Report of the Comptroller and Auditor General of India

for the year ended March 2003

Union Government
(Scientific Departments)
No.5 of 2004

CONTENTS

PREFACE

This Report for the year ended 31 March 2003 has been prepared for submission to the President under Article 151(1) of the Constitution. It covers matters arising from test audit of the transactions of the Scientific Departments of the Union Government, the autonomous bodies funded by these Departments and some major scientific organisations associated with other Departments.

This Report includes two reviews and 11 paragraphs. The topics of these reviews are:

(i) National Bureau of Plant Genetic Resources

(ii) Technology Information, Forecasting and Assessment Council

The cases mentioned in this Report are among those which came to notice in the course of audit during 2002-2003. For the sake of completeness, matters relating to earlier years which could not be covered in the previous Reports have also been included, wherever pertinent. Similarly, results of audit of transactions subsequent to March 2003 in a few cases have also been mentioned wherever relevant.

OVERVIEW

The expenditure on Scientific Departments during 2002-2003 was Rs 14307.51 crore. This represented an increase of 24.48 *per cent* over the last two years. Of the total expenditure on Scientific Departments, Rs 6018.73 crore related to the Department of Atomic Energy and the Department of Space accounted for an expenditure of Rs 2162.22 crore. With reference to the budget allotment, the Scientific Departments had an overall unspent balance of Rs 1182.99 crore. The Department of Atomic Energy, Ministry of Non-Conventional Energy Sources and Department of Space spent Rs 497.47 crore (7.63 *per cent*), Rs 201.21 crore (31.96 *per cent*) and Rs 102.77 crore (4.54 *per cent*) less than the allocation respectively.

This Report contains two performance reviews and 11 paragraphs. An overview of audit findings contained in the report is given below:

REVIEWS

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

NATIONAL BUREAU OF PLANT GENETIC RESOURCES

National Bureau of Plant Genetic Resources (NBPGR) is a constituent unit of Indian Council of Agricultural Research (ICAR). It was established in 1976 with the mandate of collection, introduction, evaluation, conservation, documentation and pest free exchange of Plant Genetic Resources (PGR). NBPGR could not entirely achieve its objectives as it has yet to evaluate, conserve and document germplasm samples collected between 1997-98 and 2002-03. It issued permits for import of germplasm samples for research purposes without verifying whether the research had been authorised. Further, violating the plant quarantine regulations, NBPGR conducted quarantine tests without import permits and phytosanitary certificates. The National Containment Facility established in September 2001 at a total cost of

Rs 3.67 crore to conduct quarantine tests for transgenic germplasm samples and a storage module costing Rs 61.27 lakh commissioned in November 2000 to store the germplasm samples at the ICAR complex for North Eastern Hill region, Shillong remained unused. The objectives in the projects, "Establishment of Gene Bank for Medicinal and Aromatic Plants", "National Facility for Plant Tissue Culture Repository and "Regeneration of Agri-biodiversity" were not fully achieved by NBPGR.

During 2000-01, NBPGR merged 83 in-house projects into 38 projects. Test-check revealed that the projects were formulated without budget estimates and scheduling dates of completion. The achievements of the projects were not assessed and evaluated before they were merged. The project-wise accounting had not been done despite this being pointed out in the previous Audit Reports. NBPGR could not commence construction of residential quarters for the last 13 years resulting in blockage of Rs 86.55 lakh.

(Paragraph 2)

MINISTRY OF SCIENCE AND TECHNOLOGY

TECHNOLOGY INFORMATION, FORECASTING AND ASSESSMENT COUNCIL

Technology Information, Forecasting and Assessment Council (TIFAC) was established as a Society under the Department of Science and Technology (DST) in 1988 with the objectives of preparing technology forecasting reports, technology impact statements, identifying priority areas of research, etc. TIFAC supports technology development projects by releasing funds in the form of Technology Development Assistance (TDA). Between 1992 and 2003, TIFAC sanctioned 145 projects under three programmes viz., Home Grown Technology, Advanced Composites Mission and Fly Ash Mission. Out of these, 68 projects (involving TDA releases of Rs 36.68 crore) were studied in Audit. It was found that in 20 projects, the objectives were either not achieved or only partially achieved; in 32 projects, the technologies developed were not commercialised or only partially commercialised. In 12 projects, the commercialisation of technologies had commenced. No review of the working and progress of TIFAC had been done since its establishment

in 1988. Sectoral Technology Information, Forecasting and Assessment Groups under individual Ministries and Departments were not established. TIFAC had also not prepared an Annual Technology Report for the Prime Minister, which was one of its objectives.

(Paragraph 3)

TRANSACTION AUDIT FINDINGS

DEPARTMENT OF INFORMATION TECHNOLOGY

Failure to safeguard financial interests of Government resulting in non-recovery of Rs 1.80 crore

The Department of Information Technology (DIT) approved a project in favour of M/s. Usha (India) Limited in March 1998 at a total cost of Rs 4.28 crore with DIT's contribution of Rs two crore as refundable grants-in-aid. DIT released the amount between March 1998 and March 1999 against a corporate guarantee and personal guarantee of the Chairman and Managing Director of the firm. The firm paid the first instalment of Rs 20.00 lakh in June 2000 and did not pay the subsequent instalments. Though the firm had been in default since September 2000, DIT did not take timely measures to protect its interests resulting in non-recovery of Rs 1.80 crore.

(Paragraph 4.1)

Non-recovery of Rs 20.00 lakh

The Department of Information Technology (DIT) released Rs 30.00 lakh to M/s. Padmini Multimedia Limited as refundable grants-in-aid in March 1998 under a project. The amount was released against a deed of guarantee executed by the firm on its letterhead which was not a legally enforceable document. DIT terminated the project in June 1999 as no progress was made and asked the firm to refund Rs 30.00 lakh. The firm refunded Rs 10.00 lakh in June

2000 and furnished two post dated cheques for Rs 10.00 lakh each in June 2001. One cheque which was deposited in the bank bounced due to insufficient funds. Though it constituted a criminal offence, DIT did not take any legal action against the firm resulting in non-recovery of Rs 20.00 lakh.

(Paragraph 4.2)

Short claim of Rs 38.67 lakh

The Department of Information Technology (DIT) released loans of Rs 1.06 crore to the Marine and Communication Electronics Limited (MACE) during the years 1987 to 1990. MACE repaid only Rs 29.86 lakh between January 1990 and December 1991 and thereafter no repayment was made. The company was wounded up in April 1996 and an official liquidator was appointed in February 2000. While submitting the claim to the official liquidator, DIT failed to include an outstanding loan of Rs 38.67 lakh out of Rs 58.00 lakh sanctioned in November 1988 to MACE.

(Paragraph 4.3)

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Unfruitful expenditure due to project termination

The Research Programme Committee of the National Agricultural Technology Project sanctioned a programme in March 2000 to be implemented by the Indian Agricultural Research Institute (IARI) at a total cost of Rs 49.66 lakh and released Rs 44.59 lakh. Though two out of three Co-Project Investigators (PI) associated with the project were due to superannuate, IARI allowed the PI to proceed on leave abroad for 180 days from 14 May 2002. The Project Investigator did not rejoin her duties after the expiry of leave. After the retirement of the two Co-PIs, the third Co-PI also refused to continue with the project in December 2002. The project was terminated in February 2003 rendering the expenditure of Rs 44.69 lakh incurred on the project largely unfruitful.

(Paragraph 5.1)

INDIAN COUNCIL OF MEDICAL RESEARCH

Wasteful expenditure due to improper planning of construction of MRC complex

The Malaria Research Centre acquired a plot of land from the Delhi Development Authority in Papankalan at a cost of Rs 1.27 crore in September 1990 for the construction of an office complex. Due to the failure of the Indian Council of Medical Research to arrange the required resources for construction, the complex could not be constructed even after more than 12 years of acquiring the land. Besides, the Centre had incurred an expenditure of Rs 61.57 lakh on account of composition fee for non-completion of the building by the due date and Rs 41.43 lakh on rent for the plot during the years 1990 to 2003.

(Paragraph 6.1)

Injudicious acquisition of funds for procurement of Liquid Nitrogen Plant

The Indian Council of Medical Research released Rs 65.00 lakh to the Malaria Research Centre between September 1997 and January 1998 for establishment of a Liquid Nitrogen Plant. A team of officers recommended in February 1998 that the procurement of the plant was not cost effective. Audit found that the consumption of liquid nitrogen in the Centre varied between only 59 and 259 litres per month during 1997-98 to 2002-03. The procurement of the plant was postponed in May 1999 due to non-availability of suitable space for its installation and the funds were kept in short-term deposits. Though a technical committee approved the procurement of the plant in January 2002, the same had not been procured as of October 2003 resulting in the blockage of funds for more than five years.

(Paragraph 6.2)

DEPARTMENT OF SPACE

Avoidable payment of Customs duty

In terms of the Customs Tariff Act, the import of electronic integrated circuits and micro assemblies was exempt from Customs duty. It was, however, noticed that three units of the Department of Space located in Bangalore and Ahmedabad paid Customs duty of Rs 86.36 lakh during 2002-03 on the import of integrated circuits.

(Paragraph 7.1)

DEPARTMENT OF ATOMIC ENERGY

Non-establishment of a Pyrochemical Process Pilot Plant

The Department of Atomic Energy (DAE) sanctioned Rs 1.80 crore in June 1992 to the Nuclear Fuel Complex (NFC) for setting up a pilot plant for production of hafnium-free anhydrous zirconium tetrachloride scheduled to be completed by December 1994. The project did not progress as envisaged. On an assurance given by NFC that the pilot plant could be demonstrated in all respects by mid 2003, DAE revised the cost of the project to Rs 3.38 crore in February 2002 with an expected date of completion by mid 2003. However, after incurring an expenditure of Rs 1.86 crore, NFC short-closed the project in March 2003 without achieving its objectives.

(Paragraph 8.1)

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Wasteful investment

The Bose Institute, Kolkata procured a Protein Sequencer in April 1997 at a cost of Rs 21.36 lakh. The equipment could not be utilised after April 1998 due to its high running costs. The failure of the Institute to anticipate the operational costs involved in using the Sequencer and its subsequent inability

to obtain the required chemicals and spares resulted in the equipment remaining idle for over five years.

(Paragraph 9.1)

DEPARTMENT OF TELECOMMUNICATIONS

Unnecessary procurement of components

The Centre for Development of Telematics (C-DOT), Bangalore provides know-how to manufacturers of the equipment designed and developed by it and charges a Transfer of Technology fee and royalty as a percentage on net sales. Though the agreements with the manufacturers do not provide for procurement and supply of components by C-DOT for the manufacture of equipment, it had been procuring and supplying components to manufacturers on reimbursement basis. Many such components procured by C-DOT were either slow-moving or non-moving, resulting in blocking of funds amounting to Rs 6.15 crore as of September 2003.

(Paragraph 10.1)

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Wasteful expenditure

The Regional Research Laboratory (RRL), Bhubaneswar imported a Differential Scan Calorimeter at a cost of Rs 17.93 lakh. RRL did not verify the condition of the consignment immediately on its receipt on 19 December 2000. The equipment was found in damaged condition during installation in March 2001. RRL lodged a complaint with the insurance company in March 2001 and registered a claim for Rs 17.93 lakh in March 2002 after getting the equipment surveyed. However, the claim was repudiated by the insurance company as the same was not lodged within the scheduled time finally resulting in wasteful expenditure of Rs 17.93 lakh

(Paragraph 11.1)

CHAPTER 1 : INTRODUCTION

The comparative position of expenditure of major Scientific Departments/ organisations, during 2002-2003 and in the preceding two years is given below:

(Rupees in crore)

Sl. No.	Ministry/Department/Organisation	2000-2001	2001-2002	2002-03
1.	Atomic Energy	4551.00	4870.15	6018.73
2.	Space	1905.40	1900.97	2162.22
3.	Indian Council of Agricultural Research	1219.68	1287.80	1333.96
4.	Environment and Forests (including Zoological Survey of India and Botanical Survey of India)	715.29	1014.23	1057.52
5.	Science and Technology (including Survey of India and India Meteorological Department)	731.40	771.33	920.84
6.	Department of Scientific and Industrial Research (including grants given to Council of Scientific and Industrial Research)	892.32	913.99	963.71
7.	Non-Conventional Energy Sources	345.96	503.37	428.33
8.	Geological Survey of India (Ministry of Mines)	251.88	243.06	248.31
9.	Information Technology	331.60	521.63	497.34
10.	Biotechnology	151.57	185.58	220.70
11.	Indian Council of Medical Research	168.53	188.63	180.00
12.	Ocean Development	103.31	150.47	167.05
13.	Centre for Development of Telematics (Department of Telecommunications)	125.26	98.23	108.80
		11493.20	**12649.44**	**14307.51**

Excess expenditure and unspent provisions under various Grants/ Appropriations

A summary of Appropriation Accounts for 2002-2003 in respect of Scientific Departments/major scientific organisations, mentioned in the paragraph above, is given below:

(Rupees in crore)

Sl. No.	Ministry/Departments/Organisation	Grant/ Appropriation (including supplementary)	Expenditure	(-) Unspent Provision (+) Excess	Percentage of Unspent provision
1.	Atomic Energy	6516.20	6018.73	- 497.47	7.63
2.	Space	2264.99	2162.22	- 102.77	4.54
3.	Indian Council of Agricultural Research	1410.50	1333.96	- 76.54	5.43
4.	Environment and Forests (including Zoological Survey of India and Botanical Survey of India)	1128.92	1057.52	- 71.40	6.32
5.	Science and Technology (including Survey of India and India Meteorological Department)	1019.84	920.84	- 99.00	9.71
6.	Scientific and Industrial Research (including grants given to Council of Scientific and Industrial Research)	1048.94	963.71	- 85.23	8.13
7.	Non-Conventional Energy Sources	629.54	428.33	- 201.21	31.96
8.	Geological Survey of India (Ministry of Mines)	245.50	248.31	(+) 2.81	(+) 1.14
9.	Information Technology	502.40	497.34	- 5.06	1.01
10.	Biotechnology	235.59	220.70	- 14.89	6.32
11.	Indian Council of Medical Research	180.00	180.00	-	-
12.	Ocean Development	199.28	167.05	- 32.23	16.17
13.	Centre for Development of Telematics (Department of Telecommunications)	108.80	108.80	-	-
	Total	**15490.50**	**14307.51**	**- 1182.99**	**7.64**

2 Audit of accounts of autonomous bodies

Accounts of autonomous bodies which receive grants and loans from the Government are audited by the Comptroller and Auditor General of India under the relevant provisions of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971.

The Comptroller and Auditor General of India is the sole auditor of seven autonomous bodies under the Scientific Departments. Separate Audit Reports are prepared on their accounts under sections 19 (2) and 20 (1) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The position of grants released to these autonomous bodies is indicated in ***Appendix I***.

In addition, the Comptroller and Auditor General of India may conduct supplementary/super-imposed audit of any of 56 other autonomous bodies, which are substantially funded by the Government of India and whose primary audit is conducted by Chartered Accountants. The position of grants released to these autonomous bodies is indicated in ***Appendix II***.

3 Outstanding utilisation certificates

Ministries and Departments are required to obtain certificates of utilisation of grants by the Ministries and Departments from the grantees i.e. statutory bodies, non-governmental institutions etc. indicating that the grants had been utilised for the purpose for which these were sanctioned and that, where the grants were conditional, the prescribed conditions had been fulfilled. According to the information furnished by the Pay and Accounts Officers of the concerned Departments, 6216 utilisation certificates for grants aggregating Rs 593.72 crore were outstanding as given in ***Appendix III***. The defaulting Ministries/ Departments included (i) Environment and Forests (Rs 495.89 crore), (ii) Ocean Development (Rs 65.51 crore) and (iii) Space (Rs 17.58 crore).

4 Follow up on Audit Reports

In its Ninth Report (Eleventh Lok Sabha) presented to Parliament on 22 April 1997, the Public Accounts Committee had recommended that Action Taken

Notes (ATNs) on all paragraphs pertaining to the Audit Reports for the year ended 31 March 1996 onwards be submitted to them duly vetted by Audit within four months from the laying of the Reports in Parliament. A review of outstanding ATNs on paragraphs included in the Reports of the Comptroller and Auditor General of India, Union Government (Scientific Departments) as of February 2004 revealed the following position :

Sl. No.	Report No. and Year	Paragraph No.	Pertains to	Brief subject
1.	5 of 2002	12.1	Department of Scientific and Industrial Research	Wasteful Expenditure
2.	5 of 2003	5.1	Department of Science and Technology	Unfruitful investment on procurement of Liquid Nitrogen Plant
3.	5 of 2003	5.2		Improper planning leading to idling of funds
4.	5 of 2003	5.3		Avoidable expenditure on electricity
5.	5 of 2003	10.1	Ministry of Environment and Forests	Avoidable payment of interest and non-receipt of refund of Income Tax
6.	5 of 2003	11.1	Geological Survey of India	Avoidable payment due to lack of planning and delay

CHAPTER 2 : INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Department of Agricultural Research and Education

National Bureau of Plant Genetic Resources

National Bureau of Plant Genetic Resources (NBPGR) was established in 1976 by the Indian Council of Agricultural Research (ICAR) with the mandate of collection, introduction, evaluation, conservation, documentation and pest-free exchange of Plant Genetic Resources (PGR) and developing human resources for efficient management of PGR at the national level. It is the sole authority for issuing permits for import of agri-horticultural plant germplasm samples for research purposes. The responsibility of carrying out quarantine tests to ensure that imported plant germplasm samples as well as germplasm samples to be exported are free from diseases and pests, also rests with NBPGR. NBPGR was yet to complete the evaluation, conservation and documentation of germplasm samples collected during the period 1997-98 to 2002-03. Coordination between NBPGR and its regional stations, National Active Germplasm Sites and indenters in obtaining feedback on germplasm samples sent to them for evaluation also needs improvement. The National Containment Facility established in September 2001 at a total cost of Rs 3.67 crore to conduct quarantine tests for transgenic germplasm samples has remained unused. The objectives of the projects of Establishment of Gene Bank for Medicinal and Aromatic Plants (Rs 90.35 lakh), National Facility for Plant Tissue Culture Repository (Rs 75.04 lakh) and Regeneration of Agri-biodiversity (Rs 51.92 lakh) were not entirely achieved.

Highlights

- ***NBPGR could not evaluate 4.25 lakh exotic (imported) and 18,061 indigenous germplasm samples.***
- ***NBPGR has yet to complete the task of assigning National Identity Numbers for germplasm samples.***
- ***NBPGR cleared 12 consignments of germplasm samples imported without permit by private companies from 1997-98 to 2002-03. Besides, the research purposes for these imports were also not authorised by ICAR.***
- ***The National Containment Facility established in September 2001 at a total cost of Rs 3.67 crore to conduct quarantine tests for transgenic germplasm samples has not been put to use.***
- ***Storage module costing Rs 61.27 lakh commissioned in November 2000 at ICAR complex for North Eastern Hill region, Shillong was not being utilised.***
- ***The objectives of establishment of Gene Bank for Medicinal and Aromatic Plants at a total cost of Rs 90.35 lakh were not entirely achieved.***
- ***The National Facility for Plant Tissue Culture Repository could not carry out in-vitro conservation of the targeted germplasm samples after incurring expenditure of Rs 75.04 lakh.***
- ***The objectives of the project on Regeneration of Agri-Biodiversity were not achieved fully.***

2.1 Introduction

The National Bureau of Plant Genetic Resources (NBPGR), New Delhi, a constituent unit of the Indian Council of Agricultural Research (ICAR) was established in 1976, with the mandate of collection, introduction,

evaluation, conservation, documentation and pest free exchange of Plant Genetic Resources (PGR)♣. The responsibility of carrying out quarantine tests to ensure that imported plant germplasm samples♥ as well as germplasm samples to be exported are free from diseases and pests, rests with NBPGR. It also seeks to develop human resources for efficient management of PGR at the national level.

2.2 Organisation

NBPGR is headed by a Director. He is assisted in scientific and technical matters by the Staff Research Council (SRC), Research Advisory Committee (RAC) and Germplasm Advisory Committee (GAC). The Institute Management Committee (IMC) assists him in overall management including finance and administration.

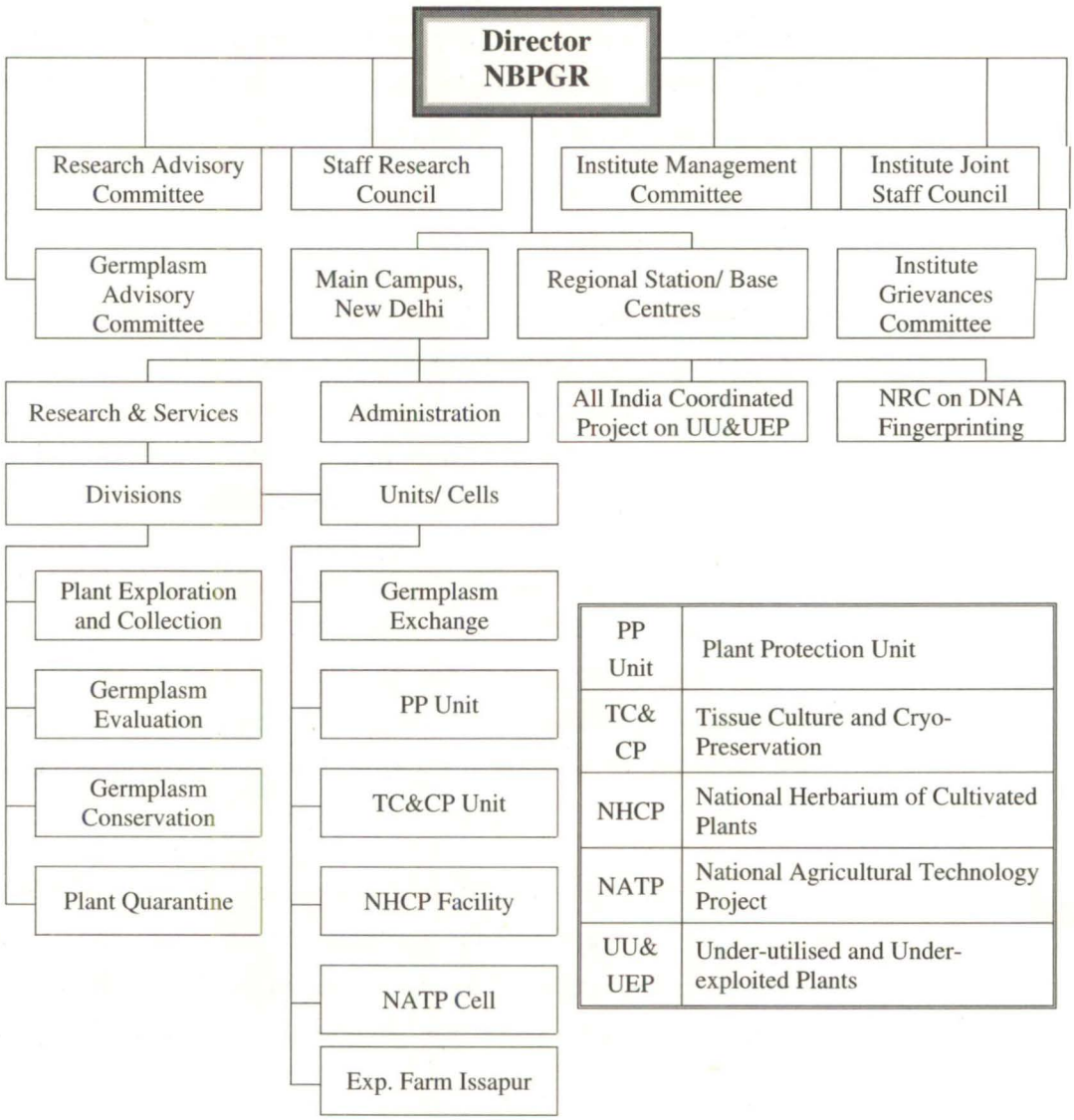
NBPGR has four divisions, three units, eight regional stations, two base centres and a satellite station located at various places, besides an experimental farm and National Research Centre on Deoxyribonucleic Acid Fingerprinting (NRCDNAF) at New Delhi. It also houses the headquarters of the All India Coordinated Research Project on Under-utilised Crops (AICRPUC).

As of March 2003, NBPGR had 474 sanctioned posts of which 252 posts were for scientific and technical work and the remaining for administrative and auxiliary work. Scientific and technical personnel in position were 223 while the administrative and auxiliary complement comprised of 210 personnel.

♣ The Genetic variability potentially useful in agronomy (crop production/crop improvement), present in crop plants and their wild relatives

♥ The sum total of the genetic material in plants. In the context of the gene pool, it includes the total variability present in a particular crop species including the related wild and weedy species.

ORGANISATIONAL CHART



PP Unit	Plant Protection Unit
TC& CP	Tissue Culture and Cryo-Preservation
NHCP	National Herbarium of Cultivated Plants
NATP	National Agricultural Technology Project
UU& UEP	Under-utilised and Under-exploited Plants

2.3 Scope of Audit

NBPGR is audited under section 20(1) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. A review on the activities of NBPGR was included in the Report of the Comptroller and Auditor General (Scientific Departments) for the year ended March 1994. The

present review, covering the period from 1997-98 to 2002-03, focuses on issues related to management of plant genetic resources by NBPGR apart from financial and other aspects.

2.4 Resources and Utilisation

NBPGR is financed mainly through grants released by the Department of Agricultural Research and Education to ICAR. From 1997-98 to 2002-03, NBPGR also received Rs 1.03 crore from the Agricultural Produce (AP) Cess Fund, Rs 32.68 crore from multilateral agencies like the World Bank, United States India Fund, United Kingdom and Rs 8.56 crore from other Ministries/ Departments for specific schemes.

The budget estimates, revised estimates and expenditure of NBPGR under Plan and non-Plan heads during 1997-98 to 2002-03 are given below. It would be seen that there have consistently been savings under the head Plan Expenditure.

(Rupees in lakh)

Year	Plan				Non-Plan			
	BE	RE	Expenditure	+ Excess - Saving	BE	RE	Expenditure	+ Excess - Saving
1997-98	165.00	250.00	230.07	+65.07	313.00	520.00	519.55	+206.55
1998-99	606.50	503.25	502.99	-103.51	544.00	869.00	816.36	+272.36
1999-2000	600.00	500.00	500.50	-99.50	721.50	823.50	873.35	+151.85
2000-01	350.00	250.00	250.00	-100.00	745.00	1280.00	1263.86	+518.86
2001-02	212.00	212.00	187.00	-25.00	890.00	1073.00	1071.28	+181.28
2002-03	200.00	177.00	176.66	-23.34	958.00	1153.00	1152.62	+194.62

BE- *Budget Estimate* **RE-** *Revised Estimate*

2.5 Plant Genetic Resources activities

NBPGR's research activities stem out of its in-house projects and sponsored projects of the Departments of Bio-technology and Science and Technology. There were also AP Cess Fund Schemes and externally aided projects. The details are tabulated below:

Category of project	Name of funding agency	Funds received during 1997-2003 (Rupees in crore)	Opening Balance of projects as of April 1997	Addition	Completed	Closing balance of projects as of 31 March 2003
				During 1997-2003		
In-house	ICAR	N.A.[@]	79	4	NIL	38[#]
AP Cess Fund schemes	ICAR	1.03	-	3	-	3
Sponsored	DBT[*], DST	8.56	3	29	5	27
Externally Aided	World Bank, U.K.[*]	32.68	5	4	6	3

[@] *Projectwise budget as well as expenditure was not maintained in respect of in-house projects.*
[#] *83 in-house projects were reorganized and merged into 38 projects in 2000-01.*
[*] *Department of Bio-Technology, Department of Science and Technology, United Kingdom*

Achievement of objectives of in-house projects was not evaluated for 15 to 25 years. No project-wise costing was done

During 2000-01, NBPGR reorganised and merged 83 in-house projects into 38 projects. A test check of nine in-house projects (***Annex***) revealed that six projects were initiated during the period 1977-78 to 1987-88 and continued indefinitely without any scheduled date of completion for periods ranging from 15 to 25 years. The remaining three projects were started between 1991 and 1999. In terms of the by-laws of ICAR, the work done in the in-house projects is required to be assessed and evaluated by the Staff Research Council (SRC) and Research Advisory Committee (RAC). However, the achievements of the projects were not assessed and evaluated before they were merged. In all the nine projects, the targeted objectives from 2000-01 to 2002-03 remained unachieved. Annual Progress Reports of six projects for the period from 1997-98 to 1999-2000 were not regularly maintained. Further, the budget and expenditure of these projects could not be ascertained since ICAR had not introduced project-wise accounts for in-house projects although this inadequacy had been pointed out in the Reports of the Comptroller and Auditor General of India

(Scientific Departments) for the year ended March 2000 and March 2001. ICAR in its Action Taken Note of September 2003 stated that action was being taken to introduce project-wise accounting. Four sponsored and four externally aided projects with a total expenditure of Rs 31.83 crore along with records of different divisions and units were also test-checked. Audit comments based on the test check have been incorporated in the succeeding paragraphs.

2.6 Plant Exploration and Collection Division

The main responsibility of the Division is to plan, co-ordinate and conduct crop-specific, area-specific and multi-crop explorations for collection of germplasm samples of different agri-horticultural crops and their wild relatives from different regions of diversity within and outside the country.

Several areas are still to be explored for collection of germplasm samples by NBPGR

The country is bestowed with immense plant diversity. Therefore, the exploration and germplasm samples collection activity necessitates the collection of age-old land races. To accomplish the germplasm samples collection of fast eroding genetic resources, 1,038 explorations were planned. A total of 1,192 explorations were executed. 81,196 germplasm samples were collected from 1997-98 to 2002-03.

NBPGR stated in October 2003 that the exploration and germplasm samples collection was a continuous activity. There were several areas still to be explored and crops and traits specific germplasm samples were to be assembled. This would be intensified through collaborative explorations in priority areas like priority crops of national importance, under-explored and un-explored crops and areas, wild-relatives of crop plants, endangered economic species and other specific traits in the hot-spots of diversity and lesser known crops of tribal importance.

2.7 Germplasm Evaluation Division

The Division is responsible for preliminary evaluation, characterisation, multiplication and identification of promising germplasm samples in agri-horticultural crops, their documentation and cataloguing. In addition, production of breeder seed and quality seed of certain released varieties

and seeds supply to the user agencies have also been entrusted to this Division.

2.7.1 Non-evaluation of germplasm samples

All germplasm samples collected, indigenous as well as exotic (i.e. imported or collected from foreign countries) were required to be evaluated to ascertain their characters for Long Term Storage (upto 50 years) in the National Gene Bank. Audit scrutiny revealed the following:

NBPGR did not evaluate indigenous and exotic germplasm samples collected as well as conserved in the National Gene Bank

- From 1997-98 to 2002-03, NBPGR collected 81,196 indigenous germplasm samples, which were required to be evaluated by the regional stations and 40 National Active Germplasm Sites located at ICAR Institutes and State Agricultural Universities. However, only 54,700 germplasm samples collected were received for evaluation. The status of the remaining 26,496 germplasm samples was not known to NBPGR

- NBPGR has conserved 2,45,233 germplasm samples in Long Term Storage as of March 2003 in the National Gene Bank. The total germplasm samples conserved included unevaluated germplasm samples for which NBPGR did not have account.

- NBPGR introduced 4.39 lakh exotic germplasm samples through imports from 1997-98 to 2002-03. In terms of the import permit, these germplasm samples were required to be evaluated by the indenters. Thereafter NBPGR should have obtained the evaluation reports as well as adequate quantity of exotic germplasm samples for long-term conservation. No evaluation reports for 4.25 lakh germplasm samples were received and NBPGR did not pursue this effectively.

ICAR stated in March 2003 that a special project had been formulated in the Tenth Five Year Plan for evaluation of germplasm samples and that efforts were underway to evaluate the unevaluated portion kept in the National Gene Bank. However, the reply was not specific regarding the total number of germplasm samples conserved without evaluation. In regard to exotic germplasm samples, ICAR stated that despite correspondence with the

indenters to obtain the feedback, the response was very poor and that NBPGR had itself evaluated over 20,000 germplasm samples. Thus, only 4.5 *per cent* of the germplasm samples introduced were evaluated.

2.7.2 Production of breeder and quality seed

Production of breeder[Ω] and quality seed of some released varieties and supply of such seeds to user agencies is one of the responsibilities of the Division.

ICAR had sanctioned Rs 16.00 lakh in August 1998 to NBPGR for implementation of a revolving fund scheme for production of nucleus, breeder and quality seeds of various crops and multiplication of promising genetic stocks of vegetatively propagated plants to augment the availability of quality seeds and generate revenue through sale of seeds. The scheme envisaged refund of Rs 16.00 lakh to ICAR in five equal instalments of Rs 3.20 lakh from the fifth year i.e. 2002-03 onwards.

The scheme was implemented at NBPGR's experimental farm at Issapur village. The targets fixed by ICAR for NBPGR during 1998-99 to 2002-03 and achievements as tabulated below clearly indicate that the objectives of the scheme remained unachieved.

Targets	Achievements
To produce 500 to 650 quintals of breeder and quality seed of wheat, mustard, pigeon pea, cowpea and dhaincha.	Did not produce seed of cowpea, dhaincha but produced untargeted crops like radish, toria, spinach, coriander and oats.
To multiply vegetatively propagated crops like mulberry, simarouba, peach, bail, ber and jojoba by 10,000 to 30,000 numbers.	None of the vegetatively propagated crops was multiplied in the last five years.
To raise nursery of vegetable, medicinal & aromatic plants and ornamental plants, tomato, brinjal, onion, rose, aloe and basil.	Not done.

[Ω] Breeder seed is the first stage of seed multiplication system and is produced from the nucleus seed (purest seed) obtained from breeders or developed by the seed-producing agencies under the direct supervision of experts.

Objectives of production of breeder and quality seed were not achieved

ICAR, in June 2001 had also observed that the physical, technical and financial targets during 1998-99 and 1999-2000 were not in accordance with the targets proposed in the scheme and therefore instructed NBPGR to improve the scheme. However, as of March 2003, NBPGR had incurred an expenditure of Rs 11.29 lakh out of the initial fund of Rs 16.00 lakh. It earned a gross income of Rs 11.61 lakh from sale of seeds, which included Rs 5.18 lakh from sale of pigeon pea and wheat which were the approved crops. Further, NBPGR did not prepare Income and Expenditure account of the scheme, nor did it compute sale value and net margin for each year as required under the scheme. However, on account of poor performance of the scheme, NBPGR refunded Rs 12.00 lakh to ICAR during 2002-03 as against the required first instalment of Rs 3.20 lakh.

ICAR stated in March 2003 that the targets could not be achieved on account of unfavourable weather, undependable canal water and power supply and poor quality of ground water. It added that the activity of vegetatively propagated materials was discontinued due to very little local demand.

2.8 Germplasm Conservation Division

The primary responsibility of this Division was to conserve germplasm samples of agri-horticultural crops in the long term (upto 50 years) and medium term storage (upto 25 years) and documentation of stored germplasm samples to facilitate easy retrieval and utilisation. The details of germplasm samples conserved at NBPGR as of March 2003 are given below:

Particulars	Type of genetic material conserved	No. of germplasm samples
LONG TERM STORAGE (LTS)		
(i) National Gene Bank	Seed	2,45,233
(ii) Plant Tissue Culture Repository	Invitro cultures	1,247
(iii) Cryo Gene Bank	Seed accessions and ex-plants	4,827
MEDIUM TERM STORAGE (MTS)		
(i) National Gene Bank	Seed	48,553
(ii) G-15 MTS module		3,241
(iii) MTS module in the old building		12,495

Audit scrutiny revealed the following:

2.8.1 Non-conservation of exotic germplasm samples

NBPGR did not conserve 4.25 lakh exotic germplasm samples

Out of 4.39 lakh exotic germplasm samples introduced from 1997-98 to 2002-03, NBPGR could conserve only 14,477 exotic germplasm samples as of March 2003 as it could not obtain adequate feedback on utilization of germplasm samples and supply of germplasm samples from the indenters for conservation in the National Gene Bank. To channelise the exotic germplasm samples into the National Crop Improvement Programmes for effective nationwide use and conserving adequate quantity of seed, it had been decided in the Institute Management Committee (IMC) meeting held in October 2001 that a major part of the germplasm samples should be sent to indenters. A part adequate to maintain the genetic base of the introduction should be supplied to the concerned crops Project Directors/Project Coordinators/ National Active Germplasm Sites and a small quantity should be stored by NBPGR as voucher sample for emergency use. In terms of the guidelines for import of germplasm samples, each consignment of germplasm samples is required to be addressed to the Director, NBPGR for quarantine clearance. It is the responsibility of NBPGR to get the consignment of germplasm samples cleared and to conduct quarantine tests. Thus, it was possible for NBPGR to implement the decision of the IMC before releasing germplasm samples to the indenters. However, NBPGR had not issued any instructions in this regard while issuing import permits. Therefore, the objective of channelising exotic germplasm samples into the National Crop Improvement Programme was not achieved.

ICAR stated in March 2003 that the response of indenters who were to furnish feedback information and supply requisite quantity of exotic germplasm samples for preservation was poor. It added that a set of guidelines to handle exotic germplasm samples had been approved and its enforcement was being pursued vigorously.

2.8.2 Non-Conservation of indigenous germplasm samples

Each indigenous germplasm sample, after its collection, is required to be divided in two parts. One part is to be kept as voucher sample in the Medium

Term Storage (MTS) module for reference and supply to other organisations and the other part is to be sent to the National Active Germplasm Sites and to the regional stations of NBPGR for evaluation and conservation in the National Gene Bank. Test check of records revealed that out of 51,130 germplasm samples collected by the Exploration and Collection Division during the years from 1999-2000 to 2001-02, 18,061 germplasm samples were not kept in the MTS module as voucher samples, defeating the objective of making them available for reference and use. However, out of 15,221 germplasm samples collected during 2002-03, 11,938 germplasm samples were kept in MTS as voucher samples and the remaining 3,283 germplasm samples were live plants and therefore were being maintained in the field gene bank.

18,061 out of 51,130 germplasm samples collected during 1999-2000 to 2001-02 were not conserved

ICAR stated in March 2003 that 16,101 out of 18,061 germplasm samples were vegetatively propagated crops species and had to be maintained as whole plants in the field gene bank. However, the details given in the reply revealed that only 3,898 germplasm samples were vegetatively propagated species.

2.8.3 Under-utilisation of Storage Module

Storage of seed over time at low temperature and relative humidity helps in prolonging seed life and avoiding frequent regeneration. Under the Indo-US Aid Plant Genetic Resources project, NBPGR provided 11 Medium Term Storage modules costing Rs 6.74 crore to nine Institutes of ICAR and two State Agricultural Universities in 1996.

The storage module with a capacity of 35,000 samples costing Rs 61.27 lakh commissioned in November 2000 at ICAR complex for North Eastern Hill region, Shillong, was not being utilised. Consequently, 4,069 germplasm samples collected during 2000-01 to 2001-02 had to be sent to NBPGR for storage.

ICAR stated in March 2003 that due to non-availability of logistic support from various departments and the concerned Institutes, the module could not be utilised. It had developed a snag and was being repaired. However, the non-

utilisation of the module since November 2000 could seriously impair the conservation effort.

2.8.4 Non-regeneration of germplasm samples

NBPGR had stored 64,289 germplasm samples in the MTS modules as of March 2003. The Staff Research Council, in November 2000, had expressed its specific concern about non-regeneration of cotton germplasm samples as they were losing germination viability. In September 2001, it had been decided that the germplasm samples stored over the years in MTS should be examined to ascertain whether these germplasm samples were also stored in the Long Term Storage (LTS) in the National Gene Bank. In case, the germplasm samples were not stored in LTS, they should be sown on priority and then sent for storage in LTS modules. However, only 15,000 germplasm samples of tomato, brinjal, pea, cowpea, lentil and maize were regenerated and their seed samples kept in the LTS.

NBPGR did not regenerate most germplasm samples

ICAR stated in March 2003 that the remaining germplasm samples were being regenerated in a phased manner.

2.8.5 Gene Bank for Medicinal and Aromatic Plants

NBPGR undertook a project entitled "Establishment of Gene Bank for Medicinal and Aromatic Plants" sponsored by the Department of Biotechnology (DBT) in March 1993 for a period of four years. The objectives of the project were collection, conservation, evaluation and documentation, multiplication and distribution of medicinal and aromatic plants. Subsequently, DBT sanctioned another project entitled "Strengthening of National Gene Bank for Medicinal and Aromatic Plants" from March 1998 to March 2002 with similar objectives. The project was extended up to June 2002 and subsequently upto the end of the Tenth Five Year Plan (2007). NBPGR incurred a total expenditure of Rs 90.35 lakh on the two projects (for the first project upto March 1997 and for the second project upto March 2003).

The objectives of gene bank for medicinal and aromatic plants were not achieved

The progress reports of the project as of March 2003 revealed that out of 1,463 germplasm samples collected, only 520 germplasm samples were evaluated and even those were not documented. NBPGR was yet to begin evaluation of the remaining 943 germplasm samples already collected. Thus, objectives targeted during the period from 1998-99 to 2002-03 were not achieved fully inspite of a total expenditure of Rs 90.35 lakh on the projects. This apart, NBPGR incurred an expenditure of Rs 62.00 lakh against Rs 46.90 lakh received from DBT for the first project undertaken in March 1993. The excess expenditure of Rs 15.10 lakh spent out of NBPGR's funds without the approval of DBT is yet to be recovered from DBT. NBPGR had last taken up this matter with DBT in June 1999.

ICAR stated in March 2003 that the medicinal plants were difficult species to handle and least studied. Even protocols for seed generation, multiplication and reproductive biology were not known. The material collected had been conserved and was being multiplied and characterised in a phased manner. Multiplication and distribution to users would be taken up as the population grow and crop growth behaviour was studied.

2.9 Plant Quarantine Division

The Plant Quarantine Division is responsible for inspecting all germplasm samples for detection of associated insect-pests, plant parasitic nematodes and plant pathogens.

2.9.1 Improper quarantine clearance

NBPGR did not grow germplasm samples in the green houses for quarantine tests and did not obtain feedback from indenters

In terms of Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989, germplasm samples which are imported into India are required to be tested for quarantine clearance. Similarly, germplasm samples meant for export are required to be tested for issuing a phytosanitary certificate i.e. a certificate issued by the exporting country to the effect that the germplasm samples exported are free from all insects and pests. For this purpose, four quarantine green houses one each at NBPGR, New Delhi and its Regional Stations at Hyderabad, Bhowali and at the Indian Institute of Pulses Research,

Kanpur, were established at a total cost of Rs 11.90 crore from March 1994 to September 1997.

Test check of records of the green house at NBPGR, New Delhi, revealed that out of 1,634 consignments of germplasm samples imported from 1997-98 to 2002-03, 1,518 consignments of germplasm samples were cleared without growing them in the green house for conducting post-entry quarantine tests (PEQN). Quarantine clearance by NBPGR without growing the germplasm samples in the green house for conducting necessary tests was fraught with the hazard of spread of pathogens, diseases and pests of other countries in our country.

ICAR stated in March 2003 that samples were required to be grown in the green house only in cases where either the seeds were reported to carry seed - borne pests, diseases and viruses or were chemically treated. The reply is not tenable since test check of records relating to Post Entry Quarantine Nursery (PEQN) facility revealed that NBPGR released 49 imported consignments of pulse germplasm samples and chemically treated wheat and maize germplasm samples to the indenters with the condition that germplasm samples should be grown in their PEQN facility with care to prevent the spread of exotic viral diseases and submit the feedback. NBPGR was also required to inspect the process of growing the germplasm samples. However, NBPGR did not take any action to ascertain the feedback from the indenters and did not inspect the crops during their growth under isolation. NBPGR stated in October 2003 that the feedback requested from the indenters earlier was being pursued vigorously and added that its scientists also inspected the site of indenters as and when required.

2.9.2 Violation of plant quarantine regulations

NBPGR conducted quarantine test without import permits and phytosanitary certificates violating plant quarantine regulations

In accordance with the Indian Plant Quarantine Regulations namely the Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989 (Chapter 2 Order No.3 and 9), no consignment of plants, fruits and seeds (germplasm samples) shall be imported into India without a valid import permit and a phytosanitary certificate issued by an official agency of the

exporting country. This certificate is essential to test germplasm samples in the quarantine division of NBPGR. Test check of registers of import permits and quarantine tests revealed that contrary to the quarantine regulations, out of 1,634 consignments of germplasm samples for which laboratory quarantine tests (other than PEQN) were completed by NBPGR from 1997-98 to 2002-03, 304 consignments of germplasm samples were tested without phytosanitary certificates. Further, in 56 consignments of germplasm samples of private parties, 12 consignments of germplasm samples were tested without import permit. It was not possible to verify whether the germplasm samples of 12 consignments imported were meant for research purposes. Thus, NBPGR did not observe plant quarantine regulations resulting in unauthorised import of germplasm samples besides improper quarantine clearance.

ICAR stated in March 2003 that the Customs authorities did not allow import of any plant material without import permit and the phytosanitary certificate. Sometimes, these documents were withheld by the Customs authorities and did not reach NBPGR and hence the discrepancy in documentation. It added that the quarantine regulations were being observed in letter and spirit. NBPGR further stated in November 2003 that the copies of 12 import permits were not traceable. However, the import permits are issued by NBPGR in triplicate; two are meant for the supplier and the remaining is for office records. Further, in terms of the import permit, the import material is required to be addressed to the Director, NBPGR, New Delhi. It is the responsibility of NBPGR to get the material cleared from the Customs and also to maintain copies of import permits systematically.

2.9.3 Non-utilisation of National Containment Facility

NBPGR undertook a project entitled "National Containment/Quarantine Facility for Transgenic[Ψ] Planting Material" sponsored by DBT for a period of

[Ψ] Transgenics are defined as those organisms with a gene or genetic construct of interest that has been introduced by molecular or recombinant DNA techniques. These exclude organisms produced by conventional breeding as well as by intra organisation rearrangement of genetic materials by physical or chemical methods

three years from 1999-2000 to 2001-02 at a cost of Rs 2.65 crore. The contribution of ICAR/NBPGR was Rs 1.02 crore in addition to the funding of DBT. The National Containment Facility meant for processing transgenic germplasm samples, conducting quarantine tests, establishment of molecular biology laboratory and development of human resources was established at a total cost of Rs 3.67 crore in September 2001. But it was not put into use at all for want of a generator set. Consequently, 10 consignments of transgenic germplasm samples received after its establishment and upto September 2003 could not be processed in the Containment Facility to ensure that they were free from virus, pathogens and pests.

National Containment Facility costing Rs 3.67 crore for testing transgenic germplasm samples was not put into use since its establishment in September 2001

This apart, the issue of funding operation and maintenance of the containment facility has remained unresolved. DBT, while sanctioning the project, had stipulated that the cost of the operation and maintenance of the facility should be borne by ICAR/ NBPGR. Therefore, it is the responsibility of ICAR/ NBPGR to resolve these issues so that the facility created after considerable investment could be used for the intended purpose.

ICAR stated in March 2003 that the procurement of the generator set had been initiated and that, in the meantime, the transgenic material was being processed from the quarantine point of view under strict vigilance. The reply may be viewed with reference to the fact that in eight out of 10 cases, the transgenic germplasm samples were released to the indenters with the conditions that the germplasm samples should be grown with due care to prevent the spread of exotic viral diseases and to submit the feedback. NBPGR had not obtained the feedback. To sum up, the containment facility established in September 2001 had not been put to use as of November 2003. The generator was yet to be procured as of November 2003.

2.10 Germplasm Exchange Unit

This unit is responsible for carrying out introduction, exchange and distribution of plant genetic resources for research, documentation and dissemination of information. A test check revealed the following :

2.10.1 Issue of import permit without verification

NBPGR issued import permits for research purposes without verification

The Government of India, Ministry of Agriculture notified in March 1990 that the Director, NBPGR, was the competent authority for issuing permits for import of germplasm samples for research purposes authorized by ICAR and the International Crops Research Institute for Semi Arid Tropics (ICRISAT), Hyderabad. NBPGR issued 567 import permits to private companies for research purposes from September 1997 to December 2002. Test check of 35 import permits revealed that NBPGR had never verified before issuing import permits whether the purpose of research, for which germplasm samples were sought for import, was authorized by ICAR and ICRISAT. Further, in terms of the guidelines of import of germplasm samples, application for the import of cotton germplasm samples is required to be routed through the Director, Central Institute for Cotton Research (CICR), Nagpur. In three out of five cases (test check of 35 import permits included five cases of cotton import), the applications were not routed through the Director, CICR, Nagpur, by the indenters. NBPGR had performed its statutory responsibility of issuing import permits without due care which led to import of germplasm samples without verifying whether the research had been authorised.

ICAR stated in March 2003 that before issuing an import permit, it was ensured that germplasm material was indented by bonafide research institutions in the country. It added that there was no need to refer every case to ICAR for authentication of research and issuance of import permit. NBPGR further stated in July 2003 that the import permits were issued in the interest of the nation. In the case of import of cotton germplasm samples, it stated in November 2003 that in three cases, the applications were not required to be routed through the Director CICR, Nagpur, as they were for transgenic germplasm samples and relevant papers were missing for other cotton imports. The reply is not tenable as authorization of the purpose of research by ICAR and ICRISAT was a statutory requirement. Further, the guidelines for import of germplasm samples did not indicate that the transgenic cotton germplasm samples did not require to be routed through the Director CICR, Nagpur.

2.10.2 Non-documentation of germplasm samples imported by private companies

NBPGR did not obtain the feedback for documentation of 18,023 germplasm samples from private companies

A test check of the register of germplasm samples of private companies for research purposes revealed that 18,023 germplasm samples were imported between 1997-98 and 2002-2003. In terms of the import permit, the indenters were required to send the feedback and adequate quantity of seeds to NBPGR for further documentation and conservation. The feedback on establishment, multiplication and evaluation and seeds of these materials were not received from the indenters. NBPGR did not pursue the matter with the indenters and the purpose for which the germplasm samples were imported was not served.

ICAR stated in March 2003 that it had been decided to obtain an undertaking from the indenters for supply of feedback before the consignment was released and added that feedback had been received in 312 cases.

2.10.3 Non-documentation of active germplasm samples

NBPGR did not obtain feedback for 18,580 active germplasm samples supplied to research organisations

NBPGR had been supplying active germplasm samples of cereals, pulses, oilseeds, vegetables and medicinal plants to other research organisations to furnish the location and date of evaluation, germplasm samples utilisation and published information for further documentation. NBPGR supplied 18,580 active germplasm samples to various organisations and individual scientists from 1997-98 to 2002-03. A test check of records revealed that none of the organisations and scientists had furnished the required information at least for 5,961 germplasm samples supplied during 1997-98 to 2001-2002 nor had NBPGR followed up with them. Thus, the documentation of active germplasm samples had not been done.

ICAR stated in March 2003 that it had been decided to obtain an undertaking from the indenters for providing feedback, before the material is supplied as the response from them was not very encouraging in spite of vigorous efforts made.

2.10.4 Failure to allot indigenous collection and exotic collection numbers

NBPGR did not allot National Identity Number for 1.05 lakh germplasm samples conserved in the National Gene Bank

All germplasm samples are required to be given National Identity Numbers for easy reference. It was also emphasised in the meeting 'on the status of the crop-germplasm' convened by the Director, NBPGR, in November 2001 that Indigenous Collection (IC) numbers with passport data (habitat, village, district, state, source, cultivator's name, common name and species name) should be allotted to all the conserved germplasm samples including in-vitro culture, germplasm samples in the cryo-bank, and germplasm samples collected or developed by organizations other than NBPGR in the country. Similarly, Exotic Collection (EC) numbers are to be given to germplasm samples introduced by NBPGR through import from foreign countries. NBPGR had about 3.16 lakh germplasm samples collected indigenously including germplasm samples kept in cryo-bank and Medium Term Storage and introduced about 4.39 lakh exotic germplasm samples as of March 2003. However, NBPGR had not allotted IC/EC numbers for more than one lakh germplasm samples. Resultantly, germplasm samples conserved in the National Gene Bank remained without any identity number.

ICAR stated in March 2003 that this was a long-term task and some progress had been made in this direction. NBPGR further stated in July 2003 that National Identity Numbers would be completed only after physical verification of germplasm samples in the National Gene Bank and that 1.10 lakh out of 3.16 lakh germplasm samples of different crops had been physically verified.

2.11 National Facility for Plant Tissue Culture Repository

The National Facility for Plant Tissue Culture Repository (NFPTCR) was established in 1986 at NBPGR, New Delhi with funding from DBT. NBPGR undertook a project aiming to preserve in-vitro culture, pollen and seeds of plants of economic importance for which conventional methods of storage were unsuccessful. The project also sought to develop and preserve culture systems required for biotechnology for the crop improvement programmes.

During 1997-98 to 2001-02, an expenditure of Rs 75.04 lakh was incurred on the project.

NBPGR did not complete in-vitro conservation and cryo-preservation for targeted crops

The progress reports from 1997-98 to 2001-02 and the project completion report revealed that out of 17 identified crops, in-vitro conservation was not done in six crops namely tea (camellia sinensis), aonla (emblica officinalis), mulethi (glycyrhiza glabra), urginia (urginia indica), grapes (vitis vinifera) and papaya (carica papaya). The in-vitro conservation was done in 11 other crops.

Similarly, six crops were identified for cryo-preservation. However, cryo-preservation was not done for four crops namely mango (mangifera indica), litchi (litchi sineusis), breadfruit (artocarpus altilis) and cocoa (theobroma cacao). In the remaining two crops cryo-preservation was done.

Further, NFPTCR did not develop new technologies for induction of in-vitro storage organs in species in which roots, rhizomes, bulbs and tubers were of economic importance. Evaluation reports had not been received for 292 germplasm samples of banana, nine germplasm samples of sweet potato and 25 germplasm samples of ginger which were sent for evaluation to other Institutes of ICAR from 1997-98 to 2000-01.

ICAR stated in March 2003 that in-vitro conservation of aonla, mulethi, urginia and papaya was not possible due to either bacterial infection or poor response of cultivators. For other crops, it had been successful. In regard to cryo-preservation, ICAR stated that no success could be achieved due to low success rate and highly recalcitrant seeds. ICAR further stated that evaluation reports for 24 out of 292 banana germplasm samples had been received. For other crops, the matter was being pursued with the respective field evaluation curators. However, the status of in-vitro conservation presented in the project completion report did not contain tea and grapes for which ICAR had stated that in-vitro conservation was successful.

2.12 Regeneration of Agri-biodiversity

Under the United States India Fund Research Programme, the Ministry of Agriculture, Department of Agricultural Research and Education, in May 1998 sanctioned a project entitled "Regeneration of Agri-biodiversity comprising of agri-horti crops, their wild and weedy relatives and other economically useful plants of South India" to NBPGR at a total cost of Rs 63.96 lakh for a period of four years. The objectives of the project included preliminary evaluation, characterisation and documentation of the existing germplasm and annual regeneration of clonally propagated crops such as taro, greater yam, and banana till these were completely characterised, evaluated, classified and stored in-vitro. Eight important crops namely rice, banana, okra, jackfruit, taro, greater yam, horse gram and sesamum spices were identified for study under the scheme.

Evaluation and documentation of targeted crops under the project were not completed

NBPGR incurred an expenditure of Rs 51.92 lakh upto September 2002 for the project which was implemented at its regional station at Thrissur. No expenditure was incurred thereafter, although there was an unspent balance of Rs 12.04 lakh and the project was extended upto September 2003. The progress reports revealed that a total of 4,033 germplasm samples of these eight crops were characterised till 2001. Thereafter activities as contemplated in the project could not be undertaken except maintenance and storage of germplasm samples as there were no research associates to carry out the work. Consequently, the important objectives like preliminary characterisation and evaluation of germplasm samples, screening of important diseases and pests under field conditions, annual regeneration of clonally propagated crops and documentation, communication and publication of research results could not be achieved.

ICAR stated in March 2003 that out of 6,568 germplasm samples to be characterised, 4,789 germplasm samples were characterised and efforts were underway to complete the characterisation. However, NBPGR in July 2003 stated that the project work as contemplated in the project document could not

be undertaken due to delay in obtaining the extension of the project and appointment of research associates.

2.13 Monitoring of Plant Genetic Resources

2.13.1 Germplasm Advisory Committees

Germplasm Advisory Committees (GACs) are expected to advise NBPGR on the Plant Genetic Resources activities, prioritisation of traits, germplasm samples to be kept in Long Term Storage, research and training needs and strengthening of linkages between NBPGR and user agencies. However, the GAC was not in existence from 1997-98 till February 2002.

ICAR stated in March 2003 that constitution of GACs was need based and added that seven GACs were notified in March 2002 after changing the nature and constitution of the committee. GAC met six times between October 2002 and June 2003 for six different crop groups.

2.13.2 Staff Research Council

NBPGR did not complete action on the recommendations of the Staff Research Council

The Staff Research Council (SRC) is empowered to approve and review the research projects and technical activities of NBPGR and to make recommendations to the scientists carrying out the work. SRC is required to meet twice in a calendar year. However, it met only seven times against the mandated 12 times during the period from 1997 to 2002.

A scrutiny of SRC meetings held from 1997 to 2002 revealed that NBPGR did not take prompt action on the recommendations of SRC. There was also no subsequent confirmation of the action taken on the recommendations made in the previous meetings of SRC. Some of the important recommendations of SRC which were not implemented by NBPGR are – (i) storing of cucumis germplasm samples collected under a joint Indo-US collaborative expedition in 1995, (ii) giving accession numbers and passport data for tomato and mucuna germplasm samples and other collection of 3,000 germplasm samples, (iii) gathering of information in respect of all germplasm samples introduced

in the country so far, (iv) transferring protocols for cryo-preservation for seven germplasm samples of yams and twelve germplasm samples of sweet potato from in-vitro bank to cryobank on priority basis and (v) completion of rejuvenation and conservation of the 5,000 sesame germplasm samples.

ICAR, while stating that prompt action had been taken on the recommendations of SRC, said in March 2003 that efforts were being made to take complete action on the recommendations of SRC.

2.14 Works and Estate Management

NBPGR spent Rs 6.02 crore on construction works from 1997-98 to 2002-03. Major construction works estimated to cost a total of Rs 2.96 crore were test checked and the findings are as follows:

2.14.1 Blockage of funds

NBPGR could not start construction of residential quarters for the last 13 years resulting in blockage of funds of Rs 86.55 lakh

Mention was made in Para 9.1.12 of the Report of the Comptroller and Auditor General of India (Scientific Departments) for the year ended March 1994 of the non-construction of 56 residential quarters at Delhi due to non-clearance of layout plan and No Objection Certificate from the Municipal Corporation of Delhi (MCD) and Delhi Development Authority (DDA) and the consequent blockage of funds of Rs 16.55 lakh. Subsequently, when the matter was still being pursued with CPWD, MCD and DDA, ICAR approved in October 1998 the revised estimate of Rs 2.09 crore submitted by CPWD. NBPGR deposited Rs 70.00 lakh as the first instalment with CPWD in November 1998 without taking into account the amount of Rs 16.55 lakh which had already been deposited resulting in an excess deposit of Rs 16.55 lakh. However, ICAR/NBPGR had still not obtained the approval for the layout plan and the 'No Objection Certificate' from MCD and DDA. Therefore, the work had not been started even as of October 2003. It is evident that the project had not been effectively monitored. This has resulted in a time overrun of 12 years and funds to the extent of Rs 86.55 lakh remaining blocked for five years. ICAR stated in March 2003 that the delay was mainly due to non-approval of layout plan by MCD.

2.14.2 Non-execution of lease deed

NBPGR did not execute lease deed of experimental farm at Issapur village for the last 27 years despite lease charges being paid

NBPGR acquired 100 acres of land at Issapur Village on lease for 99 years at Rs 10,000 per annum in 1976 from the Delhi Administration for seed production and preliminary evaluation of germplasm samples. Non-execution of lease deed by NBPGR had also been pointed out in the Report of the Comptroller and Auditor General of India (Scientific Departments) for the year ended March 1994. NBPGR had stated that steps had been taken to finalise the lease deed. However, NBPGR had not executed the lease deed as yet despite the fact that an amount of Rs 2.60 lakh had been incurred as lease charges for the period from 1977-78 to 2002-03. NBPGR stated in November 2003 that execution of lease deed was under process with ICAR.

ANNEXE

Sl. No.	Name of Project	Year of Start	Objectives	Audit Comments
1.	Documentation and dissemination of information on germplasm both imported and collected in the form of "Plant Introduction Reporter"	1977	To compile information on exotic and indigenous germplasm samples including cultivated and their wild relatives and also on germplasm samples provided by cooperating scientists.	Research project files for 1997-98 to 2002-03 revealed that the aim of the project could not be achieved fully since feedback from indenters was not received particularly with reference to exotic germplasm samples.
2.	Charcterisation, evaluation, maintenance, regeneration and documentation of germplasm resources of brinjal, carrot and radish	1977	To use the evaluation data for picking right genotype(s) to be used as a donor in Crop Improvement Programme	The progress reports for the years 1997-2003 were prepared intermittently. Thus, the total number of germplasm samples of brinjal, carrot and radish evaluated, characterised, regenerated, distributed and documented so far could not be verified.
3.	Conservation of legume germplasm using conventional seed storage methods	1984	Processing and storing of seed material of pulse crops, updating passport information and regeneration of germplasm samples in collaboration with National Active Germplasm Sites (NAGS) and other centres	Project investigator did not obtain released varieties of legumes for conservation in the National Gene Bank and did not undertake joint regeneration of legume germplasm samples in collaboration with NAGS. The updation of passport information on ex-situ legume germplasm samples was also not undertaken.
4.	Survey of nematodes in NBPGR experimental farms and screening of plant germplasm collections against nematodes	1986	To obtain basic information on population structure and densities of plant parasitic nematodes, to screen the germplasm collections of suspected crops for seed borne nematodes in order to prevent their further spread and to screen germplasm collections for their susceptibility or resistance to nematodes.	The details of treatments and remedial measures to control the nematodes were not discussed in the final report. There was no mention about the crop tolerance level with reference to the nematode population present in the soil. Therefore, the range of nematode population in the soil (250-860 per 200ml of soil) and whether the percentage indicated in the final report was within the limit or not could not be ascertained. Although the project had been completed in May 2001, it continued from the year 2001 in the modified form "Quarantine Processing of germplasm under exchange and supportive research: nematological aspect".
5.	In-vitro conservation of medicinal and aromatic plants with special reference to rare and endangered species.	1987	To standardise and develop protocols for in-vitro establishment, multiplication, conservation and cryo-preservation and to augment and maintain in-vitro collection of germplasm samples.	Research project files of 2001-03 revealed that activities like tissue culture services for exchange of germplasm, updation of passport information for data documentation and in-vitro regeneration protocol for new germplasm samples were not undertaken to achieve the objectives.

Sl. No.	Name of Project	Year of Start	Objectives	Audit Comments
6.	In-vitro conservation of tuber crops with special reference to sweet potato, yams and taro.	1988	To standardise and develop protocols for in-vitro establishment, multiplication, conservation and cryo-preservation and to augment and maintain in-vitro collection of germplasm samples.	Progress reports for 2001-02 and 2002-03 revealed that standardisation and development of protocols was not done in sweet potato and taro.
7.	Use of technique of ultra desiccation for cost effective germplasm conservation.	1991	To study the effect of moisture content on longevity of orthodox seeds, to calculate the power critical moisture content of selected crops for storage, to prepare seed survival curves of varying moisture levels especially low moisture levels and to study the cost effectiveness of ultra desiccation technique over the sub zero seed storage.	The progress report for the year 2001-02 revealed that seven crops were studied in order to assess effect of moisture content. The report did not discuss the achievement of other objectives although the project was continued from 1991.
8.	Conservation of fruit and agro-forestry tree species germplasm using conventional seed storage methods.	1998	Processing and storing of seed material of fruit and agro-forestry species (registered and released varieties) updating passport information and regeneration of germplasm samples in collaboration with National Active Germplasm Sites.	The progress report for 2000-01 revealed that passport information was updated and released/ registered varieties were acquired and processed only for vegetable crops and not for fruits and agro-forestry species. The progress report for the years 2001-02 and 2002-03 had not been prepared as the project leader was on study leave. Hence the project could not progress for the last two years.
9.	Technology development for DNA fingerprinting of medicinal and aromatic plants	1999	To develop molecular marker systems for DNA fingerprinting of selected medicinal plants having commercial value, standardization of experimental protocols, human resource development and collaboration with Council of Scientific and Industrial Research (CSIR) and other ICAR institutes	No collaboration in research activities with CSIR and other ICAR institutes as contemplated in the objectives was undertaken. Further, no activities in human resource development and developing inter-linkages, data analysis and interpretation and development of new marker systems for cultiver identification were undertaken.

NOTE : ***All projects are ongoing projects except for the project at Sl. No.4. .***

CHAPTER 3 : DEPARTMENT OF SCIENCE AND TECHNOLOGY

Technology Information, Forecasting and Assessment Council

Technology Information, Forecasting and Assessment Council (TIFAC) was established as a Society under the Department of Science and Technology (DST) in 1988. The objectives of TIFAC include preparation of technology forecasting reports, technology impact statements and identification of priority areas of research. TIFAC supports technology projects through the extension of financial assistance called Technology Development Assistance (TDA). Between 1992 and 2003, TIFAC sanctioned 145 projects under three programmes i.e. Home Grown Technology, Advanced Composites Mission and Fly Ash Mission. Out of these, 68 projects (involving TDA releases of Rs 36.68 crore) were studied in Audit which revealed that in 20 projects, the objectives were either not achieved or only partially achieved; in 32 projects, the technologies developed were not commercialised or only partially commercialised. In 12 projects, the commercialisation of technologies had commenced. The work and progress of TIFAC was not reviewed since its establishment in 1988. Sectoral TIFA Groups under individual Ministries and Departments, were not established.

Highlights

- ***Out of 45 Home Grown Technology projects (involving releases of Rs 21.02 crore) examined in audit, in 11 projects, the objectives were either partially achieved or not achieved at all and in 27 projects, the developed technologies were not commercialised or partially commercialised. In the remaining seven projects, the commercialisation started but the Technology Development Assistance (TDA) was not being received as per schedule.***

- ***Out of 13 Advanced Composites Mission projects (involving releases of Rs 13.17 crore) studied in audit, in six projects, objectives were not achieved and in four projects, technology developed was not commercialised. In the remaining three projects, commercialisation was started but the repayment of TDA was not being received.***

- ***Out of 10 Fly Ash Mission projects (involving releases of Rs 2.50 crore) studied in audit, one project was not completed in spite of time overrun of seven years, in three projects the objectives were not achieved, in one project the technology developed was not commercialised, in two projects commercialisation had started but repayment was not being received and in the remaining three projects, there were other irregularities.***

- ***The work and progress of TIFAC was not reviewed since its inception.***

3.1 Introduction

The Cabinet approved in 1986, the formation of the Technology Information, Forecasting and Assessment Council (TIFAC) as a society under the Department of Science and Technology (DST). TIFAC was registered as a society in February 1988.

The broad objectives of TIFAC are as follows:

(a) to prepare technology forecasting reports, covering 10 years or longer periods, specially in production areas involving – (i) substantial investments of financial resources and (ii) a large volume of production;

(b) to project estimates of the nature and quantum of the likely demands for goods and services in various sectors of the economy and suggest the direction and extent of technological changes that might be considered necessary in order to fulfil these demands;

(c) to prepare Technology Impact Statements, with a view to uncovering the likely short-term and long-term implications of emerging technologies;

(d) to identify priority areas of research in relation to the socio-economic, environmental and security needs of the country; to evolve and suggest strategies for technological developments based on such priorities; and to draw up programmes of purposeful research in various sectors; and

(e) to produce an Annual Technology Report for the Prime Minister.

Till March 2002 TIFAC had published 270 reports including 154 techno-market surveys.

Sectoral Technology Information, Forecasting and Assessment (TIFA) Groups were also to be constituted in individual Ministries/ Departments and Scientific agencies and at Industry level to prepare Technology Impact Statements; prioritise indigenous R&D activities; and draw up research programmes. However, Sectoral TIFA Groups had not been constituted till date. TIFAC had also not been preparing Annual Technology Reports for the Prime Minister.

3.2 Organisational Structure

The affairs of TIFAC are overseen by the Governing Body (GB). The Executive Committee (EC) manages the administrative and financial matters of TIFAC.

In terms of the Memorandum of Association and Rules of TIFAC, the composition of EC was (a) Chairman (Secretary-DST), (b) Member from the Ministry of Industry, (c) Joint Secretary and Financial Advisor (JS&FA), DST, (d) Two members nominated by GB and (e) Member Secretary/ Director-TIFAC and it was to be re-constituted after every three years. As of November 2003, EC consisted of only two members i.e. the Registrar, TIFAC and Secretary, DST.

3.3 Scope of audit

TIFAC supports technology development projects through six programmes: Home Grown Technology (HGT), Technopreneur Promotion Programme, Technology Vision for India upto 2020, Advanced Composites Mission (ACM), Sugar Technology Mission (STM) and Fly Ash Mission (FAM). Funds in the form of Technology Development Assistance (TDA) are released by TIFAC to support these projects.

This review focuses on the funding of the projects under HGT, ACM and FAM programmes of TIFAC, including monitoring, development, commercialisation of technologies and repayments of TDA during 1992-2003.

3.4 Funding of TIFAC

TIFAC is mainly financed through grants released by DST. TIFAC utilizes these funds to release TDA to Government institutions and private industries to implement the projects under the programmes mentioned above. The position of total funds inflow into TIFAC and expenditure for the period 1998-2003 is given below:

(Rupees in lakh)

Year	Receipts other than Grants			Grants from DST			Expenditure incurred by TIFAC		Closing balance
	Other Receipts	Repayment of TDA	Interest from bank	Opening Balance	Plan	Non-Plan	Plan	Non-Plan	
1998-99	25.10	26.45	168.75	2657.68	#815.74	8.00	1575.94	8.00	2117.78
1999-2000	45.66	147.00	158.75	2117.78	539.00	8.00	1600.34	8.00	1407.85
2000-01	50.64	330.95	174.38	1407.85	5435.00	9.00	3328.23	9.00	4070.59
2001-02	35.02	174.41	258.56	4070.59	3754.00	10.00	2618.26	10.00	5674.32
2002-03	17.55	337.93	292.74	5674.32	2700.00	9.00	2765.84	9.00	6256.70

TIFAC accumulated unspent grants ranging from Rs 14.08 crore to Rs 62.57 crore during 1998-03

Received Rs 350 lakh from DRDO and Rs 50 lakh from Ministry of Power under ACM and FAM respectively

It would be seen that the balances available with TIFAC were increasing indicating that it was not possible for it to absorb the increased funding from DST.

3.5 Project Monitoring

3.5.1 TIFAC's role in funding projects

The Executive Committee of TIFAC sanctions projects and releases funds in the shape of TDA as financial support, usually limited to 50 *per cent* of the total project cost. No such limitation was prescribed for government institutions. The support is for the technology development component.

3.5.2 Scrutiny and approval of project proposal

The viability of the project proposals is scrutinized by TIFAC. The projects are then approved by an Apex Board for HGT and by a Mission Advisory Committee for ACM. A separate Task Force reviews and approves the projects under FAM. For each project, a separate Monitoring Committee is constituted by TIFAC.

On the recommendation of the Apex Board, Mission Advisory Committee or Task Force, the Executive Committee of TIFAC approves the project for funding through TDA and releases the first instalment of TDA after signing an agreement/Memorandum of Understanding (MoU) and receipt of hypothecation deed. If the funding is to a private industry, an agreement is signed and if the funding is to a Government institution, an MoU is signed. Each project is required to be monitored by the concerned committee once in four months and more often if necessary. While monitoring the project, each committee also recommends improvements, authorises releases of subsequent instalments of TDA and extension of the project, where necessary.

3.5.3 Terms and conditions of granting assistance

The assets constructed or acquired under the project are to be hypothecated to TIFAC by the beneficiary to the extent of TDA released. From 1998 onwards, the hypothecation deeds are to be registered with the Registrar of Companies. The assets acquired under the project are to be insured by private companies at their cost to cover the risk of any loss or damage. Government institutions were, however, not required to either hypothecate or insure the assets.

The Project Implementing Agency has to submit quarterly progress reports, year-wise utilisation certificate/statement of expenditure along with details of assets procured under the project. A project completion report is to be submitted within 60 days of successful completion of the project.

3.5.4 Repayment procedure

- In case TDA is provided to private industry and commercialisation or development of technology is successful, TDA is to be repaid to TIFAC in

five yearly or 10 half yearly equal instalments, spread over five years from the date of completion of the project (as incorporated in the agreement) with a nominal increase over the original TDA amount (i.e. about six *per cent* surcharge or nominal interest).

- In case the project is declared unsuccessful by the concerned Committee, the stores manufactured during development work have to be disposed of and divided between TIFAC and industry in the ratio of expenditure contributed and balance expenditure written off by respective parties.

- If TDA is released to a Government institution, it is to be recovered out of receipt of royalty including licence fee against transfer of developed technology under the project.

- In case of default, a clause of penal interest at the rate of 18 *per cent* per annum is included in the agreement whereas in some cases, the whole amount less paid by the beneficiary shall immediately become due and payable to TIFAC at once. This clause is, however, not applicable to government institutions.

- In March 2001, TIFAC decided to have a uniform system for TDA repayment in respect of all the projects undertaken by it. According to the revised order issued by TIFAC in March 2001, 1.2 to 1.3 times of the total amount of TDA has to be recovered in a maximum of ten six-monthly instalments after six months from the scheduled date of completion of the project.

3.6 Review of projects

During the period 1992-2003, TIFAC sanctioned 145 projects for which technology development assistance of Rs 53.25 crore was given. The success rate of the projects was 68 *per cent*. The table below gives a complete picture of the projects undertaken by TIFAC :

(In numbers)

Year	Projects brought - forward as ongoing from previous year	New Projects sanctioned during the year	Projects shortclosed during the year	Projects completed during the year		Projects carried - over as ongoing to next year
				Success-fully	Un-successfully	
1992-93	-	3	-	-	-	3
1993-94	3	4	-	-	-	7
1994-95	7	10	-	-	-	17
1995-96	17	18	-	1	-	34
1996-97	34	11	1	8	2	34
1997-98	34	26	-	5	-	55
1998-99	55	24	1	13	-	65
1999-2000	65	24	2	13	-	74
2000-01	74	7	0	26	2	53
2001-02	53	7	3	16	3	38
2002-03	38	11	2	16	4	27

98 projects, out of 145 were declared successful by TIFAC

However, the amount overdue for recovery kept increasing over the years. It was found that TIFAC could not recover TDA amounting to Rs 23.13 crore under various projects and the status thereof as of 31 March 2003, is given below:

(Rupees in lakh)

Programme	No. of projects assisted (1992- 2003)	Total TDA released	AMOUNT OVERDUE			Total
			for more than 3 years	for more than six months upto 3 years	Up to six months	
HGT	63	2723.62	118.95	338.16	1110.23	1567.34
ACM	27	1857.52	125.38	295.97	231.73	653.08
FAM	55	743.62	12.00	62.40	18.00	92.40
Total						**2312.82**

TIFAC could not recover 43 *per cent* of the TDA extended

While TIFAC had supported a number of projects under various programmes since 1992, Audit noticed that there were lapses in adhering to the terms and conditions stipulated while extending TDA. In a number of cases hypothecation deeds were not registered with the Registrar of Companies and in other cases, assets had not been insured. The model agreement had also not been vetted by the Ministry of Law.

3.7 Home Grown Technology Programme

DST approval not obtained for initiating HGT

The HGT Programme was intended to support the commercialisation of technologies developed by indigenous research and development (R&D). It was initiated in 1991 to foster linkages between R&D institutions and industry. TIFAC had not obtained approval from DST and Expenditure Finance Committee (EFC) before initiating the HGT programme, nor had sought any budget for HGT programme. TIFAC stated in October 2003 that no separate funds were allocated by DST during 1992-2003 and expenditure was met out of the TIFAC regular grant. TIFAC further stated in December 2003 that since HGT activity was started in a small experimental manner, approval of Standing Finance Committee/EFC was not obtained before starting the activity.

Over the period 1992-2003, TIFAC sanctioned 63 HGT projects, out of which 45 projects were examined by Audit. TIFAC sanctioned these 45 projects at a total cost of Rs 57.10 crore with its contribution of Rs 23.69 crore, against which it released TDA of Rs 21.02 crore. In 11 projects, the objectives were either partially achieved or not achieved at all. In 27 projects, the technologies developed were not commercialised/ partially commercialised. In the remaining seven projects, the commercialisation had commenced. The list of projects is given in ***Annex 1***.

Some projects are discussed below:

3.7.1 Pilot plant for producing improved evaporative cooling based air-ambiators

TIFAC sanctioned the project with TDA of Rs 50.00 lakh

In December 2000, TIFAC sanctioned the project 'Pilot plant for producing improved evaporative cooling based air-ambiators' to M/s Dhaliwal Tech. Systems at a total cost of Rs 1.26 crore for a duration of one year. The objective of the project was to set up a pilot manufacturing facility for window air-ambiators based on Indirect/ Direct Evaporative Cooling technology and produce 600 units for test marketing and user feedback. Out of the total sanctioned cost of Rs 1.26 crore, TIFAC was to release Rs 50.00 lakh as TDA. TIFAC released TDA of Rs 10.00 lakh to the company in January 2001.

In May 2001, the Monitoring Committee noted that the comparatively high unit cost and its workability in all-weather conditions might limit its market. It recommended release of the next instalment of Rs 6.00 lakh, subject to the sale of two-third produced units to generate confidence in the product. This instalment was to be utilised for manufacturing the units.

Second instalment of TDA was not utilised by the company for manufacturing the units

TIFAC released the second instalment of Rs 6.00 lakh in July 2001 without ensuring the two-third sale of units already produced. The amount was also not utilised for manufacturing the units. It was also noticed that the company had spent part of the first instalment through M/s Thermo Devices Private Limited, a franchisee, without obtaining prior permission from TIFAC. In July 2001, TIFAC permitted the amalgamation of M/s Dhaliwal Tech. Systems with M/s Thermo Devices Pvt. Ltd., Mohali which took over the assets and liabilities of the former.

TIFAC foreclosed the project in July 2002 and sent letters twice to the company to refund Rs 18.05 lakh, which were returned undelivered

The Monitoring Committee was required to review the project once in four months. However, it reviewed the project only in May 2002, i.e. after one year of the first review. It was observed that no developments had been made on the project and that there were significant deviations regarding mode of operation in the project. The company stated that it would manufacture air-ambiators through its vendors and decide on setting up the pilot manufacturing facility later. The company also stated that it might not avail any further financial assistance from TIFAC and requested foreclosure of the project. TIFAC foreclosed the project in July 2002 and requested the company to repay the TDA of Rs 16.00 lakh along with interest of Rs 2.05 lakh upto June 2002 at 10 *per cent* per annum. However, the letter was returned undelivered. This was followed by a reminder only in January 2003, which was also returned undelivered. TIFAC stated in December 2003 that the company was trying to revive the efforts and intended to return TIFAC funds when able to do so. The reply of TIFAC was not borne out by the records produced to Audit. The fact remains that TIFAC failed to take any action against the company since June 2002 resulting in non-recovery of TDA and interest.

3.7.2 Development of indigenous capability and commercialisation of coronary brachy therapy catheters

On the basis of economic justification and market survey demand given (June 1998) in the project proposal, TIFAC approved a project for 'development of

TIFAC signed an agreement to implement a project with TDA of Rs 75.00 lakh

indigenous capability and commercialisation of coronary brachy therapy catheters' in March 1999 at a cost of Rs 2.65 crore with TDA of Rs 75.00 lakh for a duration of 18 months. In March 1999, TIFAC signed a tripartite agreement with M/s Care Polymed Ltd., Hyderabad and Cardiac Research and Education (CARE) Foundation, Hyderabad. M/s Care Polymed Limited was to repay Rs 1.13 crore. TIFAC released in March 1999 the first instalment of TDA of Rs 38.00 lakh to M/s Care Polymed.

The company requested foreclosure of the project in June 2001 which was agreed to only in April 2003 by TIFAC

The Monitoring Committee reviewed the project in October 2000 and pointed out that the marketing of brachy therapy would not be easy and suggested some actions including extension of the project duration. In December 2000, the project was finally extended upto September 2001. In December 2000 and January 2001, TIFAC was of the opinion that the project would be declared closed after animal and pre-clinical trials. After these trials, M/s Care Polymed Limited had to undertake clinical trials with alternate funding and immediately commercialise it. The second instalment of Rs 22.00 lakh was released in February 2001. M/s Care Polymed requested TIFAC in June 2001 to shortclose the project stating that some recent technical developments in the area of brachy therapy called for further thought on the project. The Monitoring Committee also decided to waive Rs 30.00 lakh from the dues of the company (Rs 90.00 lakh on *pro rata* basis). While foreclosing the project in April 2003, i.e. 22 months later, it decided to recover only the principal amount of TDA in instalments commencing from December 2002, though the company was required to pay instalments commencing from September 2001, in terms of the agreement. As of June 2003, only Rs 15.00 lakh had been repaid to TIFAC. TIFAC stated in December 2003 that the projections for market went wrong in this case and M/s Care Polymed had decided to return TIFAC funds in its entirety.

3.7.3 Manufacture of Stationary phase monolithic De NO_x Catalyst(s) and SO_2 Oxidation for environmental pollution control

In March 1995, TIFAC signed an agreement with M/s Associated Cement Companies Limited (ACC), Mumbai for a project on upscaling the know-how for manufacture of Stationary phase monolithic De NO_x Catalyst(s) and SO_2 Oxidation for environmental pollution control. The project was to be undertaken in two phases. In Phase I development of technology upto

TIFAC signed an agreement to implement a project in two phases and released its TDA of Rs 1.09 crore

production and field-testing of prototypes was to be done. In Phase II, setting up of manufacturing facilities was envisaged. Phase I of the project was estimated to cost Rs 2.08 crore. TIFAC was to release Rs 1.09 crore as TDA. TIFAC released Rs 1.09 crore to ACC between March 1995 and March 1997. However, assets were not hypothecated and insured.

Phase I of the project completed successfully but company did not come up with proposal to implement phase II of the project

In June 1999, the Monitoring Committee declared Phase I, to be successfully completed. However, the scale was so small that direct upscaling to commercial level operation was not possible. The Monitoring Committee recommended that an intermediate stage with treatment of complete exhaust from a 25 MW plant should be carried out in Phase II. However, ACC did not come up with a viable and detailed project proposal and insisted on an assurance from the Ministry of Power that there would be a market for installing such pollution control equipment in the National Thermal Power Corporation's power plants. The Ministry of Power opined (July 2001) that the technology developed was expensive and other cost-effective measures were available. Further, NO_x was not a major problem in India and as such NO_x emission norms were not required for coal-fired plants.

TIFAC took no action to recover TDA of Rs 1.09 crore plus interest as required under agreement

Though more than four years had elapsed, ACC had not commenced work on Phase II nor refunded TDA. In terms of the agreement, if after successful completion of Phase I, the company did not proceed with Phase II, the entire TDA of Rs 1.09 crore was re-payable to TIFAC within six months of the completion of Phase I. For delays in repayment, the company had to pay interest at the rate of 18 *per cent* per annum to TIFAC. However, no action was initiated by TIFAC resulting in non-recovery of TDA of Rs 1.09 crore plus interest thereon.

TIFAC stated in December 2003 that it believed that it would be more beneficial for the country if the option of starting the second phase of the project is kept open, rather than forcing ACC to return TIFAC funds and distance themselves from development of the technology.

3.7.4 Development of laboratory scale know-how towards commercial exploitation of the Membrane-Cell Process for Chlor-Alkali Production

TIFAC entered into an MoU with the Central Electrochemical Research

TIFAC entered into an MoU with CECRI to implement a project with its TDA of Rs 35.50 lakh

Institute (CECRI), Karaikudi in March 1995 for "Development of laboratory - scale know-how to demonstration plant towards commercial exploitation of the Membrane-Cell Process for Chlor-Alkali Production". The total cost of the project was Rs 42.11 lakh. TIFAC was to extend TDA of Rs 35.50 lakh. The duration of the project was 12 months. CECRI was required to set up the plant with 10 electrolytic cells as demonstration plant for upscaling and technology transfer.

In spite of extension, CECRI could not achieve complete objectives of the project due to non-procurement of rectifier

TIFAC released Rs 20.00 lakh in March 1995. While the Monitoring Committee was to review the project once in every four months, it was reviewed only four times between October 1995 and May 1997. In the last review meeting (May 1997), a plant with only three cells was shown to the Monitoring Committee and CECRI promised to set up another seven cells after receiving funds from TIFAC. The last instalment of TDA amounting to Rs 15.50 lakh was released in May 1997 and the project was extended upto January 1998. An assessment of the progress of the project was made in January 1998. It was found that CECRI had fabricated only six cells and of these, only three were operated in April-May 1997. The plant had been shut down since May 1997. CECRI attributed the non achievement of objectives to the low capacity of the rectifier available with them which was not enough even for six cells. However, CECRI did not procure the rectifier with the required capacity even though it was to be procured out of CECRI funds according to MoU. CECRI had spent Rs 33.55 lakh on the project as of January 1998 and no further progress was on record. The unspent balance of Rs 1.96 lakh was also not recovered by TIFAC.

In December 2003, TIFAC stated that since CECRI happened to be a CSIR laboratory, the MoU was not strictly enforced and that TIFAC had been following up in vain for refund of unspent balance from CECRI.

3.7.5 Development of laboratory-scale know-how for commercial exploitation of the Rapid Diagnostic Products process

In March 1994, TIFAC entered into an MoU with a public trust, BAIF Development Research Foundation (BAIFDRF), Pune to provide TDA of Rs 89.65 lakh (out of total project cost of Rs 91.85 lakh) to BAIFDRF for implementation of the project "Development of laboratory scale know-how for commercial exploitation of the Rapid Diagnostic Products process". TIFAC

TIFAC supported a project with its TDA of Rs 89.65 lakh and the developed technology was transferred to another company at a cost of Rs 50.00 lakh *plus* royalty at five *per cent* on sale of product

released TDA of Rs 79.82 lakh to BAIFDRF between March 1994 and June 1997. According to the agreement, TDA was to be repaid by BAIFDRF through an equal sharing (50:50) of revenues to be received against transfer of developed technology in the form of licence fee and royalty. In May 1999, a tripartite agreement for licensing "Rapid Diagnostics Kit Technology" was signed between TIFAC, BAIFDRF and Hoechst Roussel Vet Private Limited (company). The company agreed to pay TIFAC a lump-sum premium of Rs 50.00 lakh and royalty at the rate of five *per cent* of the ex-factory sale price of products sold by the company. In turn, the company would be granted the licence to utilize 'the technology package' to manufacture and sell the product.

Company paid Rs 50.00 lakh but it got the technology including equipment costing Rs 69.27 lakh

In terms of the agreement of 1999, the definition of 'technology package' included the technical documentation of the process, as well as the equipment utilised by BAIF for developing the said know-how. While the company paid a lump-sum premium of Rs 50.00 lakh, apart from the technical documentation of the process, the company got possession of the equipment costing Rs 69.27 lakh utilised by BAIF for developing the know-how, procured out of TDA.

The company had paid royalty amounting to Rs 0.27 lakh for the period 1999-2000. No royalty was received thereafter, reasons for which were not on record.

TIFAC stated in September 2003 that on financial terms the project was a success as TIFAC had recovered all the funds. TIFAC further stated in December 2003 that there was a longer gestation period for the commercial activities to take off and royalties were expected from the company in future. However, the fact remains that TIFAC had received only Rs 50.27 lakh against the release of Rs 79.82 lakh and that too after giving possession of the equipment costing Rs 69.27 lakh procured out of TDA.

3.7.6 Development of process know-how for the preparation of Irreversible Temperature Sensitive Paints and Labels

In February 1996, TIFAC entered into an MoU with the Indian Institute of Chemical Technology (IICT), Hyderabad, to provide TDA of Rs 42.50 lakh under the project "Development of process know-how for the preparation of

Irreversible Temperature Sensitive Paints and Labels (ITSPL) for pharmaceutical industry". The sanctioned duration of the project was 36 months which was extended upto 31 December 2000. TIFAC released Rs 42.50 lakh between January 1996 and May 1999.

TIFAC awarded the project to IICT without identifying the industrial partner

Whereas IICT's proposal had initally been scrutinised in March 1995, a High Level Core Group on HGT had recommended that the proposal might be supported with participation of an industrial partner. Further, the industrial partner and its contribution should also be identified before approval of the project. However, TIFAC awarded the project to IICT without identifying an industrial partner.

The Monitoring Committee had recommended extension of the project upto 31 December 2000 to enable the completion of commercialisation activities. However, the technology was yet to be successfully commercialised. IICT was yet to repay TDA of Rs 42.50 lakh to TIFAC.

In December 2003, TIFAC stated that there had been difficulties in tying up with a suitable industrial partner to transfer the technology and that the same might be even adopted voluntarily by the Indian Pharma Industry by 2005, when the product patent registration guidelines would come into force. It also added that both TIFAC and IICT were contacting various firms in the line to commercialise the process.

3.7.7 Setting up a commercial plant for manufacture of Bio-adhesive Iso-Amyl-2 – Cyano Acrylate

TIFAC signed an agreement with a company and IICT to implement a project with its TDA of Rs 66.00 lakh

TIFAC signed an agreement in July 1997 with M/s Concord Drugs Ltd., Hyderabad (company) and the Indian Institute of Chemical Technology (IICT), Hyderabad to implement a project "Setting up a commercial plant for manufacture of Bio-adhesive Iso-Amyl-2 – Cyano Acrylate" at a cost of Rs 1.82 crore for a duration of 24 months. TIFAC's TDA was Rs 66.00 lakh, which it released between September 1997 and July 1998. At the time the project was appraised, it was opined that market potential existed for such a product.

Company was not successful in marketing the product

TIFAC stated in June 2003 that the company successfully established the production unit with a production capacity of 500 litres of acrylate per year

but was not successful in marketing the product as the doctors were not trained in using the materials and the company lacked funds for rigorous marketing.

TIFAC twice revised the repayment schedule, but company could pay only Rs one lakh

The company was to repay the TDA of Rs 99.00 lakh to TIFAC in 10 equal half yearly instalments from 1 August 2000. On its request, TIFAC revised (March 2001) the repayment schedule so as to commence from 1 August 2001. TIFAC again agreed in October 2001, to postpone the repayment of first instalment upto 31 December 2001. The company deposited only Rs one lakh in August 2001. No further instalment had been received upto August 2003. Though the Registrar, TIFAC, decided in April 2003 to initiate legal action against the company, TDA of Rs 98.00 lakh still remained to be recovered (August 2003).

While accepting the facts, TIFAC stated in December 2003 that so far, no legal action could be initiated and it was still convincing the company to repay its dues to TIFAC.

3.7.8 Development of jute-coir geo-textiles

TIFAC sanctioned a project with its TDA Rs 2.19 crore and released Rs 1.77 crore

TIFAC signed a tripartite agreement in March 1998 with M/s Aspinwall Geo-tech Ltd., Cochin (company) and Indian Institute of Technology (IIT), Delhi to execute a project for "development of jute-coir geo-textiles". The project was sanctioned at a total cost of Rs 4.38 crore for a duration of three years with TIFAC's contribution of Rs 2.19 crore as TDA. In terms of the agreement, the company had to repay an amount of Rs 3.28 crore in five annual instalments of Rs 65.70 lakh each, starting from March 2002 and if it failed to repay any instalment within the stipulated time, the whole amount of repayment would immediately become due and payable to TIFAC. TIFAC released Rs 1.77 crore between March 1998 and February 1999.

Entire TDA of Rs 2.63 crore became immediately payable to TIFAC due to the company's failure to repay according to schedule

TIFAC sent a revised repayment schedule to the company in August 2002 for repayment of Rs 2.63 crore (taking into account the release of Rs 1.77 crore instead of Rs 2.19 crore) in five annual instalments of Rs 52.56 lakh each. However, no response was received from the company and TIFAC did not take action to recover the instalments of Rs 1.05 crore due from 31 March 2002 to 31 March 2003 (according to the revised repayment schedule). Since the company failed to pay the instalments within the stipulated time, the entire

repayment of Rs 2.63 crore had become due and payable at once to TIFAC. However, TIFAC took no action.

Technology developed and a pilot plant installed but the company was not interested in commercialising the technology

TIFAC stated in August 2003 that the company had realised midway that it was difficult to compete with synthetic geo-textiles and that the market segment would prefer high-strength material. The company had decided to concentrate on the manufacture of Erosion Control Blankets and this was chosen as the focus area after detailed technical assessments and discussions. The Monitoring Committee had agreed to the decision of the company in January 2000. The technology had been developed successfully and a pilot plant with a capacity of 800 sq metre per hour was installed. TIFAC further stated that the company was no longer interested in this line of business and had stopped making further efforts to commercialise the technology. TIFAC was yet to recover the amount of Rs 2.63 crore from the company and also to take action to recover the amount due.

TIFAC replied in December 2003 that the final meeting of the Monitoring Committee had not yet taken place to decide the fate of the project and accordingly, it could not be ascertained as to what amount was actually due from the company.

3.7.9 Pilot plant for production of Silicon – Iron castings

TIFAC sanctioned a project with TDA of Rs seven lakh

TIFAC signed an agreement with M/s Mukherjee Industries (M/s MI), a proprietorship concern in June 1997 to execute a project for "Pilot plant for production of Silicon – Iron castings". The project was sanctioned for a duration of 24 months at a total cost of Rs 25.00 lakh with TIFAC's TDA of Rs seven lakh.

Against requirement of bank guarantee TIFAC released TDA without obtaining even hypothecation deed

TIFAC sanctioned the project on the condition that M/s MI would submit a hypothecation deed and did not ask for a bank guarantee. TIFAC released Rs seven lakh (1997-2000) without obtaining even the hypothecation deed. The Monitoring Committee declared the project as complete in December 2000 subject to satisfactory analysis report for the product.

Neither did the beneficiary repay any instalment of TDA nor did TIFAC take any action to recover entire amount of Rs 10.15 lakh

In terms of the agreement, the beneficiary was to repay Rs 10.15 lakh to TIFAC in five yearly instalments, starting from 30 June 2000. In the event of failure to pay any of the instalments within the stipulated time, the whole

balance of TDA would immediately become due and payable to TIFAC. However, M/s MI had neither repaid any instalment nor was any action taken by TIFAC to recover the entire amount of Rs 10.15 lakh.

TIFAC stated in June 2003, that under this project, till now 31 heats (approx. 500 kg. each) of Silicon iron castings had been produced and dispatched to customers and several ordnance factories had also placed orders. Subsequently, however, TIFAC stated in December 2003 that it was facing difficulty in marketing of these castings and the entrepreneur had not received any order from ordnance factories as they were using casting from other materials.

However, the fact remains that TIFAC had still not been able to recover the amount of Rs 10.15 lakh from the company.

3.7.10 Development of laboratory-scale know-how for commercial exploitation of Eco-friendly Natural Dyes Product

TIFAC entered into an agreement with a company and IIT to implement a project and released TDA of Rs two crore. The company was to repay Rs three crore to TIFAC

In July 1998, TIFAC entered into a tripartite agreement with M/s Alps Industries Limited, Ghaziabad (company) and Indian Institute of Technology (IIT), Delhi, to provide TDA to the company for "Development of laboratory-scale know-how for commercial exploitation of Eco-friendly Natural Dyes Product". The total cost of the project was Rs 4.25 crore with TIFAC's TDA of Rs two crore. The duration of the project was 30 months. TIFAC released TDA of Rs two crore between August 1998 and January 2001. The company was to repay Rs three crore in ten equal half-yearly instalments. The first instalment was due and payable after 36 months from the date of agreement or within six months from the date of successful declaration of the project, whichever is earlier. The project had been declared successfully completed by the Monitoring Committee in its last meeting held in August 2001.

Cheque towards repayment of second instalment bounced and it was paid in three parts but last cheque of Rs 10.00 lakh also bounced and paid in April 2003

In October 2001, the company paid back Rs 30.00 lakh as the first instalment to TIFAC. In August 2002, the company sent the cheque towards repayment of the second instalment for Rs 30.00 lakh to TIFAC. But the cheque bounced due to non-availability of funds. In September 2002, the company requested TIFAC that the schedule of repayment for the balance be revised and also sent nine post-dated cheques towards the revised repayment schedule (as given below), which were accepted by TIFAC in October 2002 :

(Rupees in lakh)

Revised due date for Repayment	Revised Repayment Amount
First instalment of Rs 30.00 lakh received in October 2001	
Second instalment to be paid in three parts	
September 2002	10.00
November 2002	10.00
December 2002*	10.00
Remaining amount was to be paid in six half yearly instalments of Rs 40.00 lakh each between August 2003 and February 2006	

* *Cheque bounced and amount of Rs 10 lakh paid back in April 2003*

The revision of the repayment schedule was unauthorised and irregular as:

Revision of repayment schedules was unauthorized and irregular

- In terms of the agreement, in the event of the company failing to pay any of the instalments within the stipulated time, the whole amount viz., Rs three crore less that paid by the company would immediately become due and payable to TIFAC. The whole amount therefore, became due in July 2001.

- The approval of the competent authority i.e. EC, TIFAC, was not taken for revision in repayment schedule and acceptance of post-dated cheques.

- According to TIFAC's guidelines of March 2001, in the event of non-compliance of the repayment schedule, interest at the rate of 18 *per cent* per annum for the delayed period would be payable. However, no such interest was charged in the revised repayment schedule.

Though the cheque for Rs 30.00 lakh had bounced in September 2002, TIFAC agreed to accept post-dated cheques. A cheque amounting to Rs 10.00 lakh, due in December 2002 also bounced. The company could not pay the next instalment amounting to Rs 40.00 lakh due on 31 August 2003. TIFAC still took no legal action against the company.

In December 2003, TIFAC stated that the company had addressed the issue of bounced cheques to TIFAC's satisfaction and accordingly, no legal action was taken. TIFAC also stated that it was taking up the issue of repayment with the company.

3.8 DST Mission Mode programmes implemented by TIFAC

Between November 1993 and August 1994, the Government of India approved two programmes viz., Advanced Composites Mission (ACM) and Fly Ash Mission (FAM). These Mission Mode Projects were undertaken on the recommendations of TIFAC. TIFAC was to implement these mission mode programmes. DST released year-wise grants under FAM and ACM till 1998-99 and 2000-01 respectively. The sanctioned duration of these two programmes was upto March 2002. With effect from 1 April 2002, these were merged with TIFAC's own activities.

3.9 Advanced Composites Mission

The Advanced Composites Mission was approved in November 1993 by the Government of India. The Mission aimed at indigenous development of composite products and technologies for domestic and export markets.

Over the period of 1993-2003, TIFAC supported 27 projects of which, 13 projects were examined by Audit. These 13 projects involved a total cost of Rs 32.04 crore. TIFAC's TDA was Rs 16.24 crore against which it released TDA amounting to Rs 13.17 crore.

Out of the 13 projects, in six projects, objectives were not achieved and in four projects, technology developed was not commercialised. In the remaining three projects, the commercialisation had commenced but TDA was yet to be repaid. The list of the projects is given in ***Annex 2***.

Some of these projects are discussed below:

3.9.1 Development of total technology package of Vacuum Forming Press to Manufacture Honeycombed Composites

TIFAC entered into an agreement for development of a technology package with its TDA of Rs 40.00 lakh

In May 1998, TIFAC entered into a tripartite agreement with M/s Tecnico Engineering Private Limited, Bangalore (company) and Hindustan Aeronautics Limited (HAL) to provide TDA to the company for development of a total technology package of "Vacuum Forming Press to Manufacture Honeycombed Composites". The total cost of the project was Rs 80.00 lakh with the shares of TIFAC, HAL and the company as Rs 40.00 lakh, Rs six lakh and Rs 34.00 lakh respectively. The duration of the project was

18 months i.e. upto November 1999. The company was to pay back Rs 48.00 lakh in ten half-yearly instalments after 30 months from the date of agreement or 12 months after successful completion of project, whichever was earlier. TIFAC released (August 1998 to February 2000) an amount of Rs 30.00 lakh.

TIFAC reduced the project cost and its share

EC, TIFAC approved in March 2001 an amendment to the TDA agreement whereby, (i) the project cost and TIFAC's contribution were reduced to Rs 64.00 lakh and Rs 30.00 lakh respectively and (ii) the company was to pay back Rs 30.00 lakh in ten half-yearly instalments. Against the release of Rs 30.00 lakh, the company should have paid back an amount of Rs 36.00 lakh calculated on *pro rata* basis taking into account repayment of Rs 48.00 lakh against the release of Rs 40.00 lakh.

The company had not paid back any amount to TIFAC. In August 2003, TIFAC stated that the company could not develop the press to HAL's requirements. Developmental activities had ended and the company had ceased its operations. Its capital assets had been sold and the press developed for HAL was also lying as scrap. The possibility of recovery of the principal amount of TDA of Rs 30.00 lakh from the company appears remote.

3.9.2 Design and Development of Composite Artificial limbs for the physically handicapped

TIFAC signed an agreement with a company and a laboratory with its TDA of Rs 32.00 lakh

TIFAC signed a tripartite agreement in June 1999 with M/s Mohana Orthotics and Prosthetics Centre (company), Chennai and the Madras Institute of Technology, Anna University, Chennai (Laboratory), for implementation of a project entitled 'Design and Development of Composite Artificial limbs for the physically handicapped'. The project was sanctioned at a cost of Rs 67.50 lakh (TIFAC's TDA Rs 32.00 lakh) for a period of 18 months. TIFAC released TDA of Rs 32.00 lakh to the company between August 1999 and December 2000.

The company refunded only Rs two lakh against Rs 15.36 lakh due by March 2003

In terms of the agreement, if the development of technology was successful, the company was required to refund Rs 38.40 lakh in five annual instalments, starting from 5 December 2001. In December 2000, TIFAC extended the project duration upto March 2001 and also revised the repayment schedule of TDA in June 2001. According to the revised schedule, the repayment of TDA was to start from March 2002. However, the company had refunded only

Rs two lakh against Rs 15.36 lakh due by March 2003. TIFAC had not taken any action to recover the dues.

TIFAC stated in June 2003 that the project had achieved its objectives. The company had been trying to commercialise the product on a large scale and substantial orders were expected shortly. TIFAC stated in December 2003 that the company had recently indicated that it would start repayment of limited amounts periodically to TIFAC and that a letter to this effect was expected shortly.

3.9.3 Development of total technology package of Jute-based Composites for ultimate commercialisation

TIFAC entered into an agreement with a company for development of total technology package with its TDA of Rs 1.51 crore

TIFAC entered into an agreement in May 1998 with M/s Duroflex Limited, Bangalore (company) for "Development of total technology package of Jute-based Composites for ultimate commercialisation". The total cost of the project was Rs 3.01 crore with TIFAC assistance of Rs 1.51 crore. The duration of the project was 24 months i.e. upto May 2000. TIFAC released TDA of Rs 1.51 crore between August 1998 and July 1999. The project was declared successful in May 2000.

TIFAC issued 'no objection' for transferring the assets and liabilities to a new company without obtaining the required personal guarantee

In December 2000, the company requested for "no objection" from TIFAC for transferring its assets and liabilities to a new company being floated by it. TIFAC agreed to it, subject to the condition that the Director, Natura Division of the company would furnish a personal guarantee to repay TDA in terms of the agreement. In January 2001, Advisor (ACM), TIFAC communicated "no objection" for transferring the assets and liabilities of Natura Division of Duroflex Limited to the new company (being floated) without obtaining the said personal guarantee.

Repayment schedule was revised without approval of Competent Authority. TIFAC received back only Rs three lakh against Rs 1.45 crore due

In terms of the agreement, if the development of technology was successful the company was to refund Rs 1.81 crore in five equal annual instalments. The first instalment was due in July 2000. In January 2001, while communicating the 'no objection' for transfer of assets, Advisor (ACM), TIFAC also communicated a revision in the repayment schedule to be started from September 2001, without obtaining approval of the competent authority i.e. EC, TIFAC. Though the repayment of TDA amounting to Rs 1.45 crore had become due as of August 2003, TIFAC could receive back only Rs three lakh

from the new Company M/s Natura Fibretech Private Limited. In March 2002, TIFAC issued the first legal notice to the company.

TIFAC stated in December 2003 that due to the internal problems between two Directors of Duroflex Limited, the matter was referred to the Company Law Board (CLB). As decided by CLB, Duroflex had taken over the jute-coir composite manufacturing unit. The Natura Fibretech Private Limited, floated by one of the Duroflex Directors had taken over the liability for repayment of Rs 30.00 lakh to TIFAC. The balance liability of Rs 1.20 crore was to be liquidated by Duroflex, which has refuted the Advisory and Monitoring Committee's decision on success of the project. TIFAC had referred the matter to the arbitrator, appointed by Secretary, DST.

3.10 Fly Ash Mission

The Mission Mode Projects for fly ash disposal and utilization (Fly Ash Mission) (FAM) was approved in August 1994 with DST as the nodal agency and TIFAC as the implementing agency. FAM was to be executed in close co-operation with the Ministry of Environment and Forests, Ministry of Power and a number of other agencies including industry.

The main objective of FAM was to set up technology demonstration projects in order to encourage large-scale adoption of these technologies for utilization and safe disposal of fly ash.

Over the period 1994-2003, TIFAC supported 55 projects under the FAM programme, of which 10 projects were examined in Audit. These 10 projects were sanctioned at a total cost of Rs 5.84 crore with TIFAC's TDA of Rs 3.19 crore, against which TIFAC released TDA of Rs 2.50 crore.

Out of 10 projects examined in audit, one project was incomplete despite a time overrun of seven years and in three projects, the objectives were not achieved. In one project, the technology developed was not commercialised and in two projects commercialisation had commenced. The list of the projects is given in ***Annex 3.***

Two projects are discussed below :

TIFAC entered into agreements with M/s Dual Fabs, Chennai (company) to provide TDA for two projects as detailed below:

(Rupees in lakh)

Name of the Project	Date of Agreement / Project duration	Total Project Cost / TIFAC's TDA	Amount released	Total Repayment amount
Setting up of pilot plant for manufacture of Fly Ash light weight concrete towards commercial exploitation	Oct 1997 12 months	68.90 34.45	34.45	54.68
Setting up of pilot plant for manufacture of building components using Fly Ash towards commercial exploitation	Feb 1998 12 months	96.62 48.31	48.31	72.47

In July 2000, the Monitoring Committee declared both projects successfully completed.

While approving the second project, TIFAC had decided that all the directors of the company would furnish guarantees in their personal capacity. However, this was not done. Assets procured under both projects were not insured. In the case of the first project assets had not even been hypothecated.

TIFAC received Rs 1.15 lakh only under these two projects. The company failed to repay remaining TDA due to TIFAC

In terms of the agreement, if the projects were commercially successful, the company was required to refund Rs 54.68 lakh and Rs 72.47 lakh to TIFAC under the first and second project respectively in 10 half yearly instalments beginning in October 1999 and February 2000. However, the company did not adhere to the repayment schedule. In December 2000, the company agreed to commence the payment from May 2001 and August 2001 respectively, for both projects. The company repaid only Rs 0.65 lakh towards the first project in December 2001 and Rs 0.50 lakh towards the second project in July 2002. No further payment was made by the company to TIFAC as of September 2003.

The company requested TIFAC in March 2003 to waive the interest and stated that the principal would be returned in instalments of Rs one lakh per month. TIFAC was yet to take a decision in the matter, as of November 2003.

TIFAC stated in December 2003 that the company was facing financial problems due to general recession in the industry. It also stated that at the time of approval of the project, TIFAC did not yet have the system of hypothecation/bank guarantee and getting assets insured. The reply of TIFAC was not tenable because hypothecation and insurance of assets was required in terms of the agreement.

3.11 Review of TIFAC

No exercise to review the work and progress of the Council had been done so far

In terms of the TIFAC Bye-laws, the Central Government was to appoint, from time to time, a Committee to review the work and progress of TIFAC and to report in such manner as the Central Government might stipulate. However, no such review of TIFAC's work had been conducted since its establishment in 1988.

ANNEXE 1

HOME GROWN TECHNOLOGY PROGRAMME

(Rupees in lakh)

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
PROJECTS UNDER WHICH OBJECTIVES NOT ACHIEVED/PARTIALLY ACHIEVED								
1. Development of technology and its transfer for eventual commercial manufacture of "Membrane-Cell Process for Chlor-Alkali Production"	Central Electro-Chemical Research Institute, Karaikudi	March 1995 12+22 months	42.11 35.50	35.50	35.50	35.50	NIL	▪ No repayment was received, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ List of assets awaited
2. Development of technology upto production and field testing of Prototypes for stationary phase monolithic De No_x catalyst(s) and SO_2 Oxidation for environmental pollution control	M/s Associated Cement Companies Ltd, Mumbai	March 1995 21 months	208.00 109.00	109.00	109.00	109.00	NIL	▪ Total amount due because of non-commencement of Phase II of the project, ▪ No Hypothecation Deed/bank guarantee obtained, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring
3. Development of technology and its transfer for eventual commercial manufacture of Coir-CNSL	Central Building Research Institute, Roorkee	March 1996 24 months	27.60 12.60	6.30	6.30	6.30	NIL	▪ No repayment was received, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
4. Manufacture of Red mud/Fly Ash Ploymer R. Wood Door Shutters	M/s Dual Build Tech. (P) Ltd., Chennai	July 1997 24 months	30.00 15.00	15.00	22.50	5.00	0.25	▪ Additional contribution of Rs 7.50 lakh to TIFAC waived. ▪ Total amount due because of default in repayment ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
5. Manufacture of unsaturated polyester resin	M/s Vetrofiber Reinforced Plastics Private Ltd., New Delhi	March 1999 12 months	40.00 20.00	20.00	30.00	19.80	NIL	▪ Total amount due because of default in repayment ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
6. Development of four products in the field of power electronic for electrical engineering applications	M/s RMS Automation Systems Pvt. Ltd., Nasik, Maharashtra	June 1999 12 months	85.00 40.00	15.00	22.50	12.37	NIL	▪ Total amount due because of default in repayment ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
OBJECTIVES NOT ACHIEVED DUE TO FORE/ SHORT CLOSURE OF PROJECTS								
7. Development of technology and its transfer for eventual commercial manufacture of Vitamin A	Indian Institute of Chemical Technology , Hyderabad	March 1993 21 months	200.00 10.00	10.00	Amount received back in August 2003 after 10 years after date of sanction			▪ Project short-closed
8. Extraction of serum from slaughter house waste	M/s BIAF Development Research Foundation, Pune (**Public Trust**)	March 1996 36 months	59.40 59.40	35.00	Amount of Rs 35.00 lakh received back in July 1996			▪ Project short-closed
9. Development of indigenous capability and commercialization of coronary brachy therapy catheters	M/s Care Polymed Ltd., Hyderabad	March 1998 18+12 months	265.00 75.00	60.00	90.00	15.00	15.00	▪ Additional contribution of Rs 30.00 lakh waived, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Project completion report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
10. Development of sterically stabilized liposomal doxorubicin for therapeutic use	Bharat Serums and Vaccines Ltd., Mumbai and SIRO Research Foundation, Mumbai	July 2000 36 months	200.00 100.00	50.00	75.00	50.00	50.00	▪ Due to patent infringement, the project was fore closed and TIFAC agreed to accept the principal amount of TDA and waived the additional contribution of Rs 25.00 lakh due to TIFAC
11. Pilot plant for producing improved evaporative cooling based air-ambiators	M/s Dhaliwal Tech. Systems, Hyderabad	Jan 2001 12 months	123.00 50.00	16.00	24.00	18.05	NIL	▪ Project short-closed, TDA of Rs 16.00 lakh alongwith interest @ 10 *per cent* upto June 2002 was asked to be refunded. No refund was received. ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Project completion report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
PROJECTS UNDER WHICH DEVELOPED TECHNOLOGIES WERE NOT COMMERCIALIZED OR PARTIALLY COMEMRCIALIZED								
12. Development of technology and its transfer for eventual commercial manufacture of Grey Iron from Cokeless Cupola	National Metallurgical Laboratory, Jamshedpur	May 1996 36 months	52.00 45.00	45.00	45.00	45.00	3.50	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology
13. Development of technology for the manufacture of esfenvalerate (Tech.)	Indian Institute of Chemical Technology, Hyderabad and M/s Sudershan Chemical Industry Ltd., Pune	March 1998 12 months	50.00 25.00	25.00	25.00	25.00	5.00	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Annual/Final UC and list of assets awaited, ▪ Project completion report not received
14. Commercial plant for manufacture of Bio-adhesive Iso-Amyul 2-Cyano Acrylate	M/s Concord Drugs Ltd., Hyderabad	July 1996 24 months	182.00 66.00	66.00	99.00	44.00	1.00	▪ Total amount due because of default in repayment, same is yet to be recovered, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ No Progress Report received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
15. Development of laboratory scale know-how to pilot plant towards commercial exploitation of the process for the manufacture of Acephate (Tech)	Indian Institute of Chemical Technology, Hyderabad	March 1998 12 months	50.00 25.00	25.00	25.00	25.00	NIL	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology. ▪ Required periodic progress report not received, ▪ Project completion report not received
16. Manufacture of 3, 4 Dichloraniline using solvent free seperation technology	M/s Clarisis Organics Ltd., Vadodara	August 1999 18 months	180.00 70.00	70.00	105.00	59.00	2.00	Total amount due because of default in repayment, same is yet to be recovered, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
17. Up-scaling technology for processing of coir pith blocks production	KaveriAgri – Care Pvt. Ltd., Bangalore	Jan 2000 15 months	154.66 68.21	68.21	93.85	26.80	NIL	▪ Default in repayment, ▪ Penal interest to be charged for delay/ default in repayment, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Project completion report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
18. Manufacturing process of ceramic crucibles used for carbon & sulfar analysis	M/s Advanced Ceramics Pvt. Ltd., Hyderabad and International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad	July 1999 7+24 months	40.00 20.00	20.00	30.00	3.00	NIL	▪ Default in repayment, ▪ Penal interest to be charged for delay/ default in repayment,, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
19. Trial plant for manufacturing Agricultural Sprayers	M/s Gujrat Grassroots Innovations Augmentation and Network, Ahmedabad	August 1999 12 months	10.85 2.20	2.20	3.30	1.30	NIL	▪ Default in repayment, ▪ Penal interest to be charged for delay/ default in repayment, ▪ Hypothecation Deed obtained instead of bank guarantee
20. Development of Jute Coir Geo-textiles	M/s Aspinwall Geo-tech Ltd., Cochin	March 1998 36 months	438.35 219.00	177.00	262.80	105.12	NIL	▪ Total amount due because of default in repayment, same is yet to be recovered,, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
21. Manufacture of activated carbon from Coconut shells using fludized bed technology	M/s Palakkad Chlorates and Allied Chemicals Ltd., Kerala and Indian Institute of Technology, Chennai	March 1998 12 months	36.50 18.25	10.00	15.00	7.80	NIL	▪ Total amount due because of default in repayment, same is yet to be recovered, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
22. Developing, designing and manufacturing specialized Industrial Microwave Drying and Heating Systems	M/s Hi-Tek Engineers, Mumbai	Nov 1999 18 + 6 months	40.00 20.00	20.00	30.00	2.00	NIL	▪ Default in repayment, ▪ Penal interest to be charged for delay/ default in repayment, ▪ Hypothecation Deed obtained instead of bank guarantee, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
23. Development of laboratory scale know-how to commercial exploitation of the Rapid Diagnostic Products process know-how	M/s BIAF Development Research Foundation, Pune	March 1994 36 months	91.85 89.65	79.82	79.82	79.82	50.27	▪ Possession of equipment worth Rs 69.27 lakh given while transferring technology against which only Rs 50.00 lakh was received as Licence Fee ▪ Hypothecation Deed not obtained, ▪ Assets not insured, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
24. Development of Bio-fertilizer technology for field applications	M/s BIAF Development Research Foundation, Pune	July 1994 36 months	44.50 42.10	39.76	39.76	39.76	NIL	▪ No repayment was received, ▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Hypothecation Deed not obtained, ▪ Assets not insured
25. Development of process know-how for the preparation of irreversible temperature sensitive paints and labels for pharmaceutical industry	Indian Institute of Chemical Technology, Hyderabad	Feb 1996 36 months	42.50 42.50	42.50	42.50	42.50	NIL	▪ No repayment was received, ▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology,
26. Development of technology and its transfer for eventual commercial manufacture of Rare Earth Magnets	Defence Metallurgical Research Lab., Hyderabad and Non-ferrous Technology Development Centre, Hyderabad	May 1993 36 months	109.00 83.08	83.08	58.91	58.91	NIL	▪ No repayment was received, ▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Out of TDA of Rs 83.08 lakh released, an amount of Rs 24.17 lakh received back in January 1997 due to reduction in project cost
27. Development of technology and its transfer for eventual commercial manufacture of cobalt from Industrial waste	Hindustan Zinc Limited, Udaipur	August 1993 36+35 months	97.50 40.00	40.00	40.00	40.00	0.77	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology,

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
28. Commercialization of 64-bit parallel processing super computer-Flosolver	National Aerospace Laboratories, Bangalore	August 1993 36 months	248.00 66.00	66.00	66.00	66.00	NIL	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Final UC and list of assets awaited
29. Upscaling of Laboratory Technology for Commercial Scale manufacture of the Jute Jumbo	M/s Stanpacks (India) Ltd., Chennai	May 1996 36 months	50.00 25.00	25.00	36.25	27.50	NIL	▪ Total amount due because of default in repayment, same is yet to be received, ▪ No Hypothecation Deed/bank guarantee obtained, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Project completion report not received
30. Upscaling the process for the manufacture of Carbon Monoxide based Chemicals	Indian Institute of Chemical Technology, Hyderabad	March 1993 36 months	200.00 75.00	75.00	75.00	75.00	20.00	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
31. Development of technology and its transfer for eventual commercial manufacture of Hydro Fluoro Carbon 134 A (HFC 134a)	Indian Institute of Chemical Technology, Hyderabad	March 1993 36 months	200.00 75.00	75.00	75.00	75.00	20.00	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Final UC and list of assets awaited
32. Development work in setting up of a modular 5 kg/ batch capacity HFC-134 A high pressure semi-commercial pilot plant and optimization of operating parameters at pilot plant level towards commercial exploitation	Indian Institute of Chemical Technology, Hyderabad	Feb 1996 36 months	495.00 100.00	100.00	100.00	100.00	NIL	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
33. For upscaling and commercialization of technologies on CF lamination of particle boards	M/s Prerna Boards Pvt. Ltd., Hyderabad	June 1996 36 months	126.35 54.00	54.00	81.00	60.00	NIL	▪ Total amount due because of default in repayment, same is yet to be received, ▪ No Hypothecation Deed/bank guarantee obtained, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
34. Development of laboratory scale know how to commercial exploitation of the technology for production of gallic acid from tannic acid by fermentation & its conversions	Shri Venkateshwara Pan Masala Industries Pvt. Ltd., Kolhapur and Hi-Tech Bio Laboratories, Pune	July 1999 18 months	24.00 12.00	12.00	18.00	8.00	6.00	▪ Assets not insured, ▪ Deficient monitoring, ▪ Required periodic progress report not received, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
35. Commercialization of pelletization technology for biomass and other combustible waste	M/s Hi-Tech Agro Projects Pvt. Ltd, New Delhi and M/s Ess Aar Energies, Punjab	March 1999 24 + 9 months	24.48 12.74	12.74	19.00	1.90	1.50	▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
36. Development of Wet type Synthetic Friction Material for 2/3 wheelers clutch applications	M/s Thirumani Auto Ancillaries Ltd., Hyderabad	Dec 1999 12 months	132.02 47.72	24.00	36.00	12.00	NIL	▪ Default in repayment, ▪ Penal interest to be charged for delay/ default in repayment, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ No Progress Report received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
37. Setting up the demonstration units for plasma pyrolysis for Bio-medical waste	Facilitation Centre for Industrial Plasma Technologies, Gandhi Nagar	Nov 1998 24 months	38.00 18.00	18.00	18.00	18.00 *plus royalty on sale of product*	NIL	▪ In October 1999 developed technology was transferred to other Company at a lump-sum cost of Rs 20.00 lakh *plus* royalty but TIFAC failed to recover 50 *per cent* of licence fee. ▪ Hypothecation Deed not registered, ▪ No Progress Report received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
38. Manufacturing briquetted coal (Bio-coal) from agricultural waste	M/s Aditya Agro Industries, Ahmed Nagar	April 1999 12 + 9 months	25.00 10.00	10.00	15.00	8.00	NIL	▪ Total amount due because of default in repayment, same is yet to be recovered ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ No Progress Report received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
❧ COMMERCIALIZATION OF TECHNOLOGY STARTED BUT REFUND OF TDA WAS NOT BEING RECEIVED								
39. Development of laboratory scale know-how to scaling up to pilot scale of synthetic thickener to complete substitution of kerosene in pigment printing of textiles	M/s Ahmedabad Textile Industry's Research Association, Ahmedabad	Feb 1994 36 months	37.00 27.75	15.00	30.00	30.00	3.00	▪ Repayment was linked with sharing of licence fee and royalty received against transfer of technology, ▪ Hypothecation Deed not obtained, ▪ Assets not insured, ▪ Project completion report not received, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
40. Establishing a Detonation Spray Coating job shop for coating various components, tools, vessels, valves etc. used in the chemical, textile, automotive and aerospace industry for improving the wear and corrosion resistance	M/s Sai Surface Coating Technologies and The International Advanced Research Centre for Powder Metallurgy & New Materials, Hyedrabad	Sept 2000 6 months	52.00 25.00	25.00	32.50	16.25	9.75	▪ Amount due in March and September not received ▪ Assets not insured
41. Pilot plant for production of Silicon – Iron castings	M/s Mukherjee Industries, Kolkata	June 1997 24 months	25.00 7.00	7.00	10.15	10.15	NIL	▪ Total amount due because of default in repayment, same is yet to be recovered ▪ No Hypothecation Deed/bank guarantee obtained, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Project completion report not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
42. Development of laboratory scale know-how to commercial exploitation of the Eco-friendly Natural Dyes Product	M/s Alps Industries Ltd., Ghaziabad and Indian Institute of Technology, New Delhi	July 1998 30 months	425.00 200.00	200.00	300.00	100.00	60.00	▪ The Company failed to repay the instalments on due dates and thus, the balance amount of Rs 2.40 crore immediately became due, ▪ Assets not insured
43. Chlorpyriphose (Insecticide) – Upgradation and modernization of manufacturing methods in India	M/s Bhagiradha Chemicals & Industries Ltd., Hyderabad	July 1998 6 months	496.00 100.00	100.00	150.00	84.00	69.00	▪ Assets not insured, ▪ Final UC and list of assets awaited ▪ EC, TIFAC revised the repayment schedule, to start from February 2001 instead of July 1999
44. Establishing a Detonation Spray Coating facility	M/s Shafel Technologies, Hyderabad and The International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad	March 2000 12+11 months	82.00 33.00	33.00	43.00	15.00	10.00	▪ Assets not insured, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited, ▪ The project was declared successfully completed in February 2002 i.e. after a delay of 11 months, ▪ , EC-TIFAC approved revision in repayment schedule without charging additional contribution of Rs 7.00 lakh
45. Development of technology and its transfer for eventual commercial manufacture of recycled Ti scrap & product	Mishra Dhatu Nigam Limited, Hyderabad	March 1996 36+24 months	130.00 78.00	65.00	94.00	43.00	23.00	▪ Project completion report received after delay of 15 months ▪ TIFAC revised the repayment schedule, to start from March 2002 instead of March 2000

ANNEXE 2

ADVANCED COMPOSITES MISSION

(Rupees in lakh)

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
PROJECTS UNDER WHICH OBJECTIVES NOT ACHIEVED INCLUDING PROJECT FORE/SHORT CLOSED								
1. Jute glass hybrid composite components for coaches under advance composites mission	M/s Fabtech Industries, Kolkata and Central Glass & Ceramic Research Institute, Kolkata	May 1999 18+17 months	89.27 40.25	33.20	39.84	19.92	NIL	▪ Default in repayment, ▪ Legal notice served and Arbitrator appointed in December 2002 but the case was still pending, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Project completion report not received
2. Development of Aluminum metal matrix composite for automobile and engineering applications	M/s Rashmi Die Casting Ltd., Secundrabad and Regional Research Laboratory, Bhopal	August 1997 30 months	399.00 189.00	151.20	180.44	108.27	NIL	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Annual UC and list of assets awaited
3. Development of composite Compressed Natural Gas cylinders	M/s Strategic Engg. Pvt. Ltd., Chennai and Madras Institute of Technology, Chennai	Dec 1999 24+20 months	578.00 280.00	280.00	336.00	50.40	4.00	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Annual UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
4. Development of total technology package of Vacuum Forming Press to manufacture Honeycombed composites	M/s Tecnico Engineering Pvt. Limited, Banaglore and Aircraft Division of Hindustal Aeronautics Limited, Bangalore	May 1998 18 months	80.00 40.00	30.00	30.00	18.00	NIL	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Annual UC and list of assets awaited
5. Development of carbon based friction material for Aircraft, Railways and Automobiles	Defence Research & Development Laboratory, Hyderabad and M/s Graphide India Ltd. (GIL), Bangaloare	March 1995 36+59 months	275.00 175.00	78.75	Royalty @ 7.5 % for first five years and @ 3.5 % for next five years.	-	NIL	▪ The Company was yet to start production and commercialization of the product, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ UC for 2002-03 and list of assets awaited
6. Development of composite armoured optical fibre cable	M/s Indore Composite Pvt. Ltd, Indore	January 2000 24+11 months	390.00 180.00	50.00	60.00	10.00	NIL	▪ TIFAC waived additional contribution of Rs 10.00 lakh and agreed to accept only principal TDA in 13 instalments by revising the repayment schedule, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ List of assets awaited
PROJECTS UNDER WHICH DEVELOPED TECHNOLOGY/ PRODUCT NOT COMMERCIALIZED								
7. Establishment of a Composites Design Centers (CDC) at the campus of RV College of Engineering, Bangalore	Rashtreeya Sikshana Samithi Trust, Banglore, National Aero Space Laboratory, Bangalore and Technology Application Group, Bangalore	January 1997 42+4 months	473.00 237.00	237.00	50 *per cent* of surplus revenue generated for 10 years	-	NIL	▪ No amount was received as no surplus revenue was generated, ▪ UC for 2000-01 and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
8. Development and standardization of evaluation techniques for composites and generation of users database	Defence Research & Development Laboratory, Hyderabad and M/s Vivace Sonics Pvt. Ltd., Hyderabad	March 1995 42+42 months	122.20 82.20	56.00	Royalty @ 7.5 % for first five years and @ 3.5 % for next five years.	5.64 (un-spent TDA)	NIL	▪ The Company was yet to commercialise the product since March 2001, ▪ Required periodic progress report not received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
9. Development and commercialization of thermoset prepreg	Aeronautical Development Agency, Bangalore and National Aerospace Laboratories (NAL), Bangalore	August 1995 24+15 months	79.07 + 25.00 49.66 + 15.00	49.66 + 15.00	43.38	-	NIL	▪ As per agreement, Indian Petrochemicals Corporation Limited, Vadodara was to pay Rs 43.38 lakh to TIFAC. Due to policy decision by Government of India the facility was transferred from IPCL to NAL and no repayment is expected, ▪ Project completion report not received, ▪ Annual UC and list of assets awaited
10. Design and development of composite artificial limbs for physically handicapped and other irregularities	M/s Mohana Orthotics and Prosthetics Centre, Chennai	June 1999 18+3 months	67.50 32.00	32.00	38.40	15.36	2.00	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Consolidated UC and list of assets awaited
PROJECTS UNDER COMMERCILIZATION OF DEVELOPED TECHNOLOGY STARTED BUT REPAYMENT NOT BEING RECEIVED								
11. Development of total technology package of Energy Efficient FRP Axial Flow Fans for ultimate commercialization	M/S Parag Fans & Cooling Systems Ltd, Dewas and Indian Institute of Technology, Mumbai	August 1998 16 months	225.01 105.60	105.60	126.72	76.03	4.50	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Assets not insured, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
12. Development of total technology package of Jute based Composites for ultimate commercialization	M/s Duroflex Ltd., Bangalore	May 1998 24 months	301.31 150.70	150.70	180.73	144.59	3.00	▪ Default in repayment, ▪ No penalty clause kept in agreement for default in repayment of instalment on due date, ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Project completion report not received, ▪ Final UC and list of assets awaited

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
13. Development of pultruded FRP profiles	M/s SUCRO Filters Pvt. Ltd., Pune and National Chemical Laboratory, Pune	Aug 1998 12+5 months	100.00 47.40	47.40	56.88	34.13	47.40	▪ TIFAC yet to take final decision on the request of the Company to dispose of the Plant and Machinery and to waive of the balance repayment of Rs 9.48 lakh. ▪ Hypothecation Deed not registered, ▪ Assets not insured, ▪ Required periodic progress report not received, ▪ List of assets not received, ▪ Project completion report not received
Total			**3204.36** **1623.81**	**1316.51**				

ANNEXE 3

FLY ASH MISSION

(Rupees in lakh)

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration)	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
DELAY IN COMPLETION OF PROJECT								
1. Use of Roller Compacted Concrete technology using high doses of Fly Ash for construction of Upper Dam & Saddle Dam of Ghatghar pumped storage scheme – near Nasik of Maharashtra Irrigation Department	▪ Irrigation Department, Government of Maharashtra ▪ Central Soil Materials & Research Station, New Delhi ▪ Indian Institute of Technology, Delhi	March 1995 18+84 months	78.05 59.05	43.41	No repayment due			▪ Project yet to take off.
PROJECTS UNDER WHICH OBJECTIVES NOT ACHIEVED INCLUDING PROJECT FORE/SHORT CLOSED								
2. Fly Ash brick making machine	M/s Cybertech Engineering, Faridabad	May 1997 24 months	18.98 13.38	3.00	3.45	3.45	1.70	▪ Project foreclosed and balance amount yet to be received, ▪ Hypothecation deed not obtained, ▪ Assets not insured, ▪ Required periodic progress reports not received, ▪ Deficient monitoring, ▪ Final UC and list of assets awaited
3. Setting up of pilot plant for bulk production of Fly Ash bricks	M/s A.P. Enterprises, New Delhi	November 1998 24 months	41.10 5.00	2.50	3.00	1.80	NIL	▪ Default in repayment ▪ Hypothecation deed not obtained, ▪ Assets not insured, Required periodic progress reports not received, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
4. Use of Fly Ash in the construction of 1 Km. road at Panipat with PWD, Haryana	Central Road Research Institute, New Delhi	August 1996 36 months	31.49 21.30	17.00	No repayment due			▪ Project completion report received after more than 42 months, ▪ Unspent balance of Rs 16.00 lakh received back in November 2000 after a lapse of 51 months

Name of the Project	Implementing Agency	Date of Agreement/ MoU Project duration)	Project Cost TIFAC assistance	Amount released	Total Repay-ment due to TIFAC	Repayment as on 31 October 2003		Findings
						Due	Received	
PROJECTS UNDER WHICH DEVELOPED TECHNOLOGY/ PRODUCT NOT COMMERCIALISED/ DEMONSTRATED								
5. Setting up of Fly Ash brick making plant	M/s Agni Bricks Pvt. Ltd, Mumbai	December 1999 24 months	33.00 10.00	10.00	12.00	4.80	NIL	▪ The company defaulted to repay instalments on due date and so total amount immediately due, ▪ Hypothecation deed not obtained, ▪ Assets not insured, ▪ Deficient monitoring, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
PROJECT UNDER WHICH COMMERCILIZATION STARTED BUT REPAYMENT NOT BEING RECEIVED								
6. Setting up of pilot plant for manufacture of building components using Fly Ash towards commercial exploitation	M/s Dual Fabs, Chennai	February 1998 12 months	96.62 48.31	48.31	72.47	56.00	0.65	▪ The company defaulted to repay instalments on due date and so total amount immediately due, ▪ Hypothecation deed not registered (Sl.No.6) and even obtain (Sl.No.7), ▪ Assets not insured, ▪ Ex-post facto approval was granted for extension upto July 2000, ▪ Project completion report not received, ▪ Final UC and list of assets awaited
7. Setting up of pilot plant for manufacture of Fly Ash light weight concrete towards commercial exploitation		October 1997 12 months	68.90 34.45	34.45	54.68	45.00	0.50	
PROJECT UNDER WHICH OBJECTIVES ACHIEVED BUT OTHER IRREGULARITIES								
8. Potential use of Fly Ash for enhancing crop production	Punjab Agriculture University, Ludhiana	March 1996 36+31 months	44.47 19.25	17.75	No repayment clause	NIL	NIL	▪ Project completion report not received, ▪ Final UC and list of assets awaited
9. Characterization of Fly Ash	Indian Institute of Science, Bangalore	March 1995 36+51 months	112.30 69.80	49.12	No repayment clause	NIL	NIL	▪ Final UC and list of assets awaited
10. Use of Fly Ash in the construction of 1 Km. road at Raichur with PWD, Karnataka	Central Road Research Institute, New Delhi	March 1995 48 months	58.71 38.71	24.19	No repayment clause	NIL	NIL	▪ Unspent balance of Rs 1.83 lakh yet to be recovered back
Total			**583.62 319.25**	**249.73**				

CHAPTER 4 : DEPARTMENT OF INFORMATION TECHNOLOGY

4.1 Failure to safeguard financial interests of Government resulting in non-recovery of Rs 1.80 crore

The Department of Information Technology released Rs two crore to a private company in March 1998 and March 1999 as refundable grants in aid against a corporate guarantee and personal guarantee of the Chairman and Managing Director of the firm. Though the company had been in default in repayment of Rs 1.80 crore since September 2000, DIT failed to take timely measures to protect its interests by invoking the guarantees.

The Department of Information Technology (DIT) approved a project titled 'Development of Multi-layered CVD passivated planar field ring technology for small signal and power transistor' in March 1998 in favour of M/s. Usha (India) Limited, a private firm. The project was to be completed in two years. The project aimed to upgrade the existing technology for production of semi-conductor devices to achieve higher yield and develop products with better specifications. Out of the total cost of Rs 4.28 crore, DIT's contribution was Rs two crore to be released to the company as refundable grants-in-aid. An agreement was entered into with the company in March 1998. In terms of the agreement, the entire amount was to be repaid in 10 equal six monthly instalments starting after 24 months from the date of approval of the project. In case of default in the payment of instalments the company was to pay a penalty at the rate of six *per cent* per annum on the amount in default.

DIT released the first instalment of Rs 1.61 crore in March 1998 against a corporate guarantee and personal guarantee furnished by the Chairman and Managing Director of the firm. The second instalment was payable after recommendation of the Project Review and Steering Group (PRSG). However, in February 1999, a team from DIT visited the company to

review the project and rated the progress satisfactory. The balance amount of Rs 39.00 lakh was released in March 1999. A formal PRSG was constituted only in June 2000 i.e. three months after the scheduled date of completion of the project. The company paid the first instalment of Rs 20.00 lakh in June 2000 along with penal interest of Rs 0.34 lakh. Thereafter the company did not pay the instalments due in September 2000 and March 2001. In a review meeting held in August 2001, the PRSG observed that many equipments procured under the project were either partially installed or not installed at all, due to lack of funds and know-how. The PRSG also opined that the loan conditions were lenient and that the company should commence repayment immediately. The firm, however, neither paid the instalments due nor submitted the progress reports on the project.

Though the company did not pay the instalments as scheduled, DIT did not invoke the guarantees provided by the company and its Chairman and Managing Director. Instead, it sought the advice of the Ministry of Law and Justice in March 2002, which advised (October 2002) the initiation of arbitration proceedings. However, arbitration proceedings had not commenced even as of October 2003. It may also be mentioned that the company had not disputed the claim made by DIT.

DIT stated in October 2003 that it had served a legal notice on the company in September 2003 for repayment of the dues owed by the company to the Department. It also subsequently stated that arbitration proceedings were likely to commence in November 2003.

Though the company had been in default since September 2000, DIT did not take timely measures to protect its interests. It failed to invoke the guarantees furnished by the company and the Chairman and Managing Director. Resultantly, funds amounting to Rs 1.80 crore, have remained un-recovered from the company as of November 2003.

4.2 Non-recovery of Rs 20.00 lakh

The Department of Information Technology released Rs 30.00 lakh to a company in March 1998 as refundable grants-in-aid. The company refunded Rs 10.00 lakh in June 2000 and furnished two post-dated cheques for Rs 10.00 lakh each. One cheque which was deposited in the bank bounced due to insufficient funds. DIT did not take immediate legal action against the company resulting in non-recovery of Rs 20.00 lakh.

The Department of Information Technology (DIT) approved a project entitled "Development of Celestial Warriors" – a 3D Video Game in March 1998 proposed by M/s. Padmini Multimedia Limited, a public limited company, for a duration of 12 months at a total cost of Rs 1.45 crore. DIT's contribution was Rs 58.00 lakh as refundable grants-in-aid. The project aimed to develop the first completely indigenous 3D computer game with Indian content and characters. According to the agreement, the amount was to be repaid in 10 equal six monthly instalments starting from September 2000. In case of default, the company was to pay penalty at the rate of six *per cent* per annum on the amount in default. The agreement also provided for the payment of royalty to DIT equivalent to six *per cent* of the outstanding refundable grants-in-aid at the end of each year commencing from April 2000. In terms of the agreement, the refundable grants-in-aid was to be secured by a corporate guarantee by the company. However, the company executed the deed of guarantee on its letterhead which was not a legally enforceable document. DIT, however, accepted this document and released the first instalment of Rs 30.00 lakh in March 1998.

The Project Review and Steering Group (PRSG) which reviewed the progress of the project from August 1998 to May 1999 observed that the project was behind schedule due to inadequate hardware and software. In May 1999, PRSG recommended termination of the project as no progress had been made. DIT terminated the project in June 1999 and requested the company to refund the amount of Rs 30.00 lakh. This was followed by a reminder in April 2000. The company refunded Rs 10.00 lakh in June 2000. After protracted correspondence, the company furnished two post dated cheques for Rs 10.00 lakh each in June 2001. One cheque which was deposited in the bank bounced due to insufficient funds. DIT, returned both the cheques to the company in July 2001 with the request to remit the amount by banker's cheque. The

company has not so far refunded the amount (November 2003). DIT could have taken immediate legal action when the cheques issued by the company were dishonoured since it constituted a criminal offence under the Negotiable Instruments Act. While DIT contemplated this action, it was finally opined in July 2003 that due to delay in filing the case, the possibility of successful prosecution appeared remote. DIT did not also file a civil suit for the recovery of the amount.

DIT stated in November 2003 that it had sought advice from the legal cell in July 2003 and on receipt of the legal advice action would be taken against the company for recovery of outstanding dues.

Thus, DIT failed to take timely and effective action to safeguard its financial interests which has resulted in non-recovery of Rs 20.00 lakh and penal interest of Rs 4.50 lakh calculated at the rate of six *per cent* per annum up to 31 March 2003.

4.3 Short claim of Rs 38.67 lakh

The Department of Information Technology released loans of Rs 1.06 crore to a company during 1987 to 1990. While submitting the claim to the official liquidator after winding up of the company, the Department failed to include an outstanding loan of Rs 38.67 lakh sanctioned to the company in 1998.

The Department of Electronics (now the Department of Information Technology (DIT)) released financial assistance of Rs 1.46 crore including loans of Rs 1.06 crore to Marine and Communication Electronics Ltd. (MACE), Visakhapatnam, an Andhra Pradesh Government Undertaking during the years 1987 to 1990 for undertaking four Research and Development projects as detailed below :

(Rupees in lakh)

Year	Project	Project cost/Loan amount	Moratorium period	Loan repaid	Balance outstanding
February 1987	Development of VHF emergency position indicating radio beacons and VHF Transreceivers	17.98 8.99	2 years	3.60	5.39
May 1988	Search and Rescue radar transponder	27.75 13.88	2 years	6.93	6.95
November 1988	Design and development of low power radar for fishing trawlers	58.00 58.00	2 years	19.33	38.67
January 1990	Revitalize and augment the production facilities	42.36 25.00	4½ years	0.00	25.00
		146.09 **105.87**		**29.86**	**76.01**

MACE repaid only Rs 29.86 lakh towards these loans between January 1990 and December 1991. Thereafter, MACE did not make any repayment in terms of the loan agreements. Financial problems and unsatisfactory performance of the company were cited as reasons for non-repayment of loan. Subsequently, technical and management problems led to the winding up of MACE in April 1996. An official liquidator was appointed for the company in February 2000.

DIT, in June 2002, submitted a claim of Rs 54.69 lakh including interest to the official liquidator. It was noticed in audit that while submitting the claim, DIT failed to include the outstanding loan of Rs 38.67 lakh out of Rs 58.00 lakh sanctioned in November 1998 to MACE. In reply to an audit query, DIT stated in September 2003 that it was advanced by another division of DIT for which the records were not traceable. The reply indicates the absence of effective system of monitoring and control over the loans advanced by DIT, which adversely affects the financial interest of Government. This has resulted in a short claim of Rs 38.67 lakh. DIT has yet to take action to approach the official liquidator to include the amount in the dues recoverable from MACE (October 2003).

CHAPTER 5 : INDIAN COUNCIL OF AGRICULTURAL RESEARCH

5.1 Unfruitful expenditure due to project termination

The Indian Agricultural Research Institute allowed the Project Investigator (PI) of a project to proceed on leave abroad for 180 days, though two out of three Co-PIs were due to superannuate. The PI did not rejoin her duties after the expiry of leave and the project had to be terminated rendering the expenditure of Rs 44.69 lakh largely unfruitful.

The Research Programme Committee of the National Agricultural Technology Project (NATP)[a] sanctioned a programme 'Generation of Salt Tolerant Transgenic Brassica juncea through introduction of genes for a novel pathway coding for biosynthesis of 2-Methyl 4-Carboxy Tetrahydropyrimidine (Ectoine) – an osmoregulator' in March 2000. The terms and conditions governing the grants under NATP stipulated inter-alia that the project grant would be refunded by the grantee institution if the scheme was discontinued midway or the detailed technical programme laid down and approved by the Indian Council of Agricultural Research (ICAR) was not adhered to. The project was to be implemented by the division of Biochemistry of the Indian Agricultural Research Institute (IARI) and to be completed by March 2003 at a total cost of Rs 49.66 lakh. One Project Investigator (PI) and three Co-PIs were associated with the project. The Project Implementation Unit (PIU) of NATP released Rs 44.59 lakh from May 2000 to December 2002 for recurring expenditure and procurement of equipment.

The PI of the project submitted the first annual progress report on the project to NATP in September 2001. After working on the project for about 25 months, the PI of the project proceeded on leave abroad for 180 days from 14 May 2002. IARI sanctioned the leave and allowed the PI to leave the country on an undertaking submitted by her that she would not extend the leave further. However, the PI did not rejoin her duties after the expiry of leave and sought extension of leave for a further period of six months. Though the

[a] NATP is a World Bank aided project implemented by Indian Council of Agricultural Research

extension of leave was not granted by IARI, the PI did not resume duty. After the retirement of two Co-PIs, the third Co-PI also refused to continue with the project in December 2002.

The PIU terminated the project in February 2003 as the PI had been away for long and no progress report had been submitted. By that time, an amount of Rs 44.69 lakh had been spent on the project including Rs 28.05 lakh on procurement of equipment.

While accepting the facts, ICAR stated in September 2003 that in the absence of the PI, the project did not have qualified scientific manpower to work further on it. It also stated that the equipment procured were being utilized for other projects. However, log books for only three out of the nine equipment procured were produced to audit. Even these three log books indicated utilisation of equipment only from July 2003 onwards. The grant is liable to be refunded by IARI since the project was terminated midway.

The overall management of the project was flawed since two out of three Co-PIs were due to superannuate, yet IARI allowed the PI to proceed on leave abroad. This was bound to adversely affect the project. Since the PI did not rejoin duty, the project had to be terminated rendering the expenditure of Rs 44.69 lakh largely unfruitful.

CHAPTER 6 : INDIAN COUNCIL OF MEDICAL RESEARCH

6.1 Wasteful expenditure due to improper planning of construction of MRC Complex

The Malaria Research Centre acquired a plot of land in September 1990 at a cost of Rs 1.27 crore for the construction of an office complex. The complex could not be constructed even after more than 12 years and MRC had to spend Rs 61.57 lakh on account of composition fee and Rs 41.43 lakh on rent of the plot.

The Malaria Research Centre (MRC), a unit of the Indian Council of Medical Research (ICMR), was functioning in four different campuses in Delhi. Due to inadequate space, many important and highly relevant areas of research were deferred. To overcome these constraints, MRC acquired a plot of land measuring seven acres from the Delhi Development Authority (DDA) in Papankalan at a cost of Rs 1.27 crore in September 1990. The perpetual lease deed signed in October 1991 provided that the institutional building on the land would be completed by September 1992 and an annual rent of Rs 3.19 lakh would be paid by MRC to DDA.

To prevent encroachment, the work of construction of boundary wall was entrusted to the Central Public Works Department (CPWD) and Rs 8.45 lakh was deposited with CPWD in February 1991. The work, to be completed within two months, was actually completed in October 1993 after a delay of more than two years. While the work on the boundary wall was in progress, MRC sought (November 1990) structural drawings and preliminary estimates from CPWD for construction of MRC office-cum-residential complex since the work had been awarded to them in 1990. As CPWD did not provide the preliminary drawings and estimate of the project for about four years, the work was withdrawn from CPWD in September 1994.

Since ICMR was not in a position to provide funds for the project, MRC explored various other possibilities for the necessary resources. In 1997, the World Bank agreed to lend financial support under "Enhanced Malaria

Control Project" for the construction of only the laboratory block. The estimated cost of construction of the laboratory block was Rs 12.00 crore including professional fee. For execution of the remaining parts of the complex including auditorium, residences, hostel etc., MRC invited quotations (January 1999) from four public sector companies engaged in construction work. The quotation of M/s Hospital Services Consultancy Corporation (HSCC) at an estimated cost of Rs 14.32 crore was approved by the executive committee of ICMR in February 1999. Rs 2.50 crore was placed at the disposal of HSCC in March 1999 without any agreement.

The site plans for the laboratory block prepared by the consultants appointed by the World Bank in December 2000, were approved by various agencies including the Urban Arts Commission (April 2002) and the Airports Authority of India. After obtaining all the necessary clearances, MRC requested DDA in July 2002 to grant extension of time for completion of the construction. DDA demanded Rs 69.85 lakh in July 2002 as composition fee for condoning the delay and allowing extension of time upto September 2004 for completion of the building. DDA also clarified that the failure of MRC to complete the construction by the due date would entail the cancellation of lease of the plot. DDA revised the composition fee to Rs 61.57 lakh in March 2003 payable within one month for extension of time upto September 2004. MRC deposited Rs 42.07 lakh with DDA in March 2003.

Meanwhile, the World Bank withdrew from the Enhanced Malaria Control Project and consequently, financial support for the construction of the research laboratory could not be provided. Out of Rs 2.50 crore placed at its disposal, HSCC had incurred an expenditure of Rs 39.54 lakh on consultancy and an amount of Rs 2.10 crore was lying with them as of June 2003.

The ICMR stated in September 2003 that the Building Committee of the Centre had reprioritised the work activities by placing the construction of Research Block as the first priority with total ICMR funding. The Building Committee had also recommended that completion of at least 25 *per cent* of the Research Block be ensured by September 2004. The Council also stated that on the recommendation of Building Committee, the balance composition fee of Rs 19.50 lakh had been deposited (September 2003) for obtaining clearance from DDA. The Council further stated that a provision of Rs 11.00

crore had been made in the Tenth Five Year Plan to start the construction of the Research Block. It is not clear from the Council's reply as to how the remaining construction work would be funded.

However, the fact remains that due to the failure of ICMR to arrange the required resources for construction, the MRC Complex could not be constructed even after more than twelve years of acquiring the land at a cost of Rs 1.27 crore. Besides, MRC had incurred an expenditure of Rs 61.57 lakh on account of composition fee for non-completion of building by the due date. MRC had also paid Rs 41.43 lakh on account of rent of the plot during the years 1990 to 2003 which had not actually been utilized for the purpose for which it was acquired.

6.2 Injudicious acquisition of funds for procurement of Liquid Nitrogen Plant

The Indian Council of Medical Research released Rs 65.00 lakh to Malaria Research Centre between September 1997 and January 1998 for establishment of a Liquid Nitrogen Plant. The plant had not been procured as of 31 October 2003 resulting in the blockage of funds.

The Department of Biotechnology (DBT) sanctioned a project for establishment of a Liquid Nitrogen Plant for cryopreservation of biological material at the Malaria Research Centre (MRC) in March 1997. The cost of Rs 65.00 lakh was to be shared by DBT (Rs 55.00 lakh) and the Indian Council of Medical Research (ICMR) (Rs 10.00 lakh). The DBT share was to be drawn by ICMR and released to MRC for the purpose. DBT released Rs 55.00 lakh between March 1997 and November 1997 to ICMR which subsequently released this amount along with its own share of Rs 10.00 lakh to MRC between September 1997 and January 1998.

MRC constituted a team in January 1998 to visit the institutions where Liquid Nitrogen Plants had been installed. The team recommended in February 1998 that the procurement of Liquid Nitrogen Plant was not cost-effective as the procurement of liquid nitrogen from the market would not involve expenditure

of more than Rupees five thousand per month whereas the expenditure on staff salaries and electricity charges after installation of the plant could be much beyond this. During discussions with the actual users of the plants, it had been emphasized that for a requirement of 300 litres per month, it would be more economical to procure liquid nitrogen from the market rather than buy a plant. Audit found (June 2003) that the consumption of liquid nitrogen in MRC varied between only 59 litres and 259 litres per month from 1997-98 to 2002-03 and had been procured at the rate of Rs 18.50 per litre.

In May 1999, the procurement of the Liquid Nitrogen Plant was postponed due to non-availability of suitable space for its installation in MRC. MRC thereafter kept funds amounting to Rs 65.00 lakh in short-term deposits. Rs 18.15 lakh was earned as interest on the short-term deposits from 1998 to December 2001, of which Rs 15.72 lakh was remitted to ICMR and Rs 2.43 lakh was retained by MRC. In January 2002, the technical committee of ICMR approved the procurement of the Liquid Nitrogen Plant which could produce 10-12 litres of liquid nitrogen per hour from a Netherlands-based company at a total cost of Rs 77.94 lakh. However, the plant had not been procured as of October 2003.

ICMR stated in May 2003 that it had since been decided to install the plant in the newly constructed premises of the Institute of Cytology and Preventive Oncology (another institution under ICMR) at Noida. It also stated that in addition to the requirements of MRC, the plant would also meet the requirements of other Institutes. ICMR further stated in September 2003 that an inbuilt facility of liquid nitrogen was mandatory for any research institution and was not based on the consumption pattern. However, it may be pointed out that the use of liquid nitrogen was not more than an average of 480 litres per month during 2002-03 in units of ICMR located in the National Capital Region.

While ICMR released funds amounting to Rs 65.00 lakh to MRC, the case for the procurement of the Liquid Nitrogen Plant was doubtful. Moreover, the plant is yet to be installed and this has resulted in the blockage of funds for more than five years.

CHAPTER 7 : DEPARTMENT OF SPACE

7.1 Avoidable payment of Customs Duty

Three units of Department of Space wrongly interpreted a notification, resulting in avoidable payment of Customs duty amounting to Rs 86.36 lakh on the import of integrated circuits.

In terms of the first Schedule of the Customs Tariff Act 1975, the import of electronic integrated circuits and micro assemblies was exempt from Customs duty. The Government of India, by a notification issued in July 1996, exempted certain goods falling within the said Schedule from the whole of duty, when imported by public-funded research institutions, universities etc. This was further amended by a notification issued in March 2002, according to which the exemption would be from so much of the portion of duty, which was specified in the Schedule, as was in excess of five *per cent* ad valorem. Thus, the duty payable on such goods was only five *per cent* ad valorem, even if a higher rate was prescribed in the Schedule. The notification of March 2002 did not impose any duty on goods for which no duty was prescribed in the Schedule.

Three units of the Department of Space (DOS) located in Bangalore and Ahmedabad and one unit in Thiruvananthapuram had been importing integrated circuits. It was noticed in audit (May 2003) that consequent upon the notification of March 2002, the units in Bangalore and Ahmedabad started paying Customs duty on integrated circuits at the rate of five *per cent* though no duty was prescribed in the Schedule. The amount of duty paid during 2002-03 by these three units on 37 consignments was Rs 86.36 lakh. The units at Bangalore and Ahmedabad were also paying duty on these items in 2003-04. The unit at Thiruvananthapuram had correctly interpreted the amendment and had not paid Customs duty on the import of integrated circuits.

Thus, wrong interpretation of the notification issued by the Customs authorities in March 2002 resulted in avoidable payment of Customs duty amounting to Rs 86.36 lakh on the import of integrated circuits.

DOS stated in November 2003 that it has asked the concerned units to prefer refund claims on the customs authorities in October 2003.

CHAPTER 8 : DEPARTMENT OF ATOMIC ENERGY

8.1 Non-establishment of a Pyrochemical Process Pilot Plant

A project conceived in March 1983 for development of pyrochemical process for reducing the cost of production of reactor grade zirconium sponge to 40 *per cent* and to minimize the environmental hazards was shortclosed without achieving its objective after 20 years of research and expenditure of Rs 1.86 crore.

The Nuclear Fuel Complex (NFC), Hyderabad, an industrial unit of the Department of Atomic Energy (DAE) is responsible for manufacture of zirconium alloy clad, natural and enriched uranium oxide fuel assemblies for all Pressurised Heavy Water Reactors and Boiling Water Reactors in the country and zirconium alloy structural components for these reactors. The technology used by NFC for production of reactor grade zirconium sponge yielded poor recovery, used many chemicals, consumed more energy and generated a large amount of effluents. Therefore, the NFC Board approved a project in March 1983 for indigenous development of a pyrochemical process by setting up a pilot plant for production of hafnium-free anhydrous zirconium tetrachloride. It was envisaged that the designs for a large-scale plant would be evolved based on the pilot plant studies. NFC felt that the new process had a major technological significance in terms of reducing the cost of production of reactor grade zirconium sponge to 40 *per cent* and in minimizing environmental hazards.

NFC and the Bhabha Atomic Research Centre (BARC), jointly carried out preliminary experiments during 1990-92 towards development of the pyrochemical process on laboratory/bench-scale for production of hafnium-free anhydrous zirconium tetrachloride at BARC. NFC planned to set up a pilot plant after completion of the laboratory/bench-scale experiments.

DAE sanctioned Rs 1.80 crore in June 1992 for setting up a pilot plant with a capacity of 75 tonne per annum (tpa) of hafnium-free anhydrous zirconium tetrachloride through a pyrochemical process for separation of hafnium-free

zirconium oxide at NFC. The pilot plant was scheduled to be completed and commissioned by December 1994. NFC, in coordination with BARC, carried out preliminary development work for establishing process feasibility during 1992-95 at BARC. Though the pilot plant was scheduled to be completed by December 1994, the bench-scale units for the crucial extractive distillation based separation process and chloride purification were brought to NFC only in 1995-96. The development work was started in 1996.

The project did not progress as envisaged. Due to delays in the project, NFC in September 2000 proposed to revise the cost of the pilot plant to Rs 3.38 crore. While attributing the delay to the time taken for development works, NFC assured DAE in December 2001 that considering the level of progress made in the technology development, the subject pilot plant could be demonstrated in all respects by mid 2003. It further contended that the successful development of the pilot plant would pave the way for evolving new front-end plant designs, which would result in drastic reduction of variable cost of zirconium sponge. Consequently, DAE revised the cost of the project to Rs 3.38 crore in February 2002 with an expected date of completion by mid 2003.

However, in March 2003 NFC held that the technological and economical advantages of the pyrochemical process were considered only for very large-scale production plants capable of producing more than 500 tonne per year of reactor grade zirconium sponge (RGSP). However, the requirement for nuclear programmes had not grown as was anticipated and even upto 2007 only one module of 250 tpa was proposed to be set up at Palayakayal. NFC short-closed the project in March 2003 stating that further activities on this project would be taken up at a later stage based on the requirement. NFC spent Rs 1.86 crore on the project upto March 2003.

The contention of NFC that the production of hafnium-free anhydrous zirconium tetrachloride through pyrochemical process was advantageous only in large-scale production plants capable of producing more than 500 tpa RGSP has to be viewed against the fact that the project was sanctioned essentially for technology development and demonstration by setting up a pilot plant with a capacity of 75 tonne of pure zirconium tetrachloride per year. NFC had also justified the need and continuation of the project even in December 2001.

Moreover, DAE was also aware of the requirement of the zirconium sponge when it approved the revised sanction in February 2002.

DAE stated in November 2003 that some major technological achievements have been made. Since it was anticipated that further trials for obtaining comprehensive data would take a longer time, it was decided to restrict the expenditure and take up the further work at a later stage.

However, the fact remains that the project conceived in March 1983 was shortclosed without achieving its objective after twenty years of research and expenditure of Rs 1.86 crore.

CHAPTER 9 : DEPARTMENT OF SCIENCE AND TECHNOLOGY

9.1 Wasteful investment

The Bose Institute, Kolkata procured a Protein Sequencer in April 1997 at a cost of Rs 21.36 lakh. However, the equipment could not be utilised after April 1998 due to its high running costs.

Mention was made in paragraph 7.1.4 of the Report of the Comptroller and Auditor General of India (Scientific Departments) for the year ended 31 March 1994 regarding the unsatisfactory performance of Isocratic Protein Peptide Sequencer, model 471 procured by the Bose Institute, Kolkata (a society of the Department of Science and Technology) in January 1990 from a foreign company at a cost of Rs 18.18 lakh. The same firm, in December 1996, offered an upgraded version of the equipment (model 476 A) costing US$ 166650 at a concessional price of US$ 60000, equivalent to Rs 21.36 lakh, in exchange of the earlier model.

The Institute placed an order in January 1997 and the equipment was received in April 1997 along with all the reagents and chemicals required for its installation. The equipment was installed in August 1997. Some defects were noticed in the equipment in April 1998 which could not be rectified by the local agent. Meanwhile, the warranty period of the equipment expired in July 1998. The Institute entered into an Annual Maintenance Contract for one year with the Indian agent of the supplier in December 1998 at a cost of Rs 0.45 lakh. After several attempts by the service engineer, some results could be obtained from the equipment. The service engineer suggested that the Institute procure chemicals and stock spares costing Rs 5.14 lakh to run the equipment. However, the Institute did not procure them and shut down the equipment in December 1999. As of October 2003, the equipment had been lying idle for more than five years.

The Institute stated in January 2003 that the equipment could not be operated due to its escalating operating cost and that the related work was got done

abroad. However, the Institute has not provided details of the expenditure incurred by it in this regard.

The failure of the Institute to anticipate the operational costs involved in using the Sequencer and its subsequent inability to obtain the required chemicals and spares resulted in the equipment costing Rs 21.36 lakh remaining idle for over five years.

The matter was referred to the Department in September 2003, who have not replied as of February 2004.

CHAPTER 10 : DEPARTMENT OF TELE-COMMUNICATIONS

Centre for Development of Telematics

10.1 Unnecessary procurement of components

The Centre for Development of Telematics, Bangalore had been procuring components and supplying them to the manufacturers of the equipment designed and developed by the Centre. Many such components were either slow-moving or non-moving resulting in blocking of funds amounting to Rs 6.15 crore as of September 2003

The Centre of Development of Telematics (C-DOT) is a registered society, under the Department of Telecommunications. Its activities include the designing and developing of equipment needed for telecommunication. After development, the technology is disseminated to manufacturers. In return, C-DOT charges a Transfer of Technology (TOT) fee (one time payment) and royalty as a percentage on net sales. According to the terms of the TOT, C-DOT would provide know-how for manufacturing, installation, operation and maintenance of equipment, documentation, technical assistance and training. The TOT agreements do not provide for procurement and supply of components by C-DOT.

Though manufacturers themselves procure raw materials and components for the manufacture of equipment, C-DOT, Bangalore had also been procuring components simultaneously, stocking and supplying them to the manufacturers on 'reimbursement' basis. Many such components, procured by C-DOT were either slow-moving or non-moving and as a result, the amount invested in their procurement remained blocked. The value of such inventories with C-DOT as at the end of March 2001, 2002 and 2003 was Rs 11.17 crore, Rs 9.17 crore and Rs 7.37 crore respectively. Five items alone accounted for a major portion of the total value of inventories. The stock position in respect of these items is given below :

Sl No.	Item	Stock position as of	Quantity	Value *(Rs in lakh)*
1.	EUD-C68701U4-170	March 2001	33992	516.57
		March 2002	25732	391.04
		March 2003	20387	297.10
		September 2003	18667	266.14
2.	EUD-H0068010-082	March 2001	9032	337.07
		March 2002	6712	250.49
		March 2003	6507	242.90
		September 2003	6210	231.95
3.	EUM-SD082048-M16	March 2001	2762	116.51
		March 2002	2662	112.29
		March 2003	1118	47.16
		September 2003	-	-
4.	EUN-1053C710-070	March 2001	5856	118.29
		March 2002	4224	88.42
		March 2003	4161	87.18
		September 2003	4106	86.10
5.	EUM-C0628512-OB6	March 2001	9625	41.95
		March 2002	9432	41.11
		March 2003	7966	33.15
		September 2003	7517	30.71

In May 2001, C-DOT asked manufacturers to intimate their requirement of components. However, the response was poor. Some manufacturers informed C-DOT that they had adequate stocks or had placed orders with other suppliers. A committee constituted by C-DOT recommended, inter-alia, in July 2002 approaching Bharat Sanchar Nigam Limited (BSNL), manufacturers and other outside agencies offering them the stocks. The balance items could be disposed of as scrap. The table above indicates that there were not enough takers for the components except for one item (at Sl. No. 3) and there was

heavy unsold stock in respect of other items even as of September 2003. Moreover, the sale trend was also on the decline.

C-DOT stated in September 2003 that: (i) though the agreements for transfer of technology entered into with the licensees did not specifically provide for procurement of components by C-DOT, several provisions imposed the liability on C-DOT to undertake such procurements; (ii) C-DOT procured only those components in respect of which difficulties were faced by the licensees in identifying sources after the discontinuance of the production of such components by the original manufacturers; and (iii) as of September 2003, the value of stock of these five components, held by C-DOT had decreased from Rs 7.07 crore to Rs 6.15 crore.

However, it may be mentioned that the licensees were procuring these components from other suppliers and there was not much demand among them for these components. C-DOT's procurement of components has ultimately resulted in build-up of inventories with consequent blocking of funds amounting to Rs 6.15 crore as of September 2003.

CHAPTER 11 : COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

11.1 Wasteful expenditure

The Regional Research Laboratory, Bhubaneswar, imported a Differential Scan Calorimeter at a cost of Rs 17.93 lakh. Though the equipment reached the Laboratory in December 2000, it was inspected only in March 2001 and found in damaged condition. The claim registered with the insurance company was also repudiated as it was not lodged within the scheduled time, resulting in wasteful expenditure of Rs 17.93 lakh.

The Regional Research Laboratory (RRL), Bhubaneswar, a field unit of the Council of Scientific and Industrial Research, placed an order in February 2000 on a US-based company for supply of a Differential Scan Calorimeter along with software-controlled thermal analyzer at a total cost of US$ 39038.00 (equivalent to Rs 17.95 lakh) including agency commission. The equipment was to be installed by the Indian agent of the supplier within 30 days of its delivery. RRL entered into a contract with M/s. Oriental Insurance Company Limited for covering the risk of any loss or damage to the equipment during transit. The insurance contract stipulated that if the loss or damage was not apparent at the time of taking delivery but noticed subsequently, RRL was required to give notice in writing to the carriers or other bailees within three days of delivery. In the event of loss or damage which might involve a claim under insurance, immediate notice of such loss or damage was required to be given and a survey report obtained from the insurance agents.

The consignment reached Kolkata airport on 11 August 2000 and was delivered at RRL on 19 December 2000 through the clearing agents. RRL incurred an expenditure of Rs 17.93 lakh on the procurement of the equipment including freight, insurance charges etc. However, RRL did not verify the condition of the delivered consignment immediately on receipt. After the lapse of more than 30 days, RRL requested the Indian agent on 20 January 2001 to depute a service engineer for installation of the equipment. When the service engineer visited RRL in March 2001, he observed that the boxes containing the equipment were not in good condition. On opening the boxes, it was found that the equipment was damaged and that the furnace mechanism

and base unit were also damaged. The equipment could not be installed in view of its damaged condition and was beyond repair. RRL lodged a complaint with the insurance company in March 2001 and the equipment was surveyed by their authorised surveyor in the same month. The survey report was submitted in November 2001 to the insurance company. RRL after a lapse of four months, registered an insurance claim for Rs 17.93 lakh in March 2002 for the damaged equipment. The insurance company repudiated the claim in August 2002 stating inter alia that RRL did not bring the matter to the notice of the carrier or other bailees within three days of delivery of the consignment according to the transit clause. The policy terminated on the expiry of 30 days after unloading the consignment at the final destination on 19 December 2000 whereas the damage was reported as late as 14 March 2001. After a further lapse of 10 months, RRL took up the matter with the foreign supplier in June 2003 requesting for replacement of the equipment. The supplier's response was still awaited (November 2003).

Thus, failure of RRL to get the consignment inspected immediately on its receipt, resulted in delay in lodging the insurance claim for the damaged equipment and consequent wasteful expenditure of Rs 17.93 lakh.

The matter was referred to the Council in October 2003, who did not reply as of February 2004.

(R.P. SINGH)
Principal Director of Audit,
Scientific Departments

New Delhi
Dated : 01 June 2004

Countersigned

(VIJAYENDRA N. KAUL)
Comptroller and Auditor General of India

New Delhi
Dated :01 June 2004

APPENDIX-I

Grants released to Autonomous Bodies audited under sections 19(2) and 20(1) of Comptroller and Auditor General's (Duties, Powers & Conditions of Service) Act, 1971

Sl. No.	Name of the Autonomous Body	Amount of grants released in 2002-03 *(Rs in crore)*
1.	Wild Life Institute of India, Dehradun	8.06
2.	Central Zoo Authority of India, New Delhi	12.25
3.	Sree Chitra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram	30.25
4.	Technology Development Board, New Delhi	56.00
5.	Indian Council of Agricultural Research, New Delhi	1381.59
6.	Indian Council of Medical Research, New Delhi	180.00
7.	Council of Scientific and Industrial Research, New Delhi	936.59
Total		**2604.74**

APPENDIX-II

Grants released to Autonomous Bodies audited under section 14 of Comptroller and Auditor General's (Duties, Powers & Conditions of Service) Act, 1971

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2002-03 *(Rs in crore)*
DEPARTMENT OF ATOMIC ENERGY		
1.	Tata Memorial Centre, Mumbai	88.78
2.	Saha Institute of Nuclear Physics, Kolkata	33.70
3.	Institute of Physics, Bhubaneswar	7.88
4.	Atomic Energy Education Society's School, Mumbai	15.71
5.	Tata Institute of Fundamental Research, Mumbai	101.71
6.	Harish Chandra Research Institute	6.97
7.	Institute of Plasma Research, Ahmedabad	58.50
8.	Institute of Mathematical Sciences, Chennai	7.63
	Total	**320.88**
DEPARTMENT OF BIO-TECHNOLOGY		
9.	National Institute of Immunology, New Delhi	23.50
10.	National Centre for Cell Science, Pune	9.90
11.	Centre for DNA finger printing and Diagnostics, Hyderabad	8.80
12.	National Centre for Plant Genome Research	7.70
13.	National Brain Research Centre	11.00
14.	Institute of Bio-resources and Sustainable Development	1.30
15.	Institute of Life Sciences	2.50
	Total	**64.70**

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2002-03 *(Rs in crore)*
DEPARTMENT OF INFORMATION TECHNOLOGY		
16.	Centre for Development of Advance Computing (C-DAC), Pune	10.00
17.	Society for Applied Microwave Electronics Engineering Research (SAMEER), Mumbai	14.60
18.	Electronic Research and Development Centre of India (ER&DC)	11.00
19.	National Centre for Software Technology (NCST), Mumbai	3.00
20.	Centre for Liquid Crystal Research (CLCR), Bangalore	1.70
21.	Education & Research Network (ERNET) India	13.10
22.	Centre for Electronics Design and Technology of India (CEDTI)	5.70
23.	Electronics and Computer Software Export Promotion Council (ESC)	8.00
24.	Software Technology Park of India (STPI)	11.00
	Total	**78.10**
MINISTRY OF ENVIRONMENT AND FORESTS		
25.	Central Pollution Control Board, New Delhi	26.42
26.	Indian Institute of Forest Management, Bhopal	3.92
27.	Indian Council of Forestry Research & Education, Dehradun	47.81
28.	Indian Plywood Industries Research and Training Institute, Bangalore	3.04
29.	Govind Ballab Pant Himalayan Institute of Environment and Development	6.00
	Total	**87.19**

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2002-03 *(Rs in crore)*
DEPARTMENT OF SCIENCE & TECHNOLOGY		
30.	Raman Research Institute, Bangalore	13.15
31.	Bose Institute, Kolkata	13.55
32.	Indian Institute of Tropical Meteorology, Pune	8.43
33.	Indian Association for Cultivation of Science,Kolkata	15.65
34.	Indian Institute of Astrophysics, Bangalore	15.15
35.	Indian Institute of Geo-magnetism, Mumbai	13.00
36.	Indian Science Congress Association, Kolkata	1.46
37.	Indian National Science Academy, New Delhi	5.25
38.	Birbal Sahni Institute of Palaeobotany, Lucknow	7.30
39.	Wadia Institute of Himalayan Geology, Dehradun	7.92
40.	S.N.Bose National Centre for Basic Sciences, Kolkata	6.95
41.	Indian Academy of Sciences, Bangalore	2.01
42.	J.N. Centre for Advanced Scientific Research, Bangalore	8.75
43.	National Academy of Sciences, Allahabad	2.08
44.	Technology Information Forecasting and Assessment Council, New Delhi	27.09
45.	Vigyan Prasar, New Delhi	2.20
46.	Agharkar Research Institute, Pune	7.27
47.	International Advanced Research Centre for Powder Metallurgy & New Materials	8.70
48.	National Accreditation Board for Testing & Calibration Laboratories, New Delhi	4.00
49.	Indian National Academy of Engineering, New Delhi	0.44
	Total	**170.35**

Sl. No.	Ministry/Department Name of the Autonomous Body	Amount of grants released in 2002-03 *(Rs in crore)*
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH		
50.	Consultancy Development Centre, New Delhi	0.45
	Total	**0.45**
DEPARTMENT OF SPACE		
51.	National Remote Sensing Agency, Hyderabad	10.00
52.	Physical Research Laboratory, Ahmedabad	26.63
53.	National MST Radar Facility , Gadanki	2.98
	Total	**39.61**
DEPARTMENT OF OCEAN DEVELOPMENT		
54.	Indian National Centre for Ocean Information	11.13
55.	National Centre for Antarctic & Ocean Research	21.97
56.	National Institute for Ocean Technology	35.13
	Total	**68.23**
	Grand Total	**829.51**

APPENDIX-III

Outstanding Utilisation Certificates

Ministry/Department	Period to which grant relates	Number of utilization certificates outstanding at the end of March 2002	Amount *(Rs in lakh)*
Department of Atomic Energy	1991-92	1	2.51
	1992-93	1	0.37
	1994-95	1	0.46
	1995-96	1	1.19
	1996-97	6	7.21
	1997-98	10	27.43
	1998-99	13	37.21
	1999-00	18	142.98
	2000-01	46	66.62
Total		**97**	**285.98**
Department of Space	1976-77	1	0.05
	1979-80	1	0.05
	1980-81	1	0.38
	1981-82	1	0.03
	1982-83	6	0.74
	1983-84	3	0.66
	1984-85	7	1.74
	1985-86	3	0.65
	1986-87	10	3.90
	1987-88	4	4.88
	1989-90	3	3.08
	1990-91	3	5.59
	1991-92	1	1.24
	1992-93	1	1.01
	1993-94	2	1.28
	1994-95	3	4.99
	1995-96	3	0.95

Ministry/Department	Period to which grant relates	Number of utilization certificates outstanding at the end of March 2002	Amount *(Rs in lakh)*
Department of Space	1996-97	5	8.99
	1998-99	9	26.25
	1999-00	17	27.02
	2000-01	46	1664.13
Total		**130**	**1757.61**
Ministry of Non-Conventional Energy Sources	1993-94	1	2.43
	1994-95	2	9.02
	1995-96	11	5.95
	1997-98	6	29.02
	1998-99	3	17.09
	1999-00	7	35.80
	2000-01	33	670.11
Total		**63**	**769.42**
Ministry of Environment & Forests	1981-82	15	5.79
	1982-83	21	41.00
	1983-84	90	58.50
	1984-85	143	229.80
	1985-86	121	495.40
	1986-87	74	533.77
	1987-88	278	6531.00
	1988-89	359	2543.18
	1989-90	545	192.00
	1990-91	70	123.30
	1991-92	81	1439.00
	1992-93	216	736.00
	1993-94	64	74.18
	1994-95	135	1146.00
	1995-96	10	21.00
	1996-97	440	15732.00
	1997-98	602	9767.00
	1998-99	302	314.00

Ministry/Department	Period to which grant relates	Number of utilization certificates outstanding at the end of March 2002	Amount *(Rs in lakh)*
Ministry of Environment & Forests	1999-00	517	4405.49
	2000-01	548	5200.89
Total		**4631**	**49589.30**
Department of Science & Technology	1987-88	2	28.16
	1988-89	2	5.41
	1989-90	3	9.37
	1990-91	5	94.86
	1991-92	2	4.11
	1992-93	5	2.46
	1993-94	4	3.07
	1994-95	8	4.41
	1995-96	5	2.20
	1997-98	1	0.98
	1998-99	11	6.30
	1999-00	9	7.96
	2000-01	10	16.44
Total		**67**	**185.73**
Department of Bio-technology	1992-93	3	0.50
	1993-94	25	4.80
	1994-95	42	31.94
	1995-96	26	12.90
	1996-97	47	26.00
	1997-98	61	30.65
	1998-99	68	36.08
	1999-00	87	55.05
	2000-01	58	34.88
Total		**417**	**232.80**

Ministry/Department	Period to which grant relates	Number of utilization certificates outstanding at the end of March 2002	Amount *(Rs in lakh)*
Department of Ocean Development	1983-84	8	101.52
	1984-85	22	22.66
	1985-86	45	40.26
	1986-87	23	27.20
	1987-88	84	159.63
	1988-89	48	58.00
	1989-90	93	98.53
	1990-91	17	227.46
	1991-92	20	114.60
	1992-93	8	3.00
	1993-94	16	40.20
	1994-95	9	151.97
	1995-96	53	58.77
	1996-97	52	152.02
	1997-98	71	858.74
	1998-99	82	1189.03
	1999-00	65	2216.68
	2000-01	95	1030.73
Total		**811**	**6551.00**
Grand Total		**6216**	**59371.84**