

CHAPTER-IV DEPARTMENT OF ELECTRONICS AND INFORMATION TECHNOLOGY

4.1 Idle investment of ₹2.43 crore on procurement of defective equipment

Failure of STQC, Directorate to enforce contractual obligations on supplier to replace faulty equipment led to its non-commissioning and idle investment of ₹2.43 crore. Besides, three electronics test laboratories for which the equipment was procured could not render specific testing services to industries.

The Standardisation, Testing and Quality Certification (STQC) Directorate¹ provides quality assurance services in the area of Electronics and Information Technology through a country wide network of Electronics Regional Test Laboratories (ERTLs) and Electronic Test and Development Centres (ETDCs). The services include testing, calibration, training and certification for public and private organisations.

For augmentation of its laboratories, STQC ascertains requirements for various equipments from each laboratory and major equipment costing more than ₹ 50 lakh is purchased by STQC through open tender process. In one such process of augmentation, STQC processed requirement for 'Three phase power/ energy calibration system' received from ERTL, Mumbai, ETDCs, Bangalore and Hyderabad and placed purchase orders on M/s Rotek Instruments Corporation, USA.

Purchase proposal

ERTL, Mumbai proposed to purchase a new power/energy calibration system in 2005-06 and submitted a demand to STQC Directorate. The specifications of the equipment indicated by the laboratory among other things included manual and automated operation capable of calibrating every reference meter, watt meter, phase angle meter etc. Similarly, ETDC, Bangalore and Hyderabad raised a demand for purchase of a new three phase Energy Calibration System in 2005-06.

¹ It is an attached office of the Department of Electronics and Information Technology (DeitY), Government of India.

Lapses in following tender procedure

In order to procure equipment for ERTL, Mumbai, STQC invited open tender in December 2005 in response to which only one tender was received from M/s Microtek instruments, Chennai, which is an Indian Agent for the principal M/s Rotek Instruments Corporation, USA. The single tender received was evaluated and cleared by the technical committee. Similarly, STQC invited open tender in June 2006 to procure the same equipment each for ETDC, Bangalore and Hyderabad, in response to which only two / three bids respectively were received. On evaluating the bids the technical committee selected only one bid received from M/s Microtek instruments on behalf of principal M/s Rotek Instruments Corporation as technically suitable. The fact remains that in all the three cases the equipment was procured from the same vendor i.e. M/s Rotek Instruments Corporation, USA which eliminated competition and restricted the choice of equipment.

On this being pointed out by Audit, the Ministry replied (February 2013) that in an earlier tender for procurement of similar equipment for ETDC Guwahati, M/s Rotek and M/s Zera participated and the equipment from Zera did not meet the technical requirements. Hence, it was assumed that based on the earlier experience, the other suppliers may not have participated in the tender as the equipment was the same for Mumbai. Further, the call for participation in the tender was through Global tender in the instant case. The reply is not acceptable since STQC without examining the option of retendering finalised the single bid from M/s Rotek. Further, in order to install and commission the equipment procured from M/s Rotek, dedicated power panel and rack enclosure was directly purchased by ERTL (W) which was outside the ambit of the Global tender. Therefore, the entire purchases also cannot be termed as procurement through Global tender.

Non-implementation of terms and conditions of the purchase orders

Three purchase orders were placed between March 2006 and September 2006 on M/s Rotek Instruments Corporation at a total cost of ₹ 2.43 crore².

The terms and conditions of purchase orders were:

- The goods would be inspected and upon its rejection the supplier would replace the equipment free of cost.
- Equipment supplied should be installed and commissioned within one month from the date of arrival of consignment at laboratory premises.

² Break up of value: ERTL Mumbai- ₹ 86.68 lakh, ETDC Bangalore- ₹ 94.94 lakh & ETDC Hyderabad – ₹ 61.70 lakh

- Warranty period of two years from the date of shipment/satisfactory installation during which the supplier was required to eliminate any faults without delay by improvement or replacement.
- Failure to provide satisfactory after sales service shall entail forfeiture of performance bank guarantee (PBG) (10 *per cent* of cost of equipment).

In the case of ERTL, Mumbai the purchase order provided for 90 *per cent* payment and in other two cases 100 *per cent* payment through irrevocable letter of credit on shipment and production of shipping documents.

We observed that the contract did not protect the interests of the purchaser as no scope was provided for retention of a portion of cost till satisfactory installation and commissioning of equipment except a 10 *per cent* in the form of PBG. Even the 10 *per cent* PBG with respect to ERTL, Mumbai was given away due to issue of a successful installation and commissioning certificate even though the equipment was not commissioned.

Non-installation and commissioning of the systems

The equipment was received by the laboratories between November 2006 to June 2007 and the Engineers from M/s Rotek initially took up the installation work at the three laboratories during March 2007 to June 2007. The equipment was installed but could not be commissioned due to various problems encountered like missing cables, inherent problems in software, software driven interface and hardware. Even though the centers could not use the equipment, the same was not rejected. Both the ETDCs Bangalore and Hyderabad sought replacement of faulty system only in August 2009 i.e. after a lapse of two years of receipt of faulty equipment. ERTL, Mumbai did not ask for replacement. The supplier agreed for partial replacement³ in case of Bangalore and to repair the equipment in the case of Hyderabad.

STQC in July 2010 issued a final notice and offered last opportunity to the supplier to replace and install the system latest by August 2010 failing which it would initiate proceedings for recovery of entire cost and damages. We however observed that no such proceedings were initiated by STQC against the supplier although the supplier defaulted in meeting the deadline of August 2010. Further, the PBG liable to be forfeited was extended till December 2011. As on date, the equipments had neither been replaced nor repaired.

³ Replacement of active components

The Ministry replied (February 2013) that replacement of equipment at Mumbai was not needed as the equipment was operational. In the case of ETDC Bangalore and Hyderabad it was stated that equipment of such high precision and complexities are generally subject to fine tuning exercise during installation at site. Also these sophisticated equipments were not plug and play type and hence outright rejection was not possible.

The reply is not convincing as the equipment at Mumbai did not function properly. Further, ETDC, Bangalore and Hyderabad failed to reject the faulty equipment as per the terms and conditions of the supply orders. STQC also did not effectively pursue the matter and enforced contractual obligations on the supplier. The PBG though liable to be forfeited was also not forfeited. No proceedings were initiated against the supplier for recovery of cost and damages despite supplier's failure to install and commission the equipment for more than five years.

We observed that it was only after five years of delay, that STQC cancelled the contract for two equipments for ETDC, Bangalore and Hyderabad after encashing PBG amounting to ₹15 lakh, claimed for recovery of ₹2.72⁴ crore (being cost of equipment and interest thereon) and ₹1.73 crore (being penalty for loss of business and goodwill, freight and insurance paid).

The Ministry also replied (February 2013) that the terms and conditions in respect of 100 *per cent* payment as a part of the contract had the approval of the competent authority. It was further stated that successful installation certificate was issued by the Senior Director, ERTL (W) although few discrepancies were noticed which would not hamper the operations/functionality of the system.

The reply is not acceptable as 100 *per cent* payment on dispatch of equipment did not protect the interest of STQC. We further observed that the earlier practice of payment of 90 *per cent* through letter of credit on shipment and balance 10 *per cent* after installation of equipment was changed to 100 *per cent* payment through letter of credit to minimize expenditure on bank charges. This change in practice has not safeguarded the interest of STQC in getting the equipment installed properly. Further, the Director ERTL (W) had issued installation and commissioning certificate in March 2007, while in August 2007 the Joint Director (Standard & Calibration), ERTL (W) addressed the agents of M/s Rotek for replacing defective items of the equipment. The Joint Director has further stated that the complete system would remain idle till the defective items are replaced. This indicated that payments for the equipment were made without ensuring proper commissioning of equipment. Further, even though the rectification of parts was carried out for over two years yet the equipment remained nonfunctional, thereby defeating the objectives for which the machines were purchased.

⁴ \$ 5,44,302 * ₹50 (approximately) = ₹2.72 crore.

Thus, failure of STQC to enforce contractual obligations on the supplier to replace faulty equipment led to its non-commissioning and idle investment of ₹ 2.43 crore. Further, due to faulty equipment, the work of calibration done by these laboratories/centres was severely affected.

4.2 Project Management in Society for Applied Microwave Electronic Engineering and Research (SAMEER)

4.2.1 Introduction

Society for Applied Microwave Electronic Engineering and Research - SAMEER is an autonomous institution set-up by the Ministry of Communication and Information Technology (MoCIT) in 1984 to promote Research and Development (R&D) in the areas of Microwave Engineering and Electromagnetic Engineering Technology.

SAMEER's vision is to achieve excellence in application oriented research in the areas of Microwave/Radio Frequency Electronics and Electromagnetics. Its major objective is to carry out R&D activities, to engage in product development and to provide test and measurement services. These R&D activities are carried out by SAMEER through its various projects.

SAMEER is managed by the Governing Council supported by the Executive Committee in administrative matters, the Research Advisory Committee in technical matters and the Finance and Accounts Committee in financial matters. The Director is the Chief Executive of SAMEER reposed with full responsibility to manage the society.

The headquarters of SAMEER is located at Mumbai and its two Centres, namely Centre for Electromagnetic and Centre for Millimeter Wave Research are located at Chennai and Kolkata respectively.

4.2.2 Scope of Audit

Audit was conducted during the period 2011-12 covering the Sponsored, Grant-in-Aid and the Core projects executed during the period 2007-08 to 2011-12. Further, as SAMEER did not have a central monitoring mechanism/data base to monitor the progress of all the projects undertaken by it, we relied on the list of projects given by SAMEER for conducting test checks.

4.2.3 Audit Criteria

The sources of main audit criteria were:

- Memorandum of Association of SAMEER
- Rules and Regulations of SAMEER
- Bye-Laws of SAMEER
- Delegation of Powers to the Governing Council and Executive Committee
- Project review and steering committee reports
- Project schedule for the year 2011-12 of SAMEER

4.2.4 Audit Methodology

The audit findings are based on review of relevant documents, discussions with various levels of Management, field visits of SAMEER Mumbai with regard to Project execution and its management by SAMEER. Macro level financial data was collected from the financial statements of SAMEER for audit analysis. Besides, detailed Audit of selected projects out of projects each costing ₹20 lakh and above executed during the period 2007-08 to 2011-12 were conducted and audit findings reported upon.

4.2.5 Audit findings

The audit findings are brought out under Financial Management, non-formation of Project guidelines, Project Implementation and its monitoring, Grant-in-aid projects, Sponsored projects, Core projects and Intellectual Property Rights.

4.2.5.1 Financial management

SAMEER is financed through grants released by the Department of Electronics and Information Technology (DeitY) and funds from sponsoring agencies i.e. other Ministries /Departments / autonomous organizations of the Government of India. During 2007-12, SAMEER received a total sum of ₹304 crore from various sources (₹158 crore as grants in aid from DeitY and ₹146 crore from sponsoring agencies), against which an expenditure of ₹246 crore had been incurred during the period. Besides, ₹77.64 crore were also received as test measurement, consultancy services and other income during the period.

(i) Grants in aid

A summary of Income and expenditure account of SAMEER, which reflects the grants received and expenditure against the grants during the period 2007-08 to 2011-12 is given below in Table-1.

Table-1**(₹ in crore)**

Year	Receipts			Expenditure	Unutilised funds	Percentage of unutilised funds
	Grant received from MoCIT ⁵	Other receipts ⁶	Total Receipts			
2007-08	23.11	10.53	33.64	19.64	14.00	42
2008-09	25.34	19.46	44.80	24.95	19.85	44
2009-10	38.74	12.27	51.01	30.66	20.35	40
2010-11	35.78	18.49	54.27	28.69	25.58	47
2011-12	34.70	16.89	51.59	31.08	20.51	40
Total	157.67	77.64	235.31	135.02	100.29	

(Source - Annual reports (2007-12) of SAMEER)

From Table-1 it is evident that during the period 2007-08 to 2011-12, though there has been steady increase in expenditure, yet there was consistent under-utilisation of grants resulting in savings of 40 to 47 per cent yearly during this period.

SAMEER also failed to give the Utilisation Certificates (UCs) in respect of grants amounting to ₹ 68.74 crore as shown below in Table-2.

Table-2**(₹ in crore)**

SI No	Amount of Grant	UC due for the Year	Amount for which UC was due as of March 2012	Number of UCs due
1	0.92	2008-09	0.92	1
2	1.37	2009-10	1.37	2
3	13.35	2010-11	13.35	4
4	53.10	2011-12	53.10	10
	68.74		68.74	17

(Source – Statement given by DeitY)

⁵ Ministry of Communications and Information Technology

⁶ Test measurement, consultancy services and other income

On being pointed out by us (November 2012), it was stated (February 2013) that only 5 UCs amounting to ₹13.72 crore were pending as of December 2012 against audit figure of 17 UCs amounting to ₹68.74 crore.

The reply is however not acceptable as the UCs status submitted by SAMEER covered the period of allocation of grants up to 2010-11 and Audit coverage was up to 2011-12 wherein additional 10 UCs amounting to ₹53.10 crore were not submitted by SAMEER during the year 2011-12. This indicated that the grants were not being used in the year of receipt and hence, there was an urgent need for effective financial control by the Ministry, to ensure submission of UCs by SAMEER before the release of grants.

(ii) Sponsored funds

In the case of funds received against sponsored projects from Government Departments /Organisations the amount is separately maintained under a 'Fund' called 'Sponsored project funds' where the unspent balances of sponsored projects are parked. The year wise details are given below in Table-3.

Table- 3

(₹ in crore)

Year	Opening Balance	Funds received from sponsoring agencies	Total	Expenditure	Percentage utilisation	Funds Carried forward
2007-08	39.09	46.46	85.55	17.88	20.90	67.67
2008-09	67.67	32.84	100.51	21.09	20.98	79.42
2009-10	79.42	18.01	97.43	19.56	20.07	77.87
2010-11	77.87	31.01	108.88	24.51	22.51	84.37
2011-12	84.37	18.10	102.47	28.44	27.75	74.03
Total		146.42		111.48		

(Source - Annual Reports (2007-12) of SAMEER)

It can be seen from the above Table-3 that the percentage utilization of sponsored funds ranged between 20 and 28 *per cent* only. This resulted in parking of funds received from the sponsoring agencies in fixed deposits that ranged from ₹86 crore (2007-08) to ₹140 crore (2011-12) without being put to gainful use for the purpose for which they were granted in the respective financial years.

On this being pointed out by Audit (November 2012), the Ministry replied (February 2013) that higher Internal and Extra Budgetary Resource (IEBR) generated by SAMEER shows good financial health of the organization. They further added that the Cash and

Bank balance of ₹140 crore includes carried forward sponsored project fund (₹74.03 crores) and internal revenue (₹77.64 crores).

The reply is however not convincing as the sponsored project fund of ₹74.03 crore is the Government fund advanced by the concerned sponsoring departments and hence not to be treated an IEBR. Also IEBR has to be generated from internal resource and not from interest from Sponsored Funds given for specific purposes, without undertaking the assigned work. Further, out of ₹77.64 crore mentioned as internal revenue, majority of the amount of ₹39.68 crore is on account of interest from bank deposits which again is accrued due to parking of sponsored project funds in banks. Thus, most of the cash and bank balances represent the Government monies and interest element and not an outcome of the internal resource of SAMEER.

4.2.5.2 Non-formation of project Guidelines

The Governing Council is vested with full powers to approve general Guidelines to fix charges for services rendered by the Society including manpower charges, usage charges of facility created by the Society, methodology for arriving at project cost, terms and conditions of transfer of technologies, rate at which royalty to be collected etc. We observed (November 2012) that no Guidelines covering the above issues were framed and approved by the Governing Council. In the absence of general Guidelines, SAMEER was conducting project activities and transfer of technologies on ad-hoc basis without any stipulated rules and regulations.

The Ministry replied (February 2013) that SAMEER was executing almost all projects only for Government Departments/Ministries. Further, on the recommendation of internal committee constituted for the purpose of project costing guidelines, these Guidelines have been framed and are being followed.

The reply that the execution of projects is for Government Departments/Ministries does not allow SAMEER to execute these projects without proper rules and regulations. Further, the internal committee itself had stated that project costing guidelines were initial recommendations and further discussions were to be held with Cost Accountant/Chartered Accountant for finalizing them.

4.2.5.3 Project implementation and its monitoring

The Director, SAMEER had constituted expert committees for each core project to monitor the progress. In respect of sponsored projects and Grant-in-aid projects, the sponsoring department appointed Project Review and Steering Group (PRSG) for periodical review of the project. The members of PRSG are nominated by the sponsoring

department and invitees are decided by the Chairman of the Committee from SAMEER such as Chief investigators and Programme Directors.

We observed (November 2012) that though these committees were reviewing specific projects on a case to case basis periodically but there was no central monitoring mechanism or a project tracker system to monitor the progress of all the projects undertaken by SAMEER. Consequently, the overall progress of different projects could not be ascertained. On being pointed out (November 2012) by us it was stated (February 2013) that software tracker would be considered for implementation. The reply is indicative of a lack of overall monitoring of projects and control mechanism in SAMEER.

4.2.5.4 Grant-in-aid Projects

These are projects undertaken by SAMEER based on grants received from DeitY. SAMEER undertook 23 such Grant-in-aid projects during the period from 2007-08 to 2011-12, out of which 10 were completed as given below in Table-4.

Table-4

	Opening Balance of Grant in aid projects as of April 2007	Projects added during 2007 - 2012	Projects completed during 2007 - 2012	Closing Balance of Projects
Mumbai	3	12	6	9
Chennai	1	3	2	2
Kolkata	2	2	2	2
Total	6	17	10	13

Our examination (July and November 2012) of these projects revealed delays in completion of the projects ranging from 1 to 18 months in 7 out of 10 completed projects and delays of 10 to 39 months in 8 out of 13 ongoing projects.

We examined in detail four⁷ out of 23 Grant-in-aid projects executed during the period 2007-08 to 2011-12 and found significant time and cost overrun. These are brought out in the succeeding paragraphs.

⁷ (a) National Programme for the deployment of Integrated Medical LINAC System

(b) Project for Fabrication of LINAC Tube and Linear Accelerator

(c) Project on Development and Deployment of Hybrid Dryers

(d) Project on design and Development of Software Defined Radio

(i) National Programme for the deployment of integrated Medical LINAC system

(a) Phase I

DeitY approved “National Programme for the deployment of two indigenously developed 6 MV Integrated Medical LINAC⁸ system for Cancer Therapy” (Phase-I) in March 2001 at a total outlay of ₹7.00 crore with a project duration of two years up to February 2003. We observed (November 2012) that both the Medical LINAC units were commissioned after delays of more than five years by May 2008 at a cost of ₹7.77 crore.

(b) Phase II of the programme

DeitY sanctioned Phase II of the project in February 2008 for deployment of four 6 MV integrated Medical LINAC machines in four different hospitals at a total estimated cost of ₹10.70 crore. The duration of the project was from March 2008 to August 2011. SAMEER however could not commission even one machine within the stipulated time and incurred an expenditure of ₹6.38 crore as on 31 March 2011 under Phase II of the project.

Project Review and Steering Group (PRSG) in September 2011 reviewed the project and expressed its concern on the time over run and suggested that SAMEER should become more efficient in time management.

The Ministry stated (February 2013) that the first unit will be commissioned in February 2013 and for next three units, 80 *per cent* work has been completed and would be commissioned in next few months. SAMEER again stated (September 2013) that the revised date of closure was 31 December 2013.

Thus, in spite of commissioning of two 6 MV Medical LINAC system in May 2008 under Phase- I, there were significant delays in all the four 6 MV Medical system being commissioned under Phase-II.

(c) Commercial production of Medical LINAC machines.

SAMEER was asked (March 2011) by PRSG to make efforts to transfer of technology (ToT) relating to 6 MV integrated Medical LINAC to the industry for commercial production at a reasonable cost. Accordingly, PRSG deliberated (September 2011) on the subject of ToT and recommended a ToT fee of ₹1 crore to be paid by each of the technology recipient. Director SAMEER was instructed (September 2011) by PRSG to

⁸ Linear particle accelerator

write to industries to submit their financial bid within a short period and follow up in the next meeting of the PRSG at DeitY, New Delhi. No further progress was made as of August 2012.

In February 2013 the Ministry replied that M/s Panacea Medical Technologies was identified for ToT and first draft agreement was sent to the company.

We observed (November 2012) that even after more than four years of commissioning of 6 MV integrated Medical LINAC under Phase-I, the technology could not be transferred and the objective of R&D undertaken by SAMEER to develop indigenous Medical LINAC for commercial production at affordable cost was yet to be achieved.

(ii) Project for fabrication of LINAC tube and Linear Accelerator

DeitY approved (November 2005) establishment of a facility for batch fabrication of LINAC tube and Linear Accelerator at SAMEER, Navi Mumbai within a period of three years at an outlay of ₹24.88 crore. In December 2009, the project cost was revised to ₹27.58 crore with DeitY contributing ₹25.38 crore as grant in aid and SAMEER contributing ₹2.20 crore and duration of the project was extended up to December 2010.

We observed (November 2012) that the civil work relating to all activities was completed only in August 2010. Also the equipment procured for ₹59.73 lakh were lying idle for more than four years and six of the equipment required for the project were yet to be procured (September 2011). We further noticed that SAMEER had incurred an expenditure of ₹27.40 crore and the project was yet to be completed (February 2013).

The Ministry stated (February 2013) that SAMEER had appointed a Civil Expert Consultant and one Electrical Engineer on contract basis and almost all equipments were commissioned. The fact remains however that the project management by SAMEER was inefficient and tardy as the project was to be completed by 2008 but it remained incomplete till February 2013.

(iii) Project on development and deployment of Hybrid dryers

DeitY sanctioned a project in July 2007 to develop Hybrid Dryers and install two such machines in Sikkim and Tripura at a total cost of ₹98 lakh within a period of 18 months. DeitY in August 2009 enhanced the project cost to ₹1.03 crore with extension up to December 2009. The Hybrid Dryer was for drying of natural produce like vegetable, spices, tea etc.

SAMEER without taking into consideration the requirements of the user States, took the initiative to identify a site each in Sikkim and Tripura. The Sikkim Government gave no indication of acceptance and subsequently SAMEER decided to install the hybrid dryer in Assam for drying of tea. Accordingly it diverted the dryer from Sikkim and installed it at Tea Research Association (TRA) Jorhat in July 2009 and in January 2011 stated that since then they had been conducting trials on different type of tea.

Regarding the second dryer, the Government of Tripura had decided to install the proposed dryer at Ludhua Tea Estate site for Green Tea Processing. SAMEER stated (December 2011) that the hybrid dryer would be integrated with equipment purchased by Ludhua Tea Estate and indicated that the facility would be ready for installation of hybrid dryer by end of January 2012.

The Ministry stated (February 2013) that the entire delay was due to decisions of the user departments and the dryers had been installed by 2012.

The reply is not convincing as the whole project was undertaken without identifying the stake-holders requirements and their readiness to make available the infrastructure to adopt the new technology which resulted in delays of more than three years in installing and using the dryers.

(iv) Project on Design and Development of Software Defined Radio

Ministry of Communication and Information Technology, New Delhi sanctioned a project for Design and Development of Software Defined Radio (SDR) in April 2007 at a cost of ₹4.95 crore with C-DAC contributing ₹3.48 crore and SAMEER contributing ₹1.47 crore.

The project was commenced in April 2007 and completed partially in September 2008. The completion report mentioned that the project aimed at development of a prototype and ToT to the industry. Hence a roadmap was prepared for commercial version of SDR and SAMEER planned to have two or three variants of the SDR with applications to suit Defence, Utility Sectors and Commercial requirements. In January 2012, the Management stated that its scientists were engaged in many sponsored and core projects and manpower allocation could not be made to the second phase which could be considered at a later stage when on-going projects were completed.

We observed (November 2012) that the next stage of realisation of SDR did not take off even after four years of completion of the first stage of prototype development in 2008.

The Ministry stated (February 2013) that the design details of prototype and the hardware developed by SAMEER were with C-DAC and would be utilized by them.

The reply is not convincing as the efforts and money spent on development of a prototype SDR system by SAMEER could not be further utilised for the purpose for which it was developed even after four years of completion of the prototype development in 2008.

4.2.5.5 Sponsored Projects

Sponsored projects undertaken by SAMEER were funded by the Government Departments such as the Department of Science and Technology, Defence Research and Development Organisation and the involvement of private sector / industry was missing.

During the period 2007-08 to 2011-12, SAMEER completed 76 out of 116 sponsored projects as per the details given below in Table-5.

Table-5

SAMEER Units	Opening Balance of sponsored projects as of April 2007	Projects added during 2007 - 2012	Projects completed during 2007 - 2012	Closing Balance of projects
Mumbai	40	41	50	31
Kolkata	03	05	04	04
Chennai	09	18	22	05
Total	52	64	76	40

Our examination (July and November 2012) of these projects revealed significant time and cost overrun as brought out in the succeeding paragraphs.

(i) Delays in completion of sponsored projects

Out of 116 sponsored projects, 76 projects were completed and 40 were ongoing projects. Further, 47 out of 76 completed projects and 28 out of 40 ongoing projects were delayed. The delays in these projects ranged from 4 to 136 months. Besides, there was no provision in the projects for revision of costs when there was a time over run in completion of projects.

We examined in detail selected five major projects⁹ involving delays and non-recovery of costs from the sponsoring organisations were observed (July and November 2012) and our findings are detailed below:

(a) Project on setting up of Electron Beam Centre and develop industrial accelerators

SAMEER entered into a MoU in October 1999 with the Bhabha Atomic Research Centre (BARC), Mumbai for “Scientific Collaboration to jointly set up Electron Beam Centre and develop industrial accelerators” at Belapur, New Mumbai. The time schedule for completion of design was by December 1999 and fabrication and testing by December 2000 and funds of ₹80.00 lakh were to be released to SAMEER in stages by Project Monitoring Group on recommendations from Project Coordinators. The MoU was extended from time to time and in October 2009 for a further period of five years up to October 2014. It was observed (July 2012) that BARC had released only ₹72.00 lakh and the cost escalation amount of ₹52.30 lakh was not released by them.

On this being pointed out (November 2012) by Audit, the Ministry stated (February 2013) that the BARC had now agreed to release the funds.

(b) Project on commissioning of a 6 MeV industrial linear accelerator

Vikram Sarabhai Space Centre (VSSC) placed a supply order on SAMEER in October 2007 for design, development, installation and commissioning of a 6 MeV industrial linear accelerator at a cost of ₹3.20 crore, scheduled to be completed by June 2009. SAMEER failed to complete the project within the scheduled time and by then had incurred an expenditure of ₹2.60 crore. Against this, SAMEER received only ₹1.68 crore from VSSC and ₹92 lakh was yet to be recovered (March 2011) from VSSC. The VSSC pointed out (May 2010) certain problems during the installation of the system. The system was dismantled and returned to SAMEER for reconditioning, which was finally commissioned and handed over to the user agency in March 2012.

On this being pointed out (November 2012) by us, it was stated (February 2013) that the Division was executing a few LINAC projects simultaneously. Since there was a constraint on the facilities and manpower, the projects were delayed. Also the contract staff working on these projects needed to be trained properly before they could be

⁹ (a) Project on setting up of Electron Beam Centre and Develop Industrial Accelerators

(b) Project on Commissioning of 6 Me V Industrial Linear Accelerator

(c) Project on Commissioning of 6 Me V Linac System

(d) Project for Delivery of 12 sets of S-Band transponders

(e) Project on CDMA based Telecommunication(TC) system

allowed to work independently on some of the sub-systems. SAMEER further replied (September 2013) that the entire project cost had been received from the VSSC.

The reply is not acceptable as SAMEER had not initiated any action to address the issue of constraints on the facilities and manpower to avoid delays in execution of the projects undertaken by it.

(c) Project on commissioning of 6 MeV linac system

Advanced Systems Laboratory (ASL) placed a supply order in October 2004 on SAMMER for design, development, installation and commissioning of 6 MeV LINAC system at an estimated cost of ₹2.50 crore, scheduled to be completed by October 2006. SAMEER however failed to deliver the system within the scheduled time.

SAMEER stated (March 2011) that there was a delay in the initial phase of development as the LINAC tube vacuum processing equipment was under repair. It was further stated that the Society had taken up many LINAC projects in anticipation of their newly developing facility at Kharghar which got delayed for about two years. As a result, the LINAC projects had to be done with limited facilities at SAMEER, Powai campus leading to delays. The LINAC system was finally installed and commissioned in August 2011 and full payment received.

The reply is not acceptable as preparation of site within a reasonable time is part of the project execution. Inordinate delay of five years indicate inadequate synchronization and monitoring mechanism.

(d) Project for delivery of 12 sets of S-Band Transponder

ISRO Satellite Centre (ISAC) placed orders on SAMEER in March 2006 for 12 sets of S-Band Transponder at a cost of ₹2.40 crore. The first set was deliverable within 26 weeks, next two sets within 56 weeks and subsequently two sets in every six months thereafter. Four sets were delivered by July 2011.

It was observed (July 2012) that SAMEER had incurred ₹2.44 crore for four sets of S-Band Transponder while the value of the contract was ₹2.40 crore for supply of 12 sets indicating cost overrun. Further, SAMEER had received only ₹1.40 crore from ISAC against an expenditure of ₹2.44 crore resulting in short recovery of ₹1.04 crore.

On this being pointed out by us, it was replied (August 2012) that major cost was incurred towards manpower due to inordinate delay in supply of space grade components. The manpower was actually utilized for other ongoing R&D activities on time sharing basis

but the booking continued against the S band project resulting in cost escalation. SAMEER again stated (September 2013) that two more sets were delivered in May 2013 and two sets were under development. For the remaining four sets, Space Grade components from ISAC was awaited. It was also stated that total expenditure incurred on the project was ₹2.94 crore against the received amount of ₹1.56 crore and the excess expenditure was met from the internal resources of SAMEER.

It is evident from SAMEER's reply that it could not obtain enough sponsored funds in time which resulted in spending of its own funds.

(e) Project on Code Division Multiple Access Based Telecommunication (TC) System

Integrated Test Range (ITR), Chandipur placed order for supply of Code Division Multiple Access (CDMA) Based TC System in March 2010 at a cost of ₹57.94 lakh. ITR paid an advance of ₹19.17 lakh in June 2010 and the system was to be delivered by June 2011. The system could not be developed due to delay in purchase of the components and modules.

In reply, it was stated (August 2012) that the delays were mainly due to release of funds and in future SAMEER would ensure that reasonable time schedules are projected in the proposals. However, SAMEER did not address the issue of delays in procurement. SAMEER further stated (September 2013) that the project was completed and the system delivered in July 2013. An amount of ₹50.38 lakh was spent against the receipt of ₹19.17 lakh and the excess funds were managed from its internal resources. It was also stated that the balance amount would be recovered on completion of evaluation.

It is again evident from SAMEER's reply that it could not obtain sponsored funds in time which resulted in spending of its own funds on sponsored project.

(ii) Deficiencies in Sponsored project approvals, costing and pricing

Requests are received from agencies to take up the sponsored projects and upon such request, SAMEER submits its projects along with quotations. We observed (November 2012) that no standard basis was adopted for preparation of quotations, discounts offered during price negotiation meeting and the Minutes of the price negotiation meetings were not on record. We also noticed that feasibility study assessing the existing resources in terms of finance, manpower and infrastructure was also not conducted while taking up new projects. The documentation of project files as a whole was poor in most of the cases.

On this being pointed out (November 2012) by us, it was replied (February 2013) that the project proposals were submitted in the format given by the Government sponsoring agencies. Due to time constraints and uncertainty of design, the feasibility project documents were not made in each case. Further, all the projects taken up by SAMEER were of different nature, requiring different kind of resources like infrastructure, manpower etc. and some of the projects required specialized infrastructure.

The reply that all the projects were of diverse nature and hence were not applicable to the basic uniform rule is not convincing. SAMEER should have clear guidelines regarding project approvals, costing and pricing for transparency and accountability.

(iii) Irregular expenditure in sponsored projects

Our examination relating to 54 sponsored projects completed during the period 2007-2012 revealed that in 10 sponsored projects, an irregular expenditure of ₹87.15 lakh was booked during 2011-12 as given below in Table-6.

Table-6

Sl No.	Project name	Date of completion	Advance from Sponsor	Total Expenditure	Balance as of 31-03-2012	Irregular Expenditure during 2011-12
			(₹ in crore)			(Amount in ₹)
1	Height sensing device	13-01-2011	1.15	0.61	0.54	9957
2	9 MV Linear Accelerator	26-02-2010	4.82	4.70	0.12	1198336
3	KA Band active Radar seeker	28-02-2009	1.74	1.76	-0.02	69077
4	Variable altitude switch	07-03-2007	0.85	0.66	0.19	2123227
5	HP RF Transmitter	04-12-2010	1.40	1.45	-0.05	902950
6	Dev of Radiotheodolite	16-03-2011	1.16	0.69	0.47	129408
7	Dev of Altimeter	22-04-2010	1.65	0.70	0.95	3449937
8	Phased array sodar-VSSC	31-03-2009	0.40	0.39	0.01	9078
9	Phased array sodar-DAE	28-04-2010	0.25	0.18	0.07	290621
10	Phased array sodar-Kalpakkam	15-03-2011	0.25	0.20	0.05	531985
	Total		13.67	11.34	2.33	8714576

It can be seen from the above Table-6 that even after one to five years of completion of the sponsored projects (i) expenditure was being irregularly booked during 2011-12 (ii) the balance of advance amounting to ₹2.33 crore from sponsors was not refunded (iii) in two projects viz. KA Band Active Radar Seeker and HP RF Transmitter, the expenditure was more than the advance paid by the sponsors. These irregularities reflect on poor

accounting due to lack of a policy on project costing, expenditure booking, project closure and financial closure of the project.

SAMEER stated (December 2012) that technically projects were closed after initial delivery of the system. However, manpower was still retained since user agencies needed to carry out necessary tests before closing the projects and releasing the final installments. Manpower was also needed to take care of breakdowns, maintenance, up gradations etc. It was further stated that R&D Projects cannot have such sharp cut off points of project closure immediately after the project delivery and hence they considered a project to be completed only when all the technical commitments were fulfilled and the full payment was received.

The reply is however not convincing as it has not addressed the issue of having a clear policy on technical and financial closure of the projects so that irregular booking of expenditure under completed projects is avoided.

Our findings in some of the projects examined as a test check, also revealed that due to lack of a policy regarding project completion, wrong bookings and additional expenditure was incurred even after completion of the projects. These are brought out in the following paragraphs.

(iv) Irregular expenditure after completion of sponsored projects

(a) Project on Hand Held data computer

SAMEER entered into an MoU with the India Meteorological Department (IMD) for supply of 60 numbers of Hand Held data computer at a cost of ₹31.80 lakh. The equipment was delivered to IMD by March 2008 and entire payment of ₹31.80 lakh was also received by March 2008. We observed (November 2012) that an expenditure of ₹16.75 lakh was incurred under this project even after delivery of the equipment in March 2008.

SAMEER stated (December 2012) that the expenses incurred during 2008-2011 were on account of salary and spare consumables used for R&D work done for the projects under the umbrella MoU between SAMEER and IMD.

The reply is not convincing as the project in itself was an independent project and income/expenditure on this project was accounted for separately. Hence technical and financial closure of the project should be independent of the other projects under the umbrella MoU.

(b) Project on Design, Development and Supply of one set of Fire Control System

Machine Tools Prototype Factory placed Orders in March 2006 for Design, Development and Supply of one set of Fire Control System related sub-system for Kavach MOD II at a cost of ₹1.17 crore. SAMEER supplied the item within the due date in April 2007. We observed (November 2011) that as against the receipt of ₹1.17 crore, SAMEER had incurred an expenditure of ₹1.57 crore resulting in excess expenditure of ₹40 lakh.

SAMEER stated (January 2012) that the difference was due to salary of contract employees working in other projects which was erroneously booked under this project till November 2011. It was further stated that the expenditure would be rebooked to the concerned projects.

The Management reply confirmed the poor accounting and wrong booking of expenditure under the project even after its completion.

(c) Project for supply of 10 Variable Altitude Switch

Research Centre IMARAT (RMI), Hyderabad placed an order (November 2005) on SAMEER for supply of 10 Variable Altitude Switch at a cost of ₹85.00 lakhs. The delivery was to be completed by 30 April 2006 and SAMEER delivered all 10 units to RMI by March 2007. SAMEER received ₹85 lakh from RMI but incurred an expenditure of ₹45 lakh and balance ₹40 lakh was lying under this project as of March 2011. We further noticed (November 2012) that an expenditure of ₹21.23 lakh was incurred towards contract staff salaries, consumables, travelling and miscellaneous expenses during the year 2011-12 although all 10 units to RMI were delivered by March 2007. This indicated that the project was not closed even after its completion.

SAMEER stated (January 2012) that the actual flight testing in missile was pending though SAMEER's commitments were completed. However, the fact remains that SAMEER had not closed the project as on date.

(d) Project for design and development of Radar Altimeter

Aeronautical Development Establishment (ADE) sanctioned (June 2007) a project for development of Radar Altimeter at a cost of ₹1.65 crore. The product was delivered to ADE in April 2010 and SAMEER had incurred an expenditure of ₹35.25 lakh. There was a saving of ₹1.30 crore under this project and the project was not closed (March 2011).

The Ministry replied (February 2013) that in this project, the participation of SAMEER during mission checkouts is an ongoing process and it normally happens much after deliveries are completed. Further, environmental testing, EMC testing, field evaluations in actual aircrafts are user prerogative. All these variables are included in full at the time of project costing.

The Ministry's reply is not acceptable as it did not provide reasons for non-incorporation of a specified period in the contract for completion of Environmental testing, EMC testing, field evaluations etc.

(v) Non-recovery of dues from sponsoring agencies

SAMEER has not realised dues of ₹1.81 crore towards eight sponsored projects as detailed below in Table-7.

Table-7

Sl No	Title of the project	Name of sponsorer	Month/Year of completion	Pending dues as of Sep 2012. (₹ in crore)
1	15 MeV Medical Linac	DOE	March 2006	0.03
2	Design and development of high power components for RF accelerator	DAE	March 2007	0.14
3	KA Band active radar seeker	DRDO	February 2009	0.73
4	Poly optical wave guide	DST	September 2010	0.06
5	Height sensing device	DRDL	January 2011	0.07
6	Development of Radiotheodolite	IMD	March 2011	0.38
7	Linac tube for 4 MeV-ASL	ASL	March 2011	0.12
8	6 MeV Linear Accelerator	HEMRL	November 2011	0.28
	Total			1.81

It was evident that most of the projects were completed one to six years back but the dues were yet (September 2012) to be recovered from the sponsoring organisations/ departments.

On this being pointed out (November 2012), it was stated (February 2013) that in respect of project relating to Height sensing device, an amount of ₹7.00 lakh had been recovered

in January 2012 and similarly in project relating to development of Radiotheodolite, part payment of ₹21.79 lakh was recovered in April 2012. It was further replied that the dues were from Government Departments and recovery process was underway.

SAMEER needs to strengthen its monitoring and revenue realization mechanism so that dues are collected in time.

4.2.5.6 Core Projects

Core projects are projects executed by SAMEER out of funds received from DeitY. These Projects are initiated by SAMEER based on new technologies related to its domain knowledge and expertise. We observed (November 2012) that SAMEER did not have consolidated statistics of all the core projects undertaken by it over the years as given below.

Inadequate documentation of core projects

Maintenance of complete project documentation including project proposals, progress reports, completion reports and project evaluation reports is essential for efficient project management, monitoring and review. We noticed (November 2012) that SAMEER did not maintain adequate documentation in respect of the in-house/core projects, thereby rendering the whole process non-transparent and not amenable to subsequent review. It was further observed that the proposals, approvals and files relating to the core projects were not on record. Besides, the expenditure sanctioned and incurred on core projects was not monitored and project-wise budgeting was not maintained.

On being pointed out (November 2012), the Ministry stated (February 2013) that the project files of core projects, approval of Research Advisory Committee, achievements and other documents relating to the projects would be made available in future. Also action had been initiated to improve the documentation of the Core/in-house projects for new core projects starting from the year 2012-13. It was also stated that SAMEER suffered from inadequacy of man power for R&D Projects.

Although SAMEER has given an assurance for improving the maintenance of records relating to Core Projects, specific guidelines for its implementation was awaited (February 2013).

4.2.5.7 Intellectual Property Rights

Ministry of Science and Technology has brought out comprehensive guidelines for implementing Research Projects wherein the institutions seeking grants for R & D

purposes are required to seek protection of Intellectual Property Rights (patents, registered designs, copyrights and lay out design of integrated circuits) to the results of research on their topics. To facilitate this, a separate patent fund is operated which provides the funding for obtaining the IP rights.

We observed (November 2012) that in SAMEER, no such initiative was taken and during the last five years only three patents were obtained and there was only one case of transfer of technology, although many scientists were engaged in R&D activities on which more than ₹ 200 crore were spent during the last five years. This reflects poorly on the quality of R&D output by SAMEER. Hence SAMEER should have a clear policy on IPs.

The Ministry stated (February 2013) that SAMEER was working in strategic areas and executing projects for defence, space and atomic energy laboratories and the work carried out in these projects could not be widely publicized. In view of this, no patents were filed for the strategic work done in the institution. Further, the patents filing is a very elaborate and lengthy process which needs a lot of documentation and due to huge technical workload and shortage of manpower, filing of Patents gets delayed.

The reply is not convincing as Memorandum of Association of SAMEER provides for adopting effective measures to take the R&D outputs towards commercialization and proliferation to address the requirements in the country and outside. Hence, SAMEER needs to set in place a clear policy regarding IPs. Its R&D efforts should also culminate in obtaining patents, ToT and commercialization of technology.

Transfer of Technology (ToT)

The Research Advisory Committee in March 2008 had reiterated that projects should be based on state-of-the-art technology, which would find users at the shortest possible time.

We observed (November 2012) that no guidelines were framed for Technology Transfer and thus SAMEER could not decide the strategy for ToT. During the last five years, SAMEER was able to transfer technology only in one case. Further, the companies which purchased the technology also did not commercially exploit the same.

The Ministry stated (February 2013) that the product or technology developed by SAMEER demands understanding of multidisciplinary complex technologies. Also each product developed cannot be commercially exploited since the number of units required may not be very large. However, SAMEER has taken action by forming (February 2013) a committee for identifying the products and giving guidelines to be followed in the case of ToT.

The reply is not convincing as no concrete long term proposal has been finalized to take care of commercialization of technologies developed by SAMEER.

Conclusion

SAMEER was constituted for the promotion of research and development in the areas of Microwave Engineering and Electromagnetic Engineering Technology with the objective of carrying out R&D activities in the areas of its expertise, to engage in product development driven by technology and user requirement, to provide test and measurement services and transfer of technology to the industry.

Our examination of projects undertaken by SAMEER revealed weak financial management, non-formulation of project guidelines, lack of centralised project implementation and monitoring system, deficiencies in costing and pricing besides lack of well-defined policy on intellectual property rights, transfer of technology and patent rights. Further, even after spending more than ₹200 crore during the last five years, SAMEER was able to get only three patents and one case of transfer of technology which reflect on the inadequate quality of its R&D output.

Recommendations

- *SAMEER may frame project Guidelines so as to ensure that project activities and transfer of technology are carried out under stipulated Rules and Regulations.*
- *SAMEER may strengthen its Project appraisal system to ensure timely completion of the projects within the approved cost.*
- *SAMEER may strengthen its financial management system so that fund flow and their utilisation are commensurate with its scale of operations.*
- *SAMEER may implement a centralized project monitoring system for overall control of the various projects undertaken by it.*
- *SAMEER may ensure that there exists a system whereby after technical and financial closure of projects no expenditure can be booked against the projects.*