

**HUNDRED AND NINETEENTH REPORT
PUBLIC ACCOUNTS COMMITTEE
(1987-88)**

(EIGHTH LOK SABHA)

BLOCKING OF FUNDS—IDLE EQUIPMENT

(MINISTRY OF CIVIL AVIATION)



Presented to Lok Sabha on 6 April, 1988

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**LOK SABHA SECRETARIAT
NEW DELHI**

March, 1988/Chaitra, 1910 (S)

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* Not printed (One cyclostyled copy laid on the Table of the House and five copies placed in the Parliament Library).

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(1987-88)

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INTRODUCTION

1. I, the Chairman of the Public Accounts Committee as authorised by the Committee do present on their behalf this Hundred and Nineteenth Report on Paragraph 51 of the Report of the Comptroller and Auditor General of India for the year 1985-86, Union Government (Civil), Vol. I relating to Blocking of Funds—Idle Equipment.

2. The Report of the Comptroller and Auditor General of India for the year 1985-86, Union Government (Civil) was laid on the Table of the House on 8 May, 1987.

3. In this Report, the Committee have highlighted that sanction of the proposal to install 15 VORs (Very High Frequency Omni Directional Radio Range) and 10 T—VORs at an estimated cost of Rs. 275.50 lakhs with a foreign exchange component of Rs. 52.75 lakhs in 1975, involving safety and economy of flying aircraft, was delayed by 2½ years and their installation remained incomplete even at the end of 1987. The estimate of the proposal had to be revised time and again due to slippages in supply by an indigenous supplier. Even after obtaining a separate sanction in 1980 for import of 6 VORs at an estimated cost of Rs. 87 lakhs with foreign exchange component of Rs. 48 lakhs to meet the immediate requirement, their installation was badly delayed. Not only that, by the time imported equipments were received at the sites the indigenous VORs too started arriving in the last quarter of 1983. All this has shown that there has been a total lack of planning right from conceptualisation to actual commissioning. It has been established that project planning and its implementation had been tardy and weak.

4. The Committee have recommended to investigate the reasons for abnormal delay in installation of equipment and resorting to import of VORs when the infrastructural facilities for installation were not even available. They also have recommended immediate installation of the VORs to improve safety, reduce flying time and fuel cost besides minimising cockpit workload. They have not approved obtaining sanction to install VORs at certain stations and installing them elsewhere on the ground of urgency which indicated total lack of planning and foresight. The Committee have desired Government to make a careful appraisal of the requirements of

VORs and DMEs for the country as a whole and draw a comprehensive time bound plan for provision of VORs and DMEs at all airports and strengthen the project planning and implementation machinery to minimise time and cost overruns.

5. The Public Accounts Committee examined the Audit paragraph at their sitting held on 1 December 1987.

6. The Committee considered and finalised this Report at their sitting held on 17 March 1988. The minutes of the sittings form Part II* of the Report.

7. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in thick type in the body of the Report and have been reproduced in a consolidated form in Appendix to the Report.

8. The Committee express their thanks to the officers of the Ministry of Civil Aviation and National Airports Authority for co-operation extended by them.

9. The Committee also place on record their appreciation of the assistance rendered to them in the matter by the Office of the Comptroller and Auditor General of India.

NEW DELHI;
March 28, 1988

Chaitra 8, 1910 (S).

AMAL DATTA,
Chairman,
Public Accounts Committee.

REPORT

BLOCKING OF FUNDS—IDLE EQUIPMENT

Audit Paragraph

1. The Audit Paragraph Blocking of Funds—Idle Equipment as appearing in the Report of the Comptroller & Auditor General of India for the year 1985-86, Union Government (Civil) is reproduced as Appendix* to this Report.

Proposal to install air traffic navigational aid equipment

2. To ensure efficient and economic operations, aircrafts should have at all times accurate information regarding the distance and bearing from the known ground location which could only be achieved if adequate number of very High Frequency Omni Directional Radio Range (VOR) and Distance Measuring Equipment (DME) are installed to give gap free coverage on all routes. In August, 1975, the Ministry of Tourism and Civil Aviation submitted the proposal for the procurement of 15 VORs, 10 T-VORs and 12 DMEs at a total cost of Rs. 413 lakhs with foreign exchange component of Rs. 173 lakhs. However, the procurement of only 15 VORs and 10 T-VORs but not the 12 DMEs at an estimated cost of Rs. 275.50 lakhs with a foreign exchange component of Rs. 52.75 lakhs was approved by the Government in February 1978. The 15 VORs were proposed to be installed in a phased manner as under:

1975-76	..	5	—	Mohanbari, Mangalore, Imphal, Bangalore and Udaipur.
1976-77	..	5	—	Chandigarh, Panagarh, Patna, Amritsar and Cochin.
1977-78	..	5	—	Visakhapatnam, Ambikapur, Jammu, Bagdogra and Jorhat.

*Refer Appendix 'A'.

3. Initially, it was considered to purchase the equipment from BEL, a Government of India Undertaking. Due to various difficulties faced by BEL, there had been slippages of about 1½ to 2 years in their programme of development undertaken in 1976. Consequently, the Department of Civil Aviation, with the clearance of Department of Electronics and DGTD, got the sanction for import of 6 VORs on 31-3-1980 at an estimated cost of Rs. 87 lakhs with foreign exchange component of Rs. 48 lakhs for immediate installation at Amritsar, Patna, Visakhapatnam, Gauhati, Mangalore and Ranchi. An indent for the purchase was placed on the DGS&D who placed an Acceptance of Tender on a foreign firm in September 1981. As per the terms of the Acceptance of Tender, the supply was subject to the warranty/guarantee valid for a period of 15 months from the date of shipment or 12 months from the date of installation whichever was earlier.

4. The 6 VORs were received at the port of discharge in India in October 1983 and were transported to the sites of installation during October, November and December 1983.

5. For the procurement of the remaining 9 VORs, an indent was placed by the Civil Aviation Department (CAD) on the DGS&D in May 1980 along with proprietary article certificate (in favour of BEL. The firm quoted in September 1980, a price of Rs. 10.25 lakhs each. The department could not take a decision on the test equipment and spares to be purchased along with the VORs till July 1981 when the firm raised its price to Rs. 11.27 lakhs each exclusive of sales tax and excise duty. The A/T placed on BEL on 6 February 1982 at the enhanced rate provided for guarantee from defects in workmanship and material for a period of 15 months from the date of despatch. Delivery commenced in December 1983 and was completed in October 1984.

6. However, installation of the equipments did not take place on delivery. As on end, 1986, only 7 VORs were installed. 5 of the 6 imported VORs have been installed at Baroda, Bellary, Kanchipuram, Mangalore and Visakhapatnam and one indigenous VOR installed at Bangalore and one kept for Radio Construction and Development Unit. The guarantee periods in respect of both imported and indigenous equipments have already expired. The position of installation of other 8 VORs was stated to be as under:

- (a) 1 VOR equipment had been physically installed at Sikandarabad in October 1987 and air calibration was to be completed in February 1988.

- (b) One equipment meant for Chandigarh was diverted to Calicut where its physical installation had been completed in December 1987.
- (c) The remaining 6 VORs for Rajkot, Bagdogra, Dibrugarh, Udaipur, Jammu & Gulbarga are expected to be installed by February 1989.

The Audit Paragraph brings out delay in the installation of equipment resulting in blocking of Government funds due to faulty planning.

Need to install VORs and DMEs

7. The proposal to procure and install an adequate number of VORs and DMEs was mooted with a view to enabling aircraft to fly in all weather conditions, thus ensuring efficient and economical operations. The delay in the installation of these equipments resulted in non-fulfilment of the objectives for which sanction to procure these equipments was obtained. The Ministry of Civil Aviation stated that in the absence of VORs the aircraft pilots had been obtaining basic navigational guidance from Non-Directional Beacons (NDB) for those parts of air space, where VOR coverage was not available. The number of NDB installations in the country was sufficient to cover navigational requirements of all air routes. The Air Traffic Control procedures provide appropriate separation standards for aircraft making use of NDBs. According to the Ministry, since the pilots report their position to Air Traffic Control Stations in any case through authorised VHF and HF communication channels and the ATC authorities provide necessary instructions and guidance, the use of NDBs in the absence of adequate number of VORs co-located with DMEs had not jeopardised the safety of aircraft operations or rendered the level of assistance to aircraft deficient all these years from the operational angle.

8. Regarding the performance roles of NDB and VORs¹, it was contended by the Ministry that NDB was the basic navigational aid. VOR was also used as a supplementary aid for route navigation and also as an approach and landing aid. As VOR provided bearing information only, it was co-located with DME to provide information regarding distance. Its role as a route navigational aid became important whenever weather conditions resulted in the degradation of NDB's performance. VOR was a short distance route navigational aid in its own right due to the distinct edge it had over NDB.

¹Refer Appendix 'B'

VOR provided highly accurate and reliable track guidance to the pilot and enabled him to fly a straight line track and to use the auto pilot. Thus VOR saved his time and reduces the cock-pit work load and resultant fatigue to the pilot. Its use lead to reduction in the flying distance and results in saving in the flying time and thereby considerable savings in terms of costs and fuel. It was because of the multiple advantages of VOR as a supplement to NDB that the proposal for procurement of VORs and DMEs was justified on the basis that the aircraft should have at all times accurate information regarding the distance and bearing from the known ground location which could only be achieved if adequate number of VORs and DMEs were installed to give gap-free coverage on all routes.

9. During evidence the Chairman, NAA admitted that absence of VORs ceased aircraft movement in a curved pattern due to non-steady-beacon thus entailing a little more travelling distance. Provision of VOR would have saved considerable fuel cost over a period of time.

Delay in the installation of VORs

10. During evidence the Secretary, Ministry of Civil Aviation accepted it as correct that those VORs when received were not installed in time due to faulty planning² on the part of DGCA He went on to add that there was no planning at all. Due to apprehended delay in the development of equipment by BEL, it was decided to import 6 VORs to meet the immediate requirement. The Secretary admitted that while on the one hand urgency was expressed primarily for which export was allowed, on the other hand DGCA had taken no steps to coordinate so that immediately on the arrival of the equipment, it could be installed. He accepted that there was no planning and consequently there was a big backlog in execution of the projects.

Inadequate advance planning

11. A reference was drawn by Audit to para 15 of their Advance Report for the year 1979-80, Union Government (Civil) wherein a mention was made about the procurement of 2 VORs by the Department and a delay of 3 and 6 years in their installation and commissioning due to land acquisition delays resulting in blocking of

²Refer to relevant portion Appendix 'C'

funds. The Department had then stated (December 1979) that selection of a suitable site and acquisition of land for a technical aid, which was site sensitive, was a long drawn process and often all the efforts put into acquiring particular site did not give fruitful results and one had to go in for an alternative location and start the process all over again. The Committee is constrained to observe that although the Department was, thus, aware of the difficulties in land acquisition, yet the selection of sites, acquisition of land and completion of works were not planned to coincide with the arrival of equipment.

12. As regards the steps taken by the Department to synchronise the receipt of these costly equipment with the availability of the necessary infrastructure including site (land) for their timely installation, the Ministry tried to justify the delay by stating that although DGCA initiated surveys for identification of sites for the installation of VORs as early as in July 1977 due to various difficulties such as features of the level, existence of hangers, big buildings, high tension lines, etc. involved in selection of the sites, the Department could not avoid delay in providing the basic infrastructural facilities³. The Ministry have also stated that the present practice of taking up simultaneous action for procurement of equipment and acquisition of land/construction of building for installation of equipment would result in the commissioning of the equipment in a shorter time. In their opinion this would effect economy as well.⁴

Constraints faced by the DGCA in installation of equipment

13. The Civil aviation Secretary held CPWD authority as one of the main factors contributing towards inordinate delay in construction of many of their facilities.⁵ According to him CPWD, on an average, had taken 33 months in the construction of many of these facilities. With the works now being directly given to IAAI, RITES and other agencies this delay would not recur in future.

14. Limited financial resources available due to restricted plan outlays were stated to have not permitted simultaneous development of all airports and provision of necessary facilities at civil airports. The Civil Aviation Sector not being a core sector approved outlays for the sector underwent major cuts quite frequently. The

³Refer to relevant portion Appendix 'C'

⁴Refer to relevant portion Appendix 'C'

⁵Refer to relevant portion Appendix 'C'

Working Group on Civil Air Transport had recommended an outlay of Rs. 2764.07 crores in the Seventh Plan, which was pruned to Rs. 2491.20 crores by the Planning Commission and ultimate outlay for the sector was fixed at Rs. 730.20 crores. This outlay being grossly inadequate, various organisations under the Ministry of Civil Aviation were subjected to revision of their priorities and deferment of a number of their schemes. Besides (i) plans for providing VORs were sometimes deferred due to difficulties in selecting suitable sites and long time involved in completing the process of land acquisition; and (ii) procurement and installation of VORs had to be staggered due to inadequate manpower and availability of limited facilities for flight calibration.

Establishment of National Airports Authority

15. According to the Ministry there were inherent limitations in the erstwhile DGCA system to watch and monitor timely implementation of projects and that with the formation of National Airports Authority, delays in provision of infrastructure facilities would be considerably reduced.

Diversion of equipment meant for Chandigarh to Calicut

16. Attention of the Secretary, Ministry of Civil Aviation was drawn to the fact that at the time of sanction of VOR; the Department was advised to acquire land under the urgency clause, in case delay in the acquisition of land was anticipated. The Secretary admitted that the Department had failed to apply that urgency clause.

17. Audit also pointed out that the Department of Civil Aviation obtained sanction for import of 6 VORs in March 1980 to meet the immediate requirements for installation of VORs at Amritsar, Patna, Visakhapatnam, Gauhati, Mangalore and Ranchi. The original proposal to procure 15 VORs, however, did not include the stations of Gauhati and Ranchi. Besides, VORs meant for Chandigarh had been diverted for installation at Calicut. The Chairman, National Airports Authority informed the Committee that the equipment meant for Chandigarh could not be installed there on its receipt due to non-acquisition of land and Calicut was coming up as a completely new airport for the Boeing 737 where immediate installation of VOR was required. Instead of keeping the equipment idle, the Authority had used it at Calicut and on receipt of equipment ordered for Calicut would be transferred to Chandigarh.

18. The Secretary, Civil Aviation upheld the position explained by the Chairman, NAA and stated that the VOR was transferred for

installation at Calicut to meet the immediate need and there was no extraneous consideration.

Purchase of Indigenous Equipment

19. As regards the quality of imported VOR *vis-a-vis* indigenous VOR, imported ones were stated to be working trouble-free and easy to maintain whereas in case of indigenous ones it was intimated by the Ministry that reports from field stations indicated that the imported equipment was more stable than the indigenous one and that adjustments were required to be carried out more often in indigenous equipment than in imported one. It was further stated that only the NAA and perhaps Air Force were the only agencies to use indigenous equipment and necessary expertise in design, construction and manufacture of quality equipment will accrue to indigenous agencies only after a period of time. The component content of the indigenous equipment was 30 per cent to 40 per cent of the total cost and their spares were not available.

Perspective Plan

20. With a view to providing gap-free navigational coverage for aircraft on all routes and assuming that the present route pattern will not undergo any major change, the National Airport Authority has worked out the perspective plan till the year 2000 A.D. This plan envisage, subject to availability of resources, replacement of 39 VORs and 15 DMEs. NAA sought permission from the Government for import of these VORs as BEL who earlier supplied VORs gave up the manufacture of VORs. The Authority were informed that Gujarat Electronics would be manufacturing VORs for the future requirement. The Authority was, however, informed by the Gujarat Electronics that the firm were not yet in a position to manufacture VORs. One of the reasons for indigenous sources not manufacturing VORs was that the quantum of requirement by NAA who alone would require VORs and that too not exceeding 5 to 10 in number, did not permit them to undertake this product economically. The Committee were informed that even the plan requirement upto 2000 A.D. prepared by Tata Committee did not indicate more than 5-10 DVORs for India. Indigenous sources had been advised to manufacture simple VORs only, whose requirement by the turn of century would be around 20-60 and the cost per unit would be Rs. 40 lakhs. As against this, cost of imported VOR would be of the order of Rs. 20 to 25 lakhs.

21. The Committee note that as proposed by the Ministry of Tourism and Civil Aviation in August 1975 the Government accorded sanction in February 1978 for procurement of 15 VORs and 10 F-VORs at an estimated cost of Rs. 275.50 lakhs with a foreign exchange components of Rs. 52.75 lakhs, for installation at 15 different airports. The Committee are surprised that the Govt. took 2½ years to accord sanction to a proposal involving safety and economy of flying of aircrafts and are constrained to observe that this shows lack of seriousness and urgency on the part of the Government. This estimate had to be revised time and again due to slippages in supply by the indigenous supplier, i.e. Bharat Electronics Ltd., on whom the initial supply order was placed. Even though a separate sanction was obtained in March 1980 for import of 6 VORs at an estimated cost of Rs. 87 lakhs with a foreign exchange component of Rs. 48 lakhs, to meet immediate requirement, their installation was inordinately delayed. Not only that, by the time the imported equipments were received in the country and despatched to the site, the indigenous VORs too started arriving in the last quarter of 1983. Thus supply from both sources was almost simultaneous even though a lot of foreign exchange was spent on import of the 6 VORs on grounds of so called urgency. The Committee do not consider that such extraordinary urgency was justified in view of the delay that occurred in the installation of both imported and indigenous equipment.

22. The Committee agree with the Secretary, Civil Aviation that there has been a total lack of planning. They are of the opinion that right from conceptualisation to actual commissioning project planning and implementation had been tardy and weak. While on the one hand import of equipment involving foreign exchange was resorted to, on the other there was inordinate delay in the installation of equipment due to lack of infrastructural facilities and by that time the indigenous VORs had also started arriving. The import of the equipment involving precious foreign exchange was thus an exercise in futility. The guarantee period of both indigenous and imported equipment had already expired by the time these were installed. The Committee deprecate this lackadaisical approach of the Government and would urge them to investigate the reasons for abnormal delay in installation of equipment and resorting to import of VORs when the infrastructural facilities were not even available and to fix responsibility for lapses. The Committee would like to be apprised of the results of such investigations.

23. The Committee find that the Department of Civil Aviation obtained sanctions stressing the urgent need of the VORs, to improve safety, reduce flying time and fuel cost besides minimising cockpit workload. During evidence, the Chairman, NAA accepted this position. The Committee feel that the delay in installation of the VOR have not only blocked the capital amount spent on their procurement but this has also resulted in additional fuel cost which would have been saved due to reduction in the flying time. They urge the Government to take expeditious steps to install all the VORs so that efficient and economic operations of aircraft is ensured.

24. While seeking sanction for procurement of the VORs the Department/DGCA considered it necessary to install the VORs at certain stations lacking the necessary facilities. The Committee note, however, that on receipt of the equipment, it was discovered that their installation at those stations could be deferred without affecting much of their efficiency. The Department further discovered that there are many more stations/airports, existing or being developed where installations of VORs is necessary on priority basis. One VOR procured for Chandigarh was shifted to Calicut with a view to meeting the immediate need at Calicut. The Committee are of the opinion that this is clearly indicative of total lack of planning and foresight as the Government did not consider the requirements of the country as a whole and the problem was tackled on ad-hoc basis. The Committee deprecate this casual approach of the Government and hope that the Government will now have careful appraisal of their requirements in totality to take up planned development of airports and provide requisite facilities therein. The Committee also hope that the Government would draw a lesson from this experience and suggest that Government plan a comprehensive time-bound programme for provision of VORs and DMEs at all airports and en route and strengthen the project planning and implementation machinery to minimise time and cost overruns.

25. The Committee are unhappy to note that the reports from field stations indicated that imported equipment was more stable than the indigenous one and that adjustments were required to be carried out more often in indigenous equipment than in imported ones. The Committee are of the view that reasons for relatively unsatisfactory performance of indigenous equipment should be critically analysed in consultation with the designers and producers of the equipment and appropriate remedial measures taken

with due promptitude to improve the quality of equipment manufactured indigenously to obviate need for imports.

26. The Committee have been informed that National Airports Authority has been created as there were inherent limitations in the erstwhile DGCA system to watch and monitor timely implementation of projects. The Committee hope that the establishment of NAA would result in efficient utilisation of resources and fulfilment of objectives.

27. The Committee observe that audit in their Advance Report 1979-80 had pointed out that on an earlier occasion the DGCA obtained sanction for procurement of 2 VORs but delayed their installation by 3 to 6 years on the ground that selection of suitable sites and acquisition of land were long drawn processes. Even being aware of the impediments of this nature the Ministry preferred to accord sanction for procurement of VORs from indigenous sources as well as their import without ensuring that adequate steps are taken to remove these limitations. This indicates lack of monitoring and vigilance on the part of the Ministry. The Committee need hardly emphasise that delays in project implementation have grave financial and economic implications. Organising project completion actively to synchronise completion of various components of the project to ensure timely completion was therefore a responsibility of not only the DGCA but also of the Government. The procedure, practices and organisation involved in completion of projects require critical analysis and review. The Committee hope that the Government will learn a suitable lesson from this experience and will be careful in according sanctions in future, besides ensuring that the specific centres of responsibility and accountability are clearly identified and defined at the time of issue of sanctions. Once such sanctions are accorded these should be implemented within the prescribed schedule so that there is no time and cost overruns.

28. The Committee note that the Department have not been able to install the VORs at different stations for their not being able to acquire land in time. According to Secretary, Civil Aviation, CPWD took enormous time (in some cases as long as 33 months) in the construction of buildings and other infrastructure facilities. The Committee found that the plea taken by the Ministry/Department are not wholly substantiated by the facts. At the time of according sanction for the procurement of VORs, the Ministry advised the Department to use urgency clause in case they apprehend difficulty in the acquisition of land. It is disquieting to note that neither the urgency clause was invoked even once for land acquisition nor the

negotiations with land owners, for quicker take over of the land was even thought of. Besides, when CPWD failed to complete the construction of buildings within a certain specific time, the DGCA could have taken up the matter at the appropriate level. But there is no evidence to show that the Department treated the matter with the seriousness it deserved. The Committee are inclined to agree with the statement of the Secretary, Civil Aviation that DGCA had not taken steps to coordinate with concerned authorities so that on arrival of the equipment it could be installed. The Committee hope that the Government will now examine the issue in greater depth and issue detailed instructions so that there is sense of urgency in resolving such impediments and delay in execution of such projects of vital importance is avoided in future.

29. The Committee note that a perspective plan till the year 2000 has been drawn. They hope that the plan will be implemented in accordance with the prescribed schedule and care will be taken to review and modify the plan every year taking into account the exigencies of situation and constraints.

NEW DELHI;
 March 28, 1988
 Chaitra 8, 1910 (S)

AMAL DATTA.
 Chairman,
 Public Accounts Committee

APPENDIX A

(Vide Para 1 of Report)

*Para 15 of the Report of C&AG of India for the year 1985-86 (Civil),
Vol. I, re. Blocking of Funds—Idle Equipment*

MINISTRY OF TRANSPORT

(Department of Civil Aviation)

51. Blocking of funds—Idle equipment

Very High Frequency Omni Directional Radio Range (VOR) and Terminal Very High Frequency Omni Directional Radio Range (T—VOR) (which is similar in operation to a VOR except that its useful range is less), enable the aircraft to fly in all weather conditions, thus ensuring efficient and economical operations.

In pursuance of the Ministry of Tourism and Civil Aviation memo to the Expenditure Finance Committee (EFC) submitted in August 1975 requesting approval for the procurement of 15 VORs, 10 T—VORs and 12 Distance Measuring Equipment (DMEs) at a total cost of Rs. 413 lakhs with foreign exchange component of Rs. 173 lakhs, Government approved in February 1978 the procurement of 15 VORs and 10 T—VORs at a total estimated cost of Rs. 275.50 lakhs with a foreign exchange component of Rs. 52.75 lakhs. The proposal was justified on the basis that the aircraft should have at all times accurate information regarding the distance and bearing from the known ground location which could only be achieved if adequate number of VORs and DMEs were installed to give gap free coverage on all routes.

The 15 VORs were proposed to be installed, in a phased manner, as under:—

1975-76	5	Mohanbari, Mangalore, Imphal, Bangalore and Udaipur.
1976-77	5	Chandigarh, Panagarh, Patna, Amritsar and Cochin.
1977-78	5	Visakhapatnam, Ambikapur, Jammu, Bagdogra and Jorhat.

It was earlier considered to purchase the equipment from firm 'A', a Government of India Undertaking, which had undertaken development work in 1976. On account of various difficulties faced by it, there had, however, been slippages of about 1½ to 2 years in the development programme, and consequently at the instance of the Department of Civil Aviation and with the clearance of the Department of Electronics and the Director General, Technical Development (DGTD), import of 6 VORs at an estimated cost of Rs. 87 lakhs, with a foreign exchange component of Rs. 48 lakhs, was sanctioned by the Ministry on 31st March 1980 to meet the immediate requirements for installation at Amritsar, Patna, Visakhapatnam, Gauhati, Mangalore and Ranchi. Stations at Gauhati and Ranchi which did not find place in the proposal for 15 VORs referred to above, were included in the list of stations for installation subsequently for meeting urgent operational requirements. An indent for the purchase was placed on the Director General, Supplies and Disposals (DGSD) who placed an Acceptance of Tender (A/T) on a foreign firm in September 1981. Delivery of all the 6 VORs was guaranteed within six months from the opening of the Letter of Credit (L/C) (later substituted as 2 months from the date of extension of validity of L/C). As per the terms of the A/T, the supply was subject to warranty/guarantee valid for a period of 15 months from the date of shipment or 12 months from the date of installation, whichever was earlier.

The 6 VORs were received at the port of discharge in India in October 1983 and were transported to the sites of installation during October, November and December 1983.

For the procurement of the remaining 9 VORs, an indent was placed by the Civil Aviation Department (CAD) on the DGSD in May 1980 along with proprietary article certificate in favour of firm 'A'. Firm 'A' quoted in September 1980, a price of Rs. 10.25 lakhs each. The department could not take a decision on the test equipment and spares to be purchased along with the VORs, till July 1981 when the firm raised its price to Rs. 11.27 lakhs each exclusive of sales tax and excise duty. The A/T placed on firm 'A' on 6th February 1982 at the enhanced rate provided for guarantee from defects in workmanship and material for a period of 15 months from the date of despatch. Delivery was commenced in December 1983 and completed in October 1984.

Three VORs at Bangalore, Kanchipuram (not included in the proposal for 15 VORs but included subsequently in the list of stations for installation for meeting urgent operational requirements) and Visakhapatnam had been commissioned (September 1985, October 1985 and July 1986). One VOR was proposed to be kept for Radio Construction and Development Unit.

The position of installation and commissioning of the remaining 11 VORs, as in September 1986, was as under:—

(a) *Indigenous supply:*

Chandigarh: Site originally selected in 1980 because unsuitable due to unacceptable development around the site in the nearby industrial area. A new site was approved in May 1985, but land had not yet been acquired.

Udaipur, Sikandrabad: Civil works had been completed. Electrical works were in progress.

Dibrugarh: Site was approved in June 1986. Land acquisition was not required, but delay was due to non-availability of suitable site.

Rajkot: Estimates for civil and electrical works were awaited from the Central Public Works Department.

Jammu: Site was approved in November 1983. Land acquisition was in progress.

Bagdogra: Site was yet to be approved.

(b) *Imported supply:*

Gulbarga: Though land for VOR was acquired in February 1982, land for the approach road is yet to be acquired.

Baroda: The Building works were completed in February 1984 and physical installation of equipment was completed in June 1984. Flight check of VOR was completed on 30th August 1986 during which the generator, stabilizer and air-conditioner failed. Repairs had still not been completed.

Bellary: The civil electrical works were completed in May 1984. Installation of VOR was completed in February 1985. VOR was flight checked on 8th August, 1986. The standby generator, voltage regular and air-conditioner were yet to be repaired.

Mangalore: Civil and electrical works were completed in February 1985, VOR was installed in August 1986. It was yet to be commissioned.

The delay in installation of eleven VORs had resulted in blocking of Rs. 148.25 lakhs (4 imported VORs: Rs. 56 lakhs and

7 indigenous VORs Rs. 90.25 lakhs including excise duty and central sales tax for over 32 months (September 1986).

A mention was made in para 15 of the Advance Report of the Comptroller and Auditor General of India for the year 1979-80: Union Government (Civil) about the procurement of 2 VORs by the department and a delay of 3 and 6 years in their installation and commissioning due to land acquisition delays resulting in blocking of funds. The department had then stated (December 1979) that selection of a suitable site and acquisition of land for a technical aid, which was site sensitive, was a long drawn process and often all the efforts put into acquire a particular site did not give fruitful results and one had to go in for an alternative location and start the process all over again. The department was, thus, aware of the difficulties in land acquisition

Despite the above, selection of sites, acquisition of land and completion of works were not planned to coincide with the arrival of equipment. Sites had not been selected at Chandigarh, Rajkot, Dibrugarh and Bagdogra by the dates the VORs had been delivered at these sites. In 4 cases (Chandigarh, Jammu, Udaipur and Sikandrabad), where acquisition of private land was required, the same had not been completed by the time the VORs were received. Land acquisition had still (September 1986) not been done in Chandigarh and Jammu.

The following points emerge:

- A proposal initiated in 1975 to provide gap free navigational coverage by installation of equipment has not fructified till date in a large number of sites (eleven out of fourteen) (September 1986).
- An expenditure of Rs. 148.25 lakhs incurred on procurement had remained blocked for over 32 months (September 1986).
- The guarantee periods both in respect of imported and indigenous equipment have already expired.
- Since the delivery by firm 'A' had started almost by the time the imported equipment had arrived, there apparently was no need to spend foreign exchange of Rs. 48 lakhs,

specially considering the lag in the provision of infrastructural facilities at the sites where immediately for provision of equipment had been indicated.

The case was referred to Government in October, 1986, but their comments were awaited (January 1987).

APPENDIX B

(Vide para 8 of Report)

Performance of VOR and NIB as Navigational and Approach Aids

Both Very High Frequency Omni directional range (VOR) and Non-Directional Beacon (NDB) are Pilot-interpreted aids and therefore these facilities can be used by pilots directly without the assistance of Air Traffic Control personnel. VOR operates in the Radio Frequency Range 112 to 118 MHZ and its range is limited by line of sight as in the case of television broadcasting. Therefore, the normal range of operation of a VOR is 100 to 200 nautical miles depending upon the altitude of the aircraft. For the purpose of aircraft navigation for aircraft flying at altitudes of the order of 30,000 ft., expected range of a VOR is about 150—180 nautical miles. The operational accuracy of a VOR depends upon the condition of the site of the VOR ground facility. If the terrain around the VOR facility is reasonably flat and even and does not contain hilly terrain features or unacceptable reflecting objects such as hangers, big buildings, high tension lines, etc., the accuracy of VOR can be as good as 3 degrees or better. However, if a site gets degraded due to above mentioned features and objects, the course signal radiated by VOR may, suffer from large bends as well as roughness which may, sometimes, cause an error of the order of 10 degrees. Consequently, a VOR has to be installed at a carefully selected site and requires considerable preparation before installation and also protection after installation. Assuming that no such operational problems are faced, a VOR can provide reliable and accurate guidance for short distance navigation of aircraft and also for approach to an airport. One important advantage of VOR is that the radiation characteristics do not depend upon weather phenomena, time of the day or seasons of the year.

2. The Non-Directional Beacon normally operates in the radio frequency band of 200 to 500 KHZ and the signal radiated by this facility is received by ground wave propagation. Consequently, the range of NIB does not depend upon line of sight, but essentially depends upon the radio frequency power of the ground equipment, the sensitivity of airborne receiver and also the characteristics of the ground over which the radio waves propagate. The usual average range of high power NIB can be 300 nautical miles, range of medium power NDB can be 150 to 200 nautical miles and that of a low power

NDB (100 Watts) can be 50 to 100 nautical miles. The performance of NDB is not as critically dependent upon the site conditions as in the case of a VOR. It is, therefore, easy to instal and maintain. However, the accuracy of NDB is usually in the order of ± 5 degrees, and is subject to degradation depending upon the time of day and season of the year as well as weather phenomena. The accuracy suffers some degradation during night, and further degradation may occur during thunder-storms. It is in such circumstances that a VOR is far more useful and dependable. However, a high power NDB can be used as long distance navigational aid whereas a VOR's operational range is inherently limited by propagation phenomena. In accordance with the document Annexe 10 of ICAO, NDB can be used as a long distance navigational aid. It can also be used as a short distance and limited approach aid.

3. At present, there are 42 VORs in operation providing coverage in the Indian Air Space. The number of NDB in operation however is about 90. Consequently, in a situation where aircraft do not get VOR coverage in certain areas, they depend upon the coverage provided by NDBs. The Air Traffic Control procedures provided separation standards for air traffic depending upon the aids and facilities available to them. Owing to the wide variation in accuracy of track guidance, the separation standards on the basis of NDB facility require higher longitudinal and lateral separation between aircraft as compared to situations where they use VORs. Since the pilots report their position to ATC in either case, these standard separations are ensured by ATC personnel. The position reports of the pilots are reported in authorised VHF and HF communication channels and the ATC authorities provide necessary instructions and guidance to the pilots through these channels.

4. The Non-Directional Beacon (NDB) while providing a longer range of service compared to the VOR, suffers from adverse effects when thunder conditions exist. The aircraft would find it difficult to navigate using a NDB when thunder clouds exist in the vicinity.

5. The NDB does not permit the pilot to fly a desired track automatically since this instrument only provides a relative bearing of the NDB location with reference to the FORE and AFT axis of the aircraft. Consequently, it will be extremely difficult for an aircraft to fly a straight line track to a NDB and invariably the aircraft reaches the NDB in a curve pattern.

6. Due to the reasons enumerated above, the use of auto pilot for flying a desired track using the NDB is not practical.

7. The VOR provides a shorter range of coverage since it operates on the VHF frequency. However, it provides very accurate track guidance (± 1.5 degree) and thereby permits the aircraft to navigate very accurately. Consequently, the lateral separation between two aircraft using the same VOR would be only 15 degrees as against 30 degrees minimum required on the NDB.

8. Since the VOR provides accurate direction in terms of 360 radials, it is possible for an aircraft to fly a straight line track with reference to the VOR.

9. Due to these reasons, flying to and from the VOR using auto pilot is possible and consequently the cockpit work load and resultant fatigue to the pilot is reduced to a great extent.

10. Since the VOR provides accurate guidance to fly straight line track, the flying distance involved would be lower compared to the flying with reference to a NDB (the fly path with reference to NDB being a curve track). The resultant saving in the flying time provides for adequate savings in terms of cost and fuel.

APPENDIX C

(Vide para 10, 12-13 of Report)

Extracts from submission by witness/written replies/other documents

2. The Secretary, Civil Aviation submitted that: (vide para 10 of Report)

"It is correct that these VORs when received were not installed in time and for that I confess that on the part of the DGCA there was faulty planning. In fact, there was no planning at all. In fact, there was no planning at all because various preliminaries such as requirement of land etc. had not been cleared and I find that in many cases, the time taken from conceptualization to actual commissioning has been as large as 10—14 years which is inexcusable. We have had discussions and we have now asked NAA to evolve a system in which the time is reduced to the barest minimum."

3. The Ministry submitted (vide para 12 of Report)

"The Directorate General of Civil Aviation had initiated surveys for identification of sites for the installation of VORs as early as in July, 1977. Selection of suitable sites for installation of VOR is a complicated exercise due to the site sensitivity of the equipment. The operational accuracy of the VOR depends upon the condition of the site. If the terrain is not reasonably flat and even and contains hilly features or unacceptable reflecting objects such as hangers, big buildings, high tension lines, etc., the accuracy of the VOR is adversely affected. The signal radiated by VOR may suffer from large bends as well as roughness which may cause an error of the order of 10 degrees. Due to these problems, site selection becomes a time-consuming exercise. The problem is further compounded by the difficulties faced in the process of acquiring land through CPWD and the State Government. Because of these problems which are totally beyond its control, the

DGCA, despite the best efforts made to identify suitable site much before the formulation of the project, could not avoid the delay in providing the basic infrastructural facilities needed for the installation, imported as well as indigenous.”

4. The Ministry submitted (*vide* para 12 of Report)

“It may further be submitted that it would not be appropriate to initiate the process of procurement of equipment after the infrastructure facilities are completed as the time frame for the commissioning of the equipment will become unduly longer due to the delay in placement of indent for the supply of equipment. The present practice of taking up simultaneous action for procurement of equipment and acquisition of land|construction of building for installation of equipment will result in the commissioning of the equipment in a shorter time. Further if the procurement action is taken up after the infrastructure facilities are ready, the authority will have to spend more money on the project of equipment as the price of equipment is bound to escalate in the intervening period, for example, if the VORs which form the subject matter of the debate, which were acquired at a cost of Rs. 140.30 lakhs are acquired now, i.e. after the infrastructural facilities are ready, the authority would have to spend Rs. 500 lakhs or more.”

5. The Secretary, Civil Aviation submitted that: (*vide* para 13 of Report)

“The time taken by CPWD in construction of many of these facilities has been as large as 33 months on an average, for jobs involving only 7-8 lakhs of rupees. That is the height of inefficiency. At that time, the Department had no option: under Government orders, they had to go to the CPWD and they did not have their set-up everywhere with the result that smaller works at out of the way places were not given due attention. They have now gone out of it and they are now giving works directly to the IAAI and RITES as also other agencies and that problem, I do not think, will occur in future.”

APPENDIX D

Statement of Recommendations and Observations

Sl. No.	Para No.	Ministry/ Department	Recommendations/Observations
1	2	3	4
1	21	Ministry of Civil Aviation	<p>The Committee note that as proposed by the Ministry of Tourism and Civil Aviation in August 1975 the Government accorded sanction in February 1978 for procurement of 15 VORs and 10-T-VORs at an estimated cost of Rs. 275.50 lakhs with a foreign exchange components of Rs. 52.75 lakhs, for installation at 15 different airports. The Committee are surprised that the Govt. took 2½ years to accord sanction to a proposal involving safety and economy of flying of aircrafts and are constrained to observe that this shows lack of seriousness and urgency on the part of the Government. This estimate had to be revised time and again due to slippages in supply by the indigenous supplier, i.e. Bharat Electronics Ltd., on whom the initial supply order was placed. Even though a separate sanction was obtained in March 1980 for import of 6 VORs at an estimated cost of Rs. 87 lakhs with a foreign exchange component of Rs. 48 lakhs, to meet immediate requirement, their installation was inordinately delayed. Not only that, by the time the imported equipments were received in the country and despatched to the site, the indigenous VORs too started arriving in the last quarter of 1983. Thus supply from both sources was almost</p>

simultaneous even though a lot of foreign exchange was spent on import of the 6 VORs on grounds of so called urgency. The Committee do not consider that such extra ordinary urgency was justified in view of the delay that occurred in the installation of both imported and indigenous equipment.

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Ministry of Civil
Aviation

The Committee agree with the Secretary, Civil Aviation that there has been a total lack of planning. They are of the opinion that right from conceptualisation to actual commissioning project planning and implementation had been tardy and weak. While on the one hand import of equipment involving foreign exchange was resorted to, on the other there was inordinate delay in the installation of equipment due to lack of infrastructural facilities and by that time the indigenous VORs had also started arriving. The import of the equipment involving precious foreign exchange was thus an exercise in futility. The guarantee period of both indigenous and imported equipment had already expired by the time these were installed. The Committee deprecate this lackadaisical approach of the Government and would urge them to investigate the reasons for abnormal delay in installation of equipment and resorting to import of VORs when the infrastructural facilities were not even available and to fix responsibility for lapses. The Committee would like to be apprised of the results of such investigations.

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Ministry of Civil
Aviation

The Committee find that the Department of Civil Aviation obtained sanctions stressing the urgent need of the VORs, to improve safety, reduce flying time and fuel cost besides minimising

cockpit workload. During evidence. the Chairman, NAA accepted this position. The Committee feel that the delay in installation of the VOR have not only blocked the capital amount spent on their procurement but this has also resulted in additional fuel cost which would have been saved due to reduction in the flying time. They urge the Government to take expeditious steps to install all the VORs so that efficient and economic operations of aircraft is ensured.

Ministry of Civil
Aviation

While seeking sanction for procurement of the VORs the Department/DGCA considered it necessary to install the VORs at certain stations lacking the necessary facilities. The Committee note, however, that on receipt of the equipment, it was discovered that their installation at those stations could be deferred without affecting much of their efficiency. The Department further discovered that there are many more stations/airports, existing or being developed where installations of VORs is necessary on priority basis. One VOR procured for Chandigarh was shifted to Calicut with a view to meeting the immediate need at Calicut. The Committee are of the opinion that this is clearly indicative of total lack of planning and foresight as the Government did not consider the requirements of the country as a whole and the problem was tackled on *ad-hoc* basis. The Committee deprecate this casual approach

of the Government and hope that the Government will now have careful appraisal of their requirements in totality to take up planned development of airports and provide requisite facilities therein. The Committee also hope that the Government would draw a lesson from this experience and suggest that Government plan a comprehensive time-bound programme for provision of VORs and DMEs at all airports and *en route* and strengthen the project planning and implementation machinery to minimise time and cost overruns.

5 25 Ministry of Civil
 Aviation

The Committee are unhappy to note that the reports from field stations indicated that imported equipment was more stable than the indigenous one and that adjustments were required to be carried out more often in indigenous equipment than in imported ones. The Committee are of the view that reasons for relatively unsatisfactory performance of indigenous equipment should be critically analysed in consultation with the designers and producers of the equipment and appropriate remedial measures taken with due promptitude to improve the quality of equipment manufactured indigenously to obviate need for imports.

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6 26 Ministry of Civil
 Aviation

The Committee have been informed that National Airports Authority has been created as there were inherent limitations in the erstwhile DGCA system to watch and monitor timely implementation of projects. The Committee hope that the establishment of NAA would result in efficient utilisation of resources and fulfilment of objectives.

**Ministry of Civil
Aviation**

The Committee observe that audit in their Advance Report 1979-80 had pointed out that on an earlier occasion the DGCA obtained sanction for procurement of 2 VORs but delayed their installation by 3 to 6 years on the ground that selection of suitable sites and acquisition of land were long drawn processes. Even being aware of the impediments of this nature the Ministry preferred to accord sanction for procurement of VORs from indigenous sources as well as their import without ensuring that adequate steps are taken to remove these limitations. This indicates lack of monitoring and vigilance on the part of the Ministry. The Committee need hardly emphasise that delays in project implementation have grave financial and economic implication. Organising project completion actively to synchronise completion of various components of the project to ensure timely completion was therefore a responsibility of not only the DGCA but also of the Government. The procedure, practices and organisation involved in completion of projects require critical analysis and review. The Committee hope that the Government will learn a suitable lesson from this experience and will be careful in according sanctions in future, besides ensuring that the specific centres of responsibility and accountability are clearly identified and defined at the time of issue of sanctions. Once such sanctions are accorded these should be implemented within the prescribed schedule so that there is no time and cost overruns.

The Committee note that the Department have not been able to instal the VORs at different stations for their not being able to acquire land in time. According to Secretary, Civil Aviation, CPWD took enormous time (in some cases as long as 33 months) in the construction of buildings and other infrastructure facilities. The Committee found that the plea taken by the Ministry/Department are not wholly substantiated by the facts. At the time of according sanction for the procurement of VORs, the Ministry advised the Department to use urgency clause in case they apprehend difficulty in the acquisition of land. It is disquieting to note that neither the urgency clause was invoked even once for land acquisition nor the negotiations with land owners, for quicker take over of the land was even thought of. Besides, when CPWD failed to complete the construction of buildings within a certain specific time, the DGCA could have taken up the matter at the appropriate level. But there is no evidence to show that the Department treated the matter with the seriousness it deserved. The Committee are inclined to agree with the statement of the Secretary, Civil Aviation that DGCA had not taken steps to coordinate with concerned authorities so that on arrival of the equipment it could be installed. The Committee hope that the Government will now examine the issue in greater depth and issue detailed instructions so that there is sense of urgency in resolving such impediments and delay in execution of such projects of vital importance is avoided in future.

1	2	3	4
9	29	Ministry of Civil Aviation	The Committee note that a perspective plan till the year 2000 has been drawn. They hope that the plan will be implemented in accordance with the prescribed schedule and care will be taken to review and modify the plan every year taking into account the exigencies of situation and constraints.

