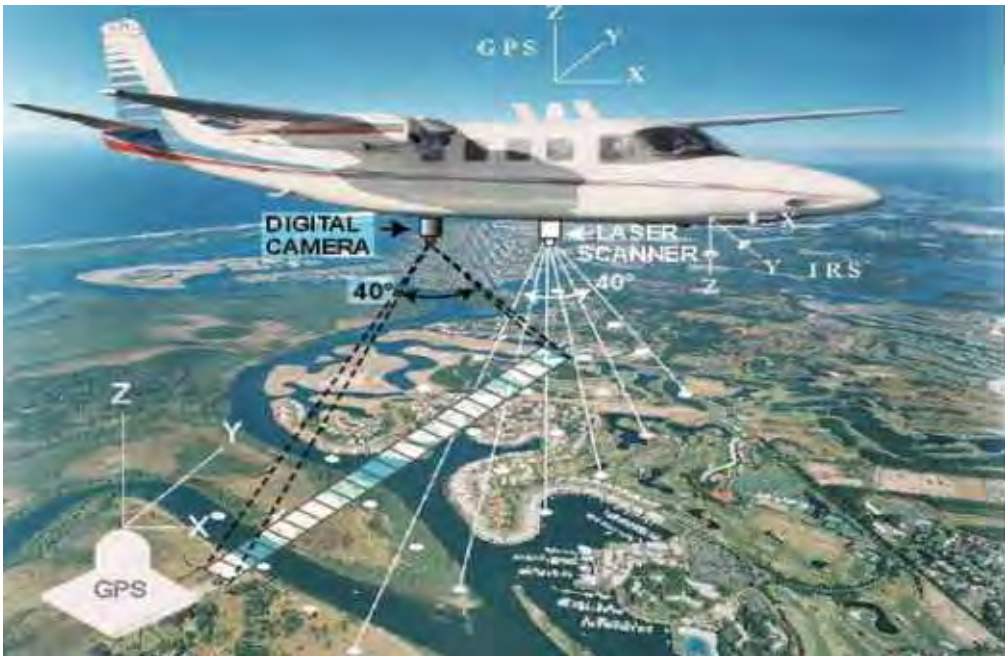
Chapter 5 Aerial Remote Sensing

Audit Objective 3: To assess effectiveness of airborne remote sensing and completion of projects on time.



Aerial Remote Sensing

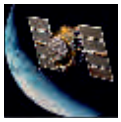
5.1 NRSC was the sole civilian provider of aerial remote sensing services in the country. These aerial projects were meant for remote sensing specific areas at required times, which is not possible through satellites. Two beach-craft aircraft equipped with navigation aids, state-of-the-art sensors like LIDAR[30], digital camera based aerial photography systems and airborne magnetometer for aerial data acquisition and ground instrumentation were utilised for airborne remote sensing.

Delay in completion of aerial projects

5.2 During review period, NRSC undertook 67 aerial remote sensing projects and completed 45 projects. Out of 67 projects, we selected 36 projects for detailed scrutiny based on materiality.

Our scrutiny revealed that 12 aerial projects (33 *per cent*) costing ₹ 45.85 crore were delayed from 8 to 54 months due to various reasons such as scarcity of pilots due to boom in aviation market, non-receipt of payment from the users, unfavourable weather conditions, naxalite problems and technical snags in the aircraft.

[30] Light Detection and Ranging.



We further observed that:

- In two major projects[31], NRSC did not charge for the additional work and escalation in time, though the delay was attributable to the users.
- One of the selected projects[32] was kept in abeyance after spending ₹ 4.64 crore due to non-furnishing of inputs by the user.
- In another project[33], there was in-ordinate delay in completion of the work by three years and eight months due to change in specification by the user.
- In the remaining eight projects though there was delay in completion, no cost escalation was involved.

As regards delay in completion of the projects, DOS replied in July 2009 that final classification of data from Survey of India took considerable time since security vetting from various agencies in Ministry of Defence is a sequential process. Reply of DOS is not acceptable since the aspect of time required for statutory clearance should have been considered at the proposal stage before finalising the timelines of the projects.

Utilisation of aircrafts

5.3 The performance of two aircrafts in operation in terms of actual flying hours during 2003-09 is given in **Table 7**.

Table 7
Utilisation of aircrafts

No.	Aircraft	Actual flying hours (*per cent*)					
		2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
1	VT-EQK	296	127	220	149	275	410
		(72)	(31)	(54)	(36)	(67)	(100)
2	VT-EBB	276	461	253	89	317	355
		(60)	(100)	(55)	(19)	(69)	(77)
	Total	**572**	**588**	**473**	**238**	**592**	**765**

It can be seen from the table that against its maximum ability of 461 flying hours, VT-EBB could perform only 19 to 77 *per cent* of its maximum ability during 2003-09 except for the year 2004-05. Similarly, aircraft VT-EQK could perform only 31 to 72 *per cent* of its maximum ability of 410 flying hours except during 2008-09.

[31] Large Scale Mapping of 11 towns of Andhra Pradesh Urban Services for Poor, Aerial photography of 16 places in Karnataka for Karnataka State Remote Sensing Application Centre, Bangalore.

[32] Aerial Large scale Terrain Mapping for Garland command and catchment area for Water Resources Development Organisation.

[33] Aerial photography and mapping over Kolkata Municipal Corporation.

NRSC, while admitting the underperformance of the aircrafts, replied in September 2008 that idling was due to problems such as non-availability of pilots due to boom in aviation market and frequent snags in the aircraft due to their ageing and difficulty in procurement of spares. It was also stated that two pilots available with NRSC had resigned and it was managing with freelance pilots. NRSC added in September 2008 that Indian Air Force (IAF) was approached for deputing some pilots. DOS replied in July 2009 that the peak performance of the individual aircraft could not be assumed to be the annual average capacity.

Reply of DOS is to be viewed in the background of the fact that we had compared the actual performance against the peak performance of these aircrafts in any of the six years in the absence of any other available benchmarks.

Thus, non-utilisation of aircrafts to its maximum capacity due to problems such as non-availability of pilots, maintenance/ repair of aircrafts etc., had impacted airborne remote sensing and 12 out of 36 aerial projects test checked were delayed. This impacted the efficiency of NRSC in completing aerial projects in time as detailed in **Annex 4** and paragraph 6.4.1 of the report.

Conclusion

Aircrafts performing the task of aerial remote sensing could not be put to use to their maximum capacity mainly due to non-availability of pilots and technical snags in the aircrafts. As a result, one third of aerial projects test checked were delayed.

Our Recommendations	Action proposed by NRSC on recommendations
7. NRSC, being the sole civilian provider of aerial surveys, may strengthen its efforts in improving operational efficiency of aircrafts by addressing suitably the causes of delays.	*NRSC stated in February 2010 that it had brought in place in 2009, a wet leasing mechanism involving deployment of skilled private entrepreneurs in the campus under the direct supervision of NRSC to expedite data processing for project execution well in time. NRSC added that they were streamlining procedures for speedier clearance from Ministry of Defence and Survey of India for its flying tasks and classification of data, respectively. It further stated that to ensure stringent compliance, a mechanism for entering into an MoU with project sponsoring agencies had since been institutionalised and that it would ensure that all the conditions of MoU (inclusive of financial terms) were adhered to in future.*