



रात्यमेव जयते

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

FOR THE YEAR ENDED 31 MARCH 1994

NO.9 OF 1995

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**UNION GOVERNMENT
(DEFENCE SERVICES - AIR FORCE AND NAVY)**

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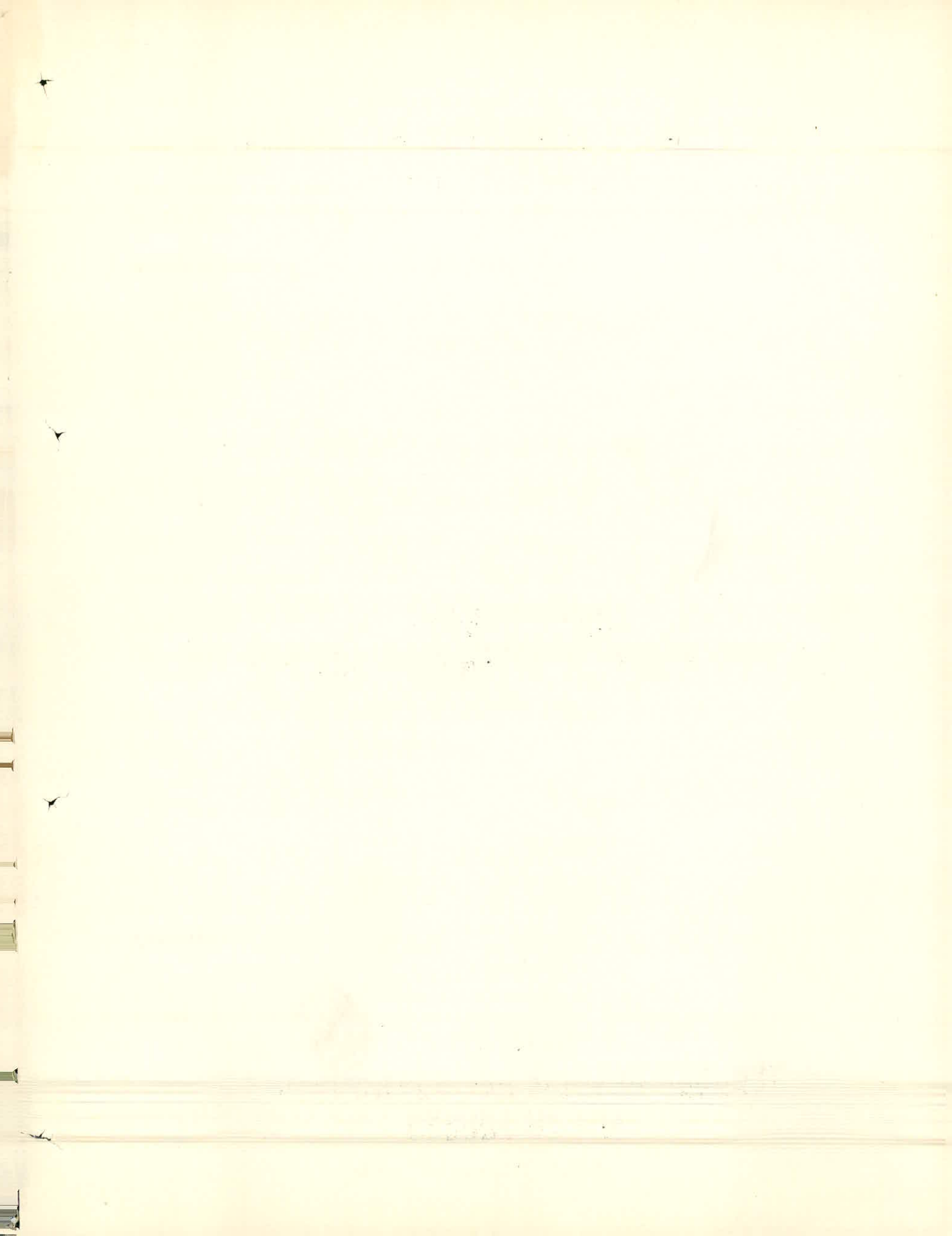


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PREFATORY REMARKS

1. This Report for the year ended 31 March, 1994 has been prepared for submission to the President under Article 151 of the Constitution. It relates mainly to matters arising from test audit of the financial transactions of the Ministry of Defence, Air Force, Navy, Coast Guard and associated Defence Research and Development Organisations.

2. The Report, *inter alia*, includes reviews on

Air Force

(a) Induction of an aircraft

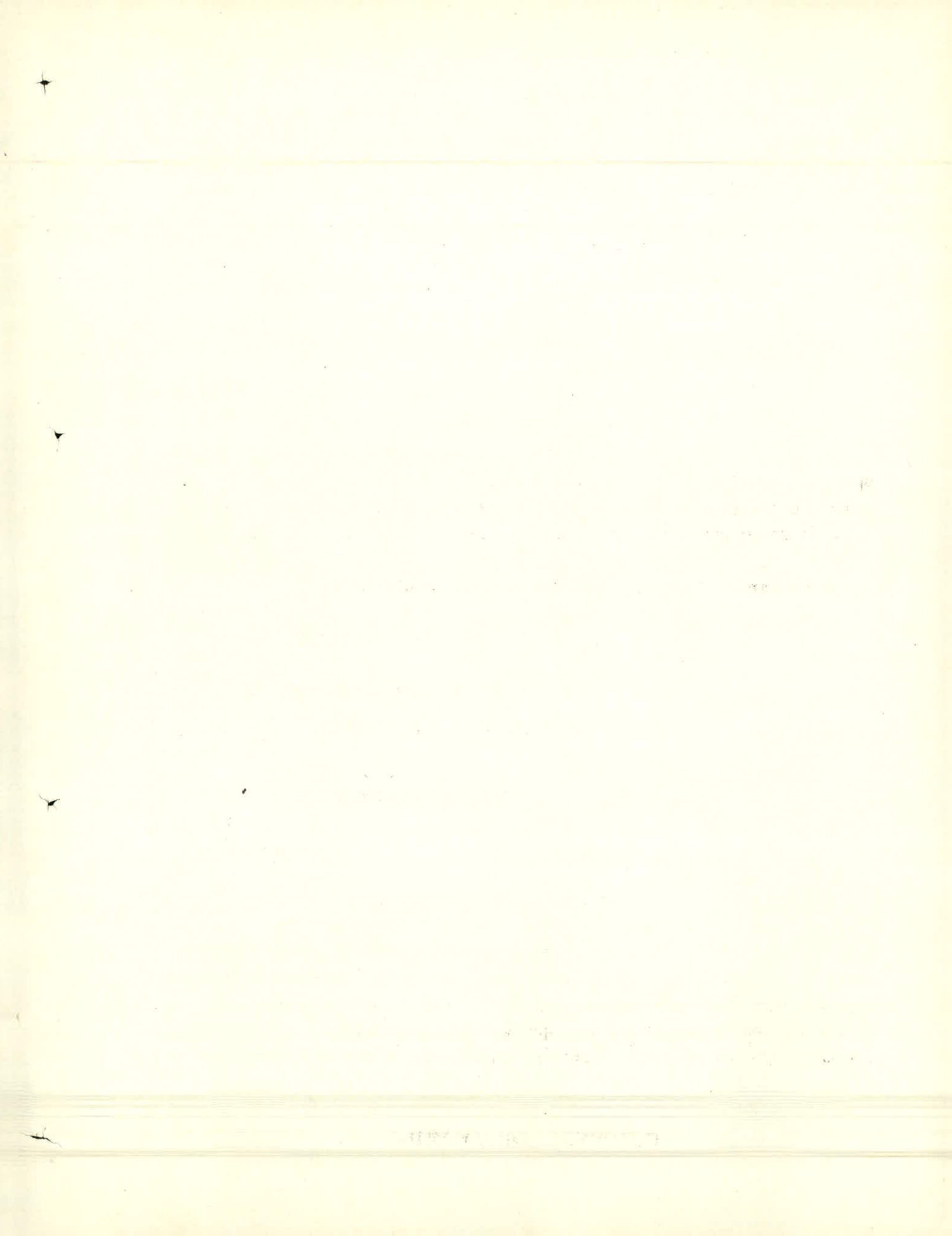
Navy

(a) Naval Air Stations

(b) Naval Yardcraft

(c) Working of Foreign Procurement Cell in Naval Headquarters

3. The cases mentioned in the Report are among those which came to notice in the course of audit conducted during the year 1993-94 and early part of 1994-95. It also includes cases noticed during earlier years but could not be included in the previous Reports.



OVERVIEW

The expenditure of Air Force and Navy during the year 1993-94 was Rs 6133 crores and Rs 2735 crores respectively; which represents 38.58 *per cent* of the total expenditure on Defence Services.

Some of the major audit findings included in the Report are mentioned below:

I. Avoidable expenditure in chartering of a vessel

Delayed sanctioning of outright purchase of a vessel from a public sector undertaking resulted in an avoidable expenditure of Rs 9.56 crores on the continued hiring of the vessel. Additionally, an unintended benefit of Rs 1.74 crores was also made to the public sector undertaking by way of hire charges paid in advance besides payment of Rs 0.94 crore not covered under the contract.

(Paragraph 2)

II. Unauthorised funding of a project

Eventhough the entire non-recurring expenditure on the acquisition of vessels and aircraft to take care of the peace-time threats in the Bombay High area was the liability of Ministry of Petroleum and Natural Gas, Navy incurred an additional liability of Rs 107.76 crores without approval of the competent authority. Due to expiry of warranty of the material packages delivered by a foreign firm, Navy had to commit an avoidable expenditure of Rs 2.50 crores for replacement of defective items.

(Paragraph 3)

III. Induction of an aircraft

In order to fill up the gap in the force level of Airforce, Government concluded a contract in October 1982 for the procurement of certain number of aircraft 'A' at a cost of Rs 621.75 crores. A review of the induction of the aircraft revealed that there was a deficiency in squadron strength due to delay in ferrying of aircraft procured from abroad.

There were also significant shortfalls in flying effort during 1989-93. While the shortfall in the case of trainer aircraft ranged from 20.42 to 36.58 *per cent*, the same was higher in respect of fighter aircraft which ranged from 35.57 to 61.30 *per cent*.

Eventhough the evaluation team recommended in 1980 replacement of the existing aircraft radars and tropical trials of the aircraft conducted in 1986 had revealed high rate of failure of radars, yet the modifications of radars and electronic warfare systems (EWS) were completed only by January 1993. The aircraft, therefore, had to be operated without improved radars and EWS during the intervening period.

While the aircraft was inducted in 1985, its repair facilities are expected to be completed only by 1996 by which time nearly 40 *per cent* of the total technical life of the aircraft would be over. Delay in setting up of repair facilities resulted in an expenditure of Rs 67.62 crores for repair of aircraft arisings abroad. Further, setting up of the repair facilities for the airframe at a PSU instead of at an Air Force depot would result in extra expenditure of Rs 73.78 crores. This would also inflate the cost of overhaul and entail extra financial burden of Rs 197.80 crores to the Air Force during the life cycle of the aircraft.

Additionally, weapon system imported at a cost of Rs 11.15 crores during 1991-92 was yet to be inducted in squadron service. However, in the meantime, the life of certain expendables valued at Rs 3.81 crores had expired. Pending induction of the system which is expected only by December 1996, the aircraft would continue to remain vulnerable to emerging electronic threat, thereby affecting operational preparedness of the Air Force.

The mission simulator procured at a cost of Rs 5.71 crores for training of pilots remained grossly underutilised since November 1989. The weapon training range has also not been completed. Pending completion of the range, air to ground weapon training on the aircraft had to be conducted on a limited scale and that too at other ranges which involved extra expenditure on transportation of men and material from the main base.

(Paragraph 4)

IV. Extra expenditure due to delayed sanctioning of civil works

Sanctioning of infrastructural facilities required for effective functioning of a helicopter unit inducted in November 1988 was abnormally delayed resulting in cost escalation of Rs 1.16 crores. The facilities would be ready only by June 1997 after a lapse of over eight years of induction of the

helicopter. By the time these facilities are available, the total technical life of the helicopters till first major overhaul would be over.

(Paragraph 5)

V. Extra expenditure due to delay in procurement of vehicles

Though the evaluation of vehicles required by the Air Force was completed by 1989, delay in procurement of vehicles resulted in extra expenditure of Rs 48 lakhs.

(Paragraph 6)

VI. Premature failure of overhauled aero-engines

There had been large number of premature failures of aero-engines overhauled by a PSU. Against 1241 aero-engines overhauled by PSU, 1164 engines failed prematurely, of which 190 engines failed even before completion of 50 per cent of time between overhaul and, therefore, had to be re-overhauled at a cost of Rs 15.98 crores during 1989-94. High rate of premature failure resulted in increased down time of the aircraft fleet and adversely affected the operational capabilities of the Air Force.

(Paragraph 10)

VII. Avoidable import of an item

Ten travelling wave tubes costing Rs 41.79 lakhs procured from a PSU which were found unsuitable had not been replaced even after a lapse of over four years despite contractual warranty for such replacement. The non-replacement by PSU necessitated import of an equal number of tubes at a cost of Rs 49.86 lakhs for meeting the requirements of the Air Force.

(Paragraph 11)

VIII. Additional expenditure on procurement of tubes

Lack of coordination between two procurement agencies of the Air Force led to simultaneous procurement of radar tubes from two different sources at varying rates which resulted in an additional expenditure of Rs 32.85 lakhs.

(Paragraph 12)

IX. Naval Air Stations

A review of the performance of Naval Air Stations revealed consistent shortfall in the achievement of the assigned flying task by certain squadrons thereby affecting training of pilots and operational preparedness of the Navy. Aircraft availability/ serviceability was also low in certain squadrons. Three helicopters imported during 1986-91 at a cost of Rs 23.27 crores could not be utilised for the intended purpose for want of modifications to Naval ships which deprived the Navy of a better strike capability. Further, pilotless target aircraft imported at a cost of Rs 6.72 crores could not be fully exploited for want of backup spares which affected the testing of modern weapon systems and training of personnel. Due to delays on the part of the Navy, 21 sets of a system costing Rs 74.58 lakhs were yet to be embodied in the aircraft even four to six years after procurement.

Continued defects in airfield lighting system seriously jeopardised night flying at a Naval Air Station. While instrument landing system, a primary landing aid, costing Rs 90.91 lakhs could not be installed at a station pending completion of runway works, similar equipment installed at another station had operational limitations since 1989. Display units costing Rs 1.27 crores procured in 1989 could not be integrated with the radar due to a large number of defects, affecting air operations at one of the Naval Air Stations.

Precision approach radar and surveillance radar element, vital navigational equipment, sanctioned in 1986 at a cost of Rs 7.20 crores were yet to be provided at a Naval Air station, absence of which adversely affected flying operations. Faulty design and inadequate supervision by the engineers resulted in collapse of a hangar under construction. An expenditure of Rs 1.25 crores had been incurred on it by then. Navy's failure to realistically assess requirement of civil works coupled with inadequate planning on their part resulted in non-installation of equipment costing Rs 57.51 lakhs at two Naval Air Stations.

(Paragraph 15)

X. Naval Yardcraft

There were no scales/norms for holding of yardcraft by Naval dockyards. Yardcraft acquisition-cum-replacement plan for 1991-96 envisaged induction of 36 yardcraft at a cost of Rs 114.25 crores, Navy,

however, sought piecemeal approval from the Ministry and only seven yardcraft costing Rs 8.54 crores were sanctioned during 1991-94 despite an annual planned expenditure of Rs 19 crores. There were 60 yardcraft out of 118 held by the Navy which had outlived their life. Tardy progress in replacement of vintage yardcraft resulted in five fold increase in work packages during refit with consequential higher maintenance cost, apart from restricting operational availability. Navy had to incur an expenditure of Rs 6.44 crores on the maintenance of 23 vintage yardcraft whose material state was unsatisfactory.

Two water barges and a ferry craft procured at a cost of Rs 3.75 crores were grossly underutilised. Further, procurement of auxilliary craft at a cost of Rs 2.75 crores alongwith the floating dock were not really necessary. At Naval dockyard, Bombay, there was shortfall to the extent of 65 per cent in achieving the planned refits. In majority of the cases the time taken for the refits was far in excess of the prescribed time schedule. As of June 1994, 25 yardcraft were overdue for docking since June 1988.

Due to steep decline in the dockyard dredging at Naval dockyard, Bombay since 1989-90, the dredging fleet remained grossly underutilised despite average expenditure of Rs 81.13 lakhs per annum on its maintenance. Further, maintenance of uneconomical dredging fleet resulted in extra expenditure of Rs 3.34 crores on dredging by the Naval dockyard as compared to the cost of dredging by the Dredging Corporation of India during 1984-1994. Liquidated damages amounting to Rs 30.95 lakhs due from a PSU for belated delivery of yardcraft were not recovered even after two to three years of delivery.

(Paragraph 16)

XI. Idle investment on manufacture of Gas Turbines

Navy's failure to conduct a realistic technical assessment of the engineering design of a gas turbine before its import resulted in an infructuous expenditure of Rs 7.18 crores. The imported gas turbine remained with a PSU since 1989 with no prospects of its future utilisation. Additionally, the Navy could not derive any benefit out of the licence fee amounting to Rs 1.05 crores reimbursed to PSU for the licensed manufacture of the gas turbine.

(Paragraph 18)

XII. Excess expenditure over sanctioned cost

Navy incurred an excess expenditure of Rs 291.96 crores on the construction of four vessels without the approval of the Government. The excess expenditure was yet to be regularised.

(Paragraph 19)

XIII. Delay in construction of Dry Dock

Frequent changes in the size of a dry dock and delay in conclusion of consultancy agreement and the decision of Naval HQ to suspend the work after incurring an expenditure of Rs 10.92 crores indicated lack of adequate planning which led to delay in the construction of the dry dock for the Navy. Resultantly, refits/drydocking of Naval ships had to be offloaded to commercial yards at a sanctioned cost of Rs 52.49 crores. While the completion cost and date of completion of the dry dock remained uncertain, the estimated cost of marine civil works alone escalated from Rs 91.51 crores in April 1991 to Rs 123.54 crores in September 1994. Further, the decision of Naval HQ to suspend the work necessitated revalidation of the consultancy contract at an extra cost of Rs 58.32 lakhs

(Paragraph 20)

XIV. Delay in setting up of a permanent Naval Academy

Land acquired at a cost of Rs 25 crores by a State Government and transferred to Navy in 1984 for setting up of a Naval Academy has not yet been put to use for ten years as the Academy is yet to be sanctioned by the Government. In the meantime, an expenditure of Rs 99.40 lakhs had to be incurred to ensure safety of the land besides incurring a recurring annual expenditure of Rs 7.29 lakhs since April 1994 on the security of the assets.

(Paragraph 21)

XV. Excessive procurement of valves and fittings

Navy's unrealistic assessment of the requirements of valves and fittings for the refit of a ship resulted in unnecessary procurement of items costing Rs 2.19 crores which were in stock since 1987-89.

(Paragraph 26)

XVI. Extra payments on power consumption

Navy paid Rs 1.50 crores to a State Electricity Board as penalty for unauthorised connections. Besides, failure to maintain the power factor at the required level resulted in payment of Rs 4.08 crores as surcharge.

(Paragraph 27)

XVII. Non-utilisation of assets

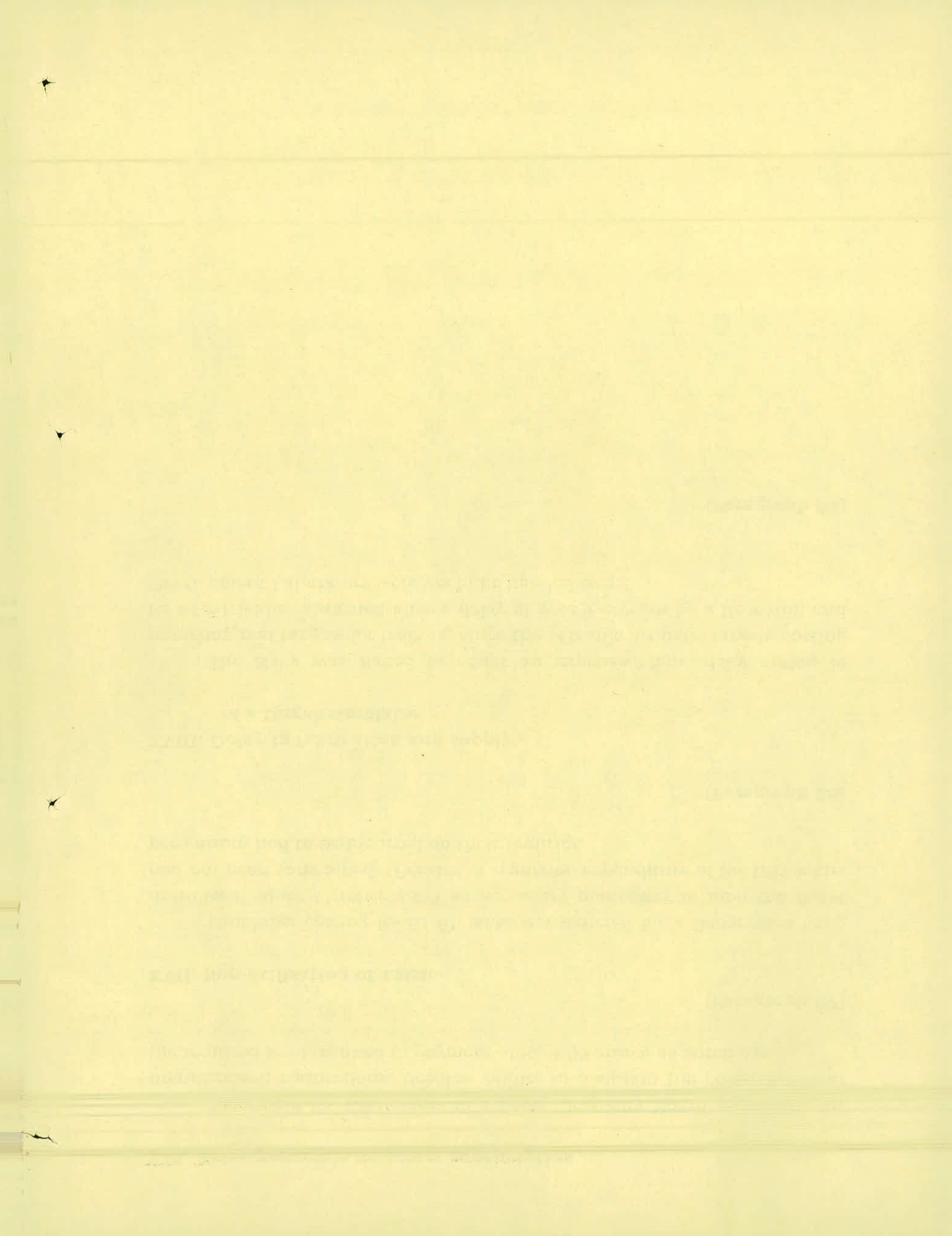
Buildings costing Rs 61.61 lakhs constructed for a depot were lying unutilised since October 1993 as necessary manpower to man the depot had not been sanctioned. Besides, a recurring expenditure of Rs 1.01 lakhs per annum had to be incurred on their security.

(Paragraph 28)

XVIII. Delay in fabrication and supply of a target simulator

The Navy was forced to adopt an expensive and risky option of providing real targets for training since the versatile acoustic targets costing Rs 91.61 lakhs fabricated after a delay of over five years by a Research and Development Laboratory were yet to be handed over.

(Paragraph 34)



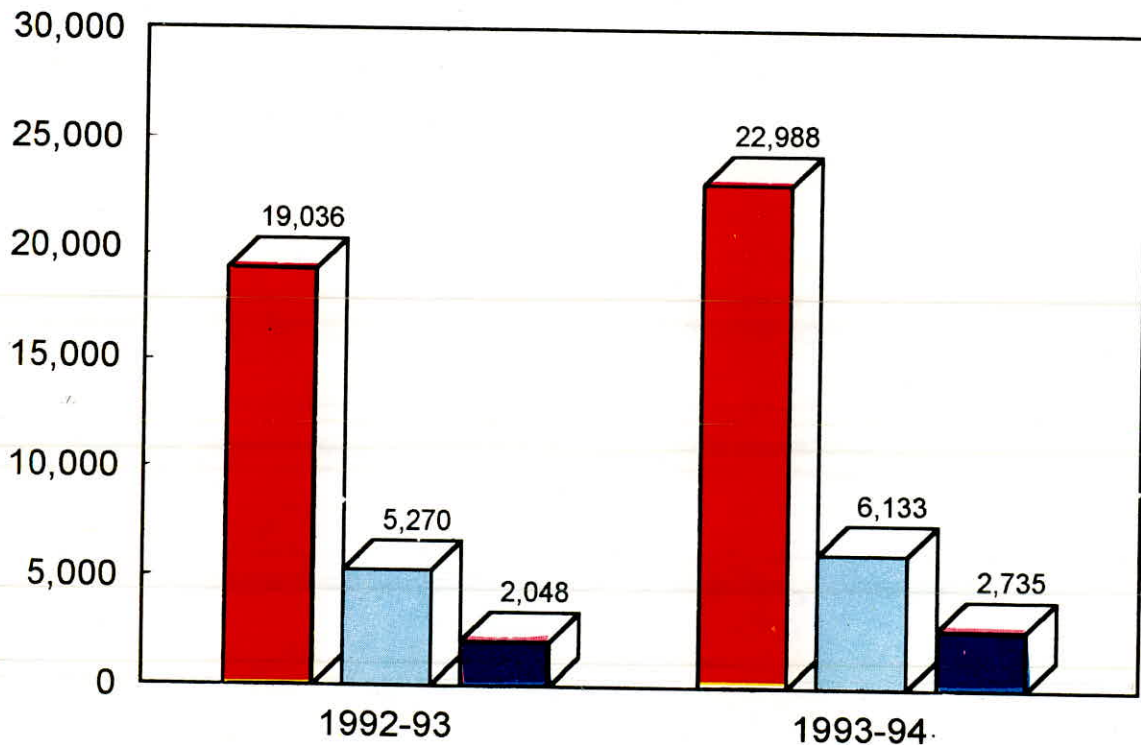
CHAPTER I

FINANCIAL ASPECTS

1. Financial aspects

1.1 During the year 1993-94, expenditure on Defence Services was Rs 22,988 crores which represented an increase of 20.76 per cent over the expenditure incurred during 1992-93. The share of expenditure of the Air Force and the Navy during the year was 26.68 per cent (Rs 6133 crores) and 11.90 per cent (Rs 2735 crores) respectively. The expenditure on the Air Force and Navy during the year 1993-94 revealed an increase of 16.38 per cent and 33.54 per cent respectively over that of the previous year as indicated below:

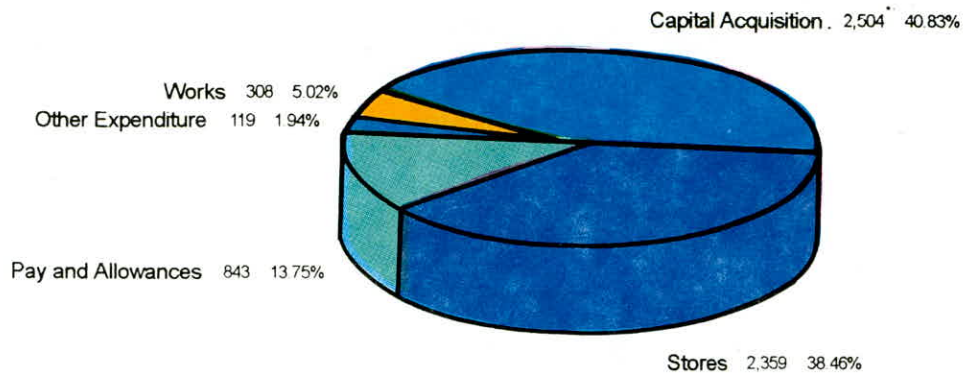
SHARE OF EXPENDITURE AIR FORCE AND NAVY (Rupees in crores)



■ Defence Expenditure ■ Air Force Expenditure
■ Navy Expenditure

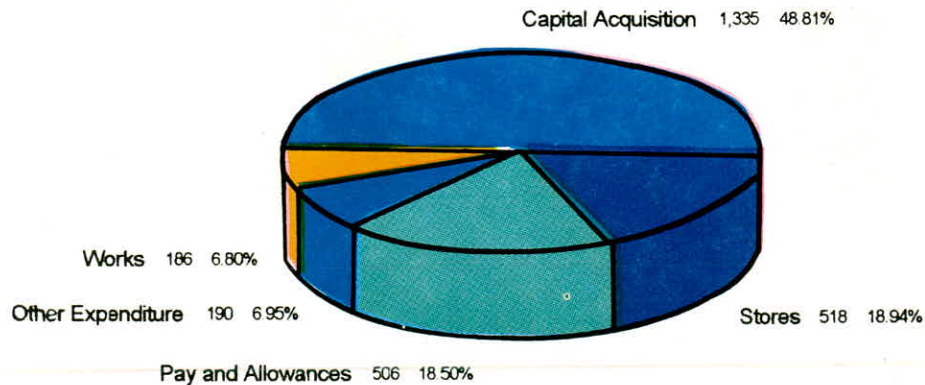
1.2 The proportion of expenditure in respect of the Air Force on capital acquisition, stores, pay and allowances; and works for the year 1993-94 was as under:-

AIR FORCE
PROPORTION OF EXPENDITURE
(Rupees in crores)



1.3 The proportion of expenditure on similar activities for the year 1993-94 in respect of the Navy was as under:-

NAVY
PROPORTION OF EXPENDITURE
(Rupees in crores)



1.4 The Air Force in addition to its main task of maintaining an alert vigil in the Indian skies, carried out air maintenance of the far flung North and North East Regions and assisted civil administration when needed. The Air Force continued to keep pace with technological developments in the field of aviation. Modernisation of Air traffic control facilities was undertaken to ensure highest standards of flight safety and to improve the efficiency of airspace management. Efforts continued to inculcate and encourage indigenous development and upgradation. The first batch of Women Short Service Commissioned Officers joined the Air Force in June 1993. The Air Force instituted a number of economy and austerity measures aimed at economising and optimising resource utilisation/management without compromising the operational capability of the Force.

1.5 In order to keep pace with its increasing responsibility, the Navy has been inducting ships to replace the serving fleet. During the year the seventh off shore patrol vessel; third and fourth Fast Attack Missile craft were commissioned in addition to the launching of the third Fleet Tanker. The Navy was also involved in providing logistics support for UN operations in Somalia. The Navy achieved substantial measure of self reliance with the commissioning of the Marine Gas Turbine Overhaul centre and continued its efforts on indigenisation to reduce dependence on foreign sources. A New Management Strategy was introduced providing for extensive delegation of administrative/financial powers to Naval dockyards with a view to avoid time and cost overrun.

1.6 The Defence Research and Development Organisation operating through a net work of Laboratories/ Establishments continued its endeavour to achieve progressive self reliance in various technology disciplines such as Aeronautics, Armaments, Combat Vehicles, Engineering, Electronics and Instruments, Missiles, Materials, Naval Systems, Life Sciences, etc. The major on-going projects include Light Combat Aircraft, Surface to Surface Missile, Composite Sonar and Technical Weapon Control System, Marine Acoustic Research Ship, etc.

1.7 Test check of various transactions and review of certain selected projects relating to the Air Force, Navy, Coast Guard and a few Research and Development Laboratories revealed instances of injudicious planning, weaknesses in project implementation, delays in decision making leading to time and cost overruns, expenditure in excess of that sanctioned, extra

expenditure in the procurement of stores/creation of facilities, avoidable procurement resulting in idle investment and non-utilisation of assets/stores, etc. as detailed in the succeeding paragraphs. An amount of Rs 48.39 lakhs was recovered at the instance of Audit during the year.

CHAPTER II

MINISTRY OF DEFENCE

2. **Avoidable expenditure in chartering of a vessel**

Mention was made in para 3 of the Report of the Comptroller and Auditor General of India, Union Government, (Defence Services-Air Force and Navy) for the year ended 31 March, 1990 regarding the unusually long time taken for the selection of a submarine rescue vessel (SRV) for the Navy necessitating the dry chartering of a vessel which had certain limitations, on payment of Rs 10.35 crores as hire charges for three years from May 1989 besides incurring Rs 20 lakhs on its modifications. In their action taken note, the Ministry stated in January 1992 that the revised cost of SRV was Rs 170 crores at July 1991 price level and due to resource constraints a decision for its acquisition was yet to be taken.

The vessel chartered by the Navy to serve as an interim SRV belonged to a public sector undertaking (PSU) and was offered on outright sale/charter to the Navy. The outright purchase was not considered as the vessel did not possess:

- state-of-the-art technique of submarine rescue;
- a helo-deck essential for expeditious transfer of rescuees and
- rescue capability beyond a depth of 200 metres against the required depth capability of 450 metres for a SRV.

Naval HQ, therefore, opted for the dry charter of the vessel and its conversion to SRV for limited rescue operations.

The hire charges of the vessel were worked out taking into account its life as 20 years and basic price as Rs 21 crores with interest at the rate of 12 per cent per annum on the written down value. The contract concluded in May 1989 for the charter of the vessel included a provision for exercising an option to purchase the vessel by the Navy either during the currency of the charter or on its expiry on payment of Rs 21 crores reduced by Rs 1.05 crores per annum or pro rata for fraction thereof for the period of charter. The contract also provided extension of charter by paying hire charges equal

to annual depreciation of the vessel plus interest at 12 *per cent* on written down value.

As the acquisition of a dedicated SRV would cost more than Rs 200 crores and would take six to eight years to acquire, Naval HQ in accordance with the terms of the contract proposed in February 1992 the outright purchase of the vessel at Rs 17.85 crores. Government's sanction for purchase of this vessel at Rs 17.55 crores was accorded only in February 1995. Pending Government approval to the proposal, the dry charter of the vessel was periodically extended upto February 1995, on payment of Rs 9.56 crores as hire charges for the extended period.

Meanwhile, in April 1992, the PSU demanded increase in price from Rs 21 crores to Rs 23.95 crores and a corresponding increase in hire charges. The Ministry decided in December 1992 to increase the basic price of the vessel to Rs 23.40 crores though there was no provision in the contract for such an increase. Accordingly, the hire charges were revised upwards from May 1992 onwards. The extra payment of hire charges on account of upward revision of basic price of the vessel worked out to Rs 0.94 crore.

Further, the annual hire charges of the vessel were paid in advance as per the terms of the contract. The two constituent elements of hire charges, viz. depreciation and interest on written down value would accrue only at the end of the year and not at the beginning of the year. Actual payment of hire charges in advance at the beginning of the year resulted in an additional benefit to the PSU to the extent of Rs 1.74 crores. In reply to an Audit query, Naval HQ stated in May 1993 that the hire charges were fixed after negotiations and not based on any fixed norms. The argument of Naval HQ is not tenable since normally such payments are made only when accrued.

In sum:

- Delay in sanctioning outright purchase of the vessel resulted in an avoidable expenditure of Rs 9.56 crores incurred on the dry charter of the vessel during the extended period;
- acceptance of higher basic price and consequent upward revision of hire charges amounting to Rs 0.94 crore were contrary to the provisions of the contract and

an unintended benefit of Rs 1.74 crores was given to the PSU by paying annual hire charges in advance.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

3. Unauthorised funding of a project

Consequent on entrusting the defence of off-shore installation of Bombay High to the Navy, Government reviewed in December 1985, the force level required to take care of the peace-time threats in the Bombay High area and accorded sanction in January 1986 for procurement of seven patrol ships and four maritime surveillance aircraft at a cost of Rs 132 crores and Rs 25 crores respectively. It was also decided that the entire non-recurring expenditure would be met by Ministry of Petroleum and Natural Gas (MPNG)/Oil and Natural Gas Commission (ONGC), if necessary by providing additional funds by the Ministry of Finance. The recurring expenditure on the operation and manning of these vessels/aircraft was the responsibility of the Navy.

Keeping in view the urgency of the requirement, it was decided to import the first three vessels during 1988-89 and to build the remaining four vessels indigenously during 1989-90 using imported material packages.

In July 1987, two contracts were concluded jointly with foreign firms 'A' and 'B' for acquisition of three ready built vessels and four ship-sets of material packages at a total cost of Rs 103.34 crores. In August 1987, a contract was also concluded with a public sector shipyard for construction and delivery of four vessels using the material packages at a fixed cost of Rs 40.08 crores. The material packages were to be delivered by the foreign firms in such a way as to enable the shipyard to deliver the vessels between April 1990 and January 1991.

The first, second and third vessels were delivered by the foreign firms in August 1989, January 1990 and June 1990 respectively. The material packages were also delivered by the foreign firms to match the originally scheduled construction and delivery of the vessel by the shipyard. However, the construction of the vessel in the shipyard got delayed and the vessels were actually delivered between November 1990 and November 1993. The delay was attributed to low productivity in the shipyard and diversion of items from one ship-set of material package to the other to make good the

items found defective during trials. The foreign firms had refused to make good the shortage as the warranty of the items had expired. In August 1992, based on a proposal made by Naval HQ, the Ministry issued sanction to the procurement of items to make up the deficiency at a cost of Rs 2.50 crores.

Meanwhile, in February 1992, MPNG informed the Ministry to stop further funding of the scheme. However, the Navy continued to incur expenditure on the acquisition of the vessels on the plea that it would not be prudent to leave the semi- built vessels at the shipyard in an 'as is where is' condition.

While the Navy had incurred a total expenditure of Rs 254.15 crores till July 1994 on the acquisition of the seven vessels and four aircraft, MPNG funded a sum of Rs 157 crores. The additional amount of Rs 97.15 crores was spent by the Navy from its budgetary allocations without obtaining sanction of the Government.

Ministry also accorded sanctions in August 1989 and April 1990 for procurement of seven communication packages for these vessels at a cost of Rs 10.61 crores. In order to contain the cost of the vessels within the cost approved by the Government it was decided to meet the cost of communication packages from Naval funds. Meeting non-recurring expenditure from Naval funds in violation of the funding policy approved by the Government was irregular. Naval HQ stated in July 1994 that a proposal for obtaining sanction of the Government had been submitted and the approval was awaited.

The case revealed that:

- eventhough the entire non-recurring expenditure was the liability of MPNG, it funded only an amount of Rs 157 crores; Navy incurred an additional expenditure of Rs 97.15 crores without Government sanction, though MPNG advised discontinuance of funding the project in February 1992;
- a sum of Rs 10.61 crores was sanctioned from Naval funds for procurement of communication packages contrary to the Government decision; and

- due to slippage in the production of the vessels in the shipyard and consequent expiry of warranty of the material packages delivered by the foreign firms, Navy had to commit an avoidable non-recurring expenditure of Rs 2.50 crores for the replacement of defective items.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

CHAPTER III

AIR FORCE

REVIEWS

4. Induction of an aircraft

4.1 Introduction

In order to fill the gap in the force level of the Air Force, Government approved in October 1981 the procurement of 'Q' number of aircraft 'A' including trainers in flyaway condition and with an option for its licence manufacture in India. Payment of Rs 3.92 crores was made to the manufacturers in May 1982 for retention of this option. The contract for procurement of the aircraft was concluded with aircraft manufacturers of a foreign country in October 1982 for Rs 621.75 crores. The contract covered integration and operational clearance of a variety of weapons but not the supply of these weapons.

4.2 Scope of Audit

The process of selection, negotiation, procurement, maintenance and actual performance of the aircraft and also establishment of indigenous repair facilities for the aircraft, their engines and other related activities were reviewed in audit during 1993-94.

4.3 Highlights

The delay in ferrying the aircraft led to deficiency in squadron strength ranging from 14 to 47.50 per cent in the case of fighter aircraft and 5 to 50 per cent in respect of trainer aircraft.

There was significant shortfall in flying effort and it had shown an increasing trend over the years. The shortfall ranged from 35.57 to 61.30 per cent in respect of fighter aircraft and 20.42 to 36.58 per cent in respect of trainer aircraft during the years 1989-93.

Replacement of existing aircraft radars was recommended in 1980. Tropical trials conducted in 1986 had also revealed high rate of failures of the radars. The modification of the radars and electronic warfare system (EWS) was completed only in January 1993 at a cost of Rs 62.09 crores. As a consequence, the aircraft continued to operate without improved radars and EWS during the intervening period.

While the aircraft was inducted in 1985, the facilities for its repair are expected to be completed only by 1996 and till then the aircraft arisings would continue to be sent to the manufacturers abroad for repair. An expenditure of Rs 67.62 crores had already been incurred on this account. Nearly 40 per cent of the total technical life of the aircraft would be over by the time the facilities are established.

Setting up of repair facilities for the airframe and its accessories at the PSU instead of at the Air Force Depot would result in extra expenditure of Rs 73.78 crores. This would inflate the cost of overhaul and entail extra financial burden of Rs 197.80 crores on the Air Force on the overhaul of aircraft during its life cycle.

The decision to refurbish the existing Engine Test Bench(ETB) at Depot 'N' disregarding the advice of the manufacturer resulted in creation of two facilities, ETB at Depot 'N' and Leak Test Bench(LTB) at the base. The capacity created at Depot 'N' at a cost of Rs 1.63 crores remained grossly underutilised and the shortfall in utilisation ranged from 40.50 to 82.50 per cent during 1988-93. The ETB at Depot 'N' could not be made universal for testing of engines of another aircraft as envisaged and yet another test bed was created at a cost of Rs 96.38 lakhs.

The weapon system imported at a cost of Rs 11.15 crores was yet to be inducted into squadron service. Modification of the aircraft required for carriage and release of the system has not yet commenced. In the meantime, the life of some of the expendables valued Rs 3.81 crores had expired. Induction of the system is scheduled to be completed by December 1996 and till then the aircraft would continue to remain vulnerable to emerging electronic threat.

Two of the three projectors of the mission simulator procured at a cost of Rs 5.71 crores were lying unserviceable since November 1989 for want of light valves. Consequently, air to air and air to ground training roles of the simulator had to be performed on aircraft itself by actual flying. This rendered the simulator grossly underutilised since November 1989. Besides, there was a loss of Rs 26.10 lakhs on account of damage of a light valve.

Weapon training range for which the acquisition of land was sanctioned in August 1987 had not yet been completed and even the civil works had not yet commenced. Consequently, air to ground weapon training had to be conducted on a limited scale at other ranges involving extra expenditure on transportation of men and material from main base besides limiting the training commitments.

4.4 Identification and procurement

Air Headquarters (HQ) considered three modern generation aircraft including aircraft 'A'. Two of the aircraft were finally ruled out resulting in a single supplier situation where only aircraft 'A' was available for negotiation. An evaluation team evaluated aircraft 'A' during November/December 1980 and found it suitable for the intended role. The team, however, stated that the aircraft was still in its infancy and its various systems were under different phases of development and the aircraft as a weapon system would achieve its designed performance when fully developed. The team recommended procurement of improved radar under development subject to its satisfactory performance in air to air and air to ground roles. However, as the improved radar was under development till completion of the

negotiations, the existing radar was selected. The team added that the satisfactory performance of the aircraft be determined under tropical conditions in India.

A negotiation committee held discussions with the manufacturers between October 1981 and March 1982. The negotiation committee stated that they did not have any meaningful yardsticks to go by in determining the negotiating position. According to the Ministry, the Air Staff Requirements (ASRs) available for air superiority and ground attack roles were to become the basis for price negotiations with the sellers. The fact, however, is that normally the ASRs are meant for technical evaluations and cannot form the basis of price negotiation.

An agreement was signed in October 1982 with the manufacturers for the supply of 'G' number of aircraft 'A' including trainers and option for licence manufacture in India at a cost of Rs 621.75 crores at 1981 price level plus escalation. The option was surrendered in June 1984 in favour of induction of another advanced technology aircraft and an additional agreement was entered into with the manufacturer in March 1986 for the procurement of 'R' number of aircraft 'A' in flyaway condition to be supplied by September 1988 at a cost of Rs 107.74 crores plus escalation for sustaining the unit establishment (UE) till the turn of the century.

4.5 Contract performance

All the aircraft contracted in October 1982 and March 1986 were delivered between December 1984 and May 1986 and February and September 1988 respectively as scheduled. However, there was delay in ferrying of 31 per cent aircraft from the foreign country and the delay averaged six months per aircraft. Two aircraft delivered by the manufacturers in April and October 1988 were ferried only in October 1990. Ministry stated in December 1994 that the aircraft were ferried in batches to make the ferry cost effective. The Ministry added that after delivery, the two aircraft were loaned to seller for electronic warfare system (EWS) integration. The fact remained that delay in ferrying of aircraft led to delay in raising of squadron and deficiencies in squadron strength besides affecting the reserve strength of the fleet.

4.6 Raising of squadrons

Sanction was accorded by the Government in November 1984 to raise two squadrons; one in February 1985 and the second in January 1986.

However, with the delay in ferrying of the aircraft, the first squadron could be raised only in June 1985 and that too with a deficiency of 47.50 per cent of the average unit establishment(UE). The second squadron though formed in January 1986 had a deficiency of about 25 per cent. The actual availability of aircraft in squadron service from 1985 onwards was as under:

Year	Fighter		Trainer	
	Percentage of Aircraft available in squadrons	Shortfall in availability against UE	Percentage of Aircraft available in squadrons	Shortfall in availability against UE
1985	52.50	47.50	50.00	50.00
1986	75.62	24.38	68.00	32.00
1987	85.93	14.07	61.60	38.40
1988	72.12	27.88	68.20	31.30
1989	71.34	28.66	81.60	18.40
1990	72.90	27.10	95.00	05.00

The shortfall in availability of aircraft ranged from 14 to 47.5 per cent in the case of fighter aircraft and 5 to 50 per cent in the case of trainer aircraft during 1985-1990.

Accepting the facts, Ministry stated in December 1994 that shortfall in availability of aircraft occurred due to gradual induction based on delivery schedules, retention of five to seven aircraft with the manufacturers for training of pilots and non availability of eight aircraft in 1989 due to hanger collapse. The fact, however, remained that full complement of the UE sanctioned for the squadron was not available till 1990 despite procurement of a reserve fleet of 'R' number of aircraft.

4.7 Operation of the aircraft

In November 1984, the flying task was fixed at 15 hours per month per aircraft in respect of the fighter and 20 hours per month per aircraft in respect of the trainer aircraft. There were, however, shortfalls in the flying task as indicated below :

Percentage of shortfall in flying task		
Year	Fighter	Trainer
1989	35.57	31.33
1990	45.19	20.42
1991	52.05	33.58
1992	61.30	34.50
1993	60.57	36.58

Air HQ stated in March 1994 that flying efforts had to be curtailed due to limited availability of spares and other infrastructure required. Accepting the facts, Ministry stated that the reduction in flying effort was a temporary measure forced by circumstances and was within the maximum permitted tasks without compromising the quality of tasks. The data, however, revealed that the shortfall was not a temporary measure and it has shown an increasing trend over the years despite better availability of aircraft. Obviously, this affected the training commitments of the Air Force.

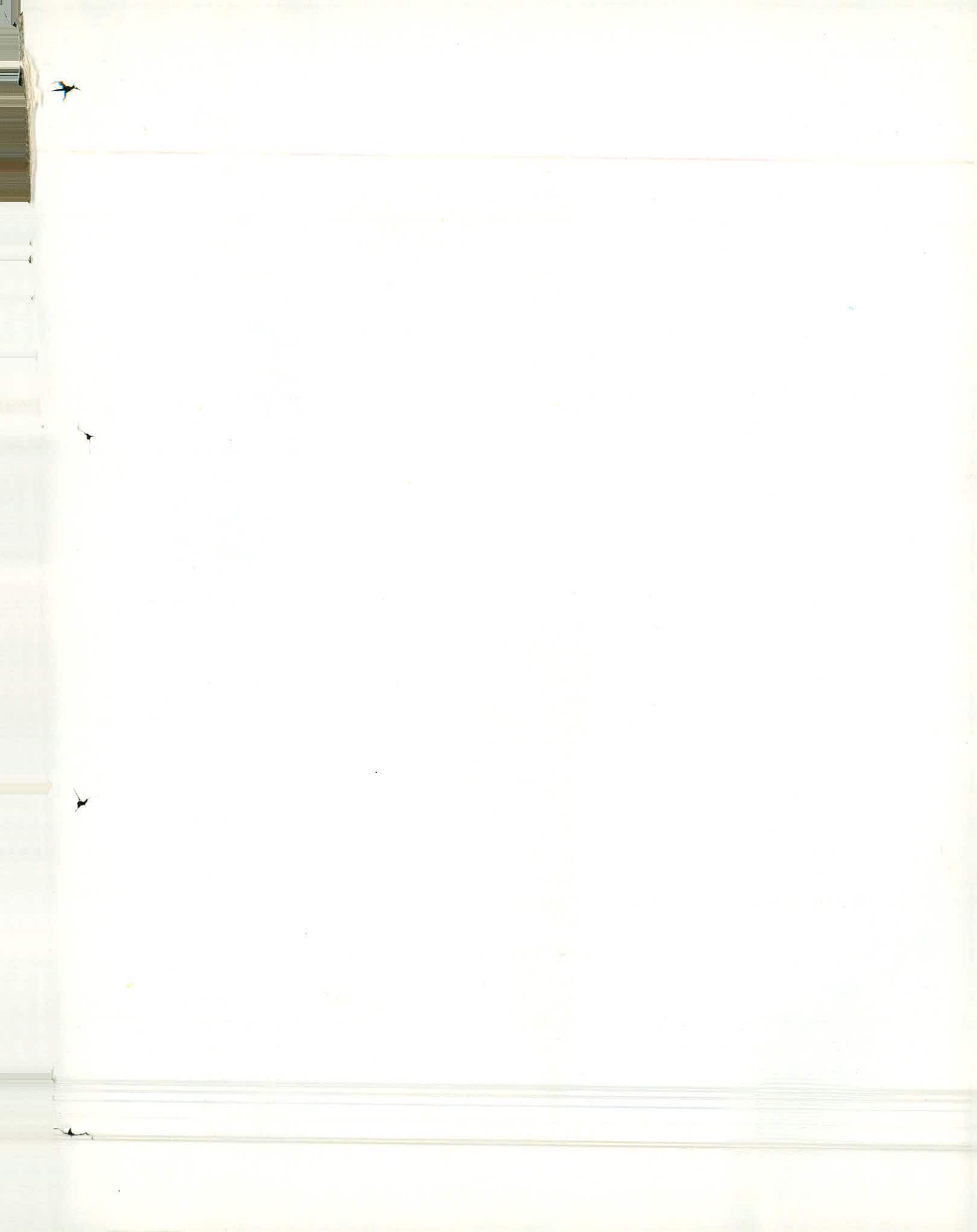
4.8 Deficiency of pilots

There were deficiencies in the posted strength of pilots which showed an increasing trend as detailed below:

Year	Percentage of deficiency
1989	5.26
1990	7.89
1991	7.89
1992	15.79
1993	21.05



Aircraft 'A'



Air HQ stated in April 1994 that there were overall deficiencies in pilot strength in all the fighter units of the Air Force. Deficiency of pilots in the front line aircraft may have an adverse impact on the operational preparedness of the Air Force. The Ministry admitted the facts and stated that arrangements existed to post trained pilots to operational squadrons by withdrawing them from routine duties during hostilities. This, however, is not an ideal practice especially in respect of frontline aircraft.

4.9 Delay in modification of the aircraft

The aircraft were purchased when it was still at the development stage, with the result these had to be updated progressively through a series of modifications including refit. Though the modifications were completed by April 1988, there had been delay of six years in integration of the improved radar and other systems as discussed below.

The manufacturers had guaranteed certain performance parameters under tropical conditions. The tropical trials of the aircraft were conducted in India in July 1986. The system performance of the aircraft at the prescribed temperature, however, could not be evaluated as the maximum temperature during trials was below that value. The attack system of the aircraft also could not be evaluated as weapons were not available for trials by then. Admitting the facts, the Ministry stated in December 1994 that some trials had been carried out in ensuing years when weapons were made available and it met all the designed and operational requirements.

As regards the guaranteed performance of the aircraft systems, the Ministry had intimated in March 1990 that certain deficiencies were noticed during combat flying and the manufacturers had agreed to provide modifications to rectify these deficiencies and the implementation of these modifications was in progress. It was noticed that some of the deficiencies like misting of the canopy still persisted even after nine years of the induction of the aircraft.

It was also noticed that there had been delays in modification of the existing aircraft radars. Though tropical trials of July 1986 had revealed that failure rate of radars was increasing, Ministry concluded the contract only in December 1988 with the manufacturers for carrying out necessary modification to the existing radars and certain other EWS for improving their performance. An expenditure of Rs 62.09 crores was incurred subsequently on these modifications. While the EWS were modified during 1990-92 at the main base, all the radars were sent to the manufacturers

abroad in a phased manner for incorporation of modifications, which were completed in January 1993. The Ministry stated that modification work was clubbed with other tasks so as to avoid grounding of entire fleet time and again. Since operational capabilities were not affected, tasks were taken up in phases resulting in long execution period.

Notwithstanding the Ministry's reply the fact remained that though the aircraft had been inducted into squadron service in June 1985 and its tropical trials conducted in July 1986 had revealed high rate of failure of aircraft radars, the modification was completed only in January 1993, i.e. after six years of the induction of the aircraft and till then the aircraft were without improved version of radars and EWS which affected the operational and training commitments of the Air Force.

The Ministry stated in December 1994 that modifications of radars were for the incorporation of additional features for improving performance originally contracted and pre-mod radars had met the basic QRs and there was no adverse effect on operational capability of the aircraft. The fact, however, remained that till the radars were modified and integrated the aircraft did not achieve its designed performance.

4.10 Delay in establishment of repair facilities

As per the contract of October 1982, the manufacturers were to provide technical assistance, knowhow and facilities for overhaul(OH) of the aircraft, engines and associated equipment in India. For this purpose, an Inter Disciplinary Committee with specialists from the Ministry, a public sector undertaking (PSU) and Defence Research and Development Organisation (DRDO) undertook techno-economic study of the manufacturers' proposal for repair/OH of the aircraft.

The Committee considered the options for setting up of the facilities either in the Air Force or in the PSU and recommended in February 1991 that facilities for repair/OH of airframe and its accessories be established at the Air Force base repair Depot 'M' and that for the aeroengine and its accessories be established at Depot 'N' at the same station. Setting up of the facilities at the Air Force base had the following distinct advantages over the setting up of the same at the PSU :

- the PSU had no background in the first and second line repair of the aircraft and this would call for training of the personnel

which would still not be equivalent to the experience and expertise of the Air Force in the area and

the total cost of setting up of the facilities for aircraft and the engine in the Air Force alone was considered economical as compared to their setting up in the Air Force and the PSU separately. While the cost of setting up of the facilities in the Air Force was estimated at Rs 371.99 crores, the cost of setting up of facilities in the Air Force and the PSU separately was estimated at Rs 445.77 crores based on which the unit cost of OH of airframe at the Air Force was estimated to cost Rs 3.92 crores as against Rs 6.22 crores at the PSU. Higher manpower cost and profit payable to the PSU were the main factors leading to higher cost of overhaul at the PSU.

Contrary to the recommendations of the Committee, the Ministry decided in April 1992 that the task of OH of airframe and its accessories be assigned to the PSU and accordingly, approval of the Government was obtained in November 1992 for setting up of the facilities for OH of airframe and its accessories at the PSU at a cost of Rs 284.54 crores (FE Rs 260.83 crores) and that of engine and its accessories in the Air Force (Depot 'N') at a cost of Rs 149.98 crores (FE Rs 134.42 crores).

The contract for setting up of the facilities for the engine was concluded with the engine manufacturer in August 1993 at a cost of Rs 145.73 crores. The contract provided for setting up of the repair/OH facilities in a phased manner by 1996. As per the provisions of the contract, 16 industrial facilities were required to be imported after obtaining the specifications from the engine manufacturer. The manufacturer was to furnish the detailed specifications by November 1993.

Orders for 13 out of 16 industrial facilities were placed during March to May 1994. The Ministry stated (December 1994) that orders for all the 16 industrial facilities had since been placed at a cost of Rs 5.98 crores and supplies had commenced. The Ministry also stated that orders for 14 out of 31 industrial facilities from indigenous sources have been finalised and the remaining orders were under finalisation. The Ministry added that go ahead sanction for civil works costing Rs 1.28 crores was accorded in August 1994 and the works were in an advanced stage of planning and were expected to commence soon.

As regards the establishment of repair/OH facilities for airframe at the PSU, the Ministry concluded a contract in August 1993 with the aircraft manufacturers for setting up the facilities at a cost of Rs 69.33 crores. During the same month another contract was concluded with the manufacturers for establishment of the overhaul facilities for repair of aircraft components at various divisions of the PSU at a cost of Rs 96.38 crores. Establishment of repair/OH facilities for airframe and its accessories at the PSU and its divisions was against the recommendations of the Committee and would entail extra financial burden of Rs 197.80 crores to the Air Force taking into account the overhaul of aircraft during its life cycle.

Ministry stated in December 1994 that the decision to entrust the overhaul of aircraft and accessories to the PSU was taken in order to put in profitable use of surplus manpower and infrastructure at the PSU. The fact, however, remains that the decision was against the recommendation of the committee set up for the purpose and expertise available at the Air Force was not taken care of. This would result in additional expenditure of Rs 73.78 crores in setting up of the facilities at the PSU and extra financial burden of Rs 197.80 crores on the Air Force on overhaul of aircraft during its life cycle which according to the Ministry was mainly due to higher manhour cost and profit margin of the PSU.

Thus, while the aircraft was inducted in June 1985, the facilities for its repair/OH would be completed only by 1996 and till then the repair arisings would continue to be sent to the manufacturers abroad for repair. In the absence of indigenous repair/OH facilities, the Air Force had entered into three different repair contracts for repair of assemblies, sub-assemblies and live repair units for which Rs 67.62 crores had been paid to the manufacturers till December 1993. Further, by the time the repair facilities would be completed, nearly 40 per cent of the total technical life of the aircraft would be over.

4.11 Establishment of engine test facilities

The engines of the aircraft are modular in nature. The modules and not the engines, are overhauled or changed. These modular changes are carried out in the module change workshop and thereafter the complete engine is tested on an Engine Test Bench (ETB). The ETB is also required for fault diagnosis and rectification of snags and defects.

The contract for procurement of aircraft concluded in October 1982 contained a provision of Rs 1.93 crores for supply of an ETB by the engine

manufacturer to be set up at the main operating base of the aircraft as a completely new facility for which the manufacturer submitted a comprehensive proposal in February 1983.

The Negotiating Committee, however, opined in October 1983 that it would be advantageous to modify an existing ETB at base repair depot (Depot 'N') instead of creating a new facility which would require large expenditure for infrastructure and civil works. The modified test bed would be of universal type and could be utilised for testing of engines of other aircraft also with minor adaptation.

The manufacturer was not in favour of modifying the existing ETB and insisted that the facility must be provided at the main base itself as creation of ETB facility at Depot 'N' would require the establishment of Leak Test Bench (LTB) facility at the main base for checking the assembled engines. This would also necessitate transportation of engines from main base to Depot 'N' and *vice-versa*.

Air HQ, however, decided in October 1983 to refurbish the existing ETB at Depot 'N' and to establish a LTB at the main base. Contract for refurbishment of ETB was concluded in March 1984 with firm 'C' at a cost of Rs 1.28 crores.

The refurbishing of the ETB could not be completed by April 1985 as scheduled due to non-cooperative attitude of the manufacturer. It was completed in May 1988 at a cost of Rs 1.63 crores. In the meantime, considering the undue delay in refurbishing the existing ETB at Depot 'N', the Air Force decided to upgrade the LTB at main base and it was made functional by April 1986 at a cost of Rs 1.24 crores. Thus, two test beds, one at the main base and the other at Depot 'N' were created though the manufacturer had advised creation of only one test bed at the main base.

The refurbished ETB at Depot 'N' being designated for testing of engines of aircraft 'A' alone could not be made universal for testing of engines of another aircraft with minor adaptation as envisaged earlier. Subsequently, another test bed facility for testing of engines of another aircraft was created at Depot 'N' at a cost of Rs 96.38 lakhs. Admitting the facts, the Ministry stated that this being a specialised task needed considerable expertise. Data required for software development were of proprietary nature and were not readily available. However, this goes against the arguments advanced for creating the ETB at Depot 'N'.

Further, the capacity created at the ETB at a cost of Rs 1.63 crores remained grossly underutilised and the shortfall in utilisation ranged from 40.50 to 82.50 *per cent* during 1988-93. The Ministry expected that utilisation would increase with the ageing of engines and after OH cycle commenced at Depot 'N'.

4.12 Procurement of calibration equipment

Mention was made in paragraph 8 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services-Air Force and Navy) for the year ended 31 March 1989 regarding delay in procurement of weapons for the aircraft. Audit, however, noticed that procurement of calibration equipment required for calibration of weapon test benches was also delayed as discussed below:

The weapons for the aircraft are tested on specific test benches. These test benches were procured and commissioned at the aircraft main base between November 1987 and May 1989. These test benches required yearly calibration to ensure the accuracy of the results of the equipment and components. However, the provision for calibration equipment required for calibration of weapon test benches was not catered for in the contract concluded in October 1984 for procurement of weapons for the aircraft. Approval of the Government was obtained only in April 1990 for procurement of calibration equipment at a cost of Rs 3.52 crores and a contract was concluded in July 1992 with foreign firm 'D' at a cost of Rs 5.94 crores according to which the calibration equipment, spares and documentation were scheduled to be delivered by November 1993. The equipment, however, was received only in July 1994. Till then, the test benches which were due for yearly calibration remained uncalibrated. In the absence of calibration equipment, the Air Force had the only choice of treating their test benches serviceable even if not calibrated.

Admitting the facts, the Ministry explained the reasons for delay in conclusion of the contract and stated that calibration of equipment have since been completed. The Ministry added that a claim for liquidated damages for the delayed supplies had been preferred on the firm.

Thus, weapon test benches valuing Rs 8.12 crores which were installed during November 1987 - May 1989 and were required to be calibrated every year, remained uncalibrated till July 1994 for over five years. In the absence of calibration equipment, the test benches were

deemed to be serviceable even if not calibrated. Thus, the accuracy of test results could not be ensured.

4.13 Delay in integration of a weapon system

In January 1981, the Air Force projected a need for acquisition of a weapon system which was considered essential for the safety of the aircraft during operational missions. The contract for procurement of the system at a cost of Rs 11.15 crores was concluded in November 1988 with foreign firm 'E' after a delay of three years. Delay in conclusion of contract and impact of delays causing additional financial burden of Rs 2.89 crores was commented upon in paragraph 11 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services - Air Force and Navy) for the year ended 31 March 1990.

The systems due for delivery from May 1990 onwards, rescheduled to March 1991, were delivered in batches during July 1991 and September 1992 with a warranty of 18 months from the date of delivery. The systems procured were required to be integrated on aircraft 'A' and 'B' in the ratio of 36 and 64 *per cent*. For this purpose, the aircraft were required to be modified for carriage and release of the weapon system.

Government sanctioned in December 1990 to carry out the feasibility study by the aircraft manufacturers for integration of the system on aircraft 'A' at a cost of Rs 44.38 lakhs. The feasibility study was completed in June 1991 and it revealed that the integration was feasible. The manufacturers simultaneously submitted a techno-commercial proposal for trial modification and flight evaluation on an aircraft at a cost of Rs 4.17 crores. Since the cost offered was considered very high, Air HQ proposed in June 1993 indigenous integration of the system. A team of engineers, scientists and pilots from the DRDO, the PSU and the Air Force carried out feasibility study and found that indigenous integration was feasible with the import of certain essential spares.

Consequently, Government sanctioned in August 1993 trial modification of an aircraft 'A' at a cost of Rs 14.13 lakhs which included Rs 8.60 lakhs for import of material and Rs 5.53 lakhs for payment to the PSU for structural work. The PSU, however, quoted a cost of Rs 92 lakhs for undertaking the structural works which was finally negotiated at a cost of Rs 73 lakhs and accordingly, Government sanction was issued in March 1994. The activities concerning the development of trial modifications through indigenous route commenced in June 1993 and were expected to be

completed in July 1994. Series modification of the remaining aircraft was to be taken up on successful completion of the trial modifications. The induction of the system is likely to be completed by December 1996. In the meantime, the life of some of the expendables valued Rs 3.81 crores had expired.

Ministry accepted the facts and stated that since the integration of the system was expensive, indigenous route was chosen and the delay in integration occurred due to non-availability of aircraft data.

Thus, the system which was considered essential for the safety of the aircraft during operation had not yet been inducted into squadron service despite an expenditure of Rs 11.15 crores on its import and aircraft would continue to remain vulnerable to emerging electronic threat till 1996.

4.14 Other interesting points

4.14.1 Under-utilisation of mission simulator

With the induction of the aircraft, a mission simulator was also procured from the manufacturers at a cost of Rs 5.71 crores and installed at the main base in March 1987 for training of pilots. In addition to its basic role of training on aircraft systems, it was to provide training in air to air attack with the use of radars and weapons and training in air to ground attack in various profiles with different weapon configurations.

In order to simulate the flying environment and target projections during combat exercise, three projectors were used on mission simulator. Of the three, two target projectors were rendered unserviceable in November 1989 for want of light valve that became unserviceable due to normal wear and tear. In November 1989, two aircraft on ground (AOG) demands were raised by the unit for the replacement of two light valves. Accordingly, Air HQ concluded two contracts with two foreign firms ('X' and 'Y'), one in October 1991 at a cost of Rs 26.10 lakhs and another in November 1993 at a cost of Rs 21.84 lakhs. Against the contract concluded in October 1991, the light valve was received in July 1992. The light valve was damaged during off-loading and was found to be unserviceable during functional checks. The matter was taken up with the firm in July 1992 for free replacement. The firm rejected the claim stating that the damage was due to mishandling.

As regards the light valve against the contract concluded in November 1993, though due by October 1994, it had not been delivered (December 1994). Thus, the target projectors which were rendered unserviceable in November 1989 for want of light valves were yet to be made serviceable. As a consequence, only limited sorties could be flown on the simulator and the important role of air to air and air to ground mission involving visual simulators could not be practised.

Air HQ stated in April 1994 that in the absence of light valves there had been certain degradation in air to ground mode of mission simulator. They added that the same had been made good by carrying out air to ground training on aircraft itself which involved approximately 10 per cent additional sorties. This rendered the simulator grossly under utilised since November 1989. Besides, there was a loss of Rs 26.10 lakhs on account of damage to one light valve due to mishandling. The loss was yet to be regularised (December 1994). Admitting the facts Ministry stated that non-availability of light valves affected the training of pilots in air to air and air to ground missions.

4.14.2 Delay in establishment of a weapon training range

With a view to imparting training to the pilots on all types of armament delivery, necessity was felt to establish an air to ground weapon range near the main base. This would reduce flying duration of the aircraft and avoid expenditure on transportation of men and material from main base to other ranges. Accordingly, a Board of Officers held in July 1985 recommended establishment of an air to ground weapon training range near the main base to meet operational and training requirements of the Air Force.

Subsequently, Government sanctioned in August 1987 acquisition of 76 hectares of land consisting 56 hectares of private land and 20 hectares State Government land at a cost of Rs 7.23 lakhs. The cost was revised to Rs 21.80 lakhs in January 1991. While the private land measuring 56 hectares was taken over in November 1991, the State Government land was not taken over till April 1994.

In March 1992, an another Board was held to assess the minimum essential work services to make the range operational and recommended works services at a cost of Rs 1.15 crores. Based on the recommendations of the Board, Air HQ, accorded administrative approval in January 1993 for

the provision of works services for the range at a cost of Rs 97.25 lakhs which was to be completed by February 1993. However, construction of the range could not commence since 20 hectares of State Government land on which assets were to be created had not been taken over till April 1994. Consequently, the air to ground weapon training had to be conducted on a limited scale and that too at other ranges. Obviously, this involved extra expenditure on transportation of men and material from main base to the other ranges besides limiting the training commitments.

Admitting the facts, the Ministry stated that State Government land had since been taken over and civil works were in tendering stage. The Ministry added that weapons of aircraft being costly, major training was imparted on the mission simulator. The Ministry's arguments are not tenable as the simulator itself was unfit for the intended role for want of necessary valves since November 1989 thereby affecting the training.

4.14.3 Premature failure of servo actuators

Servo actuator is a component fitted in the aircraft. Out of 247 actuators held by Air Force, 82 failed prematurely within a period of seven to eight years as against the service life of 12 years. As a consequence, six aircraft were grounded during December 1993 to February 1994. Since no indigenous facilities for repair of the actuators were available, 38 actuators had to be sent abroad for repair at a cost of Rs 2.51 crores till March 1994. Thirty four more actuators were still with the manufacturers awaiting repairs. Admitting the facts, the Ministry stated in December 1994 that the number of aircraft awaiting actuators had since been reduced to three.

WORKS SERVICES

5. Extra expenditure due to delayed sanctioning of civil works

For induction of a helicopter unit at station 'A', an Air Force Command HQ constituted a Board of officers in December 1983 to assess the quantum of works services required for providing infrastructure and effective functioning of the Unit. The Board submitted its recommendations after a lapse of 33 months in October 1986 which were approved by Air HQ in February 1988 after a further delay of 16 months. Thereafter, engineers took 32 months to prepare the estimates for the required works services which were submitted in October 1990. The estimated cost was Rs 5.12 crores. The case for approval of the civil works was finally submitted to

Government in November 1990, i.e. seven years after the approval of induction of helicopter unit.

Air HQ admitted (March 1991) that it had taken excessively long time in submitting the case to the Ministry due to delay in completion of required formalities. The estimates were revised to Rs 5.72 crores in December 1991. Thereafter, the proposal remained under correspondence between Air HQ and the Ministry for two years and the estimates were further revised to Rs 6.47 crores in November 1992. The administrative approval for the works services estimated at Rs 6.28 crores was finally issued in March 1993. The work was released for execution in June 1993 and it is expected to be completed by June 1997. However, the work was still at tendering stage (October 1994).

In the meantime, the helicopter unit was inducted at station 'A' in November 1988 and in the absence of requisite infrastructure, the helicopters had to be parked in the open space. The parking of helicopters in the open was causing frequent unserviceability of helicopters. The total technical life of helicopters was seven years/1500 flying hours till first major overhaul, over 75 per cent of which had already expired without necessary facilities and the unit had been operating from make shift arrangements.

Accepting the facts, the Ministry stated in September 1994 that delay had been due to finalisation of Board proceedings and other procedural requirements. It was also stated that due to non availability of hangar space, the helicopters were flown to other stations for servicing. Thus, due to delay in availability of necessary infrastructure in the station, the helicopters had to be flown to other stations for servicing which caused loss of flying hours.

In sum :

- though the helicopter unit was inducted at station 'A' in November 1988, the provision of works services for the induction and effective functioning of the unit was sanctioned in March 1993 and the facilities would be ready only by June 1997 after a lapse of over eight years of induction of the helicopters. By the time these facilities are available, the total technical life of helicopters till first major overhaul would be over;

lack of infrastructure affected the effective functioning of the helicopter unit. The helicopters had to be flown to other stations for servicing which caused loss of flying hours and

the delay in issue of sanction for civil works also resulted in revision of original estimates by Rs 1.16 crores.

PROVISIONING

6. Extra expenditure due to delay in procurement of vehicles

Air Force carried out a review of type 'A' vehicles in May 1988 which revealed a net deficiency of 190 vehicles. Since Army was not able to meet the requirements, the Air Force proposed (June 1988) to procure 150 type 'B' vehicles at a cost of Rs 5.40 crores. It was mentioned in the proposal that funds for the procurement of these vehicles were available. Vehicle 'B' had already been inducted into the Air Force in April 1988 in replacement of existing vehicle 'A' which had out-lived their life and had become unreliable and uneconomical. In April 1989, the Air Force rescheduled their requirements and proposed to procure 60 type 'B' vehicles at a cost of Rs 2.26 crores (unit cost : Rs 3.76 lakhs) and 88 type 'D' vehicles at a cost of Rs 1.91 crores (unit cost: Rs 2.17 lakhs).

In June 1989, the cost of type 'B' vehicle escalated to Rs 3.94 lakhs and that of type 'D' to Rs 2.21 lakhs (total cost increased from Rs 4.17 crores to Rs 4.31 crores). Stressing the need for early finalisation of the proposal, the Air Force stated in June 1989 that non-clearance of the proposal for about a year had added to the cost of the vehicles. The Ministry approved the proposal only in April 1990 after two years of its submission. By that time, the total cost of the vehicles had further escalated to Rs 4.80 crores. The orders were placed on firms 'X' and 'Y' in April and May 1990 for supply of 60 type 'B' and 88 type 'D' vehicles at a total cost of Rs 4.79 crores. The vehicles were delivered in 1990.

The delay in finalising the proposal for procurement of the vehicles required for replacing the vintage vehicles resulted in an avoidable expenditure of Rs 48 lakhs.

Accepting the facts, the Ministry stated in September 1994 that the whole proposal needed reassessment with a view to make it more cost effective by resorting to a mix of vehicles 'B' and 'D'. It added that delay of two years was unavoidable as induction of new generation vehicle could be

done after all aspects like initial cost running cost and maintainability were evaluated. The reply is not tenable as type 'B' vehicle had already been evaluated and inducted into the Air Force in 1988 after necessary trials and type 'D' vehicle also was recommended for induction in April 1989 itself. Hence, the cost effectiveness of the product mix of both vehicles had already been evaluated by April 1989. The Ministry, therefore, was in a position to take decision in 1989 itself. The delay in finalising the proposal escalated the cost of vehicles by Rs 48 lakhs.

7. Extra expenditure on procurement of Pre-detection Combiners

In order to improve the performance of tropo and line of sight links inter-connecting various Air Force stations, fitment of pre-detection combiner mod-kits (PDCs) was considered necessary by Radar and Communication Project Office (RCPO) for some of the links. Accordingly, RCPO projected a requirement of 34 PDCs for updating 17 links in October 1982.

The offers of two foreign firms and a PSU received in response to a limited tender enquiry of March 1983 were examined by an evaluation committee (August 1983) and the offer of the PSU was found suitable.

In June 1985, the requirement of PDCs was reduced from 34 to 22 as the updation of only those links was considered necessary where poor performance had been observed. It was further decided in July 1985 to procure 10 PDCs initially and remaining 12 after their successful integration.

Accordingly, an order was placed on the PSU in December 1986 for 10 PDCs and spares at a cost of Rs 125 lakhs (unit price of PDC Rs 10.18 lakhs and spares Rs 23.20 lakhs). These were integrated between March and October 1987. Instead of placing the order for balance PDCs in one go, as decided in July 1985, two separate orders were placed on the PSU for 10 PDCs. One order was placed in April 1988 for eight PDCs and associated spares and firmed up in March 1990 at a total cost of Rs 128.22 lakhs (unit cost of PDC Rs 12 lakhs and spares Rs 32.22 lakhs). The PDCs were integrated between March and October 1990. Another order was placed in December 1992 for 2 PDCs and spares at a cost of Rs 62.90 lakhs (unit price of PDC Rs 21.25 lakhs and spares Rs 20.40 lakhs). These were yet to be delivered (October 1994). The piecemeal procurement of PDCs and associated spares resulted in an extra expenditure of Rs 31.50 lakhs.

The Ministry stated in September 1994 that the PDCs had to be procured in piecemeal as their performance had to be proved in the field. The reply is not tenable as the links for which the PDCs were ordered in April 1988 and December 1992 had been identified for improvement in June 1985 and their successful integration had been done in October 1987. Therefore, these could have been ordered at one go in April 1988. Further, there was no change in specification of the PDCs between the second and third indents placed on the PSU.

Thus, the piecemeal procurement of PDCs in April 1988 and December 1992 resulted in an extra expenditure of Rs 31.50 lakhs.

8. Import of equipment with incorrect specifications

In December 1987, Government concluded a contract with a foreign firm for the supply of spares for helicopter 'A' which included supply of an equipment costing Rs 23.12 lakhs. The equipment was procured as standby and was received in an Air Force depot in February 1989 without certain essential documents. The non receipt of these documents with the equipment was taken up by Air HQ with the foreign firm in September 1989 but was not pursued thereafter. During inspection in May 1994 i.e. after five years of its receipt, the equipment was found unsuitable for use on helicopter 'A' as it was not according to prescribed specifications. The equipment was lying in the depot since its receipt in February 1989.

Accepting the facts, the Ministry stated in September 1994 that the equipment was procured as standby but was found unsuitable for use. The unsuitability could be ascertained only during physical inspection by a qualified technical officer. It was also stated that the matter was taken up with local representative of the firm in August 1994 for free replacement of the equipment who agreed in principle to replace it free of cost. However, the fact remains that the unsuitability of the equipment was ascertained only after five years of its receipt and action for its replacement was initiated at the instance of Audit.

Thus, the equipment procured at a cost of Rs 23.12 lakhs did not serve its intended purpose.

9. Procurement of a missile system

Government approved in November 1985 acquisition of certain missiles with associated equipment and spares from a foreign supplier at a

cost of Rs 231.86 crores. In order to ensure that the missiles and the equipment are complete and functional, the Government sanctioned in November 1989 deputation of three specialists from the supplier for technical handing over of the missiles and other equipment. The sanction stipulated that in case any fault was found during the handing over, the same would be rectified by the supplier before final handing over. If the fault could not be rectified the supplier would provide replacement of sub-assembly/main-assembly.

The contract for procurement of the missiles and equipment was concluded in October 1986 and the contract for training of officers and technicians abroad was concluded only in 1988. The missiles (costing Rs 12.20 lakhs each) were delivered during 1989-90 as scheduled along with the other equipment. The shelf life of the missiles was six years from the date of induction and the missiles were guaranteed for a period of one year from the date of receipt.

It was noticed in audit that seven missiles delivered during 1989 were found defective during taking over checks. Of these, four missiles were repaired by the foreign specialists. The remaining three missiles could not be repaired due to non-availability of repairing equipment, tools, documents and spares. Air HQ preferred claims against the supplier in December 1990 for repair/replacement of the defective missiles. The supplier declined to accept the claim and stated in July 1991 that these missiles became defective due to faulty implementation of 'operation instructions'. These missiles costing Rs 36.60 lakhs remained unserviceable till September 1994 due to defective instrument panels.

Accepting the facts, the Ministry stated in August 1994 that the missiles were not rendered unserviceable because of non-implementation of "operation instructions" but were found defective during taking over checks. It was also stated that efforts were being made to repair the missiles within the resources. Subsequently, Air HQ intimated (November 1994) that these missiles had been made serviceable after acquiring the requisite instrumentation components from the Navy. The fact remains that Air HQ had failed to obtain free replacement for missiles costing Rs 36.60 lakhs found unserviceable during taking over as envisaged in the contract. By the time these were made serviceable 75 per cent of their shelf life had expired.

OTHER CASES

10. Premature failure of overhauled aero-engines.

A public sector undertaking (PSU) had been carrying out repair and overhaul of aero-engines 'A' and aero-engines 'B' since 1970 and 1981 respectively. The specified time between overhauls (TBO) of aero-engine 'A' was 250 hours and that for aero-engine 'B', was 250 hours to 400 hours.

The various processes of overhaul, adequacy of inspection and testing by the PSU and investigation of reported defects were supervised by an inspection agency 'X' of the Air Force. Another agency 'Y' of the Air Force supervised design, development and manufacturing activities.

During the years 1989-94, the PSU overhauled 740 aero-engines 'A' and 501 aero-engines 'B' at a total cost of Rs 109.20 crores.

It was seen that out of 1241 aero-engines overhauled during these years, only 77 aero-engines (6.20 per cent) achieved the prescribed TBO life and 1164 aero-engines (93.8 per cent) failed prematurely without completing TBO life. While 343 engines failed due to bird hit, foreign object damage and other reasons, 310 aero-engines failed due to avoidable reasons. The avoidable reasons were; problems relating to fuel system (fuel leak, high fuel consumption, oil mix up, metal particles in fuel system) and performance of the aero-engines (overheating, loss of thrust/power, grinding noise, RPM fluctuations, flame out, failure of aero-engine to start).

It was also seen that out of 176 aero-engines overhauled, 90 (51.14 per cent) aero-engines 'A' and out of 134 aero-engines overhauled 100, (75.37 per cent) aero-engines 'B' had failed even before completing 50 per cent of TBO life. These aero-engines had to be re-overhauled at a cost of Rs 15.98 crores. These included 2 aero-engines 'A' and 69 aero-engines 'B' which failed at zero hour. Besides, there were 97 cases of repeat failure of aero-engines 'A' and 48 cases of aero-engines 'B' before completion of TBO life after successive overhauls.

The PSU admitted the existence of premature withdrawals due to design/technological defects and stated in March 1992 that such flaws could not be totally eliminated. The question of large scale premature withdrawals was also analysed by agencies 'X' and 'Y'. Inspection agency 'X' viewed in July 1993 that the high incidence of premature withdrawals was due to lapses on the part of the PSU which *inter-alia* related to faulty

workmanship, wrong assembly, faulty components, inadequate inspection, short cuts in the overhaul processes, design deficiencies etc. Inspection agency 'Y' was of the view (July 1993) that large scale premature withdrawals occurred due to certain major recurring technical problems. However, the PSU did not accept any liability for premature withdrawals as the price for overhaul did not include warranty/guarantee charges. The fact remains that 310 aero-engines had failed prematurely due to avoidable reasons primarily attributable to the PSU. Further, no recovery was made from the PSU towards re-overhaul charges amounting to Rs 2.92 crores incurred on 41 aero-engines for which the PSU had accepted that premature withdrawal occurred due to technical defects.

The premature withdrawals affected the Air Force fleet adversely and increase in such withdrawals resulted in increased down time of the aircraft.

The case revealed that:

- out of 1241 aero-engines overhauled, 310 aero-engines failed prematurely for avoidable reasons, of which 191 failed without completing even 50 per cent of their TBO life and 71 aero-engines had not run even for a single hour;
- in the absence of warranty/guarantee, no recovery could be made from the PSU towards re-overhaul charges of 190 aero-engines amounting to Rs 15.98 crores;
- the high incidence of premature failures resulted in increased down time of the aircraft, adversely affecting the operational preparedness of the Air Force and
- there is an urgent need to streamline overhaul processes by the PSU and inspection mechanism by the inspection agencies to minimise the premature withdrawal of aero-engines.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

11. Avoidable import of an item

Travelling wave tube 9140 is an amplifier used in radars with the Air Force. A PSU had developed this tube indigenously and Air HQ placed an order on it in May 1989 for the supply of 10 tubes at unit cost of Rs 4.20

lakhs. Though the unit cost of importing the tube was Rs 2.09 lakhs, the order was placed on the PSU mainly to conserve foreign exchange. The tubes were received between September 1989 and January 1990 for which a sum of Rs 41.79 lakhs was paid to the PSU upto February 1990. These tubes were found unsuitable for fitment and use in the radar system and were, therefore, returned to the PSU during August 1990 - June 1991 for replacement under warranty clause of the supply order. The tubes were scheduled to be replaced between July 1992 and March 1993. However, by December 1993 only one tube was returned by the supplier and even after repairs, it was found unsuitable. Remaining nine tubes were yet to be returned (October 1994).

Meanwhile, due to critical requirement of these tubes, orders were placed on the same PSU in September 1990, September 1991 and May 1992 for supply of nine imported tubes at a cost of Rs 49.86 lakhs. The tubes were received between February 1991 and June 1993.

Accepting the facts, the Ministry stated in October 1994 that the supply against order of May 1989 was still outstanding and would be effected. It was also stated that when compared with the present cost of 10 tubes, the expenditure already incurred was not considered to be a loss. The reply is not tenable as due to non-replacement of tubes, an extra expenditure of Rs 49.86 lakhs had been incurred in addition to blocking of the investment of Rs 41.79 lakhs for over four years.

Thus, no benefit could be derived out of the investment of Rs 41.79 lakhs for over four years. Further, instead of getting the tubes replaced free of cost, Air HQ preferred to place fresh orders for procurement of tubes resulting in an additional expenditure of Rs 49.86 lakhs.

12. Additional expenditure on procurement of tubes

The procurement of carried and depot spares pertaining to radars under installation for handing over to the Air Force is made by Radar Communication Project Office (RCPO), while the procurement of spares for further maintenance of the radars is made by Air HQ.

Radar type 'A' procured by RCPO from a PSU is fitted with a travelling wave tube 9121 manufactured by a foreign firm. In September 1990, the foreign firm informed RCPO about their intention to discontinue production of the tube and sought consolidated requirement of RCPO to undertake final production. The firm quoted a rate of Rs 2.30 lakhs per tube in November

1990, valid upto May 1991. RCPO assessed the requirement at 15 tubes (November 1990).

In January 1991, the PSU quoted a rate of Rs 3.37 lakhs per tube which was subsequently reduced to Rs 2.99 lakhs in April 1991. The tubes were to be imported by the PSU for supply to RCPO after adding 30 per cent mark up price on actual cost of the tube.

Despite the fact that the rate quoted by the PSU was higher than the rate quoted by the foreign firm, an order was placed by RCPO on the PSU in May 1991 for supply of 15 tubes at a cost of Rs 42.80 lakhs. In April 1992, the PSU revised the price as Rs 5.51 lakhs. The price was negotiated in a Price Negotiation Committee meeting held in April 1992 and unit price of Rs 5.34 lakhs was accepted. Accordingly, the order was firmed up in May 1992 at a cost of Rs 80.23 lakhs. The tubes were actually delivered between August 1992 and January 1994.

Based on the foreign firm's letter of September 1990, Air HQ had also worked out a requirement of 28 tubes (April 1991), subsequently reduced to 14 tubes (December 1991) for maintenance. Air HQ found that the tubes ex-foreign firm were cheaper than those from the PSU and accordingly they procured 14 tubes from a foreign firm at a unit cost of Rs 3.15 lakhs (ordered in September 1992 and received in December 1993).

The closing down of the production line by the foreign firm was known to Air HQ as well as RCPO but the latter did not interact with Air HQ which had procured the tubes directly from the foreign firm at a cheaper rate. This resulted in an avoidable expenditure of Rs 32.85 lakhs on procurement of 15 tubes.

RCPO stated in October 1993 that procurement was done through the PSU in Indian currency as there was shortage of foreign exchange (FE) in 1992. The reply is not tenable as the PSU also imported the tubes from the same foreign firm and there was no saving in FE.

Ministry stated in October 1994 that interaction between Air HQ and RCPO could be done only when some peculiar situation arises and in this particular case there was no such situation. This argument is not tenable in view of the fact that closing down of the production line of a particular item by the foreign manufacturer warranted interaction between RCPO (procuring agency) and Air HQ (user) for assessing one time requirement.

Thus, despite the fact that the tubes were available at a cheaper rate directly from the foreign firm, RCPO failed to interact with Air HQ and procured 15 imported tubes through the PSU, thereby giving an additional benefit of Rs 32.85 lakhs to the PSU.

13. Delay in setting up of X-ray testing facilities

A Base Repair Depot (Depot `A') of the Air Force is responsible for the overhaul of aircraft `B' and its components. The mandatory requirement during overhaul included *inter alia* X-ray testing of materials which was being met by a PSU.

Depot `A' proposed in September 1989 for setting up of their own X-ray complex at an estimated cost of Rs 7.05 lakhs (X-ray equipment etc. Rs 4.80 lakhs and X-ray complex Rs 2.25 lakhs). Firms `C' and `D' were identified as possible suppliers of the industrial X-ray machine. The Administrative Approval for the construction of the X-ray testing complex was accorded for Rs 4.11 lakhs in December 1990.

Tender action could not be initiated by the engineers (MES) until May - June 1992 as approval for final drawing was received only in November 1991. Tenders had to be re-issued in December 1992 as the lowest tendered and retendered amount (Rs 5.20 lakhs and Rs 4.93 lakhs respectively) exceeded the amount sanctioned for the X-ray complex. This necessitated upward revision of administrative approval amount of Rs 4.11 lakhs to Rs 6.38 lakhs in January 1993. The X-ray complex building was completed in October 1993 at a cost of Rs 5.22 lakhs.

In the meantime, in March 1990, Air HQ floated limited tender enquiry for the procurement of an X-ray machine. Based on the offers received from firms `C' and `D', an order was placed in October 1990 on firm `D' for the supply of the X-ray machine by April 1991 at a cost of Rs 4.05 lakhs.

Although firm `D' did not acknowledge the receipt of the supply order as stipulated, it sought in April 1991 extension of delivery date by 150 days on the plea that there has been delay in getting the X-ray tube head from its foreign principal. The delivery schedule was accordingly, extended upto mid October 1991. Air HQ further extended the delivery schedule upto October 1992 in September 1992 on their own volition. Since the firm still failed to supply the machine, Air HQ sought opinion of the legal adviser in December 1992 for resorting to risk purchase at the expense of the firm. The legal

adviser opined in January 1993 that the extension of delivery period was not done at the request of the firm and as such the extension did not appear to have been accepted by the firm.

An official from Depot 'A' visited firm's premises in April 1993 and found that no such firm existed in the said premises. Air HQ finally cancelled the supply order in February 1994 without any financial implication on either side. Incidentally, it was noticed that the firm had not remitted the required security deposit which was to be paid within ten days of receipt of the order.

Admitting the facts, the Ministry stated in September 1994 that firm 'D' was selected based on the recommendations of Depot 'A' and the inspection agency and that the inspection agency is required to make recommendations after verification of the capacity of the firm. It added that the X-ray machine was being procured from an alternative source. However, the alternative source of supply was yet to be decided (October 1994). The X-ray complex could not be commissioned due to delay in procurement of the X-ray machine and mandatory testing continued to be done at the PSU.

Considering the fact that the firm had sought extension of time due to non-receipt of X-ray tube from its principals, it was clear that the firm was not the actual manufacturer of the item. Thus, the selection of firm 'D' was not justified in that the suitability of the firm with reference to its capability to supply the requisite machine was not ensured before placing the supply order. The firm had neither acknowledged the supply order nor deposited the earnest money and had thus defaulted from the very beginning. The Air Force authorities took more than three years to ascertain that the firm did not exist. In the meantime, facilities created in October 1993 at a cost of Rs 5.22 lakhs for housing the machines were lying idle. Besides, the mandatory testing of materials during aircraft overhauls continued to be entrusted to the PSU.

14. Recoveries at the instance of Audit

A sum of Rs 48.39 lakhs was recovered at the instance of Audit during 1993-94 in two cases as detailed below:

- (i) In October 1987, Air HQ placed an order on a PSU for supply of four sets of an equipment at a cost of Rs 1.49 crores each. These were to be delivered in two batches of two sets each during 1988-89 and 1989-90. The payment was to be made on the basis of fixed cost quotation (FCQ) rate of

the year in which the supplies were made. In January 1991, at the request of the PSU, the period of delivery was amended for supply of one set each in December 1990, August 1991, April 1992 and December 1992. It was stipulated in the amendment that the revised delivery schedule would have no bearing on the price.

The PSU supplied only one set during March 1991 for which it was paid a sum of Rs 2.11 crores based on the FCQ rate of 1990-91 whereas as per the delivery schedule payment was to be regulated with reference to the FCQ rate of the year 1988-89 which was Rs 1.68 crores. This resulted in an overpayment of Rs 43 lakhs. On being pointed out by Audit in August 1992, the amount was recovered from the PSU in November 1993.

(ii) In another case, Air HQ placed an order on the same PSU in March 1988 for supply of 49 ground test equipment at a cost of Rs 9.80 lakhs. A sum of Rs 5.39 lakhs was paid to the PSU as advance (Rs 3.43 lakhs in April 1988 and Rs 1.96 lakhs in May 1989).

Though the order was cancelled in July 1989 without any financial repercussions, no action was taken to recover the amount of advance. On being pointed out by Audit in June 1993, Rs 5.39 lakhs were recovered from the PSU in June 1993 itself.

The Ministry confirmed recoveries in these cases.

CHAPTER IV

NAVY

REVIEWS

15. Naval Air Stations

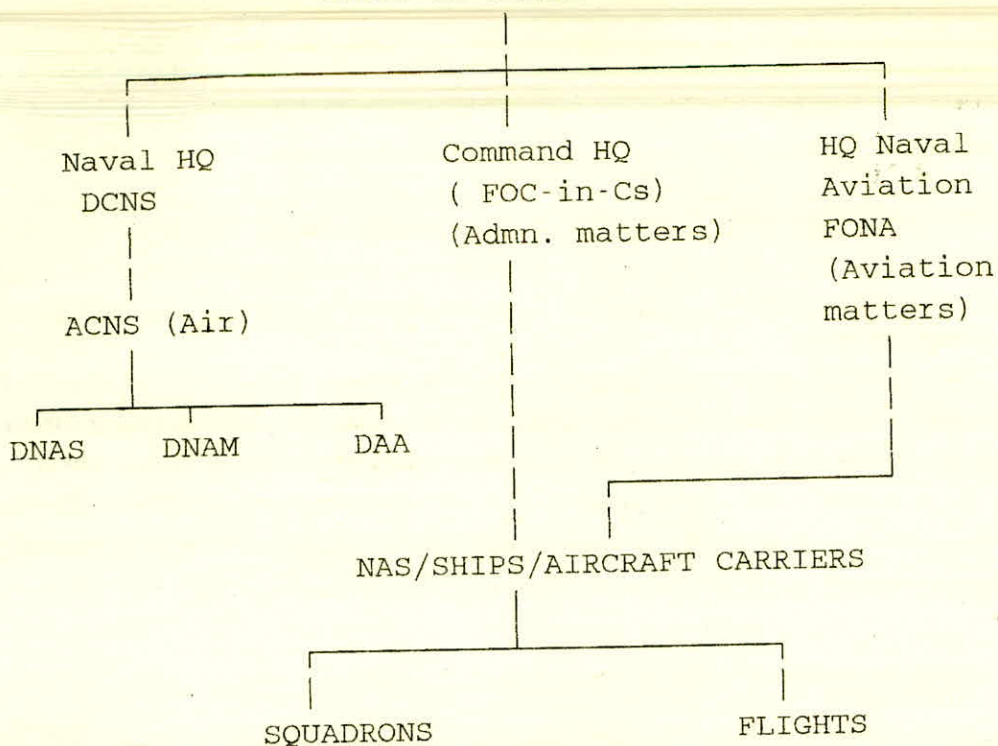
15.1 Introduction

Naval Aviation is a vital arm of the Indian Navy for undertaking tasks such as maritime reconnaissance, fleet air defence, carrier borne strikes against maritime targets, ships and shore borne air anti-submarine warfare, search and rescue (SAR) etc. To undertake these tasks, a variety of aircraft and helicopters are employed by the Navy.

15.2 Organisational set up

The basic organisational structure of Naval Aviation is four tiered viz (i) Naval HQ at the apex (ii) Flag Officers Commanding-in-Chiefs (FOC-in-Cs)/HQ Naval Aviation (iii) Naval Air Stations/Ships/Aircraft carriers and (iv) Naval Air Squadrons/Flights as in the chart.

CHIEF OF NAVAL STAFF



DCNS	-	Dy. Chief of Naval Staff
ACNS	-	Assistant Chief of Naval Staff
DNAS	-	Director of Naval Air Staff
DNAM	-	Director of Naval Air Material
DAA	-	Director of Aircraft Acquisition
FONA	-	Flag Officer Naval Aviation
FOC-in-Cs	-	Flag Officers Commanding-in-Chief

The Directorates (DNAS, DNAM and DAA) are responsible for selection, acquisition, operation and maintenance of the aircraft. The FOC-in-Cs are responsible for fighting efficiency, operational readiness and tactical control in respect of aircraft and aircrew allotted to them. Flag Officer, Naval Aviation (FONA) is responsible to the Chief of the Naval Staff on all matters concerning aviation training, maintenance, flight safety and operational tactics.

Naval Squadrons/Flights are controlled and supported by the parent Naval Air Station or the Carrier ship. The Naval Air Station (NAS) exercises control through Commodore (Air) who in turn controls the Air Squadrons/Flights. The Squadron Commander is responsible for the functioning and operational status of his squadron.

The Air squadrons operate from the Naval Air Stations and ships which provide necessary facilities for the operation and maintenance of these squadrons.

15.3 Scope of Audit

The working and operation of two major Naval Air Stations was commented upon in para 49 of the Report of the Comptroller and Auditor General of India, Union Government, Defence Services for the year 1985-86.

The present review covers all the five Naval Air Stations and one Flight. The performance of the Naval Air Stations as well as squadrons dependent on them was examined for the period 1989-94 with reference to the tasks assigned. The review also covers different aspects of operation and maintenance of aircraft, their serviceability and availability for the role envisaged besides a critical examination of provisioning and utilisation of various landing aids, navigational equipment and specialist vehicles etc.

15.4 Highlights

- **There was consistent shortfall in the assigned flying task in respect of nine squadrons during 1989-94 affecting operational preparedness of the Navy. Also the availability of aircraft vis-a-vis sanctioned/serviceability of aircraft was also low in six squadrons.**

- **Pending modifications to three Naval ships, three helicopters imported during 1986-91 at a cost of Rs 23.27 crores could not be utilised for the intended purpose thereby depriving Navy of better strike capability.**

- **During 1990-94 shortfalls to the extent of 75 per cent were noticed in the planned task of pilotless target aircraft imported in 1989 at a cost of Rs 6.72 crores for want of backup spares thereby affecting the operational preparedness of the Navy and training of personnel by the Naval ships. One of pilotless target aircraft costing Rs 95.38 lakhs was lost due to inadequate training.**

- **Of the 38 sets of a system, 21 sets costing Rs 74.58 lakhs were yet to be embodied in the aircraft due to delays on the part of Naval authorities depriving the Navy of a vital**

operational need. Of these, 11 sets costing Rs 37.29 lakhs were lying in stock since early 1988.

Continued defects in the airfield lighting system since 1987 seriously jeopardised night flying at Naval air station 'A' necessitating use of an alternate system which had inherent defects. Instrument landing system, a primary landing aid installed at the same station had operational limitations since its relocation in May 1989. At Naval air station 'C' the instrument landing system procured in August 1990 at a cost of Rs 90.91 lakhs was awaiting installation pending non-completion of runway work.

Ground control approach radar, (comprising of precision approach radar and surveillance radar element), a vital navigational equipment, sanctioned in 1986 at a cost of Rs 7.20 crores was yet to be provided at Naval air station 'C' in the absence of which flying operations were adversely affected. The precision approach radar (costing Rs 2.83 crores) scheduled for delivery in March 1992 was yet to be received. The surveillance approach radar element was yet to be identified for procurement, the cost of which had escalated from Rs 3.96 crores to Rs 12 crores.

Display units procured in May 1989 at a cost of Rs 1.27 crores could not be commissioned and integrated with the radar at Naval air station 'A'.

Navy's failure to realistically assess requirement for civil works coupled with inadequate planning resulted in non-installation of equipment worth Rs 22.52 lakhs at a Naval air station for over two years. At another Naval air station equipment worth Rs 34.99 lakhs were awaiting installation/ commissioning for want of power supply.

At Naval air station 'B' a hangar and allied works contracted in August 1989 at a cost of Rs 1.43 crores collapsed in March 1992 when 85 per cent of the work was over due to faulty design and inadequate supervision by the engineers.

While eight specialist vehicles costing Rs 1.60 crores had not been commissioned for periods ranging from three to seven years of their receipt, 30 other specialist vehicles costing Rs 3.50 crores were lying unserviceable for want of spares and suitable repair agency. This affected the functioning of Naval Air Stations.

15.5 Performance of Squadrons/Flights

15.5.1 Availability/serviceability of aircraft

Naval air stations provide necessary support services to the squadrons/flights based on those stations. A scrutiny of the records of various squadrons at Naval air stations for the period 1989-94 revealed that the availability of aircraft with reference to the authorised unit establishment was consistently very low in respect of three squadrons and the serviceability of aircraft was also too low in respect of three other squadrons as detailed below:

Station/ Type of Aircraft/ Name of Squadron	Year	Availability of aircraft (In percent)	Average Service- ability of aircraft
Station A			
Aircraft M			
X-1	1991-92	63	72
	1992-93	78	64
	1993-94	100	51
Aircraft R			
X-6	1990-91	114	66
	1991-92	100	44
	1992-93	100	38
	1993-94	100	47

Station B

Aircraft N2

X-9	1989-90	75	50
	1990-91	100	42
	1991-92	125	49
	1992-93	125	57
	1993-94	100	40

Station C

Aircraft T

X-12	1989-90	63	65
	1990-91	65	79
	1991-92	60	50
	1992-93	58	32
	1993-94	38	65

Station E

Aircraft O

X-16	1989-90	40	64
	1990-91	40	59
	1991-92	40	57
	1992-93	40	38
	1993-94	40	79

Station F

Aircraft N2

X-18	1990-91	33	63
	1991-92	22	84
	1992-93	20	68
	1993-94	45	79

Low aircraft serviceability/availability affected the assigned flying task which had a bearing on the operational preparedness of the Navy.

15.5.2 Aircraft on ground (AOG)

As of January 1994, 19 aircraft were on ground for periods ranging from 14 to 55 months as detailed below:

Station	Aircraft	No. of aircraft	AOG since
A	U	2	November 1991
	S	2	November 1991, September 1992
	T	3	August 1991, February and April 1992
	V	5	July and September 1991, September, November and December 1992
B	N1	2	July 1989, January 1990
	P1	2	October 1991, January 1992
	O	2	August 1990, September 1991
C	T	1	June 1992

These aircraft were on prolonged AOG due to non- materialisation of demands for spares. This resulted in reduced availability of serviceable aircraft to the squadrons thereby affecting the flying effort.

15.5.3 Shortfalls in flying tasks

There was significant shortfall in the flying tasks assigned to various squadrons/flights during 1989-94 as detailed below:

Station	Squadron	Percentage of shortfall				
		1989-90	1990-91	1991-92	1992-93	1993-94
A	X5	22	26	1	31	56
	X6	29	10	Nil	3	7
	X7	-	53	21	16	48
B	X9	27	37	15	11	9
	X10	14	6	9	34	39
C	X12	15	28	13	35	23
	X14	-	-	32	42	12
E	X16	56	58	68	70	23
F	X18	-	-	20	53	60

The reasons for continuous shortfall were attributed to:

- poor aircraft serviceability due to non-availability of spares;
- shortage of qualified flying Instructors;
- limited night flying due to non-availability of search and rescue ships;
- non-availability of support facilities (runway) to take 'all up weight' (Stations A and C);
- less number of trainees in a squadron and
- bad weather/monsoon.

The shortfall in flight efforts had adversely affected the training/operational tasks assigned to these squadrons.

15.6 Helicopters

15.6.1 Non-deployment of helicopter `V` for ship borne operations

A certain number of helicopters `V` was acquired from a foreign country during July 1986-91 under three contracts at a cost of Rs 74.16 crores. It was envisaged in October 1986 that some of these helicopters would be deployed with three particular ships in replacement of helicopters `U`. The ships which were designated to take on the new helicopter `V` needed modifications involving an expenditure of Rs 200 crores.

Modification/modernisation of these ships to operate the new helicopter `V` was considered essential and justified by the Navy in view of the following :

- (a) the existing helicopters `U` were on their way out and were likely to be phased out in a couple of years;
- (b) non-availability of helicopters on these three ships would deprive the ships of their air capability;
- (c) if these ships were not modernised to operate helicopter `V`, no other suitable helicopter was readily available and it might take upto 10 years for acquisition/induction thereof whereas modernisation of these ships would take roughly three years;
- (d) trained aircrew were readily available for helicopter `V` whereas additional pilots and observers would be required to be trained to operate any new type of helicopters and
- (e) the modernisation of the three ships was likely to cost Rs 200 crores whereas induction of a new type of helicopter on these ships was expected to cost Rs 500 crores by taking into account the helicopters required for training and replenishment etc.

Thus, helicopter `V` was considered the best option for these three ships. The fact that modernisation would involve huge outlay was not

brought to the notice of the Government at the time of acquiring helicopter 'V'. The modernisation/modifications to these ships could be undertaken at the time of medium refits only. However, considering the planned medium refit of these ships, provision of facilities for operation of helicopter 'V' from two ships only was found feasible whose refit was due in 1994 and 1997.

Pending modernisation, these ships continued to operate with helicopter 'U' only thereby defeating the very purpose for which three helicopters 'V' costing Rs 23.27 crores were acquired. This also deprived the Navy of the enhanced air strike capability.

Ground and test equipments costing Rs 17.65 crores were also procured alongwith the helicopters. These equipment were installed at station 'A' by squeezing the existing workshop space as an interim facility and by re-appropriation of other facilities. Works services to house these equipment were sanctioned in March 1987 at a cost of Rs 73.73 lakhs. These works were planned to be completed by March 1989 but could not be completed due to very slow progress by the contractor (October 1993). On completion of these works services, the equipment would require to be shifted and installed in the new workshop building. Meanwhile, the repairs continue to be carried out in the interim facilities created with inadequate workshop space. The Naval authorities had accepted (February 1994) that requirement of permanent facility at an early date was inescapable.

15.6.2 Delay in replacement of four helicopters P1/P2 lost in accidents

Four helicopters P1/P2 were lost in accidents between August 1987 and August 1990. Naval HQ sought Government sanction in October 1991 to acquire four helicopters P1/P2 as replacement at a cost of Rs 18.46 crores to avoid serious shortages in the availability of helicopters. The availability, of funds amounting to Rs 18.46 crores for acquisition of helicopters was also confirmed by Naval HQ. Although, it was also brought out that the PSU which manufactured these helicopters proposed to close its assembly line in the near future, Government's clearance to the proposed acquisition was still awaited (April 1994). Naval HQ stated in April 1994, that non-replacement of helicopters had affected various operational roles.

15.7. Induction and utilisation of pilotless target aircraft

A contract was concluded with a foreign firm in April 1987 for the procurement of certain numbers of advanced version of pilotless target

aircraft (PTA) alongwith associated ground equipment etc. at a cost of Rs 6.72 crores (FE). The PTA are meant to meet the requirements of fleet ships for testing of modern weapon system and training of personnel. Apart from being used as target for missile and gun firing practices, these are also used for training in detection, identification and tracking of high speed and low flying targets towards Naval ships. The PTA were received in 1989.

The first six launches of the PTA were carried out with the assistance of the suppliers between February and March 1990. During the first independent operation of the PTA, one PTA was lost in December 1990 due to error of the Controller for want of adequate training/ experience. HQ Western Naval Command (WNC) stated in June 1994 that corrective measures for imparting adequate training/ experience to the Controller had since been instituted.

Against an annual planned task of 24 to 36 practice launches envisaged at the time of procurement of the PTA, only 24 launches had been carried out during February 1990 - March 1994 indicating a shortfall of 75 *per cent* with reference to the minimum launches planned. Subsequently, the task was revised to 18 launches per annum with effect from February 1994. HQ WNC stated (June 1994) that due to lack of back up spares, the task of undertaking 24 to 36 launches per annum to meet the fleet requirements could not be undertaken and the reduced task of 18 launches per annum could be achieved if adequate back up spares for supporting these launches were procured.

Naval HQ stated in July 1993 that the spares procured with the initial buy were consumed and procurement of further spares costing Rs 6.07 crores (FE) was proposed in January 1992 which was not cleared by Government. However, 28 critical items costing Rs 65.22 lakhs (FE) were procured under Government sanction of February 1993, of which 27 items were received in July 1993. HQ WNC clarified in June 1994 that with the procurement of these spares, four PTA launches could be undertaken during November 1993 - March 1994. It added that additional back up/critical spares were required to be procured to service all the PTA and undertake the task of 18 launches for which requirement had been projected to Naval HQ in March 1994.

Thus, one PTA costing Rs 95.38 lakhs was lost due to inadequate training and there was a shortfall of 75 *per cent* in the planned launches due to lack of back up spares which resulted in sub-optimal utilisation of PTA

imported at a cost of Rs 6.72 crores, thereby affecting operational preparedness of the Navy.

15.8 Delay in retro-fitment of identification of 'Friend or Foe' system

Identification of 'Friend or Foe' (IFF) system is used by ships/aircraft for positive identification of friendly/enemy contacts on radar and thereby preventing mistaken identity/attacks. The IFF system developed indigenously became a standard fit for all the ships and aircraft as per fitment policy promulgated in February 1984. The Government accorded sanction in October 1986 for procurement of 43 IFF system sets with 2nd line test equipment and modification kits at a cost of Rs 3.36 crores from a public sector undertaking (PSU). In June 1988, the quantity was reduced to 38 sets and the cost was increased to Rs 3.38 crores. Three orders were placed on the PSU in November 1986 for supply of 30 IFF system sets to meet the requirement of 11 NI aircraft, 13 'O' and 6 'U' aircraft. Supplies against these orders due in 1987, were actually effected between January 1988 and June 1993. A further quantity of 8 system and mod-kits was ordered on the PSU in April 1989 for aircraft 'T', the supply of which materialised in 1990. The PSU was to develop modifications in one each of these four types of aircraft by April 1990 at a cost of Rs 15.00 lakhs and embody the modification. The embodiment of the other aircraft was to be done by the Navy. There was delay ranging from 19 to 50 months in the commencement of embodiment process by the Navy. The present status of the embodiment is as under:

Air Craft	Date of supply of system	Qty.	Status of Modification		Cost of sets and mod-kits lying unutil- ised (Rs.in lakhs)
			by PSU (Qty/ modif- ied in)	by Navy (Qty/ modif- ied in)	
NI	April '88 to June '88	11	1 (1991)	1 (Jan '92)	30.51

O	May '88 to June '93	13	1 (Feb '92)	3 (Aug '92 to May '93)	33.90
U	Jan'88	6	1 (May'89)	3 (July'93 to Jan' 94)	6.78
T	April'90	8	1 (July'90)	6 (Feb'92 to June'92)	3.39
----- Total		38	4	13	74.58 -----

Thus, out of 38 sets of IFF system procured for four types of aircraft, 17 sets were modified between May 1989 and January 1994 and 21 sets alongwith mod-kits costing Rs 74.58 lakhs were lying in stock (February 1994) of which 11 sets costing Rs 37.29 lakhs were in stock since 1988. Apart from delays by the PSU in development/supply of mod-kits, there were delays on the part of the Navy also in the installation of the system thereby affecting the operational preparedness. The project sanctioned in October 1986 and considered a vital operational need by the Navy, was yet to be completed (February 1994).

15.9 Infrastructural facilities at various stations

Station 'A'

15.9.1 Delay in commissioning of Radar Extraction and Display System

Radar Extraction and Display System (REDS) is a display unit of the radar without which the radar cannot be used for flying operations. For replacement of the existing vintage radar display units, an order was placed on a PSU in March 1985 for supply of REDS and base and repair spares at a cost of Rs 1.27 crores. REDS consisted of four autonomous display

consoles and the associated equipment. These displays were to be integrated with the existing radar at station 'A'. The PSU supplied and installed the equipment in May 1989 and the base and repair spares were received in June 1992.

The displays could not be made operational due to a large number of defects. Efforts made by the PSU to improve the airconditioning and stabilised power supply to achieve the desired results also failed. As a result, REDS costing Rs 1.27 crores had not been commissioned (April 1994) and made operational even after over five years of procurement which affected air operations at the station. In the meantime, requirement of display unit was being met by a vintage display unit whose electronic life had expired long back.

15.9.2 Operational limitations of instrument landing system

Instrument Landing System (ILS) is a primary landing aid during poor visibility and bad weather conditions. Due to extension of runway, the glidepath unit of the ILS at station 'A' was relocated in May 1989 at a cost of Rs 12.30 lakhs and the same was cleared with a limitation to descend aircraft upto 650 ft only as against the standard limit of 50 ft above mean sea level (AMSL). Since this limitation was considered unacceptable from flight safety point of view, a Board of Officers held at station 'A' in June 1990 recommended:

- (a) replacement of the existing system with type 'M' array glidepath system at a cost of Rs 9.69 lakhs;
- (b) levelling of the critical area in front of the glidepath antenna.

The work for levelling of site in front of the glidepath antenna was released for execution in March 1991 at a cost of Rs 20.93 lakhs, revised to Rs 49.13 lakhs in August 1993, to cater for additional requirements. The work was commenced in April 1992 and was due for completion in August 1994.

Meanwhile, 'M' array equipment costing Rs 7.04 lakhs was received at the Naval air station in November 1993 and its installation was in progress (May 1994). Thus, the primary landing aid continued to be in use with operational limitations ever since the glidepath was relocated in May 1989 pending completion of levelling of the required site.

15.9.3 Defects in airfield lighting system

Airfield lighting system (AFLS) was installed by a private firm at station 'A' in 1983. During 1984, length of the runway was extended. The contract for lighting system for the extended portion of the runway was also awarded to the same firm and the job was completed in 1987. The AFSL installed at the extended portion was found sub-standard due to frequent faults/failures in the system. The guarantee period was extended upto 1990 and finally the bank guarantee valuing Rs 12.37 lakhs had to be invoked in September 1990 due to failure of the firm to rectify the defects.

In June 1991, Government accorded sanction for defect investigation/rectification of the AFLS at a cost of Rs 20 lakhs by another firm. The work was to be carried out in two parts; (i) relating to the old airfield lighting system installed in 1983 before extension of the runway at the Navy's cost and (ii) relating to the extended portion of the runway completed in 1987 at the cost of the defaulting firm. The Government sanction was not acted upon and in the meantime a major break-down of the AFLS took place in May 1991 due to improper laying of cables. Detailed investigation revealed that extensive burning of cables had taken place in certain areas.

In July 1991, Naval HQ requested the firm to carry out a survey and render a detailed report defining the exact scope of work with requirement of materials, complete installation and testing of the entire system. In May 1992 the firm submitted an estimate of Rs 85 lakhs for the work excluding civil works.

Meanwhile, Military Engineer Service (MES) expressed inability to work out exact estimates for civil works due to presence of grey areas. After negotiations, a letter of intent was placed by the Ministry on the firm in January 1993 at a cost of Rs 86 lakhs including Rs 16.76 lakhs for civil works. Soon after commencing the work, the firm stopped the work and submitted revised estimates of Rs 1.55 crores in February 1993 on the plea that the defect rectification of the whole AFLS would go well beyond the scope envisaged in letter of intent. Decision in this regard was yet to be taken by Naval HQ/Ministry (February 1994). In the absence of the AFLS, goose neck flares were used as an alternate runway lighting by incurring an expenditure of Rs 6.50 lakhs. The alternative system had its own inherent deficiencies seriously jeopardising night flying at the station. Thus, continued defects in the AFLS affected operational preparedness of the Navy in that:

- the aircraft for which the runway was mainly extended were not cleared for night flying at the station;
- the goose neck flares were getting extinguished during operations restricting the night flying and
- airfield hours of operation of civil aircraft were restricted 'from dawn to dusk'.

Station 'B'

15.9.4 Collapse of a hangar due to faulty design

The project "Provision of Air Engineering Department (AED) hangar at station 'B' " was sanctioned by Naval HQ in November 1985 at a cost of Rs 72.27 lakhs. Subsequently, the following allied projects to the hangar were also sanctioned by a Naval Command in August 1989:-

- (i) 'Provision of augmentation of workshop facilities' at a cost of Rs 53.31 lakhs ;
- (ii) 'Augmentation of facilities of AED workshop at a cost of Rs. 74.15 lakhs.

The above three projects were combined and the structural design of the hangar with two annexe buildings were prepared by MES in May 1988. A contract for the combined works was concluded with a private firm in August 1989 at a cost of Rs 1.43 crores.

In March 1992, when physical progress of the works was 85 per cent and an expenditure of Rs 1.25 crores had been incurred, the entire structure collapsed. A Board of Inquiry held in March 1992 opined that the hangar collapsed primarily due to faulty design and inadequate supervision by MES. In June 1993, Naval HQ advised the Naval Command to ask the MES to re-commence the work early through the original contractor or at his risk and cost. However, the work was yet to be commenced as of December 1994.

The Naval authorities intimated in May 1994 that the 2nd line maintenance of the aircraft was affected due to non-availability of independent hangar. Thus, faulty design/inadequate supervision by the

MES resulted in non-availability of an independent hangar even after nine years of its sanction.

Station 'C'

15.9.5 Non-completion of runway works

Mention was made in para 18 of the Report of the Comptroller and Auditor General of India, Union Government, Defence Services (Air Force and Navy) for the year ended 31 March 1990 regarding induction of aircraft 'T' which was to be operated from station 'C' as well but could not be operated as the station was not ready by then. In their action taken note the Ministry stated in February 1993 that station 'C' was commissioned in March 1992.

Though aircraft 'T' had commenced flying from station 'C' since June 1992, the runway work were only partially completed (May 1994). Comments regarding delay in completion of the runway were also made in para 68 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services - Army and Ordnance Factories) for year ended 31 March 1992. The present progress of the runway work was 88 per cent (January 1995) and probable date of completion was June 1995. As a result of non-completion of runway work, ILS costing Rs 90.91 lakhs received in August 1990 could not be installed resulting in delays during the recovery of aircraft in poor visibility and marginal weather conditions.

15.9.6 Non-availability of ground control approach radar

The Government sanction accorded in June 1986 for establishment of Station 'C' catered for a ground control approach (GCA) radar equipment comprising of a precision approach radar (PAR) and surveillance radar element (SRE) at a cost of Rs 7.20 crores. While supply order for the PAR was placed on a PSU in December 1990 at a cost of Rs 2.83 crores, the SRE equipment was yet to be identified for procurement. Delivery of the PAR, initially due by August 1991, was extended to March 1992. Though the civil works to house the PAR were completed in September 1993 at a cost of Rs 20.04 lakhs, the PAR equipment was yet to be supplied by the PSU (May 1994).

Naval HQ stated (May 1994) that non-availability of the equipment during poor visibility conditions caused marginal delays during the recovery of the aircraft and that the existing other navigational aids at the station

were being used to effect the landing of the aircraft. It was also stated that a case for recovery of liquidated damages amounting to Rs 10.52 lakhs had been initiated against the PSU. Regarding procurement of SRE equipment, Naval HQ clarified that in the ideal situation, PAR and SRE were complementary to each other. However, in the event of non-availability of either of them, the other one could be used independently in conjunction with other navigational aids to fulfil the role of ground controlled approach. It added that action was in hand to procure the SRE. Meanwhile, there had been a sharp increase in the cost of the SRE equipment from Rs 3.96 crores to Rs 12 crores.

Thus, though flying was commenced at the station in June 1992, it was still lacking in vital navigational equipment imposing limitations on the operations of the aircraft.

Station 'D'

15.9.7 Delay in commissioning of an avionics workshop

A Naval Command sanctioned civil works for the provision of maintenance facilities for aircraft N3 at a cost of Rs 65.12 lakhs in March 1987 which were completed in March 1991. However, the facility created did not cater for full requirements of an avionics workshop. A Board held in December 1989 had recommended provision of stabilised power supply and 12 work benches which is yet to be executed (March 1994) in the absence of appropriate sanction. Equipment worth Rs 75.31 lakhs was sanctioned by Government for the facility in August 1987. Out of 34 equipment costing Rs 47.01 lakhs received between June 1989 and March 1994, 11 equipment costing Rs 34.99 lakhs were awaiting installation/commissioning pending completion of civil works relating to power supply. The balance equipment were yet to be procured (May 1994).

Thus, the workshop facilities completed in March 1991 (civil works) at a cost of Rs 65.12 lakhs and equipment worth Rs 34.99 lakhs were not fully functional (May 1994). The Naval authorities stated in May 1994 that in the absence of the avionics workshop, the turn round time of the aircraft was longer and defective components had to be replaced. It was also stated that if items were not available, the aircraft had to be grounded or these flew with limitations.

Station `E'

15.9.8 Delay in setting up of air technical facilities

In order to provide maintenance support for aircraft O, P1 and P2 at station `E', Government sanctioned in June 1987 procurement of equipment/machinery at a cost of Rs 75.31 lakhs. The equipment was to be housed in the existing accommodation at the station and no expenditure on civil works was envisaged. Notwithstanding this, when the equipment started arriving, station `E' proposed in February 1991 sanctioning of civil works on priority to house the equipment. The civil works costing Rs 1.18 crores were sanctioned by a Naval Command in May 1991 as an operational work which was regularised by Naval HQ in February 1993 at a cost of Rs 1.16 crores. The buildings excepting airconditioning work were completed and taken over in September 1993. Taking into account the anticipated cost of airconditioning work, the likely cost of the workshop would be Rs 1.31 crores for which Government sanction was awaited (April 1994). In the meantime, out of 79 equipment sanctioned by Government, 29 equipment costing Rs 22.52 lakhs had been received during August 1988 and April 1992 but these equipment could not be installed as special power requirement and laying of cables were yet to be sanctioned (April 1994) for which a Board of officers was held in October 1993 which recommended sanctioning of necessary work at a cost of Rs 4.4 lakhs. The work was yet to be sanctioned (April 1994).

Thus, the Naval authorities failed to realistically assess the requirement of civil works *ab initio* and there was inadequate planning thereafter in that the special power requirement was overlooked initially. For want of power requirement worth Rs 4.40 lakhs only, civil works costing Rs 1.31 crores were lying idle since September 1993. Besides, equipment costing Rs 22.52 lakhs received between August 1988 and April 1992 were also awaiting installation depriving Navy of the benefits of warranty.

15.10 Other interesting points

15.10.1 Delay in disposal/reutilisation of spares of phased out aircraft

Aircraft `W' was withdrawn from service in a phased manner from December 1989 onwards. A Board was convened in July 1992 by the Navy at Naval Aircraft Yard at station `B' to determine alternative use or disposal of spares of this aircraft. The Board identified 8766 type of spares comprising about 33 *per cent* of the spares inventory of the aircraft for use

on other types of aircraft as this would result in a saving of approximately Rs 10 crores in foreign exchange. These recommendations were submitted to Naval HQ in March 1993 on which decision of Naval HQ was still awaited (December 1994).

15.10.2 Delay in regularisation of losses

Thirty six cases of aircraft accidents/incidents which occurred during 1982-92 involving losses amounting to Rs 23.10 crores were awaiting regularisation (March 1994) by competent financial authorities. The period for which these were awaiting regularisation ranged from 1 to 12 years as detailed below:

Period since pending	No. of cases	Loss (Rs in crores)
1 to 5 years	07	1.31
5 to 10 years	23	20.58
Over 10 years	06	1.21
Total	36	23.10

15.10.3 Specialist vehicles

Eight specialist vehicles costing Rs 1.60 crores had not been commissioned at various stations for periods ranging from three to seven years since their receipt. A specialist vehicle costing Rs 39.18 lakhs though commissioned had not been put to use since its receipt in October 1991 at Station 'F'. Further, 30 specialist vehicles costing Rs 3.50 crores were in an unserviceable state for periods ranging from one to twelve years for want of spares, suitable repair agency etc. Non-availability of specialist vehicles affected the functioning of the Naval air stations in that the working routine of the station had to be strained to make up the deficiency by using alternate equipment which at times proved costly as well as certain operations had to be conducted manually. There was thus an urgent need to commission/make serviceable the specialist vehicles to obtain optimum benefit of the investment made in these vehicles.

The matter was referred to the Ministry in September 1994; their reply has not been received (February 1995)

16. Naval Yardcraft

16.1 Introduction

Yardcraft consist of ferry craft, tugs, water barges, dumb barges, speed motor boats, dredgers, oil tankers, pontoons etc. and form an integral part of Naval dockyards and Naval ship repair yard organisation of the Navy. Yardcraft are used for the movement of ships, docking and undocking, berthing, rendering logistics support to Naval ships such as supply of water, fuel, stores, rations, arms/ammunitions and ferry of personnel between Naval dockyard and ships at anchorage. At Naval dockyard, Bombay dredging and surveying of tidal basin are also undertaken.

Yardcraft are procured depending on the operational demands assessed on the basis of five year augmentation-cum-replacement plans drawn up by Naval HQ.

The responsibility for the maintenance and operation of the yardcraft rests with the Naval dockyards.

16.2 Scope of Review

Yardcraft plans, their acquisition, operations, maintenance and performance during the period January 1988 - March 1994 were reviewed by Audit.

16.3 Highlights

- **In the absence of dockyard wise authorisation of holding of yardcraft, justification for assets held was not ascertainable.**
- **Yardcraft acquisition-cum-replacement plans were scaled down due to financial constraints. As against the revised induction plan of 36 yardcraft costing Rs 114.25 crores envisaged during 1991-96, only seven yardcraft costing Rs 8.54 crores were sanctioned during 1991-94. Rs 6.44 crores had been incurred on maintenance of 23 vintage yardcraft of which 18 had been recommended for replacement. Non-replacement of vintage craft resulted in prolonged refit efforts with consequential higher maintenance cost and low operational availability apart from holding excess assets.**

- **A sum of Rs 2.20 crores was spent on maintenance of yardcraft retained in service without Government sanction and non replacement of an uneconomical vessel.**
- **Auxiliary yardcraft procured at a cost of Rs 2.75 crores could not be used for the exploitation of the floating dock.**
- **There was gross underutilisation of two water barges and a ferry craft procured at a cost of Rs 3.75 crores.**
- **The approved yardcraft refit cycles/plans and time schedules were not adhered to at Naval dockyard, Bombay. The shortfall in approved refit cycles was over 75 per cent and that with reference to plans was over 65 per cent. In 105 out of 149 refits, the excess time taken for completion was upto 200 per cent.**
- **There was steep decline in the dredging carried out by a Naval dockyard over the years. The shortfall in dredging during 1988-94 ranged from 88 to 98 per cent. Maintenance of uneconomical dredging fleet by Naval dockyard, Bombay resulted in an extra expenditure of Rs 3.34 crores during 1984-94 in addition to Rs 8.72 crores incurred on pay and allowances of dredging crew for the period 1984-92.**
- **Ferry service charges were not recovered from personnel since 1961 by Naval Dockyard, Bombay inspite of Government orders.**

16.4 Yardcraft holdings

As of March 1994 there were 87 yardcraft at Naval dockyard, Bombay (NDB) 19 yardcraft at Naval dockyard, Visakhapatnam (NDV) and 12 yardcraft at Naval ship repair yard, Cochin (NSRY). However, no Government sanction exists authorising the number of yardcraft for each dockyard. The shortages and excess holding if any of these yardcraft and their justification could not be ascertained. There is, therefore, a need to lay down scales/norms for holding the yardcraft.

16.5 Yardcraft plans

The yardcraft acquisition-cum-replacement plan for 1990-95 (subsequently termed as 1991-96 plan) was initiated in February 1989. The various Naval Commands projected requirement of 108 yardcraft at a cost of Rs 431.52 crores. However, the budgetary allocation for the plan period was initially restricted to Rs 50.55 crores which was later increased to Rs 100 crores in February 1991. Naval HQ finalised the plan in August 1992 for induction of 36 yardcraft involving an outlay of Rs 114.25 crores. However, Government approval for the total outlay was not sought and instead individual cases were processed. Between August and November 1991, Naval HQ sought Government sanction for procurement of 11 yardcraft in 1991-92. Against that, Government sanctioned only seven yardcraft in March 1993 at a cost of Rs 8.54 crores.

As against the planned expenditure of Rs 19 crores per annum, only a sum of Rs 8.54 crores was sanctioned by the Government during the years 1991-94 which resulted in slowing down the pace of acquisition of the yardcraft. Though yardcraft/boats which had completed 15/10 years of operational cycle required replacement, there were as many as 60 yardcraft/boats out of 118 yardcraft/boats which were more than 15/10 years old as of June 1994. Delay in replacement of old vintage yardcraft resulted in prolonged refit efforts and five-fold increase in work package than normal repair work during refits with consequential increase in maintenance cost apart from restricting operational availability to the extent of 60 per cent. This situation could have been avoided had Naval HQ sought Government approval for the total plan outlay.

16.6 Operational status of yardcraft

As per NDB, the average operational availability of yardcraft was 60 per cent. A test check revealed that during 1988-94 the yardcraft were non-operational as under:

<u>Average period</u>	<u>No of yardcraft</u>
Upto 20 months	9
21 to 30 "	23
31 to 40 "	24
41 and above	1

The non-operational period was high in the case of dredgers, tugs, ferry craft, victualling craft, power barges and mooring vessel. Out of 87 yardcraft, 14 were non-operational for periods ranging from 30 to 55 months which deprived the Navy of their availability for the intended purpose. NDB attributed the low average operational availability to docking of several yardcraft simultaneously and utilisation of specialised yardcraft only for specific purposes.

Keeping in view the low operational availability, there was holding of excess yardcraft which amounted to almost double of the actual requirements as of June 1994 as indicated below:

Type	Requirements	Holdings	Operational	Non-operational
Tugs	6	12	7	5
Ferry Craft	5	9	6	3
Oiler	3	5	4	1
Water Barge	2	3	3	-
Dredger	3	6	2	4
Hopper Barges	3	6	3	3
Power Barges	3	5	3	2
Boats	3	5	4	1
Total	28	51	32	19

Further, a board of officers constituted in December 1989 identified 23 yardcraft of various types whose material state was not satisfactory and recommended replacement of 18 yardcraft whose residual life was five years or less. These yardcraft were yet to be replaced as of June 1994. In the meantime, an expenditure of Rs 6.44 crores was incurred between April 1990 and February 1994 on the maintenance of these 23 yardcraft. Seven

of these yardcraft had become beyond economic repairs between February 1991 and February 1993. After being pointed out by Audit, the Government accorded sanction in November 1994 for decommissioning of these yardcraft. NDB had stated in June 1993 that even if the yardcraft are declared beyond economical repairs, merely keeping them afloat also entails heavy expenditure until actually disposed of. The fact, however, remains that timely action for replacement/ disposal could have avoided the necessity of keeping un-economical yardcraft afloat. There is thus a need for review of the procedure for decommissioning/disposal of the yardcraft at periodical intervals to avoid un-necessary maintenance expenditure on such yardcraft.

At NDV, the tugs and boats remained non-operational as under during the period 1988-93.

Category	Average Holdings (Nos.)	Average non-operational period in an year per craft
Tugs	6	5 months
Boats	6	6 months

No reasons for low operational availability were furnished though asked for.

A Board convened in December 1993 found that six out of seven boats held by NDV had outlived their life and were on extended life for over ten years and their repair and maintenance was considered most uneconomical due to material state and non-availability of spares and recommended their replacement. There was no further progress in the matter as of June 1994.

At NSRY out of 12 yardcraft available six were over 15 years old. No Board had been convened to ascertain the material state of these old yardcraft as of June 1994.

16.7 Retention of a yardcraft without sanction

In June 1968, Government sanctioned the replacement of Oiler Sambhar. Its replacement (Oiler Palan), however, was delivered in June 1986 at a cost of Rs 57.19 lakhs. Oiler Sambhar was yet to be decommissioned and an expenditure of Rs 96.62 lakhs had been incurred on its repair/maintenance during 1986-94. Naval HQ justified (June 1993) retention of the Oiler on the grounds of induction of an aircraft carrier. Sanction of the Government was, however, not obtained for its retention in service since June 1986. The yardcraft was non-operational for 21 months during the last six years. Its replacement had been planned again during 1995-96.

16.8 Non-replacement of uneconomical mooring vessel

Mooring vessel 'Dhruvak' was commissioned in the Navy in November 1959. In May 1983, Naval HQ proposed the replacement of the vessel due to its primitive design, difficulty in maintenance and uneconomical operation. In May 1984, Naval HQ assessed the replacement cost at Rs 8.00 crores which escalated to Rs 16.82 crores in December 1987. The vessel was non-operational for a period of 48 months during 1988-94.

The expenditure incurred on its maintenance during 1983-94 was Rs 1.23 crores of which a sum of Rs 43.63 lakhs was spent during 1989-94. Naval HQ stated in May 1993 that replacement could not be processed due to paucity of funds. The utilisation of the mooring vessel since 1988 had been as follows:

Year	Utilisation in hours
1988	206
1989	201
1990	70
1991	Nil
1992	5
1993	11
1994(up to March 94)	Nil
Total	493 hours

The NDB stated in June 1994 that the vessel had performed all the allotted operational tasks. The fact, however, remains that the utilisation of this vessel had been exceptionally low from 1990 onwards.

Thus, an uneconomic vessel continued to be with the Navy for the last four years with no replacement in sight. Considering insignificant utilisation during the last five years, the question of its replacement needs immediate consideration. It also needs to be investigated why the vessel had not so far been considered for decommissioning/disposal.

16.9 Acquisitions

16.9.1 Non-recovery of liquidated damages

(i) Based on the Government sanction of November 1987, a contract was concluded with a PSU in March 1988 for the construction of one 20-ton bollard pull tug at a cost of Rs 3.99 crores. The tug was to be delivered by November 1989, failing which liquidated damages upto five *per cent* of the contract price were recoverable. The tug was delivered in January 1991 and the delay was attributed to delay in delivery of equipment by the sub-contractors. Naval HQ opined in November 1991 that penalty for poor planning could not be attributed to the sub-contractors only and it must be shared by the PSU as it had not taken due care while ordering the major equipment. As per contractual clause a sum of Rs 19.95 lakhs was due from the PSU as liquidated damages which was yet to be recovered as of August 1994, even after three and a half years of delivery of the tug. The PSU in February 1991 and January 1992 requested for extension of delivery date under force majeure clause of the contract. No action was taken thereon.

(ii) Based on the Government sanction of December 1987, another contract was concluded with the same PSU in November 1988 for construction of a 10 ton bollard pull tug at a cost of Rs 2.20 crores. The tug scheduled to be delivered by May 1990 was delivered in February 1992. In this case also the delay was attributed to delay in delivery of various equipments by the sub-contractors. As per contractual clause, liquidated damages amounting to Rs 11 lakhs were yet to be recovered (August 1994) even after two and a half years of delivery of the tug. The PSU had requested Naval HQ in 1992 for extension of delivery date. No action was taken thereon.

16.9.2 Payment of wage escalation without contractual provision

Contracts for the construction of two tugs 'A' and 'B' were concluded with the same PSU in June 1987 and November 1988. The tugs were to be delivered by March 1989 and February 1990 respectively. The PSU delivered tug 'A' in April 1991 and tug 'B' in July 1991. In March 1992, Naval HQ approved extension of delivery dates. Under both the contracts, there was no provision for payment of 150 per cent labour 'on cost' on direct labour escalation beyond the contractual delivery date and profit was payable only upto a date three months before the contractual delivery date in case of slippage. In March 1992, the PSU claimed 150 per cent labour 'on cost' and 7.5 per cent profit on wage escalation upto November 1989 in respect of tug 'A' and upto December 1990 in respect of tug 'B' which was paid to the PSU though such payments were not covered by the contract. A sum of Rs 8.62 lakhs was paid on this account. Naval HQ justified (April 1993) the payments on the ground that the PSU had been granted extension. The reply is not tenable as the contract did not contemplate payment of 150 per cent 'on cost' on wage escalation and profit for extended delivery period.

16.10 Acquisition of auxiliary craft with floating dock

Government approved in August 1985 the acquisition of a floating dock for station 'X' at a cost of Rs 10 crores. Subsequently in May 1987, Government approved the purchase of the floating dock with six auxiliary craft at a cost of Rs 14.75 crores. Though, neither the outline specification prepared by the Navy for the acquisition of the floating dock nor the Government approval accorded in August 1985 made any mention about the necessity of procurement of auxiliary craft, Naval HQ considered the procurement of auxiliary craft as essential for proper exploitation of the floating dock and recommended their purchase from firm 'E' alongwith the floating dock as a package deal. The price negotiation committee, therefore, recommended purchase of two tugs, two dumb barges, a personnel launch, one motor boat and additional tools and equipment at a cost of Rs 2.75 crores. A contract was concluded with firm 'E' in June 1987. The auxiliary craft were taken over by the Navy in July 1987 with the floating dock. An analysis of the utilisation of these auxiliary craft revealed the following:

16.10.1 Tugs

Tugs are used to tow Naval ships within the dockyard. It was observed in audit that within nine months of its receipt at station 'X', tug

Karan was transferred to Naval dockyard, Visakhapatnam in March 1988. The tug could not, however, be put to operational use at Visakhapatnam as some parts were lost in transit. The tug was used only for 22.30 hours (Port Engine) and 11.30 hours (Main Engine) during 1989-94. The main engine (Port) of the other tug Nakul, after working for 488 hrs upto January 1989 was declared unserviceable. In March 1989 i.e. within two years of its acquisition, Base Repair Organisation of the Navy categorised the tug as non-operational and its repair was not considered economical.

16.10.2 Personnel launch

The Personnel launch was let out as a special consideration to the local administration during December 1987 - February 1989 which would indicate that the craft was not necessary for the exploitation of the floating dock. Further, the Port Main Engine was non-operational since March 1991.

16.10.3 Speed motor boat

Speed motor boat is used for transporting personnel, and stores, patrol duties etc. It was, however, observed that the speed motor boat was delivered by the firm in a non-operational state and it remained non-operational since May 1988 except during May 1993.

The Ministry stated in October 1990 that the existing tugs at station 'X' were used for movement of ships at the floating dock and the yardcraft available at the station were also deployed for transportation of stores/personnel to the floating dock. It was also stated that the purchase of auxiliary craft did not figure in the outline specifications as these were proposed to be procured under yardcraft plan. The reply is not tenable considering the transfer of one tug to NDV where it was lying non-operational since March 1988, non-operational state of the second tug, hiring out of personnel launch, as also the speed motor boat being virtually non-operational since its receipt would indicate that these auxiliary craft purchased at a cost of Rs 2.75 crores were not really required for the exploitation of the floating dock.

16.11 Excess procurement

16.11.1 Water barges

A 300 ton sullage barge held by NDV since May 1979 was converted into a fuel-cum-fresh water barge in 1982 which had its limitation for use

as fuel barge due to potential fire hazard. The converted barge was able to carry 250 tons of water per day which was adequate to meet the requirement of all the ships in the harbour. In September 1982 NDV proposed to HQ Eastern Naval Command for utilisation of the barge for supply of fresh water only. However, Naval HQ was not aware of the conversion. In December 1987, Government accorded sanction for the acquisition of one self propelled (Rs 1.73 crores) and two non-self propelled water barges (Rs 69 lakhs each) at a cost of Rs 3.11 crores. All the three barges were commissioned in 1989 thereby increasing the total water carrying capacity of NDV to 900 tons per day.

The daily record of quantity of fresh water supplied to ships during 1988-94 revealed that the average quantity of fresh water supplied did not exceed 110 tons per day. Also, the self propelled water barge 'Varsha' costing Rs 1.73 crores had run for only 113 hours during January 1990 - March 1994 for want of crew. Considering the actual utilisation, holding of four water barges of 900 ton capacity which was much in excess of actual requirements of the dockyard lacked justification.

NDV stated that normally the water requirement was met through shore supply and only a limited supply of water was made through barges. Keeping in view the ships based at the station, the daily requirement of water in the event of fault in the shore pipe lines worked out to 700 ton only which was still lower than the acquired capacity.

Thus, the procurement of one non-self propelled water barge of 200 tons capacity in 1989 at a cost of Rs 69 lakhs was avoidable. Further, the self propelled barge procured at a cost of Rs 1.73 crores was grossly under utilised for want of crew which indicated improper planning in the procurement of these barges.

16.11.2 Ferry craft

NDV procured an indigenous ferry craft in April 1986 at a cost of Rs 1.33 crores. The ferry craft was considered essential for transporting personnel and equipment to deep draught ships berthed in the outer harbour/anchorage. However, the craft could not be utilised as there were no ships of deep draught at Visakhapatnam necessitating berthing at outer harbour/anchorage. In June 1987, NDV intimated HQ Eastern Naval Command that the craft was being neglected maintenance-wise as no crew was sanctioned for manning the craft. It was seen that the ferry craft was used for 379 hrs only during the period 1986-91. The craft was transferred

from Visakhapatnam to Bombay in April 1991. NDV stated in July 1993 that the ferry craft was transferred to Bombay for operational utilisation. Thus, the ferry craft procured at a cost of Rs 1.33 crores was grossly under-utilised for five years after its acquisition.

16.12 Refits/repairs of yardcraft

Refits/repair of the yardcraft at periodical intervals as per cycles laid down by Naval HQ are of paramount importance as non-adherence thereto leads not only to deterioration in the material state of the yardcraft but also results in prolonged duration of refit/repair at a later date. The position of refits/repairs is discussed below.

16.12.1 Naval dockyard, Bombay

As per refit cycle, 275 essential repair and dry docking (ERDD) and 500 normal repair and dry docking (NRDD) were due in respect of 73 yardcraft at NDB during the period 1981-94 (March 1994). As against this, only 34 ERDD and 116 NRDD were actually carried out and the shortfall worked out to 88 and 77 per cent in respect of ERDD and NRDD respectively. NDB attributed non-adherence of refit cycle to dry docking constraints and work load in fabrication department.

In the absence of any meaningful maintenance, NDB considered it unsafe to operate 37 yardcraft in their present material state. Accordingly, NDB proposed in January 1993 for off loading maintenance of 37 yardcraft to outside agencies at a cost of Rs 7.28 crores. During 1988-94, actual offloading amounted to Rs 27.78 lakhs. Had the refit cycle been adhered to, this situation could have been avoided.

16.12.2 Refit Plans

During 1988-93, 109 NRDD and 52 ERDD were planned against which only 45 NRDD and 15 ERDD were completed. The percentage of shortfall in completion of planned refits worked out to 59 in respect of NRDD and 71 in respect of ERDD. Thus, apart from non-adherence of refit cycle, even planned refits could not be completed at NDB. As of June 1994, 25 yardcraft were overdue for docking since June 1988.

16.12.3 Delay in refits

There were abnormal delays compared to the normal completion period of two months for ERDD and four months for NRDD. Out of 149

refits carried out during 1981-94, it was noticed that only 44 refits were carried out in time. In respect of balance 105 refits, the excess time taken ranged from 50 to over 200 per cent. In as many as 43 refits, the excess time taken exceeded 200 per cent. NDB stated in June 1993 that as of January 1991, out of 75 yardcraft 31 had outlived their life and when these were docked, the amount of work undertaken during refits was five fold than the normal work. The delay in refits was attributed to lack of experienced personnel, shortage/delays in supply of spares and dry docking constraints, besides overloading of fabrication department. Prolonged refit time obviously resulted in low operational availability of the yardcraft.

16.12.4 Expenditure on refits

The annual expenditure incurred on maintenance of the yardcraft held at NDB during 1987-94 was as detailed below:

Year	Expenditure (Rs in crores)
1987-88	2.86
1988-89	3.98
1989-90	3.71
1990-91	6.02
1991-92	3.87
1992-93	4.47
1993-94 (upto February 1994)	3.95
Total	28.86

In 66 cases, the expenditure on refit of yardcraft exceeded Rs 10 lakhs. However, the reasonableness of expenditure was not susceptible of verification in the absence of work-wise expenditure. An open/standing work order for each yardcraft was operated throughout the year.

NDB stated in June 1993 that the maintenance expenditure of marine assets was never low and even if the assets were declared beyond economical repairs, keeping them afloat entailed heavy expenditure till their final disposal. In order to have an effective and meaningful cost control, the practice of issuing open or standing work order needs to be reviewed.

**16.12.5 Naval dockyard, Visakhapatnam/
Naval ship repair yard, Cochin**

No refit cycle/refit plans for yardcraft at NDV were proposed but only running repairs were carried out as and when required. Adopting the same norms of refit cycle as were approved for NDB, 22 ERDD and 52 NRDD were due in respect of 19 yardcraft held by NDV during January 1988 - March 1993. NDV stated in July 1993 that a refit cycle had since been drawn for approval by Naval HQ.

Similarly, at NSRY Cochin refit cycles were not got approved and no annual refit plans were made. Only details of dry docking for the last five years were produced to Audit. Adopting the refit cycle of NDB, 10 ERDD and 25 NRDD were due in respect of 11 yardcraft held by NSRY. However, these were also not carried out. NSRY stated that only routine overhauls were undertaken as they did not have their own dry dock/slipway. Expenditure of yardcraft at NDV and NSRY was not ascertainable in the absence of any cost accounting system.

Thus, there was an urgent need to standardise the refit/repair cycle of yardcraft and to ascertain their costs so that these could be maintained properly and economically.

16.13 Dredging

The dredging of the area alongside the berth (upto 15 mtrs) and other nooks and corners including dock mouth was undertaken by the NDB with the help of six dredgers and six hopper barges with a crew of 531 personnel. For the balance area, annual contracts were concluded with the Dredging Corporation of India Ltd. (DCI).

Mention was made in para 22.9 of the Report of Comptroller and Auditor General of India, Defence Services (Air Force and Navy) for the year ended 31st March, 1990 regarding uneconomical maintenance of dredging fleet by NDB. The Ministry attributed in November 1990 the uneconomical maintenance of the dredging fleet to the aged dockyard dredgers. As of June 1993, seven craft out of 12 dredging fleet held were non-operational. NDB stated (June 1993) that of late the average availability of the dredgers had been far from satisfactory.

The NDB has a dredging capacity of 20.22 lakh cubic metres per annum. However, the actual dredging carried out by the NDB during 1988-94 indicated decline as detailed below:

Year	Quantity (cu m in lakhs)	Shortfall (in percent)
1988-89	2.44	88
1989-90	1.74	91
1990-91	1.23	94
1991-92	1.61	92
1992-93	0.39	98
1993-94 (Upto Jan 94)	0.32	98

It is noticed that decline from 1991-92 to 1992-93 is a steep one. The actual dredging in 1992-93 is hardly one fourth of the preceding year. This needs investigation for taking remedial steps.

The dockyard dredging capacity thus remained grossly underutilised despite an average expenditure of Rs 81.13 lakhs per annum on the maintenance of dredging fleet besides an expenditure of Rs 8.72 crores during the period 1984-92 on the pay and allowances of 531 personnel.

During 1984-94, the cost of dredging by DCI ranged between Rs 22.83 and Rs 48.72 per cu m and by dockyard fleet between Rs 23.73 and Rs 201.64 per cu m. The extra expenditure on dockyard dredging compared to dredging by DCI worked out to Rs 3.34 crores during 1984-94 (upto February 1994). NDB stated in February 1993 that the poor material state of dockyard dredging fleet adversely affected even dredging alongside the berth and other nooks and corners which in turn affected berthing, docking and undocking of ships. It was proposed to contract the dredging work at a cost of Rs 75 lakhs per annum in the area hitherto dredged by the NDB. No decision was taken thereon as of March 1994. Considering the position explained by the NDB and the steep decline in the quantum of

dredging over the years, there is an urgent need to review the continued retention of the dredging fleet and personnel employed thereon.

16.14 Other interesting points

16.14.1 Power barges

In December 1986, Government sanctioned acquisition of four power barges for meeting the harbour power supply requirements of a project in addition to other ships of western origin. One old power barge commissioned in July 1976 was to be replaced on arrival of the new power barges. The new power barges were received and commissioned during 1988-89 but the old power barge was not decommissioned and disposed of. Despite the fact that this barge was utilised for a meagre duration of 13 hours only between August 1988 and December 1994, an expenditure of Rs 13.17 lakhs was incurred on its maintenance between 1988-94 (upto February 1994). NDB stated in June 1993 that to keep the barge floating, it had to undergo essential repairs. The fact remains that due to delay in decommissioning and disposal of the barge, an expenditure of Rs 13.17 lakhs had to be incurred on its maintenance which was avoidable.

16.14.2 Non-recovery of ferry service charges

Ferry service between Bombay and Karanja as per fixed boat routine are provided by NDB to the employees of the Navy for official and non-official purposes and their families as well as other civilians residing at Karanja. For this purpose, each way 20 trips on working days and 11 trips on sundays/holidays are undertaken by eight Naval ferry craft and about eight lakh persons avail of the facility every year. In January 1961, Government sanctioned sea transport of civilians on duty on recovery of charges prescribed therein. However, no charges had been recovered and the use of ferry services had always been free of charge. Ministry of Defence/Finance viewed in July 1980 that the rates fixed in January 1961 should be revised. In July 1981, Government issued orders stipulating recovery from July 1981 at the rates to be prescribed later. In a meeting held in September 1982, the Ministry opined that commuting from residence to place of work was not the liability of the Government and recovery was more a rule than an exception. In November 1984, Ministry of Defence/Finance, requested Naval HQ to finalise the recovery charges as there was no authority under which free ferry services were to be provided but no action was taken by Naval HQ and the rates of recovery were yet to be prescribed (June 1994). In June 1993, Naval HQ justified free ferry service on the ground that in April

1972 Government approved recovery charges but these were waived by it in October 1972 due to serious protests and representations from the employees and their unions.

The reply is not tenable since what was imposed and withdrawn in 1972 was the levy of charges for use of ferry services for non-duty purposes only. The provisions of Government letter of January 1961 still exist for duty trips. Thus, the rates contemplated to be prescribed in 1980 and 1981 were yet to be finalised.

Similarly at Cochin, two trips on working days are being operated between Naval base and high-court jetty since May 1985. No recovery had been effected from officers/personnel availing the ferry services from residence to duty point and back.

16.14.3 Non recovery of hire charges

During July to September 1986, the services of a ferry craft were provided to State Government of Goa Daman and Diu as an aid to civil authorities. The administrative instructions issued by HQ Goa area in July 1986, however, did not indicate the rates, mode of recovery of hire charges and the agency responsible for payment. Under instructions from Naval HQ in December 1987, a claim for Rs 17.90 lakhs was raised by Controller of Defence Accounts, Navy (CDA N) on the State Government in October 1991 after a lapse of five years. The State Government did not honour the claim (August 1992) on the ground that responsibility for construction and maintenance of National Highway bridges rests with the Government of India. Accordingly, the case was taken up with the Ministry of Surface Transport by CDA(N) in October 1992. Even after a lapse of eight years of rendering the services, recovery was still pending (March 1994).

The matter was referred to the Ministry in November 1993 and again in September 1994; their reply has not been received (February 1995).

17. Working of Foreign Procurement Cell in Naval Headquarters

17.1 Introduction

Consequent upon the closure of the India Supply Mission abroad and transfer of procurement of foreign items to the respective Service HQ, Foreign Procurement Cell (FPC) was formed under the Directorate of Logistics Support (DLS) at Naval HQ in August 1984. FPC functions as a

part of the Directorate of Procurement (DPRO) in Naval HQ since January 1994. The overall control rests with the Assistant Controller of Logistics (ACOL).

17.2 Objective and functions

In addition to procurement of stores and equipment of foreign origin FPC deals with policy matters on procurement; compilation of vendor dictionary, price and source data in respect of foreign items/firms. FPC also renders assistance to consignees on post procurement activities. Allocation of funds and release of foreign exchange (FE) are controlled by the Ministry of Defence (Finance).

The standing Tender Purchase Committee (TPC) which is required to meet at least once in a week approves all purchases between Rs 10 lakhs and Rs 50 lakhs. Purchases exceeding Rs 50 lakhs have to be approved by the Ministry. The procedure of Open Tender Enquiry (OTE) is to be adopted in all cases where the estimated value of purchase exceeds Rs 5 lakhs. In case of urgency, where all the likely sources of supply are known or for any other reasons, OTE procedure is waived by the competent authority. No increase in firm and fixed price indicated in the contract is normally permissible. However in exceptional cases increase in cost can be considered in consultation with the Ministry.

17.3 Scope of Audit

The review covers test check of 1058 contracts valuing Rs 112.40 crores finalised by FPC during 1988-94 and overall functioning of FPC. The review also covers the processing of indents by various Directorates of the Naval HQ and the delays involved at various stages in finalisation of indents/contracts.

17.4 Highlights

The working of the Foreign Purchase Cell at Naval HQ revealed certain procedural irregularities in that open tender enquiries were never floated, thereby restricting the element of competition; procurement made without duly constituted tender purchase committee and non-maintenance of basic records for the effective functioning of FPC.

Contracts in respect of 108 indents valuing Rs 12.20 crores pertaining to the period 1988-93 were pending finalisation with

FPC. The delay in finalisation was mainly due to the absence of any prescribed time schedule in this regard. This resulted in depletion of stocks of Naval and Aviation spares which in turn delayed refits of ships and postponement of essential routines.

Delayed conclusion of contracts due to belated release of foreign exchange by the Ministry and failure of FPC to avail of cheaper offer resulted in an extra expenditure of Rs 79.96 lakhs in foreign exchange.

17.5 Procedural deficiencies/deviations

17.5.1 Tender enquiry

The stipulated procedure of OTE in respect of indents exceeding Rupees Five lakhs was not followed in any of the contracts finalised by FPC during 1988-94. Instead, tender enquiries were issued only to three or four firms on the recommendations of the indentors. Naval HQ stated in April 1994 that floating of OTE was time consuming, uneconomic and administratively inconvenient. The reply is not tenable as the OTE procedure was prescribed after taking into account all relevant factors and limiting the tender enquiries to three or four firms had restricted the scope for more competitive rates, besides deviation from the prescribed procedure.

17.5.2 Non-maintenance of prescribed records

Trade directories and current register of suppliers of broad category of stores required to be maintained by FPC for references while deciding firms for limited/single tender enquiry were not maintained. Naval HQ stated in April 1994 that it was not possible to maintain the trade directory due to manpower constraints and heavy work load. The fact remains that in the absence of these basic records it could not be ensured in audit that contracts concluded by FPC were with the best available sources.

17.5.3 Tender Purchase Committee meetings

In September 1984, the Ministry prescribed constitution of a standing TPC for approval of purchases over Rupees ten lakhs which would meet at least once a week. Audit observed that in many cases TPC meetings, as stipulated, were not held for the contracts finalised by FPC. Instead, the purchase proposals were circulated among the members of TPC individually and their approval sought. In the absence of regular meetings the distinct advantages of collective forum and wisdom could not be derived. Also, in

December 1989, FPC finalised a contract valuing Rs 14.36 lakhs without constituting a TPC.

Eventhough, orders issued by the Ministry in April 1985 for purchases over Rs 30 lakhs and upto Rs 50 lakhs stipulated inclusion in the TPC of a representative each of the indenting directorate and the users who should not be below the rank of Real-Admiral, the requirement was never complied with by FPC.

17.6 Absence of time schedule for procurement

The existing procurement system followed by FPC does not envisage any time schedule for processing of indents and finalisation of contracts. An audit scrutiny revealed that FPC could not finalise contracts in respect of 108 indents valuing Rs 12.20 crores pertaining to the period 1988-93 as detailed below:

Year	<u>Number of indents</u> Cost (Rs.in Lakhs)		
	Base and Depot spares and Naval stores	Aviation spares	Machinery spares
1988-89	-	14 68.87	-
1989-90	-	-	-
1990-91	2 23.78	3 47.30	4 19.14
1991-92	13 183.85	-	10 31.60
1992-93	12 142.00	14 125.89	36 577.86
TOTAL	27 349.63	31 242.06	50 628.60

The delays were particularly pronounced in the release of FE by the Ministry leading to expiry of the validity of the quotations. This reflected poor co-ordination between financial and material planning. Naval HQ stated (March 1994) that the impact on operational efficiency of aircraft/helicopters due to non-availability/ of aviation spares could not be quantified. It was also stated that in certain cases, essential spares were cannibalised from aircraft under IInd line/IIIrd line inspection to keep the frontline aircraft airworthy. The significant fall out due to non-availability of spares had been in the depletion of stocks at the depots leading to 'stock out' condition in respect of certain fast moving consumable spares.

Regarding machinery spares, Naval HQ stated (May 1994) that the requirement of most of the spares indented still existed and the FE could not be obtained due to delay at various levels in the Ministry. It was also stated that the non-availability of the spares had resulted in delayed refit of ships, postponement of essential routines and cannibalisation of spares, the impact of which could not be quantified.

A few cases of extra expenditure of Rs 55.06 lakhs due to non-finalisation of contracts within the validity of offer are detailed below:

Case I

In March 1988, firm 'D', a proprietary firm for the supply of base and depot (BD) spares for air compressor installed on board a ship submitted a quotation for 381 items of BD spares. The validity of the offer which was initially upto September 1988 was subsequently extended upto August 1991.

After confirming the availability of funds in December 1989, DLS raised an indent in April 1990 for the procurement of 289 items of BD spares for the air compressor. There was no indication in the indent as to when the BD spares were to be supplied. As per the quotation of the firm, the cost of 289 items of BD spares was Rs 41.40 lakhs. The contract could not be finalised even within the extended validity of offer due to non release of FE by the Ministry.

In July 1992, the firm submitted a revised offer valid upto December 1992. After inordinate delays, the FE was finally sanctioned by the Ministry in April 1993. FPC finalised a contract with the firm in August 1993 for 290 items of BD spares at a cost of Rs 77.07 lakhs. Eventhough the firm had extended their original quotation for more than three years, yet the contract

could not be concluded during this period due to delay in releasing the FE by the Ministry. This resulted in avoidable expenditure of Rs 33.87 lakhs. This apart, the non-availability of BD spares had also affected the exploitation of the air compressor.

Case II

Directorate of Logistics Support (DLS) raised an indent on FPC in February 1991 for the purchase of 15,000 litres of oil OX-38. In March 1991, FPC received a quotation from firm 'E' for the supply of the oil at the rate of Rs 72.62 per litre. The quotation was valid upto June 1991 which was extended upto August 1991. The quotation of the firm was forwarded to the indenting directorate in August 1991 for obtaining FE from the Ministry after the expiry of the validity of the quotation. In January 1992, the firm revised the price of the oil to Rs 120.49 per litre and FPC finalised the contract with the firm in March 1992 for the supply of 14, 965 litres of the oil at a cost of Rs 18.03 lakhs. Non-finalisation of contract within the extended validity period resulted in an extra expenditure of Rs 7.16 lakhs. Accepting the facts, FPC stated (January 1994) that the delay in placing the contract was due to time taken in processing the case with the Ministry for release of FE.

Case III

FPC received an indent in November 1989 from the Director General of Armament Supply for the procurement of two sets of silver zinc cells for certain batteries with a quotation of firm 'G' which was valid upto November 1989, subsequently extended upto April 1990. The firm had quoted Rs 14.90 lakhs for two sets of batteries. However, FPC could finalise the contract with the firm only in August 1990 at a cost of Rs 20.26 lakhs entailing an extra expenditure of Rs 5.36 lakhs. FPC attributed the delay in finalisation of the contract to non-availability of FE in time.

Case IV

FPC received an indent in October 1990 from DLS for the procurement of 43 items of spares for a particular system fitted on a ship. In response to a tender enquiry floated by FPC in October 1990, firm 'H' submitted a quotation in March 1991 for these items of spares at a cost of Rs 4.11 lakhs valid till December 1991. Eventhough the FE amounting to Rs 5.03 lakhs required to finalise the contract was released by the Ministry in December 1991 and communicated to the indenting directorate in the

same month, the latter failed to inform FPC about the FE release within the period of validity of quotation. This necessitated re-validation of quotation and based on a revised quotation of April 1992 from firm 'H', FPC finalised the contract in February 1993 at a cost of Rs 7.52 lakhs. Thus, the delay by the indenting directorate in communicating the FE sanction within the validity of offer resulted in avoidable expenditure of Rs 3.41 lakhs.

Case V

FPC received an operational indent from Director of Naval Air Material (DNAM) in November 1992 for the procurement of one HP Rear casing (casing) which was a proprietary item of firm 'M'. In response to a tender enquiry, the firm submitted a quotation in November 1992 which was valid upto June 1993 for supply of the casing at Rs 19.09 lakhs. However, DNAM did not process the case with the Ministry for release of FE for conclusion of contract. The contract was finally concluded by FPC in February 1995 at a cost of Rs 23.35 lakhs.

DNAM stated in April 1994 that along with this indent there were five other indents for which consolidated approval in principle of the Ministry was taken for raising the indent amounting to Rs 3.83 crores and as the quotation was received only for one indent in November 1992, they did not consider it expedient to approach the Ministry for release of FE in piecemeal. They also stated that the Ministry was being approached for release of FE on case to case basis to avoid recurrence of such cases. The fact remains that the failure of DNAM to secure timely release of FE in respect of one indent for which quotation had been received from the proprietary firm resulted in an extra expenditure of Rs 5.26 lakhs.

17.7 Avoidable expenditure due to non-availing of cheaper offer

DNAM raised an indent in November 1992 on FPC for the procurement of two liquid springs to be supplied immediately. In response to a tender enquiry floated by FPC in November 1992, firm 'J' submitted a quotation in January 1993 which was valid upto February 1993 for supply of these springs at Rs 9.24 lakhs each. A draft contract was forwarded by FPC to DNAM in February 1993 requesting them to obtain the requisite FE. While no action was taken by DNAM in this regard, they raised another operational indent in January 1993 for the procurement of three liquid springs. Eventhough a valid quotation of firm 'J' was available with FPC, limited tender enquiries were again floated by FPC in February 1993. Firm 'J' was, however, not asked to quote. A contract was finalised with firm 'K'

in December 1993 for the supply of three liquid springs at a cost of Rs 52.62 lakhs without linking the lower and valid quote of firm 'J'.

FPC stated in April 1994 that it was not possible for them to maintain indent-wise data due to very large range of aircraft spares. They also added that but for the very large range of aircraft spares, the indents would have been cross linked and the indenter reminded to process the case accordingly. The fact remains that failure of FPC to avail of the lower offer of firm 'J' led to fresh retendering which resulted in an extra expenditure of Rs 24.90 lakhs.

The matter was referred to the Ministry in August 1994; their reply has not been received (February 1995).

ACQUISITIONS

18. Idle investment on manufacture of gas turbines

Ministry of Defence (Ministry) approved in July 1981 the induction of gas turbines (GT) for propulsion of all Naval ships to be constructed in future in view of its distinct advantages over diesel/steam propulsion systems. Since there was no indigenous source for GTs, Government decided in September 1985 to create manufacturing facilities in a public sector undertaking (PSU) to take up production of the GTs with foreign collaboration. In November 1986 the PSU, therefore, entered into a collaboration agreement valid for 10 years with a foreign firm for the license manufacture of category 'P' GTs in India for the Navy. A licence fee of Rs 4.60 crores was payable to the firm in a phased manner under the agreement.

The PSU imported one GT from the firm at a cost of Rs 7.18 crores in 1989 for installation in a Naval vessel which was to be constructed by another PSU. The Navy reimbursed PSU a sum of Rs 6.52 crores towards cost of the imported GT and Rs 1.05 crores towards licence fee paid to the firm. The balance amount of Rs 66 lakhs was payable to PSU on transfer of GT to Navy.

GT was imported by PSU as per instructions of Naval HQ based on their preliminary study in early 1989. A subsequent detailed review of the engineering design conducted in November 1990, however, revealed that the fitment of GT in the vessel would impose serious limitations on the operational exploitation of the vessel. In May 1991, Naval HQ informed the Ministry that the imported GT would not be suitable for the Naval vessel for

which it was intended, due to technical reasons and they had decided to continue the existing practice of obtaining propulsion package from another foreign supplier. Accordingly, the Ministry advised PSU in May 1991 not to expend any resources on the project for licence manufacture of category 'P' GTs. Obviously, the Navy failed to conduct a detailed review of the engineering design before import of GT.

In December 1991, Naval HQ, however, proposed to the Ministry to sanction payment of Rs 11.92 crores to PSU for creation of facilities for manufacture of category 'P' GTs stating that all future ships would be fitted with GTs. However, the Ministry observed in April 1992 that the construction of ships proposed by Naval HQ would involve an outlay of Rs 7000 crores. Additionally, GT project would involve an investment of Rs 700 crores which was not found economical since the break even point was at 37 engines, whereas the Navy had a requirement for only 25 engines. The Ministry opined in August 1994 that there was no other option but to close the project. However, a decision was yet to be taken (February 1995).

Thus, the expenditure of Rs 8.23 crores incurred on the project remained unfruitful, of which Rs 7.18 crores was due to Navy's failure to make a realistic technical assessment before importing GT. GT imported at a cost of Rs 7.18 crores remained with PSU since 1989 with no prospects of its utilisation in the near future.

The matter was referred to the Ministry in August 1994; their reply has not been received (February 1995).

19. Excess expenditure over sanctioned cost

In January 1982, Government approved indigenous construction of four vessels of a particular class at an estimated cost of Rs 120 crores. The orders were placed in August 1983 on two public sector shipyards (shipyard 'A' and shipyard 'B') for two vessels each. Naval HQ had projected the cost per vessel as Rs 30 crores at 1981 price level. When the project was taken up by shipyard 'A', it quoted a unit cost of Rs 54.86 crores. The reason for the substantial increase, apart from escalation, was cost of additional weapon, sensors and equipment which was considered an operational necessity by the Navy. The cost projected by shipyard 'A' was negotiated (1983) and reduced to Rs 50.43 crores per vessel.

In January 1984, the Government approved the acquisition of the vessels at the revised cost of Rs 201.72 crores. The vessels were constructed

and delivered by shipyards 'A' and 'B' between August 1989 and October 1991. The total cost of construction of the four vessels was Rs 493.68 crores as against the sanctioned cost of Rs 201.72 crores. Approval of the Government was not taken before incurring additional expenditure of Rs 291.96 crores.

In response to an Audit query, the Ministry stated in July 1993 that a proposal for seeking approval of the Government to the increased cost of construction was under active consideration. However, this was yet to be obtained (September 1994). Thus, even after a lapse of about 36 months of the delivery of the vessels the additional expenditure of Rs 291.96 crores was yet to be regularised.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

WORKS SERVICES

20. Delay in construction of a dry dock

Government sanctioned construction of a dry dock of size 200x27x14 mtr at an estimated cost of Rs 51 crores and a wharf at a cost of Rs 22.60 crores at Naval dockyard, Bombay in April and December 1985 respectively to make up the shortfall in dry docking and berthing space for ships and submarines based at and operating off Bombay. These works were required to be designed and constructed by Director General Naval Project, Bombay (DGNP) as one facility to ensure that the two structures were compositely created.

In January 1986, Naval HQ proposed revision of the size of the dry dock to 220x35x14 mtr stating that the acquisition of an aircraft carrier and construction of a sea control ship were under consideration of the Ministry and they would require a dry dock of larger size. Accordingly, Government accorded sanction in July 1986 for construction of dry dock of larger size at a revised cost of Rs 68 crores.

In July 1986, Naval HQ recommended implementation of the project through DGNP with the help of consultancy to complete the work by 1989. Sanction for engaging a firm as consultant was, however, issued only in May 1988 after a lapse of 21 months. The consultancy agreement was signed in October 1988 at a cost of Rs 92.11 lakhs which was valid upto April 1993. Under the agreement, the firm was required to prepare detailed project

report (DPR) and render all assistance for the construction of the dry dock which was expected to be completed by March 1993.

The DPR provided a dry dock of bigger size viz 236x37x15 mtr, as it was found after commissioning of the aircraft carrier in May 1987 that further enhancement in the size of dry dock was essential. The DPR was approved by Naval HQ in October 1989 and the total cost of the project was estimated at Rs 115.45 crores which required revised approval of the Government. As this would entail delays in implementation of the project, the Ministry issued sanction in April 1991 to go ahead with the marine civil works for the dry dock and wharf at an estimated cost of Rs 91.51 crores and decided to sanction balance items of the project after obtaining revised approval of the Government.

In May 1991 Naval HQ, however, proposed to shift the dry dock project to Karwar and directed DGNP to stop all the work at Bombay. Till then, an expenditure of Rs 10.92 crores had been incurred on the project for preliminary work, consultancy etc. The Ministry, however, did not agree to the proposal and directed Naval HQ in February 1993 to recommence the work and to ensure its completion in four years.

Since the consultancy contract was valid only upto April 1993, the firm demanded higher fee for extension of the validity of the contract. In October 1993, the contract was revalidated upto April 1997 at the enhanced fee of Rs 150.43 lakhs against the initial fee of Rs 92.11 lakhs.

In September 1994, the Ministry revised the go-ahead sanction for the marine civil works of the project at an estimated cost of Rs 123.54 crores which included Rs 10.92 crores already spent under the earlier sanction. The probable date of completion of the work was not mentioned in the sanction.

Due to the shortage of dry docking capacity at the Naval dockyard, refit/repairs/dry docking of Naval ships had to be offloaded to commercial yards at a sanctioned cost of Rs 52.49 crores during 1990-94.

The case revealed that :

- the revision in the size of the dockyard, time taken in concluding consultancy agreement and decision of Naval HQ to stop the work after incurring an expenditure of Rs 10.92 crores indicated lack of adequate planning resulting in serious delays

in implementation of the project. Thus, the project expected to be completed by 1989 had not come up so far (December 1994);

- due to non availability of the dry dock, refit/repairs/dry docking of ships at a sanctioned cost of Rs 52.49 crores had to be offloaded to commercial yards. The dependence on commercial yards for dry docking would continue till the dry dock is commissioned;
- the estimated cost of the marine civil works increased from Rs 91.51 crores in April 1991 to Rs 123.54 crores in September 1994 and
- consequent to the stoppage of work in May 1991 at the behest of Naval HQ, the validity of the consultancy contract expired before the completion of the project which had to be revalidated at an extra cost of Rs 58.32 lakhs.

The matter was referred to the Ministry in June 1994; their reply has not been received (February 1995).

21. Delay in setting up of a permanent Naval Academy

The Naval Academy engaged in training cadets of the Navy is presently housed in a sailors training establishment which is neither equipped nor has the wherewithal to function as a permanent Academy. A sum of Rs 40 crores was provided in the Defence Plan 1980-85 to set up a permanent Academy with a capacity to train upto 600 cadets in phase I. In May 1982, Government decided to set up a permanent Academy at Ezhimala. During January-June 1984, 979.65 hectares of land at Ezhimala was transferred to the Navy by the State Government. Though the land was transferred free of cost, the State Government had incurred an expenditure of Rs 25 crores for its acquisition which was partly financed by the Union Government by paying a loan of Rs 20 crores in November 1983. As the project for setting up of the permanent Academy was not taken up for execution during the Plan period 1980-85, it was shifted to the Defence Plan 1985-90 for Rs 95 crores.

In 1984, the Navy decided to assign the design and execution of the project to private architects instead of Military Engineer Service (MES) which is the official agency for execution of Defence Works. Subsequently, a firm

was selected as architect through a design competition held during December 1987 - December 1988. In June 1988, Naval HQ also proposed the appointment of a management consultant for supervising the construction work as it could not be the responsibility of the architect. Naval HQ reiterated in January 1989 that they did not want the MES either to execute the work or to supervise it. Eventhough the MES had expressed (April 1989) their willingness to supervise the construction based on the design by a private architect, in February 1990, Government approved the proposal to engage a PSU to act as management consultant. In March 1991, Naval HQ reversed their stand and suggested that the MES be associated with the project instead of the PSU.

In August 1991, the Government decided to appoint the architect for the project with MES acting as management consultant. Accordingly, in February 1992, the Ministry appointed the architect for preparation of detailed project report (DPR) at a remuneration of Rs 57.50 lakhs. The DPR prepared by the architect was approved by the Ministry in December 1993.

In the meantime, a security wall/fence erected by the Navy in July 1988 at a cost of Rs 80 lakhs for the security of the land at Ezhimala breached at several points within just two years due to poor maintenance. The Ministry issued sanction in September 1993 for the MES to take over the wall/fence for repairs. The Ministry stated in October 1994 that the breach was on account of heavy rains and funds for repairs/maintenance were not allotted pending sanction for entrusting the maintenance to the MES. The Ministry added that the MES had been directed to carry out maintenance/special repairs.

The land and assets at Ezhimala were being managed by a detachment of one officer, 22 sailors and 26 Defence Security Corps personnel deputed on temporary duty. The expenditure on such deputation of Naval personnel alone was Rs one lakh per annum. As the existing manpower could not provide adequate security, a private security agency was also hired from April 1994 involving payment of Rs 6.29 lakhs per annum. In addition, a speed boat for patrolling the coastal area, fire fighting arrangements and check posts were provided at a cost of Rs 19.40 lakhs at the site.

The Ministry stated in October 1994 that the project was a priority scheme in the Naval Plan 1992-97 and approval of the Government for execution of the work at an estimated cost of Rs 169.35 crores was awaited. The completion would take eight years after the Government's approval. The

Ministry added that the delay in execution of the project was due to lack of initial response from reputed companies for the architect's selection, delay in provision of infrastructural facilities by the State Government and reluctance of the MES to compete with other PSU consultant because it involved a private architects' design. The fact was that the Navy had been unwilling to associate the MES on the plea that the MES were constrained by Government rules and procedures, were more used to provide facilities which cramp the style of work, etc. resulting in delayed decision on the selection of agencies to which the work was to be entrusted for execution and supervision.

In short, the construction of the Academy though provided in Defence Plans from 1980-85 onwards and for which land was acquired at a cost of Rs 25 crores by the State Government and transferred to the Navy in 1984 was yet to commence. The delay was mainly as a result of the protracted deliberations on the selection of agency for the execution of the work, the Navy's initial reluctance to associate the MES and the volte face after seven years. The project estimated to cost Rs 40 crores in 1980-85 is now expected to cost Rs 169.35 crores. As the sanction for execution was yet to be issued (September 1994), the launching and completion of the Academy remains uncertain. A non-recurring expenditure of Rs 99.40 lakhs had been incurred for ensuring safety of the assets besides a recurring expenditure of Rs 7.29 lakhs per annum on personnel/private security agency.

22. Delay in modification of a slipway

In February 1981, a contract was concluded with country 'A' for supply of six ships of a particular class at a cost of Rs 18 crores. In August 1983, the Navy proposed modification to the existing slipway of a Naval ship repair yard at station 'X' at a cost of Rs 4.81 crores to undertake dry docking of these ships. The proposal envisaged recovery of the investment in five years time and was, therefore, considered economical. Government approved the proposal in December 1985 at a cost of Rs 4.49 crores and accordingly two sanctions (Civil works Rs 3.69 crores and equipment Rs 0.80 crore) were issued during the same month. In November 1986, the work was categorised as 'time bound' to be completed by November 1989. The design/drawings for civil works connected with the modification (project) were prepared in March 1987 by engaging a consultant firm at a cost of Rs 3.72 lakhs.

A revised sanction for changed scope of civil works was issued in April 1987 at an estimated cost of Rs 3.56 crores. A lumpsum contract for the

civil works was concluded in December 1988 with firm 'A' at a cost Rs 4.76 crores after obtaining financial concurrence of Government for overall project liability of Rs 5.84 crores. The work commenced in January 1989 and was to be completed by January 1990.

Meanwhile, the Ministry accorded another sanction in April 1987 for provision of equipments at a cost of Rs 76.15 lakhs revised to Rs 84.45 lakhs in October 1990. Two more contracts for provision of special and traverse carriages for ship and for provision of a 35 ton winch were concluded with firm 'B' at Rs 26.08 lakhs in March 1990 and with firm 'C' at Rs 14.95 lakhs in June 1990. These works commenced in April and June 1990 respectively.

The project could not be completed by the scheduled date of January 1990 due to delay in handing over site, changes in design and provision of additional requirements, delay in completion of dredging by the Navy etc. The civil works connected with the project executed by firm 'A' were completed in November 1993. In March 1994, the project cost was revised to Rs 6.01 crores and an amount of Rs.5.55 crores was paid to firm 'A' upto March 1994.

The load trials of special carriage carried out in March 1993 revealed major failure of axles and locking plates and deficiencies in alignment of the rails. To overcome these deficiencies, further expenditure of Rs 15.75 lakhs was felt necessary for provision of an additional winch for operational exploitation of the slipway. However, this was yet to be sanctioned (September 1994).

Though the works relating to provision of 35 ton winch had been completed by firm 'C' and the winch tested in June 1994, firm 'B' had yet to complete the work relating to special and traverse carriages (September 1994). In view of the serious limitations, operational exploitation of the slipway to full extent was doubtful unless further modifications were carried out to provide for the additional winch. As regards the equipment worth Rs 84.45 lakhs procured against the sanction of October 1990, Naval HQ stated in September 1994 that equipment of general nature (furniture, welding gas, fire fighting etc.) were in use but admitted that operational exploitation of the equipment would be possible only after completion of the civil work.

It was noticed by Audit that during 1987-94 (upto January 1994) an amount of only Rs 34.87 lakhs had been spent on dry docking of vessels in

commercial yards. Prima facie it appears that the investment of Rs 6.85 crores on modification of slipway lacked justification.

The case revealed that:

- the modifications of slipway sanctioned in December 1985 and categorised as 'time bound' were yet to be completed even after a lapse of nine years;
- taking into account the expenditure on dry docking for the last seven years, it is clear that Navy had overstated the dry docking requirements and their proposal to recover the cost of investment in five years was unrealistic. Modification of the slipway at a cost of Rs 6.85 crores prima-facie lacked justification and
- even after incurring an expenditure of Rs 6.85 crores on the project, there were serious operational limitations in the exploitation of the slipway which required additional winch which was yet to be provided.

The matter was referred to the Ministry in August 1994; their reply has not been received (February 1995).

PROVISIONING

23. Over-provisioning of an item

In July 1988, Controller Material Planning, Bombay (CMP) projected a requirement of 44.88 lakh metres of tape adhesive transparent water proof 25 mm wide based on the annual consumption level (ACL) of three depots 'X', 'Y' and 'Z'. Since the ACL projected for Depot 'X' appeared to be abnormal, Naval HQ asked CMP in August 1988 to review and submit revised ACL. Pending receipt of information, Naval HQ raised an indent on Director General of Supplies and Disposals (DGSD) in December 1988 for procurement of 21.62 lakh metres tape transparent. In August 1989, DGSD placed an order on firm 'P' for the supply of 21.62 lakh metres of tape transparent at a cost of Rs 21.34 lakhs. The entire quantity of tape transparent was received between November 1989 and June 1990.

CMP, had, however, intimated Naval HQ in August 1989 about the revised ACL which worked out to 4.24 lakh metres (2.62 lakh metres only for Depot 'X' instead of 15.59 lakh metres projected in July 1988). Based on the

norms prescribed by the Ministry in January 1981, the quantity should have been restricted to 8.83 lakh metres as against 21.62 lakh metres indented by Naval HQ.

The case revealed incorrect assessment of ACL for tape transparent for Depot 'X' in July 1988 and the injudicious decision of Naval HQ in raising the indent on DGSD without waiting for the required information from CMP resulted in over provisioning of tape transparent to the extent of 12.79 lakh metres costing Rs 13.09 lakhs. The excess quantity of tape transparent was lying in stock even after four years of its procurement.

The matter was referred to the Ministry in June 1994; their reply has not been received (February 1995).

24. Blocking of funds

According to the instructions issued by Naval HQ in February 1977, procurement action in respect of machinery/equipment whose estimated life is upto three years was to be initiated to ensure their timely availability. Procurement of such an equipment is made on the basis of the recommendations of a Board of Technical Officers constituted to assess the life of the equipment.

A Board constituted in July 1984 recommended replacement of eight boat davits and davit winches fitted on board ship 'X' which were declared beyond economical repair. These davits are used for lowering/hoisting life boats/work boats etc. and were required to be fitted on board ship 'X' whose long refit (LR) was planned to be commenced in December 1984. Naval HQ approved the recommendations of the Board in November 1985.

Based on the Board's recommendations, Naval HQ raised an indent in March 1987 on its foreign procurement cell (FPC) for the procurement of eight davits. FPC finalised a contract with firm 'A' in August 1987 for the supply of eight davits at a cost of Rs 25.30 lakhs. These were received in November 1988.

In August 1992, an examination of all davits with associated fittings on board ship 'X' was carried out and it was found that they had become unserviceable. But the replacement of davits could not be done as it was a major work and could be undertaken only during ship's LR or in two Navigational refits (NR). Only four davits were proposed to be replaced during the forthcoming NR of ship 'X' in August 1994 and the remaining four davits were to be fitted at a later refit. However, the NR of ship 'X' which

was planned to be undertaken in August 1994 had been suspended since ship 'X' was being phased out of service by mid 1995. As such, there are no prospects of utilisation of the davits in the near future.

Thus, the davits procured in November 1988 could not be put to use so far (December 1994). This resulted in blocking of Rs 25.30 lakhs for six years.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

25. Extra expenditure on procurement of transmitters

Based on the quotation of a PSU received in July 1985, Naval HQ placed an order in February 1986 for supply of 20 sets of 500 WHF transmitters with accessories at a cost of Rs 1.05 crores. The transmitters were to be supplied by March 1988.

In November 1986, the PSU informed Naval HQ that the prices and delivery schedule were being revised as the bulk production clearance (BPC) for the transmitters had been received from the Army only in September 1986. This was not agreed to by Naval HQ as there was no provision in the quotation or the order wherein the price and delivery schedule were subject to the BPC of the Army.

In the meeting of Price Negotiating Committee (PNC) held in March 1987, unit price of transmitters at Rs 3.92 lakhs with delivery schedule as 1988-89 was accepted. It was also decided that the prices of accessories shall be valid only after receipt of detailed breakdown of cost from the PSU. Based on the decisions taken in the PNC meeting, the PSU furnished a revised quotation for the transmitters and its accessories in May 1987 without a detailed breakdown of cost of accessories and requested Naval HQ to issue an amendment to the order. Naval HQ issued an amendment to the order in November 1987 revising the total value of the order from Rs 1.05 crores to Rs 1.39 crores without insisting on the PSU for submission of detailed breakdown of cost of accessories. The transmitters were received during 1988-89.

In reply to an Audit query, Naval HQ stated in December 1991 that neither the PSU had indicated in their quotation nor was it indicated in the supply order that the supply of the transmitters would materialise subject to BPC by the Army. Hence, the PNC meeting held in March 1987 had no relevance after the placement of order in February 1986. In spite of this, the

value of the order was revised in November 1987 which lacked justification and resulted in an extra expenditure of Rs 34 lakhs.

The case revealed that:

- an extra amount of Rs 34 lakhs was paid to the PSU due to post contract developments though there was no such provision and
- contrary to the decisions of the PNC, Naval HQ issued an amendment to the order without insisting on detailed breakdown of cost of accessories.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

26. Excessive procurement of valves and fittings

Based on the recommendations of Boards of Technical Officers constituted in July 1985, August 1986 and October 1986 to assess the residual life of various equipments of ship 'X' for replacement during its refit in 1991, Naval HQ raised 14 indents in June 1987 on Director of Supplies and Disposals, Bombay (DSD) for procurement of 1006 items of valves and fittings. The DSD finalised 11 contracts with firm 'A' between September and December 1987 for the supply of these items at a cost of Rs 5.10 crores. The items were supplied between March 1988 and June 1989.

The refit of ship 'X' commenced in June 1991 and was completed in May 1993. It was noticed that out of 1006 items of valves and fittings procured, only 581 items were utilised during the refit of the ship and the balance 425 items costing Rs 2.19 crores which constituted 42 per cent of the total procurement, remained unutilised and were lying in stock (February 1994).

The case revealed that the serviceability of the items fitted on board ship 'X' had not been realistically estimated by the respective Boards resulting in blocking of Rs 2.19 crores.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

OTHER CASES

27. Extra payments on power consumption

Mention was made in para 24.7.3 of the Report of the Comptroller and Auditor General of India, Union Government, (Defence Services - Air Force & Navy) for the period ended 31 March 1991 about the payment of additional charges amounting to Rs 16.04 lakhs on account of availing of power supply at 11 KV due to delay in installation of 132 KV sub-station in the Naval dockyard (ND) at Station 'A'. In their action taken note, Ministry advised that works should be completed timely to avoid time and cost overruns. The Naval authorities had made further extra payments as detailed below:

(a) While construction of 132 KV sub-station at the ND complex was in progress, a Naval command sanctioned in February 1985 augmentation of electric supply in a Naval base area at an estimated cost of Rs 48.87 lakhs. The cost was revised to Rs 72.84 lakhs in December 1989. The Naval command issued another sanction in September 1985 for the provision of uninterrupted power supply in Naval depot area at an estimated cost of Rs 24.40 lakhs and the cost was revised to Rs 71.54 lakhs in November 1988. These works were meant ultimately to connect all the Naval establishments including residential areas in the Naval base as well as Naval depot to the 132 KV sub-station at ND complex. The works sanctioned in 1985 were completed in August 1987 and November 1989 respectively.

However, before completion of these works, Naval authorities connected the Naval base area to the existing power line in the ND complex in April 1988. The State Electricity Board (SEB) which supplied the power under an agreement concluded with the Naval dockyard in January 1988, considered it an unauthorised connection and asked Naval authorities in May 1988 to disconnect these lines failing which penalty would be imposed. The Navy, however, connected Naval depot area also to the ND complex in January 1989. The SEB started billing the Navy from March 1989 at rates higher than those applicable to the ND complex.

SEB agreed in November 1989 to the connection of the Naval base and Naval depot area to the ND complex and charge at the rates applicable to the ND complex after meters were installed for lighting load. The contract for supply of power to Naval base and Naval depot areas including ND complex was concluded with the SEB in April 1991. The meters were installed at a cost of Rs 4.16 lakhs in May 1991 and the SEB started billing at the rates applicable to the ND complex from July 1991. However, for the period from

March 1989 to June 1991 payment was made at higher rates and the excess amount worked out to Rs 1.50 crores.

(b) As per the gazette notification issued by the SEB in April 1989, the power factor at consumers' installation was to be kept at 0.85 during any month falling which the consumers were to pay a surcharge of two *per cent* on the total amount of bill for that month for each 0.01 fall in the power factor and three *per cent* of the total amount of the bill if the power factor remained less than 0.85 continuously for six months. It was noticed that the ND complex had never achieved the power factor of 0.85 and payment of surcharge on account of low power factor had become a recurring phenomenon since June 1989. A sum of Rs 4.08 crores was paid towards surcharge on account of lower power factor during the period June 1989 - May 1994. The payment was yet to be regularised.

The ND stated in August 1992 that the power factor in commercial and in the industrial establishments tended to be low and normally a power factor of 0.70 was obtained. The power factor which averaged 0.75 was considered reasonable. It was also stated that efforts made to improve the power factor remained unsuccessful. The reply is not tenable as the power factor was maintained around 0.85 at another ND.

The case revealed that the Navy had to pay higher electric charges amounting to Rs 1.50 crores during the period March 1989 - June 1991 for connecting the Naval base and Naval depot areas to ND complex without the permission of the SEB. Further, a surcharge amounting to Rs 4.08 crores had to be paid to the SEB due to low power factor during the period June 1989 - May 1994 and further extra payments are not ruled out if the power factor is not improved.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

28. Non-utilisation of assets

In August 1986, Naval HQ sought approval 'in- principle' of the Government to establish a weapon equipment depot (WED) at a Naval station (station 'A') providing weapon equipment logistic support to ships and establishments based at that station. The proposal envisaged that till such time the requisite manpower was sanctioned for the WED, the essential manpower would be provided from the resources of the Navy.

While the proposal was under consideration of the Ministry, a WED was set up by a Naval command HQ in a temporary accommodation at station 'A' in February 1987 for storing weapon spares of a particular class of ship. The staff was provided from the existing Naval resources. The Naval command HQ sanctioned construction of the WED in July 1987 at an estimated cost of Rs 61.53 lakhs without the approval of the Ministry.

In November 1988, the Ministry conveyed the approval 'in principle' to set up a permanent WED at station 'A'. The Ministry, however, stipulated that the existing practice of demanding weapon spares from the WED at another station (station 'B') would continue till a final decision regarding a WED at station 'A' was taken.

The construction of the WED building and allied services was executed through various contracts during December 1987 and March 1991 and was completed in November 1992 at a cost of Rs 61.61 lakhs. The building was taken over by the Navy in October 1993.

Navy's proposal made in July 1990 for sanction of manpower for the WED was not approved by the Government due to financial constraints and ban on creation of new posts. Thus, the building constructed at a cost of Rs 61.61 lakhs remained unutilised since its construction and the existing arrangement of demanding the weapon spares from station 'B' had to be continued. Necessary security cover had also to be provided to the newly constructed WED building at an annual recurring expenditure of Rs 1.01 lakhs.

Thus, construction of the WED building without the approval of the Ministry resulted in blocking of Rs 61.61 lakhs for over one year besides incurring an annual expenditure of Rs 1.01 lakhs on its security.

The matter was referred to the Ministry in June 1994; their reply has not been received (February 1995).

29. Loss due to delay in disposal of a ship

A Naval ship was decommissioned in October 1984. However, no action was initiated for its disposal till February 1986 when Naval HQ proposed to use the ship for training purposes. The proposal was made despite the fact that the underwater hull of the ship was in a bad condition since July 1982. The proposal, however, did not materialise and the ship was cleared for disposal in November 1987. Naval HQ fixed the reserve price

at Rs.27.59 lakhs for the disposal of the ship. However, before the ship could be disposed of, it sank at berth in December 1987.

The ship was last dry docked for ten days in January 1983 and thereafter it was kept afloat till December 1987 without necessary maintenance/repairs. A Board of officers which investigated into the circumstances leading to the sinking of the ship concluded that the ship sank due to poor material state and deterioration of the hull as no maintenance was carried out since January 1983. The efforts made by the Navy to refloat the ship after spending Rs.13 lakhs on its salvage operations remained futile.

The Navy, therefore, concluded a contract with a private firm in April 1990 to sell the ship at Rs.4.61 lakhs on an 'as is where is' basis. The firm paid the amount of Rs.4.61 lakhs in July 1990. The contract stipulated that the firm should remove the ship within 180 working days of the issue of the sale release order, failing which a compensation @ Rs.500 per day would be paid by the firm. Though the contract was concluded in April 1990, the sale release order could be issued only in December 1991. The firm failed to remove the ship by the stipulated date i.e. June 1992. Thereafter, there was no progress in the work and the contract was terminated in May 1993.

In November 1993, the contract was reopened on compassionate grounds. Even then the firm could not complete the salvage operation by 31 March 1994 as stipulated in the re-opened contract and the contract ceased to exist with the security deposit of Rs one lakh being forfeited to the Government. Besides, the delay in removal of the ship obstructed full usage of the berth.

Accepting the facts, Naval HQ stated in August 1994 that the ship wreck continued in a sunken state and further extension of the time to the firm was under consideration. It was also stated that the reserve price of Rs 27.59 lakhs was for a floating vessel and not for a wreck. The fact remains that disposal of the ship was kept in abeyance for over three years and despite its anticipated use for training purposes, the Navy failed to maintain the ship though it was known that underwater hull of the ship was in a bad condition since July 1982.

The case revealed that:

- though the ship was decommissioned in October 1984, Navy not only delayed action for its disposal but also failed to carry

out necessary maintenance for the hull which ultimately led to her sinking in December 1987 and

- due to poor maintenance the ship sank at berth. Despite spending Rs 13 lakhs on salvage operations of the ship, the Navy could recover only a fraction of the amount spent on salvage operations.

30. Delay in induction of a life saving equipment

Life rafts used in the Navy to save life of men at sea during emergencies had no navigational aid integrated with them to enhance radar detection. For early detection of location of life rafts and enhancing the survivability rate, introduction of radar reflector and its integration with life rafts was considered essential. Based on successful trials conducted in December 1987, radar reflector developed by a Defence Research and Development Establishment (DRDE) was accepted by the Navy in December 1988. Based on the quotation of Ordnance Parachute Factory (OPF) in August 1988, the DRDE indicated that the approximate cost of radar reflector would be Rs 3300 per unit. The DRDE advised Naval HQ in August 1989 to place indent on the OPF. The OPF indicated a lead time of two years for bulk production of the items.

In August 1989, Naval HQ sought sanction of the Ministry for procuring 800 radar reflectors at an estimated cost of Rs 26.40 lakhs and confirmed that funds were available. Certain clarifications sought by the Ministry in September 1989 were furnished by Naval HQ only in April 1991 after a lapse of 19 months. In December 1991, the Ministry accorded sanction for the procurement of 800 radar reflectors at a cost of Rs 29.40 lakhs. Naval HQ decided to procure the item through trade sources as the lead time of two years for production by the OPF was not acceptable. In January 1992, Naval HQ placed an indent on the Director General of Quality Assurance (Navy) for supply of 800 units and when quotations were received by the latter, it was found that the cost per unit would be Rs 5860. In order to contain costs and to avoid delay in procurement, the Ministry issued revised sanction in August 1993 for the procurement of a reduced quantity of 506 units at a cost of Rs 29.40 lakhs. An order was placed by the Ministry in October 1993 on a private firm for supply of 335 radar reflectors at a cost of Rs 18.39 lakhs (unit cost: Rs 5490). The items were yet to be delivered (September 1994).

The case revealed that:

- an important life saving item developed in 1987 and needed by the Navy was yet to be made available though over six years had lapsed since its satisfactory trials due to delay in processing the case by Naval HQ
- though the designated production agency was Ordnance Factory, order valuing at Rs 18.39 lakhs was placed, on a private firm which could not supply the items till September 1994 and
- the increase in anticipated cost of procurement of 800 units from Rs 29.40 lakhs to Rs 43.92 lakhs was avoidable had order been placed on the Ordnance Factory.

The matter was referred to the Ministry in July 1994; their reply has not been received (February 1995).

CHAPTER V

COAST GUARD

31. Non-installation of an equipment

Based on the Ministry's sanction of October 1989, Coast Guard Headquarters placed an order on a public sector undertaking (PSU) in December 1989 for the supply of three types of communication equipment and its accessories by December 1990 at a total cost of Rs 14.54 lakhs. The equipments were received between April 1991 and April 1992.

The Coast Guard HQ placed a work order on PSU in January 1992 for installation and commissioning of the equipment at station 'X' at a cost of Rs 0.69 lakh. The PSU carried out pre-installation survey in March 1992 and indicated that the equipments could be commissioned only after necessary civil works were carried out at the station.

The civil works were sanctioned in September 1993 to be carried out by agency 'A' at a cost of Rs 1.99 lakhs. The funds were allotted in March 1994. The work was scheduled to be completed by December 1994. In the meantime, the warranty given under the contract for the equipments had expired.

The Ministry stated (September 1994) that though planning and co-ordination was carried out at the time of procurement of the equipments, the civil works could not be completed due to reorganisation and re-allotment of responsibilities of Zonal Chief Engineer executing the work.

The fact, however, remains that the equipment and accessories worth Rs 14.54 lakhs could not be put to use for periods upto 40 months after their procurement and the warranty given under the contract could also not be availed of, in the event of unsatisfactory functioning of the equipment. In the absence of communication equipment at station 'X', the messages to Coast Guard ships were at times delayed affecting Coast Guard operations at sea.



CHAPTER VI

RESEARCH AND DEVELOPMENT ORGANISATION

32. Available expenditure on a project

The Defence Research and Development Establishment (DRDE) had developed item `X' meant for providing mobile subscribers an access into the area grid network of a mobile communication system. In May 1988 while the trials of the item `X' were in progress, the DRDE proposed to develop an advanced version of item `X' (item `Y') by incorporating the latest techniques in the field of mobile communication.

Based on the recommendations of Defence Research and Development Organisation (DRDO), the Ministry sanctioned in January 1989, the project for development of item `Y' at a cost of Rs 4.71 crores to be completed by August 1990. In June 1989, the DRDE entered into a contract with the PSU for fabrication and supply of two pre-production models of item `Y' within a year at a fixed cost of Rs 4.10 crores. The contract provided that the design of item `Y' would be evolved jointly by the PSU and the DRDE within three months. Specifications thereof were to be given by DRDE.

In August 1989, an advance of Rs 1.23 crores was paid to the PSU towards the project. The PSU could not deliver the pre-production models even after the extension of the project upto September 1993.

In January 1993, the PSU stated that one of the main causes of the delay was that the technical specifications were not finalised till February 1992. The DRDE could not provide the system specification and other information required by the PSU since its personnel were engaged in improvement to item `X'.

In April 1993, when progress of the project was reviewed by the project management, the representative of the Army stated that they had been arguing since September 1991 that the modulation techniques of item `Y' would make it incompatible with the system and therefore item `Y' would be of no use. The project was foreclosed in April 1993 after incurring an expenditure of Rs 1.70 crores of which Rs 1.23 crores was the advance paid to the PSU and Rs 0.47 crore spent on purchase of stores.

In September 1993, the DRDE directed the PSU to refund the advance with the penalty for non-performance of the contract. In March 1994, while agreeing to refund the advance in 12 monthly instalments commencing from April 1994, the PSU requested for waiving the penalty. DRDE, however, turned down the request and directed the PSU to refund the full amount of Rs 1.39 crores which included liquidated damages amounting to Rs 0.16 crore. While the PSU refunded the amount of Rs 1.23 crores in two instalments of Rs 0.25 crore and Rs 0.98 crore during August 1994 and October 1994 respectively, the liquidated damages of Rs 0.16 crore was yet to be recovered (February 1995).

Admitting the facts the Ministry stated in February 1995 that the project had to be foreclosed due to changes in requirements and that the stores costing Rs 0.47 crore procured for the project were partly used during development activities while test equipment would be transferred to other projects.

The case revealed that:

- the development of an advanced version (item Y) of the item X was taken up in haste without adequate technical appreciation of both the complexity of the project as well as the ability of the PSU to deliver the goods. As a result the project had to be foreclosed without achieving the objectives;
- even though the users had been persistently arguing against the development of the item since September 1991 on the ground that it would be of no use, the project was allowed to continue upto April 1993;
- a sum of Rs 1.23 crores remained blocked with the PSU for over five years without any tangible benefits and
- penalty of Rs 0.16 crore recoverable from the PSU was yet to be recovered (January 1995).

33. Development of a weapon

The delay in development of two weapon systems 'X' and 'Y' by laboratory 'M' resulting in the foreclosure of these projects was commented in paragraph 46 of the Report of the Comptroller and Auditor General of

India, Union Government (Defence Services-Air Force and Navy) for the year ended 31st March 1992.

In another case, in May 1986, laboratory 'M' undertook a project for the development of weapon 'Z' which was being used by the Air Force and Navy of a foreign country. Air HQ intended to induct the weapon into the Air Force and issued Air staff requirement (ASR) in 1982 laying down various parameters of the weapon. Laboratory 'M' examined the feasibility of developing weapon 'Z' as per the ASR and found that such a weapon could be developed indigenously within a reasonable time frame and the resources available in the country. After a lapse of two years, in June 1984 it was decided to undertake it as a staff project and laboratory 'M' submitted a case for undertaking the project jointly in collaboration with its sister laboratories.

The aim of the project was to design and develop weapon 'Z' based on modular concept for use in the Air Force for meeting their training and operational requirements. Considering the advantages and urgency of the weapon and its non-availability in the world market, the Air Force emphasised again in September 1984 sanctioning of the project on highest priority basis. Accordingly, the Ministry of Defence sanctioned in May 1986 the design and development of weapon 'Z' at an cost of Rs 1.67 crores. The project was to be completed by April 1989.

The development of weapon 'Z' was delayed as the prototypes manufactured as per initial design failed during trials carried out in October 1987. Consequently, the probable date of completion (PDC) of the project was extended upto April 1991 for carrying out some modifications suggested by experts.

The prototypes manufactured after incorporating these modifications were offered for flight trials during April 1990 and August 1990. The prototypes were further modified in the light of the trials conducted in August 1990 and were offered for flight trials in February 1991. Though the sub-systems functioned correctly in static independent modes, these did not give consistent results when integrated with the main weapon. This required further improvements in design of the prototypes and conduct of the users trials. The PDC of the project was further extended upto June 1993. Further trials conducted during March 1993 also did not prove successful. An expenditure of Rs 1.58 crores had been incurred on the project till June 1994.

Thus, the project under execution since May 1986 based on ASR of 1982 for meeting the operational and training commitments of the Air Force was yet to be completed even after a lapse of eight years of its sanction.

Accepting the facts, the Ministry stated in October 1994 that in the light of design data generated during development, the ASR was revised in November 1993 and weapon would be proved as per revised ASR. It was also stated that based on the revised ASR and critical design review of the project, a three phase development programme had been suggested to Air HQ in February 1994 and further line of action would be decided after receipt of comments from Air HQ which were awaited (October 1994). The fact, however, remains that despite an investment of Rs 1.58 crores, the laboratory failed to develop weapon 'Z' within the given time frame and the weapon has still to be proved as per the revised ASR.

34. Delay in fabrication and supply of a target simulator

In order to train their sonar and underwater operators, Naval HQ in September 1983 projected necessity for development and fabrication of versatile acoustic target (VAT) simulator operating over a wide range of frequencies covering sonar and weapon applications. The VAT was to be used in lieu of submarines, the use of which for training and exercises was not considered a viable option due to high operating costs and risk to the submarines.

The Ministry sanctioned the work in January 1985 to a Naval Research and Development Laboratory to fabricate and supply 12 VATs to the Navy by January 1988 at a cost of Rs 92.50 lakhs.

The prototype had been fabricated and trials completed by October 1987. However, due to difficulty in locating production agencies and modifications necessitated during trials, the project was extended several times and finally upto April 1993. By 1990-91, a sum of Rs 29.34 lakhs had been spent and the bulk of the expenditure (Rs 62.27 lakhs) was incurred in the years 1991-92 and 1993-94 after the production agencies supplied the VATs. Ten VATs were fabricated by the laboratory by April 1993 at a cost of Rs 91.61 lakhs as against 12 VATs envisaged and these too were yet to be handed over to the users (November 1994). In the absence of the VAT, the Navy continued to train their operators by providing real targets in terms of ships and submarines.

The Ministry stated in November 1994 that the delay in completion of the project due to non-availability of foreign exchange during 1988-90 and time taken for completion of trials. It was also stated that the VATs were expected to be handed over to the users in October 1994. The reply is not tenable since foreign exchange crunch was felt during 1988-90 whereas the project was scheduled for completion in 1987-88. Further, despite completion of fabrication of the VATs in April 1993, these could not be handed over to the users till November 1994 as these had to be subjected to further modifications.

Thus, the benefits of the project, completed at a cost of Rs 91.61 lakhs and after a delay of over five years were yet to trickle down to the users and the Navy had perforce to adopt the unviable option of providing real targets for training which was expensive and risky.

35. Irregular expenditure

In January 1981, Ministry of Defence revised the procedure for grant of loan to State Governments towards capital cost of water supply schemes, proportionate to the benefits derived from such schemes. According to the revised procedure, on request of a State Government, loan assistance was to be granted by the Ministry in consultation with Ministry of Finance. The procedure did not contemplate payment of non-refundable/non-adjustable capital contribution to Municipalities.

In September 1990, a work centre of a defence research and development project at station 'A' requested project authorities for approval of advance payment of Rs 1.25 crores to the Municipality for meeting its future requirement of water of five lakh gallons per day. The Ministry sanctioned Rs one crore in January 1991 to the Municipality as non-refundable/non-adjustable capital contribution for drawing four lakh gallons of water per day, eventhough such a sanction was not within the delegated powers of the Ministry. In March 1991, an agreement was signed between the project authorities and the Municipality and Rs one crore was paid to the latter in March 1991 as non-refundable/non-adjustable payment.

Ministry stated in October 1994 that the payment demanded by the Municipality was made on the similar lines on which lumpsum contributions/grants-in-aid were payable to Cantonment Boards. The Ministry also added that the water supply scheme was completed in August 1994 but the production unit at the work centre for which the water was

required was expected to be ready only by 1997. The contention of the Ministry regarding incurring of expenditure by attributing similarity to payments to Cantonment Boards is not tenable since payments to Cantonment Boards are made after making specific provision in the Defence budget for such payments to non-government bodies in the form of grants-in-aid. The payment of Rupees one crore to the Municipality was irregular as it was not covered by the powers delegated to the Ministry.

New Delhi
Dated the

30 MAR 1995



(K.S.MENON)
Principal Director of Audit,
Air Force and Navy

Countersigned

New Delhi
Dated the

25 APR 1995

25 APR 1995



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