REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA

FOR THE YEAR ENDED 31 MARCH 1991
NO. 9 OF 1992

UNION GOVERNMENT
(DEFENCE SERVICES - AIR FORCE AND NAVY)

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CHAPTER V

RESEARCH AND DEVELOPMENT ORGANISATION

PREFATORY REMARKS

This Report for the year ended 31 March 1991 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 and Navy including Research and Development.

2. The Report includes, inter-alia, reviews on :

Air Force

(a) Design and development of Advanced Light Helicopters
(b) Aircraft and Systems Testing Establishment

Navy

(a) Computerisation in the Navy
(b) Execution of a Naval project
(c) Naval Training Establishment

3. The cases mentioned in this Report are among those which came to notice in the course of audit during the year 1990-91 and early part of 1991-92 as well as those which came to notice in earlier years but could not be dealt with in the previous Reports.

OVERVIEW

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

I. Design and development of advanced light helicopter

Development and manufacture of an advanced technology multirole light helicopter (ALH) which was mooted as early as in 1970 to succeed Cheetah and Chetak helicopters and whose induction was to commence from 1981-82 is still at the design stage even after a lapse of over 20 years. The ALH being developed by a PSU was found unsuitable by the users for the intended multirole requirements. This led to the decision to develop only a general purpose version of the ALH. This change in project perception defeated the original purpose of developing a multirole ALH. Thereafter the Indian Air Force (IAF) was to formulate a fresh ASR to develop an attack version of the ALH, work for which had yet to commence. The overall delay in the availability of ALH, particularly with attack role capability, apart from denying a vital weapon system to IAF, led to the continued deployment of available helicopters for roles for which they were not designed. Further, the ten-year collaboration with the foreign collaborator expired in September 1980 by which time even the design parameters of the ALH had not been finalised. The second collaboration agreement was concluded only in July 1984 after nearly four years of expiry of the first agreement. This resulted in revenue expenditure of Rs.7.56 crores incurred under the first agreement being rendered largely redundant.

Tardy progress of the project also resulted in cost overrun of Rs.224.54 crores during the period from 1976 to 1990.

(Paragraph 5)

II. Aircraft and Systems Testing Establishment

A tracking and analysis equipment required to evaluate a weapon system was contracted with a foreign firm whose offer was rejected initially by the technical committee as it did not meet the operational requirements. The equipment imported from the firm at a cost of Rs.2.60 crores in 1985 could not be put to use ever since its receipt due to its unserviceability. No action against the defaulting supplier could be taken despite a clear provision in the contract, since certificate of satisfactory

completion of all trials including installation had been issued and payments released in full. Due to the unserviceability of the equipment, a centre created in December 1985 at a non-recurring expenditure of Rs.14 lakhs and a recurring annual expenditure of Rs.3 lakhs could not perform its assigned tasks.

Delay in positioning of necessary infrastructure affected the helicopter test pilot courses which had consequently to be conducted with a reduced intake of 50 per cent and with diluted norms. There was also delay in commissioning of the software support centre at the establishment. Even after commissioning of the centre at a cost of Rs.74.68 lakhs, its objectives could not be met due to lack of technical know-how, documentation and trained manpower.

(Paragraph 6)

III. Impact of wrong acquisition of land

An investment of Rs.12.99 lakhs made in the acquisition of land in 1986 and erection of security lighting/fencing thereon at a cost of Rs.3.87 lakhs could not serve the intended purpose as the land acquired was not in alignment with the runway of the airfield. Equipment costing Rs.1.35 lakhs procured a decade back could not also be installed.

(Paragraph 8)

IV. Extra expenditure on procurement of modification kits for an aircraft

Delays and piecemeal procurement of mod-kits resulted in avoidable expenditure of Rs.33.94 lakhs in foreign exchange. Besides, additional expenditure of Rs.1.24 crores had to be incurred on account of overhaul of engines to pre-mod standard due to non-availability of sufficient mod-kits.

(Paragraph 10)

V. Procurement of electronic warfare system

Acceptance of an offer of a firm for procurement of an equipment considered essential for operational effectiveness of a frontline aircraft, when another less expensive but equally acceptable offer of another firm was available led to the procurement of two types of the same equipment from two firms resulting in extra expenditure of Rs.6.16 crores. There were also delays in the integration of the equipment which left the aircraft without this vital system for a considerable period of time.

(Paragraph 11)

VI. Unsuccessful modification on aircraft

Inadequate technical appreciation resulted in the unsuccessful modification of the system in an aircraft which led to redundancy of material to the extent of Rs.82.29 lakhs. Besides, the IAF had to continue with pre-modified systems which were considered unsatisfactory and operationally deficient.

(Paragraph 16)

VII. Delays leading to avoidable payment

The delay in supplying the central section forging for an aircraft despite its availability since May 1980 coupled with the delay in issue of sanction for their fitment resulted in grounding of aircraft for over five years as well as additional expenditure of Rs.19.76 lakhs.

(Paragraph 17)

VIII. Computerisation in the Navy

Investment of Rs.5.31 crores was made on computer systems in pursuance of a 10-year computerisation plan formulated by the Navy in 1980 for installing networked computer systems for use as an aid to the management. It was largely infructuous as hardware and software acquired were either unsuitable or inadequate. Two hundred and thirty two personal computers (PC) costing Rs.1.61 crores were acquired by the Navy between 1988 and 1990 without undertaking any feasibility studies. Further, a computer system costing Rs.1.51 crores acquired from a PSU could not be put to its intended use as the hardware supplied was unsuitable for implementing the application software.

(Paragraph 23)

IX. Execution of a Naval project

A Naval project sanctioned in 1968 for the creation of facilities for the repair and maintenance of certain Naval ships by 1978 is now expected to be completed in its entirety only in 1992. The delay in completion of the project was due to inadequate analysis of soil data and frequent changes in the scope of work effected during implementation. This resulted in escalation of project cost by Rs.66.41 crores. Delay in completion of workshop facilities also resulted in off-loading of work to trade to the extent of Rs.67.93 lakhs. Due to sinking of floors, the need for suspended flooring to the existing workshop buildings as well as in future construction though accepted as early as in February 1982 was yet to be provided for. This was likely to affect not only production in the dockyard, but also result in further escalation in the cost of the project. Gas

Turbine (GT) overhaul facilities set up for certain class of ships at a cost of Rs.18.25 crores were being utilised only to the extent of 50 per cent. Such facilities required to be set up for another class of ships by 1985 are yet to be completed and as a result the GTs of these ships had to be overhauled abroad at a cost of Rs.7.20 crores. Failure of the project authorities in adhering to the instructions of the State Electricity Board and non-acceptance of its offer for providing a 132 KV sub-station and executing the work departmentally, resulted in escalation of Rs.1.28 crores in completion cost besides payment of Rs.16.05 lakhs towards additional surcharge.

(Paragraph 24)

X. Naval Training Establishment

In INS Valsura, the premier training establishment for training service and civilian personnel of Indian Navy in electrical, electronics and allied subjects, there was shortage of officer instructors to the extent of 38.5 per cent which had serious repercussions on the quality of training. Against Rs.1.62 crores sanctioned for augmenting training facilities during 1985-90, only Rs.0.32 crore was spent upto February 1991. Two equipment acquired at a cost of Rs.94.25 lakhs could not be used due to lack of proper planning and timely action.

(Paragraph 25)

XI. Delay in setting up of an essential training facility

Although the need for procuring a vital training equipment to impart tactical training on ships, submarines and maritime aircraft was felt in 1980, it was yet to be procured and established even after a decade due to administrative delays. The cost of procurement has since escalated from Rs.6.69 crores in July 1984 to Rs.19.52 crores in October 1991. The building completed at a cost of Rs.4.01 crores in 1990 to house the system remains unutilised. Meanwhile, training arrangements continue to be handicapped and interim measures have been adopted entailing extra expenditure.

(Paragraph 28)

XII. Training of divers

A dive support vessel dry chartered by the Navy from a Public Sector Undertaking at a cost of Rs.10.35 crores for three years in May 1989 to serve as an interim submarine rescue vessel could not be fully exploited due to the non-availability of training crew. By the time the crew were trained, over 55 per cent of its charter period costing

Rs.5.75 crores had already expired. Delay in conclusion of contract for training of the crew led to escalation in training cost from Rs.16.41 lakhs to Rs.44.65 lakhs.

(Paragraph 29)

XIII. Non-utilisation of a radar

A radar procured at a cost of Rs.41.50 lakhs in 1977 was not installed in ships for the last 13 years. It has finally been decided to install it in the dockyard at a station to create minimum essential facilities for quick serviceability checks of certain critical components of radars of ships based at that station. But its installation at the station is also unlikely to be of much use as the radars fitted on the ships had already outlived their useful electronic life.

(Paragraph 34)

XIV. Injudicious disposal of stores

626.4 kgs of silver brazing alloy procured in disregard of the prescribed provisioning norms were disposed off without making a realistic assessment of the prevailing market price. This resulted in a loss of Rs.18.80 lakhs.

(Paragraph 37)

XV. Delay in setting up of aircraft repair and maintenance facilities

Work services for maintenance facilities sanctioned by Government in 1983 for an aircraft inducted in 1982 are still to be completed. The cost and time overrun amounted to Rs.3.25 crores and 36 months respectively. Non-establishment of the facility resulted in incurring of an expenditure of Rs.7.32 crores in foreign exchange on the repair and overhaul of the components abroad during 1984-90. The facilities being created would, however, be adequate for only the initial batch of aircraft.

(Paragraph 39)

XVI. Delay in creation of an essential facility

An interim facility was envisaged to be completed by 1987 pending setting up of a permanent range for measurement of under water noise produced by submarines. Although the necessary equipment had been fabricated as early as in March 1988, the requisite testing facilities were provided by the Navy after a delay of over 3 years. The facility considered essential for the submarine fleet of the Navy has not yet been actually provided despite incurring an expenditure of Rs.24.83 lakhs.

(Paragraph 43)

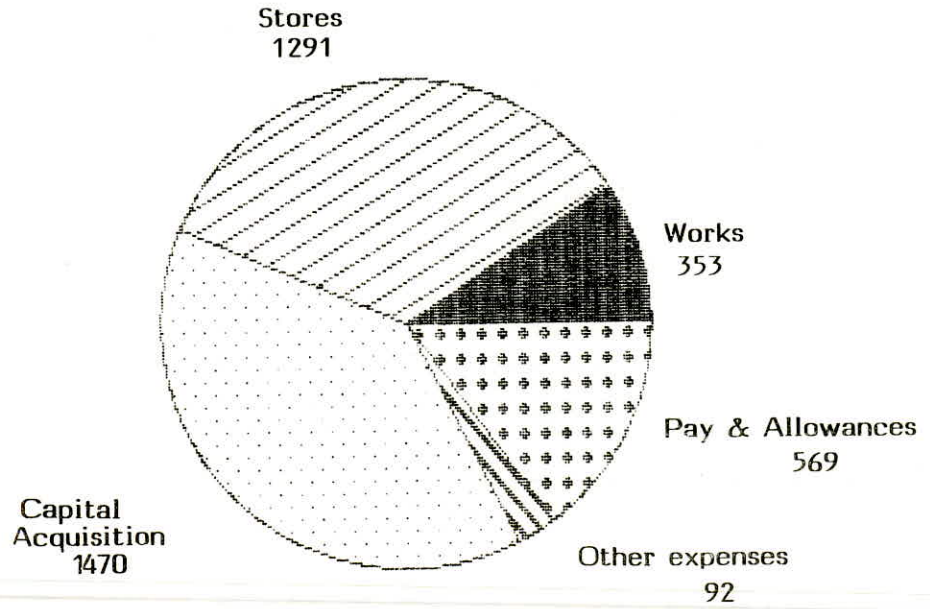
CHAPTER – I

FINANCIAL ASPECTS

1. Financial aspects

1.1 During the year 1990-91, the share of expenditure on the Air Force and the Navy was 23.60 and 12.45 per cent respectively of the total defence expenditure of Rs.15996 crores. The actual expenditure of Rs.3775 crores on the Air Force during the year was 11.52 per cent higher than the expenditure in the previous year. In respect of the Navy, the actual expenditure at Rs.1991 crores remained almost at the same level as in the previous year.

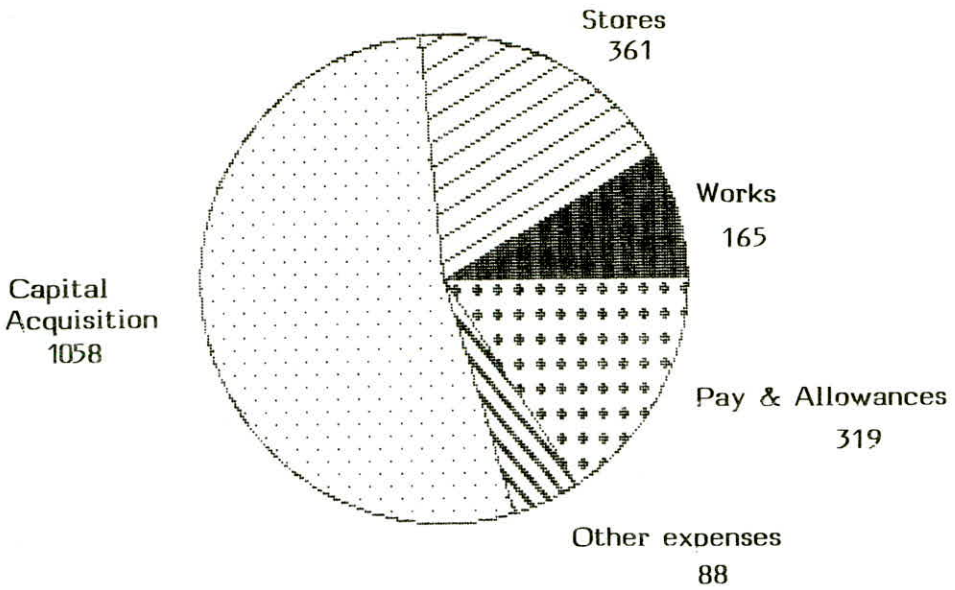
1.2 The proportion of expenditure in respect of the Air Force on capital acquisition, stores, pay and allowances and civil works for the year 1990-91 was as under:



(Figures in crores of Rupees)

1.3 Proportion of expenditure on similar heads in

respect of the Navy was as under:



(Figures in crores of Rupees)

Indian Air Force, continued to implement progressively its programmes of modernisation and re-equipment of its inventory through import and indigenous efforts. Additional aircraft were inducted into its fleet and the helicopter strength augmented. The medium lift capability of the Air Force was also strengthened with the induction of new aircraft.

The growth of the Indian Navy over the recent years, has been characterised by increasing indigenisation of activities like ship construction including development of indigenous design capabilities for sophisticated weapon system and creation of maintenance facilities. Recently, Navy has added to its fleet indigenously built patrol vessels and missiles corvettes. Considerable emphasis was also laid on computerisation, control and management information system.

1.4 Besides, Defence Research and Development Organisation is executing important projects pertaining to both the Air Force and Navy. Projects such as development of light combat aircraft, advanced light helicopter, pilotless target aircraft, sonars and torpedoes for submarines were under various stages of development.

1.5 A test check in audit of the transactions and review of some selected projects and other activities of the Air Force and the Navy during the year, however, revealed instances of injudicious planning, delay in decision making, infructuous expenditure, time and cost overruns avoidable procurement of equipment as well as their non-utilisation etc., the details of which have been indicated in this Report.

CHAPTER – II

MINISTRY OF DEFENCE

2. Non-revision of recovery rates

In accordance with a contract signed with the foreign manufacturer of an aircraft, all modifications accepted by them for the safety of the aircraft were to be carried out by them free of cost. The modification kits were also to be provided free of cost.

A team of specialists from the manufacturers visited India between June and August 1985 for this purpose. Another team from the manufacturers visited India in April 1986 and submitted a draft agreement containing terms and conditions of their deputation which included accepting the liability of food expenses beyond Rs.11 per day per individual by the Indian Air Force (IAF).

Air Headquarters (HQ) observed in May 1986 that recovery of food expenses only upto Rs.11 per day as provided in the draft agreement was unrealistic and suggested enhancement of these rates to somewhere between Rs.50 to Rs.80 per day. The recovery rates of Rs.11 per day were fixed in early 1960s.

Accordingly, the matter was taken up with the manufacturers who accepted (July 1986) food expenses upto Rs.20 per day as against Rs.80 suggested. After further negotiations, the manufacturers agreed in August 1986 to pay food expenses upto Rs.25 per day. This was not progressed as the Department of Economic Affairs had asked the Defence Ministry (August 1986) to work out the financial implication regarding the general question of revision of the amount. No decision had been arrived at (December 1991). The rates were not revised and continued to be recovered at the rate of Rs.11 per day with the excess being met by the IAF.

The Ministry stated in December 1991 that reasonable food expenses were considered to be between Rs.50 and Rs.80 per day and, therefore, it was not proper to accept the offer of Rs.25 per day suggested by the manufacturers as it would have been detrimental to the rates to be finalised for the future. The fact remained that non-revision of rates resulted in a loss of Rs.21 lakhs between 1986-91 on account of food expenses of specialists for different kinds of aircraft.

3. Over payment due to inadequate pricing procedure

Pricing of products supplied or services normally rendered by a public sector undertaking (PSU) to the Air Force (IAF) is done on fixed cost quotations (FCQ) basis for majority of the items. In July 1976, Government prescribed a procedure for finalisation of price proposals of the PSU. The procedure was revised in July 1988, according to which the PSU was required to furnish FCQ every year to the Ministry and to Air Headquarters (HQ) latest by May duly supported with actual manhours utilised on the jobs during the previous year and most reasonable estimates of manhours for the year to which the FCQ relates. The divisional balance sheets duly audited by the auditors of the PSU were also to be made available to Air HQ. The order specified that in cases where the estimates varied by more than 10 per cent from actuals of previous years, the PSU would explain the reasons and in cases of doubts regarding the reasonableness of the figures furnished, internal or statutory auditors would be asked to verify the figures.

A negotiating team from Air HQ visits various divisions of the PSU every year and preliminary discussions are held between the representatives of Air HQ and the PSU. Representatives of the internal audit are also associated after the issue of revised procedure. Normally, the manhours quoted for any financial year are expected to be less than those actually utilised during the previous year due to the experience gained on a job.

During the audit of a project relating to the manufacture of an aircraft, however, it was noticed that manhours quoted by the PSU in their FCQ proposals of 1982 to 1987 abnormally exceeded the manhours booked during the previous years. The matter was reported to the Ministry by internal audit in September 1987. The Ministry examined the issue of repeated overcharging of manhours by the PSU and found that the PSU had been deliberately charging for more manhours and their quotations for succeeding years were higher by over 40 per cent as compared to the actual manhours booked for previous years. As a consequence, the PSU had been paid an extra amount of Rs.20 crores during the period 1982 to 1987 which would have to be recovered. Admitting the fact that the PSU had quoted higher manhours, the Ministry stated in September 1991 that the norms for finalisation of FCQs applicable during 1982 to 1987 were prescribed in July 1976 and were distinct from those prescribed in July 1988. The fact remains that due to deliberate inflation of manhours, the

PSU had been paid an extra amount of Rs.20 crores.

The Ministry added that a decision had been taken not to recover the amount on the ground that FCQ once finalised should not be reopened as it would negate the spirit behind the system of finalisation of the FCQs. Ministry's reply lacks rationale as PSU had got the manhours for FCQs approved by inflating them. Since the Ministry had also reached the same conclusion, the amount would require recovery from the PSU or in the alternative written off as loss to Government under the order of the competent authority which has not been done.

4. Acquisition of land for a water supply scheme

In 1954, a decision was taken to initiate proceedings for permanent acquisition of land measuring 6.18 acres requisitioned in 1942 for a water supply scheme of the Navy. The cost of acquisition ascertained as Rs.500 per acre from the District Collector was considered reasonable by Headquarters (HQ) Southern Command. In January 1963, the Director of Military Lands and Cantonments (DMLC) directed HQ, Southern Command to intimate the reasonableness of the rate indicating the market value at the time of requisition together with relevant sale statistics. The action taken during the period from 1956 to January 1963 could not be ascertained by Audit as the concerned papers were stated to be not traceable. Since the subject matter was wrongly referred as land for a Boys Training Establishment, the local Defence Estates authorities/users could not take any action till it was clarified in July 1963 that the case related to the water supply scheme. In April 1964 the Military Estates Officer (MEO) indicated that according to the data furnished by the District Collector the cost of acquisition would be Rs.626 per acre. In addition, cost of 273 trees on the land at Rs.5 per tree also would have to be paid. Despite the directive of DMLC and a reminder, the MEO did not verify either the reasonableness of the rates quoted by the District Collector by collecting sale statistics, or the existence of the trees at the time of requisition and whether initial compensation had been paid for them.

In February 1966, the number of trees was revised to 879 and the cost of land to Rs.938 per acre by the District Collector. The MEO again failed to verify the sale statistics or the reasonableness of the rates indicated by the District Collector till 1967. HQ Southern Command proposed in July 1967 to DMLC, acceptance of the rates assessed by the District Collector for obtaining sanction. In July 1968 sanction was issued by the Ministry for the acquisition of the land measuring 6.18 acres at a

cost of Rs.0.09 lakh.

On issue of the sanction, a demand was placed on the District Collector in September 1968 for initiation of acquisition proceedings under the Requisitioning and Acquisition of Immovable Properties (RAIP) Act, 1952. The civil authorities were unable to proceed with the acquisition as by that time (1968) the land had been classified as State Government land and some cross petitions had been filed by the owners.

While the acquisition was held up, the MEO informed Director General, Defence Estate (DGDE) in October 1978 that during a resurvey in 1976 it had been found that only 5.94 acres of requisitioned land was actually held against 6.18 acres indicated by him earlier. In September 1985, the MEO(now DEO) informed DGDE that the actual area of requisitioned land occupied was 5.66 acres and not 5.94 acres as had been intimated in 1978. In June 1986,the DEO added that 1.98 acres of private land neither requisitioned nor hired was also under the occupation of the services. The Defence authorities rendering annual certificate (under the regulations) of requisitioned lands held under their charge after verifying the boundaries could not assess the actual area of land in their custody for about four decades. Even for obtaining Government sanction in 1968, the MEO had not certified the correct position. The Ministry, however, stated in January 1992 that the information was given as reported by the civil authorities. Out of a total of 7.64 acres of land required to be acquired, 3.08 acres of land fell under the purview of the Urban Land (Ceiling and Regulations) Act, 1976 and was under dispute. Consequently, in March 1987, only 4.56 acres was acquired by the District Collector by issue of notification under the RAIP Act 1952 and an amount of Rs.22.07 lakhs was paid as compensation as assessed by the District Collector, under a revised sanction issued by the Ministry in February 1989. It was intimated by the DEO, in 1988 that the cost of acquisition of the total area of 7.64 acres would be Rs.36.98 lakhs. The cost was likely to escalate further by the time of actual acquisition of the land.

In addition to the cost of land, recurring compensation totalling Rs.1.67 lakhs had also been paid from 1971 to the date of takeover of the land in March 1987. The details of expenditure incurred from 1942 to 1971 were stated to be not available.

To sum up;

- the Defence Estate authorities were totally unaware of the land under their requisition/ occupation, the records of which they are mandatorily required to maintain;

- they certified the extent of land incorrectly even when Government sanction was sought;

- even when errors were observed in 1976 and 1978, no attempt was made to recheck the extent of land;

- the certificate required to be rendered by the Defence authorities regarding the extent of requisitioned land held continued to be given incorrectly; and

- as a result of above, requisitioned land which was available for permanent acquisition at a cost of Rs.0.02 lakh in mid 1950s, was actually acquired at a cost of Rs.22.07 lakhs in 1987. The final cost of the land proposed to be acquired was stated to be Rs.36.98 lakhs, which was also likely to escalate.

The Ministry stated in January 1992 that steps would be taken to get occupation of requisitioned land as far as possible and that suitable instructions would be issued in order to obviate chances of incidents of the above nature occurring in future.

CHAPTER – III

AIR FORCE

REVIEWS

5. Design and development of advanced light helicopter

5.1 Introduction

Government signed in September 1970, a ten year collaboration agreement with foreign firm 'A' for the design and development of an Armed Light Helicopter (ArLH) as a successor to the Cheetah and Chetak helicopters in the 1980s. The project was assigned to a public sector undertaking (PSU) for implementation. The Air Force (IAF) desired the ArLH to be inducted into service in 1981-82.

The delay in sanction and execution of the project as also redundancies as a result of change over from single to twin-engine configuration were commented upon in Paragraph 8 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services) for the year 1974-75 and paragraph 6 of the Report for the year 1979-80. The approach of Government towards project implementation was also commented upon by the Public Accounts Committee (1981-82) in their seventy sixth report of Seventh Lok Sabha. Referring to further delay caused by the decision to change over from single engine to twin-engine configuration, the Committee stated that it was unfortunate that a technological gap was allowed to develop and the Ministry failed to incorporate the advanced technology already available. Deprecating this lacuna in defence planning with reference to vital projects of this nature, the Committee suggested that active steps should be taken to overcome this deficiency.

5.2 Scope of Audit

Further progress of the project with reference to the requirements projected by the Services as also the performance of collaboration agreements; the current status of the project and impact of delays was reviewed in audit during 1990-91.

5.3 Highlights

- **Despite the fact that relative merits of twin-engine helicopters were known in early 1977, sanction to switch over from single to twin-engine helicopter was issued in January 1979 after a delay of 20 months. The agreement for**

single-engine configuration with firm 'A' was allowed to be operative until it expired in September 1980. It was not foreclosed even after change in the configuration by invoking provisions to this effect in the agreement resulting in an avoidable payment of Rs.10.67 lakhs to the firm from 1977 onwards.

- Ten-year collaboration agreement with firm 'A' expired in September 1980 by which time even the design parameters of the twin-engine helicopter had not been decided. The second collaboration agreement was concluded only in July 1984 after a lapse of nearly four years of the expiry of the first agreement. This resulted in revenue expenditure of Rs.7.56 crores incurred on pay and allowances of technicians and acquiring of tools under the ten-year agreement including collaboration fee amounting to Rs.61.95 lakhs paid to firm 'A' being rendered largely redundant.

- The development and manufacture of an advanced technology multirole ALH which was mooted as early as in 1970 to succeed Cheetah and Chetak helicopters is yet to take off even after a lapse of over 20 years. The ALH presently under development at the PSU was found unsuitable for the intended multirole requirements due to its size and weight factors and led to the decision of developing only the utility version of the ALH. This deviation in project perception completely defeated the very purpose of going in for a single design multirole ALH. The overall delay in the availability of the ALH, particularly with attack role capability, apart from denying a suitable weapon system to IAF, led to the continued deployment of the available helicopters for roles for which they were not designed.

- Owing to the unsuitability of the ALH being developed by the PSU in attack role, IAF had to formulate a fresh ASR to develop an attack version of the ALH. However, no work has yet been started.

- Tardy progress of the project has resulted in abnormal cost and time overrun. The cost of design and development of ALH which was envisaged as Rs.27.36 crores in 1976 and revised to Rs.67.87 crores in 1984 went upto Rs.251.90 crores in 1990. The cost of ALH originally estimated at Rs.35 lakhs in 1971 and revised to Rs.70 lakhs in 1979 would now cost Rs.9 crores. Also, the induction of ALH which was to commence from 1981-82 and revised to 1986-87

is now expected to commence only after 1994-95 and that too with diluted utility role.

- Despite clear provisions made in the agreement that payment to firm 'B' would be released only on completion of respective milestones, payments in respect of three additional milestones (upto tenth) were made without their physical completion resulting in overpayment of Rs.29.18 crores.

- Delay in development and making available of the ALH led the Navy to stretch the existing resources with them thereby accepting certain degree of reduction in the performance level. As a result of the non-availability of ALH as per the expected schedule, Army was unable to deploy the helicopters in all the needy formations.

5.4 Formulation of revised ASR

The change in concept from single to twin-engine helicopter necessitated the formulation of a revised Air Staff Requirement (ASR) in May 1979, after eight years of the first ASR. The revised ASR envisaged a twin-engine multirole helicopter with armament, weapon carrying and firing capability. This single design helicopter with different standard of equipment fit for attack, utility, casualty evacuation, air observation post (AOP) and other roles including training and with capacity for carrying two plus six passengers was to be designed, developed and manufactured by the PSU. In addition, a naval version was also required for use by the Indian Navy (Navy). The helicopter was renamed Advance Light Helicopter (ALH) and was planned to be inducted in service by 1986-87. The unit price of the ALH was estimated at around Rs.70 lakhs for attack version and Rs.65 lakhs for utility version.

5.5 Requirement of the Army

Even before the issue of the revised ASR for the twin-engine configuration, Army HQ had pointed out (October 1978) that the multipurpose helicopter as proposed had been allotted too many roles. On detailed consideration and after examining the prototype that was being developed at the PSU, they were of the view that it would not meet their tactical requirement in the AOP role. Subsequently in November 1979, the Army HQ stated that they had three different types of requirements for AOP, assault/attack role and airlifting of troops and material. While for the AOP role a small and easily manoeuvrable light helicopter was required, for the other two roles they required larger helicopters for

airlifting of troops and material. According to them, Cheetah helicopter adequately fulfilled the AOP role and hence it was decided to continue with it for AOP role. In April 1980, Army HQ emphasised that they required at least two types of helicopters, one for attack role and the other for air assault and logistic support role. In the attack version the requirement was for two pilots plus weapons pay load and for the air assault/logistics support version two pilots plus ten combat troops.

5.6 Requirement of the Air Force

The ALH as conceived by the Air HQ was a small, light weight, fast and highly manoeuvrable multirole helicopter. It was pointed out by Air HQ that if the capacity of the ALH was to be enhanced as required by the Army, it would become too heavy causing unacceptable loss in performance. The PSU, however, informed in May 1980 that it would be able to accommodate and satisfy the Army's requirements, meeting at the same time the ASR. This was not found feasible by the IAF who opined that if they were to accept the ALH as envisaged by the PSU, they would have to use a vulnerable heavy and slow helicopter for the anti-tank role in place of a light weight, high speed manoeuvrable one. According to them, with a larger and heavier helicopter which would be expensive to own and operate, it was not a viable proposition to assign to it the training role stipulated in the ASR and they would have to induct a smaller helicopter for training requirements. It was, therefore, the considered opinion of the Air HQ that the ALH as proposed by the PSU would not meet the ASR.

5.7 Design and development of twin-engine ALH

The ALH that was being developed under ten year collaboration agreement of September 1970 was a single-engine helicopter. However, due to the experience gained in operations and with the availability of data and the relative merits of the twin-engine helicopter, Air HQ proposed in August 1977 a change from single to twin-engine configuration. Approval of the Cabinet Committee on Political Affairs was obtained in December 1978 and sanction to this effect was issued in January 1979. The revised ASR was issued in May 1979. To cater for the needs of the twin-engine configuration, it was decided to enter into a fresh consultancy agreement. Proposals were received from firms 'A', 'B' and 'C'. The offer of firm 'C' was not pursued as it involved manufacture of an existing helicopter under licence. Of the remaining two proposals, firm 'B' was favoured based on technical considerations even though it was costlier. An agreement at a total cost of Rs.36.04

crores was signed with firm 'B' in July 1984 (subsequently enhanced in December 1985 to Rs.39.19 crores), after a lapse of nearly four years of the expiry of the first collaboration agreement. Thus, even though the relative merits of twin-engine helicopter were known to IAF in 1977 itself, it took seven years for entering into an agreement for their development. As a result of the change over to twin-engine configuration and entering into an agreement for its development, a revenue expenditure of Rs.7.56 crores on account of pay and allowances of technicians and acquiring of tools, incurred in respect of the earlier ten-year collaboration agreement for the design, development and production of a single-engine helicopter was rendered largely redundant. This was inclusive of the payment of Rs.61.95 lakhs made to foreign firm 'A' as technical assistance fees. The Ministry stated in January 1992 that revenue expenditure of Rs.7.56 crores was not wholly infructuous as helicopter design and development was attempted for the first time and the earlier project resulted in acquiring certain amount of experience in the basic concepts of helicopter design. It was, however, agreed that tools worth Rs.20.74 lakhs were specific for the single-engine helicopter and could not be used for twin-engine configuration. The agreement with firm 'A' was not foreclosed and was allowed to continue till its expiry in September 1980 despite specific provisions in the agreement for its foreclosure resulting in an avoidable payment of Rs.10.67 lakhs to the firm from 1977 onwards. The Ministry stated in December 1990 that the agreement with firm 'A' was not terminated in 1977 as their offer was also being considered for the twin-engine configuration. However, the offer could have been pursued with firm 'A' even after foreclosing the existing agreement by invoking the provisions therein.

The agreement with the foreign firm 'B' provided for the design, development and establishment of production facilities within seven years by the PSU. There were 13 milestones to be achieved within this span of seven years. The agreement also provided for the production of four prototype and one ground test vehicle (GTV). The prototype was scheduled to fly in November 1988 and production helicopter expected to enter into service by 1991.

In September 1984, Government issued a fresh sanction for implementation of twin-engine ALH in collaboration with firm 'B' which interalia stipulated incurring of the following expenditure:

- capital expenditure upto a limit of Rs.19.44 crores by the PSU which included actual expenditure of Rs.8.05 crores already incurred.

- design and development expenditure upto a limit of Rs.67.87 crores in addition to the expenditure of Rs.7.56 crores already incurred.

5.8 Unsuitability of ALH for multi-role requirements

Notwithstanding the disagreement of Air Force on the conceptual change in the design of the ALH prior to the conclusion of the agreement with firm 'B' in July 1984, the configuration was changed to two plus ten troops from two plus six troops stipulated in the ASR on the insistence of the Army. Further, on the assertion of the Army that Cheetah helicopter adequately fulfilled the requirement of AOP role, the development of the ALH for this role was dispensed with. The ASR, however, was not amended.

In September 1986, the Army pointed out that ALH under development would be sub-optimal in the attack role because of its increased weight and volume. The IAF viewed that the ALH would be unsuitable in the attack role owing to its size, weight and limited manouvrability. On these being pointed out, the PSU stated that it would be possible to develop an attack variant of the ALH as a follow on programme within two years after the completion of design of ALH. It was, therefore, decided to develop the utility version of helicopter first, with weapon system integration (WSI) as a separate follow on programme. However, Government is yet to accord sanction for the WSI. According to the Ministry, the programme of WSI would be taken up at an appropriate time. The Ministry stated (January 1992) that as and when the first prototype carries out successful flight trials, the subject would be reviewed.

In March 1988, in a meeting held to consider the requirements of the three services, IAF pointed out that apart from the fact that the attack capability of the ALH was only sub-optimal due to its vulnerability on account of its size, it had also limitations in its capacity to carry adequate number of missiles. They added that as no work on WSI had yet been started, the attack variant of the ALH would be ready only by 1994-95 by which time it would be too late for them to use it and they could not wait till that time. Hence, the IAF and the Army had no use for the ALH as an armed helicopter. IAF also viewed that spending of scarce resources towards WSI on the ALH, whose size was sub-optimal for the attack role, would be a waste of resources and infructuous. They suggested that if a successor to the ALH could be designed as an agile Light At-

tack Helicopter (LAH), it would be acceptable to them. The Navy who had required ALH for specific role also found it unsuitable for that role. They had even suggested that the requirement of Navy should be dropped as the ALH would not meet the requirement in terms of Anti Submarine Warfare (ASW) capability. Thus, the ALH which was being developed from 1970 onwards for meeting the multi-role requirements of the three services including attack, AOP and training would now be used only for utility roles.

The Ministry, while conceding that ALH would be sub-optimal as a dedicated attack helicopter stated (December 1990) that it would still be multirole helicopter having performance parameters required for general attack and utility purposes. This is not borne out by the facts as AOP role had already been dispensed with. For attack role, both Army and IAF had expressed that it would not be suitable in the armament role due to its vulnerability and limitations in its capacity to carry adequate number of missiles. IAF had not considered it suitable even for the training role. Further, the Ministry themselves have stated that it would be preferable to develop a LAH for a dedicated attack role. As per latest projections, while the IAF envisaged the ALH to be utilised in utility roles with limited fire power, the Army envisaged it to be utilised primarily in utility roles.

5.9 Light Attack Helicopter

Taking into account the peculiar situation arising out of the inability of the ALH in meeting the attack role requirements, the IAF formulated a fresh ASR for a Light Attack Helicopter in December 1987. Primarily, the helicopter which was estimated to cost Rs.6.5 crores was meant for anti-tank role and IAF wanted it to enter into service by 1988-89. However, the feasibility study carried out by the PSU was still under discussion between Air HQ and the PSU and the work had not yet been started (March 1991).

5.10 Present status of the project

According to schedule prescribed in the collaboration agreement with firm 'B', all the thirteen milestones including prototype delivery to IAF should have been completed by May 1991. However, by March 1991, only GTV construction, pertaining to the seventh milestone which should have actually been over by May 1988, had been completed. Thus, even the twin-engine ALH project is running 34 months behind schedule. The first ALH is expected to be made available by the PSU in 1992-93 and the estimated

cost was assessed at Rs.9 crores including cost of ground servicing, test equipment and spares. But taking into account the delay that has already taken place, the prototype is now likely to be delivered to IAF by March 1994 and production activities could commence only thereafter. This would further inflate the cost. The Ministry attributed the delay mainly to delayed supplies from foreign vendors.

5.11 Cost and time overrun

The cost of design and development of ALH which was originally sanctioned in February 1976 at Rs.27.36 crores and revised to Rs.67.87 crores (FE Rs.46.92 crores) in September 1984 for the twin-engine configuration went upto Rs.251.90 crores (FE Rs.153.46 crores) in January 1990. Of the increase of Rs.184.03 crores over the revised cost estimates of 1984, the Ministry attributed Rs.58.77 crores to price escalation, Rs.53.86 crores to variations in exchange rates, Rs.27.62 crores to change in scope of work and Rs.15.24 crores to cost overrun as a result of slippage of 27 months. The cost of the ALH originally envisaged at Rs.35 lakhs in 1971 and revised to Rs.70 lakhs in May 1979 would now be Rs.9 crores. Also, the production and induction of ALH which was initially expected to commence from 1981-82 and revised to 1986-87 in May 1979 was now likely to commence only after 1994-95 and that too with the diluted utility role as against the multi-role configuration projected throughout. The Ministry stated in December 1990 that while the cost overrun was mainly due to the foreign exchange (FE) fluctuations, price escalation and design changes, the time overrun was occasioned mainly due to problems with vendor's delays in technology absorption.

5.12 Payments

Against the ten-year collaboration agreement with firm 'A', an amount of Rs.61.95 lakhs was paid to them. In respect of the agreement with firm 'B', an amount of Rs.66.37 crores had been paid to the firm till March 1991 covering the amount due upto the tenth milestone.

In respect of the collaboration agreement with firm 'B', payments were to be made on achievement of each of the 13 milestones prescribed in the agreement. The achievement of milestones was to be indicated in documents to be executed by firm 'B' and the PSU and if any extension of time schedule was involved, payment for the milestone was to be made at the end of such extension which in any case was not to exceed 120 days. The cost of the agreement and payment terms were subsequently amended in

December 1985 by the Government which stipulated that the milestone payments were to be made only upon achievement of each of the milestones. The Government also stipulated from time to time that release of payment against each milestone would be made only after documents certifying the achievement of the respective milestone were executed jointly by firm 'B' and the PSU. Despite these provisions, payments upto the tenth milestone were made to firm 'B' even though works upto the seventh milestone only were completed. The overpayment on this account amounted to Rs.29.18 crores.

On this being pointed out by Audit, the Ministry admitted the overpayment and stated that while withholding further payments to the firm, the possibility of linking the payments with actual achievements of the milestones was being examined.

5.13 Impact of delay

The delay in the development of the armed version of ALH, apart from denying a suitable weapon system to the IAF also led to the continued deployment of the available helicopters for the roles for which they were not designed. As far as the Navy was concerned, the requirements that were to be carried out by the ALH were being met by stretching the existing resources with them and thus accepting a certain degree of reduction in the performance level. As regards the Army, they could not deploy the helicopters in all formations requiring them, due to non-availability of adequate number of helicopters. Accepting the facts, the Ministry stated that the delay in the availability of the ALH has led to the continued use of Chetak helicopters for the roles for which they were not designed.

5.14 Monitoring

A steering committee was constituted by the Ministry in June 1976 to review the quarterly progress of the project developement and manufacture of ALH. The committee was to meet at least once in every quarter. In December 1984, the periodicity of the meeting was revised to once in every six months. The details regarding the number of meetings held, issues considered, recommendations made etc. by the committee were not furnished by the Ministry in the absence of which the efficacy of the monitoring mechanism could not be examined in audit.

6. Aircraft and Systems Testing Establishment

6.1 Introduction

Flight testing and evaluation of aircraft, sys-

tems, armaments and major modifications on aircraft pertaining to Indian Air Force (IAF) are carried out by a Testing Establishment (establishment) at station 'B'. The establishment also undertakes training of test pilots and flight test engineers.

6.2 Scope of Audit

The functioning of the establishment with reference to its assigned tasks, the infrastructure provided and achievements with reference to its objective was reviewed in audit during the period between October 1990 and April 1991.

6.3 Organisational set up

The establishment functions through three major wings; the Aviation Wing, the Project Management Group and the Research and Project Wing under a commandant. Functional and administrative control is exercised by Air Headquarters (HQ) while administrative facilities to the establishment are provided by HQ Training Command.

6.4 Highlights

- **The serviceability status of certain aircraft held was poor; even below 50 per cent during the period from 1985-86 to 1990-91, particularly in respect of aircraft 'C', 'D' and 'E'.**

- **For want of sufficient number of volunteers, a flight test engineers' course was conducted with a shortfall of 50 per cent in the intake, resulting in under-utilisation of the facilities created.**

- **Delay in positioning the required infrastructure including fully instrumented helicopters and qualified instructors affected the rotary wing test pilot courses which were conducted with reduced intake of 50 per cent. This resulted in imparting of training with diluted norms.**

- **An amount of Rs.19.94 lakhs payable to the IAF towards training charges was not recovered from a HAL trainee.**

- **A project management group was allowed to continue without any corresponding reduction in the establishment of the group even after the completion of one of the assigned tasks.**

- **A software support centre sanctioned in December 1985 could be commissioned only in December 1989 and that too with deficiencies. Even af-**

ter commissioning and incurring an expenditure of Rs.74.68 lakhs, the centre was unable to meet any of its objectives due to lack of technical know-how, documentation and trained manpower.

- The contract for import of a tracking and analysis equipment was concluded with a firm whose offer was initially rejected by the technical committee as it did not meet the operational requirement. The equipment imported at a cost of Rs.260 lakhs in 1985 for a range, the inescapable necessity of which was felt as early as in 1977, could not be put to use ever since its receipt in May 1985 due to its unserviceability. No action against the defaulting supplier could, however, be taken despite clear provisions in the contract, since certificate of satisfactory completion of all trials including installation had been issued and payments released in full. Due to the unserviceability of the equipment, a centre created in December 1985 to handle the system at a non-recurring expenditure of Rs.14 lakhs and recurring annual expenditure of Rs.3 lakhs could not perform its assigned tasks.

6.5 Aviation Wing

The functions of this wing are carried out mainly by a Flight Test Squadron, a Technical Support Squadron and a Test Pilot School.

6.5.1 Flight Test Squadron

The Flight Test Squadron (FTS) is responsible for carrying out of all flight trials entrusted to the establishment as also evaluating new aircraft of both foreign and indigenous origin. FTS carried out 22 flight trials in 1985, 28 in 1986, 42 in 1987, 33 in 1988, 34 in 1989 and 6 in 1990 (upto March 1990). Majority of the trials pertained to modification carried out by the Defence Research and Development Organisation (DRDO), Hindustan Aeronautics Ltd. (HAL) and Inertial Navigation Attack System Integration Organisation (IIO).

6.5.2 Technical Support Squadron

Technical Support Squadron (TSS) maintains different types of aircraft and associated ground and test equipment allotted to the establishment. This includes the first line and storage maintenance, modification, change of lifed components and rotables and snag rectification.

A unit establishment (UE) of 16 aircraft had

been allotted to the establishment with a total flying task of 2880 hours per annum which included test flying, evaluation and training exercises. The serviceability status of the aircraft ranged from 20.5 to 87.4 per cent and was particularly low (below 50 per cent) during the period from 1985-86 to 1990-91 in respect of aircraft C, D and E. According to the establishment, the low serviceability was due to schedule servicing, rectification, modification and aircraft on ground (AOG). The Ministry stated in February 1992 that because of operational constraints the downtime of the aircraft was high.

6.5.3 Test Pilot School

The Test Pilot School (TPS) started functioning from July 1973 for the training of test pilots in India. The training of experimental test pilots (ETP), however, was started only in 1976. The school conducted two adhoc courses for flight test engineers (FTE) and flight test instrumentation engineers (FTIE) in 1984 and 1985 on a one time basis. However, the regular training of FTE and FTIE started from 1989 onwards. Till 1989, training was imparted only on fixed wing aircraft but with the opening of a separate Rotary Wing Test Pilot School (RWTPS), training on rotary wing aircraft commenced from June 1989.

(a) Training on fixed wing aircraft

TPS conducted eight courses each with a duration of ten and a half months on fixed wing aircraft between 1985-86 and 1989-90 as laid down by the Government. There was, however, a shortfall of 50 per cent in the intake in respect of FTE and FTIE courses conducted in 1985. Air HQ attributed the shortfall to the limited numbers of volunteers for the course. The sanction, however, did not specify that the intake of trainees for the courses would be on the basis of volunteers.

(b) Training on rotary wing aircraft

In September 1988, the Government sanctioned setting up of Rotary Wing Test Pilot School (RWTPS) at a cost of Rs.503 lakhs for imparting training to test pilots and flight test engineers on rotary wing aircraft. The infrastructure required for conducting of courses included instrumented helicopters and qualified instructors. The sanction authorised four fully instrumented helicopters and a flying task of 710 hours per annum to be met out of total flying task of 2880 hours of the establishment. Eight officers (three pilots, four technical and one Admnistrative officer) were also authorised for the

school.

According to the sanction, four courses with a duration of 46 weeks each were to be conducted per year. This included one course with an intake of four for the rotary wing test pilots (RWTP). Although, the courses commenced in June 1989, there was a shortfall to the extent of 50 per cent in the first RWTP course. The shortfall continued to the second RWTP course which commenced in June 1990. The Ministry admitted (February 1992) that the shortfall was due to non-availability of instrumentation items.

It was seen that though the courses commenced in June 1989, full complement of the instructors was never positioned in the school. This was despite the fact that four instructors-designate officers had been deputed abroad, incurring an expenditure of Rs.2.83 lakhs in September/October 1988 to carry out a study and collect materials for conducting the courses. Air HQ stated that qualified instructional staff could not be positioned as one FTE was undergoing training abroad. There was no comment by them on the non-positioning of RWTP and FTIE instructors and other staff required. Though two helicopters 'F' were positioned at the establishment in December 1988 and April 1989, these were subsequently handed over to HAL for auto pilot modification in February and June 1989 respectively. One of these helicopters was received back in October 1989 and the other in February 1991. Two helicopters 'G' were also positioned at the establishment; one in February and the other in May 1989. However, one of them was unserviceable for nine months during 1989-90. Thus, the helicopters were not available for most of the training period. Further, no fully instrumented helicopter except one partially instrumented helicopter 'G' was available with RWTPS. Even the equipment required for instrumenting the helicopters was not available in full.

According to the establishment, though the full infrastructure was not available and training was conducted with reduced intake, there was no compromise vis-a-vis training values. Air HQ had, however, stated in July 1990 after the conduct of the first course that the existing facilities available at the school were not adequate for the conduct of the course. Further, full complement of the instrumented helicopters and technical staff was not positioned and certain flying exercises were not undertaken due to non-availability of instrumented helicopters. Accepting the facts, the Ministry stated that 17 contracts worth Rs.176.97 lakhs had been concluded for procurement of instrumentation items, of which all items against 10 contracts and

part items against two contracts had been received (February 1992). The Ministry added that due to non-availability of full infrastructure certain exercises of the course were postponed and completed alongwith next course. Thus, the absence of fully instrumented helicopters resulted in the training being conducted with diluted norms. In the absence of rectificatory measures, the second course commenced in June 1990 and the subsequent courses were likely to suffer from the same inadequacies.

6.5.4 Non-recovery of training charges

One HAL engineer underwent training in the first FTE Rotary Wing Course which commenced in June 1989. In the second batch of the same course, another HAL engineer was trained. While in respect of the latter, Government issued sanction permitting the engineer to undergo training and to recover Rs.19.94 lakhs towards training charges, no such sanction was issued in respect of the former.

Air HQ stated in May 1991 that they decided not to recover the cost of training charges from HAL in respect of the first course since money charged from HAL would ultimately have to be paid back to them with profit. The argument is not tenable especially when recovery was effected in respect of the second HAL trainee undergoing the same training at the establishment. The amount of Rs.19.94 lakhs, being training charges in respect of the first HAL trainee has to be either recovered or written off. The Ministry, however, stated (February 1992) that while in future the necessary charges would be levied, initiating recovery action at this stage would lead to unnecessary and prolonged correspondence with no significant benefits.

6.6 Project management group

Ministry sanctioned in April 1977 creation of a project management group (group) at the establishment with separate manpower of four officers and five other staff for coordination and monitoring of project pertaining to aircraft 'H', 'I' and helicopter 'J'. Even though, it was decided to foreclose the project pertaining to aircraft 'I' in November 1988, there had been no corresponding reduction in the establishment of the group. Air HQ stated that the group continued to function as it was required to study defects reported by squadrons and initiate action with the manufacturers for improvement in the future production of the aircraft. The fact remained that aircraft 'I' is no longer in production. Air HQ also stated that another aircraft project was added to the group's task as a routine tasking by them without obtaining any Government sanction.

Since the group was formed by the Government for specific tasks, allocation of additional tasks by a subordinate authority without specific Government sanction was not in order.

6.7 Research and project wing

This wing is responsible for undertaking feasibility study of trials to be carried out by the establishment, co-ordinating and monitoring jobs pertaining to ground and flight evaluation in association with the DRDO and manufacturing agencies in development works. Software Support Centre (SSC) and Tracking and Analysis Centre (centre) are two major organs of this wing.

6.7.1 Creation of Software Support Centre

A software support centre (SSC) was proposed by the IAF in July 1984 and sanctioned by the Ministry in December 1985 being set up at the establishment at a cost of Rs.53 lakhs and with a staff complement of three officers and eight airmen to undertake the following tasks:

- building up of in-house expertise in avionics system softwares,
- timely implementation of tasks connected with the reconfiguration, modification and maintenance of software,
- checking out the software standard at various operating bases, and
- updating system documents as well as standardising of software programmes in terms of language and equipment.

To carry out the tasks entrusted to SSC, a variety of computers alongwith their associated peripherals were required. It was decided, in the first phase, to acquire only two computers, 'K' and 'L' with peripherals.

While the case for the procurement of computer 'K' was being processed, the establishment changed their stand regarding the selection of hardware. It recommended that instead of one computer 'K', two computers 'KK' be procured and net-worked. Computer 'KK' was manufactured by foreign firm 'M' and certain peripherals for it by foreign firm 'N'. Public Sector Undertaking (PSU) was the authorised representative for both the firms and approval of the Government was obtained in March 1988 to procure two computer 'KK' systems at a cost of Rs.46.48 lakhs in

foreign exchange and Rs.14.60 lakhs in Indian currency from the PSU. Intention to place the order was intimated to the PSU in March 1988 and a formal agreement with the PSU was signed in March 1989.

The computers on order arrived in India in January 1989 but could not be shifted to the establishment as the site was not yet ready for their installation. The Ministry had sanctioned in November 1988 the conclusion of a contract with PSU on single tender basis to carry out the work services required for the installation at a cost not exceeding Rs.9.94 lakhs. The contract was concluded in March 1989 with a probable date of completion (PDC) of August 1989, after two months of receipt of the computer in India. The works were completed in September 1989 and installation and commissioning was completed by end of December 1989.

Though the computers were installed in December 1989, twelve items costing Rs.4.63 lakhs included in the contract could not be supplied. Two of the twelve items that were not supplied pertained to structured analysis tool 'O'. The establishment, therefore, proposed in July 1990, procurement of a substitute. The matter is still under deliberation (February 1992) leaving the SSC without any structured analysis tool so far. The establishment had stated in February 1991 that due to the non-availability of this tool, they were following manual techniques.

Imparting of adequate and comprehensive training on the software system by the PSU in India at a cost of Rs.3.62 lakhs for 16 IAF personnel was sanctioned by Government in 1988 and was completed in two spells between December 1988 and March 1989 and July 1989 and September 1989. The training, however, was stated to be inadequate for the following reasons:

- lack of trained and experienced instructors,
- no regular course of the kind required by SSC was conducted by the PSU,
- the PSU had no expertise in real time avionics system, micro processor development systems and structured analysis tool 'O'.

Training on structured analysis tool 'O' has not been conducted so far on account of non-availability of the software and its literature.

Of the five officers and eleven airmen trained only one officer and five airmen were presently available at the SSC (February 1992).

6.7.2 Performance of software support centre

An analysis of the tasks allotted vis-a-vis the resources available with them was carried out by the establishment in May 1989. It was revealed that they were unable to carry out any of the assigned tasks for the following reasons:

- aircraft in IAF fleet were mainly from countries 'P' and 'Q'. In respect of aircraft of country 'P', the know-how on the avionics system software and documentation was not available with IAF. Similarly, in respect of aircraft 'R', the hardware and software life-cycle documents and development tools had not been procured alongwith the aircraft,

- in addition to the general purpose computer 'KK' system procured, specific equipment, documentation and rigs that were required were not available, and

- hardware and software environment with manpower trained on specific systems required were not available.

The establishment had stated in February 1991 that presently the computers were being utilised for developing a system. The fact remains that none of the tasks assigned to SSC could be achieved even after the commissioning of the assets created at a cost of Rs.74.68 lakhs. The Ministry stated in February 1992 that SSC was a totally new and state of art technique and was engaged in building up expertise in avionic system software and would be able to take up the task after necessary expertise is built up.

6.8 Creation of tracking and analysis centre

IAF projected in August 1977 a case for establishing a fully instrumented weapon range (range) which was considered necessary for the evaluation and development of weapon systems. The range was also considered a prerequisite for the time critical programme of integration of a navigation attack system 'BB' on aircraft 'S' to be supplied by HAL. The proposal for establishment of the range in phases was approved in principle by the Government and a sum of Rs.5 crores earmarked for this in the 1979-84 plan.

After identifying the equipment needed for the range, the Ministry in October 1980 approached Indian Missions and manufacturers abroad for quotations meeting the operational requirements (OR) to

be sent by January 1981. In all, five proposals from foreign firms 'T', 'U', 'V', 'W' and 'X' were received.

A Technical Committee (committee) constituted to assist the Negotiating Committee in evaluating the proposals, in its report submitted in March 1981 concluded that offers of 'T', 'V' and 'W' only met the OR subject to certain clarifications obtained from them. Subsequently, Air HQ in March 1981 sought and obtained the approval of the Government for procurement of the equipment and associated items at a total cost of Rs.5 crores and for the constitution of a Negotiating Committee in May 1981.

Although, the committee had short-listed only three firms, the Ministry invited all the five firms for negotiations held in March 1982. Consequent to the negotiations, the cost of equipment offered by firms 'V' and 'X' (who was not short listed) were found to be close to each other. After critical comparison of the offers which included the operational and technical parameters, the committee reported (April 1982) that the equipment offered by firm 'V' was much superior to the one offered by firm 'X'. The negotiating committee after holding negotiations with the firms in May 1982, however, decided in June 1982 in favour of firm 'X' on the grounds that their offer was the lowest and they had offered a performance bond committing full refund in case the equipment did not fulfil the requirement. Accordingly, a contract was concluded with firm 'X' in August 1982 at a cost of Rs.260 lakhs.

As per terms of the contract, the equipment alongwith associated spares and test equipment was to be supplied by firm 'X' FOB foreign port within eighteen months as well as training of IAF personnel abroad and in India for specified periods. The contract also contained provisions for a performance bond for an amount equal to ten per cent of the value of the contract, to be provided by firm 'X' which could be enforced by the purchaser in case of failure of the equipment. Notwithstanding this, the purchaser could ask the firm to buy back full or a portion of the equipment alongwith all incidental charges, if the equipment failed to meet the specifications. The contract also provided for risk purchase.

In April 1983, after seven months of conclusion of the contract, firm 'X' sought extension of six months to the contracted delivery schedule for various reasons including modernisation of electronics of the system. Later, in July 1984, the IAF felt that considering the huge expenditure involved, it would be beneficial if the commissioning trials,

originally envisaged to be carried out in India were carried out at the manufacturer's premises. The firm was agreeable for change in the venue, provided the extension in delivery schedule as sought by them was granted, FOB delivery was changed to ex-works after acceptance trials and the third stage payment of 30 per cent released after the trials. The Ministry, agreed to the firm's conditions and issued two amendments in November 1984 and November 1985 incorporating the changes. In the meantime, Government sanctioned (December 1985) formation of a centre at the establishment to maintain and operate the equipment. An expenditure of Rs.14 lakhs as non-recurring and Rs.3 lakhs as recurring (annually) was estimated for creation of the centre.

6.8.1 Training

As per the terms of the contract, the firm was to impart training for seven technicians and four computer personnel abroad for three weeks and one month respectively. The computer personnel were to be trained in India for four months by them. The cost of training was provided as an item of the cost of the equipment.

There were, however, deficiencies in the intake, duration and scope of the training. As against 11 authorised personnel, only three attended training abroad in September-October 1984. According to a report submitted by the three officers soon after their return to India in November 1984, the training was inadequate. As the equipment was lying in a dismantled condition on the shop floor of the firm and still undergoing development, only cursory theoretical training was possible. The four months course on computers in India, was cut short to eight weeks for three officers. Actually only four weeks training was conducted. Air HQ stated (May 1991) that due to time constraints in getting all the officers on time, the training in India could not be completed. No prorata reduction in cost was, however, made for the deficiencies in training, intake and duration.

6.8.2 Trials

While undergoing training abroad, the three officers, were handed over a copy of the Acceptance Trials Proposal (ATP) by the firm with the instruction that as they had already gained knowledge on the equipment, they were to witness the Acceptance Tests alongwith training classes. Accordingly, the ATP was signed by them in October 1984, prior to their departure from abroad. They, however, reported on their return that they witnessed only some of the tests carried out.

With the issue of the amendment of November 1984 and consequent shift in venue, the commissioning trials, meant to demonstrate the integrated system accuracy, were to be carried out by firm 'X' at their place at a suitable test range. The trials were to be attended by the trained officers or duly authorised officers as representatives of the purchaser and were to take place within six weeks of the completion of the acceptance testing. Commissioning trials were actually carried out in February 1985 for a period of nine days, witnessed by an IAF officer neither trained nor with the requisite experience or background information on the equipment. The performance of the equipment, was, however, certified as satisfactory by this officer. However, a perusal of the trials report after its receipt in India by the officers, trained on the equipment, revealed that the trials and the report were incomplete in many respects and did not contain off-line analysis data.

The equipment received in India in May 1985, was airlifted to range 'Y' for installation and performance checks.

The contract, as amended, contained a provision for installation of the equipment in India including trials of proper functioning free of charge. Accordingly, the firm's team alongwith trained IAF officers carried out the installation and functional trials in November-December 1985. The performance of the equipment was found not fully satisfactory as system performance for tracking live bombs and ballastic data generation for live drops could not be demonstrated. Since the equipment had already been cleared by the nominated IAF officer after commissioning trials abroad, the firm refused to carry out further improvements or visit India again for additional functional checks unless the balance ten per cent of the payment was made to them. Surprisingly, in February 1986, the final payment of ten per cent was cleared by the Air HQ after issuing "completion certificates" in respect of final acceptance installation and services. Although, the firm's representatives visited India again on a couple of occasions after receiving the final payment, the faults could not be rectified. The functional checks were completed unsatisfactorily in May 1986. In August 1987, firm 'X' intimated through the Indian Mission that they were not willing to conduct any more trials as their liability was over. In April 1988, the equipment was airlifted to the establishment for rectification where it continued to remain unserviceable (February 1992).

To meet the power requirement of the equipment,

procurement of two generators at a cost of Rs.2.60 lakhs had been sanctioned by Government in September 1984. Further, work services costing Rs.4.36 lakhs for the installation of the system were also sanctioned. The works services were taken over in May 1988 after completion.

According to Air HQ, the unserviceable equipment was hardly of any utility as it could not give worthwhile results and the very purpose of procuring it was defeated. No action could be taken against the firm by invoking any of the available options either for terminating the contract or for penalising the firm since they had already issued certificates to the effect that the acceptance trials and commissioning trials were satisfactorily completed; final acceptance and installation was over, and payments released in full.

The equipment thus imported six years ago at a cost of Rs.260 lakhs for the handling and maintenance of which a centre with the required infrastructure was established more than five years ago, continues to remain unserviceable since the date of its receipt and consequently, the fully instrumented weapon range, the inescapable necessity of which was projected as early as 1977 remains to be established. Accepting the facts, the Ministry stated (February 1992) that the equipment could not be used for integration of the system 'BB'. It, however, added that the equipment would be used for weapon evaluation after being made serviceable.

WORKS SERVICES

7. Injudicious payment in commissioning of underground cables

Letters of intents were placed by the Radar and Communication Project Office (RCPO) on a Public Sector Undertaking (PSU) between May 1988 and December 1990 for laying, jointing, testing and commissioning of underground cables at fourteen different Air Force stations at a total estimated cost of Rs.435.16 lakhs. Pending placement of formal work orders, the PSU was to proceed with the tendering and other planning processes connected with the work.

Work orders were placed by the RCPO on the PSU between August 1989 and August 1991 at a total cost of Rs.392.17 lakhs. The work was scheduled for completion between October 1989 and February 1990 at twelve stations (revised to June 1990 for three stations) and between May 1991 and December 1991 for the remaining two stations. The cost indicated in

the work orders was inclusive of the cost of material supplied either by RCPO or the PSU for the purpose of computation of service charges payable to the PSU at the rate of 20 per cent over the actual cost of work.

The PSU was asked to commence the work even before placement of work orders on grounds of urgency. In fact, 80 per cent of the work had already been completed when formal work orders were placed in August 1989 in respect of twelve stations. The Ministry of Defence stated in November 1991 that finalisation of formal work orders was delayed due to a number of formalities. The works in all stations were executed through sub contractors. It was noticed that the work of supplying and laying of certain pipes was assigned to the contractors without going into its economics in contravention of the existing orders. The procurement of these pipes on existing rate contracts was cheaper by Rs.14.79 lakhs when compared to the cost paid to the contractors. Besides, service charges amounting to Rs.2.96 lakhs (20 per cent of Rs.14.79 lakhs) paid to the PSU were also avoidable. According to the Ministry, the contract was to be awarded to the lowest bidder for the entire work and not for each item. Such an approach is not covered by the extant orders.

The work was completed at all thirteen sites by September 1991 and at one station the work was still in progress (November 1991). At station 'A', the original cost of work order of Rs.47.66 lakhs had gone upto Rs.93.69 lakhs, an increase of 96.6 per cent and was executed without permission of the competent financial authority, ignoring the orders on the subject which stipulated obtaining of such sanction if the cost was exceeded by more than ten per cent. This was regularised by issue of ex-post-facto sanction in January 1991 by the RCPO.

Total payments amounting to Rs.386.40 lakhs including final payment of Rs.251.90 lakhs for six stations and Rs.134.50 lakhs stage payments for remaining eight sites had been made to the PSU upto January 1992. The payments covered service charges of Rs.23.35 lakhs paid to the PSU on deemed custom duty alone allowed over and above the actual cost of underground cables supplied by the RCPO. This payment lacked justification as no custom duty was paid by the RCPO on the cables. Further, the deemed custom duty did not constitute the actual cost of the work. The Ministry stated (November 1991) that the RCPO had no option but to assign the work to the PSU on their terms and conditions. The Ministry added that the RCPO will be making efforts to recover the amount from the PSU.

The case revealed that,

- 80 per cent of the work was executed by the PSU before placement of formal work orders at twelve sites,

- non-evaluation of alternative options resulted in avoidable payment of Rs.14.79 lakhs to sub-contractors towards cost of pipes which could have been procured at cheaper rate contracts besides avoidable payment of Rs.2.96 lakhs as service charges thereon,

- terms and conditions in the work orders were finalised without adequate care leading to injudicious payment of Rs.23.35 lakhs as service charges on deemed custom duty on underground cables, and

- incomplete and inadequate appraisal of work contents at station 'A' contributed to execution of additional work costing Rs.46.03 lakhs without prior permission of the competent financial authority contrary to the existing orders.

8. Impact of wrong acquisition of land

Lead in and approach lights are visual aids for accurate alignment of aircraft with the runway during their approach to ensure a safe landing. It is essential that these lights are in alignment with the centre of the runway. Non-alignment of land in one case resulted in non-utilisation of approach lights purchased in January 1981 for Rs.1.35 lakhs as detailed below:

Sanction was issued in December 1980, (as amended in December 1984) by the Ministry for acquisition of 15.79 acres of land at an estimated cost of Rs.0.71 lakh under the urgency clause of the State Land Acquisition Act, 1953 for an airfield lighting installation at station 'X'. The cost of acquisition was revised in December 1985 to Rs.12.99 lakhs on the basis of revised rates indicated by the State Government in August 1985.

Land measuring 4.31 acres and 11.48 acres was acquired in April 1986 at 05 and 23 end of the runway respectively. The concerned land owners had petitioned the court in April 1986 for acquisition of additional land owned by them to maintain the alignment. During the hearing of the case, the Air Force authorities gave evidence that the land acquired was the correct land and hence there was no question of acquiring any additional land at a later date. Con-

tract for works services for provision of boundary pillars and extension of double security fencing at both ends of the runway was awarded in November 1986 for Rs.3.87 lakhs for completion by May 1987.

In April 1987, during execution of the work at 05 end of runway, it was observed that the land acquired was not in line with the centre of the runway. Similarly, the land acquired at 23 end of runway was also observed (April 1987) to be not aligned to the centre of the runway as required for installation of approach lights and hence the work on provision of boundary pillars and extension of double security fencing was foreclosed in February 1988 after incurring an expenditure of Rs.2.54 lakhs. The basis on which land not aligned to the runway was approved to be acquired was not on record.

To get the entire land aligned to the centre of the runway, the Air Force proposed (June 1989) to acquire land in exchange of part of the land already acquired without any financial implications. In April 1991 the command authorities asked Air Headquarters (HQ) not to pursue the proposal for exchange as a Board had been decided to be convened for acquisition of land required exclusively for installation of approach lights.

It was stated by the Command HQ in December 1990 that the items awaiting installation are proposed to be re-allocated to other units pending acquisition of the required land and the items not yet installed constitute reference lights and do not affect flight safety in any way.

The Ministry added in October 1991 that the reasons for the Board of officers over-looking the fact that the land proposed for acquisition was not aligned centrally with runway were difficult to ascertain at this stage but could be presumed to be due to oversight. The reply is not convincing since the fact of non-alignment was known to the Air Force authorities in April 1986 at the time of defending the case in the court of law. Had corrective action been taken at the initial stage, expenditure of Rs.12.99 lakhs incurred by way of wrong acquisition of land could have been avoided.

The outcome of a Board which had been set up to go into details about the use of land already acquired was still awaited (October 1991).

9. Loss due to damage to an antenna system

A type 'X' radar alongwith its associated equipment costing Rs.4.58 crores was supplied by a Public Sector Undertaking (PSU) in April 1986

against an order placed in March 1984. It included an antenna system costing Rs.1.80 crores, which was designed to withstand a wind speed of 140 kilometers per hour.

The radar was installed in September 1986 at its operating unit 'A' by the Radar and Communication Project Office (RCPO). According to the technical manual, the antenna system was required to be deployed on a 18 metres x 18 metres hardstanding concrete. Instead, it was installed on a water bond macadam (WBM) surface.

The proceedings of a board of officers convened for acceptance and evaluation of the radar were completed in December 1986 and forwarded to Air Headquarters (HQ) for final acceptance. Pending its formal handing over, the radar was being maintained by the operating unit.

On May 22, 1987, the antenna system toppled over due to heavy gale and storm and was extensively damaged. The maximum wind speed recorded on that day was 86 kms per hour. The Court of enquiry that investigated the matter in May/July 1987 could not establish conclusively reasons for toppling of the antenna. The strong wind was stated to be the probable cause. Proper anchoring arrangements for the antenna legs were recommended to avoid recurrence of such incidents. The loss sustained was recommended to be written off.

Based on the recommendations, the PSU suggested (June 1987) grouting of antenna legs into RCC pits for anchoring and sailing for which plain and levelled hard ground of requisite strength was recommended for deployment of antenna. Necessary instructions to this effect were issued by Air HQ in September 1987 to all operating units.

The damaged antenna was repaired by the PSU at a cost of Rs.54.25 lakhs by end of 1989. The loss of Rs.54.25 lakhs was yet to be regularised (August 1991).

While accepting the facts, the Ministry stated in August 1991 that the damage to the antenna was due to peculiar topology of the radar resulting in the wind speed exceeding the specified limits due to super-imposition of eddies causing the air to assume a lifting force. The damage was not attributable to any human error. It was added by the Ministry that additional safety measures against such an eventuality in future had been incorporated by anchoring the radar antenna.

The fact, however, remains that had the antenna

been anchored ab-initio in accordance with the procedure recommended in the technical manual, the damage to the antenna and the consequential expenditure of Rs.54.25 lakhs on its repair could have been avoided.

PROVISIONING

10. Extra expenditure on procurement of modification kits for an aircraft

In 1970, certain aeroengines 'X' (engine) were procured from a foreign manufacturer for fitment in trainer aircraft type 'A'. As these engines had a tendency of stalling or affecting their pulsating thrust/accelaration at altitudes above 25000 feet, a modification was suggested by the manufacturer in 1974 which was accepted by the Air Force in August 1977. The modification kits (mod-kits) proposed had an indefinite life subject to normal wear and tear besides saving an overhaul expenditure of Rs.3.19 lakhs per engine. The modification was proposed to be carried out by an Air Force Base Repair Depot (BRD) at the time of overhaul of the engines. The repair programmes as approved by the Ministry of Finance (Defence/Air) envisaged overhaul of all the engines during the period from 1981-82 to 1983-84. However, no provisioning action was simultaneously initiated to procure the mod- kits.

In July 1980, Air Force projected a requirement of 79 mod-kits. A contract for procurement of 50 mod-kits was concluded in March 1981 with the foreign manufacturer at a cost of Rs.70.84 lakhs in foreign exchange (FE). The kits were received between February 1982 and July 1983. These were utilised by the BRD for modification of aircraft engines upto September 1984. In April 1985, a requirement of an additional 65 mod-kits was projected against which a contract for purchase of 35 mod-kits was concluded with the foreign manufacturer in October 1985 at a cost of Rs.52.64 lakhs in FE after allowing 40 per cent discount. The mod-kits were due for delivery by December 1987. According to the Ministry, this delivery schedule had to be accepted as per the offer of the seller. The remaining kits were not purchased on the ground of avoiding blocking of funds. Further procurement of 19 mod-kits was proposed by Air HQ (10 in November 1985 and 9 in April 1986) on Production Hold Up (PHU) (where the manufacturer halts production against all other orders) basis against the 35 mod-kits on order. The procurement on PHU basis entailed extra expenditure as the 40 per cent discount allowed by the manufacturer on earlier purchases was not available. Accordingly, the foreign supplier agreed to supply 19

mod-kits on this basis without the 40 per cent discount allowed earlier. Consequently, 19 mod-kits were received less discount in February/November 1986. The remaining mod-kits were received during May to July 1987. Thus, in the procurement of 19 mod-kits on PHU basis, discount amounting to Rs.19.05 lakhs in FE was lost.

Again, in November 1985, against a requirement of another 40 kits contemplated by Air HQ the procurement of 35 kits was approved in October 1986 and the same foreign manufacturer was awarded the contract (January 1987) at a cost of Rs.67.53 lakhs in FE after allowing a discount of 40 per cent. This involved an extra expenditure of Rs.14.89 lakhs in FE on account of escalation over the contract price of October 1985. The kits were received between August 1987 and July 1990.

According to the Ministry (September 1991), the engines were due for overhaul and consequent modification only after finishing 1000 flying hours and not by 1983-84. They added that the procurement of mod-kits was staggered to match, as far as possible, the overhaul programme of the engines. During the period from 1981-82 to 1990-91, a total of 262 engines were overhauled by the BRD having completed their prescribed life of 1000 flying hours. Of them 111 engines were modified, 112 did not require incorporation of mod-kits and 39 engines were overhauled to pre-mod configuration for want of mod-kits. Details were as under:-

	Number of engines			
Year	Overhauled	Not requiring modification	Modified	Overhauled to pre-mod configuration
1981-82	22	2	7	13
1982-83	18	7	11	-
1983-84	25	1	12	12
1984-85	39	12	22	5
1985-86	28	15	8	5
1986-87	29	17	10	2
1987-88	29	7	21	1
1988-89	30	19	10	1
1989-90	17	12	5	-
1990-91	25	20	5	-

Extra expenditure incurred on account of overhaul of 39 engines to pre-mod standard was Rs.1.24 crores computed at the rate of Rs.3.19 lakhs per engine. In September 1991, nine engines were awaiting modification. Apparently, the delivery schedule did

not match the overhaul of the engines.

The case revealed that,

- it took about 10 years to arrange procurement of 120 mod-kits, although the requirement was recognised and accepted as early as in 1977,

- inadequacies in maintenance and financial planning, led to procurement of mod-kits in a piecemeal fashion resulting in avoidable expenditure of Rs.33.94 lakhs in FE, and

- extra expenditure of Rs.1.24 crores was caused on account of overhaul of engines to pre-mod standard due to non-availability of sufficient mod-kits over the years.

11. Procurement of electronic warfare system

Ministry concluded a contract in October 1982 with foreign manufacturers for procurement of 'Q' number of aircraft 'A' (aircraft). The aircraft was inducted into squadron service in June 1985.

To procure the required electronic warfare system which is an essential feature of a modern combat aircraft, Air Force (IAF) considered equipment 'M' and 'N' offered respectively by foreign manufacturers of the aircraft, firms 'C' and 'D'. Both these firms had submitted their proposals even before the main agreement for the aircraft was signed. Equipment 'M' had inherent advantages over equipment 'N' mainly in that it did not interfere with the weapon station and affect the aerodynamics of the aircraft. Equipment 'N' imposed some restrictions on the performance parameters of the aircraft on account of its geometrical configuration. IAF, however, ordered 27 pieces of equipment 'N' from firm 'D' at a cost of Rs.35.64 crores in October 1982 alongwith the main agreement and retained an option for the procurement of 16 pieces of equipment 'M' from firm 'C'. Subsequently, an agreement for procurement of 14 pieces of equipment 'M' was concluded with firm 'C' in August 1983. The delivery dates for both the equipment 'N' and 'M' were almost same. While the equipment 'N' contracted in October 1982, was scheduled for delivery in 1986 and 1987, equipment 'M' contracted in August 1983 was scheduled for delivery in 1987.

It was noticed that the cost of equipment 'M' was considerably less and 27 such equipment alongwith spares could have been procured at a cost of Rs.29.48 crores against Rs.35.64 crores at which same number of equipment 'N' were contracted. The Ministry explained that though two proposals from

firm 'C' for equipment 'M', were received, one in February 1982 and another for an improved version, in October 1982 they were only technical proposals. The firm, therefore, was asked to incorporate a few specific requirements of IAF and resubmit the proposal. The revised technical-cum-commercial proposal acceptable to IAF was received only in April 1983 by which time the contract for equipment 'N' had already been concluded with firm 'D'.

The integrated finance pointed out in July 1983, that it appeared prima-facie that both the firms 'C' and 'D' had led IAF into committing itself for equipment 'N'. Although an acceptable proposal for equipment 'M' of firm 'C' was ready before the main agreement was signed, firm 'C' delayed its offer till the contract with firm 'D' for equipment 'N' was finalised. It was evident that the IAF was actually interested in the procurement of equipment 'M' as it went in for a further six pieces of the same equipment subsequently for the aircraft procured under an additional agreement of March 1986. The procurement of equipment 'N' thus led to extra financial burden, besides the procurement of two types of ground handling equipment (GHE) costing Rs.3 crores for equipment 'N' and Rs.1.67 crores for equipment 'M'. Accepting the fact, the Ministry stated in December 1991 that IAF had shown preference for equipment 'M' primarily on grounds of operational advantages. It added that firm 'C' could have deliberately delayed their offer with a view to avoid delay in signing the contract for the aircraft but not with any specific intention of forcing IAF to buy equipment 'N'. Nevertheless, the fact remained that delayed offer of firm 'C' led IAF to buy equipment 'N'.

Further, while the aircraft was inducted into squadron service in June 1985, equipment 'N' were actually received between November 1986 and September 1987. Till that period the aircraft were without the system. The Ministry stated (November 1990) that it was imperative to provide the equipment and since the proposal of firm 'D' was meeting the IAF requirement, there was no option but to go in for procurement of a limited number of equipment 'N' from firm 'D'. However, the contracted and actual delivery (November 1986-September 1987) schedule of the equipment 'N' do not support the Ministry's contention. The Ministry stated in December 1991 that the deal to procure equipment 'N' was finalised in April 1982 at intention to proceed (ITP) stage when firm 'C' had no offer to make. It added that firm 'C' had submitted only technical proposal in October 1982. However, the contract was signed in October 1982 to provide legal cover to provisions of ITP. Therefore, possibility of logical conclusion of

offer of firm 'C' did not exist in October 1982. The fact remained that the IAF procured two types of equipment 'M' and 'N' with almost same schedule of delivery, despite the latter being costlier and with inherent disadvantages. This resulted in extra financial impact of Rs.6.16 crores besides maintenance of two types of GHE, costing Rs.3 crores for equipment 'N' and Rs.1.67 crores for equipment 'M'.

The case revealed that,

- although an acceptable offer for improved equipment 'M' was received in October 1982 from firm 'C', this was not followed up to its logical conclusion, necessitating purchase of equipment 'N' from firm 'D' at an extra cost of Rs.6.16 crores, and

- though the aircraft was inducted into squadron service in June 1985, equipment 'N' were actually received between November 1986 and September 1987. Till that period the aircraft were without the system which was vital for a modern combat aircraft. This also affected the training of pilots on the system.

12. Delay in procurement of air defence system

The friend and foe identification system (system) is a secondary surveillance system which works in conjunction with primary equipment (equipment). The system is necessary for positive identification of friendly/enemy contacts for preventing mistaken identity attacks. Provisioning of the system for integration with the equipment was considered to be an operational requirement for effective and optimal utilisation of the equipment.

Scrutiny in audit revealed (April 1991) considerable delays in the procurement and integration of the system with the equipment as indicated below:

Batch	Year of receipt of the equipment	Qty. received	Date of placement of order for the system	Qty. ordered	Cost per set (Rs. in lakhs)	Date of receipt of the system	Date of integration of the system with equipment
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
I	May 1981 to September 1982	12	May 1987	17	14	By February 1987 to March 1989	March 1987 to April 1989
	July 1985	5					

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
II	October 1987	12}	July 1990	24	18.5	Delivery would commence in July 1992 and would be completed by July 1993	After 1992-93
III	December 1988	12}					

Thus, while the system was integrated in the first batch of the equipment after a delay of four to seven years, such integration for the remaining 24 equipment would be taken up only after 1992-93. Till then, these equipment will function without the system which was considered operationally necessary for its effective and optimum utilisation.

The delay in the procurement of the system required for the second and third batch of the equipment resulted in escalation in costs. The first batch of the system was procured (1987) from a Public Sector Undertaking (PSU) at a cost of Rs.14 lakhs per unit (total cost Rs.238 lakhs). For the subsequent batches, Air Headquarters (HQ) approached the PSU only in November 1988 though procurement of the equipment had been initiated much earlier and the contracts concluded in October 1986 and December 1987. By that time, the PSU had increased the rates from Rs.14 lakhs to Rs.20 lakhs per set. After negotiations, the PSU submitted fresh quotations in January 1989 at Rs.17.70 lakhs per set with a lead time of 27 months for commencement of delivery. These rates were valid upto May 1989. No order was, however, placed on the PSU within the validity period though budget provisions for making advance payment for procurement of 12 sets of the system existed in the sanctioned budget estimate for the year 1989-90. The Ministry agreed only in September 1989 for the placement of order for 12 sets of the system on the PSU.

Placement of the order for the procurement of the system was, however, further delayed and the PSU increased (December 1989) the rates to Rs.19.47 lakhs per set. These rates, however, were brought down to Rs.18.50 lakhs per set in a meeting held in March 1990 and a firm order on the PSU was placed in July 1990. Had the order for 12 sets of the system

been placed within the validity period, the additional expenditure of Rs.9.60 lakhs could have been avoided. The Ministry stated in December 1991 that Rs.20 lakhs per set quoted by the PSU in November 1988 was only indicative cost. It added that although budget provisions for making advance payment existed in 1989-90, the order could be placed only in July 1990 after carrying out detailed negotiations with the firm for fixation of price. The fact remains that after negotiations the PSU had brought down the rates to Rs.17.70 lakhs. Since no order was placed within the validity period, the PSU increased the rates.

Thus, there was mismatch between the induction of the equipment and procurement of the system required for its optimal utilisation resulting in the equipment having to function with operational limitations. Only 17 out of the total 41 equipment have been integrated with the system after four to seven years of procurement of the equipment. The balance 24 are likely to be integrated only after July 1993. Further, the Ministry took 20 months to negotiate and place the order on the PSU for the system required for second and third batch of the equipment. The delay in initiating the case for the system coupled with that in obtaining the approval and placement of order on the PSU, resulted in an additional expenditure of Rs.9.60 lakhs.

13. Delay in installation of an equipment

The Radar and Communication Board decided in November 1973 to develop two 'A' models of synchronous on line cipher machines at a cost of Rs.9 lakhs to meet the requirements for secure transmission of messages on the air defence system channels. A Defence Research and Development laboratory (lab) was nominated as the development agency. The developed model was expected to be available by May 1979. Development was, however, completed in 1981.

In the meanwhile, a Public Sector Undertaking (PSU) was nominated as the production agency in December 1980 and Government sanction for the procurement of 500 machines from it at a cost of Rs.6.5 crores (including Rs.1.64 crores in FE) was accorded in March 1981 and order was placed by the Air Headquarters (HQ) during the same month. The PSU could not meet the delivery schedule suggested by them in August 1981 as detailed below:

Year	Number of sets	
	Promised for delivery	Actually delivered
1981-82	2	Nil
1982-83	150	Nil
1983-84	348	Nil
1984-85	-	67
1985-86	-	281
1986-87	-	130
1987-88	-	17
1988-89	-	-
1989-90	-	1
Total	500	496

Four machines were supplied directly by the PSU to an Air Force unit which could not be accounted for by the Equipment Depot for want of necessary documents.

Ministry stated (January 1992) that changes in design of the model so as to ensure good maintainability, delay in transfer of technology by the lab to the PSU and setting up of the production line by the PSU led to delay in securing the supplies. It added that the production could not progress at the desired pace due to delays in availability of imported components.

Of the 500 machines received, only 395 had been issued between 1985-86 and March 1991 and 105 machines costing Rs.1.37 crores were still held in the equipment depot (March 1991). While agreeing with the facts, the Ministry stated (January 1992) that out of 105 machines held in the depot, 63 were held as maintenance reserve and only 42 machines costing Rs.54.60 lakhs could not be utilised. In their reply regarding delay of more than 3 years in allocation of these machines to the user units, Air HQ had stated in May 1990 that the machines could not be utilised due to non-availability of strong rooms, air-conditioning, un-interrupted power supply, additional requirement of cryptographers, etc. Ministry stated in January 1992 that the machines could not be utilised on desired channels for security reasons and had to be diverted for use in Air Force units where it took sometime to provide basic requirements to make these machines operational.

Out of the 395 machines with the units, details of utilisation of 391 machines were made available to Audit. An analysis of the utilisation indicated that 5 machines were yet to be installed as these were found unserviceable on receipt and 46 machines

(including 5 above) costing Rs.59.80 lakhs had become unserviceable without any utilisation. Another 97 machines costing Rs.1.26 crores had become unserviceable after having been utilised for

less than 10 hours	8
between 10 and 100 hrs	25
between 100 and 500 hrs	43
above 500 hours	21

Thus, 143 machines costing Rs.1.86 crores were held in unserviceable condition for periods ranging from 21 to 55 months (January 1992). Air HQ had stated in October 1991 that detailed investigation of the defects was being carried out in association with the lab.

Although the machines had been ordered in March 1981 and supplies had commenced from 1984-85 onwards, no repair agency had been identified till September 1988. Air HQ admitted that due to oversight they had not projected the maintenance requirement. In the meantime, the PSU had closed the production line without informing the Air HQ. When the PSU was approached in September 1988, it agreed to undertake the repair work on condition that the spares provided to the Air Force alongwith the machines should be diverted to the PSU as it had no spares and had already closed the production line. Air HQ accepted the above proposal and firm task of 50 machines during 1991-92 and projected task of 50 machines per year for 1992-93 and 1993-94 was issued in April 1991. The Ministry intimated in January 1992 that the PSU which was committed to provide maintenance spares for a minimum period of 10 years has now confirmed that the spares could be supplied to meet 5 to 7 years' requirement.

The case revealed that,

- there was a lack of adequate planning in that equipment costing Rs.6.50 crores was procured without simultaneously ensuring that the requisite infrastructure was available with air defence system channels though the proposal for its acquisition had been under consideration since 1973. Consequently, the machines had to be diverted to Air Force units,

- in Air Force units also 42 machines costing Rs.54.60 lakhs could not be installed for want of the requisite infrastructure even after lapse of over three years from their receipt,

- Air HQ failed to provide necessary maintenance support for the machines. Resultantly, 143 machines costing Rs.1.86 crores were held in un-

serviceable condition for periods ranging from 21 to 55 months, and

- there was lack of proper coordination between the Air HQ and the PSU which was evident from the fact that the PSU closed their production line without informing the users.

14. Excess provisioning of stores

Stores required for use in the Air Force are provisioned on the basis of past and present consumption trends and their planned utilisation in future. The level upto which various types of stores are to be provisioned at any given time is called Maximum Potential Establishment (MPE) which generally ranges from 9 to 60 months requirement depending upon factors like source of supply, lead time required, and susceptibility to deterioration. Cases of over provisioning/avoidable provisioning of stores worth Rs.28.81 lakhs noted in audit of an equipment depot (depot) are discussed below:

(a) Covers outer and tubes inner

Against an indent placed by Air Headquarter (HQ) in August 1983 for covers outer and tubes inner for a specialist vehicle, 1039 pieces each of the item costing Rs.27.53 lakhs was received in September 1985 from abroad by the depot. Further, 140 covers outer and 58 tubes inner were received by the depot as unit returns between September 1985 and August 1990 making a total stock of 1814 covers outer and 1255 tubes inner including the existing stock of 635 covers outer and 158 tubes inner.

In October 1985, HQ Maintenance Command, IAF, intimated Air HQ that there were no 'dues out' for these items at the depot and also that there was an acute storage problem and requested Air HQ to review the position and allocate these tyres/tubes to various user units.

In December 1985, Air HQ allotted 490 sets of covers outer and tubes inner to 5 units for storage purposes against which only 340 covers outer and 310 tubes inner were issued to 4 units.

Further, between October 1989 and June 1990, 576 sets of covers outer/tubes inner were issued to an ordnance depot. In December 1989, however, the ordnance depot intimated the depot to withhold the despatch of the consignment of 450 sets allotted to them, as there was no requirement for these items. The Army HQ also sought disposal of 126 sets which had already been received by them by that time. However, entire quantity of 576 sets of cover outer

and tube inner were held at the ordnance depot without any consumption.

In December 1990, the holding at Air Force and ordnance depots of covers outer and tubes inner was 1565 and 906 pieces respectively costing Rs.38.95 lakhs. As no repair task for the specialist vehicles on which the items are to be used has been issued after 1987-88, the prospects of future utilisation of the items are bleak. Ministry indicated (January 1992) that quantity 624 covers outer might be consumed in another type of specialist vehicle. There would thus still be a stock of 906 sets of covers outer and tubes inner and 35 pieces of covers outer costing Rs.24.80 lakhs without any chances of utilisation within their prescribed shelf lives. In fact the shelf life of 5 years of tubes inner and a major portion of shelf life of 7 years of covers outer has already expired.

(b) Table knives

In August 1982, there was a stock of 23,225 knives at the depot. Subsequently, 82,373 numbers knives costing Rs.8.21 lakhs were received between March 1983 and September 1983 from trade through Director General Supplies and Disposals against Air HQ indent of March 1982 for 82570 knives. A quantity of 80,651 was issued to user units between March 1983 and March 1990. In March 1990, 56,409 knives costing Rs.5.62 lakhs were still held in stock including other receipts. From January 1983, knives were treated as one time issue to the trainees and on this basis the estimated annual requirement of the item worked out to 8100. The present stock would, therefore, last for 84 months. The MPE of the item being 24 months, the authorised holding works out to 16200 knives only. There was thus excess procurement of 40209 knives costing Rs.4.01 lakhs. The Ministry stated in January 1992 that change in clothing policy slowed down the off-take of the item which resulted in excess stock holding. It added that the excess holding of the item has since been condoned by the Government.

Ministry's argument lacks conviction as at the time of concluding the contract, the Depot held a stock of 23,225 knives which was sufficient to last for 20 months based on actual consumption. The quantity ordered in August 1982 was much more than the actual requirements which resulted in excess holding.

15. Procurement of unsuitable compressors

Low pressure compressors (LPC) of appropriate capacity are used as ground support equipment to

supply air to the cooling stand of Aircraft 'L'. Air Headquarters (HQ) concluded three contracts with a foreign supplier for the procurement of four LPCs of specification 'X' between January and December 1987. These were received as under:

Sl.No.	Date of contract	Qty.	Cost (Rs.in lakhs)	Date of receipt at Embarkation HQ
1.	January 1987	1	15.20	February 1988
2.	June 1987	2	30.40	May 1988
3.	December 1987	1	16.78	July 1989

Whereas the LPC at Sl. No.1 was sent directly by Embarkation HQ to an Air Force unit in August 1988, the two LPCs at Sl. No.2 were received in an Air Force Equipment Depot in November 1988 and the one at Sl. No.3 in January 1990. The Equipment Depot issued two compressors to Air Force units in March and May 1989. The remaining compressor was lying in depot stock (January 1992).

On receipt in the units, the compressors were found to be actually of specification 'Y' instead of specification 'X' as contracted for and were unsuitable as they did not meet the air flow requirements. An unsuitability certificate about the compressors was obtained from the warranty specialist of the supplier and in September 1989 on the advice of Air HQ, the depot raised the necessary discrepancy reports (DR) against the supplier, (for two compressors in September 1989 and for the fourth in February 1990). No DR was, however, raised for the LPC at Sl. No.1 received against the contract of January 1987.

The supplier while rejecting the DR stated in August 1991 that the Indian Air Force (IAF) at the time of negotiation had not insisted upon using the LPCs together with the cooling stand of aircraft 'L'. They further stated that the intention to use LPCs of specification 'X' with the cooling stand was made known to them only after two months of the signing of the last contract in December 1987 and that the fact that the capacity of the ordered LPCs was not adequate for the said cooling stand had been made known to the IAF in November 1987. Thus, compressors costing Rs.62.38 lakhs acquired between August 1988 and January 1990 were lying unutilised as these did not meet the air flow requirement of the cooling stand.

The Ministry stated in January 1992 that the LPCs of both the specifications 'X' and 'Y' were

similar and confirmed that neither of them met the requirement of the cooling stand. It added that the LPCs received could be used as part of the crash equipment. As regards delay in despatching the LPCs from the Embarkation HQ, the Ministry stated that the present procedure was being examined to cut short such delays.

Although requirement of the LPCs for the cooling stand was evident from the beginning, the precise requirement of IAF was not clearly projected while negotiating the contract agreement with the foreign supplier leading to the acquisition of an equipment costing Rs.62.38 lakhs which did not serve the intended purpose. The requirement had consequently to be met with the help of an airborne equipment fitted on board aircraft 'L' which itself had a limited life.

OTHER CASES

16. Unsuccessful modification on aircraft

The escape system on trainer aircraft 'A' manufactured in India involved two different operations; one for jettisoning the canopy and the second for seat ejection in an emergency. Malfunction of this escape system had caused several incidents/accidents. To make the escape system operationally more efficient and to overcome the deficiency and enhance safety of the pilot, Air Headquarters (HQ) proposed, (December 1975) integrated ejection of seat with canopy and jettison in one operation. Accordingly, the Directorate of Aeronautics suggested modification for models 'X' and 'Y' of the aircraft. For model 'Z' of the aircraft, it was to form the basic fitment. The modification was deliberated upon by a study group and technically cleared by Chief Resident Engineer in Directorate of Aeronautics in December 1982. The reliability of the modification was considered satisfactory by the Air Staff Equipment Policy Committee in April 1984.

Procurement of 142 modification kits (mod-kit) at a cost of Rs.41.32 lakhs (unit cost Rs.29,098) was ordered on a public sector undertaking (PSU) in August 1984 with date of delivery upto March 1985 or earlier. The unit cost of the mod-kit was revised to Rs.42,201 by the PSU in December 1988, increasing the total cost to Rs.59.93 lakhs for models X and Y. On pro-rata basis, the cost of mod-kits incorporated in 53 of the model 'Z' aircraft worked out to Rs.22.37 lakhs. The delivery of mod-kits on order was completed by June 1990. Thirty five aircraft (models 'X' and 'Y') had been fitted with the mod-kits by the end of 1989. Mod-kits costing Rs.45.16 lakhs were still in stock (September 1991).

The modified integrated escape system did not function properly. Its inadequacy was noticed even in the first five modified aircraft in the fields of design/manufacture/production/servicing. A fatal accident took place in November 1989 due to failure of the system. During investigation, performance capability of the system in eight out of ten aircraft checked, was not found satisfactory and consequently, was considered unreliable and unsafe. This is indicative of inadequate technical evaluation of the modification at the initial stages. Further, the option of ejection through the canopy available in the pre-modified system was not available in the post-modified system. According to the Ministry, the single action ejection system with through canopy ejection facility is desirable to facilitate ejection in shortest possible time.

Due to deficiencies noticed on the integrated escape system, it was decided by Air HQ in December 1989 to demodify all the aircraft to pre-modified configuration. The original ejection system was considered adequate and accordingly, 35 models 'X' and 'Y' and 53 model 'Z' aircraft were demodified to the pre-modified standard during December 1989 to February 1990. In the process, mod-kits procured/ incorporated in the aircraft at a total cost of Rs.82.29 lakhs were rendered redundant. The chances of utilisation of these kits on other aircraft are negligible as these are specific to type fitment.

The case revealed that,

- unsuccessful modification was primarily attributable to the inadequate technical appreciation in its proper dimensions. It led to redundancy of material of the order of Rs.82.29 lakhs, and

- the IAF essentially will have to continue with pre-modified escape system which had been proved to be unsatisfactory and operationally deficient.

The Ministry stated that a task force was detailed in July 1991 to review the integrated escape system in terms of design, manufacture, maintenance and its reliability before a single action canopy ejection system could be resorted to. The Ministry added that the mod-kits would possibly be utilised thereafter. However, no time schedule for the review to be carried out by the task force and incorporation of single action ejection system was indicated.

17. Delays leading to avoidable payment

Aircraft 'A' (aircraft) was allotted to a Public Sector Undertaking (PSU) in June 1981 for major servicing on a fixed cost quotation (FCQ) basis which was Rs.15.38 lakhs for 1981-82 inclusive of 10 per cent profit. The aircraft was taken on repair line in July 1981 and major servicing was carried out during 1981-82 and 1982-83. The aircraft was scheduled for delivery in August 1982 after the final system checks were carried out. However, during the periodical inspection carried out in August 1982 by PSU, the central section forging (CSF) of the aircraft was found to have developed a crack and required replacement. These checks were carried out periodically at three months intervals and no crack had been noticed in the earlier checks of May 1982.

In August 1982, the PSU had asked Air Headquarters to cannibalise CSF from another aircraft and requested for sanction to take up work of replacement of CSF at an estimated cost of Rs.7.08 lakhs based on manhour rates of Rs.79 applicable for the year 1983-84. There were, however, delays in making available the CSF. The sanction for retrieval of the CSF from another aircraft was issued in September 1984 after a delay of two years, though the aircraft from which cannibalisation was authorised had been declared beyond repair and withdrawn from the fleet in May 1980 itself. The replacement of the CSF of the aircraft under servicing was further delayed as the sanction for the work of replacement of CSF at a cost of Rs.7.08 lakhs was issued only in November 1985.

The Ministry stated in October 1991 that since a proposal to export the aircraft, withdrawn from service in 1980, to friendly foreign countries was under consideration, the CSF was not retrieved from these aircraft. As the sale did not materialise, clearance for retrieval of the CSF was given in January 1984. It was, however, seen that one of the aircraft was withdrawn from sale in September 1982 itself, for cannibalisation of the CSF.

The work relating to replacement of CSF was commenced after issue of sanction in November 1985 and completed in March 1987. The aircraft was delivered to Indian Air Force (IAF) in March 1987 and allotted to the squadron entrusted with training and target towing role. The utilisation rate achieved by the aircraft fleet during last three years was poor and ranged between 2.59 hours to 16.28 hours against 30 hours authorised.

The PSU preferred a claim in March 1987 for Rs.27.01 lakhs against the sanctioned amount of Rs.7.08 lakhs. The enhanced claim was due to the increase in manhour rates from Rs.79 in 1983-84 to Rs.130 in 1986-87, during which period maximum work was done. 17431 hours had to be utilised as extra to scheduled labour hours for major servicing and servicing of the life expired items due to discontinuation of work for nearly four years.

Revised sanction was accorded in December 1990 for final payment of Rs.26.84 lakhs to the PSU for work done in connection with replacement of CSF as against Rs.7.08 lakhs sanctioned in November 1985. This amount was reimbursed to the PSU in February 1991.

Thus, due to delay in making available the CSF despite its availability since May 1980 coupled with the delay in issue of sanction for its fitment etc. resulted in grounding of aircraft for over five years as well as additional expenditure of Rs.19.76 lakhs.

18. Non-utilisation of an electronic sub-assembly

In April 1980, Government concluded a contract with a foreign firm (firm) for the supply of special electronic equipment (Equipment 'A') at a cost of US $ 18.90 lakhs equivalent to Rs.1.51 crores. The contract included three sub-assemblies costing Rs.14.74 lakhs ($ 1.84 lakhs) which were procured as an add-on module to improve the accuracy of three numbers of a system (system 'B') which had been installed in December 1977. The sub-assemblies were received in October 1981. While equipment 'A' was made operational in May 1983, the performance of the sub-assemblies when interfaced with system 'B' was found to be unsatisfactory during endurance tests. After discussions with the firm, the sub-assemblies and their associated accessories were despatched to the firm for repair under warranty. Their performance even after repairs was found to be unsatisfactory.

In August 1986, a supplementary agreement was incorporated in the contract of April 1980 under which the defective sub-assemblies were to be shipped to the firm for repair and/or inspection at firm's cost. It was further stipulated that the balance cost of Rs.3.64 lakhs ($ 45,505) was to be paid on completion of all pending jobs as per the agreement. In June 1987, sanction of the Government for despatch of the items to the firm was accorded. The items were received back in the Air Force Unit in December 1987. Integration of the sub-assemblies with system 'B' was attempted by the firm but only

one sub-assembly could be integrated. However, the performance of even the one integrated system was erratic and unreliable. It failed four times between January 1988 and October 1989 and became non-operational thereafter.

In February 1990, the Air Force Unit requested Air Headquarters (HQ) for disposal of the sub-assemblies as it was felt that no useful purpose would be served by maintaining the incompatible items. However, in August 1990 Air HQ suggested that the possibility of utilising the equipment with system 'B' with less stringent technical specifications should be explored by constituting a team of specialists from the unit. Apart from reiterating that no useful purpose would be served by constituting a team of specialists, the Air Force Unit also pointed out (August 1990) that as per the publications, the sub-assembly to be used in system 'B' was different from the one procured. The Air HQ in September 1990 requested the Indian Embassy abroad to take up the matter with the firm in order to find out a suitable and viable solution to the problem. The response from the firm was still awaited (November 1991).

The Ministry stated in November 1991 that the contention of the unit was not correct and maintained that the item procured was suitable for system 'B'. It however, added that the sub-assemblies are now proposed to be utilised as spares to provide maintenance support to a vintage system 'C'. Notwithstanding Ministry's contention, the fact remained that even in eight attempts made by the foreign engineers, the sub-assemblies could not be made compatible with system 'B'. Moreover, the proposal to use them as spares for system 'C' is yet to be either proven or finally decided.

The case revealed that,

- Air Force took almost a decade to determine that the sub-assemblies procured in 1981 were incompatible with System 'B', and

- the sub-assembly costing Rs.14.74 lakhs required to improve the functioning of an electronic system received in October 1981 had not served the intended purpose as it could not be integrated to the main system due to incompatibility.

19. Loss due to non-availing of rebate

In February 1990, the Ministry placed a supply order on a private firm for the supply of 1318 batteries at a cost of Rs.4.48 crores (@ Rs.33,993 each). According to the supply order, the firm was

to give a rebate ranging from Rs.3805 to Rs.8075 depending on the make if it was provided with one life expired battery containing 15 cells but without a container for every new battery supplied by the firm. The firm was to increase the rebate by Rs.1000 per battery in case a life expired battery was provided in the form of complete battery with cells, stainless steel container, connector etc. of their own make.

In February, April and September 1990, the Air Headquarters (HQ) authorised an equipment depot (depot) to issue 1318 life expired batteries or equivalent number of cells @ 15 cells per battery. Against this, 19770 cells were issued to the firm. In addition, the depot also issued separately 1000 stainless steel containers at a cost of Rs.2.68 lakhs in accordance with the authorisation made by the Ministry in February and June 1990 as under:

Date of Issue	Quantity	Rate
March 1990	500	Rs.260 per container
August 1990	500	Rs.275 per container

Although the depot was in a position to issue complete life expired batteries as these were then held on depot charge in their complete state, the issue of cells and containers separately deprived the Government of a rebate of Rs.7.32 lakhs which could have been otherwise availed. While confirming that the depot was in a position to issue complete life expired batteries, the Ministry stated in December 1991 that the batteries had been issued in accordance with Government orders of May 1978 which provided for breaking down of the batteries into cells and containers and accounting and storing them separately in the depots. Once the batteries were broken up, it was not possible to identify the manufacturer. It was, however, noticed in audit that the instructions of May 1978 were framed at a time when adequate technology for manufacture of batteries had not been developed in the country and the only useful disposal of life expired batteries was to break down the batteries into cells and containers so as to enable extraction of silver from the cells. Evidently, no review of the orders had been done subsequently when the technology to manufacture batteries indigenously was developed.

Thus, adherence to outmoded procedures which clearly required a review, despite incorporation of provisions in the authorisation issued by Air HQrs

as well as an enabling clause in the supply order, resulted in the life expired batteries being issued separately incurring an avoidable loss of Rs.7.32 lakhs.

20. Delay in installation of a test equipment

A test equipment required for the navigational system in aircraft 'R' was purchased in January 1987 from abroad at a cost of Rs.17.65 lakhs (FE Rs.8.60 lakhs). It was received at organisation 'Y' in January 1987 where it was packed after checking its serviceability. The organisation 'Y' advised Air Headquarters (HQ) in August 1987 to allot the equipment to Unit 'X' as continuous disuse of the equipment was likely to render it unserviceable.

The equipment was accordingly allotted (October 1988) to Unit 'X' and airlifted (November 1988). The equipment remained in the Unit without either being used or even being taken on charge. In April 1989, Air HQ reallotted the equipment to Unit 'Z' and Unit 'X' despatched it to them in June 1989. On opening the consignment at Unit 'Z', it was seen that packing note, issue vouchers and other relevant documents were missing. On receipt of a copy of issue voucher from organisation 'Y' in October 1989, several accessories and publications required for second line maintenance were also found deficient. This was reported to Air HQ in November 1989. Organisation 'Y' with whom the equipment had been initially stored, did not accept any responsibility for any deficiency and stated that all the documents had been sent by it (July 1989).

The Ministry stated in September 1991 that no damage or discrepancy occurred while the equipment was in transit. The Organisation 'Y' had not initially sent two critical items with the equipment and these were released by it in May 1991. The Ministry added that installation of the equipment was completed in June 1991 but it was yet to be commissioned.

Thus, procurement of a test equipment without determining in advance, the Organisation where it could be utilised resulted in its non-utilisation and idling of investment of Rs.17.65 lakhs for over four years.

21. Damage to aeroengines in transit

Three new aeroengines costing Rs.1.36 crores suffered damages while in transit by road from an equipment depot to an Air Force unit. The damages occurred due to transhipment of aeroengines done enroute by the carriers about which the Air Force au-

thorities were ignorant. No claim could be preferred against the carriers as the receiving Air Force unit had given a clear receipt to them. These three aeroengines, await repair in the Base Repair Depot, pending setting up of repair facilities. The details of the case are as under:

Equipment Depot (Depot) despatched new aeroengines to an Air Force unit in batches of four, two and five in August, September and November 1988 respectively. These were received in September, November and December 1988 respectively. Since there were no signs of any external damage on the aeroengine cases, the carriers were given clear receipt by the unit. On unpacking in the same month of receipt of a batch, the unit found that five aeroengines were in damaged condition. The discrepancy reports raised by the unit on the depot were not accepted by the latter on the grounds that the aeroengines had been loaded carefully, their issue supervised by a Board of officers and pre-despatch check carried out by quality assurance staff.

The contract concluded by the depot with the carriers stipulated that the goods would be conveyed from the depot to its final destination in the same vehicle unless the vehicle broke down and cause undue delay. In that case, the carrier was to furnish details of transhipment done and also undertake the responsibility for any damage to the consignment. Further, the Air Force Equipment Regulations prescribed that the unit receiving the consignment should ascertain if the packages had been damaged in transit and in the event of any suspicion, the package was to be opened, if required, in the presence of carriers' representative and a note of the circumstances made in the carriers' receipt note.

A Court of Inquiry convened by the unit in April 1989 to enquire into the circumstances under which aeroengines were received in damaged condition found that the consignment had been transferred through three civil trucks from the depot to the unit. The Court of Inquiry concluded that the damage occurred during the transhipment which was done without any supervision of Air Force staff. It recommended that action should be taken to recover the claim of damages from the contractors.

However, no claim could be lodged against the carriers as the unit had given a clear receipt to them. As the receipt of the aeroengines in vehicles other than the ones in which these were loaded by the depot was within the knowledge of the unit, the clear receipt given to the carriers was avoidable. The Ministry stated in October 1991 that the enroute transhipment of the aeroengines was not reported by

the transporter to the depot as per the provisions of the contract. Had the packages been opened in the presence of the carrier's representative, the damage could have been detected and claim preferred on the carriers in accordance with the terms of the contract.

In July 1989, all the five damaged aeroengines were despatched for storage purposes to a Base Repair Depot for ascertaining the internal damage/defect after strip examination by a foreign repair agency. Ministry stated in October 1991 that two aeroengines were found fully serviceable by BRD after extensive checks/tests. The remaining three aeroengines with visible signs of damage were held at BRD awaiting setting up of repair/overhaul facility in March 1994. Ministry, however, added that they might be able to take up the repair/overhaul of these engines in 1992-93.

22. Outstanding landing and housing charges for use of IAF air fields

Recovery of charges for use of Indian Air Force (IAF) airfields and landing grounds by a civil aircraft for landing, housing and equipment etc. are to be made before such aircraft leave the station. However, Indian Airlines, Air India International and Vayudoot have been extended credit facilities in this regard. The bills in this respect are prepared by the concerned IAF units and passed on to the Controller of Defence Accounts (CDA), Air Force, for watching their recovery. No time frame has, however, been laid down for adjustment of such amounts.

It was noticed in Audit that claims preferred by IAF units for landing and housing charges were not being regularly cleared by the airlines and Rs.20.83 lakhs pertaining to the period 1985-91 were outstanding against Vayudoot (October 1991). Similarly, Rs.1.82 lakhs were outstanding against Indian Airlines for the year 1990-91 (October 1991).

Thus granting of credit facilities for use of IAF air fields without prescribing any time limit for making payments of the charges or stipulating penalties for delayed payments resulted in substantial amounts remaining outstanding for unduly long periods ranging from six months to six years.

The Ministry stated, in January 1992, that delay in recovery from Vayudoot was due to non-payment by them despite bills being raised regularly against them. The matter was also stated to be being pursued with Vayudoot and Ministry of Civil Aviation. The case highlights need for the Government to review the procedure for payment of

landing and housing charges for availing of IAF landing facilities to avoid recoveries remaining in arrears for prolonged durations.

CHAPTER – IV

NAVY

REVIEWS

23. Computerisation in the Navy

23.1 Introduction

Electronic Data Processing (EDP) activity in the Navy was initiated with the installation of a computer in Naval Dockyard, Bombay in April 1972 to monitor activities related to production, planning and control. In 1980, Naval Headquarters (HQ) formulated a ten year computerisation plan for implementation during the period 1981-90 at an estimated cost of Rs.39 crores. The aim was to install networked mini and main frame computers at major centres using terminals to cater for management information requirements.

23.2 Scope of audit

The planning, acquisition of hardware and software and utilisation of computers were reviewed by Audit during November 1990 to June 1991.

23.3 Highlights

- **The ten year EDP plan framed with the aim of installing networked computer systems for use as an aid to the management was not implemented in a systematic manner. The Navy could not, therefore, derive any tangible benefits from the investment of Rs.5.31 crores made in the procurement of computer systems.**

- **Hardware and software acquired at a total cost of Rs.3.66 crores were either unsuitable or inadequate for the purpose for which they had been acquired.**

- **232 PCs costing Rs.1.61 crores were acquired between 1988 and 1990 without undertaking any feasibility studies. The utilisation of the PCs was not being regularly monitored. In one Naval Command, the utility of PCs was reported to be very low due to unreliability of hardware and absence of dedicated EDP departments.**

- **Computer system costing Rs.1.51 crores acquired from a Public Sector Undertaking with the intention of creating six computer centres at Bombay and Visakhapatnam could not be put to its intended use as the hardware supplied was unsuitable for implementing the application**

software. Evidently, the procedures and controls used by the Navy/Ministry when considering and deciding upon the acquisition facilities were inadequate.

- Computer system acquired for the Area Headquarters and Naval Store Depot, Goa at a cost of Rs.23.74 lakhs had frequent unserviceabilities since its installation in July 1987.

- The development and implementation of systems like integrated production, planning and control in Naval dockyards, integrated logistics management information systems of Material Organisations, integrated pay accounting system and integrated sailors' management information system for which an amount of Rs.5.05 lakhs has been expended are held up due to inadequacy of the hardware procured.

- Computer systems costing Rs.40.86 lakhs procured for translation and inter-shop communication were found inadequate to meet the requirements.

23.4 EDP policy and planning

The main objective of the EDP efforts was development of an integrated management information system to assist effective decision making at various levels. With this objective the ten year computerisation plan visualised setting up of seven computer centres at nodal points located in New Delhi, Bombay, Visakhapatnam, Cochin and Goa with the apex at Naval HQ. The centres were to be integrated through a digital data communication network and were to be set up in a phased manner during the years 1982-88.

In 1988, Naval HQ modified the EDP policy and adopted a "bottoms up approach" in view of the changes in computer technology. Instead of the earlier "top down approach" which called for creation of major computer facilities at nodal points and subsequent linking with terminals at users' ends, the bottoms up approach involved creation of local data bases using personal computers (PCs) in the first instance and their networking at a later date. It was indicated that creation of wide area or inter city network to fulfil the ultimate needs of the Navy would be taken up after satisfactory implementation of stand alone PCs and local area networks. The Ministry stated (February 1992) that the ten year computerisation plan was only a Principal Staff Officers' paper and was not converted into a paper for obtaining approval of Cabinet Committee on Political Affairs although it continued to guide the

planned computerisation of the management information system. The Ministry added that the integrated command and control system was the ultimate objective and was expected to be achieved over next two to three plan periods. Thus, the main objective of computerisation which was to be achieved by 1987-88 is now expected to be achieved by about 2005.

23.5 Acquisition of hardware

23.5.1 Provision of computers for Naval Dockyard, Material Organisation and Naval Command HQ at Bombay and Visakhapatnam from PSU 'A'.

As a part of the plan to set up computer centres, the Defence Computer Committee of the Ministry approved in June 1982, the provision of two computer complexes at the Naval Dockyards, Material Organisations and Naval Command HQ at Bombay and Visakhapatnam at an estimated cost of Rs.5 crores. Each complex was to have one main frame computer as host and five mini computers as satellites. While no action has been taken for acquisition of the host computers, Naval HQ obtained sanction of the Ministry for the acquisition of six satellite computers at a cost of Rs.180 lakhs in July 1985, as amended in January 1986. Based on the recommendations made by Naval HQ, the balance four satellite computers were sanctioned by the Ministry in May 1986 at a cost of Rs.120 lakhs. The delay in acquisition of the satellite computers and their final acceptance on account of the failure of the suppliers to meet contractual obligations and consequential hiring of computers from outside agencies at a cost of Rs.41.14 lakhs had been commented upon in para 48 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 (No.11 of 1990).

In January 1991, the Ministry informed the Public Accounts Committee that the computers had been formally accepted in March 1990 and were being used. However, it was observed in audit that an amendment to the contract had been issued to enable final acceptance by deleting items yet to be delivered from the scope of the contract and thereby also reducing the contract value by Rs.34.48 lakhs. The items deleted included data cables, modems, network controller and application packages, the absence of which limits the computer capacity as well as its ability to be linked up in a local area network at a subsequent date as contemplated in the EDP plan.

Of the six computers supplied by PSU 'A' at a cost of Rs.150.60 lakhs, three each were delivered at Visakhapatnam and Bombay for installation at

Naval Dockyards, Material Organisations and Naval Command HQ. The computers installed (1987) at Bombay were intended to meet the requirements of Integrated Production Planning and Control (IPP&C) of the Naval Dockyard, Integrated Logistics Management Information System (ILMIS) of Material Organisation of this station and the office Management Information System of the Naval Command HQ (IOMIS) and Naval Pay Office. However, after a systems study conducted by a consultant 'P' appointed by the PSU, as per the terms of the contract, it was found that these computers did not have the capacity to operate the IPP&C. It was evident that the acquisition of hardware and services at a cost of Rs.50.20 lakhs for the Naval Dockyards was done without an adequate assessment of their suitability vis-a-vis the identified applications and also without ensuring the availability of compatible software and systems packages. The computers supplied by PSU 'A' had in fact been accepted without even any user acceptance tests. The Ministry explained in February 1992 that the PSU had on two occasions attempted to carry out the acceptance tests but did not succeed as it could not muster the necessary personnel and test equipment at the sites. Meanwhile, the Navy started using the system for creating data bases and running application programmes and when it was decided to curtail the contract after almost three years of non-performance by the PSU, it was considered futile to insist on formal acceptance tests. Since the Navy was nowhere near creating local area networks and operating online systems, the deletion of networking controller became inconsequential. Regarding consultant P's inability to develop the application software, the Ministry stated that the consultant had totally under-estimated the Naval requirements as was evident from the low sum of Rs.9 lakhs quoted by them. The Ministry added that the reference to inadequacy of the systems was merely a cover up to disguise their own incorrect assessment and that the Navy had developed some applications inhouse for the utilisation of the systems. The fact remained that none of the applications intended to be run on the systems have been fully developed and implemented. Moreover, if the estimate submitted by consultant 'P' was manifestly low, this could have been taken into account while evaluating the offers. The Ministry also admitted that computer systems supplied by PSU 'A' had already become obsolete.

23.5.2 Computer facilities for Naval Dockyards, Base Maintenance Unit and Bureau of Sailors at Bombay and Visakhapatnam from PSU 'B'

Action for acquisition of the remaining four satellite computers at a cost of Rs.120 lakhs for

installation at Naval Dockyards, Bombay and Visakhapatnam, Bureau of Sailors (BOS), Bombay and Base Maintenance Unit (BMU), Visakhapatnam sanctioned by the Ministry in May 1986 was initiated with the setting up of a Price Negotiating Committee (PNC) by the Ministry in November 1986. Based on the recommendation of the PNC, the Ministry placed an order on PSU 'B' in February 1990 for four computer systems at a cost of Rs.92.77 lakhs. Taking into account the experience gained by the Navy on the computers procured from PSU 'A', Naval HQ informed the Ministry in March 1990 that the system under procurement for the dockyards would not have the capacity to handle the workload and order for two of the systems should be cancelled. The Ministry cancelled the order for two systems in November 1990 and amended the value of the supply order for the remaining two systems to Rs.47.35 lakhs. The system meant for BMU was installed at Material Organisation, Visakhapatnam (MOV) in February 1991. The computer delivered to the BOS in June 1990 was tested and it was found that the memory capacity of the hardware procured was totally inadequate to meet the full needs of Sailors Management Information System (SMIS) which was intended to be run on the computer and the system would just about hold the basic data of all sailors. The computer acquired required a total change of configuration if it was to fulfil its contemplated tasks. The Ministry stated that its action of cancelling the order for two computers from PSU 'B' in November 1990 was based on the experience gained for use of the computers procured from PSU 'A' which did not have the capacity to handle the workload. This, however, contradicts the position taken by the Ministry in responding to the audit observation made in the preceding paragraph regarding the application programme of consultant 'P'. If the application programmes were themselves inadequate, it is not clear how the Ministry could have arrived at a conclusion as to the adequacy of the system. The Ministry added in February 1992 that since BMU was a part of the Naval Dockyard it was decided to install the second system in MOV whose needs would be adequately met by the system. Regarding the upgradation of the system sought by BOS for meeting full needs of SMIS, it contended that it was to meet anticipated additional needs. Any upgradation would, however, be looked into only after the completion of integration work. The system at BOS was expected to be fully in place only by end 1992 when its adequacy can be fully assessed. The system intended to be run on the computer diverted to MOV was expected to be implemented fully by end 1993.

Thus, the computers procured from PSU 'B' at a total cost of Rs.47.35 lakhs were yet to be fully

utilised.

23.5.3 Computer facilities for Naval Store Depot, Cochin

The Ministry sanctioned in November 1982, the procurement of a computer system and its installation at a total cost of Rs.18 lakhs for the setting up of a computer centre at the Naval Command HQ, 'Z'. The system was procured from firm 'D' against a contract concluded by the Director General Supplies and Disposals, New Delhi in April 1983 at a cost of Rs.16.89 lakhs. Although the system was received in October 1983, it was taken over from the firm only in April 1986 after rectification of defects in the system.

The system was intended for operation of Naval Air Stores Inventory Control system for which a software was to be developed by consultant 'Q' at a cost of Rs.0.98 lakh under a sanction issued by the Ministry in April 1985. At the implementation stage (October 1987), it was found that the system was inadequate to perform the contemplated task and required upgradation at an estimated cost of Rs.4.11 lakhs. In April 1988 Naval HQ accorded sanction to the upgradation of the system at a cost of Rs.4.20 lakhs which was done by firm 'D' in July 1988. The system was finally accepted in September 1989 after adding some more peripherals at an additional cost of Rs.4.20 lakhs. The computer system could thus be brought to its full use only after a delay of 6 years from its initial receipt from firm 'D'. The Ministry clarified (February 1992) that there were some drawbacks in the system installed in October 1983 viz. the operating system was of proprietary nature and not compatible with IMB/UNIX environment machines which had subsequently become industry standards for multiuser system. The system was exploited and upgraded in 1988 to enhance data entry and updation capability. The manual system of Naval Air Store Inventory Control was, however, yet to be discontinued and the Ministry stated that this would be done after consultation with the Controller of Defence Accounts, Navy (CDA-N).

23.5.4 Computer facilities for Area HQ at Goa

The ten year computerisation plan envisaged the setting up of a medium/mini size computer at Area HQ, Goa. In May 1984, Naval HQ obtained sanction of the Ministry for the procurement of a mini computer at a cost of Rs.20 lakhs. The computer was acquired from PSU 'A' at a cost of Rs.23.74 lakhs against a contract concluded in September 1986. The computer was delivered and installed at Naval Store Depot, Goa in July 1987. The Naval authorities stated in

November 1990 that the system was not giving satisfactory service and had not been accepted by them. According to the Ministry (February 1992), it was the remoteness of the location and absence of resident engineers that were causing the problems. These were being ironed out and certain application packages had been developed. However, the Ministry admitted that the computer system supplied by PSU 'A' were using chips that had become obsolete.

23.5.5 Naval HQ, New Delhi

Based on a sanction obtained from the Ministry in August 1982, Naval HQ procured a mini computer from firm 'D' at a cost of Rs.17.37 lakhs for a Naval Officers Management Information System (NOMIS). The computer was accepted by Naval HQ in March 1985. The system, however, could not be implemented, due to inadequate memory capacity. Naval HQ, therefore, procured 11 PCs at a cost of Rs.9.50 lakhs to supplement the system procured earlier against sanctions issued by it between November 1986 and February 1988. The extent of utilisation of the computers could not be verified in audit as no record of their utilisation was being maintained. Inability to make a proper assessment of the requirements of hardware prior to the acquisition of the system necessitated procurement of 11 additional PCs at a cost of Rs.9.50 lakhs. While not contesting the facts, the Ministry merely stated (February 1992) that the addition of PCs was a technological necessity.

23.5.6 Acquisition of personal computers

The Defence Computer Committee had in March 1986 issued a policy directive that each case seeking financial sanction for acquisition of computers should be supported by a feasibility study report indicating the areas prone to computerisation and that as a general rule, sanctioning of stand alone desk top personal computers for single user would not be accepted as this would lead to creation of independent data bases which would be impossible to integrate at a later date during net working. In August 1987, however, Naval HQ sought approval of the Ministry for acquisition of 245 PCs during the three year period from 1987-88 to 1989-90 for use in Naval ships/ establishments and directorates in Naval HQ at a cost of Rs.3.90 crores. The proposal aimed at achieving the following objectives:-

- propagate the culture of computerisation;

- utilisation of dormant EDP skills imparted to personnel over the past few years; and

- data capture and data entry on magnetic media for each Naval ship/establishment and directorate of Naval HQ as a prelude to incoming larger computer systems.

The Ministry sanctioned the purchase of 232 PCs during the period May 1988 to March 1990 at a cost of Rs.160.88 lakhs. No cost-benefit analysis was done nor were the actual application areas and systems identified before the proposed induction of PCs. It was indicated in April 1988 that a policy for software development was under formulation by Naval HQ.

In August 1990, Naval HQ approached the Ministry seeking sanction for procurement of another 150 PCs in order to computerise grass root functions of various organisations of the Navy. Ministry, however, observed in September 1990 that Naval HQ should first make out a comprehensive plan and carry out a cost-benefit analysis of the 232 PCs already procured and quantify manpower savings. This exercise was yet (February 1992) to be undertaken.

It was reported by one Naval Command in August 1990 that as a result of studies carried out, the productivity and utility of PCs supplied to various units in December 1988 was very low due to unreliability of hardware and absence of dedicated EDP departments. No study on productivity and utility of PCs was carried out by the other Naval Commands. Naval HQ stated in January 1991 that feedback on utilisation of PCs was being formulated and a proforma would be designed and circulated to assess utilisation of the PCs procured. In February 1992, the Ministry stated that Naval HQ would undertake steps to link the stand alone systems at Dockyards, Stores Organisation and HQ at the appropriate time. It added that this did not mean that all PCs would be networked, as PCs on board ships would be operated on stand alone basis and data would be transferred on magnetic media. It further stated that such an exercise would create an atmosphere of non-acceptance of induction of computers by end users. This is not tenable as cost-benefit analyses are undertaken for assessing the requirement and economics of expensive systems before procurement and cannot be related to amorphous concepts of spreading of computer culture in the Navy. Moreover, this stand contradicts Ministry's own directive issued to Naval HQ in September 1990 for undertaking such an analysis.

23.6 Systems design and development

The contract concluded in October 1986 with PSU 'A' for acquisition of computers included a provi-

sion for development of application packages through a sub-contractor (consultant 'P'). The packages to be developed were as under:

Station	System Application
Naval Dockyards, Bombay and Visakhapatnam	Integrated Production, Planning & Control System
Material Organisations, Bombay & Visakhapatnam	Integrated Logistics Management Information System
Naval Pay Office, Bombay	Integrated Pay Accounting System
Naval Command HQ, Visakhapatnam	Integrated Office Management Information System

However, due to inadequacies in the hardware supplied by PSU 'A' and accepted by the Navy, none of the application packages could be developed by the consultant. Such lack of systematic planning and identification of needs leading to inadequacy of the hardware compelled the Navy to make alternative arrangements largely on an adhoc basis to establish the requisite facilities. Many of the systems contemplated were consequently either delayed or could not be established at all. The details are as follows:

(a) In March 1990, Naval HQ stated that the IPP&C which had been proposed to be designed and developed by consultant 'P' was more in tune with the requirements of Naval Dockyard, Bombay and would not be suitable for Naval Dockyard, Visakhapatnam. Based on this, in April 1991, the Ministry had to conclude a contract with PSU 'C' for study and delivery of documentation for development of a suitable system for Naval Dockyard, Visakhapatnam at a cost of Rs.2.7 lakhs. The report submitted by the PSU was being analysed by Naval Dockyard and Naval HQ (February 1992). The Ministry stated that hardware sizing was omitted to be done and to prevent recurrence of such a predicament, it had called in a PSU to look into both the hardware and software needs of Naval Dockyard, Visakhapatnam.

(b) In November 1987, work for creation of data base of the inventory held in Material Organisation, Bombay, estimated to be around Rs.5 lakhs, had to be offloaded to consultant 'Q' at a cost of Rs.8.56 lakhs in order to enable timely implementation of the ILMIS. The firm had been paid Rs.4.42 lakhs upto December 1990. In January 1990, a proposal was sent by Naval Command HQ, Bombay to award a contract

to consultant 'Q' at an estimated cost of Rs.290 lakhs for supply of hardware as well as software for ILMIS. However, in August 1990 Naval HQ felt that the proposal suffered from several drawbacks and instead decided that initially a number of PCs should be provided for training users and creation of data bases. While agreeing with the above, Ministry stated (February 1992) that the emphasis of Naval HQ was on ensuring data bases operation first and system integration using super minis at a later point.

(c) The computer procured from PSU 'B' against the order placed in February 1990 for BMU, Visakhapatnam was diverted to the MOV for development and operation of a computerised management information system for a particular class of stores. This was yet to be developed (February 1992).

(d) For the development and implementation of a SMIS in the BOS, a super micro computer was acquired from PSU 'A' against a sanction issued by Naval HQ in July 1987 at a cost of Rs.4.35 lakhs and installed in January 1988. This was upgraded by December 1988 at a cost of Rs.2.34 lakhs. However, it was found unsuitable for the SMIS. Thus expenditure of Rs.6.69 lakhs for the acquisition of computer and its upgradation proved infructuous. The Ministry stated in February 1992 that the system was provided for ensuring continuity of work which the BOS had been doing on a hired computer till January 1989 and that it was transferred to Naval HQ on receipt of a new system from PSU 'B' in June 1990. Audit, however, noticed that the computer had been transferred to Naval HQ in February 1990 as it was not functioning satisfactorily in BOS. According to the Ministry (February 1992), the system was being used at Naval HQ for training purposes.

In September 1989, an order was placed on consultant 'Q' for design, development and implementation of SMIS at a cost of Rs.3.25 lakhs. Meanwhile, under two sanctions issued by Naval HQ in December 1988 and February 1989, a computer was procured from PSU 'B' at a cost of Rs.8.49 lakhs and installed at the BOS. In December 1989, consultant 'Q' pointed out that the computer under procurement would not be suitable. Naval HQ, however, decided to go ahead with the procurement on the ground that the SMIS could be run on the computer and enhanced requirement could be met by suitable upgradation in due course. The computer was installed in March 1990. Simultaneously, another computer system ordered by the Ministry on PSU 'B' in February 1990 was also delivered and installed at the BOS in June 1990. A review of the capabilities of the hardware of these computers by the BOS in November 1990 revealed that

the computers procured were inadequate for the task envisaged and required upgradation. This was yet to be done (February 1992).

(e) In February 1990, Naval HQ decided to develop the IPAS in-house, with some modifications and to implement by May 1991. The system was yet to be developed and implemented (February 1992). The Ministry stated (February 1992) that all related modules had been developed and with the provisioning of additional PCs and terminals all sections would go on to maintenance of records on magnetic media as a sequel to elimination of manual record keeping.

(f) The IOMIS could not be developed and implemented in Naval Command HQ at Visakhapatnam due to the unreliability of computer system supplied by PSU 'A'. The Command HQ stated in April 1991 that the Main computer was not under any annual maintenance contract and development of IOMIS was now being studied by consultant 'Q', free of cost. The Ministry stated (February 1992) that consultant 'Q' had been approached for maintenance cover but had not agreed. PSU 'A' is now maintaining the system on on-call basis.

23.7 Semi automated translation system

In order to speed up the translation into English of repair technical documents supplied by a foreign supplier of ships, Naval HQ proposed in March 1984 the acquisition of a computer aided translation facility at New Delhi. Naval HQ added in June 1985 that there was already a backlog of four lakh pages/sheets of documents pending for translation. The Ministry issued sanction in November 1985 for the procurement of the system including software at a cost of Rs.20 lakhs. The technical evaluation and negotiations got delayed and it was only in August 1987 that the Ministry placed order on firm 'E' for acquisition of the system at a cost of Rs.24 lakhs.

Although all the hardware and standard software were delivered in November 1988, the systems could not be accepted till April 1990 due to deficiencies in both the software and hardware. In April 1990 Naval HQ accepted the computer and made payment to the firm subject to the condition that the deficiencies would be made good. These were yet to be rectified (February 1992). The Ministry stated in February 1992 that by using the available hardware and system software, the backlog of four lakh pages had been cleared although the deficiencies were yet to be made good.

23.8 Inter-shop communication system in Naval Dockyard, Visakhapatnam

In order to provide a micro processor based inter shop communication system to Naval Dockyard, Visakhapatnam, sanction was obtained by the Navy in December 1985 for acquisition of such a system with 16 terminals from PSU 'B' at a cost of Rs.19.07 lakhs, through Director General Naval Project, Visakhapatnam. The system received from the PSU at a cost of Rs.16.86 lakhs, though installed in August 1987, could not be put to use due to defects in the application software which resulted in communications being transmitted to wrong destinations. In June 1988, the Dockyard proposed upgradation of the system at an estimated cost of Rs.12 lakhs. Sanction was awaited. The Dockyard stated in May 1991 that the complete communication requirement would be covered under the dockyard system study which had been undertaken since May 1991.

In addition routine maintenance of the system was not carried out although a sum of Rs.1.90 lakhs was paid in advance to the PSU in May 1990 for its maintenance against an order placed on it in November 1989 by the Dockyard. In May 1991, the Dockyard stated that efforts were on to get the amount refunded by the PSU. Thus, the benefit of an expenditure of Rs.18.76 lakhs was yet to accrue. The Ministry stated in February 1992 that the firm had failed to provide technical assistance in rectifying some of the defects and that the local engineer of the firm was attending to the problems. It added that upgradation was not taken up since it would be met during implementation of integrated production, planning and control requirements of the dockyards.

23.9 Training

The plan projected the requirement of 500 officers and 2500 sailors over a period of ten years. It was planned to impart the training at centres of the Army, Navy as well as other institutions. An EDP training centre was established at a Naval establishment in April 1984 with two super mini computers and 20 PCs costing Rs.40.41 lakhs. It was seen that only 25 officers (including 3 civilians) were imparted long EDP training against a planned capacity of 40. The courses planned by Naval HQ from 1987 in other establishments envisaged long term courses for 8 to 10 officers and short term course for 300 officers and 2000 sailors per annum. Naval HQ could not furnish details of training imparted at institutions other than at the Naval establishments. The Ministry stated (February 1992) that though a dedicated team of 500 officers and 2500 sailors were considered a pre-requisite in

early 1980s this underwent changes and it was decided that keeping in view the policy of the Government on manpower sanctions, all officers and sailors involved in record keeping activities be put through basic computer courses. It added that after the setting up of the training centres only one or two officers were deputed to outside institutions for training.

23.10 Monitoring

An EDP Policy Committee which had been constituted by Naval HQ in January 1976 was made responsible for identification of tasks for computerisation and allocation of priorities. It was to meet once in a year and had held regular meetings till March 1984. The Committee did not discuss any policy matters and its discussions basically centered round the need for additional manpower. It, however, did not meet after March 1984 and became defunct.

The acquisition of computer facilities and implementation of systems were thus not effectively monitored by Naval HQ/Ministry. Although Naval HQ had maintained that the process of computerisation was being monitored by them, the fact was that they did not have even the records of the computers held by the Navy. The users did not also maintain any records of utilisation of the computers. The Ministry stated (February 1992) that the monitoring had been delegated to commands. However, this does not absolve Naval HQ of its responsibility for centralised monitoring of the computerisation activities.

24. Execution of a Naval project

24.1 Introduction

In July 1967, the Ministry issued approval for the establishment of the office of the Director General, Naval Projects (DGNP) for the creation of facilities at station 'P' for the repair and maintenance of certain Naval ships being acquired from country 'X'. The detailed project report was received from country 'X' in January 1968 and the project was formally approved in September 1968. The project was estimated to cost Rs.96 crores, and was expected to be completed within a period of ten years.

Execution of phase I of the project was examined in audit during 1974-75 and a mention was made in para 19 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services) for the year 1974-75 regarding cost escalation and delays due to change in scope of work as

well as defects in construction, suspension of dredging of the degaussing basin and additional expenditure due to conclusion of a new contract for dredging. Further, irregularities in the award of a contract, additional cost due to change in design of dock floor, collapse of dock head wall and sheet pile cell of the coffer dam and its construction and loss of working time due to non-compliance of pre-dredging requirements were highlighted in para 20 of the Report for 1975-76. Mention was also made in para 23 of the Report for the year 1977-78 regarding increase in cost due to change in the alignment of the degaussing basin and additional payment for transfer of Port Trust land due to delay in taking a decision on shifting of two establishments. The impact of delay in completion of facilities under the project on repair activities of the Naval Dockyard was also commented upon in para 40 of the Report for the year 1984-85.

24.2 Scope of Audit

The setting up of facilities under the subsequent phases of the project with reference to the time schedule and sanctioned cost, utilisation of selected facilities and financial management were examined in audit during the period from July to December 1990.

24.3 Organisational set up

The DGNP headed by a Rear Admiral works directly under the Ministry and is responsible for coordinating the requirements and priorities of different contracts so as to ensure speedy completion of the projects. DGNP is delegated with various financial powers and is authorised to take decision on all matters connected with the speedy execution of the projects. Besides his own establishment of engineers, technocrats and other categories of employees, he is assisted by a Financial Adviser.

24.4 Highlights

- **There had been abnormal delay in the completion of the project due to inadequate analysis of soil data and consequent frequent changes in the scope of work as also subsequent additions during the execution resulting in cost escalation of Rs.66.41 crores. The project which was scheduled to be completed by 1978 is now expected to be completed in its entirety only in 1992.**

- **Delay in completion of workshop facilities strained the internal resources of the Naval**

dockyard and resulted in off-loading of work to trade to the extent of Rs.67.93 lakhs.

- Due to sinking of floors, the need for suspended flooring to the existing workshop buildings as well as future construction had been accepted as early as in February 1982 and provision of Rs.10.17 crores had been made in February 1987 for this purpose. The suspended flooring had not, however, been provided to any of the buildings which would not only affect production, but also escalate the cost.

- Failure to adhere to the instructions of the State Electricity Board (SEB) and non-acceptance of its offer for providing a 132 KV substation and delay in completion of the sub-station by the Navy resulted in escalation of Rs.1.28 crores in completion cost besides payment of Rs.16.05 lakhs towards additional surcharge.

- Gas Turbine (GT) overhaul facilities set up at a cost of Rs.18.25 crores after a delay of six years were being utilised only to the extent of 50 per cent. The GT overhaul facility required to be set up by 1985 for another class of ships was yet to be completed. Consequently, the engines of these ships had to be overhauled abroad at a cost of Rs.7.20 crores.

- Due to change in site and design of degaussing facility, it was completed after a delay of 15 years at a cost of Rs.7.47 crores. The facility created was 15-20 years old and is not suitable for modern special purpose vessels.

24.5 Planning and Progress

Although the project was planned for completion over a period of ten years from 1968-69 to 1978-79, difficult sub-soil conditions encountered during the execution of the project and inadequate soil investigation necessitated changes in the scope of work and revision of cost estimates. The estimated cost of the project was revised to Rs.211 crores in June 1975. The main reasons for the increase were:

	Rs. in crores
- under estimation of costs due to insufficient data	37.00
- cost of services/new items of work not known earlier	31.50
- change in scope of work	6.61
- escalation in cost of construction materials	5.80

During the same month, the left over work was split into 3 phases, Phase 1A costing Rs.111.31 crores, Phase IB Rs.33.47 crores and Phase II Rs.66.05 crores. In July 1978, Phase 1B and II of the Project were reassessed and the project cost was revised from Rs.99.52 crores to Rs.104.85 crores.

Due to the very poor soil conditions suspended flooring was required to be provided to important buildings. However, flooring made up of cast blocks was provided in the buildings constructed under phase I of the project. Consequently, the flooring subsided at many places affecting production. The Steering Committee for the project had directed in February 1982 that suspended floors be provided in all important buildings in Phase II and a programme be evolved for special repairs to all buildings completed under phase I. The project cost of phase II was accordingly reassessed in May 1987 from Rs.104.85 crores to Rs.237.24 crores. The increase was attributed mainly to

	Rs. in crores
Escalation in prices	51.57
Change in the scope of works due to induction of new type of ships	55.81
Additional expenditure due to provision of suspended flooring	10.17
Increase due to variation in cost of stores/contingencies and establishment charges.	14.84
	132.39

The Ministry stated (January 1992) that the assumption was that the soil would settle down and that no further sinking would take place after some time; but that this was belied as there was a shifting river bed below the site. The reply of the Ministry was not convincing since the existence of the river bed and its nature should have been taken into account at the time of initial planning itself.

Consequent on the acquisiton of a certain class of new ships in February 1981, Government approved in December 1981 the creation of additional facilities for the repair and overhaul of these ships as Phase III of the project at an estimated cost of Rs.59.58 crores. This included repair facilities for gas turbines of these ships at a cost of Rs.10.53 crores. However, in September 1983 Ministry agreed in principle to create a Marine Gas Turbine overhaul centre to augment the facilities contemplated earlier in Phase III of the project.

This was approved in September 1984 at a cost of Rs.24.40 crores as phase IV. The approved amount of phase III was reduced to Rs.49.95 crores.

Again, with the acquisition of newer ships between 1986 and 1989, necessity arose for further augmentation of the shore facilities. Consequently, Government approved in October 1989 Phase V of the project for augmenting the shore facilities at an approximate cost of Rs.51 crores.

24.6 Progress of the project

The physical and financial progress of execution of the phases is depicted in Table below:

TABLE

Phase	Probable date of completion		Date of completion	Cost	
	Original	Revised		Original / Revised	Amount sanctioned / Expenditure till March 1991
				(Rupees in crores)	
I	1968	1978	1983*	96.00 112.92	99.69 116.14
II	1968	1978 1984 1992	**	104.00 237.24	188.55 207.91
III	1988	April 1991	April 1991***	49.95	19.29 18.24
IV	1988	March 1991 June 1991	****	24.40	22.39 18.73
V	1994	-	*****	51.00	-

* Balance work transferred to Phase II
** Works costing Rs.69.17 crores in progress
*** All works excepting installation of equipment costing Rs.14.32 crores completed
**** Civil works completed. Work for airconditioning is in progress.
***** Work in progress.

Thus, although, Phase I works had been completed more than eight years back, the revised administrative approvals have yet to be accorded to regularise the excess expenditure. Ministry stated (January 1992) that exact expenditure would be known only on completion of the transfer of surplus stores and thereafter action would be taken to revise administrative approvals, if required. It was, however, noticed in Audit that nearly eight years had already elapsed since the completion of the works. It was envisaged while revising the cost of phase II in May 1987 that the balance civil works costing Rs.144.28 crores and installation of equipment costing Rs.19 crores would be completed by March 1991. The Ministry stated (January 1992) that certain portion of the work remained to be completed. It added that while revising the cost of Phase II, the envisaged dates of completion had been advanced to March 1991 from end 1991. However, the time frame of completion of works which were linked with certain classified projects and amenities for residential colony could not be compressed further and were envisaged to be completed by the end of 1991. Thus, the project which was scheduled to be completed by 1978 is yet to be completed in its entirety. The Ministry while admitting the time and cost overruns in the execution of the project attributed the same to the following:

- difficult and unusual soil conditions encountered during construction.

- difference in the concept of refits and consequent shortfalls in foreign country's project report.

- changes due to catering for the needs of different type of vessels acquired/positioned at that place later.

- escalation in prices of all types of materials and labour.

- inexperience of the executing agency (MES) in setting up civil and marine works in such adverse sub-soil conditions.

The actual expenditure till April 1991 had exceeded the administrative approval of Rs.188.55 crores accorded for Phase II so far, by Rs.29.87 crores. Considering the fact that works worth Rs.2.66 crores were still being planned and that works worth Rs.29.23 crores were only 50 per cent complete as also equipment costing Rs.22.02 lakhs were yet to be installed, the cost of the project was likely to escalate further. No forecasts were, however, available. The Ministry intimated in

January 1992 that the exact position will emerge only on completion of transactions relating to unconsumed stores as and when the projects are finally closed.

It was observed that two items of work i.e. provision of mobile steam plant and a polaroid identification system costing Rs.42.12 lakhs and Rs.8.78 lakhs respectively, which were not included in the original approval of the Cabinet Committee on Political Affairs (CCPA), were sanctioned during April and September 1987 respectively for execution against the reported savings of two other works under the phase. Keeping in view the expenditure incurred against the sanctions accorded and the works in progress, the question of any savings expected under the phase is remote. As such execution of these works out of the "anticipated savings" which were unlikely was improper. The DGNP agreed that such works should not have been sanctioned.

Further, special works like provision of civil works and equipment for inspection repair shop, war head joining workshop, model room for the Marine Gas Turbine Overhaul Centre, administrative block and changing room for officers/supervisors/workmen etc., costing Rs.27.86 crores had been executed so far for which no approval of the CCPA existed (December 1991). The Ministry's contention that the issue of according administrative approvals was done with the sanction of the competent financial authority was incorrect as the appropriate authority for granting approval to such works was the CCPA with whose approval the entire project was being executed.

In May 1987, while conveying the sanction for the revised cost of the phase II from Rs.104.85 crores to Rs.237.24 crores, Ministry had indicated that the administrative approvals for different items of civil works and equipment based on the approximate estimates would be revised and issued separately. Out of a total of 162 sanctions accorded, 27 required revision. No revised sanctions had been accorded even after a lapse of over four years (December 1991).

24.7 Delay in execution of works services

Instances of delay in execution of works which came to notice are indicated below:

24.7.1 Foundry Forge Heat Treatment Workshops

The project report envisaged setting up of a foundry forge heat treatment workshop by 1978. The initial cost of the buildings and civil works projected to Ministry was Rs.531.81 lakhs, which in-

cluded civil works of Rs.180.56 lakhs and equipment worth Rs.351.25 lakhs. The cost was subsequently revised in May 1987 to Rs.349.74 lakhs for civil works and Rs.415.76 lakhs for the equipment. Civil works were completed in May 1989 at a cost of Rs.300.33 lakhs while the installation of workshop equipment costing Rs.142.75 lakhs was completed by April 1991. The delay in completion of workshop facilities by 13 years resulted in off-loading the work to trade to the extent of Rs.67.93 lakhs during the period from August 1988 to August 1991. The Ministry stated in January 1992 that the delay in completion of workshop facilities occurred due to provision of suspended flooring and some additional functional requirements which necessitated additional works, external electric supply etc.

24.7.2 Provision of suspended flooring

At the time of revision of cost of phase II works in February 1987, a provision was made for an amount of Rs.10.17 crores for suspended flooring for all important buildings to be constructed under phase II (Rs.1.37 crores) and all buildings completed earlier in phase I (Rs.8.80 crores). Till January 1991 only one work costing Rs.18 lakhs had been completed as a pilot project. The DGNP stated in January 1991 that the work could not be progressed due to repair bays being not made available by the Navy. The Ministry stated (January 1992) that the repair work to the floor would require removal of the installed equipment. Thus, while there would be certain adverse effects on production and escalation of cost, the work was likely to be completed by early 1993.

24.7.3 Delay in provisioning of 132 KV receiving station

The power requirement for Naval Dockyard and Naval Base at Station 'P' was drawn from a sub-station of a State Electricity Board (SEB). In July 1981, the SEB stipulated that consumers with a maximum demand of over 5 MVA should avail the power at 132 KV station and a grace period of six months was allowed to make the necessary arrangements. Additional surcharge at 10 per cent was to be levied from consumers who violated these instructions. After about a year the Navy requested the SEB to exempt them from the levy of additional charges which was not agreed to by the SEB. However, as a gesture of goodwill, the SEB offered in June 1982 to execute on payment the sub-station and commission within 2 months of receipt of go-ahead sanction at an estimated cost of Rs.1.02 crores.

Instead of availing of the offer of the SEB,

Ministry's sanction was obtained in November 1983 by the Navy for provision of a 132 KV receiving station at a cost of Rs.1.92 crores. The work was completed at a cost of Rs.2.30 crores in March 1989. Due to non-availing of the offer of the SEB and further delayed completion of the 132 KV station, Navy had to pay Rs.16.05 lakhs upto March 1989 by way of additional surcharge of 10 per cent. The Ministry stated in January 1992 that though the SEB had agreed to take up the work at a tentative cost of Rs.1.02 crores, they neither agreed to the waiver of the penal charges nor the penalty clause for delayed completion of work. Moreover, the SEB was insisting on payment of surcharge even if the work was delayed and the Navy bearing the possible escalation of costs. It was, therefore, decided by the Naval authorities to execute the work departmentally. It was, however, noted in audit that the offer of the SEB was less by Rs.0.90 crore from even the initial contemplated cost of Rs.1.92 crores. The project was in fact completed with a cost overrun of Rs.0.38 crore and a time overrun of over five years. The apprehension of the Navy that the escalation of cost, if any, in SEB offer may have been more was, therefore, without any firm basis. Moreover, the fact remained that action on the instructions of the SEB was delayed for a year. Thus, non-acceptance of their offer resulted in ultimate completion of the work departmentally at an extra cost of Rs.1.28 crores after a delay of over five years besides the payment of additional surcharge of Rs.16.05 lakhs.

24.7.4 Construction of slipway

The project included setting up of a 600 tonne slip way. This included a portal crane for the repair berth which was sanctioned in December 1970 at a cost of Rs.21.74 lakhs. The construction of the diaphragm end curtain walls of the slipway was sanctioned at a cost of Rs.78.65 lakhs in April 1972 and completed at a cost of Rs.1.48 crores in 1975. The delay in setting up of the slipway was commented upon in para 40 of the Report of the Comptroller and Auditor General of India, Union Government (Defence Services) for the year 1984-85.

Further work on construction could not be carried out due to the decision of Naval HQ in May 1982 to appropriate the site for a special classified project. In July 1988, Government sanctioned the construction of the slipway and winch house at another site in the Naval Dockyard at a cost of Rs.25.04 crores which was likely to be completed in April 1992. Thus, civil works and crane already installed at a cost of Rs.1.48 crores could not be utilised for the intended purpose. In addition, equipment costing Rs.27 lakhs, imported in 1971,

remained un-installed. The Naval authorities stated in September 1987 that the work had helped in consolidation of the soil in the area.

24.7.5 Marine Gas Turbine Overhauling Centre

Facilities for the medium repair of Gas Turbine (GTs) of 'A' series of ships sanctioned under Phase I were to be completed by November 1976. The facilities were completed in March 1982 after a delay of five years. The non-availability of facilities necessitated despatch of 10 GTs to a foreign country for repair and overhaul involving an expenditure of Rs.2.75 crores.

The dockyard commenced repair/overhaul of GTs from April 1982. Although the facilities created were for medium repair/overhaul of four GTs per year, the dockyard could not repair more than two GTs per annum till 1990-91. The low output was stated to be due to uncertain soil conditions as well as faulty lay out of the shop as a whole.

Consequent upon the acquisition of 'B' series of vessels in May 1980, necessity arose for the creation of additional medium repair facilities, the proposal for which was approved by Government in December 1981 as Phase III of the project at a cost of Rs.10.53 crores. A scrutiny of the repair technical documents (RTDs) revealed that the proposed building had to be modified in a major way in terms of both civil works and equipment. The situation was reviewed by the Navy and a centralised Marine Gas Turbine Overhaul Centre (MGTOC) evolved. The site originally proposed was also changed to a nearby location. In supersession of the earlier approval accorded in December 1981, approval of the CCPA was obtained in September 1984 for the creation of the centralised facility at a cost of Rs.24.40 crores. The facility was to be commissioned by 1989. As the GTs of this series of ships were due for overhaul from November 1985 onwards, it was felt imperative that the MGTOC should be set up by mid 1988 so that the GTs of at least third ship onwards could be overhauled in India. There was no alternative except to send GTs of first two ships of 'B' series to the foreign country for overhaul.

The civil works for the main overhaul centre and majority of allied work services were completed in March 1991 at a cost of Rs.13.49 crores. Equipment worth Rs.4.76 crores constituting 51.52 per cent of sanctioned cost of Rs.9.44 crores had been procured till the end of March 1991 and 80 per cent of the equipment have been installed upto October 1991.

Due to delay in creation of the requisite facilities in the country, two supplementary agreements had to be concluded in January 1986 and December 1987 respectively with a foreign country for the repair/overhaul of the GTs of the first two vessels of the 'B' series of ships at a cost of Rs.4.13 crores. The engines were sent to them in August 1986 and October 1988 and were received back in May/November 1988 and November 1990 and January 1991 respectively. The GTs of the third ship were also approved by the Government for repair/overhaul in the foreign country at a cost of Rs.3.91 crores in May 1990 and a third supplementary agreement was concluded in August 1990 for repair/overhaul of three out of four GTs of this ship at a cost of Rs.3.07 crores. The contract for the fourth GT of the ship was yet to be concluded (December 1991).

One of the new GTs received from the foreign country was fitted on board of the first ship and trials were satisfactorily completed in January 1987. The GT was expected to function without any problem for a period of next five years. However, the GT suffered internal damage in May 1987 i.e. within four months of its operation. Naval HQ opined that manufacturing defects led to its failure. The responsibility for repair/replacement was, however, not accepted by the foreign country.

After protracted correspondence, the foreign country stated in September 1988 that the issue of repairs/replacement under guarantee would be based on the inspection of the engine in that country. Thereafter, a draft supplementary agreement was received in January 1989 for the repair/overhaul of this GT at a cost of Rs.74.22 lakhs which was revised to Rs.83.54 lakhs in May 1989. The contract, however, could not be concluded due to disagreement about the exchange rate. Ultimately, Government approved in May 1990 conclusion of the contract at a cost of Rs.99 lakhs. Naval HQ stated in June 1991 that the contract could not be concluded so far, as the foreign country did not agree to the presence of Indian specialists during defect investigation in their country for deciding the warranty liability of the GT (June 1991). The Ministry stated in January 1992 that a separate draft contract was awaited from the foreign country.

Thus, GT overhaul facilities for 'A' series of ships, created after a delay of six years, were being utilised to the extent of only 50 per cent of installed capacity. The GT overhaul facilities required to be set up by 1985 for 'B' series of ships were yet to be completed (June 1991). Consequently, GTs of three ships had to be despatched to the foreign country for overhaul at a cost of

Rs.7.20 crores.

24.7.6 Degaussing facility

Phase II of the project included provision of a degaussing facility comprising a degaussing basin, jetty and a building at a cost of Rs.314.80 lakhs. This facility was essential to ensure safety of ships against destruction by magnetically operated mines by minimising their induced magnetic field. The infructuous expenditure of Rs.50 lakhs due to the shifting of site for the degaussing basin because of the existence of rocks at the selected site and the risks to which the ships were exposed due to the non-availability of the requisite degaussing facility have already been commented upon in paras 23 and 40 of the Reports of the Comptroller and Auditor General of India, Union Government (Defence Services) for the years 1977-78 and 1984-85 respectively.

The changes in site and design led to price escalation and the facility was sanctioned at a revised cost of Rs.10.56 crores in May 1986. The facility was commissioned in December 1989 at a cost of Rs.7.47 crores (booked expenditure upto April 1990). This included equipment worth Rs.30 lakhs procured from the foreign country against a supplementary agreement concluded in October 1968 and received in June 1975. In the meantime, the ships had to sail all the way from Station 'P' to Station 'R' for necessary demagnetisation at regular intervals which entailed heavy expenditure on fuel as well as lost time.

The Navy obtained another sanction in April 1987 to conduct a feasibility study for construction of an under water range including another degaussing facility at a cost of Rs.1.46 crores. In reply to an audit query about the necessity of creating another degaussing facility in addition to that already created at the Naval Dockyard, the Ministry stated in February 1989 that the equipment and techniques developed in the range at Station 'P' were 15-20 years old and were, therefore, not suitable for modern special purpose vessels. The Ministry stated (January 1992) that the facility was being extensively used and would continue to be used. The fact remained that there was delay of 15 years in creation of the facility which necessitated the sending of ships to Station 'R' for demagnetisation at an extra cost, thus defeating to a substantial extent the objective of saving in expenditure.

24.8 Monitoring and Management Information System

Computer facilities costing Rs.8.28 lakhs were established in the DGNP in May 1988. However, the EDP personnel for manning the computer are yet to be posted. The facilities are being utilised for routine work such as pay bills rather than generating a management information system and on-line analysis which are imperative needs in an organisation executing works worth around Rs.400 crores.

In para 74 (19) of their Ninety third Report (1986-87), Eighth Lok Sabha, the PAC had also recommended that computer-aided Management Information Systems (MIS) should be established for efficient monitoring of major projects by both Government and Service HQ. Although the DGNP is vested with substantial financial powers no proper MIS to monitor physical and financial progress of the project existed in the organisation resulting in lack of coordination and control over various activities of the organisation. The Ministry while confirming the lack of a computersied MIS stated (January 1992) that a manual system was being used and was being operated with the available know-how on a limited scale. The DGNP stated in January 1991 that efforts were being made to develop a MIS with available data and EDP officers have been sancti-oned. However, no qualified officers had been positioned as yet.

25. Naval Training Establishment

25.1 Introduction

INS Valsura is the premier training establishment for training service and civilian personnel of the Indian Navy in electrical, electronics and allied subjects and in operation, maintenance, repairs, design, development, production, installation and testing of all general service weapon control, radio, electrical and other equipments of the electrical branch of the Indian Navy. Personnel from foreign Navies are also being trained at the establishment.

25.2 Scope of Audit

The existing training facilities at INS Valsura and the augmentation, establishment and commissioning of new facilities during the period 1985-90 as also realisation of training targets were reviewed in audit during the period from September 1990 to January 1991.

25.3 Organisational set up

The Commanding officer of INS Valsura is responsible to the Southern Naval Command, Cochin for training purposes and to the Western Naval Command, Bombay, for administration of civilian personnel. The establishment is functionally divided into various departments, each under the charge of a separate Head of Department.

Service officers and sailors constitute sixty two per cent of the sanctioned strength in August 1981 with the balance thirty eight per cent being constituted by civilians -industrial, non-industrial and ministerial.

25.4 Highlights

- **There was shortage of officer instructors to the extent of 38.5 per cent which had serious repercussions on the quality of training.**

- **Against the sanctioned amount of Rs.1.62 crores for augmenting training facilities sanctioned during 1985-90, only Rs.0.32 crore was spent upto February 1991.**

- **Two equipment acquired at a cost of Rs.94.25 lakhs could not be used due to lack of proper planning and timely action.**

- **A 20 bedded sickbay costing Rs.79.59 lakhs was constructed without appropriate sanction and could not be utilised for over two years in the absence of the requisite staff. Similarly, a fire station building constructed at a cost of Rs.5.80 lakhs 40 months ago was not functional for want of fire crew which was yet to be sanctioned.**

25.5 Training targets and achievements

25.5.1 Training

Based on the Navy's requirements, Southern Naval Command formulates the annual training programme for officers and sailors under directions from Naval Headquarters (HQ).

Adequate instructional staff is a pre-requisite for any training activity. The position of availability of such staff during the period under review was as under:

Year	Officers		Sr.Sailors		Jr.Sailors		Civilians	
	San-ctio-ned	Post-ed	San-ctio-ned	Post-ed	Sanc-ntio-ned	Post-ed	San-ctio-ned	Post-ed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1985-86	66	37	114	102	120	47	27	20
1986-87	66	40	125	109	84	64	71	63
1987-88	66	41	125	117	84	52	79	66
1988-89	66	42	125	129	84	82	77	61
1989-90	66	43	125	125	74	56	79	68
Total	330	203	614	582	446	301	333	278
Average availa-bility per cent	61.5		94.8		67.5		83.5	

While the average availability of Sr. Sailors and civilian instructors was satisfactory, there was a significant shortfall in the case of officer and Jr. Sailor instructors. Such shortfall had the following serious repercussions on the quality of training imparted:

- increase in the class strength resulting in adverse teacher-taught ratio,
- officer instructors had to be pooled to impart training on subjects/equipment other than their areas of specialisation, and that too to various levels of classes in rapid succession without much time for preparation,
- off-loading of basic subjects to be taught by officers to Sr. Sailor instructors, and
- utilisation of maintenance staff of the establishment for instructional purposes thereby affecting the level of maintenance of the equipment.

The Ministry while agreeing with the shortages in instructional staff strength stated in January 1992 that these shortages have to be viewed in the context of overall shortage of Electrical and Educa-

tion officers in the Navy. It added that the quality of training was being maintained by posting highly qualified and motivated officers and sailors as instructors. However, the Ministry did not spell out steps being taken to rectify the situation.

25.5.2 Training aids

In order to meet job requirements on board ships and to keep the trainees abreast with the latest technological advances in the various fields as well as to enable them to have hands-down training on new equipments, it is necessary that various workshops are equipped with current/updated versions of various training aids. During the period from 1985-90, the following amounts were spent on procurement of training aids:

Year	Amount	
	Sanctioned	Spent
	(Rs. in lakhs)	
1985-86	54.83	12.66
1986-87	61.04	17.71
1987-88	-	-
1988-89	-	-
1989-90	15.17	1.64
1990-91	30.99	-
Total	162.03	32.01

The above indicates that only 10.8 to 29 per cent of the sanctioned amount were spent for procurement of requisite equipment/aids. The non-availability of sanctioned facilities coupled with shortage of instructional staff could not but have adverse effect on the quality of practical training imparted.

While attributing the delay in procurement of equipment and training aids to the procedures involved, Ministry intimated (January 1992) that Naval HQ has been advised to look into the delay in procurement of equipment and the non-installation of the equipment already procured and suggest remedial measures. The Ministry also added that lack of practical training was made good on posting of the personnel on board the ships. It was thus obvious that practical training was not being imparted to the desired degree before posting on board ships.

The Ministry also stated (January 1992) that there existed a system of feedback which enabled

identification of weak areas and initiation of remedial action. It, however, declined to provide these feedback returns to Audit stating that these were for in-house consumption. In the absence of these returns, Audit was not in a position to evaluate the efficacy of the training imparted.

25.6 Utilisation of facilities

Apart from the sanctioned facilities not being realised, even some of the equipment already procured had not been put to use by the establishment. A few such instances are given below:

25.6.1 Ziff launcher

The equipment costing Rs.89.29 lakhs in foreign exchange was received from a foreign country in August 1984 for training purposes. However, the process of its installation was initiated only in early 1990. It was stated by the establishment in February 1990 that the structural drawings did not enumerate the procedure for installation of the launcher. In addition, it was noticed in March 1990 that certain items essential for its installation had not been supplied. Under the general terms of the contract governing the procurement, claims for quantitative shortages were to be preferred within 90 days from the date of arrival of the equipment at the port of delivery. Although, Naval HQ, which had arranged the procurement, were themselves apprehensive about the acceptance of the belated claim for the items supplied short under the terms of the contract, they took up the matter with the foreign supplier in July 1990. The response of the supplier was still awaited (January 1992).

INS Valsura intimated in December 1990 that interim arrangements were being made to install the equipment and that deficient items would be retrofitted on receipt. It did not, however, indicate any time-frame either for completion of interim installation or for procurement of the items received short.

Thus, failure of the establishment in ensuring receipt of the complete equipment and in assessing the expertise available with them for its installation resulted not only in the equipment costing Rs.89.29 lakhs remaining idle for over six years but also affected the training needs. Besides additional expenditure is likely to be incurred in procuring the missing parts.

The Ministry stated in January 1992 that as the possibility of supply of the deficient items by the

foreign country was now remote, efforts to procure these through alternate sources were being made and in the meantime, passive training was being imparted as per the training curriculum.

25.6.2 Project APTRAC

In March 1984, Government sanctioned the 'APSOH Training Console' project (APTRAC) at a cost of Rs.76 lakhs (FE Rs.40 lakhs) to provide training facilities on APSOH sonar at INS Valsura. A Naval laboratory was authorised to place development contracts/orders for the project and it was to be completed by March 1988. The Ministry stated in January 1992 that the equipment was installed and put to use in mid 1988. However, certain issues relating to completion of certain tests by the laboratory including generating of suitable software and conducting training for utilisation of the system remained unresolved (December 1990). An expenditure of Rs.64.54 lakhs (FE Rs.32.18 lakhs) has been incurred on the project till March 1991.

In order to impart training on equipment procured under the above project, INS Valsura suggested in October 1984 the procurement of computer 'M'. However, the Director, Research and Development (DNRD) procured computer 'N' which was received in the establishment in July 1987 at a cost of Rs.4.96 lakhs in FE and it was installed in mid 1988 and shifted to its present site in February 1990. However, the computer required upgradation to meet the training needs. On a reference being made by the establishment, a private firm intimated in August 1989 that the software required to upgrade the computer would cost Rs.7.73 lakhs in FE besides service charges of Rs.1.95 lakhs. This was, however, not found suitable. Consequently, the upgradation of computer 'N' which was necessary to ensure its optimum utilisation, procured at a cost of Rs.4.96 lakhs in FE in July 1987, was yet to be completed (January 1992).

Project APTRAC included a provision for equipment and materials costing Rs.74 lakhs but there was no provision in the sanction for installation of the equipment/materials procured under the project.

In connection with the site preparation and provisioning of airconditioning and uninterrupted power supply for computer 'N', two special works costing Rs.6.81 lakhs and Rs.4.49 lakhs were sanctioned by Southern Naval Command in January and February 1988 respectively. The sanction which was for the same purpose was split up to avoid its reference to higher competent financial authority (CFA). The splitting was not in order. Similarly,

for the execution of work relating to site preparation and airconditioning, a contract was concluded in March 1989 for Rs.7.20 lakhs. Since the amount of contract exceeded the powers of the Naval Command for acceptance of necessity and according of administrative approval for special works which was upto Rs.7 lakhs, it required sanction of Naval HQ. The work was, however, completed in May 1990 without obtaining a revised sanction from the competent authority. A case for obtaining revised sanction of the Naval HQ was taken up in December 1989 which was yet to be accorded (January 1992).

25.7 Works Services

25.7.1 Provision of sick bay

In December 1977, INS Valsura was authorised a 10 bedded sick bay. In September 1980, Naval HQ recommended a 20 bedded sick bay and a Board of officers constituted in October 1980 recommended its construction. The proposed distribution was 2 beds for officers, 15 for sailors, 1 for officers' family and 2 for sailors' family. In October 1982, Western Naval Command reallocated the bed strength as: officers 1 bed, sailors 10, officers' family 1 and sailors' family 8 beds. A fresh Board was held in April 1983 and sanction for construction of sick bay at an estimated cost of Rs.69.77 lakhs was accorded by Naval HQ in February 1985 which was subsequently revised to Rs.71.50 lakhs in October 1986. The construction of the sick bay was completed under a contract concluded by a Zonal Chief Engineer in July 1986 for Rs.75.33 lakhs and was taken over in April 1989. Furniture items costing Rs.4.26 lakhs were also procured in August 1989 for the sick bay.

Sanction for the enhancement of bed strength of the sick bay from 10 to 20 and additional manpower like nursing/ward staff has not yet been accorded. Consequently, extent of utilisation of the sick bay constructed at a cost of Rs.75.33 lakhs could not go beyond 30 per cent per day. Furniture items costing Rs.4.26 lakhs were also lying in stock for the last 30 months (January 1992).

25.7.2 Fire Station

In March 1970, a full fledged fire station was authorised for INS Valsura. Since then the establishment was holding one domestic fire tender and two fire trailer pumps for the fire station. These were, however, not manned round the clock but were being operated by ships' emergency parties when required as no manpower has been sanctioned for the fire station.

In January 1987, Southern Naval Command sanctioned civil works for the fire station at the establishment at an estimated cost of Rs.9.18 lakhs. The civil works were completed at a cost of Rs.5.80 lakhs and were taken over in October 1988.

A case for authorising a 44 member civilian fire crew was included in the Naval Standing Establishment Committee (NSEC) case of 1985 prepared by the establishment in March 1987. Considering that the finalisation of NSEC case might be delayed, the establishment proposed in August 1988 sanctioning of a 27 member station fire crew as an interim measure to facilitate round the clock manning of the domestic fire tender and fire trailer pumps. However, neither the full complement of fire crew nor even the skeleton fire crew had been sanctioned so far (January 1992). Resultantly, civil works costing Rs.5.80 lakhs which were completed more than 40 months back continued to remain under utilised (January 1992) besides rendering the establishment vulnerable to fire hazards.

25.8 Other interesting points

25.8.1 Training Equipment

One set of a training equipment not required by INS Valsura was received in the establishment in May 1983. No action was, however, taken to transfer the equipment till August 1987. In September 1987, it was surveyed as 'no longer required' and was sent to a Naval Store Depot. In February 1988 when the packages were opened at the depot, the equipment was found rusted due to water seepage. It was declared as beyond economical repairs (BER) by the depot in June 1988.

Thus, an equipment not required at INS Valsura was unnecessarily held for over four years in the first instance and then due care was not taken in packing the equipment which led to its being declared BER by the depot without being put to use.

WORKS SERVICES

26. Irregular sanction of special works services

Defence works are categorised as:

- 'authorised works' comprising work services authorised in the regulations or in separate orders issued by Government, and

- 'special works' comprising work services not falling within the scope of the authorised

works but which are sanctioned under exceptional circumstances. Such 'special works' are not to be approved if the effect would be to introduce a new practice or change of scales.

Test check in audit revealed the following cases where special works were sanctioned in violation of the provisions of the rules:

(i) In December 1989, Naval Headquarters (HQ) issued two revised administrative approvals for provision of accommodation for sailors and MES key personnel at Calcutta at a total cost of Rs.196.20 lakhs. An integrated block was constructed against those sanctions leaving open space on the ground floor. While the provision of open space on ground floor at a cost of Rs.5.17 lakhs was sanctioned as a 'special work' in one administrative approval, in the second one, provision of open space costing Rs.3.18 lakhs (approx.) was sanctioned as 'authorised work' although it was not authorised under regulations. In reply to an audit query of March 1991 seeking justification for sanctioning the 'special works', Naval HQ did not furnish any reason except stating that the work had been sanctioned as a 'special work' in the original sanction issued by the competent financial authority in August 1985. The Ministry stated (January 1992) that open space was sanctioned and constructed to meet the exceptional local circumstances since according to Calcutta Municipal Corporation Building Rules, 1990 open space can be provided for car parking. This is not tenable since this runs counter to the express provision in the Scales that cycle/scooter sheds shall not be provided in Bombay and Calcutta for married accommodation. Moreover, the accommodation was sanctioned and constructed prior to 1990. Thus the sanction of open space at a cost of Rs.8.35 lakhs was irregular.

(ii) In August 1990, Naval HQ issued a revised administrative approval for provision of accommodation for Eastern Naval Command HQ. The estimated cost in January 1991 was Rs.118.71 lakhs. The sanction included provision of a command conference room of 200 square metres estimated to cost Rs.4.39 lakhs. This was in addition to three briefing rooms of 20 square metres each. Since according to the scales, the maximum area authorised for a conference room was only 44 square metres, Audit enquired in January 1991 the reasons for providing the excess area. In their reply, Naval HQ stated that no ceiling had been fixed for conference room which was to be provided on as required basis. The reply was not valid in terms of the scales prescribed and this was pointed out to Naval HQ in March 1991. The Ministry while conceding the audit

point, stated (January 1992) that the provisions in the scales were misunderstood by Naval Command HQ and it was now proposed to sanction the conference room as special work by amending the sanction already issued.

(iii) In June 1987, the Ministry sanctioned the provision of works services for a communication station at an estimated cost of Rs.900.57 lakhs (later amended to Rs.933.24 lakhs in November 1987). The sanction included the provision of a large swimming pool of size 50 metres x 21 metres including ancillaries as a special work estimated to cost Rs.91 lakhs although no swimming pool was authorised for stations where the strength of the personnel was expected to be less than 1000. The project authorities stated (November 1987) that the pool was being constructed as a water reservoir which would also act as a swimming pool with some additional facilities. It was added that as the climate of the area was very hot and there were no recreational facilities, the provision of a large swimming pool was necessary. Finally in October 1988 at the insistence of Audit, the project authorities decided to construct a small size swimming pool (25 metres x 13.5 metres) as a 'special work'. The Ministry also confirmed in May 1991 that only a small swimming pool had been constructed. The reduction in expenditure at the instance of Audit on pro-rata basis worked out to around Rs.36.34 lakhs. The Ministry stated in January 1992 that the cost of reduction on this account was being worked out.

27. Extra expenditure in the execution of a work

In July 1986, Naval Headquarters (HQ) proposed to the Ministry dredging of a site within the Naval Dockyard at Station 'A' for creating suitable berthing space for an aircraft carrier which was expected by early 1987. The selected site had a wreck embedded in it besides certain under-water obstructions. Based on the detailed diving/ hydrographic survey of the sea bed by the Navy in April 1986 the size of the wreck was assessed as 20'x15'x5' and volume of obstructions as 35 cubic metre (cu.m.). Sanction for entrustment of the work of removal of obstructions and dredging to a Central Public Sector Undertaking (PSU) at an estimated cost of Rs.35 lakhs was accorded by the Ministry in November 1986.

Director General Naval Project (DGNP) awarded in November 1986 the work to the PSU for completion in two months. The work package included Rs.5 lakhs each for the removal of wreck and 16 obstructions and another Rs.22 lakhs for dredging about 40,000 cu.m. in 12 dredging days. Considering the nature

of the job, the PSU was permitted to sub-contract, at its discretion, the portion of the work relating to the removal of wreck/obstructions to a specialised agency.

The PSU sub-contracted the work to firm 'X' who commenced the work in November 1986. On actual execution it was found that the size of the wreck was 50'x15'x9' and quantum of underwater obstructions was more than what had been indicated by the Navy. Attempts made by the firm for the removal of the wreck proved futile. The PSU claimed (March 1989) Rs.19 28 lakhs for payment to the sub contractor (firm 'X') for its efforts. In July 1987, the Ministry entrusted the work for removal of wreck/obstructions to another firm 'Y' at the risk and cost of the PSU. Firm 'Y' completed the job in August 1987 at a cost of Rs.7 lakhs and the PSU completed the dredging in the same month.

Volume-wise, the obstructions actually removed were 50.72 cu.m. against 35 cu.m. included in the contract. On a proportional basis the total payment for removal of obstructions was, therefore, worked out at Rs.7.25 lakhs by DGNP. It was, however, decided in March 1989 by the Ministry that due to the substantial increase in the scope of the work, the PSU should be paid on the basis of actual costs incurred and accordingly it was paid the full amount of its claim of Rs.19.28 lakhs for removal of wreck/obstructions in addition to the payment of Rs.7 lakhs to firm 'Y'.

According to the contract with the PSU, the dredging of 40,000 cu.m. was to be done by them at the rate of Rs.1.85 lakhs per day using their dredger 'M' and the payment was to be allowed for a maximum of 12 days viz. at 3333 cu.m. per day. While the PSU could dredge the area other than that covered by the wreck/obstructions using this dredger, it had to bring another dredger, Dredger 'N', with a hire rate of Rs.3.50 lakhs per day from station 'B' for dredging the area from where the wreck/obstructions had been removed, as by that time dredger 'M' had been demobilised. The total quantity of dredging done by the PSU was 91,500 cu.m. and covered 31 dredging days.

The PSU claimed a total amount of Rs.140.66 lakhs against the estimated cost of Rs.35 lakhs. After examining the claim the Ministry agreed to pay Rs.104.51 lakhs which included Rs.26.28 lakhs for the removal of wreck/obstructions and Rs.71.90 lakhs for dredging. The additional expenditure of Rs.69.51 lakhs was sanctioned by the Ministry in June 1989.

The Ministry stated in October 1991 that the underwater surveys were carried out in nil visibility conditions. The submerged wrecks covered by silt and mud defied a thorough examination of their nature and size. It was only after removal of silt, mud etc. that the exact size of the wreck became clear which necessitated a re-estimation of work. It added that a dredger of higher capacity had to be mobilised as very little time was left for the arrival of the aircraft carrier.

If the Navy was not confident of a proper assessment of the size of the wreck, they could have requested the PSU to remove the silt and mud first so as to enable a realistic estimation of the size of the wreck. Due to the under-estimation of the size of the wreck, the PSU engaged a sub contractor for about eight months as against two months provided for completion of the entire operation. Though the operation failed, the PSU had to be paid Rs.19.28 lakhs. The mobilisation of the dredger of higher capacity in view of the shortage of time was a direct result of this inadequate assessment of the work.

Thus, detailed diving/hydrographic survey of the sea bed done by the Navy proved to be grossly inaccurate and resulted in under-estimation of the work package. The work estimated to cost Rs.35 lakhs was ultimately completed at a cost of Rs.104.51 lakhs. The delay in removal of the obstructions due to the supply of incorrect data on the size of the wreck by the Navy resulted in additional expenditure of Rs.14.54 lakhs towards hire charges of the dredger which had to be employed in replacement of the dredger to be utilised under the contract as it came under mandatory demobilisation. An amount of Rs.26.28 lakhs was paid for removal of obstructions though, volume-wise the amount payable under the contract worked out to Rs.12.25 lakhs.

TRAINING

28. Delay in setting up of an essential training facility

Action Speed Tactical Teacher (ASTT) is a shore based simulator on which tactical training can be carried out for ships, submarines and maritime aircraft. ASTT is also used for evaluating the effects of new weapons and sensors and evolve new combat tactics.

Since the existing two ASTTs were old (1955 and 1975 vintage) and did not represent the state-of-the-art technology, Naval Headquarters (HQ) prepared

in 1980 a fresh qualitative requirement (QR) to meet both present and future requirements. Based on this QR, Naval HQ invited offers from foreign suppliers. Responses were received from six firms in August 1982 out of which only four met the QR.

During this period, while discussions with the firms were in progress, the QR was amended by Naval HQ due to the advances in technology and these four firms were requested in November 1983 to requote based on the amended QR. The firms submitted the quotations between December 1983 and January 1984. The lowest offer was of firm 'A' which quoted Rs.6.69 crores for the ASTT inclusive of two years' spares, installation charges and training. This offer was valid upto July 1984.

The proposal seeking approval of the Ministry for acquisition of the ASTT and confirming that funds were available reached the Ministry with the comments of the Directorate of Naval Research and Development only in May 1984. The Ministry directed Naval HQ (August 1984) to explore again the feasibility of procuring the ASTT from East European countries. This caused a delay upto January 1985 by which time it became clear that no suitable ASTT was available in those countries. In January 1985, it was decided to obtain no objection for the import of the system from the Department of Electronics (DOE). However, this was sought only in March 1985 and granted in June 1985. Since the validity of the earlier quotations had expired, the Ministry had to invite fresh quotations from the four firms which were received in August 1985, the lowest being that of firm 'A' at Rs.8.78 crores. After evaluation of the offers and negotiations, firm 'A' was awarded the contract in August 1986 for delivery of the system within 36 months from the effective date of contract, at a cost of Rs.8.33 crores payable in foreign exchange (FE). The contract could, however, become effective only in April 1987 due to delay in sending the import licence to the firm by the Navy. Firm 'A' was paid Rs.2.21 crores and Rs.1.22 crores in FE in July 1987 and September 1988 respectively as advance. The ASTT due for delivery in April 1990 was expected to be delivered in November 1991.

Due to the adverse exchange rate variations in the meanwhile the system is now (October 1991) expected to cost Rs.19.52 crores as against Rs.8.33 crores at the time of conclusion of contract.

Thus, ASTT which was projected as a vital need for imparting training was yet to be established even after more than a decade. Due to delays, the system which was available at a cost of Rs.6.69 crores in 1984 is expected to cost Rs.19.52 crores.

According to the Ministry/Naval HQ (April 1988) the tactical training arrangement continues to be handicapped and interim measures like sending ships on the Eastern seaboard to Bombay/deputing teams to Bombay besides resulted in additional expenditure on fuel, engine hours of ships and transportation of personnel. Meanwhile, building to house the ASTT, sanctioned in 1986 and completed at a cost of Rs.4.01 crores in August 1990, was lying unutilised.

The Ministry stated (October 1991) that rupee equivalent had gone up primarily due to depreciation which could not have been controlled with any administrative efforts. The fact, however, remains that it was the administrative delays of over a decade in finalising and implementing the contract for acquisition of a training equipment that contributed to the escalation of the rupee cost. The Ministry admitted that the non-availability of ASTT had adversely affected the training though it added that its availability would have only reduced and not substituted real time training. The expenditure incurred on such exercises during 1989-90 and 1990-91 had been Rs.4.9 crores and Rs.3.75 crores respectively. Pointing to this declining trend in expenditure on such exercises due to economy measures taken, the Ministry argued that the non-availability of ASTT had not resulted in additional expenditure on fuel, engine hours etc. This argument runs counter to the earlier claim made while projecting the requirement for ASTT that it would help in eliminating or at least reducing the need for expending expensive and scarce ship underway hours and aircraft flying time in learning basic tactical concepts and procedure.

29. Training of divers

Based on a sanction issued by the Ministry in May 1989, a dive support vessel (DSV) was dry chartered by the Navy from a Public Sector Undertaking (PSU) for a period of three years from May 1989 to serve as an interim submarine rescue vessel at annual hire charge of Rs.3.45 crores.

Naval Headquarters (HQ) stated in December 1988 that although the DSV was equipped with a state-of-the-art 300 metres mixed-gas diving facility, the divers of the Navy were qualified to dive upto a depth of only 60 metres in mixed-gas diving. In order to optimally exploit the system and to provide rescue cover to submarines, Naval HQ considered it essential to train a crew of 18 divers to dive to a depth of 200 metres. Accordingly, it proposed to requisition the services of instructors from abroad stating that offers were received from two internationally reputed institutions through Indian

missions abroad.According to the quotation received from firm 'A' of country 'X' in June 1988, as revised in November 1988 after discussions, mixed-gas diving training of 18 divers was to cost Rs.16.41 lakhs. Firm 'B' of country 'Y' quoted in August 1988, as further clarified in December 1988, Rs.52.86 lakhs.

In December 1988 after evaluating the quotations, Naval HQ recommended that firm 'A' should be invited to conduct diving training as its offer was much cheaper than that of firm 'B' and it had the additional advantage in that the dive systems used by them were similar to those installed on the DSV which would help in overcoming the initial problems of the diving system on board the DSV. Naval HQ also confirmed (January 1989) availability of funds. While the case remained under consideration of the Ministry, firm 'A' informed Naval HQ in May 1989 that the rate quoted would be increased by Rs.1.85 lakhs due to the high rates paid off-shore and that it was not negotiable. While bringing this to the notice of the Ministry in August 1989, Naval HQ stated that firm 'A' was responsible for imparting diving training to its country's Naval divers and since the Indian Navy's training programmes had been evolved from the same country, approval be accorded for requisition of instructors from firm 'A'. It was added that engaging of a Training Centre with no expertise of the systems on the DSV would only result in an extended time frame.

In August 1989, the Ministry decided to invite both the firms for negotiations for generating competition and a Price Negotiation Committee (PNC) was constituted in October 1989.

Since the representatives of firm 'A' had visited the DSV before making their offer, the firm while forwarding a draft contract in October 1989 stated that they would be unable to attend the PNC till the terms and conditions of the contract were mutually resolved. The firm maintained the same rate quoted in May 1989.

The representative of firm 'B' who attended the PNC meeting after negotiations agreed to reduce the cost of training to Rs.37.69 lakhs, based on the exchange rate at that period. The PNC concluded that the offer of firm 'B' was acceptable and that qualitatively the training offered by firm 'A' did not meet the basic requirements of the Navy despite the latter's positive recommendations of December 1988 and reiterated in August 1989. Firm 'A' was also never informed about their offer not meeting the Navy's requirements. In February 1990 the Ministry approved the recommendations of the PNC and con-

cluded a contract with firm 'B' in July 1990. The training was completed in January 1991 at a total cost of Rs.44.65 lakhs.

The Ministry stated (October 1991) that the DSV could have been exploited as a rescue vessel, had a necessity arisen, to the extent of the designed capability of the rescue bell. The fact is that even with the rescue bell, the divers could have dived upto only 60 metres as against the diving facility of 300 metres of the DSV. The Ministry added that since training of supervisors and life support technicians were also necessary, firm 'A' had been asked to offer necessary clarification as to whether their training would cover this also, but there had been no response. Audit, however, noticed that firm 'A' had confirmed in January 1990 that divers would be trained in these fields as well at no extra cost. Another reason advanced by the Ministry for rejecting firm 'A's offer was that it did not agree to issue certificate to the divers trained by them, duly authenticated by their Ministry of Defence. Audit noticed that while inviting offer from the firm 'A' the Navy had only sought certification by the institution and the firm had agreed to do so. The question of authentication by the Ministry of Defence concerned was raised at the stage of negotiations and it was only in December 1989 that the matter was taken up by the Indian mission for exploring the possibility of getting authentication from the Ministry of Defence of the country of foreign firm 'A'. By that time negotiations with firm 'B' had already been completed

The case revealed the following:

- The DSV dry chartered at a cost of Rs.10.35 crores from May 1989 could not be fully exploited till January 1991 due to the non-availability of trained crew. By the time crew were trained over 55 per cent of its charter period costing Rs.5.75 crores had been completed.

- Due to the delay in conclusion of contract the cost of training escalated from the estimated cost of Rs.16.41 lakhs to Rs.44.65 lakhs.

- Although the offer of firm 'A' was substantially cheaper and the dive systems used by firm 'A' were similar to the system installed on board the DSV and were found acceptable by the Navy, the offer of firm 'A' was ultimately rejected in favour of a costlier offer of firm 'B' on the ground that qualitatively the training offered by firm 'A' did not meet the basic requirements of the Navy. However, firm 'A' was never told about their offer not meeting

the Navy's requirements and asked to quote for training specifically according to the Navy's requirement.

30. Non-utilisation of training material

In order to improve the quality of training programme for electronic technicians in the Weapon department of various Naval Dockyards and Repair Organisations, Ministry accorded sanction in July 1984, for importing recorded video cassette courses from an Engineering Institute of a foreign country. Naval Headquarters (HQ) considered this requirement as inescapable to ensure that weapon/electronic technicians are kept abreast of the latest technology without requiring their disturbance/ movement at frequent intervals to training establishments.

An operational indent was placed by Naval HQ on the concerned Indian Supply Wing for procurement of 118 video cassettes in PAL format at an estimated cost of Rs.5.92 lakhs inclusive of incidental and airfreight charges. In January 1985, the Indian Supply Wing informed Naval HQ that only few cassettes were available in PAL format and the remaining were available in NTSC format and conversion of this type into PAL system would cost $300 per tape. In February 1985, Naval HQ instructed the Supply Wing to procure 33 cassettes available in PAL system. In March 1985, Naval HQ directed the Supply Wing to procure the remaining cassettes in NTSC format. In March 1985, the Supply Wing placed an order on the Engineering Institution concerned for the procurement of 43 cassettes in PAL format and 75 cassettes in NTSC format at a cost of Rs.5.12 lakhs. In May 1985, certain course materials and text books were also included in the order and the cost was revised to Rs.5.30 lakhs. All the stores were airfreighted and received in Depot 'M' in August 1985.

In November 1985 Naval HQ instructed Depot 'M' to reproduce five copies each of all the cassettes for issue to three Naval repair establishments, one training centre and Naval HQ retaining the original cassette with them. In January 1986, the depot intimated Naval HQ that copies of the cassettes should be reproduced under security arrangements. In September 1989, Naval HQ directed that no security arrangements were required as the material was lecture material of commercial nature and the reproduction may be done under depots' local financial powers. However, Naval HQ in July 1991 decided not to make copies of the cassettes in view of the copy right regulation.

In the meantime, sanction was obtained (August 1984) from Ministry for procurement of three sets of

colour television (CTV), video cassette recorders (VCR) and voltage stabilisers at an estimated cost of Rs.0.99 lakh to be used with the imported cassettes. In November 1984, Naval HQ placed the necessary indent on Controller of Procurement, Bombay. Three VCRs were procured for Rs.40,732 in only July 1988 and three CTVs for Rs.27,927 in October 1990. However, these CTVs and VCRs were compatible only to PAL system. The voltage stabilisers were yet to be procured (December 1991). The Ministry stated (December 1991) that out of 118 cassettes procured, 43 in PAL format were distributed among three repair organisations in July 1991 for imparting training to technicians. The remaining 75 cassettes which were in the NTSC format could not be utilised because the VCRs and CTVs procured could only operate on PAL format. The Ministry added that a project for conversion of NTSC cassettes to PAL format has been assigned to a Naval Training Establishment and the results would be known in February 1992. The fact, however, remained that Naval HQ knew as early as in March 1985 that 75 cassettes ordered were in NTSC format. The Naval HQ, therefore, should have taken action to either convert the cassettes to PAL format or to otherwise ensure that the cassettes were put to the contemplated use at the earliest.

The case revealed that training material procured from abroad and indigenously for Rs.5.99 lakhs and considered to be an inescapable requirement to keep weapon/electronic technicians abreast of the latest technology, remained unutilised for six years primarily due to delay in taking a decision by Naval HQ in the distribution of video cassettes, conversion of NTSC cassettes to PAL and procurement of voltage stabilisers.

PROVISIONING

31. Avoidable expenditure on the import of equipment

Certain mine disposal equipment developed by a foreign country and considered essential to provide protection to ships against mines were evaluated by Naval Headquarters (HQ) in September 1983 and proposed for import to the Ministry either through the Ministry of Defence of the foreign country or directly, after negotiations from any of the two licensed manufacturers. In August 1984, Ministry sanctioned procurement of 60 sets at an estimated cost of Rs.51.46 lakhs in foreign exchange (FE) to meet the minimum inescapable initial requirement. It was decided that additional requirements would be met by indigenisation.

In response to quotations invited in December 1984 by Naval HQ for supply of 60 sets, firms 'A' and 'B' quoted Rs.43.27 lakhs and Rs.41.44 lakhs respectively. The tender purchase committee (TPC) of Naval HQ invited the firms for negotiations in March 1985. While firm 'A' deputed its representative, firm 'B' could not do so due to its other engagements. Recommendation of the TPC to award the contract to firm 'A' was not favoured by the integrated finance and fresh negotiations were held in July 1985 with both the firms. The negotiated values were Rs.40.64 lakhs for firm 'A' and Rs.34.49 lakhs for firm 'B'. After considerable deliberations, the TPC recommended (August 1985) splitting the order to 40 sets on firm 'A' and 20 sets on firm 'B'. Contracts were concluded in October 1985 for supply of 40 sets for Rs.27.09 lakhs by firm 'A' and 20 sets for Rs.11.50 lakhs by firm 'B'. Supplies were received from firm 'A' in September 1986 and firm 'B' in January 1987. The firms 'A' and 'B' were paid Rs.32.76 lakhs and Rs.15.18 lakhs respectively. The increase in cost was due to exchange rate variation.

Of the 60 sets received in a Naval Armament Depot (NAD) only three sets were issued to user ships, that too after more than 30 months of their receipt. Thirteen sets were issued between June 1987 and August 1989 to training/diving teams. In the meantime, a committee of the Defence Research and Development Organisation had decided in October 1983 to take up the project on indigenisation of the equipment and complete it in an estimated four years' time. The work, however, was yet to commence (February 1992).

The Ministry while confirming the facts stated in February 1992 that the sets had been kept in safe custody of the NADs to meet emergent requirements in case of hostilities. The argument of the Ministry is not convincing as at the time of projection of the requirement, it had been stated that the sets were urgently required to be available on board the ships so as to enable them to defend against any hostile attack. Stocking them in NADs would not serve this purpose.

The case revealed that 44 sets costing Rs.35.80 lakhs in foreign exchange imported for meeting urgent requirement continued to remain in stock (December 1991) for more than five years after their receipt. There was also considerable delay ranging from 9 months to 35 months in issue of the other 16 sets.

32. Delay in according financial sanction

Three items of equipment installed on board a Naval Ship 'X' had outlived their life of 12-15 years and were to be replaced during reconditioning and modernisation of the ship planned to commence by end of 1986. For this purpose, Turbo Alternator comprising two numbers each of Turbo Generators, Blowers and Main circulating pumps, which were proprietory articles of a Public Sector Undertaking (PSU) were decided to be procured by the Naval Headquarters (HQ). A budgetary quotation amounting to Rs.590.20 lakhs with a foreign exchange (FE) content of Rs.180 lakhs, obtained in December 1983 was referred back in August 1984 to the PSU seeking a firm quotation and reduction in price. In December 1984, the PSU submitted their revised price of Rs.527.82 lakhs with a FE content of Rs.160 lakhs. The offer was valid upto 31 March 1985. During January and February 1985, the PSU intimated the Naval HQ of the likely upward revision of prices on the expiry of the validity of their offer.

Although financial sanction was sought for from the Ministry in January 1985, it was accorded in September 1985 as a combined sanction for another reconditioning and modernisation activity. In February 1986, a supply order was placed by Naval HQ on the PSU for the three items of Turbo alternator at a cost of Rs.554.21 lakhs which included an increase of 5 per cent over the December 1984 quotation of the PSU for delay by Naval HQ in not finalising the contract by 31 March 1985. The supply order was amended in June 1986 to Rs.580 lakhs (FE Rs.176 lakhs). Non-finalisation of the offer during its validity period thus entailed avoidable liability of Rs.52.18 lakhs.

The Ministry stated (February 1992) that actually the PSU demanded a price of Rs.654.65 lakhs including FE element of Rs.220.32 lakhs. This was negotiated in March 1986 and a price of Rs.580 lakhs including a FE content of Rs.176 lakhs was agreed to and the supply order was amended in June 1986. They added that the quote of December 1984 from the PSU was only budgetary and it was incorrect to compare it with the negotiated price and infer that there was avoidable expenditure of Rs.52 lakhs.

The contention of the Ministry was untenable as the increase of 5 per cent over the December 1984 quote was offered due to delay in finalising the contract as conceded by Naval HQ in their supply order of February 1986. The PSU had indicated in January and February 1985 of the impending price escalation. This was ignored.

33. Delay in installation of torpedo decoy system in patrol vessels

Ten anti-submarine patrol vessels (vessels), acquired from a foreign country between November 1968 and December 1974, were not equipped with torpedo decoys for evading enemy torpedoes. A Naval research and development laboratory was entrusted with the task of designing a prototype torpedo decoy for being fitted on these vessels. The prototype decoy was developed and tested successfully by the Naval Laboratory in February 1976. The electrical winch required for towing the decoy was, however, made available by a Defence Public Sector Undertaking (PSU) only five years later against the orders placed and advance given in 1981. The trials of decoy and the electrical winch were successfully completed in February 1982 and Naval Headquarters (HQ) accepted the equipment for induction into service.

Considering the life span of the vessels, the Naval HQ proposed in 1983 that the fitting of the decoys be limited to five vessels. In addition, one decoy was proposed for training purposes and one as reserve. In March 1985, Ministry accorded sanction for the procurement of seven decoys alongwith on board as well as base and depot spares at an approximate cost of Rs.146.70 lakhs.

In August 1985, the Naval HQ concluded a contract with a State PSU for the supply of seven decoy systems and spares. As per the contract, the PSU was to supply the first set by December 1986 and the remaining six sets at the rate of one set per month after six months from the supply and approval of the first set. The PSU did not make the supplies as per the contract and extension was given for the supply of the first set upto 30th June 1988. The first set was accepted by the Inspectorate of Warship Equipment in May 1988 and the set was received by a Weapon Equipment Depot (WED) in August 1988. The remaining six sets were despatched by the PSU in March 1989 and received by the WED in July 1989.

One system was installed on board Naval Ship 'A' in January 1990. The Ministry stated in March 1991 that the systems installed in vessel 'A' had completed the harbour/sea acceptance trials to the entire satisfaction of the Navy. The remaining six systems costing Rs.125.74 lakhs were lying in stock from July 1989 onwards. Its warranty had expired in March 1991. One of the vessels to be installed with this system was lost in August 1990. Meanwhile, a more sophisticated torpedo decoy system had been developed by the Naval Laboratory and was under production in a PSU.

The Ministry stated in October 1991 that in view of the poor material state of patrol vessels which came to light only in August 1990 after the sinking of one of the vessels, it was decided not to fit the decoys on these vessels. The Ministry added that the decoys were being planned for fitment in another class of patrol vessels being built at a central shipyard. Of the four such patrol vessels ordered on the shipyard due for delivery between December 1989 and September 1990, two were commissioned in November 1990 and October 1991 respectively, while the remaining two are expected to be commissioned in June and December 1992. The decoys were yet to be fitted on any of these vessels. The assessment of the poor state of the patrol vessels was done only after a vessel was sunk. Further, the Navy's proposal to fit these torpedo decoys in another class of vessels under construction when a more sophisticated torpedo decoy system had already been developed and was under production is a bid to find an alternate use for the torpedo decoys which had become almost obsolete.

The case revealed the following:

- anti-submarine patrol vessels were not equipped with a system essential for evading torpedoes fired on them,

- six systems procured at a cost of Rs.125.74 lakhs were lying in stock from July 1989 onwards. Their warranty had expired in March 1991,

- there was a delay of over a year in the installation of one system on board the first vessel, and

- due to the delay, against an expected life of 12 years, the system even after installation would have a limited life of less than 6-8 years.

34. Non-utilisation of a radar

In May 1975 an order for procurement of three radars alongwith spares and accessories at a cost of Rs.124.50 lakhs, including Rs.49.50 lakhs in foreign exchange, was placed by Naval Headquarters (HQ) on a public sector undertaking (PSU). The radars were received in a Naval Store Depot in 1977. Two of these radars were for fitment on two Naval ships 'A' and 'B' during their modernisation scheduled between 1974 and 1977 and one was reserve. While one radar was installed on ship 'A', the one intended for ship 'B' could not be installed as the ship was decommissioned in October 1985 without modernisation.

Mention was made in paragraph 50 of the Report of the Comptroller and Auditor General of India Union Government (Defence Services) for the year 1985-86 about the decommissioning of the ship without undertaking the modernisation.

In September 1985, the Ministry of Defence (Ministry) issued a sanction for installing the radar in ship 'C' during her modernisation. The modernisation of ship 'C' was also cancelled due to non-availability of other items required for modernisation.

In September 1988, Naval HQ sought approval of the Ministry for the transfer of the radar to a Naval Dockyard 'P' at Station 'X' stating that four ships with this type of radar were based at that station and installation of this radar was necessary to create minimum essential facilities required for quick serviceability checks of critical components. Accordingly, the Ministry issued sanction in February 1989 for the installation of the radar at Naval Dockyard 'P'. It was observed in audit that three of the ships based at station 'X' were fitted with this type of radar between November 1974 and May 1977 and their approved electronic life of twelve and a half years had fully expired. The Ministry stated in December 1991 that the radar was being transferred to the dockyard where it would be undertaking maintenance of radars installed on other ships.

Thus, a radar procured at a cost of Rs.41.50 lakhs remained idle for over 13 years. Even after the proposed installation of the radar at the Naval Dockyard, it is unlikely to be of much use as the radars fitted on the ships based at the station had already outlived their useful electronic life of twelve-and-a-half years and its production had in fact been discontinued by the PSU. The Ministry stated (December 1991) that there was no immediate plan for replacing those radars.

35. Avoidable procurement of spare parts

An imported Diving Apparatus (Apparatus) was inducted in the Navy in July 1985. Twenty nine items of spare parts were recommended by the foreign manufacturer for its maintenance for a period of three years.

Naval Headquarters (HQ) placed an indent in November 1984 on Director General of Supplies and Disposals (DGSD), New Delhi for procurement of twenty nine categories of spares. As DGSD was not in a position to arrange supply, the indent was withdrawn in March 1985 and forwarded to the

Director of Supplies and Disposals (DSD), Bombay in April 1985 who concluded a contract on 17th July 1985 with firm 'X' for eighteen of the twenty nine categories of spares. The indent was shortclosed for the balance eleven categories as these were not offered by firm 'X'. Within a day of the conclusion of the contract, the spares on order were tendered for inspection by firm 'X' and these were accepted by the inspecting authority on the same day. Naval HQ noticed on 31st July 1985 that the quantity contra-cted with firm 'X' in respect of twelve categories of spares was more than the quantity indented and they requested DSD to amend the quantity. This was not accepted by DSD and they contended that the excess quantity appeared to have resulted from an ambiguity in the wording in the indent. The spares were taken on charge in September 1985 including the excess quantities which ranged from 50 to 1100 numbers in respect of twelve categories of spares (cost Rs.13.92 lakhs approximately).

Naval HQ placed two more indents on DSD, one in August 1985 for 52 sets of the Apparatus alongwith three year maintenance spares and another in September 1985 for three year maintenance spares for the existing Apparatus. Both these indents inter-alia included the twelve categories of spares received in excess earlier.

Since the cost of the Apparatus and the spares included in the indent of August 1985 exceeded the financial powers of Naval HQ for such purchases, viz. Rs.50 lakhs, the requirements were bifurcated and two separate indents, one for the Apparatus (Rs.34.85 lakhs) and the other for the maintenance spares (Rs.30.55 lakhs) were raised on DSD in March 1986.

DSD concluded a contract with firm 'X' in October 1985 covering Naval HQ indent of September 1985 and another contract with firm 'Y' in June 1986 covering one indent of March 1986 for the procurement of maintenance spares.

Non-linking of the requirements with available stock by Naval HQ while placing subsequent indents of September 1985 and March 1986 and overlooking the excess receipt in July/September 1985 resulted in avoidable procurement of spares valued at Rs.9.86 lakhs approximately.

A comparison of rates of the twenty six categories of spares common in both the contracts further revealed an increase in cost of Rs.6.15 lakhs in the contract of June 1986 vis-a-vis the rates in the contract of October 1985. Had the

requirement of spares been clubbed together and a single contract concluded in October 1985, Navy would have got a price advantage of Rs.6.15 lakhs.

While confirming the above facts, Naval HQ stated (July 1991) that the contracts had been placed by DSD and, therefore, they had no comments.

Audit also noticed that the contracts concluded for the supply of spares included Rs.4.43 lakhs (firm 'X' Rs.2.28 lakhs and firm 'Y' Rs.2.15 lakhs) towards agency commission. Interestingly, sales tax amounting to Rs.0.09 lakh was also paid on the agency commission to firm 'X'.

To sum up,

- ambiguity in the description of the items in the indent of November 1984 raised by Naval HQ resulted in excess receipt of spares worth Rs.13.92 lakhs approximately,

- non-adherence to the prescribed norms relating to setting off existing assets against future requirements caused additional purchase of spares costing Rs.9.86 lakhs,

- Naval HQ split up the indent in March 1986 to bring the amount of purchase under the powers delegated to them,

- non-clubbing of quantities in two indents resulted in avoidable extra payment of Rs.6.15 lakhs, and

- non-procurement of spares from the manufacturers directly necessitated payment of agency commission of Rs.4.43 lakhs which was avoidable.

The matter was reported to the Ministry in August 1991; their reply was awaited (February 1992).

36. Infructuous expenditure on procurement of boats

Based on two indents of Naval Headquarters (HQ), the Director General, Supplies and Disposal placed an order in August 1969 for supply of nine motor boats on firm 'A' at a cost of Rs.2.77 lakhs per boat. After supply of three boats between 1975 and 1977, the price per boat was enhanced to Rs.5 lakhs in July 1979 for the balance six boats which were delivered between September 1981 and March 1986.

Seven boats were issued to various Naval

establishments and to the Naval Dockyard, Bombay between September 1975 and April 1987. The performance of the boats was unreliable as the engines were obsolete and spares were not available as the manufacturers of engines had closed down their company. The utilisation and the present position of these seven boats are indicated below:

Sl. No.	Boat No.	Date of receipt by the establishment/ dockyard	Total hours utilised		Remarks
			Hrs	Minutes	
(a)	(b)	(c)	(d)		(e)
1.	873-A	16.9.1975 INS Circars, Vishakhapatnam.	6	30	Non-operational since 1977
2.	1317	18.3.1977 INS Gomantak, Goa.	Not furnished by Ministry		Unserviceable since July 1984
3.	1319	23.6.1982 INS Garuda, Cochin.	- do -		Non-operational sincce October 1989. This has not run for more than four nautical miles at a stretch. Declared as beyond economical repairs (BER) in December 1990.
4.	889-A	12.1.1983 INS Venduruthy, Cochin.	494	40	Transferred to Naval Dockyard Bombay in 1984 and declared beyond economical repairs, and is being surveyed off.
5.	1002-A	7.2.1982 Naval dockyard, Bombay.	585	35	Recommended BER in September 1989.
6.	992-A	19.10.1985 Naval dockyard, Bombay.	239	50	- do -
7.	1320	11.4.1987 Naval Dockyard, Bombay.	Nil		Could not be run because of initial trouble and non-availability of spares.

The Naval dockyard, Bombay, who were the custodian of boats mentioned at serial numbers 5 to 7 above stated in July 1991 that the engine hours done by the boats at serial numbers 5 and 6 were managed by interchanging the engine parts of the three boats.

The eighth boat received by Controller of Warehousing (CWH), Bombay in February 1977 was issued on temporary loan to a ship in January 1980. This was returned by the ship in April 1980 and was lying in stock with CWH, Bombay since then (January 1992). The Ministry stated (February 1992) that the boat had been exploited by Naval Dockyard, Bombay between 1977 and 1985. The extent of utilisation was not, however, indicated.

Naval HQ in June 1987, approved the temporary issue of the ninth boat received by CWH, Visakhapatnam in March 1986, to project 'Sea bird' at Karwar. The boat was landed in Naval Dockyard, Visakhapatnam for serviceability checks and trials in July 1987. No trials could be carried out as the seawater pump of the boat developed defects which was subsequently rectified by the Navy. The boat was despatched by road to Karwar at a cost of Rs.0.13 lakh and was received in September 1987. While carrying out trials of the engines, further defects were noticed which were got rectified at a cost of Rs.0.07 lakh in December 1987. During trials carried out subsequently, defects were again noticed in the engine gear box. The gear box pump of the boat was finally sent for repairs to Base workshop, Goa where it was declared as BER. In March 1988, Naval HQ ordered despatch of the boat to Cochin pending reallocation. The boat was thereafter sent to Naval Ship Repair Yard (NARY) Cochin for repairs. The NARY, Cochin indicated in June 1989 that the work involved was extensive and that they had no capacity to undertake the repair work. The boat was ultimately transferred to the Controller Technical Services, Bombay in September 1990 where it was awaiting repairs (February 1992).

The Ministry stated in February 1992 that the engines had become obsolete only after all the boats had been delivered to the Navy. Further, the obsolesence of the engines and cessation of production by the manufacturer could not be foreseen. The fact, however, remains that though the original indents were placed in August 1969, the Naval authorities failed to ascertain at the time of upward revision of the cost in July 1979, whether the engines were maintainable during the normal anticipated life and whether the supplier would be in a position to continue to provide the necessary product support

during their life time. This omission led to a situation of non-availability of spares and consequent gross under-utilisation of the boats procured at a cost of Rs.38.31 lakhs.

OTHER CASES

37. Injudicious disposal of stores

Mention had been made in sub para 5.3 of para 57 of the Report of the Comptroller and Auditor General of India, Union Government, Defence Services for the year ended 31 March 1987 (No.2 of 1988) about the over-provisioning of Silver brazing alloy, in disregard of the provisioning norms by the Material Superintendent (MS) Bombay. Against the average annual consumption of the item of 63.44 Kgs during 1981 to 1983 and 4.6 Kgs during 1984 to 1986 the MS, Bombay had a stock of 665.9 Kgs in March 1987 costing Rs.9.79 lakhs which was expected to last indefinitely. In the Action Taken Note submitted by the Ministry to the Public Accounts committee (PAC) in May 1989 it was stated that:

"the expenditure of the item in fact fluctuates depending upon the number of ships to be refitted and the extent of repairs conducted on board... The annual expenditure would be to the tune of about 100 Kgs at which rate the stock may get utilised in about five to six years... The item has no specific life and can be used indefinitely. Besides, there is general escalation in the price of silver, the main ingredient of the item, in the market. The item was bought while the silver price was between Rs.1400 and Rs.1700 per kg. and the price of the silver now prevailing in the market is about Rs.6000 per kg".

Despite the assurance given by the Ministry in May 1989 that the item had no specific life and it would be utilised in about five to six years time, the MS, Bombay declared 626.4 Kgs as surplus to requirements in August 1989 i.e. within 3 months of its assurance, taking into consideration the actual consumption registered in the intervening period and obtained the approval of Naval Headquarters (HQ) in September 1989 for its disposal. While the item was awaiting disposal, the MS, Bombay placed an order on a local firm in December 1990 for the local purchase of 10 Kgs of the item at the rate of Rs.4999.50 per kg which was received in February 1991. The Ministry stated in January 1992 that as the item had already been transferred to the Disposal Group, the quantity held in that group could not be linked while initiating action for local purchases. It added that instructions had since been issued to all concerned to prevent recurrence of the events of this nature in future.

The reserve price was fixed by a board of officers assembled for the purpose in January 1991 as Rs.9.44 lakhs in disregard to instructions issued by the Naval HQ in November 1976 and March 1977 to the effect that the reserve prices are to be fixed realistically after ascertaining the prevailing market price. Had the board adopted the prevailing market rate of even Rs.4999.50 per kg obtaining in December 1990 when the MS Bombay had ordered for the local purchase of the item the reserve price should have been fixed at not less than Rs.31.32 lakhs. Further, by Ministry's own admission even in May 1989, the cost of silver content alone worked out to Rs.18.79 lakhs. The internal audit authorities also overlooked this aspect and approved the price fixed by the board. The stores were ultimately disposed of in February 1991 to a private firm through the Metal Scrap Trade Corporation for a sum of Rs.12.52 lakhs. There was thus, a loss of Rs.18.80 lakhs in the disposal of material with reference to the reserve price that should have been fixed.

The case revealed that,

- within a period of three months, the Ministry went against its own assurance given in May 1989 about the future utilisation of the item and declared it surplus,

- local purchase of item worth Rs.0.50 lakh was made when the same item held in stock was declared as surplus and was awaiting disposal, and

- the reserve price was fixed low in violation of the existing norms resulting in a loss of Rs.18.80 lakhs.

38. Loss due to prolonged storage

Based on indents placed by Naval Headquarters (HQ), the Material Superintendent (MS), Bombay received 4.26 lakh metres of electric cable (value Rs.25.99 lakhs) meant for general lighting purpose on board Naval Ships between August 1975 and April 1979. Of this, only 1.86 lakh metres of cable could be issued to user ships and establishments during the period August 1975 to April 1985. In June 1985, MS sent 2.40 lakh metres of cable received between August 1975 and August 1977 to the local surveyer of stores for testing. The cable was declared as unserviceable in the same month on the ground that the insulation had perished. The MS constituted a board in January 1987 which after physically examining the cables concluded that some of these appeared to be in good condition. He recommended that the entire quantity of cable should be re-examined by the

competent inspecting authority to ascertain their serviceability or otherwise.

In May 1989, another board of officers declared the entire quantity of cables as beyond economical repairs and recommended its disposal. The MS, Bombay, instead of declaring it as scrap declared them as surplus to requirements to Naval HQ in August 1989. The disposal of the cable (estimated value Rs.12.68 lakhs) was approved by the Naval HQ in September 1989.

Tenders for the cables were called for by the Metal Scrap Trade Corporation (MSTC) in December 1989 and the highest offer was for Rs.2.11 lakhs which included 539 electrical plugs (value Rs.4000 approximately). This offer was rejected by the MS in April 1990 as it was much below the reserve price. Ministry stated in December 1991 that the highest offer of Rs.2.11 lakhs was not accepted as the bid was for serviceable items and if the offer had been accepted it would have been incumbent on MS, Bombay to deliver the cables in a serviceable condition. The Ministry's contention is not tenable as the specific tender notice had clearly indicated that the auction of stores was on 'as is where is' basis and the reasons for rejection had been indicated by the MS as due to low bid only. Further, the tenderers are given an opportunity to satisfy themselves thoroughly of the condition of the stores by physical inspection before submitting the tender. In March 1991 these cables were disposed off through MSTC as Disposal Stores to a private firm for a sum of Rs.0.30 lakh against the reduced reserve price of Rs.0.40 lakh.

The case revealed that,

- over-provisioning of cable worth Rs.12.68 lakhs (estimated value) resulted in its prolonged storage and ultimately in its becoming unserviceable and having to be disposed of for a paltry sum of Rs.0.30 lakh,

- the MS, Bombay had got a bid of Rs.2.07 lakhs for the cable in December 1989 by which time a technical board had already declared the cable as beyond economical repairs. Therefore, the bid amount should have been evaluated in terms of 'unserviceable' stores. This could have avoided a loss of Rs.1.77 lakhs to the State.

39. Delay in setting up of aircraft repair and maintenance facilities

In 1977, Ministry approved import and induction of aircraft 'A' into the Navy. The aircraft was

introduced from December 1982 onwards in three batches at a total cost of Rs.1097.34 crores. With a view to setting up first and second line repair and maintenance facilities for the aircraft and its engines, Ministry sanctioned (March 1983) Rs.269 lakhs for necessary civil works and in April 1983 another Rs.10 lakhs was sanctioned for installation of equipments. The target dates for completion of the work were June 1988 and December 1990 respectively revised subsequently to December 1992 due to delays in delivery of aircraft and equipment.

While the civil works were completed in 1984 except for a chilled water plant and certain testing facilities at a cost of Rs.594.31 lakhs, completion of the maintenance facilities was still awaited. There were both cost and time overruns of Rs.325 lakhs and 36 months respectively in their completion. The reasons for the overruns were not furnished to Audit despite being requested for.

The facilities planned were, however, adequate to meet the needs of the first batch of the aircraft only and required augmentation for catering to the second and third batches. Accordingly, in July 1989, sanction for Rs.5 lakhs was sought by the Naval establishment to augment the facilities. According to the Ministry, this increase was not considered by the Naval Headquarters (HQ) with a view to economise the expenditure.

In accordance with the contracts concluded in November 1979/November 1985, the foreign suppliers were required to submit project reports/additional project reports for establishment of third and fourth line repair and overhaul facilities in India by December 1980/June 1986 for engines and May 1981/December 1986 for the aircraft. Based on the reports submitted by the suppliers (1982-87), Naval HQ proposed (March 1986) setting up of facilities for third and fourth line repairs. The cost effectiveness of the project was examined and the report of the Study Group that examined the cost effectiveness for setting up of these facilities was under examination with the Integrated Finance (December 1991). According to the Ministry, the approximate time needed to set up these facilities would be 3-5 years after receipt of Government approval. The Ministry stated (December 1991) that creation of full fledged repair and overhaul facilities in India was not economically viable as per the project reports received from the foreign suppliers and accordingly the case projected to Government envisaged that 25 per cent air frame components and 5 per cent engine components would still continue to go abroad even after setting up of the repair facilities in India. At the same time it was admitted

that there have been instances where aircraft had to perforce wait for return of components from abroad due to longer recycling period and limited availability of repair float and under such circumstances the necessity to increase the repair float to counter the long repair periods had always been felt to keep the aircraft operational. So far, the additional spares procured alongwith the second and third batch aircraft had helped to tide over the situation and by the time the aircraft inventory grows to its full complement, the need to procure additional components would become increasingly inescapable due to non-availability of third and fourth line repair and overhaul facilities. Naval HQ stated (February 1991) that apart from the expenditure on repair abroad, the non-availability of third and fourth line facilities in India caused considerable delay in recycling of components, which led to longer downtime of aircraft and invariably resulted in procurement of additional components to keep the aircraft operational.

Pending setting up of the required facilities in India, an expenditure of Rs.732.33 lakhs in FE had to be incurred on the repair and overhaul of the components, accessories, engines etc. abroad during the period 1984 to 1990.

To sum up,

- maintenance facilities sanctioned by Government in 1983 for a new generation aircraft inducted into the Navy from 1982 onwards still remained incomplete;

- there were cost and time overruns in respect of civil work necessary for the maintenance facilities amounting to Rs.325 lakhs and 36 months respectively;

- the facilities created so far are adequate only for the initial batch of aircraft;

- due to non-creation of full fledged maintenance repair and overhaul facilities in India, components, spares, accessories etc. were being sent abroad, resulting in the incurring of considerable expenditure in foreign exchange as well as limiting the operational availability of the aircraft.

40. Under utilisation of aircraft simulator

In January 1980, Government sanctioned induction of a particular type of aircraft alongwith associated training, maintenance and operational facilities at a cost of Rs.129.15 crores revised to

Rs.181.89 crores in September 1987.

At the time of sanction, it was envisaged that a simulator would be needed for training purposes and that it could be utilised for 1740 hours annually. It was also projected that considering the difference in cost of simulator flying and trainer aircraft flying, the simulator would pay for itself in 2 to 3 years. A contract was accordingly concluded in May 1980 with a firm for import of the simulator which was received in November 1983 and commissioned in May 1984. The payment made for the simulator amounted to Rs.10.35 crores.

The actual utilisation of simulator since its commissioning upto 1990 varied from 134 to 304 hours as against the annual target of 1740 hours. The shortfall from the target ranged from 82 to 92 per cent with the maximum utilisation never exceeding 18 per cent. According to the Ministry, the actual utilisation of the simulator met the training target.

Naval authorities attributed the under utilisation to:

- non-availability of pilots in adequate number and shortage of qualified flying instructors,
- non-availability of uninterrupted power supply,
- spares and components of simulator had to be sent abroad for repair involving long lead time and the time required to get items repaired varied between 12 to 24 months,
- non-setting up of a simulator repair and maintenance facility, which was still under the consideration of Naval Headquarters (HQ), and
- non-availability of a sub system, viz. radar simulator, which developed a fault in 1988 that was beyond the capability of local repair and it had affected the availability of radar sorties.

The reasons attributed by Naval HQ for under utilisation could have been anticipated, had there been adequate planning. While sanctioning the simulator in 1980, the requirement of qualified flying instructors and power supply should have been carefully assessed. Regarding the power supply, Naval HQ intimated in February 1991, that underground cables had now been laid to restore uninterrupted power supply (after 10 years). Similarly, final decision on the project report submitted (1983-84) by the foreign supplier on repair and maintenance fa-

cilities was still awaited (December 1991).

Thus, due to delay and inadequate planning, the simulator valued at Rs.10.35 crores remained grossly underutilised. Naval HQ added that non-availability of simulator for prolonged period had adversely affected the flying task of the aircraft.

The Ministry stated (December 1991) that the actual utilisation of simulator would depend upon the number of trainees required to be trained by the Indian Navy and ever since the simulator was acquired, the Operational Flying Training of the pilots has been conducted in India. It was further stated that the Royal Navy discontinued the training of Indian pilots on Operatioal Conversional Unit courses after 1989 and since then, the complete training has been conducted in India using the simulator facilities. The Ministry added that even if the option of training pilots abroad had remained open, the cost of such training would have been prohibitive and thus concluded that the simulator has been fully utilised. The fact, however, remained that the simulator was grossly underutilised and as admitted by Naval HQ its non-availability for prolonged period had adversely affected the flying task of the aircraft.

41. Avoidable delay in commissioning of a workshop

In May 1985, a Command Headquarters (HQ) ordered a Siting-cum-costing Board (Board) to site accommodation for augmentation of test facilities at a station consequent upon introduction into service of a new breed of aircraft and the establishment of third and fourth line repair facilities for a helicopter. Based on recommendations of the Board (June 1985), the Command HQ sanctioned (November 1985) civil works for the workshop at an estimated cost of Rs.39.36 lakhs, later revised to Rs.39.47 lakhs in July 1990. The proposed workshop had special power requirements viz. DC power supply and conversion to higher frequency to carry out its activities. However, the Board while making its recommendations had considered catering only to commercial power supply and had stated that further rectification to DC and conversion of power to higher frequency were to be carried out by the users to meet their special power requirements. Despite this, the Command HQ, on their own, convened another Board to go into this aspect after a lapse of over three years (December 1988). Based on the recommendations of the Board (January 1989), the provision of machinery for converted power supply including civil works and commissioning expenses estimated to cost Rs.55.11 lakhs was yet to be sanctioned by the Government

(November 1991).

The Ministry explained in November 1991 that prior to May 1988, the responsibility for procurement of the converted power supply machinery was that of the Navy and its procurement and installation were arranged in such a way that the receipt of the machinery synchronised with the completion of works services. Subsequently, on a policy decision taken in May 1988, the procurement of equipment and power supply was made the responsibility of the Military Engineers Services. Therefore, the Board was convened at the end of 1988 but due to some administrative constraints Government sanction could not be accorded so far (November 1991). It added that though the workshop could not be commissioned as an Avionics workshop, the available space in the building was being utilised for other repair purposes.

Thus, the workshop building completed at a cost of Rs.43.81 lakhs and taken over in September 1990 has so far not been put to its intended and optimum use in the absence of the converted power supply (November 1991).

The case revealed that,

- despite specific recommendations of the Board made in June 1985, the users did not initiate action till December 1988 to provide for the necessary converted power supply, and

- as necessary work for converted power supply is still to be sanctioned, assets created at a cost of Rs.43.81 lakhs have not been put to intended use.

42. Recovery of central sales tax at the instance of Audit

The Ministry concluded a contract in March 1990 with Firm 'A' for the supply, installation and commissioning of airfield lighting system for Naval Air Station, Arkonam at a total cost of Rs.3.36 crores amended to Rs.3.39 crores in September 1990. The contract provided for payment of sales tax at actuals by the Government. The inclusion of such a clause in the contract was irregular since according to the Central Sales Tax (CST) Act, 1956, in the case of inter state sales to Government, the sales tax chargeable was only four per cent on total turnover, on production of Form 'D' to be supplied by the buyer.

In August 1990, this irregularity was noticed by Audit during the scrutiny of paid bills relating to this contract in the office of the Controller of

Defence Accounts (CDA) Navy, Bombay. The CDA, Navy informed Audit in April 1991 that based on the reference made to Naval Headquarters they issued Form 'D' to Firm 'A' and payment of CST was being restricted to 4 per cent. The CDA(Navy) had so far recovered/retrenched Rs.11.20 lakhs from firm 'A's bills.

The Ministry while confirming the facts stated in December 1991/January 1992 that in another contract also, concluded with the same firm in March 1990 for the supply, installation and commissioning of airfield lighting system for Naval Air Station, Port Blair, a similar provision for the payment of sales tax had been made. However, necessary corrective action was taken by them by the issue of Form 'D' and payment of sales tax was restricted to four per cent.

The case revealed that while finalising the contract, the Ministry failed to take into account the provisions of the CST Act relating to payment of sales tax to Government departments at concessional rates. But for the observation of Audit, the overpayment would have amounted to Rs.27.62 lakhs in one contract alone as CDA, Navy would have continued to admit sales tax at actuals as per contractual provisions.

CHAPTER – V

RESEARCH AND DEVELOPMENT ORGANISATION

43. Delay in creation of an essential facility

Periodic measurement of underwater noise produced by submarines is considered essential to assess their operational effectiveness. Since creation of a permanent range for this purpose was likely to take some time, the Navy accepted, in 1982 and as an interim measure, a technique for noise measurement using an equipment fabricated by a Naval Research and Development Laboratory (lab).

In December 1983, the Directorate of Naval Research and Development (DNRD) sought sanction of the Ministry to fabricate three such equipment for meeting the immediate requirements of the Navy for deployment in each of the three Naval Commands. Sanction for taking up the project at an estimated cost of Rs.28 lakhs including Rs.18 lakhs in foreign exchange was issued by the Ministry in February 1984. The project which was taken up in February 1984, was to be completed in three years. Since no submarine was based at one of the commands, the necessity of fabricating an equipment which was basically an interim measure, was enquired by Audit in March 1988. DNRD replied in September 1988 that the third one would serve as a standby to meet the additional requirements of the Navy and the research activities of the lab.

In February 1987, the lab sought sanction for extension of time for rectification of defects in one item supplied by a contractor. Extension of time upto end 1987 and thereafter upto March 1989 was sanctioned by the Ministry in April 1987 and December 1988 respectively.

The project was closed in March 1989 at a cost of Rs.24.83 lakhs including Rs.13.44 lakhs in foreign exchange. However, the equipment fabricated by the lab in 1988 have not been handed over to the Navy (September 1991).

The Ministry stated in August/September 1991 that during the user trials carried out in February 1991, the performance of the equipment was observed to be of a standard lower than that specified. It added that the performance inadequacies had now been resolved but handing over of the equipment to the users was pending successful user trials. The delay in the conduct of the user trials was attributed to the non-availability of the consort ship from the

Navy and favourable sea conditions. The user trials are now expected to be completed after September 1991.

Thus, a facility considered essential for the submarine fleet of the Navy could not be actually provided till date despite incurring an expenditure of Rs.24.83 lakhs. Since in the meanwhile (April 1987) the Ministry has also initiated action on setting up of a permanent range, further delay would only reduce the time span for utilisation of these assets.

44. Purchase of main motor generators

Two main motor generators (MMG) were required by a testing centre (TC) of the Defence Research and Development Organisation in order to provide uninterrupted power supply to a craft when the main supply fails. Based on an offer made by a Public Sector Undertaking (PSU) in February 1989, the project authorities proposed to the Ministry which in turn approved in March 1989, the purchase of two MMGs from the PSU at a total cost of Rs.2.28 crores. Each MMG was to be supplied alongwith a local control panel (LCP) fitted with air circuit breakers (ACB). The ACBs were to be procured from foreign supplier 'A' by the PSU. The letter of intent (LOI) for the sets was placed on the PSU in March 1989 and purchase order in January 1990. The sets were scheduled for delivery by February 1991.

In July 1989, the consultant of the project revised the shock values of MMGs and LCPs. However, the project authorities decided to go ahead with procurement from the PSU without making any changes stating that the revised shock values were applicable only for ship-borne sets and original shock values were acceptable for the TC.

In a meeting convened by the project authorities in April 1990 to review the progress of MMG, the PSU stated that the foreign supplier 'A' had indicated that their ACBs did not meet the prescribed voltage variation requirements and that the only firm that quoted for ACBs meeting the specifications was a foreign supplier 'B'. The PSU was advised in the meeting by the project authorities to take action to keep the validity of supplier A's offer open till November 1990 pending comprehensive re-examination of re-design of LCPs as also to take parallel action to work out LCP dimensions using ACBs offered by supplier 'B'. ACBs of supplier 'B' were in fact already under evaluation by the project authorities for fitment in switch boards required for the TC and an order for 45 ACBs was subsequently placed in June 1990 on Indian firm 'C' which was stated to have en-

tered into a collaboration agreement with supplier 'B' for indigenous manufacture of ACBs.

The PSU informed the project authorities in August 1990 that the ACBs from the foreign supplier 'A' were again available and proposed their fitment in the LCPs as per the original design. However, they were advised to suspend the ordering for ACBs from supplier 'A'. In a meeting convened in August 1990 to discuss the issue, it was then stated by the project authorities that the ACBs of foreign supplier 'A' would not meet the revised shock requirements which was a reversal of the stand taken earlier that a conscious decision had been taken to use the ACBs of foreign supplier 'A' as they were deemed acceptable for the TC despite the revised shock values required.

In December 1990 negotiations began with firm 'C' for eight additional ACBs of foreign supplier 'B'. Firm 'C' expressed their inability to supply the ACBs at the same rates at which purchase orders had earlier been placed in June 1990 and quoted Rs.69.53 lakhs for eight ACBs. This was higher by Rs.25 lakhs as assessed by the project authorities compared to the rate offered in June 1990. Firm 'C' added that the foreign supplier 'B' would have supplied the additional ACBs at the same rates had the order been placed in June 1990 alongwith the order for the other ACBs. During negotiations, firm 'C' agreed to supply 8 ACBs at a cost of Rs.68 lakhs which included Rs.28 lakhs towards cost of design and development. An LOI was placed on it in February 1991 followed by an order in June 1991. The 8 ACBs are expected to be delivered by February 1992.

The PSU while agreeing to fit the ACBs procured from firm 'C', demanded Rs.14 lakhs as additional sum for redesigning and engineering LCPs using ACBs of foreign supplier 'B'. This was sanctioned by the Ministry in February 1991 raising the net cost of MMGs/LCPs by Rs.32 lakhs.

The Ministry stated in October 1991 that when the consultant tendered the advice to revise shock values, the project authorities' perception of shock values and their implication was nebulous and a clear picture emerged only in August 1990. The fact, however, remained that even while evaluating offers for switch boards for the TC in April 1990, the authorities had been aware of the revised shock values and ACB suitable to withstand the revised shock values was selected for switch boards required for the TC. Had the orders been clubbed together the extra cost of Rs.23.50 lakhs could have been avoided. Regarding payment of Rs.28 lakhs to firm 'C' towards cost of design and development of ACB,

the Ministry stated that this was part of the development cost for indigenisation.

Thus, the inability of the project authorities to correctly adopt the required shock values despite the advice of the consultant in the first instance led to their having to completely revise their requirements after about 20 months from placement of their initial order on PSU. This resulted in an extra expenditure of Rs.14 lakhs for redesign of LCP, Rs.23.50 lakhs for the purchase of ACBs from firm 'C' and delay of more than one year in the delivery of LCPs.

45. Delay in commissioning of an equipment

The necessity for hot air autoclave (equipment) required for high pressure moulding of advanced composites projected by the Director, Defence Materials and Stores, Research and Development Establishment (DMSE) was approved by the Equipment Procurement Committee of the Defence Research and Development (DR&D) Organisation during 1983 at an estimated cost of Rs.10.50 lakhs. These high performance composites were required for defence and space applications.

Director General Supplies & Disposals (DGSD), New Delhi awarded (January 1986) an order to a foreign supplier for Rs.20.61 lakhs in foreign exchange (FE). The equipment was received in DMSE in February 1987. The sea freight paid amounted to Rs.1.10 lakhs.

When the equipment was taken up for installation (April 1987), it was noticed that the control panel door with its instrumentation was damaged reportedly due to mishandling during transit. After survey on five occasions between May 1987 and January 1988, the equipment was declared irrepairable (February 1988) by the supplier's service engineers. The assessed replacement value of damaged spares amounted to Rs.0.96 lakh in FE. In addition, Rs.0.78 lakh in FE was payable towards cost of visit of specialists to put the equipment in order.

Claim amounting to Rs.2.52 lakhs preferred in December 1987 on the Indian Insurance Company for damages in transit was pending settlement (February 1992).

The required items to make the equipment functional were ordered on the foreign supplier, in August 1988 (amended in January 1989) at a total cost of Rs.1.74 lakhs in FE approximately. On their receipt at DMSE in October 1990, certain items were observed to be missing.

The Ministry while accepting the facts stated (February 1992) that the deficient parts were traced out and collected from Custom/Cargo office, International Airport Authority of India, New Delhi during March 1991 and immediately after arrival of full consignment of replacement parts, the supplier was asked to send their service engineer to India.

The case revealed that,

- equipment imported at a cost of Rs.20.61 lakhs in January 1987 could not be commissioned even after a lapse of five years (February 1992),

- claim on Insurance Company, for damages suffered to the extent of Rs.2.52 lakhs had not been settled, and

- in the event of unsatisfactory functioning of the equipment after its eventual installation, it will not be possible to take advantage of the warranty under the contract which had already expired.

(**N.R. RAYALU**)
Principal Director of Audit,
Air Force & Navy

NEW DELHI
Dated the 9 APR 1992

Countersigned

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

NEW DELHI
Dated the 9 APR 1992