadequacy of the design capability as a result of which errors were noticed in working drawings which caused re-work and delay in execution. Rework not only caused delay in completion but also involved higher inputs of labour and materials.

42. The loss in construction of the concerned vessels was thus the cumulative result of a number of factors relating to design capability, lack of proper production control, inadequate supervision and the deficiencies in quality control. The Company also did not have adequate system of monitoring costs and timely analysis thereof for remedial action at appropriate stages. Remedial action for meeting these inadequacies have been taken to cover most of the aspects and the organisation is being strengthened to avoid recurrence in future.

43. In regard to delays in construction, Audit had been informed that the agreement for the construction of the vessels was entered into on 1.3.1975 but the production commenced only in March, 1976. The delay was, *inter-alia*, attributed to the following :

(a) The Company did not have a data bank for design of various types and sizes of cargo vessels and the design was evolved from scratch as a process of development.

(b) As a result of technical discussions with the owners and their representatives, after signing the contract many changes had to be made in the accommodation lay-out to meet the statutory requirements of the Depart ment of Trade, U.K.

(c) Lines plans prepared by the Company were sent to M/s. Vickers, U.K. for tank test in April, 1975, but the owners representatives recommended that the lines be modified by M/s. Vickers so as to improve the form.

(d) The Company's officers had to visit U.K. in February 1976, to expedite the approval by the classification society and to obtain from the Department of Trade U.K., clarification regarding certain stability criteria so as to ensure adequate stability of the vessel.

44. The Committee enquired whether the factors cited above were not taken into consideration while stipulating the delivery period of 15½ months in the case of 1st vessel. The Managing Director, M.D.L. stated in his evidence before the Committee:

> "This was the first ever order secured by any Indian shipyard for export of vessels to Europe. Some mistakes were there and we have been learning from whatever mistakes had happened; we are trying to improve the performance. This UK export was of significance because it helped us to secure another order from Iran, for export of vessels worth Rs. 27 crores on which the company made a profit of Rs. 5.26 crores. We signed the contract for the cargo vessels on 1st March 1975 and we secured the other order from Iran on 1st May, 1975. We are sorry some mistake occured. . . . . We gave a period of 15½ months for delivery of the first vessel.

Japan, Korea and Singapore give 10 to 11 months. To us it seems this 15½ months delivery period is not unrealistic."

45. Explaining the causes for the delay the M.D. stated that in the construction of ship the coordinated input of a number of elements was very essential and if any of the element was not there on time, it had a tremendous effect on the productivity, which consequently affected the period or completion. The first was the design, the second was the facilities in the yard and the third was the machinery and equipment and the material required. As it turned out in actual execution the two major projects, both for export- one to Iran and other to U.K. put a lot of strain on their resources, particularly with regard to the design work. They made a lot of effort to recruit draughtsmen and other personnel but were not very successful. With these two major projects in hand it had become very difficult for them to manage and it would appear that with this sort of rush of work and over-work, certain things went wrong. Further water carriers for Iran were much bigger vessels and of higher value. They put them on the South Yard Slipway and started the construction of cargo vessels in the North Yard Slipway where the ship building berth was there, but the assembly shop and the crane were not there. They had, therefore, to construct units upto 15 tonnes only in the South Yard. The smaller units took more labour; transportation also took further time. This was another factor which contributed to the delay in the construction of the vessels.

46. Explaining the difficulties in receipt of machinery and materials, the Managing Directors stated :

"So far as the machinery and equipment are concerned, it is a very uncertain element. When we are importing certain materials, we are not sure how much time it will take. But in this case, we were able to persuade the owner to supply us the imported equipment as owner supply items free. This burden was on the owners. Therefore, we were able to tackle this element of uncertainty in this case. But as ill luck would have it, even the remaining items, which were indigenous items, were delayed considerably, and at times we had to cut the side of the ship to install a particular equipment and re-do the whole thing. This involved a lot of time, labour and cost. In order to expedite the work, for the superstructure was given to another public sector company, Richardson and Cruddas. However, we were unfortunate and there was considerable delay on their account. The units manufactured by them were not properly aligned. We had to do further work on those units before we were able to incorporate those units in our ships."

47. The witness also added that at that time there was also exodus particuiarlyof the skillen labour such as the welders so much so that after

1975-76 their strength of workmen in these critical categories was almost stagnant. They were trying to get more and more. They were training apprentices but they could not cope with the requirements. They were only marginally met as compared to thehuge requirements.

48. Asked as to what were the major causes which could not be foreseen, the Managing Director stated :

> "The first major thing which we could not anticipate was that the completion and approval of the tank test and the design would take that much of time. This is something which should not have taken more than eight weeks. Our Design Manager and our General Manager (Construction) had gone to U.K. for discussion with the Lloyds and with the Vickers, who were doing the tank test. But it was more due to this fact perhaps i.e. lack of experience and we could not say or assert with that much of confidence that this should not take more than this time".

49. The Committee enquired whether there were any other ships built by the Company after this assignment. The Managing Director stated :

> "We have built a number of vessels but not cargo vessels. We are going into more sophistication like crane barges for the installation of platforms etc. For war-ships building, we are going in for sub-marines. Recently, we had a discussion with the Russian authorities. They were interested in export of platforms from Mazagon."

50. Asked about the reasons for cost escalation, the Managing Director stated that besides underestimation the main delay occurred because they could not coordinate various things in time and the mandays went up. As regards the reasons for over consumption of steel the witeness stated that the total excess consumption was of the order of 22% to 27%. Out of that the under estimation was 11 to 12% and the remaining was due to other reasons i. e. non-availability of the optimum size of steel plates, carrying out of certain modifications, re-doing of some works etc.

51. Asked as to whether the question of importing steel plates of the required size was considered, the M.D. stated that they wanted to use as much indigenous steel as possible. Elaborating further he stated, "We could havs imported the plates of the correct size. However, if something of the some quality and near sizes was available indigenously we would definitely have to use the indigenous material as much as possible."

52. When the Committee pointed out that according to audit the Company had no system of recording and reviewing the quantum of consu-

mption of important items of material and utilisation of labour and comparing them with the stage-wise estimates which made it difficult to exercise any meaningful control, the M.D. stated:

> "This is agreed. It is extremely difficult in the case of big ships. That is why we appointed the consultants from U.K. who have done lot of work in big Shipyards so that we could introduce this system in our yard also. They made detailed recommendations. We have been able to introduce the system partly. Other recommendations are in the process of examination."

53. In regard to the appoinment of the consultants, the Company stated in a note that M/s. A&P Appledore (London) Ltd. were appointed as Consultants, primarily for the Production Planning and Control Systems. The contract with them was signed in December, 1978, and the report was received in December 1979. In respect of the Design & Drawing Office, the Appledore study was mainly for organisational and procedural matters which were directly linked with the Production Planning & Control Systems. This study was conducted in April 1979 and the report was received in June 1979. The consultancy work relating to detailed study and introduction of latest Design/Drawing Aids & Techniques, etc. had been entrusted to M/s. Schiffco in September, 1982. Their work is divided into four phases as follows :—

Phase I	— Survey and Preliminary Analysis — Preliminary proposals for changes required — Discussion with Management — Preliminary Report	Preliminary Report received in December 1982.
Phase II	— Detailed Report and recommendations including recommondations for hardware & software needed for improving drawing productivity	Report to be received in March 83
Phase III	— Training of Shipyard Personnel on system recommended in European Shipyards where such systems are in use. Concurrently MDL to procure Hardware & software accepted by Management for introduction.	3 months April — June 1983.
Phase IV	— Step by step Implementation of Recommendations.	6 months September 83 to March 84.

54. The recommendations of M/s. A & P Appledore had been progressively implemented. However, further improvement were required in the following areas and action was in hand to effect these improvements :

Production, Planning & Control

(i) Fixation of norms for various work stations for purpose of planning;

(ii) Mandays control on daily basis;

(iii) feed back system on work-packages issued, for analysis of variations from the estimates;

(iv) integrated outfit material control system, which is essentially computer based.

Design & Drawing Office

(i) Utlilisation of scale models to aid design of engine rooms & piping systems.

(ii) Computerisation of design calculations.

(iii) Development of comprehensive standards data base within the design department, which is a continuing process.

(iv) Establishment of an overall Drawing Office work programme.

(v) Pre-outfitting drawings for systems, which is dependent on the timely availability of equipment information, on which system drawings have to be generated.

Recommendations/Conclusions of the Committee

55. The main activities of Mazagon Dock Ltd. taken over by Government in 1960 are ship repair, ship building, construction of off-shore platforms, and general engineering. In terms of value of production ship building occupied the first place till 1981-82. However, as a result of diversification since 1978, the production of off-shore platforms has over-taken the ship building in 1982-83. The capacity utilisation in regard to ship building, in terms of steel throughout, ranged between 25% to 106% during 1977-83. The production was particularly low during 1978-79 and 1979-80 when it is stated to have been adversely affected by recession world-over in shipping industry. The profitability of the Company in this activity has been low. Even in 1981-82, when the capacity utilisation was 106% in terms of steel throughout and 95% in terms of utilisation of berths, day docks, and wet-basins, profit to capital emp-

loyed was barely 1.4 per cent. There have been instances of delays in the delivery of vessels resulting in cost escalation and payment of liquidated damages. The unfavourable and expensive labour practices and production procedure and methods also affected the cost of production.

56. A detailed examination of the execution of an export order for six cargo vessels to a U.K. based shipping company during 1977 to 1979 revealed several deficiencies affecting cost efficiency and profitability. There was delay ranging from 12-15 months from the due dates in the delivery of these vessels and the Company suffered a heavy loss of Rs. 584.26 lakhs as against the anticipated profit of Rs. 84.72 lakhs. The main factors responsible for this state of affairs were defective estimates, inadequacy of design capability, lack of proper production planning and control, inadequate supervision and deficiencies in quality control. Under estimation of labour and materials resulted in a loss of about Rs. 19 lakhs in one vessel alone. Further, lack of data bank for designing of various type and sizes of cargo vessels resulted in errors in working drawings which caused rework resulting in delay in execution as well as excess consumption of labour and meterials. The Committee find that in spite of the fact that the Company had been undertaking construction of so phisticated warships like frigates and other vessels since 1976, it had not evolved a suitable system for supervision, production planning, quality control and monitoring of costs. The Company had also no system of recording and reviewing the consumption of important items of meterials and utilisation of labour and comparing them with stagewise estimates which could help in making use of the experience gained in the construction of one vessel in taking timely remedial measures for affecting economy in the construction of other vessels.

57. The Committee feel that in view of the admitted inexperience in building such types of cargo vessels and the various deficiencies in control system it was unfortunate that the Company embarked upon the construction of six cargo vessels at a time incurring thereby huge loss of Rs. 5.54 crores. In fact the Company, at the same time, took up another export order for supply of two water carriers to Iran. Apparently, in its enthusiasm to secure big export orders, the various organisational deficiencies were over-looked by the management.

58. With a view to remedying the deficiencies relating to design and drawing office and production, planning and control system the Company had appointed in 1978 M/s. A & P Appledore (London) Ltd. as consultants to study the problems and make suitbale recommendations. In spite of the fact that the report of the consultants had been received more then 3 years back in December 1979, action on recommendations of the Consultants relating to important areas of production planning and control, Design and Drawing office was stated to be in hand. The Committee desire that action in this regard should be expedited to improve efficiency.

59. The Committee would also like to be informed of the action taken on the recommendations of the German Consultants appointed by the Company in September 1982 for introduction of latest design/drawing aids and techniques etc.

60. It has been stated that subsidies are given in almost all the countries in one form or the other for ship building. In India, recognising the need for subsidising the ship building industry Government have now allowed in the pricing formula for Public Sector shipyards subside upto 37% of the international parity price but this is limited to construction of cargo vessels. As the cost of inputs does not vary much for the other types of vessels, absence of any form of subsidy inevitably results in partial loss. The matter is stated to have been taken up by the Department of Defence Production with the Ministry of Shipping and Transport. The Committee hope that decision will be taken in the matter soon.

61. The profitability of the Mazagon Dock was also low in the case of ship construction for the Navy as the price is fixed on the basis of cost plus 5% profit on the original estimates. Any escalation in cost has the effect of reducing even this low percentage of profit. The question of having a satisfactory pricing formula is stated to have been taken up with the Ministry of Defence. The Committee hope that a suitable pricing formula would be evolved soon which would encourage to economise the production cost and allow a fair return to the Company.

62. The Committee note that manufacture of off-shore platform has increased form Rs. 64 lakhs in 1977-78 to Rs. 88.50 crores in 1982-83. In evidence, Secretary, Defence Production informed that manufacture of off-shore platforms by the Company has helped in saving foreign exchange and in bringing down the import prices. The Committee appreciate the achievement and hope that the Company will keep up its efforts for increasing the manufacture of off-shore platforms to meet country's requirements.

NEW DELHI ;

April 28, 1983

Vaisakha 8, 1905 (Sake)

MADHUSUDAN VAIRALE,
Chairman,
Committee on Public Undertakings.

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