

APPENDICES

Appendix I (Refer to Paragraph 1.5)

Grants released to Autonomous Bodies auditable under Section 14 of Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 during 2016-17

(₹ in crore)

	Autonomous Body	Grants released in 2016-17
DEPARTMENT OF ATOMIC ENERGY		
1.	Harish Chandra Research Institute, Allahabad	34.43
2.	Institute of Mathematical Sciences, Chennai	57.46
3.	Atomic Energy Education Society, Mumbai	79.40
4.	Tata Institute of Fundamental Research, Mumbai	650.47
5.	Tata Memorial Centre, Mumbai	470.00
6.	Institute for Plasma Research, Gandhinagar	512.19
7.	Institute of Physics, Bhubaneswar	37.11
8.	National Institute of Science Education and Research, Bhubaneshwar	185.63
9.	Saha Institute of Nuclear Physics, Kolkata	118.51
DEPARTMENT OF BIO-TECHNOLOGY		
10.	National Brain Research Centre, Gurgaon	51.36
11.	National Centre for Cell Sciences, Pune	6.34
12.	National Institute of Immunology, New Delhi	3.36
13.	Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	4.16
14.	Centre of DNA Finger Printing & Diagnostics, Hyderabad	4.01
15.	Institute of Bio-resources and Sustainable Development, Imphal	9.28
16.	Institute of Life Sciences, Bhubaneshwar	1.30
17.	Translational Health Science and Technology Institute, Faridabad	21.80
18.	National Agri-Food Biotechnology Institute and Bio-processing Unit, Mohali	0.50
19.	Institute for Stem Cell Research and Regenerative Medicine Bengaluru	42.10
20.	National Institute of Biomedical Genomics, Kalyani	42.72
21.	National Institute of Animal Biotechnology, Hyderabad	15.75
DEPARTMENT OF SCIENCE AND TECHNOLOGY		
22.	Aryabhata Research Institute for Observational Sciences, Nainital	5.81
23.	Birbal Sahni Institute of Paleobotany, Lucknow	42.62
24.	Indian National Academy of Engineering, Gurgaon	1.18
25.	Technology Information, Forecasting and Assessment Council, New Delhi	8.27
26.	Vigyan Prasar, New Delhi	4.85
27.	Wadia Institute of Himalayan Geology, Dehradun	6.55
28.	Agarkar Research Institute, Pune	4.15
29.	Indian Institute of Geomagnetism, Mumbai	6.10
30.	International Advanced Research Centre for Powder Metallurgy, Hyderabad	11.03
31.	Indian Institute of Astrophysics, Bengaluru	7.84
32.	Indian Academy of Sciences, Bengaluru	4.68
33.	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	18.46
34.	Bose Institute, Kolkata	16.54
35.	Indian Association for the Cultivation of Science, Kolkata	46.03

	Autonomous Body	Grants released in 2016-17
36.	S N Bose National Centre for Basic Science, Kolkata	19.32
37.	Institute of Advanced Study in Science and Technology, Guwahati	10.25
38.	National Innovation Foundation, Ahmedabad	6.47
39.	Institute of Nano-Science and Technology, Mohali	0.18
DEPARTMENT OF SPACE		
40.	North Eastern Space Application Centre, Shillong	17.24
41.	Indian Institute of Space Technology, Thiruvananthapuram	76.50
42.	National Atmospheric Research Laboratory, Tirupati	26.40
43.	Physical Research Laboratory, Ahmedabad	131.37
44.	Semi-Conductor Laboratory, Chandigarh	234.00
MINISTRY OF EARTH SCIENCES		
45.	National Institute of Ocean Technology, Chennai	163.92
46.	Indian Institute of Tropical Meteorology, Pune	284.86
47.	Indian National Centre for Ocean Information Services, Hyderabad	103.03
48.	National Centre for Antarctic & Ocean Research, Goa	201.14
49.	Centre for Earth Sciences Studies, Thiruvanthapuram	18.22
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE		
50.	Central Pollution Control Board, Delhi	89.87
51.	G.B. Pant Institute of Himalayan Environment and Development, Almora	34.81
52.	Indian Institute of Forest Management, Bhopal	20.10
53.	Indian Council of Forestry Research and Education, Dehradun	163.20
54.	Indian Plywood Industries Research and Training Institute, Bengaluru	7.80
MINISTRY OF NEW AND RENEWABLE ENERGY		
55.	Centre for Wind Energy Technology, Chennai	25.00
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION		
56.	Polavaram Project Authority, Hyderabad	100.00
TOTAL		4,265.67

Appendix II (Refer to Paragraph 1.6)

Outstanding Utilisation Certificates for the period ending March 2017

Ministry/ Department	Period to which grant relates	Number of utilisation certificates outstanding due by March 2017	Amount (₹ in lakh)
Department of Atomic Energy	1991-2010	132	667.8
	2010-15	1,285	13,028.21
	2015-16	448	3,560.77
Total		1,865	17,256.78
Department of Bio-Technology	1993-2010	212	1,316.56
	2010-15	17,297	4,14,526.17
	2015-16	3,534	1,43,121.90
Total		21,043	5,58,964.63
Department of Science and Technology	2009-10	6,798	1,40,646.63
	2010-15	22,078	7,10,266.10
	2015-16	6,348	1,91,788.70
Total		35,224	10,42,701.43
Department of Scientific and Industrial Research	2005-10	104	16,640.49
	2010-15	657	1,12,644.16
	2015-16	108	8,042.65
Total		869	1,37,327.30
Department of Space	1976-2010	125	607.96
	2010-15	64	182.28
	2015-16	72	406.27
Total		261	1,196.51
Ministry of Earth Sciences	1983-2010	402	3,003.25
	2010-15	188	2,211.51
	2015-16	267	18,865
Total		857	24,079.76
Ministry of Environment, Forest and Climate Change	1994-2010	3,530	11,828.24
	2010-15	357	6,514.65
	2015-16	140	28,619.16
Total		4,027	46,962.05
Ministry of New and Renewable Energy	2005-10	29	608.88
	2010-15	160	18,273.50
	2015-16	580	1,65,632.11
Total		769	1,84,514.49
Ministry of Water Resources, River Development and Ganga Rejuvenation	1986-2010	108	893.46
	2010-15	99	33,453.89
	2015-16	60	1,94,829
Total		267	2,29,176.35
Grand Total		65,182	22,42,179.30

Appendix III (Refer to Paragraph 1.8)

List of Central Public Sector Enterprises under the Scientific and Environmental Ministries/Departments

Sl. No.	Name of the CPSE
Department of Atomic Energy	
1.	Anushakti Vidyut Nigam Limited- AVNL
2.	Bharatiya Nabhikiya Vidyut Nigam Limited
3.	Electronics Corporation of India Limited
4.	Indian Rare Earths Limited
5.	Nuclear Power Corporation of India Limited
6.	NPCIL – Indian Oil Nuclear Energy Corporation Limited
7.	NPCIL – NALCO Power Company Limited
8.	Uranium Corporation of India Limited/ UCIL
Department of Bio-Technology	
9.	Bharat Immunologicals and Biologicals Corporation Limited
10.	Biotechnology Industry Research Assistance Council
11.	Indian Vaccines Company Limited
Department of Scientific and Industrial Research	
12.	Central Electronics Limited
13.	National Research Development Corporation of India Limited
Department of Space	
14.	Antrix Corporation Limited
Ministry of Environment, Forest and Climate Change	
15.	Andaman & Nicobar Islands Forest and Plantation Development Corporation Limited
Ministry of New and Renewable Energy	
16.	Andhra Pradesh Solar Power Corporation Private Limited
17.	Himachal Renewable Limited, Shimla
18.	India Renewable Energy Development Agency Limited
19.	Karnataka Solar Power Development Corporation Limited
20.	Lucknow Solar Power Development Corporation Limited
21.	Renewable Power Corporation of Kerala Limited
22.	Rewa Ultra Mega Solar Limited
23.	Solar Energy Corporation of India Limited
Ministry of Water Resources, River Development and Ganga Rejuvenation	
24.	National Projects Construction Corporation Limited
25.	WAPCOS (India) Limited

Appendix IV (Refer to Paragraph 1.9)**Statement of losses and irrecoverable dues written off/waived during 2016-17***(Amount in ₹ lakh)*

Ministry/ Department	Write off of losses and irrecoverable dues due to									
	Failure of system		Neglect/fraud etc.		Other reasons		Waiver of recovery		Ex-gratia Payments	
	Cases	Amount	Cases	Amount	Cases	Amount	Cases	Amount	Cases	Amount
Department of Atomic Energy	-	-	-	-	22	8.37	-	-	-	-
Department of Bio-Technology	NIL									
Department of Science and Technology	NIL									
Department of Scientific and Industrial Research	NIL									
Department of Space	-	-	-	-	8	8.59	-	-	-	-
Ministry of Earth Sciences	Data not available									
Ministry of Environment, Forest and Climate Change	NIL									
Ministry of New and Renewable Energy	NIL									
Ministry of Water Resources, River Development and Ganga Rejuvenation	Data not available									
Total	-	-	-	-	30	16.96	-	-	-	-

Appendix V (Refer to Paragraph 1.11)

A: Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments as of December 2017- ATNs which have not been received from the Ministry/Department even for the first time

Sl. No.	No. & Year of Report	Para No.	Para title	Date of laying in the Parliament	Delay in submission of ATNs (months)
Department of Atomic Energy					
1.	30 of 2015	2.1	Implementation of Performance Related Group Incentive scheme	08.12.2015	20
Department of Bio-Technology					
2.	17 of 2017	3.3	Over payment of Transport Allowance	21.07.2017	1
Department of Scientific and Industrial Research					
3.	17 of 2017	5.1	Management of Human Resources in Council of Scientific and Industrial Research	21.07.2017	1
4.	17 of 2017	5.4	Avoidable expenditure due to non-disposal of unutilised land	21.07.2017	1
Ministry of Earth Sciences					
5.	17 of 2017	7.2	Irregular implementation of promotion scheme	21.07.2017	1
Ministry of Environment, Forest and Climate Change					
6.	39 of 2016	Standalone	Environmental Clearance and Post Clearance Monitoring	10.03.2017	5
Ministry of Water Resources, River Development and Ganga Rejuvenation					
7.	10 of 2017	Standalone	Schemes for Flood Control and Flood Forecasting	21.07.2017	1

B: Summarised position of the Action Taken Notes (ATNs) in respect of CPSEs awaited from various Ministries/ Departments as of December 2017- ATNs which have not been received from the Ministry/Department even for the first time

Sl. No.	No. & Year of Report	Para No.	Name of the CPSE
Department of Scientific and Industrial Research			
1.	9 of 2017	13.1	Central Electronics Limited
Ministry of Water Resources, River Development and Ganga Rejuvenation			
2.	9 of 2017	17.1	National Projects Construction Corporation Limited

Appendix VI (Refer to Paragraph 1.11)

Summarised position of the Action Taken Notes (ATNs) awaited from various Ministries/ Departments as of December 2017- ATNs on which Audit has given comments/observations but revised ATNs have not been received

Sl. No.	No. & Year of Report	Para No.	Para title	Date of issue of vetting comments on the ATN	Delay in submission of revised ATNs (months)
Department of Atomic Energy					
1.	22 of 2013	2.2	Hasty procurement of equipment without creating infrastructure facilities for installation	04.08.2017	4
2.	12 of 2016	2.2	Non-installation of Steam Turbine Generator	25.10.2017	2
3.	17 of 2017	2.1	Avoidable expenditure on purchase of medicine without tendering process	22.11.2017	1
4.	17 of 2017	2.2	Management of Human Resources in Autonomous Bodies of Department of Atomic Energy	27.12.2017	-
5.	17 of 2017	2.4	Irregular construction of residential flats and diversion of grant funds	27.12.2017	-
Department of Bio-Technology					
6.	5 of 2003	3.1	DBT Review	22.09.2017	3
7.	12 of 2016	3.1	Irregular administrative and entitlements operations	27.10.2017	2
8.	17 of 2017	3.1	Irregular expenditure on premises transferred to another organisation	23.11.2017	1
Department of Science and Technology					
9.	5 of 2004	3.1	Review of TIFAC	04.08.2017	4
10.	5 of 2005	5.1	Unfruitful expenditure during GTS-Bicentenary celebrations	25.10.2017	2
11.	13 of 2007	5.3	Internal controls in DST	25.10.2017	2
12.	CA 3 of 2008	5.2	Irregular extension of service	03.07.2017	5
13.	CA 16 of 2008-09	5.1	Non-recovery of dues despite development of technology	04.08.2017	4

Sl. No.	No. & Year of Report	Para No.	Para title	Date of issue of vetting comments on the ATN	Delay in submission of revised ATNs (months)
14.	CA 16 of 2008-09	5.3	Activities of Birbal Sahni Institute of Palaeobotany, Lucknow	14.12.2017	-
15.	27 of 2014	3.1	Fraudulent payment of legal fees	04.08.2017	1
16.	30 of 2015	3.2	Avoidable expenditure due to poor management of land and delayed construction of office complex	07.04.2017	8
17.	26 of 2016	Standalone	Administrative functioning of Autonomous Bodies under Department of Science and	25.10.2017	2
18.	17 of 2017	4.1	Inadequate implementation of National Map Policy 2005	30.11.2017	1
Department of Scientific and Industrial Research					
19.	5 of 1998	2.4	Loss due to defective agreement	04.08.2017	4
20.	22 of 2013	4.1	Public Private Partnership for setting up The Centre for Genomic Application by Institute of Genomics and Integrative Biology	14.12.2017	-
21.	29 of 2013	Standalone	Network Projects of Council of Scientific and Industrial Research for Tenth Five Year Plan	15.12.2017	-
22.	30 of 2015	4.1	New Millennium Indian Technology Leadership Initiative scheme	22.09.2017	3
23.	12 of 2016	4.1	Unfruitful expenditure on procurement of BSL-3 facility	12.04.2017	8
24.	17 of 2017	5.3	Non-operationalisation of Automatic Visual Range Assessor Systems	14.11.2017	1
Department of Space					
25.	12 of 2016	5.4	Loss due to delayed commissioning of equipment	10.08.2017	4
26.	17 of 2017	6.1	Management of VSAT services	30.11.2017	1
27.	17 of 2017	6.2	Irregular expenditure on pre-project activities	13.11.2017	1

Sl. No.	No. & Year of Report	Para No.	Para title	Date of issue of vetting comments on the ATN	Delay in submission of revised ATNs (months)
28.	17 of 2017	6.3	Lack of financial prudence and improper contract management in the delivery of commercial spacecraft	13.11.2017	1
29.	17 of 2017	6.4	Infructuous expenditure in purchase of ecologically fragile land	13.11.2017	1
Ministry of Earth Sciences					
30.	22 of 2013	8.1	Irregular introduction of pension scheme and diversion of funds	26.10.2017	2
31.	27 of 2014	5.2	Irregular payment of gratuity	31.07.2017	5
32.	30 of 2015	6.1	Unfruitful expenditure due to non-functional website	20.04.2017	8
33.	12 of 2016	6.1	Non-establishment of desalination plants and wasteful expenditure	23.10.2017	2
34.	17 of 2017	7.1	Non-recovery of fuel charges due to improper contract management	13.11.2017	1
Ministry of Environment, Forest and Climate Change					
35.	3B of 2001	1.0	Implementation of environment act relating to water pollution	31.07.2017	5
36.	21 of 2013	Standalone	Compensatory Afforestation in India	03.08.2017	4
37.	27 of 2014	6.3	Wasteful expenditure on hiring of office accommodation	13.09.2017	3
38.	30 of 2015	7.1	implementation of E-waste (Management and Handling) Rules, 2011 by central pollution Control Board	13.09.2017	3
39.	30 of 2015	7.2	Inordinate delay in completion of pilot projects for sewage treatment	03.08.2017	4

Appendix VII (Refer to Paragraph 3.1.2.2)

A: List of projects in which there was time over run

Projects	Original Scheduled date of completion	Revised date of completion	Actual date of completion	Time Overrun (As on 31 March 2017)	Reasons for time over run
1. Revamping of main cooling tower & Re-routing of cooling water return header at HWP, Manuguru	March 2012	June 2012	June 2012	3 months	-----
2. Replacement of unit-I & common unit DCS of CPP at HWP, Manuguru	March 2013	December 2013	December 2013	9 months	-----
3. Acquisition of land at the plant site of HWP, Tuticorin	August 2012	September 2012	September 2012	1 month	Marginal delay
4. Construction of Boundary wall and replacement of fencing at HWP, Manuguru & Kota	September 2014	March 2015	March 2015	6 months	-----
5. Retrofitting/upgradation of electrical, mechanical & electronic instrumentation system at HWP, Manuguru	March 2016	March 2018	---	1 year	Delay due to repeated retendering for EHTC and non-acceptance of liability clause by suppliers for 6.6 KV VCBs.
6. Utilization of waste heat/low grade to generate refrigeration at HWP, Manuguru	March 2016	March 2019	--	1 year	Due to retendering and delay in approval from DAE for placement of order.
7. Revamping of existing integrated information system application along with IT infrastructure at HWB(CO) & HWP, Baroda/Kota/Manuguru/ Talcher/Tuticorin	March 2016	March 2019	--	1 year	Repeated tendering for IIS application software & delay in getting revised financial sanction from DAE. Approval for placement of Work Order on M/s ECIL through MoU for IIS revamping work is awaited from DAE.
8. Setting up of operator training simulator facility for Heavy Water production plants based on NH ₃ -H ₂ & H ₂ S-H ₂ O exchange process	February 2015	March 2018	---	2 years and 1 month	Due to delay in approval from DAE for placement of order and developmental nature of job the work is getting delayed.
9. Retrofitting/upgradation of electrical, mechanical & electronic instrumentation system at HWP, Thal	March 2015	March 2018		2 years	Retendering due to high cost of HP valves, delay in finalization of specification of antisurge controller.
10. Replacement of control room instrument with DCS at HWP, Manuguru	June 2011	June 2016	June 2016	5 years	Retendered thrice due to receipt of inadequate offers and non-agreement of liability clause by supplier. Proposal for placement of PO and revised sanction cost were sent to DAE on 06.09.2013. Approval of the same was received from DAE on 29.03.2014. Accordingly, the placement of PO and schedule of work completion have got delayed. PO which was supposed to be placed in September 2013 was placed on 30.03.2013. Due to delay in placement of PO the schedule

Projects	Original Scheduled date of completion	Revised date of completion	Actual date of completion	Time Overrun (As on 31 March 2017)	Reasons for time over run
					date of commissioning of XU-I was postponed from March 2014 to March 2015 and XU-II including utilities was postponed from March 2015 to March 2016 as it depends upon the planned shutdown of the plant. Due to this, the schedule of completion has been delayed by approximately one year.
11. Extension of H ₂ S monitoring facility and environment survey facility at HWP, Manuguru	March 2016	March 2017	March 2017	1 year	Due to retendering of cables etc. the project got delayed.
12. Improvements in CPP by incorporating energy efficient systems/components/ equipment etc.	March 2016	March 2017	March 2017	1 year	Delay in execution of turbine retrofitting work due to backing out by the party has resulted in delay in execution of project.
13. Replacement of existing pneumatic instrumentation with electronic instruments and hooking up with DCS PLC system at HWP, Kota	December 2009	March 2014	March 2014	4 years and 3 months	Phase-I of DCS installations i.e. for XU & DU commissioning work completed by February 2010. Delay is attributed to supply of system and further development related to performance of system for safe & smooth operation of the plant.
14. Oxidation system for tritiated deuterium product from HEWAC facility at HWP, Kota	July 2012	July 2013	July 2013	1 year	Due to developmental nature of job and delay in approval of engineering document.
15. Setting up solar PV power plant at HWP, Manuguru to meet mandatory requirement of APERC	May 2014	January 2016	January 2016	1 year and 8 months	Due to heavy rain, Telangana separation agitation and delay in obtaining the clearance from Telangana state electricity board
16. Additional storage requirement for Heavy Water at Heavy Water Plants, Kota and Manuguru	March 2013	March 2014	March 2014	1 year	Delay in supply of tanks and delay in erection due to non-availability of crane.
17. Major repair/replacement of ESP internals (8 fields) and ESP controllers with microprocessor based system	March 2012	March 2014	March 2014	2 years	Delay was due to matching of the retrofit jobs during Major turnaround of plant.
18. Advanced Non-destructive Examination and condition monitoring facility at HWP, Baroda	March 2016	March 2017	March 2017	1 year	Due to embargo for supply of few of the items procurement delayed.
19. Development & implementation of efficient process for management of Sodium Sulphate at HWP, Kota & TDP, Chembur	September 2015	March 2019	--	1 year and 6 months	The file for Sodium Sulphate was retendered due to inadequate & technically not acceptable offers.
20. Pre-project activities for new Heavy Water production facility	October 2014	March 2019	--	2 years and 5 months	Due to delay in approval from DAE for placement of consultancy contract for DPR preparation for

Projects	Original Scheduled date of completion	Revised date of completion	Actual date of completion	Time Overrun (As on 31 March 2017)	Reasons for time over run
					Ammonia and Sulphide based Heavy Water Plant.
21. Retrofitting of 6.6 KV & 33 KV MOCB to VCBs- Phase-I at HWP, Manuguru	March 2012	March 2014	May 2014	2 years and 2 months	Delay due to poor response during tendering.
22. Procurement of double disc gate valve for HWP at HWP, Manuguru	March 2012	May 2014	May 2014	2 year and 2 months	Development of the valve indigenously through local supplier by giving sample valve from site has taken time
23. Installation of sheet metal structured packing in third stage hot tower of HWP, Manuguru	March 2011	August 2013	August 2013	2 years and 5 months	Based on the performance of structured packing in cold tower, packing for hot tower was procured and installed. Also delay in resolving the tax dispute between DPS and supplier.
24. Procurement of double disc gate valve for HWP, Kota	December 2011	May 2014	May 2014	2 years and 5 months	Development of the valve indigenously through local supplier by giving sample valve from site has taken time
25. Replacement of DG set at HWP, Kota	March 2012	October 2013	March 2014	2 years	Due to delay in placement of order due to delay in receipt of clarification from DG set supplier.
26. Effluent treatment plant for TBP plant at HWP, Baroda	March 2012	March 2013	March 2013	1 year	Due to developmental nature of project as this type of effluent is not available at other places.
27. Development of industrially suitable wet proof catalyst for isotopic exchange reaction involving hydrogen and water in collaboration with RRCAT , Baroda	February 2010	March 2013	March 2013	3 years and 1 month	Delay in freezing technical specifications as environmental monitors are not available in the market.
28. Enhanced fire /safety features/mitigation measures at HWP, Kota	March 2016	December 2018	--	1 year	The scheme was re-optimized and revised estimate was prepared. Administrative approval was received on 12-02-2015, after that procurement action was initiated. Thereafter, work is getting affected due to delay in supply of pipe and pipe fittings.
29. Project activities for production of rare material	March 2010	Continuing		7 years	There is delay in obtaining the sanction for main project the activities considered under the pre-project activities got delayed. Preparation of various documents like DPR, EIA, geotechnical studies etc. were delayed due to identification of suitable plot of land at proposed site. Environmental clearance was delayed as one of the proposed site location was under moratorium due to critical level of pollution. Consent application to various pollution control boards got delayed due to delay in obtaining the environmental clearances.

B: List of projects in which there was cost over run*(₹ in crore)*

Sl. No.	Name of the project	Original Sanctioned cost	Revised cost	Cost over run	Reasons for cost over run
1	2	3	4	5 (4-3)	6
1	Utilization of waste heat/low grade to generate refrigeration at HWP, Manuguru	22.00	24.60	2.60	Due to delay in tendering process and obtaining necessary approvals from DAE.
2	Revamping of existing integrated information system application along with IT infrastructure at HWB(CO) & HWP, Baroda/Kota/Manuguru/Talcher/Tuticorin	10.00	14.00	4.00	Repeated tendering for IIS application software also the revised financial sanction is awaited from DAE.
3	Replacement of control room instrument with DCS at HWP, Manuguru	12.00	16.62	4.62	Retendered thrice due to receipt of inadequate offers and non-agreement of liability clause by supplier.
4	Installation of sheet metal structured packing in third stage hot tower of HWP, Manuguru	3.10	3.51	0.41	Delay in resolving the tax dispute between DPS and supplier
5	Replacement of DG set at HWP, Kota	1.81	2.50	0.69	Due to delay in placement of order due to delay in receipt of clarification from DG set supplier.
	TOTAL	48.91	61.23	12.32	

Appendix VIII (Refer to Paragraph 4.1.2.1)

Action taken by IBSD on suggestion on Committees in setting up of Bio-resource Park

Committee Meeting	Initiative suggested by SAC/GC	Action taken by IBSD
10 th SAC meeting January 2011	To demarcate an area for plants for a butterfly zone in the Park	No area has been demarcated.
	To have germplasm conservatory of: (i) 'Zingiberaceae', (ii) 'Banana', (iii) Citrus, (iv) 'minor fruits' trees, (v) 'fuel wood' trees, (vi) 'insectivorous and parasitic plants', (vii) 'sericulture plants' and (viii) other 'useful endemic plants' of the region	Germplasm conservatory of only Zingiberaceae, Citrus and Orchids partially created
13 th SAC meeting August 2013	To develop a "Signature Garden/Theme Park of Manipur" which could act as 'Manipur Tribal Plants Conservatory' having a collection of: (i) aquatic plants, (ii) indigenous dye-yielding plants, (iii) tannin yielding plants, (iv) poisonous plants, (v) edible insects and (vi) indigenous fishes.	Not developed
	To develop post-harvest demonstration facility on: (i) 'ginger', (ii) 'oleoresins from Capsicum' and (iii) 'essential oil extraction from aromatic crops'.	Not developed.
	To be developed as a show-piece or window of the Institution	The work was yet to be reviewed
12 th GC meeting November 2012	To create bio-resource based entrepreneurship at the Park in order to promote bio-based enterprises in the region.	Work was at a preliminary stage.
15 th SAC meeting August 2015	To create a state-of-the art Orchidarium at the Park	Tenders were floated and the process was on.
15 th GC meeting October 2015	To create facilities for mass multiplication of few aromatic crops such as patchouli, geranium and vetiver etc. along with processing facilities at the Park	Work was at a preliminary stage.
	To create a National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited facility at the Park in order to provide value addition to the available resources	No such facility was created.

Appendix IX (Refer to Paragraph 4.1.2.5)**Details of technologies developed but not transferred to industry**

Division	Product/technology developed	Year of development
Animal Resource	1. Breeding and seed production technology of <i>Osteobramabelangeri</i> (Species of ray finned fish)	2009-10
Plant Resource	2. Anti-arthritic formulations	2015
	3. Optimization of nursery agro-techniques out of niche environment at 800m above mean sea level of <i>Valerianajatamansi</i> with special reference to optimum sowing time, sowing/raising in different bed types and plotting of media.	2015-16
	4. Agro-techniques out of niche environment at 800 m above mean sea level for <i>Valerianajatamansi</i> for plant density per unit area	2015-16
Microbial Resource	5. Process and product for fermented soybean production using activated starter culture	2008
	6. Process and product of fermented bamboo shoot production using the selected starter culture consortium	2011
	7. Fibrinolytic enzymes from <i>Bacillus subtilis</i> production	2011
	8. Development of microbial bio-pesticides for the control of seed borne fungal pathogens and plant growth promotion using native <i>Trichoderma viride</i> .	2016

Appendix X (Refer to Paragraph 4.1.2.5)

Details of patents filed by IBSD but not granted

Division	Patent Title	Year of patent filing
Plant Resource	1. Non-pungent Pigments from Pungent chillies extraction, usage for cosmetic and dermatological products	2016
	2. An improved method for isolation and purification of Capsaicin, USP grade from pungent fruits of Capsicum spp.	2014
Animal Resource	3. A biofumigant comprising 2-Methyltetrahydro-3- Furanone	2014

Appendix XI (Refer to Paragraph 4.1.2.5)

Outcome of recommendations of SAC on development of product and technology

Division	Suggestion by SAC	Audit observation
Plant Bio-resource	SAC in 9 th Meeting (April 2009) suggested to carry out research work for technology generation on Citrus peel oil viewing its commercial prospect.	Technology was yet to be developed and extraction was done in lab scale only.
	SAC in 13 th Meeting (September 2013) suggested to create the resource base of the elite variety of capsicum available in NER having good industrial demand and to develop a process for extraction of capsaicinoids and capsaicin from King Chilli.	IBSD could not create the resource base of elite variety of capsicum of NER due to hilly terrain and lack of transportation, local language problem, law and order problem and non-availability of suitable manpower and though the process for extraction of capsaicinoids and capsaicin from King Chilli had been developed and standardized at laboratory level but pilot plant validation of the same was not done.
	SAC in 13 th Meeting (September 2013) suggested to determine vase life of ornamental ginger 'GlobbaSp' in order to have market value and to release one ginger ornamental flower as a product of IBSD by producing and putting at least 1,000 plants in the market within one year.	On being asked to intimate action taken on this, IBSD did not offer any comments.
Animal Bio-resource	In January 2011 SAC (10 th Meeting) suggested to crossbreed between local earthworms with exotic earthworms for enhancing efficiency of local earthworms.	No action has been taken on this.
	In September 2014, SAC (14 th Meeting) suggested to undertake outreach programme on fermented fish viz., Ngari, Cider to enhance the commercial value and also to give health tag to fermented food by conducting clinical trial to popularize fermented food among other communities and to avail support of good technologist and engineers for commercialisation.	The study on microbial dynamics on Ngari fermentation was carried out with the help of two indigenous Ngari producers and starter culture was designed, however, no study was initiated on Cider due to limited manpower and no health tagging was done and as such the process and products developed were incomplete.
Microbial Bio-resource	In June 2008, SAC (8 th Meeting) suggested to develop fermented food product from cabbage for better profitability.	No work on this had been carried out.
	In April 2009, SAC (9 th Meeting) suggested to develop bio-fertilizer for organic farming inputs for Mandarin Orange.	On being asked to intimate action taken on this, IBSD did not offer any comments.

Division	Suggestion by SAC	Audit observation
	<p>In April 2012 SAC (12th Meeting) suggested to develop useful products derived from BGA collections.</p>	<p>In action taken report IBSD stated that a few nos of cyanobacteria were identified for commercial exploitation since the strains found to be at par commercial grade strains. However, no product has been developed.</p>
	<p>In April 2012 SAC (12th Meeting) suggested to translate fermented food of NER with proven health benefits into national food basket by improving hygiene, fermentation technology, large scale production and food packaging.</p>	<p>In-depth studies on the microbial resources associated with fermented soybean (Hawaijar), fermented bamboo shoot (Soibum), fermented fish (Ngari) and rice wine (Athingba) were carried out. However, since the processes and products were incomplete in the aspects of chemical composition analysis and health tagging, the final product/technology yet to be developed.</p>
	<p>In November 2006 Society (6th Meeting) advised IBSD to take up research work on biofuels as one of the priority area of research of the Institute. Further, in September 2016 Governing Council (17th Meeting) suggested among other to take up research programme on biomass/waste to energy.</p>	<p>The work is at preliminary stage and no product has been developed as of March 2017.</p>
	<p>In October 2006 SAC (5th Meeting) suggested to take up bioprospecting of cynobacteria for high value natural pigments and proteins such as phycocyanin and phucoerythrin.</p>	<p>No records showing the action taken of this was available with IBSD.</p>
	<p>In September 2007 SAC (7th Meeting) suggested to undertake a research programme on the diversity of micro algae as it have the potential source of biodiesel and biofuel.</p>	<p>No product has been developed out of this research programme as the Scientist assigned for micro-algal cultures however left the institute.</p>

Appendix XII (Refer to Paragraph 6.2.1)

List of Eleventh Five Year Plan projects of CSIR laboratories selected for audit

Name of the project	Name of the institute	Approved cost of the project (₹ In crore)	Actual expenditure (₹ In crore)
1. Enhancement of knowledgebase in aerospace sciences and development of cutting age technologies (SIP-01).	National Aerospace Laboratories (NAL), Bangalore	99.67	85.14
2. New drug development programme for parasitic Diseases and Microbial Infections(SIP26)	Central Drug Research Institute (CDRI), Lucknow	29.88	26.80
3. Diabetes Mellitus – New Drug discovery R&D, Molecular mechanisms and genetic factors (NWP32)		33.78	33.49
4. Validation of Identified Models and Development of new alternative models for evaluation of new drug (NWP34)		18.50	18.42
5. Identification and validation of drug targets for selected pathogens (NWP38)		16.50	15.94
6. Advancement in Metrology (NWP-45)	National Physical Laboratory (NPL), New Delhi	136.81	135.73
7. R&D on Photovoltaics and other energy applications (SIP-17)		15.00	14.63
8. Fabrication of LED Devices and Systems for Solid State Lighting Applications (NWP-25)		47.88	47.59
9. Ceramic materials for emerging technologies involving liquid and gas separation (SIP-23)	Central Glass and Ceramic Research Institute (CGCRI), Kolkata	21.33	20.59
10. Non oxide ceramic based advance structural materials: Armours and Refractories (NWP-29)		14.50	13.19
11. Photonics for Communication, Sensor and Laser Technology (NWP-26)		19.99	19.77
12. Evaluation and Correction of Mitochondrial Dysfunction in Disease (SIP-07)	Indian Institute of Chemical Biology (IICB), Jadavpur	16.50	16.50
13. Engineering Peptides & Proteins for New Generation Therapies (NWP-005)		10.34	9.72
14. Development of Diagnostics and Target Based molecular Medicines against Allergy Bronchial Asthma and Chronic Obstructive Pulmonary Disease (NWP-33)		19.80	19.80
15. New insights in Cancer Biology identification of Novel Targets and Development of Target based molecular medicine (IAP-01)		9.27*	9.24*
16. Development of Specialty Inorganic Materials for Diverse Applications (NWP-10)	Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavnagar	20.00	19.14
17. Mapping of the Marine Biodiversity along the Indian Coast (NWP-18)		9.00	8.25
18. Development of hollow fiber membrane technology for water disinfection/purification and waste water reclamation (NWP-47)		12.00	9.92
19. Science for development of a forecasting system for the waters around India (SIP-13)		72.45	66.02

Name of the project	Name of the institute	Approved cost of the project (₹ In crore)	Actual expenditure (₹ In crore)
20. Atmosphere carbon dioxide sequestration through fertilization of a high-nutrients-low-chlorophyll (HNLC) oceanic region with iron (NWP-14)	National Institute of Oceanography (NIO), Goa	15.00	15.00
21. To develop know-how and technology for environmental friendly conversion and utilization of biomass to fuels, lubricants and additives (SIP-19)	Indian Institute of Petroleum (IIP), Dehradun	35.00	31.63
22. An Integrative Biology Approach in Deciphering Genotype – Phenotype Correlation for Human Complex Disorders (SIP-06)	Institute of Genomics and Integrative Biology (IGIB), New Delhi	14.50	14.27
23. NCL-IGIB Joint Research Initiative : Interfacing Chemistry with Biology(NWP13)		21.50	21.50
24. Comparative Genomics and Biology of non-coding RNA in the human genome (NWP36)		38.00	35.39
25. Plasma Proteomics Health, Environment and Disease (NWP-04)	Centre for Cellular and Molecular Biology (CCMB), Hyderabad	33.61	33.61
26. Nano material and Nanodevices in Health and Disease (NWP-35)		38.75	35.38
27. Project for the conservation for the endangered species (IAP -02)		16.94	15.38
TOTAL		836.5	792.04

*Figures in respect of IICB alone. The total expenditure was not provided.

Appendix XIII (Refer to Paragraph 7.1.2.2)

Details of delays in purchase/work contracts under NAVIC

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
IRCDR Works							
1.	01-07-2006/ 29-11-2010/ 02-05-2011/ 15-01-2012/ 22-02-2013/ ISTRAC/CMD/CON/ Jodhpur/1060/ 11758 (₹ 1.59 crore)	Construction of IRIMS/ IRCDR Building at Jodhpur (Civil, PH, Electrical and A.C. works) (ISTRAC)	53.73	2.13	13.47	69.33	Reasons for delay in planning the work was not put on record by ISRO. Delay in execution of the jodhpur works were due to; (i) the delay in handing over of site (ii) construction of size stone masonry toe wall (iii) non-availability of sand due to ban by Rajasthan High Court (iv) Raising Finished Floor Level & Finished Ground level of building and (v) delay in supply and installation of 200KVA transformer.
2.	01-07-2006/ 13-10-2010/ 10-02-2011/ 23-08-2011/ 30-04-2013 ISTRAC/CMD/CON/ NE-SAC/TN-06/WO-09/2010-11/11423 (₹ 76.94 lakh)	Construction of IRCDR facility Building (Civil, PH, Electrical and Air conditioning works) at NE-SAC, Umium Meghalaya (ISTRAC)	52.17	1	20.53	73.70	Reasons for delay in planning the work was not put on record by ISRO. Delay in execution stage of the Meghalaya works were due to delay in cutting of trees (ii) construction of sump RCC retaining wall (iii) due to hold on 3 nos. column (iv) cold climatic conditions (v) non-availability of labour (vi) heavy rainfall and additional work.
* The civil works were to be ready expeditiously since the building was to house IRCDR equipment/ consumables. Therefore, RFP should be realised immediately after issue of financial sanction by DOS in June 2006.							
IRCDR Purchase							
3.	30-06-2007/ 16-07-2008/ 25-02-2009/ 31-03-2010/ 03-02-2013 20080002150101	11 M full motion antenna system (ISTRAC)	12.73	4.47	34.67	51.57	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in

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Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
	(₹ 13.40 crore)						execution of this procurement was due to (i) heavy rains hampered access to sites as they were remotely located (ii) labour problems (iii) law and order problem, etc.
4.	30-06-2007/ 14-06-2007/ 21-02-2008/ 09-06-2008/ 03-02-2009 20070005600101 (₹ 1.80 crore)	SATRE modem satellite time & ranging equipment (SAC)	--	5.40	7.97	13.37	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.
5.	30-06-2007/ 28-12-2015/ 19-08-2016/ 18-10-2016/ 21-02-2017 2015E006970101 (₹ 3.70 crore)	Two Way CDMA Ranging Modem for IRCDR Station (ISTRAC)	103.43	4.83	4.20	112.46	Reasons for delay in planning the procurement was not put on record by ISRO. Delay of one month in execution of this procurement was on account of late issue of Letter of Credit by ISTRAC. However, reasons pertaining to the remaining period of delay was not put on record by ISRO.
6.	30-06-2007/ 03-04-2009/ 07-12-2009/ 18-05-2010/ 27-04-2010 20090000080101 (₹ 2.40 crore)	5071A High performance Cesium standard (clocks) (ISTRAC)	21.43	5.27	--	26.70	Reasons for delay in planning the procurement was not put on record by ISRO.
7.	30-06-2007/ 16-07-2008/ 25-02-2009/ 31-12-2011/ 03-02-2013 20080002150102 (₹ 3.10 crore)	11 M full motion antenna system (ISTRAC)	12.73	4.47	13.33	30.53	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) heavy rains hampered access to sites as they were remotely located (ii) labour problems (iii) law and order problem, etc.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
8.	30-06-2007/ 14-06-2007/ 25-07-2007/ 15-11-2007/ 26-02-2008 20060030830101 (₹ 60.99 lakh)	SATRE modem satellite time and ranging (SAC)	--	--	3.43	3.43	Reasons for delay in execution of the procurement was not found since the concerned purchase file was weeded out by ISRO.
* indents for procurement under IRCDR were to be raised within twelve months (three months for placing work order + nine months for completion of work) from 01 July 2006 i.e. by June 2007.							
IRNWT							
9.	30-04-2007*/ 17-07-2008/ 11-08-2009/ 28-06-2010/ 09-08-2011 20080002160101 (₹ 8.57 crore)	IRNSS NETWORK TIMING FACILITY (ISTRAC)	14.80	10	13.57	38.37	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to constant feedback (PDR & CDR) from ISRO after completion of various stages and subsequent modifications in design.
10.	31-01-2008#/ 17-01-2014/ 30-05-2016/ 30-07-2017/ incomplete as on 31-10-2017 20130003310101 (₹ 17.97 crore)	IRNWT-II at Lucknow (ISTRAC)	72.60	25.80	3	101.40	Reasons for delay in planning the procurement was not put on record by ISRO.
*indents for procurement of IRNWT-I (Byalalu) was to be raised within ten months (three months for placing work order + seven months for completion of work of INC-1) from 01 July 2006 i.e. by April 2007. # indents for procurement of IRNWT-II (Lucknow) was to be raised within nineteen months (three months for placing work order + sixteen months for completion of work of INC-2) from 01 July 2006 i.e. by January 2008.							
User Devices Simulators							
11.	01-07-2006/ 17-08-2011/ 28-06-2012/ 15-04-2013/ 22-03-2013 20110013750101 (₹ 3.57 crore)	IRNSS signal simulator development (SAC)	62.43	7.53	--	69.96	Reasons for delay in planning the procurement was not put on record by ISRO.
12.	01-07-2006/ 13-12-2013/ 21-08-2014/ 09-07-2015/ 16-09-2015 2013E002980101 (₹ 1.67 crore)	Design & Development of IRNSS SPS & GPS Simulator (SAC)	90.73	5.37	2.30	98.40	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
13.	21-05-2013/ 21-05-2013/ 26-11-2013/ 23-09-2016/ 23-09-2016 20130004770101 (₹ 51 lakh)	AMC of GPS simulator (SAC)	--	3.30	--	3.30	Reasons for delay in planning the procurement was not put on record by ISRO.
14.	01-07-2006/ 25-08-2011/ 07-02-2013/ 07-08-2013/ 23-12-2013 20110002440101 (₹ 2.53 crore)	IRNSS satellite L5, S signal simulator (ISTRAC)	62.70	14.73	4.60	82.03	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.
* The civil works were to be indented immediately after issue of financial sanction by DOS in June 2006.							
User Receivers							
15.	31-08-2007/ 20-01-2012/ 25-09-2012/ 25-03-2014/ 13-10-2014 20110022590101 (₹ 4.08 crore)	Development of IRNSS (SPS)_GPS user RXS. (SAC)	53.43	5.30	6.73	65.46	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was on vendor side to comply certain technical parameters.
16.	31-08-2007/ 19-07-2012/ 15-05-2013/ 31-01-2015/ 18-07-2016 20110027370101 (₹ 6.83 crore)	Development of IRNSS RS_GPS user receiver (SAC)	59.47	7	17.80	84.27	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to customizations requested by SAC, Ahmedabad which led to overall delay of shipment.
17.	31-08-2007/ 06-01-2014/ 22-01-2015/ 22-10-2015/ 18-04-2016 2014E003090101 (₹ 5.67 crore)	105 Units of NaVIC SPS, GPS and GAGAN receivers procured from M/s ACCORD, Bangalore (SAC)	77.33	9.70	5.97	93	Reasons for delay in planning the procurement was not put on record by ISRO. User receivers were to be delivered and installed at multiple locations. Delay in execution of this procurement was due to non-furnishing of these location details to vendor by SAC, Ahmedabad along with purchase order.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
18.	31-08-2007/ 08-07-2014/ 27-02-2015/ 14-11-2015/ incomplete as on 31-05-2017 20140014880101 (₹ 1.90 crore)	105 Units of NAVIC SPS, GPS and GAGAN receivers procured from M/s Data Patterns, Chennai (SAC)	83.43	4.80	18.80	107.03	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) change in specifications requested by vendor and confirmation of modification was given by SAC after three months (ii) more interaction in mechanical structure analysis and ADS simulation of RF board.
19.	31-08-2007/ 26-04-2016/ 20-02-2017/ 20-08-2017 2016E015390101 (₹ 5.40 crore)	100 Units of NAVIC SPS, GPS and GAGAN receivers procured from M/s ACCORD, Bangalore (SAC)	105.37	7	--	112.37	Reasons for delay in planning the procurement was not put on record by ISRO.
* indents for procurement of user devices were to be raised within fourteen months (three months for placing of simulators' purchase order + eleven months for completion of delivery of simulators) from 01 July 2006 i.e. by August 2007.							
INC							
20.	01-07-2006/ 01-02-2008/ 28-01-2009/ 10-08-2009/ 05-07-2010 ISTRAC/CMD/CON/IRNSS/ 1000/5987 (₹ 12.16 crore)	Construction of IRNSS complex at IDSN campus, Byalalu village Bangalore- Comprising of Civil, PH, Electrical and Air conditioning works (ISTRAC)	19.33	9.07	10.97	39.37	Reasons for delay in planning the civil work was not put on record by ISRO. Delay in execution of this work was due to; (i) delay in earthwork excavation in hard rock (ii) extension of roof slab in cafeteria building (iii) revision in top ring beam of Antenna supporting structure.
21.	01-07-2006/ 01-11-2013/ 17-01-2014/ 30-07-2014/ 27-12-2014 ISTRAC/CMD/CON/INC-2- LCK/1097/15416	Construction of substation, cable trenches & transformer foundation & fencing for INC-2	89.33	--	5	94.33	Reasons for delay in planning the civil work was not put on record by ISRO. Delay in execution of this work was due to; (i) delay in shifting of

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
	(₹ 1.04 crore)	Building, IRNSS facility at ILF, Lucknow (Civil & PH works) (ISTRAC)					substation (ii) delay in clearance for footing depths, design mix, testing material and cable trench routes and material.
22.	01-07-2006/ 01-11-2013/ 17-02-2014/ 02-06-2015/ 30-08-2016 ISTRAC/CMD/CON/INC-2- LCK/1097/15539 (₹ 6.61 crore)	Construction of INC-2 Building for IRNSS facility at ILF, Lucknow (Civil & PH works) (ISTRAC)	89.33	--	15.17	104.50	Reasons for delay in planning the civil work was not put on record by ISRO. Delay in execution of this work was due to; (i) delay in clearance for footing depths (ii) clearance for testing material (iii) modification of surveillance, managers, conference and engineer rooms.
23.	01-07-2006/ 16-09-2014/ 13-04-2015/ 27-12-2015/ 26-12-2016 ISTRAC/CMD/EI/LCK/CON/VO-1/15-16/17817 (₹ 1.50 crore)	Construction of INC-2 Building for IRNSS facility at ILF, Lucknow- Electrical work – Internal electrification of External power supply (ISTRAC)	99.97	3.97	12.17	116.11	Reasons for delay in planning the civil work was not put on record by ISRO. Delay in execution of this work was due to delay in completion of civil works which caused this work to start late.
24.	31-01-2008**/ 16-03-2015/ 04-11-2015/ 18-03-2016/ 17-06-2016 ISTRAC/CMD/EI/LCK/CON/VO-4/15-16/17802 (₹ 1.14 crore)	Construction of INC-2 Building for IRNSS facility at ILF, Lucknow- Electrical works – Supply Installation, testing & commissioning of 2x100KVA on line parallel UPS with battery backup (ISTRAC)	86.70	4.77	3.03	94.50	Reasons for delay in planning and execution of this work was not put on record by ISRO.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
25.	01-07-2006/ 16-09-2014/ 18-03-2015/ 31-08-2015/ 16-12-2016 ISTRAC/CMD/EI/LCK /CON/WO-3/14-15/17726 (₹ 1.73 crore)	Construction of INC-2 Building for IRNSS facility - Electrical works – Low tension electrical works at sub-station building, at ILF, Lucknow (ISTRAC)	99.97	3.10	15.77	118.84	Reasons for delay in planning the civil work was not put on record by ISRO. Delay in execution of this work was due to delay in completion of civil works which caused this work to start late.

* The civil works were to be indented immediately after issue of financial sanction by DOS in June 2006.

** RFP for UPS was to be initiated within nineteen months (three months for placing work order + sixteen months for completion of civil work) from 01 July 2006 i.e. by January 2008.

Other Space Consumables

26.	01-07-2006/ 08-07-2013/ 21-03-2014/ 21-07-2014/ 21-07-2014 2013E002100101 (₹69.24 lakh)	Vector Network Analyser (SAC)	85.47	5.53	--	91	Reasons for delay in planning the procurement was not put on record by ISRO.
27.	01-07-2006/ 11-06-2007/ 26-03-2008/ 26-05-2009/ 04-01-2010 20070006090101 (₹ 41.73 crore)	Traveling wave tube amplifiers (SAC)	11.50	6.63	7.43	25.56	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.
28.	01-07-2006/ 28-05-2008/ 12-03-2009/ 31-08-2010/ 10-09-2011 20080000800101 (₹ 9.65 crore)	Indigenous development, fabrication EPC (SAC)	23.23	6.60	12.50	42.33	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) diversion by the contractor of some components meant for this order to another SAC order (ii) delay in arrival of new components. (iii) non availability of testing facility at SAC for testing Qualifying Model units.
29.	01-07-2006/ 07-02-2013/ 13-06-2014/ 28-05-2015/ 05-04-2017 20120027300101 (₹ 2.88 crore)	Fabrication, testing & delivery of C-band Receivers (SAC)	80.43	13.37	22.60	116.40	Reasons for delay in planning the procurement was not put on record by ISRO.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
							Delay in execution of this procurement was due to delay in delivery of Free Issue of Material by SAC to the contractor.
30.	01-07-2006/ 25-07-2013/ 04-09-2014/ 12-08-2015/ 19-07-2016 20120027360101 (₹ 2.26 crore)	Fabrication, testing & delivery of L5 & S band modulators (SAC)	86.03	10.53	11.40	107.96	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to delay in submission of Bank Guarantee by the contractor for receipt of Free Issue of Material from ISRO.
31.	01-07-2006/ 01-10-2012/ 23-07-2013/ 02-12-2013/ 17-08-2015 20120016200101 (₹ 72.83 lakh)	6.3 m L& S Band antenna system with LNA assembly (SAC)	76.13	6.83	20.77	103.73	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was on the part of the vendor.
32.	01-07-2006/ 07-02-2013/ 31-07-2014/ 07-11-2015/ incomplete as on 31-05-2017 AHSN20120027350 101 (₹ 3.28 crore)	L5 & S band Up-converter (IRNSS) (SAC)	80.43	14.97	19.03	114.43	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.
33.	01-01-2012**/ 23-09-2016/ 09-12-2016/ 30-06-2018 2016E022840101 (₹ 1.94 crore)	Assembly, Integration and Testing of two satellites (ISAC)	57.57	--	--	57.57	Reasons for this delay in planning the procurement was not put on record by ISRO.
<p>* Indents for procurement of Other Space Consumables were to be raised immediately after issue of financial sanction by DOS in June 2006.</p> <p>** indent for assembly, integration and testing of two ground spare NAVIC satellites was to be raised by 1 January 2012 i.e. after scheduled operationalisation of NAVIC programme by December 2011.</p>							
Satellite Control Centre							
34.	01-07-2006/ 18-09-2007/ 20-03-2008/ 30-09-2009/ 26-02-2016 20070002480101	SUPPLY INSTALLATION AND COMMISSIONING OF 11m	14.80	3.13	78	95.93	Reasons for delay in planning the procurement was not put on record by ISRO.

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
	(₹ 11.40 crore)	Full Motion C-Band Antenna (MCF)					Delay in execution of this procurement was due to non-readiness of site at Bhopal.
35.	01-07-2006/ 18-09-2007/ 20-03-2008/ 30-09-2009/ 10-12-2013 20070002490101 (₹ 5.60 crore)	SUPPLY AND INSTALLATION OF 7.2m Antenna (MCF)	14.80	3.13	51.07	69	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to non-readiness of site at Bhopal.
36.	01-07-2006/ 26-11-2013/ 20-05-2015/ 20-08-2016/ 31-03-2017 2013E001390101 (₹ 6.75 crore)	Supply and installation of 11M L/S band Full Motion Antenna (MCF)	90.17	15	7.43	112.60	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to subsequent modifications in design.
37.	01-07-2006/ 26-11-2013/ 24-09-2015/ 24-03-2017/ incomplete as on 31-05-2017 2013E001400101 (₹ 10.68 crore)	Installation of 11M FMA system with CIV (MCF)	90.17	19.23	2.27	111.67	Reasons for delay in planning and execution of the procurement was not put on record by ISRO.

* Indents for procurement of Space Control Centre equipment were to be raised immediately after issue of financial sanction by DOS in June 2006.

IRIMS

38.	30-06-2007/ 17-02-2009/ 19-05-2011/ 13-11-2013/ 24-09-2013 20080005610101 (₹ 26.19 crore)	IRNSS reference receivers (IRIMS) (ISTRAC)	19.93	24.37	--	44.30	Reason for delay in planning the procurement was not put on record by ISRO.
39.	30-06-2007/ 09-03-2010/ 04-01-2012/ 28-06-2013/ 23-01-2014 20090006670101 (₹ 7.50 crore)	Development of indigenous reference receiver (ISTRAC)	32.77	19.20	6.97	58.94	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) non-availability of the project team from ISTRAC due to their preoccupation in pre and post launch activities (ii)

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
							reschedule of the CDR of the level 2 receiver.

* Indents for procurement for IRIMS receivers were to be raised within twelve months (three months for placing work order + nine months for completion of work of IRIMS) from 01 July 2006 i.e. by June 2007.

Communication Link

40.	30-04-2007*/ 12-12-2008/ 12-03-2010/ 30-07-2010/ 29-05-2013 20080004340101 (₹ 1.87 crore)	VSAT communication network (ISTRAC)	19.73	12.17	34.47	66.37	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to non-readiness of sites.
41.	31-01-2008*/ 16-03-2016/ 12-09-2016/ 17-03-2017/ incomplete as on 31-05-2017 2016E007490101 (₹ 3.43 crore)	Data communication network (IRDCN) establishment at INC-2 Lucknow (ISTRAC)	98.90	3	2.5	104.40	Reasons for delay in planning of the procurement was not put on record by ISRO. Due to the after effects of the demonetisation and banking related issues supplier could not complete the work in time.

* indents for procurement of IRNWT-I (Byalalu) was to be raised within ten months (three months for placing work order + seven months for completion of work of INC-1) from 01 July 2006 i.e. by April 2007.

indents for procurement of IRNWT-II (Lucknow) was to be raised within nineteen months (three months for placing work order + sixteen months for completion of work of INC-2) from 01 July 2006 i.e. by January 2008.

Atomic Clock

42.	01-07-2006/ 16-02-2007/ 26-03-2008/ 11-09-2010/ 08-04-2014 20060073640101 (₹ 81.35 crore)	Rubidium atomic frequency standard (ISAC)	7.67	10.47	43.50	61.64	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) delay in obtaining export licence (ii) delay due to technical repairs.
43.	01-07-2006/ 31-07-2008/ 23-09-2008/ 24-11-2010/ 30-08-2014 20080009850101 (₹ 1.63 crore)	Development of Atomic Clock (SAC)	25.37	--	45.83	71.20	Reasons for delay in planning the procurement was not put on record by ISRO. Delay in execution of this procurement was due to (i) subsequent design modifications by SAC/ISRO (ii) delay

Sl. No.	RFP due date*/Date of RFP/Work Order date/Scheduled date of completion/Actual date of completion/ Work Order number and value	Description and concerned ISRO centre	Stage-I delay (in months)	Stage-II delay (in months)	Stage-III delay (in months)	Total delay (in months)	Reason for delay
							in procurement of critical raw material - Rubidium 87 isotope by NPL.
* Indents for procurement of Atomic clock were to be raised immediately after issue of financial sanction by DOS in June 2006.							
Signal Monitoring							
44.	01-07-2006/ 06-03-2013/ 24-06-2014/ 28-08-2014/ 11-01-2016 20120030600101 (₹ 2.06 crore)	DATA acquisition and recording system (SAC)	81.33	12.83	16.70	110.86	Reasons for delay in planning the procurement was not put on record by ISRO. Execution of this procurement was delayed due to Space Application Centre.
* Indents for procurement of Signal Monitoring System were to be raised immediately after issue of financial sanction by DOS in June 2006.							
Navigational server and software							
45.	30-04-2007/ 04-12-2009/ 11-03-2010/ 29-04-2010/ 01-04-2010 20090004850101 (₹ 2.44 crore)	IRNSS servers (ISTRAC)	31.63	--	--	31.63	Reasons for delay in planning the procurement was not put on record by ISRO.
* indent for procurement of Navigational servers and software was to be raised within ten months (three months for placing work order + seven months for completion of work of INC-1) from 01 July 2006 i.e. by April 2007.							

