



सत्यमेव जयते

**Report of the
Comptroller and Auditor General of India
on
Management of satellite capacity for
DTH service by Department of Space**



**Union Government
(Department of Space)**
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PREFACE

This Report for the year ended March 2013 has been prepared for submission to the President under Article 151 of the Constitution of India.

This report of the Comptroller and Auditor General of India contains the results of compliance audit of management of satellite capacity for DTH service by Department of Space upto 2012-13; matters relating to the period subsequent to 2012-13 have also been included, wherever necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

Audit wishes to acknowledge the cooperation received from Department of Space at each stage of the audit process.

Executive Summary

Background

Direct to Home (DTH) service is a satellite based broadcast service which entails distribution of multi-channel television programmes in Ku band. Ministry of Information and Broadcasting (MIB) is the nodal Ministry for broadcasting services in India. Department of Space (DOS) provides national space infrastructure through satellite transponder capacity to meet the telecommunication, broadcasting and security requirements of the country. Union Government approved (November 2000) the proposal of Ministry of Information and Broadcasting (MIB) to introduce DTH service in India. During 2004 to 2007, DOS entered into lease agreements with Doordarshan, Dish TV, Tata Sky, Sundirect DTH (Sun DTH), BIG TV (Reliance), Airtel Digital TV (Airtel) and D2H (Videocon) for hiring of satellite transponder capacity for providing DTH services.

The requirement for DTH service is of the order of minimum of five Ku band transponders going up to 18 to 24 transponders for providing 300 to 400 channels. Therefore, availability of Ku band transponders was the most important consideration while planning satellite capacity for DTH service. DTH service is also location specific. Since the dish antenna of the DTH customer has to be facing the satellite, satellite capacity should preferably be available at a particular position in the sky continuously. Therefore, larger number of Ku band transponders would be required continuously at the same position in the sky to ensure continuity of service.

The Union Cabinet approved an 'open sky' policy and allowed both Indian and foreign satellites to be used in DTH services with the condition that proposals envisaging use of Indian satellites would receive preferential treatment. DOS would acquire and allocate necessary transponder capacity from foreign satellites for short term periods, so that the service could be brought back to INSAT system as and when Indian satellite capacity was available.

Audit objectives

Audit was conducted with a view to evaluate

- whether planning and realisation of satellite capacity for DTH service was done with a view to give economic, efficient and effective service;
- whether allocation of satellite capacity for DTH service was transparent, fair and equitable; and

- whether transponder lease agreements safeguarded the financial interest of Government and were implemented accordingly.

Audit findings

Audit of DTH services in India was limited to the role of DOS in planning, realising, allocating, contracting and managing communication satellite capacity for the DTH service providers.

Planning of satellite capacity

- DOS failed to provide satellite capacity (Ku band transponders) on domestic satellites as it was not able to realise the communication satellites as planned. Out of nine satellites with an aggregate of 218 Ku band transponders planned for launch during eleventh five year plan period, DOS could eventually realise three satellites with 48 Ku band transponders, which was only 22 *per cent* of the target.
- In spite of having sufficient funds, DOS did not consider procured launches for its ready satellites or acquire satellite in orbit and position it under the orbital slot coordinated by India.
- DOS was unable to maintain the satellite capacity already used for DTH service due to technical problems, using these capacities to substitute for satellites being de-commissioned, etc.
- DOS could not satisfactorily fulfil the competing needs of critical, strategic and commercial sectors, which led to a forced migration of commercial DTH users (Sun DTH, Airtel and Reliance) to foreign satellite systems.

(Para 2.2.1)

- The satellite launch of GSAT 8 initially intended for DTH use was delayed by more than three years. When satellite capacity was eventually available, it was not immediately earmarked and capacity remained idle from July 2011 to December 2011. The satellite was finally allocated for non DTH use.
- DOS launched GSAT 10 satellite in order to swap with capacity allocated to Tata Sky on INSAT 4A, which was functioning with reduced power. Tata Sky subsequently declined the proposal but DOS did not allocate capacity on GSAT 10 to any other service

provider apprehending litigation, as Tata Sky was given exclusive first right of refusal on Ku band capacity of INSAT 4A.

(Para 2.2.2)

- Inability of DOS to realise its communication satellites and failure to utilise available satellite capacity led to competitive disadvantage to DOS vis-à-vis foreign satellite system. Out of the total 76 Ku band transponders used by Indian DTH operators (July 2013), only 19 transponders (25 *per cent* of total) belonged to Indian satellites. The remaining 57 transponders (75 *per cent* of total) were on foreign satellites. Tata Sky, which was using 12 transponders in the INSAT system, had also decided (July 2013) to migrate to foreign satellite arrangement as a permanent measure. As such, only 10 *per cent* of the satellite capacity for the DTH service would be serviced by INSAT system. The future requirement of transponders for DTH services was also planned to be met largely from foreign satellites.

(Para 2.2.3)

- Non-achievement of targeted Ku band capacity to meet its commitments for DTH service providers was fortuitous for the foreign satellite owners, who were ready at the opportune time to place their satellites over five orbital slots in Indian skies for providing DTH services in India. Crowding of the foreign satellites over India and consequent increase in demand for the orbital slots would not only affect INSAT system, but would also result in non-availability of the strategically important slots for India.

(Para 2.2.4)

- DOS arranged foreign satellite capacity to Indian DTH industry as a short term measure to ensure that the service could eventually be brought back to INSAT system. As DOS could not realise its communication satellites in time, most of the DTH service providers moved to foreign satellites. These DTH service providers later did not prefer to return to INSAT system due to trust deficit.
- As DTH service is 'location specific' any change in the position of the satellite would result in migration expenses to the DTH service provider besides causing inconvenience to the customers. Therefore bringing back of service providers from foreign satellite to INSAT system would be an improbable and difficult exercise.

Allocation of Satellite Capacity

- When satellite capacity for DTH usage was available with DOS, it was not earmarked; instead, lease agreements with foreign satellite providers were renewed for further periods.

(Para 2.3)

- INSAT Coordination Committee (ICC), which was to earmark satellite capacity, was not convened after June 2004 and was re-constituted by the Government of India only in May 2011, after lapse of nearly seven years. In the meantime, three satellites were launched, in which capacity was allocated to DTH service providers directly by DOS, which was not as per SATCOM policy.

(Para 3.1)

- Ministry of Information and Broadcasting (MIB), which is a member of ICC, was responsible for matters relating to broadcasting in India. By not convening ICC, MIB was not involved in the satellite capacity allocation decision making process.

(Para 3.2)

- The procedure for allocation of satellite capacity was not framed by ICC. There was no prescribed procedure within DOS for allocation of satellite capacity for DTH service providers. Thus, since the initiation of DTH service in India, DOS committed satellite capacity to various DTH service providers without an ICC approved procedure.

(Para 3.3)

- Tata Sky was fifth in the order of preference for allocation of satellite capacity. However, Tata Sky was granted precedence over Doordarshan and allocated capacity on INSAT 4A satellite which was launched earlier.

(Para 3.4.1)

- DOS committed the exclusive first right of refusal to Tata Sky for using Ku band transponders (for DTH service) at 83° east orbital slot, whereas this was not done in transponder lease agreements entered with other DTH service providers. This created a difficult situation for DOS in allocating its Ku band transponders in the slot to any other DTH service provider or usage. Consequently, DOS did not allocate Ku band transponders of GSAT 10 to any other user fearing litigation from Tata Sky.

(Para 3.4.2)

Leasing of Satellite Capacity

- Transponder lease agreements did not safeguard financial interest of Government. The lease period in transponder lease agreements for INSAT Ku band satellite capacity for DTH service ranged from five to 10 years without provision for revision of prices. Though DOS subsequently decided to raise its prices by 15 *per cent* the revision was not carried out. In contrast, the transponder lease agreements with foreign satellite operators were valid for one to six years only. Prices of transponders leased from foreign satellite systems were increased by five to 33 *per cent* over a period of one to six years whereas DTH service providers availing INSAT transponder capacity paid the same charges for over six to ten years.

(Para 4.2.1)

- Transponder lease agreement entered with Tata Sky gave certain benefits to Tata Sky which were not offered to any of the other DTH service providers.

(Para 4.2.2)

- DOS entered into agreement with Sun DTH for the lease of 6.25 transponder units in INSAT 4B satellite at the rate of ₹4.75 crore per transponder. DOS actually charged Sun DTH for only six transponders which resulted in loss of ₹ 46.92 lakh to DOS.

(Para 4.2.3)

- DOS allowed bonus free access to satellite capacity for 1.5 months after the permitted three months time to Sun DTH which resulted in unintended benefit of ₹3.56 crore to Sun DTH.

(Para 4.2.4)

- Based on the request of Prasar Bharti, though DOS allocated one additional transponder to Prasar Bharti but it did not enter into a firm agreement/MoU. Prasar Bharti later informed that the additional transponder was not put to use since MOU was not signed. As a result, revenue of ₹5.90 crore towards lease charges was not collected by DOS.

(Para 4.2.5)

Audit recommendations

Audit made the following recommendations:

- *DOS and ICC may frame a transparent policy for allocation of satellite capacity for DTH services and all future satellite capacity allocations may be made based on the same.*
- *DOS may consider creating Ku band satellite capacity for DTH services commensurate with the demand in the sector and requirement for national and strategic applications.*
- *DOS may clearly define short term and long term strategy for allocation of Ku band satellite capacity to DTH service providers on domestic and foreign satellites to ensure continuity to the existing users as well as to bring those DTH service providers using foreign satellites back to INSAT/GSAT system.*
- *DOS may incorporate price revision clause in long term transponder lease agreements and revise the transponder prices in time to avoid extending undue benefit to the service providers.*

Chapter 1 - Introduction

1.1 DTH Service

Television is one of important sources of entertainment and education. The Television sector in India mainly comprises of cable television services, Direct to Home (DTH) services, Internet Protocol Television (IPTV) services, free to air DTH services and terrestrial TV services provided by Doordarshan¹ (DD) networks.

DTH service is a satellite based broadcast service which entails distribution of multi-channel television programmes in Ku band² by using a satellite system.

In DTH service a large number of television channels are digitally compressed, encrypted and beamed from satellites. There are four major technical stages involved in the working of a DTH service. These are content acquisition, compression, modulation and uplink to DTH satellite and finally reception of signals at the users end. The contents of the television channels are first acquired and then compressed using a series of compression equipments. The compressed Radio Frequency (RF) signals are modulated, frequency converted, amplified and uplinked to the DTH Satellite. DTH satellites broadcast the RF signals to the 'small TV dish antenna' fixed at the users' end. The dish antenna receives the RF signals, Low Noise Block Down Converter converts the RF signals and set top box demodulates and decrypts these signals and the content is exhibited on the television set. The working of various stages of DTH service system is pictorially described at Figure 1.

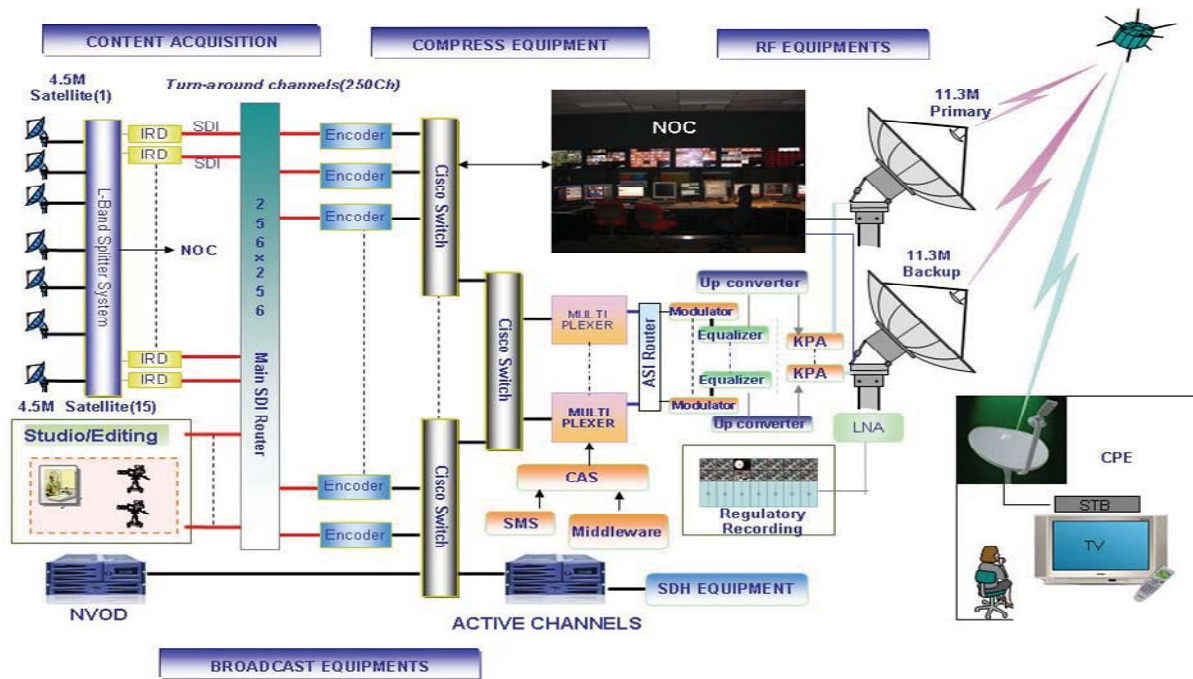
DTH service being a digitally addressable system offers good picture quality, enhanced value added services, transparency in the system resulting in better services to the consumers. Union Cabinet approved (November 2000) the proposal of Ministry of Information and Broadcasting (MIB) to introduce DTH service in India.

As of 2014, out of a total of 16.10 crore television homes in India, 9.30 crore (58 *per cent*) are covered by cable TV services, 3.70 crore (23 *per cent*) are covered by private DTH services and the rest (19 *per cent*) by IPTV services, terrestrial broadcast services and free to air DTH services of DD. With the digitalisation of cable TV services, consumers were in a position to receive 500 channels or more, including a large number of High Definition (HD) channels, which boosted the demand for satellite transponder capacities by DTH operators.

¹ India's Public Service Broadcaster

² A portion of electromagnetic spectrum used for satellite communications, primarily for broadcasting satellite television.

Figure-1: DTH System Block Diagram



1.2 Grant of licence for DTH service

The guidelines for obtaining licence for providing DTH Broadcasting Service in India were formulated (March 2001) by MIB, being the nodal Ministry for broadcasting services in India. Salient features of the guidelines were as follows:

<p>Eligibility</p>	<ul style="list-style-type: none"> Indian registered companies were eligible for licence. Companies had to apply to MIB for licence. There was no restriction on number of DTH licences.
<p>On receipt of application from the eligible companies, MIB obtained certain prescribed clearances</p>	<ul style="list-style-type: none"> Security clearance from Ministry of Home Affairs. Satellite clearance from Department of Space (DOS).
<p>On receipt of satellite clearance from DOS, DTH service provider obtained operational clearance</p>	<ul style="list-style-type: none"> Standing Advisory Committee on Radio Frequency Allocation (SACFA) clearance from Department of Telecommunications (DOT).

<p>Issue of licence and revenue collection</p>	<ul style="list-style-type: none"> • MIB issued DTH licence for a period of 10 years. • MIB was to collect a non refundable entry fee of ₹10 crore from the DTH service providers after obtaining the satellite clearance from DOS. • Within one month of obtaining SACFA clearance, DTH service providers were to submit a bank guarantee to MIB for an amount of ₹40 crore valid for the duration of the licence. • After submission of bank guarantee, a licensing agreement was signed by MIB and the licensee. • MIB was to collect an amount equivalent to 10 <i>per cent</i> of the gross revenue of DTH service providers in that particular financial year within one month of the end of that year from the service providers. • DTH service providers were to pay annual licence fee and royalty for the spectrum usage to Wireless Planning and Coordination Wing (WPC) of DOT.
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During 2004 to 2007, DTH licences were issued to Dish TV (Dish TV India Ltd.), Tata Sky (Tata Sky Ltd.), Sundirect DTH (Sun Direct TV Pvt. Ltd.), BIG TV (Reliance BIG TV Ltd.), Airtel Digital TV (Bharti Telemedia Ltd.) and D2H (Bharat Business Channel Ltd). As of March 2014, 792 TV channels were permitted by MIB.

1.3 Satellite capacity allocation

Department of Space (DOS) provides national space infrastructure through satellite transponder capacity to meet the telecommunication, broadcasting and security requirements of the country.

As per the DTH guidelines, DOS was to provide satellite clearance before issue of the DTH licence by MIB. Satellite capacity arrangement was left to DOS. Government instituted the INSAT³ Coordination Committee (ICC) in 1977 for coordinating and monitoring the implementation of space and ground segments of INSAT projects. ICC is a high level multi-departmental control mechanism consisting of Secretaries of six Departments viz. DOS, Department of Economic Affairs, Department of Telecommunications, MIB, Department of Science and Technology and Department of Information Technology.

³ Indian National Satellite

Recognising the heavy demand for communication satellites for DTH service in India and its technological/ strategic advantage, DOS put up (May 1997) a cabinet note for a broader Satellite Communication (SATCOM) policy, duly considering the opinion of the stakeholders through interdepartmental⁴ consultation exercise. The Norms, Guidelines and Procedures (NGP) for implementation of policy framework of SATCOM were approved by Union Cabinet in January 2000.

Under the SATCOM policy framework, both Indian and foreign satellites were allowed to be used to provide DTH service, with the condition that proposals envisaging use of Indian satellites would receive preferential treatment. The salient features of the policy for allocation of satellite capacity to DTH service were as under:

<p>SATCOM Policy</p>	<p>Allocation of capacity</p> <ul style="list-style-type: none"> • According to Article 2.5.2 of the policy, ICC was to earmark at least a certain percentage of capacity in INSAT system for use by the non-governmental users who had been authorised by law to provide various telecommunication services including broadcasting. • According to Article 2.5.3 of the policy, ICC was to evolve the procedures from time to time taking into account the capacity available and the prevailing situation in the satellite communications market. <p>Commercial and contractual factors</p> <ul style="list-style-type: none"> • According Article 2.6.2 of the policy, once capacity was earmarked by ICC, DOS was to provide the satellite capacity following its own procedures. In case the demand exceeded available capacity, DOS was to evolve suitable transparent procedures for allocation of capacity, which could be any equitable method such as auction, good faith, negotiation or first come first served basis.
<p>The arrangement for use of foreign satellites for DTH service was further detailed by ICC (June 2001)</p>	<ul style="list-style-type: none"> • DOS would acquire and allocate necessary transponder capacity from foreign satellites to meet specific customer requirements. • For private customers, private funds would be used. • In order to take care of this, DOS would use its commercial wing Antrix Corporation Limited⁵ (Antrix) which would enter

⁴ Other Departments included Department of Science and Technology, Ministry of Finance, Ministry of Industry, Ministry of Defence, Ministry of Home Affairs and Ministry of Information and Broadcasting.

⁵ Antrix is a public sector company under the administrative control of DOS. It is the marketing arm of DOS for promotion and commercial exploitation of space products, technical consultancy services and transfer of technologies developed by Indian Space Research Organisation (ISRO).

	<p>into back to back agreements with foreign satellite owners and Indian customers.</p> <ul style="list-style-type: none"> Foreign satellite capacity arranged by DOS/ Antrix for Indian DTH industry would be for short term period as a temporary measure, to ensure that the service could be brought back to INSAT system as and when Indian satellite capacity was available.
<p>Arrangement for foreign satellite capacity</p>	<ul style="list-style-type: none"> Indian DTH service providers requiring satellite transponder capacities were required to apply to DOS. In case of non- availability of the capacity on INSAT satellites the service providers were required to place a request to Antrix for foreign satellite capacity, which then aggregated such requests. Thereafter, Antrix floated the aggregated requirements to foreign satellite operators and after negotiations, transponder capacities were contracted for DTH service providers. The DTH service provider entered into an agreement with DOS. Antrix, in turn entered into an agreement with the foreign satellite owner so that foreign satellite capacity was arranged for the Indian DTH service provider for a short period.

Allocation of satellite capacity for DTH service presented several challenges before DOS. These were:

- Satellite capacity for Indian DTH service was made open to Indian as well as foreign satellites;
- Satellite capacity requirement was a bulk requirement; and
- With millions of TV dish antennas of DTH customers pointed at a satellite, capacity was required continuously from the same location in the sky.

Therefore, satellite capacity requirement for DTH needed to be meticulously planned and realised.

During March 2004 to February 2007, DOS entered into transponder lease agreements with DD, Dish TV, Tata Sky, Sundirect DTH (Sun DTH), BIG TV (Reliance), Airtel Digital TV (Airtel) and D2H (Videocon). DOS did not enter into any transponder lease agreement after February 2007. A chronology of events in the allocation of satellite capacity to DTH service providers is given at **Annexure I**.

1.4 Audit objectives

Audit was conducted with a view to evaluate

- whether planning and realisation of satellite capacity for DTH service was done with a view to give economic, efficient and effective service;
- whether allocation of satellite capacity for DTH service was transparent, fair and equitable; and
- whether transponder lease agreements safeguarded the financial interest of Government and were implemented accordingly.

1.5 Audit Criteria

The criteria for this audit were derived from:

- SATCOM Policy;
- Decisions taken in various meetings of ICC, Space Commission and approved project reports of communication satellites recorded in the minutes;
- Terms of the DTH Transponder lease agreements between DOS and service provider;
- Terms of the DTH Transponder lease agreements between DOS and service provider and its back to back agreement entered by Antrix with foreign satellite owners; and
- Orders issued by DOS regarding bandwidth allocation, pricing of transponders, satellite capacity allocation.

1.6 Audit Scope and Methodology

Audit of DTH services in India was limited to the role of DOS in planning, realising, allocating, contracting and managing communication satellite capacity for the DTH service providers. The audit was conducted during July 2012 to August 2012 and August 2013 to October 2013, covering the period from March 2004 to July 2013.

Audit scrutinised records relating implementation of SATCOM Policy, minutes of various committee meetings, project reports approved by the competent authority, transponder lease agreements, account statements and its ledgers maintained in DOS, Satellite Communication and Navigational Programme Office (SCNPO) and Antrix. In addition, audit issued questionnaires to seek information and response of the management on issues noticed. Relevant portions of the audit observations were also issued to MIB to elicit their comments.

1.7 Organisation of Audit findings

Audit reviewed the planning, earmarking, allocation and leasing of the satellite capacity by DOS to DTH service providers. Observations regarding planning and realisation of satellite capacity for DTH service are discussed in Chapter 2 of this report, observations regarding allocation of satellite capacity for DTH services are discussed in Chapter 3 and specific issues relating to contract management are discussed in Chapter 4. Chapter 5 contains the conclusion and recommendations.

1.8 Acknowledgement

We acknowledge the cooperation extended by Indian Space Research Organisation, Antrix Corporation Ltd., Department of Space and Ministry of Information and Broadcasting during conduct of our audit.

Chapter 2 – Planning of satellite capacity

Satellite capacity for any satellite based communication services including DTH service are required to be planned after assessment of the market demand duly taking into account technical challenges involved in the type of service, strategic, societal and national importance of the service, competing priorities, financial considerations, etc. This chapter brings out the implications of the policy adopted by DOS for planning, realising and providing satellite capacity for DTH service and highlights issues noticed by audit in this regard.

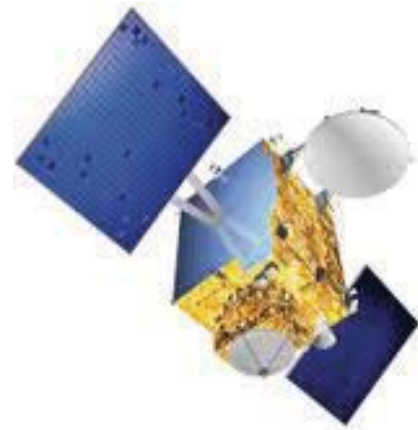


Figure 2: Communication Satellite

2.1 Formulation of SATCOM Policy

The procedure for allocation of satellite capacity (transponders) has been discussed in Chapter 1. As mentioned in Para 1.3, DOS put up (May 1997) a cabinet note for a broader SATCOM policy, duly considering the opinion of the stakeholders through interdepartmental consultation exercise involving Department of Science and Technology, Ministry of Finance, Ministry of Industry, Ministry of Defence, Ministry of Home Affairs and Ministry of Information and Broadcasting (MIB). The proposal suggested having a ‘closed sky’ policy in DTH service whereby the satellite would be provided by INSAT system or an Indian satellite⁶ only. DOS gave the following reasons for adopting this policy:

- Large number of foreign satellite systems were set to provide a variety of communication services throughout the world including DTH services. These operators were pressing for a very open regulatory regime everywhere particularly in developing countries so that they could gain access to the vast markets and provide unrestricted trans-border communication and equipment movement.
- Unlike terrestrial systems, a foreign based satellite system did not bring in investment to India in establishment of infrastructure or in production activity.
- The economic harm to INSAT System and protection of a technological base that had been built up over three decades was one of the most important considerations.

⁶ A private satellite belonging to Indian Private Industry could register and be notified as an Indian satellite.

- Allowing Indian private parties to lease capacity from foreign satellites for TV services might stifle the growth of INSAT system or similar Indian systems. DTH service providers could even buy satellites already in orbit to begin the services, which could hurt the nascent satellite manufacturing capability in India.
- By allowing uplinking to foreign satellites from India it would *de facto* be recognised that India was part of the 'service area' for these satellites in the International Radio Regulatory framework, which was significant, as orbit spectrum was a very valuable resource not only from the point of view of providing services to the people, but also from a financial⁷ angle.
- Operations with foreign satellites from Indian soil could be permitted on case to case basis for Government agencies or in the event of certain capacity leased by INSAT system to augment or replace its own capacity.
- Closed sky policy was also considered significant for reasons of security, industrial policy, development of Indian space industry, bringing investment into India by prospective service providers, creation of jobs in India in the high-tech areas, ability to deal with telecommunications/broadcasting and space related international trade and tariff issues on equal footing, ability to demand reciprocity, etc., where considered necessary.
- Advanced market economies around the world prohibited the use of foreign systems. Most of the countries in the Asian region had banned reception of signals from the foreign satellites.

Except MIB, all Ministries/Departments agreed to the proposal of DOS. MIB, however, advocated for an 'open sky' policy interalia citing the following reasons:

- This approach looked more democratic.
- It provided a competition to INSAT and made more capacity available to the users.
- Government could retain INSAT as a captive resource.
- As the uplinks would be in India, Government could exercise reasonable control over the material broadcast.
- It would create jobs and market for uplink equipment.
- As Indian parties were presently permitted to hire transponders on foreign satellites, there was no reason to reverse this policy.

⁷ Around 1996 USA auctioned an orbit-spectrum slot for DTH TV for close to US \$ 685 million.

- It would supplement and strengthen national efforts to improve Indian information infrastructure. A 'closed sky' policy was not likely to help in developing economy including the information infrastructure.

The Union Cabinet of India finally approved (January 2000) the 'open sky' policy and allowed Indian and foreign satellites to be used in DTH services with the condition that proposals envisaging use of Indian satellites would receive preferential treatment. To ensure this, ICC prescribed (June 2001) a back to back arrangement whereby DOS would acquire and allocate necessary transponder capacity from foreign satellites to meet the specific requirements of private customers. Antrix, after aggregating the requirements of the Indian customers, would enter into back to back agreements with foreign satellite owners for **short term periods, so that the service could be brought back to INSAT system as and when Indian satellite capacity was available.**

2.2 Planning and realisation of DTH satellites

Though many firms were interested in providing DTH services in India, the scarcity of transponders was a major constraint. Till July 2011, 6,000 transponders were available the world over, of which India had 200 transponders. DTH services were provided through Ku band transponders. A 3,000 kg communication satellite could carry upto 24 Ku band transponders. Unlike other satellite based communication services which require transponder capacity up to 36 MHz (equivalent to one transponder) for various applications, the requirement for DTH service is of the order of minimum of five transponders (180 MHz) going up to 18 to 24 transponders for providing 300 to 400 channels. Therefore, availability of Ku band transponders was the most important consideration while planning satellite capacity for DTH service.

DTH service is location specific. Since the TV dish antenna of the DTH customer has to be facing the satellite, satellite capacity should be available at a particular position in the sky continuously and permanently. Any change in the position of the satellite would result in migration expenses to the DTH service provider and inconvenience to the customer. Therefore, additional Ku band transponders were required to be provided continuously at the same position in the sky to ensure continuity of service.



Figure 3: Small Dish TV antenna

In the above scenario, development and realisation of satellites for DTH service, their maintenance and uninterrupted operations were critical. It required adhering to timeliness of launches, coordination of sufficient orbital slots and protecting strategic interest. Further, for DOS, being a satellite builder and conducting research and development in

communication satellite development sector, it was a big opportunity to harness its research efforts towards establishment of indigenous satellite communication technologies for the DTH sector and in the process, generate revenue for the government.

The year wise position from July 2004 onwards, of demand raised by DTH service providers for satellite capacity, capacity available with DOS and satellite capacity allocated by DOS to the DTH service providers is detailed in the **Annexure II**.

A summary of yearwise allocation of capacity to DTH service providers from INSAT system and foreign satellites is at Table 1.

Table-1: Yearwise allocation of satellite capacity to DTH Service from 2004 to 2013

Period	Name of service provider/Number of Ku band transponders allocated from INSAT System				Name of service provider/Number of Ku band transponders allocated from foreign satellite system						Total number of transponders allocated	
	INSAT 4A (83°E)	INSAT 4B (93.5° E)	INSAT 4CR (74° E)	Total number of transponders	NSS-6 ⁸ (95° E)	ST ⁹ (88° E)	MEASAT ¹⁰ (91.5° E)	SES ¹¹ (108.2° E)	Asiasat ¹² (100.5° E)	Total number of transponders		
July 2004				0	Dish TV / 6.5						6.5	6.5
July 2005				0	Dish TV / 9						9	9
July 2006	Tata Sky/12			12	Dish TV / 9						9	21
July 2007	Tata Sky/12	DD/5		17	Dish TV / 9						9	26
July 2008	Tata Sky/12	DD/5, Sun DTH/6.25	Airtel/6.5	29.75	Dish TV / 11	Videocon/4.5	Reliance/8				23.5	53.25
July 2009	Tata Sky/12	DD/5, Sun DTH/6.25	Airtel/6.67	29.92	Dish TV / 12	Videocon/3	Reliance/8				23	52.92
July 2010	Tata Sky/12	DD/5, Sun DTH/3	Airtel/6.67	26.67	Dish TV / 12	Videocon/9	Reliance/9, Sun DTH/1				31	57.67
July 2011	Tata Sky/12	DD/5, Sun DTH/1	Airtel/7	25	Dish TV / 12	Videocon/9	Reliance/9, Sun DTH/4	Airtel/11		Dish TV / 6	51	76
July 2012	Tata Sky/12	DD/6, Sun DTH/1	Airtel/4.5	23.5	Dish TV / 12	Videocon/12	Reliance/9, Sun DTH/4	Airtel/11		Dish TV / 6	54	77.50
July 2013	Tata Sky/12	DD/6, Sun DTH/1		19	Dish TV / 12	Videocon/15	Reliance/9, Sun DTH/4	Airtel/11		Dish TV / 6	57	76

⁸ Owned by SES World Skies, USA

⁹ Owned by Singapore Telecommunications Ltd., Singapore

¹⁰ Owned by MEASAT Satellite Systems Sdn., Malaysia

¹¹ Owned by SES World Skies, USA

¹² Owned by Asia Satellite Telecommunications Co. Ltd., Hongkong

The satellite wise position of allocation of capacity to DTH service providers is given in Table 2.

Table-2: The Satellites providing DTH service in India as on 31 July 2013

Sl. No.	DTH Satellite	Date of launch	Orbital Location	Number of Ku band transponders in the satellite	Number of Ku band transponders allocated for DTH service	DTH service Provider/ Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
INSAT SYSTEM						
1	INSAT 4A	22-Dec-2005	83° E	12	12	Tata Sky
2	INSAT 4B	12-Jan-2007	93.5° E	12	7	Six transponders were allocated to DD and one was allocated to Sun DTH. The remaining five were not allocated to any commercial user and kept with DOS.
3	INSAT 4CR	02-Sep-2007	74° E	12	0	Initially capacity was allocated to Airtel. Later, due to decommissioning of another satellite of DOS (GSAT 2), Airtel was vacated from INSAT 4CR to accommodate services offered by GSAT 2. Therefore, as of July 2013, no transponders were allocated for DTH service. More than 11 ¹³ transponders were allocated for non-DTH applications such as Edusat ¹⁴ users.
4	GSAT 8 (INSAT 4G)	21-May 2011	55° E	24	0	Three transponders were allocated to Government users ¹⁵ for their information and communication technology related programmes in DTH platform and 16.75 transponders were allocated for non-DTH use. The remaining 4.25 transponders were not allocated to any commercial user and kept with DOS.
5	GSAT 10	29-Sep-2012	83° E	12	0	None were allocated for DTH service. All transponders were kept with DOS.
	TOTAL INSAT			72	19¹⁶	

¹³ One transponder is equivalent to 36 Mhz. Of the 432 MHz available on the 12 transponders, 412 MHz was allocated to various users and 20 MHz was kept with DOS.

¹⁴ India's first thematic satellite dedicated exclusively for educational services to provide distance education service to remote areas of India.

¹⁵ Two transponders were allocated to Ministry of Human Resource Development (MHRD) and one to Government of Gujarat/ BISAG.

¹⁶ Excluding the three transponders allocated to Government users for information and communication technology related programmes in DTH platform.

Sl. No.	DTH Satellite	Date of launch	Orbital Location	Number of Ku band transponders in the satellite	Number of Ku band transponders allocated for DTH service	DTH service Provider/ Remarks
FOREIGN SATELLITE SYSTEMS						
6	NSS-6 (USA)	Not available	95° E	12	12	Dish TV
7	MEASAT-3 (Malaysia)	Not available	91.5° E	13	13	Reliance, Sun DTH
8	SES-7 (USA)	Not available	108.2° E	11	11	Airtel
9	ST-2 (Singapore)	Not available	88° E	15	15	Videocon
10	Asiasat-5 (Hongkong/ China)	Not available	100.5°E	6	6	Dish TV
	TOTAL FOREIGN			57	57	

Audit findings on planning and realisation of the satellites are discussed in the following paragraphs.

2.2.1 Deficiencies in launching planned satellites

DOS entered into transponder lease agreements with the DTH service providers during the period 2004 to 2007. On signing the agreements, DTH satellite capacity was to be realised to meet the needs of the service providers. During March 2004 to February 2007, total satellite capacity of 52.5 to 80.5 Ku band transponders was committed by DOS to seven DTH service providers in transponder lease agreements signed with them, as detailed in Table 3.

Table-3: Satellite capacity committed by DOS to service providers in chronological order

Sl. No.	Service provider	Date of agreement	Satellites planned to be used	Number of transponders committed (Range from -to)	Number of transponders actually allocated as of July 2013	Satellites actually used	Date of commencement of service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	DD	18 March 2004	INSAT-4A/4B	6	6	INSAT-4B	15 July 2004
2.	Dish TV	27 May 2004	NSS-6	6.5	12 6	NSS-6 Asiasat	1 June 2004
3.	Sun DTH	19 February 2005	INSAT-4B	4-9	1 4	INSAT-4B MEASAT	15 January 2008
4.	Reliance	28 June 2005	GSAT 8	6-18	9	MEASAT	15 April 2008
5.	Tata Sky	12 November 2005	INSAT-4A	12-18	12	INSAT-4A	1 May 2006
6.	Airtel	26 December 2006	GSAT 8	12-15	11	SES	1 Jan 2008
7.	Videocon	27 February 2007	GSAT 8	6-8	15	ST	1 Feb 2008

It can be seen from the above table that DOS could not provide satellite capacity (Ku band transponders) on domestic satellites as planned. This was a consequence of DOS not being able to realise its planned communication satellites. Non-realisation of satellites with Ku band transponders in time led to migration of DTH service providers to foreign satellite systems, which is discussed in the succeeding paragraphs.

(i) Inability to realise satellites with Ku band transponders

During the Eleventh Five Year Plan (2007-12) period, DOS planned to launch nine¹⁷ satellites with an aggregate of 218 Ku band transponders for various applications, including DTH. Of the nine satellites, two satellites (GSAT 8 and GSAT 15) were earmarked for DTH applications. Out of nine satellites planned, DOS could eventually realise only three¹⁸ satellites with 48 Ku band transponders during eleventh plan period, which was only 22 *per cent* of the target.

Two satellites, namely GSAT 9 and GSAT 15 were not launched citing non-availability of launch vehicle GSLV. Audit, however, observed that two other satellites, viz. GSAT 8 and GSAT 10 were realised through procured launches¹⁹. Audit also observed that DOS spent ₹250 crore and ₹345.36 crore for the procured launches of GSAT 8 and GSAT 10 satellites respectively. In spite of having sufficient funds, DOS did not consider procured launches for

¹⁷ INSAT 4 CR, GSAT 8, GSAT 9, GSAT 10, ACTS-1, GSAT 11, ACTS-2, GSAT 13 and GSAT 15.

¹⁸ INSAT 4 CR, GSAT 8 and GSAT 10.

¹⁹ Launching satellites by procuring foreign launch vehicle

its ready satellites or acquire satellite in orbit and position it under the orbital slot coordinated by India. Instead, it surrendered available funds. During the last five years (2008-09 to 2012-13), DOS surrendered amount ranging from ₹792 crore to ₹2,809 crore²⁰ annually. Dr. Kasthurirangan committee²¹ also subsequently recommended (April 2011) to resort to lease of satellites to meet the additional demand of transponders.

While agreeing to the inordinate delay in realisation of satellites in Eleventh five year plan period, DOS stated (December 2012) that Dr. Kasthurirangan's committee recommendations were available only in April 2011 and not at the beginning of Eleventh Plan. DOS further stated that the procured launch vehicle route was not cost effective for 2,000 kg class of satellites. DOS added (March 2014) that surrender of funds were due to budget cut imposed by Ministry of Finance.

The reply needs to be seen in light of the fact of the growing demand for Ku band transponders for various applications including DTH services and inability of DOS to meet demands as initially envisaged from domestic satellite capacities which resulted in DTH service providers moving to foreign satellites and loss of opportunity to effectively utilise the Indian coordinated orbital slots. The reply of DOS regarding cost effectiveness of procured launches is also not acceptable since GSAT 8 and GSAT 15 were 3,000 kg class of satellite. GSAT 8 was finally launched (2011) through procured route and GSAT 15 was planned to be realised through procured launch.

Further, DOS had explained (September 2013) while furnishing the Action Taken Note to Paragraph 5.46 of Report No.1 of 2011-12 that huge surrenders were due to revision of budget provision brought about by complex nature of space technology and developmental uncertainties taking into account development status of the projects.

(ii) Forced migration of DTH service providers to foreign satellite systems

Failure to realise its planned satellites together with other problems led to a forced migration of DTH service providers to foreign satellites as described in Table 4.

²⁰ Amount surrendered were: ₹ 800.98 crore in 2008-09, ₹ 792 crore in 2009-10, ₹ 1,265.29 crore in year 2010-11, ₹ 2,809 crore in 2011-12 and ₹ 1,835.03 crore in 2012-13, averaging to ₹ 1,500.46 crore a year.

²¹ A GSLV/SATCOM Programme Review and Strategy formulation committee was set up on 25 December 2010 chaired by Dr. Kasturirangan, former Chairman of ISRO. Kasturirangan committee recommended building of 3,000 kg plus class of satellite (GSAT 8 type of configuration with 24 transponders and GSAT 10 type with combination of C, Extended C and Ku bands) may be adopted for meeting the future requirements and to replace the ageing satellites with C-Band and Extended C band capacity and also to add the Ku band capacity. The Committee recommended that Bulk 'procured launches' may be considered till indigenous Geostationary Satellite Launch Vehicle (GSLV MK III) became operational.

Table 4: Impact due to delay in realisation of communication satellites

Name of satellite	Intended purpose of Ku band transponders in the satellite	Reason for non-realisation of satellite for DTH service	Impact
GSAT 8 (INSAT 4G)	DTH for Reliance, Airtel and Videocon	The launch of GSAT 8 was planned in 2007 but it was actually launched in May 2011, after delay of more than three years.	Airtel was allocated capacity on INSAT 4CR and Reliance and Videocon moved (2008) to foreign satellites MEASAT and ST respectively.
INSAT 4CR	DTH for Airtel	Due to de-commissioning of two satellites of DOS (Edusat in September 2010 and GSAT-2 in March/April 2011), Airtel was vacated from INSAT 4CR in order to accommodate the services of these satellites and to meet their additional capacity requirements.	Airtel moved (2011) to foreign satellite SES.
INSAT 4B	DTH for Sun DTH	Four transponders of INSAT 4B were switched off (July 2010) due to power problems in the satellite.	Sun DTH consequently moved (September 2010) to foreign satellite, MEASAT-3.
GSAT 9	Earmarked as spare	DOS planned to launch satellites GSAT 9 during March-June 2008 (earmarked as spare) and GSAT 15 (for DTH applications) during January- March 2012. Both these satellites could not be launched due to non-availability of indigenous launch vehicle, GSLV.	DOS was unable to bring back DTH service providers to INSAT system due to non-availability of satellite capacity.
GSAT 15	DTH applications		

DOS attributed (June 2010/ March 2014/ June 2014) the delay in launch of GSAT 8 to changes in design of the satellite and modifications carried out in its solar array system and associated power systems, which were prompted due to failure of the power systems reported in two other satellites viz. W2M²² and INSAT 4B. DOS added that after examining the prevailing situation in 2011 when GSAT 8 was finally launched, ICC decided to allot transponders of GSAT 8 to more important national and government services, which could only be met through INSAT/GSAT capacity. DOS also stated that failure of INSAT 4B and GSLV were unexpected contingency situations. DOS further stated that best efforts were being made such as accelerated realisation of increased number of high power satellites to support DTH services and procured launches, augmentation of capacity, etc., for enabling it to cater to demands of all kinds of services including DTH.

²² A project carried out by DOS for a client of Antrix.

The reply needs to be viewed in the following context:

- DOS had committed satellite capacity on INSAT 4A, 4B and GSAT 8 to DTH service providers by entering into firm transponder lease agreements with them. However, capacity was not allocated to most of the non-government DTH service providers from INSAT/GSAT systems. Except for Videocon and Dish TV (which were allocated foreign satellites from the beginning), all the other DTH service providers were using capacities on foreign satellite systems only to the extent committed in the transponder lease agreements signed with DOS, which were originally planned to be provided in the INSAT/GSAT system.
- DOS did not plan replacement strategy in advance for satellite meant for national and government users such as Edusat and GSAT 2. The replacement for Edusat was planned on GSAT 14 only in Twelfth Five Year Plan period (2012-17). Further, the planned replacement for GSAT 2 (GSAT 5P) did not materialise due to failed launch. This put added pressure on DOS to utilise the limited existing Ku band capacity for maintaining the services provided by these satellites.
- As seen from Table 3, demand for satellite capacity from licensed DTH service providers was determined by the year 2007. Non-availability of INSAT/GSAT satellite capacity at that time resulted in loss of business opportunity to DOS due to forced migration of DTH service providers to foreign satellite systems. Eventually, when satellite capacity was available on GSAT 8 (2011), DOS failed to bring DTH service providers back to INSAT/GSAT system who, by then, were established on foreign satellites.

Thus, achievement of a meagre 22 *per cent* of the target of Ku band transponders and inability to maintain the capacity already in service resulted in a squeeze on the available resources of Ku band transponders due to which DOS could not satisfactorily fulfil the competing needs of critical, strategic and commercial sectors, which led to a forced migration of commercial DTH users to foreign satellite systems.

2.2.2 Capacities created remained idle

- (i) As discussed in para 2.2.1, though GSAT 8 was planned to meet the transponder commitments made to Reliance and Videocon, the satellite launch was delayed by more than three years with the result that the service providers moved to foreign satellites. When satellite capacity was eventually available in GSAT 8 (May 2011), audit observed that the capacity was not earmarked though ICC met in July 2011 after the launch of the satellite. The satellite was finally allocated (December 2011) for non DTH use. DOS stated (March 2014) that allotment of transponders in GSAT 8 was done to strategic

and government users. DOS, however, did not comment on the idling of satellite capacity from July 2011 to December 2011.

- (ii) The 12 Ku band transponders of INSAT 4A satellite were allotted to Tata Sky on an exclusive basis. As its transponders were functioning with reduced power, Tata Sky voiced its concerns about the health of satellite and continuously represented at different levels in Government to launch GSAT 10 satellite to avoid adverse impact on its business. At the instance of Tata Sky, DOS launched (September 2012) GSAT 10 satellite having 12 Ku band transponders and positioned it at the same orbital slot (83° east) as that of INSAT 4A. ICC (November 2012) proposed that the 12 transponders of INSAT 4A could be swapped with 12 transponders in GSAT 10. This proposal was agreed to by Space Commission (April 2013).

Tata Sky, which was initially willing to swap the transponders of INSAT 4A with GSAT 10, subsequently declined (July 2013) the proposal on the ground that swapping would not provide additional capacity required by them. Audit observed that apprehending litigation from Tata Sky, DOS did not allocate capacity on GSAT 10 to any other service provider and entire 12 Ku band transponders capable of generating revenue of more than²³ ₹82.80 crore a year continued to remain idle (May 2014) since its launch in May 2011.

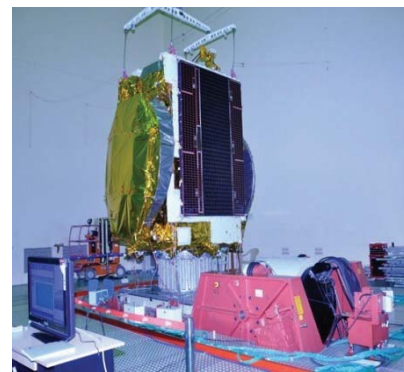


Figure 4 : GSAT 10 realisation

DOS replied (March 2014) that Ku band capacity in GSAT 10 was treated as spare capacity with appropriate approvals.

The reply is not acceptable, as spare capacity of Ku band on GSAT 10 was not a planned option, but a fall back option since Tata Sky was given exclusive first right of refusal on INSAT 4A, which is discussed in detail in para 3.4.2. Pending Tata Sky's decision, the 12 transponders could not be utilised otherwise, with the implied pecuniary loss to the public exchequer. Audit further observed that allocation of satellite capacity being the responsibility of ICC, the decision to keep satellite capacity as spare was taken without the specific approval of ICC.

²³ 12 transponders for 18 months from September 2012 to March 2014 at the rate of ₹4.60 crore per transponder in a year.

2.2.3 Dominance of foreign satellites over Indian Sky

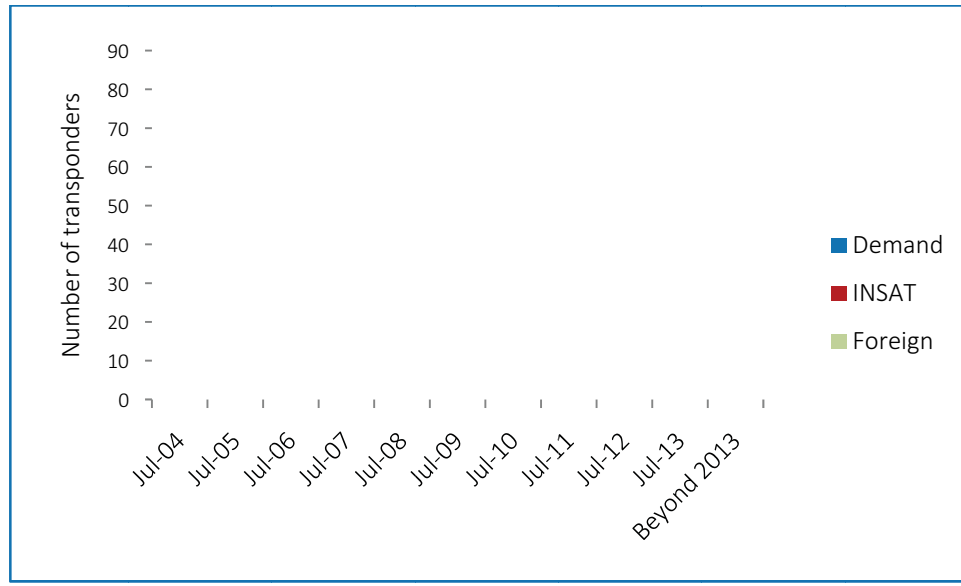
The yearwise demand for satellite capacity in the DTH sector and satellite capacity arranged by DOS either from INSAT system or from foreign satellite was as shown in Table 5.

Table-5 : Estimated demand of satellite capacity in DTH sector

Year	Number of transponders		
	Demand	Met through INSAT system	Met through foreign satellite systems
2004	24.5-30.5	0	6.5
2005	34.5-57.5	0	9
2006	46.5-72.5	12	9
2007	52.5-80.5	17	9
2008	52.5-80.5	29.75	23.5
2009	52.5-80.5	29.92	23
2010	52.5-80.5	26.67	31
2011	52.5-80.5	25	51
2012	52.5-80.5	23.5	54
2013	52.5-80.5	19	57

A comparison of demand met through INSAT systems against the foreign satellite systems showed that initially during 2006 to 2009, major portion of services were being provided through Indian satellite capacity.

Thereafter, INSAT transponders providing DTH service reduced from 30 units in 2009 to 19 units in 2013. There was a progressive increase in dependence on foreign satellite systems from 6.5 units (2004) to 57 units (2013). Based on the assessment of demand in DTH sector, a demand analysis was prepared by DOS (May 2013). According to these estimates, the demand was expected to increase to over 200 units beyond the year 2013, which was planned to be met almost entirely through foreign satellite systems. The transition of dominance from INSAT system to foreign satellite systems is illustrated in chart 1.

Chart-1 : Demand and supply position of satellite capacity to DTH service

The inability of DOS to realise its communication satellites and failure to utilise available satellite capacity led to competitive disadvantage to DOS vis-à-vis foreign satellite system. Audit observed that although there were requests²⁴ for satellite capacity from INSAT system, DOS did not consider these on the ground that these satellite capacities were not feasible to be realised in near future.

Further, it was seen that there was decreasing demand even among the existing users of INSAT system, as discussed in para 2.2.1. Out of the total 76 transponders used by Indian DTH operators (July 2013), only 19 transponders (25 *per cent* of total) belonged to Indian satellites. The remaining 57 transponders (75 *per cent* of total) were on foreign satellites. Tata Sky, which was using 12 transponders in the INSAT system, had also decided (July 2013) to migrate to foreign satellite arrangement as a permanent measure. As such, more than 90 *per cent* of the satellite capacity for the DTH service would be serviced by foreign satellites instead of INSAT system. The future requirement of transponders for DTH services was also planned to be met largely from foreign satellites.

Thus, inability to create and maintain planned capacity for DTH services along with increased dependence on foreign satellite systems even for future needs may eventually lead to a situation in which only 10 *per cent* of the Ku band requirement for DTH services will be provided by Indian satellites resulting in loss of opportunities for revenue generation and strategic interests.

²⁴ Tata Sky and Ministry of Human Resources Development requested for 87 and 38 Ku band transponders from DOS respectively.

DOS stated (March 2014) that to overcome the shortage in Ku band transponders, best efforts were being made in accelerated realisation of increased number of high power satellites to support DTH like services, procured launches and augmentation of capacity. DOS added that this coupled with revised policy for transponder allocation and pricing for which approval was awaited from Cabinet, it would be able to cater to the demand for all kind of services including DTH sector.

The reply of DOS needs to be viewed in the context that though DOS had the foresight to recognise the risks of implementing an open sky policy for allocation of satellite capacity for DTH services in protecting strategic interests, challenges to development of Indian space sector and business opportunity, etc., yet it was unable to develop a strategy and implement a plan to offset these risks.

2.2.4 Crowding of foreign satellites in orbital slots above India

Orbital slot²⁵ is the position of a geo-stationary satellite above earth. Member countries under the framework of United Nations acquire these orbital slots through a coordination process at International Telecommunication Union (ITU). Any country desirous of providing satellite based services within its national boundary must obtain the approval of the ITU for operating a communication satellite in a particular orbital slot. The orbital slots positioned above a country are convenient for its application and called country specific slots for each country. The regulation towards operating a satellite is governed by the following criteria:

- Any country can cover any region of the world and the requests are recorded in ITU on 'first-come-first served' basis.
- Coordination with neighbouring satellites as identified by ITU is required to be completed.
- After coordination of the orbital slot, member countries should put their satellites in the designated orbital slots and spectrum filed should be brought to use within the 'due diligent' period of seven years from the date of filing the first request.
- The satellites should be operated continuously in a coordinated orbital slot without any discontinuity. The maximum discontinuity allowed would be three years and the position needs to be informed to ITU.

Thus, ITU coordination involving satellite bands at ITU level is a lengthy process requiring considerable lead time. This, together with the necessity to maintain the satellite fleet for

²⁵ Geo-stationary satellites have an orbital period same as the earth's rotation, such that they are always pointed at the same position in the sky. A geo-stationary orbit is achieved by placing a satellite directly above earth's equator in a certain longitudinal coordinate, which is known as the orbital slot.

long period without any discontinuity²⁶, etc., makes the orbital slot a scarce and valuable resource.

India specific orbital slots are located between 40° and 120° East. DOS had successfully placed five Indian satellites viz. INSAT 4A, 4B, 4CR, GSAT 8 and GSAT 10 at orbital slots 83°, 93.5°, 74°, 55° and 83° east respectively. Of these, only two satellites (INSAT 4A and 4B) provided capacity for commercial DTH service. As such, Indian administration needed to coordinate adequate number of Ku band orbital slots in the sky.

DOS could not achieve the targeted Ku band capacity to meet its commitments for DTH service providers during Eleventh Five Year Plan (2007-12) at the critical point when the DTH services were being introduced in India under the umbrella of 'open sky' policy. It was a fortuitous turn of events for the foreign satellite owners, who were ready at the opportune time to place their satellites over five orbital slots in Indian skies for providing DTH services in India. The five foreign satellites viz. NSS-6, Measat-3, SES-7, ST-2 and Asiasat-5 were providing DTH service and were positioned at 95°, 91.5°, 108.2°, 88°, 100.5° east respectively. Leasing of another foreign satellite Asiasat 7 in the orbital slot 83° was also under active consideration of the ICC (July 2012). However, due to the strong views of MIB against placement of a foreign satellite Asiasat 7 in the Indian orbital slot, it was ultimately decided not to proceed with leasing of the foreign satellite.

The location of DTH satellites (both foreign and Indian) servicing India can be seen in Figure 5.

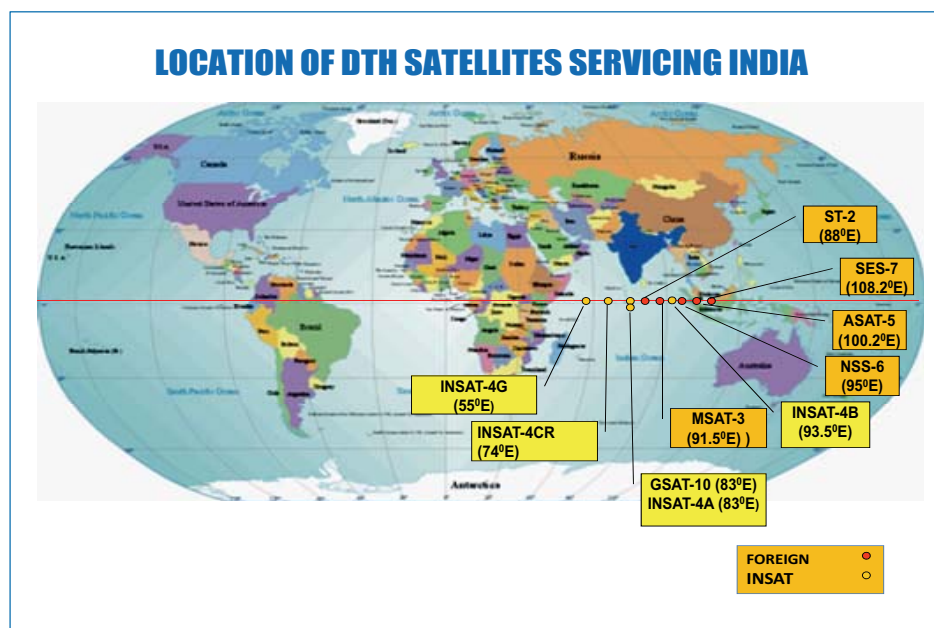


Figure 5 : Location of DTH Satellites

²⁶ The maximum discontinuity permitted is three years with the knowledge of ITU.

As can be seen from Figure 5, with the increased dependence on foreign satellite systems for DTH service, there was a crowding of foreign satellites over Indian skies, which had the following implications:

(i) Increased competition for orbital slots over Indian skies

As discussed in para 2.2.3, DTH service providers were using 57 Ku band transponders of five foreign satellites against 19 transponders in three Indian satellites. With the exit of Tata Sky, the foreign satellite utilisation which is presently 75 *per cent*, would be more than 90 *per cent*. DOS had also conceded that Ku band satellite capacity for DTH services from Indian satellites were not feasible in the near future and had planned to meet the future demand also from foreign satellites.

Crowding of the foreign satellites over India and consequent increase in demand for the orbital slots would not only affect INSAT system, but would also result in non-availability of the strategically important slots for India. The occupation of foreign satellites above India, therefore, poses a strategic disadvantage to India, as the foreign satellite owners would have priority at the slots already occupied by them in their coordination with ITU. DTH business opportunity in India would maintain steady demand for satellite capacity over India, which would not only make the coordination of orbital slots for Indian satellites a difficult exercise, but would put India at a disadvantage in the development and maintenance of its own INSAT system.

DOS replied (March 2014) that the orbital slots and coordinated space spectrum resources belonging to India will continue to remain with India and be available for various services as long as INSAT satellites were operated therein irrespective of the capacities leased by India from foreign satellites for DTH.

The reply needs to be viewed in the context that crowding of foreign satellites and steady business opportunity to foreign satellite owners would result in continued priority for them in their slots and efforts to protect Indian coordinated spectrum and additional coordination would be a difficult exercise.

(ii) Need for the coordination of more number of orbital slots

The foreign satellite owners would continue to provide satellites in their orbital slots since their satellites continue to get business from India. The need was for DOS/ISRO to aggressively capture DTH business opportunity in India in view of preferential treatment given to Indian satellite as per SATCOM policy.

DOS, therefore, needed to plan and coordinate more number of Ku band orbital slots and satellites to bring back those DTH service providers to INSAT system that had moved to foreign satellites. However, as DOS had already planned future DTH requirement from foreign satellites it needs to work out medium term and long term strategy to avoid monopoly of foreign satellites.

DOS, however, did not indicate medium term and long term strategy, but stated (March 2014) that the process of coordinating additional orbital slot /spectrum was a continuous process and was being handled by DOS on a continuous basis based on the demand, future technology advances and DOS plans.

2.3 Inability of DOS to bring back DTH service providers to INSAT system

The arrangement of foreign satellite capacity to Indian DTH industry was envisaged to be a **short term measure to ensure that the service could be brought back to INSAT system as and when Indian satellite capacity was available.** For the purpose, DOS and Antrix entered into back to back agreements with the DTH service providers and foreign satellite owners respectively so that foreign satellite capacity was arranged for the Indian DTH service providers for a short period. However this arrangement did not work favourably for DOS due to the following reasons:

- **Failure of DOS in creating/ maintaining capacities**

As discussed in the previous paragraphs, DOS could not realise its communication satellites in time. Due to these problems, most of the DTH service providers such as Reliance, Videocon, Sun DTH and Airtel moved to foreign satellites. These DTH service providers later did not prefer to return to INSAT system due to trust deficit that was created due to the following circumstances:

- (i) Reliance and Videocon, after waiting for the launch of GSAT 8 satellite, moved to foreign satellites since GSAT 8 was delayed by more than 3 years; and
- (ii) Airtel was forced to vacate INSAT 4CR to accommodate social networks of ISRO with the result that Airtel also moved to foreign satellite capacity.
- (iii) Tata Sky, the major non Government DTH service provider in the INSAT system had also decided to move to a foreign satellite. With this, more than 90 *per cent* of the satellite capacity requirement of Indian DTH service would be serviced by foreign satellites.

- **Inherent issues in migration**

DTH service is 'location specific' and requires that satellite capacity should be available at a particular position in the sky only. Any change in the position of the satellite would result in migration expenses to the DTH service provider besides causing re-orientation of dish antennas by a large number of users. The additional investment would be to the tune of ₹60 crore approximately. Therefore, bringing back of service providers from foreign satellite to INSAT system would be an improbable and difficult exercise.

As discussed in para 2.2.3, DTH service providers had to be moved to foreign satellite systems due to delayed launch of GSAT 8. Eventually, when GSAT 8 was launched (May 2011), though satellite capacity was available with DOS, it was not earmarked though meeting of ICC was convened in July 2011. Around the same time, lease agreements of at least three service providers had expired or were due to expire. Audit observed that DOS did not even attempt to bring the service providers back to INSAT/GSAT system, instead, lease agreements with the foreign satellite providers was renewed for further periods, as detailed below:

Events at the time of signing original agreement	Events after the launch of GSAT 8 (May 2011)
<p>DOS signed an agreement (February 2005) with Sun DTH for lease of transponder capacity in INSAT system. Initially 6.25 units²⁷ were given on lease in INSAT-4B and later two more transponders were given on lease in Measat 3 satellite (foreign satellite) from 22 January 2010 and 25 October 2010 through back to back agreement which was signed (October 2007) between Measat and Antrix. The period of lease of this agreement expired on 13 June 2011.</p>	<p>The service provider was not brought back to INSAT system after the expiry of the back to back agreement. Instead, a renewal agreement was entered (July 2011) between Measat and Antrix for two transponder units in Measat 3, at the rate of ₹ 4.52 crore per unit per annum.</p>
<p>DOS signed an agreement (June 2005) with Reliance for lease of transponder capacity in INSAT system. However, due to non availability of INSAT transponders at that time, Reliance was provided with lease of eight transponder units (later increased to nine in July 2011) in Measat 3 satellite (foreign) for which back to back agreement was signed (October 2007) between Measat and Antrix for a period of three years.</p>	<p>The service provider was not brought back to INSAT system after the expiry of the back to back agreement. Instead, another agreement was entered (August 2011) between Measat and Antrix for the lease of nine transponders in Measat 3 (service starting from 1 July 2011), at the rate of ₹4.52 crore per unit per annum.</p>

²⁷ 36 MHz of transponder in a year is called one unit. 6.25 units comprising 4 x 36MHz + 3 x 27MHz.

Events at the time of signing original agreement	Events after the launch of GSAT 8 (May 2011)
<p>DOS signed an agreement (April 2009) with Videocon for lease of transponder capacity in ST-1 system, as INSAT transponders were unavailable at that time. Videocon was provided with lease of 4.5 transponder units (later increased to nine) in ST-1 (Singtel) satellite (foreign) for which back to back agreement was signed (May 2009) between Singapore Telecommunications Limited (Singtel) and Antrix. The agreement expired on 29 February 2012.</p>	<p>The service provider was not brought back to INSAT system after the expiry of the back to back agreement. Instead, another agreement was entered (April 2012) between Videocon and DOS for lease of 12 transponder units in ST-2 satellite (nine transponders service started from 01 March 2012 and the remaining three started from 19 April 2012) for which back to back agreement was entered (April 2012) between Singtel and Antrix at the rate of \$ 1.07 million per unit of 36 MHz per annum.</p>

The satellite capacity on GSAT 8 was finally allocated (December 2011) to non-DTH users. Thus, back to back arrangement did not serve the purpose of bringing Indian DTH service providers back to INSAT system. Besides, due to non-allocation of available satellite capacity to DTH service providers, DOS failed to capitalise on a business opportunity of ₹115 crore²⁸ per annum.

DOS stated (March 2014) that DTH service providers could not be brought back to INSAT/GSAT due to insufficient available capacity to meet DTH requirements, as capacity on GSAT 8 was allocated to meet national and government services. The reply needs to be viewed in the light of the fact that GSAT 8 was initially planned to cater to requirements of DTH service providers (2005-07). But due to delays in its launch DTH service providers were accommodated on foreign satellites. Once capacity was allocated on foreign satellites, it was difficult to bring the service providers back to INSAT system for operational reasons such as location specific nature, bulk requirement of satellite capacity and dish migration expenses and customer inconvenience.

²⁸ Calculated for 23 transponders at the rate of ₹5.00 crore per transponder per annum.

Chapter 3 – Allocation of satellite capacity

Allocation of satellite capacity for DTH service was to be done in accordance with the provisions of the SATCOM policy. According to Article 2.5.2 of the policy, ICC was to earmark at least a certain percentage of capacity in INSAT system for use by the non-governmental users who had been authorised by law to provide various telecommunication services including broadcasting. Article 2.5.3 of the policy stipulated that ICC was to evolve the procedures from time to time taking into account the capacity available and prevailing situation in the satellite communications market. Article 2.6.2 of the policy further stated that once capacity was earmarked by ICC, DOS was to provide the satellite capacity following its own procedures. In case the demand exceeded available capacity, DOS was to evolve suitable transparent procedures for allocation of capacity, which could be any equitable method such as auction, good faith, negotiation or first come first served basis.

As of 31 July 2013, five Indian satellites were identified for DTH service in India, as shown in Table 6:

Table 6: Indian satellites earmarked for DTH service

Sl. No.	Satellite	Date of launch	Mission life (Years)	Number of Ku Band transponders		DTH service provider to whom capacity was allocated
				Total	Allocated for DTH Service	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	INSAT 4A	22 December 2005	12	12	12	Tata Sky
2	INSAT 4B	12 January 2007	12	7*	7	DD, Sun DTH
3	INSAT 4CR	2 September 2007	12	12	0**	Not allocated
4	GSAT 8	21 May 2011	12	24	0***	Not allocated
5	GSAT 10	29 September 2012	15	12	0	Not allocated
TOTAL				67	19	

*The satellite had 12 Ku band transponders, of which 7 were working as of July 2013.

**From July 2008 to July 2012, transponders ranging from 4.5 to 7 units were allocated to Airtel, thereafter, due to utilisation of the capacity for the erstwhile GSAT-2 users and EDUSAT networks, Airtel was shifted to foreign satellite.

***Excluding three transponders allocated to government users for non-commercial applications.

This chapter highlights issues observed by audit in earmarking and allocation of satellite capacity.

3.1 Satellite capacity not earmarked by ICC

Audit observed that ICC, which was the authority responsible for earmarking satellite capacity for non-Government users, was not convened after June 2004 and was re-constituted by the Government of India only in May 2011, after lapse of nearly seven years. In the meantime, three satellites were launched, in which capacity was allocated to DTH service providers directly by DOS, which was not as per SATCOM policy.

While confirming the facts, DOS stated (December 2012) that members were informed about the transponder allotments to DTH services in the Technical Advisory Group (TAG) meetings. The reply is not acceptable as TAG was only a technical subcommittee of ICC and its mandate was not to earmark satellite capacity in INSAT system.

3.2 Role of Ministry of Information and Broadcasting in the allocation of satellite capacity

According to The Allocation of Business Rules, 1961²⁹ Ministry of Information and Broadcasting (MIB) was responsible for matters relating to broadcasting in India and DOS is responsible for all activities connected with space.

DTH service being a broadcasting service comes under purview of MIB. Accordingly, guidelines for DTH service were prescribed (March 2001) by MIB with approval of Union Cabinet. Allocation of satellite capacity to DTH service providers is an important decision making process under DTH service. ICC, in which MIB is a member, is mandated to plan and earmark satellite capacity to users including DTH service providers. By not convening ICC, MIB was not involved in the satellite capacity allocation decision making process.

Another case on allocation of transponder to private service provider in the absence of ICC was also raised earlier in Paragraph 2.3 of Comptroller and Auditor General's (Union Government), Report No. 4 of 2012-13 'Report on hybrid satellite digital multimedia broadcasting service agreement with Devas'.

MIB also agreed (May 2014) that ICC being the apex body for all matters relating to allocation of transponders, it should be mandatory that all allocations be made by DOS with the approval of ICC.

²⁹ The rules allocate business of the Government of India and specify subjects that are to be dealt with by the Ministries/Departments.

DOS stated (March 2014) that ICC is meeting regularly after its reconstitution in May 2011.

3.3 Satellite capacity allocation procedure not developed by ICC and DOS

Audit observed that though the Norms, Guidelines and Procedures (NGP) of SATCOM Policy was approved by Union Cabinet in January 2000, the procedure for allocation of satellite capacity was not framed by ICC as envisaged in Article 2.5.2 of SATCOM policy until February 2013. The transponder allocation policy of ICC was pending approval of Union Cabinet (March 2014). Audit further observed that in the absence of an ICC approved transponder allocation policy, there was no prescribed procedure within DOS for allocation of satellite capacity for DTH service providers. Though DOS stated (March 2011) that after the announcement of SATCOM policy, generally bandwidths were allotted on 'first come-first served' basis by maintaining a waiting list of customers, documents relating to formulation of first come first served policy, rules of precedence, operational guidelines/manual, etc., duly approved by the competent authority were, however, not found on record. In the absence of records, audit could not ascertain whether the 'first come first served policy' and rules of precedence adopted by DOS were approved by the Space Commission. Audit also observed that the order of precedence was also not available with DOS. Audit, however, observed that a precedence list from the year 2009 onwards was maintained by Antrix, which was irregular, as it was only the marketing arm of DOS and should not have any role in the allocation of satellite capacity created out of Government funds.

Thus, since the initiation of DTH service in India, DOS committed satellite capacity to various DTH service providers without an ICC approved procedure. A similar issue of violation of above procedure was also reported in para 2.4 of Comptroller and Auditor General's (Union Government), Report No. 4 of 2012-13 'Report on hybrid satellite digital multimedia broadcasting service agreement with Devas'.

DOS stated (March 2014) that evolving suitable transparent procedure for allocation required under Article 2.6.2 arises only when demand exceeds available capacity. DOS further stated that the rules of precedence were not relevant since the capacities were available. DOS added that approval of Space Commission was not necessary, as there was no policy making involved. The reply is not acceptable, as SATCOM policy stipulated that procedure for allocation of satellite capacity was to be evolved by ICC. Further, during the period from 2004 to 2011 when ICC was not in place, the demand for satellite capacity exceeded supply in all years, as detailed in Table-5. The reply also confirmed the fact that neither method of allotment nor procedure for allocation was framed by DOS and satellite capacity was committed to various DTH service providers without an ICC approved procedure.

3.4 Irregularities in the 'first come-first served' policy adopted by DOS

Since introduction of DTH service in India, DOS allotted satellite capacity to DTH service providers as detailed in Table 7.

Table-7: Allocation of satellite capacity for DTH service as on 31 July 2013

Order of Precedence	DTH service providers	Date of agreement	Indian Satellite				Foreign satellite		
			Name	Date of launch	Orbital location	No. of transponders	Name	Orbital location	No. of transponders
1	DD	18.03.04	INSAT 4B	12.01.07	93.5° E	6	-	-	-
2	Dish TV	27.05.04	-	-	-	-	NSS-6 Asiasat-5	95° E 100.5°E	12 6
3	Sun DTH	19.02.05	INSAT 4B	12.01.07	93.5° E	1	Measat-3	91.5° E	4
4	Reliance	28.06.05	-	-	-	-	Measat-3	91.5° E	9
5	Tata Sky	12.11.05	INSAT 4A	22.12.05	83° E	12			
6	Airtel	26.12.06	-	-	-	-	SES 7	108.2° E	11
7	Videocon	27.02.07	-	-	-	-	ST	88° E	15
TOTAL						19			57

Audit observed irregularities in the allocation of satellite capacity to Tata Sky by DOS, which are discussed in the following paragraphs.

3.4.1 Allocation of satellite capacity out of turn

It can be seen from the above table that Tata Sky was fifth in the order of preference for allocation of satellite capacity. However, Audit observed that Tata Sky was granted precedence over DD and allocated capacity on INSAT 4A satellite which was launched earlier in December 2005. DD, which was first in the precedence list, was allocated capacity on INSAT 4B which was launched in January 2007.

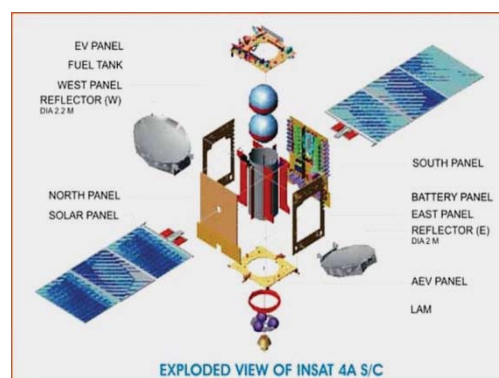


Figure 6: INSAT 4A

DOS stated (March 2014) that DD was allocated capacity on a foreign satellite (NSS-6) before allocation of capacity to Tata Sky on INSAT 4A. As DD had already started their DTH service from the foreign satellite, the services were migrated to INSAT 4B after the end of their contract period. DOS however, did not state

whether capacity on INSAT 4A at the prime slot of 83° east was offered to DD and turned down by the latter, which is significant in the context that DOS granted exclusive rights over this prime slot to Tata Sky as discussed in the next paragraph.

3.4.2 Grant of exclusive rights over prime orbital slot

According to SATCOM policy, satellites could be allocated to private parties in only two circumstances;

- ICC would earmark certain percentage of the capacity of Indian Satellites (INSAT) owned by Government of India for the use of Indian private users (Article 2.5).
- WPC would register 'Indian satellite systems' for private parties after following certain well defined and transparent norms. To establish an 'Indian Satellite System', the private parties had to incur expenditure towards application and its processing, operating licence and towards establishing ground segments and Satellite Control Centre (Article 3.1).

The principle of allocation of satellite capacity to the private users on a non exclusive basis was prescribed by the INSAT Coordination Committee.

Audit, however, observed that in the agreement signed with Tata Sky (November 2005), DOS committed the exclusive first right of refusal to Tata Sky for using Ku band transponders (for DTH service) at 83° east orbital slot, whereas this was not done in transponder lease agreements³⁰ entered with other DTH service providers. The prime slot of 83° east was advantageous to Tata Sky, since the communication satellites occupying this slot could uniformly access the length and breadth of the country.

The issue of preferential allocation of 83° orbital slot to Tata Sky was first pointed out by Audit in September 2012. Acknowledging the audit point, DOS held (July 2013) a meeting with Tata Sky during which it agreed to relinquish the first right of refusal on the orbital slot. However, no formal amendment was effected in this regard as of March 2014.

In the meantime, DOS launched GSAT 10 (September 2012) and placed it in the orbital slot 83° east (same as INSAT 4A). As INSAT 4A was functioning on reduced power, DOS offered to swap 12 transponders of INSAT 4A with GSAT 10. Though Tata Sky initially agreed with the arrangement, it later backed out stating that it was looking for additional satellite capacity with a foreign satellite as a long term engagement. Fearing litigation from Tata Sky,

³⁰ Dish TV, Reliance, Airtel, Sun DTH and Videocon.

DOS did not allocate 12 transponders of the Ku band satellite capacity of GSAT 10 to any other user.

Thus, DOS not only allocated satellite capacity to Tata Sky out of turn, but also accorded exclusive rights to the private party, in violation of the principle of non-exclusiveness of ICC.

Since Ku band transponders located in this slot could be allocated only to Tata Sky unless they refuse, grant of exclusive first right of refusal to Tata Sky created a difficult situation for DOS in allocating its Ku band transponders in the slot.

DOS stated (December 2012) that the satellite capacity was allocated to Tata Sky to improve acceptability of INSAT/GSAT system without compromising government interest. DOS added (March 2014) that first right of refusal was given as a technical requirement as further expansion of capacity for DTH service was possible only at the same orbital location. The fact, however, remained that DOS did not give exclusive right of first refusal to any other DTH service provider, indicating that DOS gave a preferential treatment to Tata Sky over other DTH service providers.

Chapter 4 – Leasing of satellite capacity

4.1 Institutional mechanism for entering into transponder lease agreement

According to Article 2.6.5 of NGP of SATCOM Policy, the use of INSAT capacity by non-Government users was to be based on a formal lease agreement signed between DOS/INSAT and the party, which would spell out the technical, financial, contractual and management terms and conditions. However, approval and control mechanism to ensure that the various terms and conditions of the agreement were determined after examining the technical, financial and legal implications of the contract as well as to fix responsibility and accountability for management of the contract was not put in place in respect of DTH transponder lease agreements. There was no prescribed procedure for:

- Approval of the appropriate authority from the financial angle (Member Finance of Space Commission) so that financial interests and financial risks involved were sufficiently covered in the lease agreement;
- Approval from Ministry of Law from the legal angle;
- Duly documented meeting of Technical committee and Commercial negotiation Committee at the appropriate level for negotiation of terms and conditions with the service providers; and
- Stipulation of the officials responsible for management of the contract.



Figure 7: DTH service in operation

DOS stated (March 2014) that various methods for leasing transponders to commercial users in INSAT/GSAT system had since been adopted and streamlined.

In respect of the transponder lease agreements entered into by DOS with DTH providers for allocation of satellite capacity on INSAT systems, whereas DOS provided all technical support, invoicing and collection of payments was done by Antrix. For this, Antrix charged

commission ranging from 15 *per cent* to 40 *per cent* from DOS. In respect of the back to back contracts entered into by Antrix with the DTH service providers for foreign satellite capacity, Antrix charged commission of 7.5 *per cent* from the DTH service providers. Though DOS offered substantial technical support in the allocation and leasing of satellite capacity to DTH service providers, no remuneration was claimed by DOS. On the contrary, the effective realisation of revenue by DOS through leasing of INSAT/GSAT capacity was also reduced due to considerable percentage being paid as commission to Antrix.

While agreeing that it provided technical support to Antrix, DOS stated (March 2014) that back end work related to end user and Antrix was significant and the current mechanism was necessary to establish INSAT/GSAT system as a good commercial venture. The reply may be viewed in the context that in spite of rendering complete technical support for the allocation of satellite capacity in back to back agreements, DOS did not claim any compensation from Antrix.

4.2 Transponder lease agreements did not safeguard financial interest of Government

Audit noticed that the terms and conditions of the transponder lease agreements of DOS favoured private service providers and were against the financial interest of the Government, as discussed in the succeeding paragraphs.

4.2.1 Loss due to non revision of transponder charges

The period of lease committed in the DTH transponder lease agreements between DOS and the DTH service providers for satellite capacity from INSAT system ranged from five to 10 years. Audit observed that the transponder lease agreements entered by DOS did not include provision for revision of prices.

DOS constituted (June 2002) a Standing Committee to fix minimum price for each type of transponder for different INSAT satellites. The committee was to periodically review the marketing strategy and in the event of any difference on account of rates, it was authorised to negotiate with individual DTH service providers. INSAT transponder lease charges were fixed and approved (March 2008) by DOS for a period of three years i.e up to March 2011.

As ICC was yet to finalise the prices as of April 2011 when the validity period expired, the validity of existing price of various transponder lease agreements was extended till December 2011. DOS subsequently decided (April 2012) to raise its prices by 15 *per cent*. Audit, however, observed that ICC did not finalise the prices, due to which the revision was not carried out. As such DOS extended the validity of the existing prices upto September

2013 and stated (September 2013) that approval was being sought for further extension of the prices up to 31 March 2014.

In contrast, the transponder lease agreements with foreign satellite operators in the case of back to back contracts were valid for one to six years only. At the end of the terms of the agreement, fresh contracts were entered with revised prices as detailed in Table 8.

Table-8: Revision of price of transponders leased from foreign satellites

₹ in crore

Sl. No.	Foreign satellite capacity provider	DTH Service provider	Original Agreement				New Agreement				Increase in price	Percentage increase in price (%)	Duration between dates of original and increasing process (months)
			Date of original Agreement	Price per transponder per year as per contract	Commission @ 7.5%	Total price per transponder	Date of new Agreement	Price per transponder per year as per contract	Commission @ 7.5%	Total price per transponder			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Measat	Reliance	October 2007	4.30 for 36 MHz	0.32	4.62	August 2011	4.52 for 36 MHz	0.34	4.86	0.24	5	46
2.	ST	Videocon	July 2009	4.82 for 54 MHz (US\$ 1 million)	0.36	5.18	January 2011	6.20 for 54 MHz (US\$ 1.35 million)	0.47	6.67	1.49	29	18
3	ST	Videocon	January 2011	6.20 for 54 MHz (US\$ 1.35 million)	0.47	6.67	April 2012	8.24 for 54 MHz (US\$ 1.6 million)	0.62	8.86	2.19	33	15
4.	Measat	Sun DTH	December 2008	4.21 for 36 MHz	0.32	4.53	July 2011	4.52 for 36 MHz	0.34	4.86	0.33	7	31
5.	SES	Dish TV	June 2004 (amendment January 2005)	4.54 for 36 MHz (US\$ 1 million)	0.34	4.88	April 2010	4.88 for 36 MHz (US\$ 1.1 million)	0.37	5.25	0.37	8	70
				5.23 for 54 MHz (US\$ 1.15 million)		0.39		5.62		5.61 (US\$ 1.265 million)			

It is evident from the table that prices of transponders leased from foreign satellite systems were increased by five to 33 *per cent* over a period of one to six years. In contrast, DTH service providers availing INSAT transponder capacity paid the same charges for six to ten years. Non-inclusion of price revision clause in the agreements signed by DOS with service

providers for INSAT systems and non-revision of prices resulted in a pricing differential estimated at ₹36.17 crore to the disadvantage of DOS, as shown in Table 9.

**Table-9: Pricing differential due to delay in revision of prices
(Agreements valid after April 2011)**

₹ in crore

Sl. No.	Customer	Satellite	Date of agreement	Period*	Duration	Rate of transponder on April 2011	Rate of transponder considering increase of 15%	Number of transponders	Pricing differential ³¹	Duration since dates of original agreement (months)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Tata sky	INSAT-4A	12 November 2005	1 April 2011 to 17 July 2013	27 months 17 days	4.6	5.29	12	19.02	91
2	Doordarshan	INSAT 4B	18 March 2004	1 April 2011 to 21 May 2012	13 months 21 days	4.4	5.06	5	3.77	114
				22 May 2012 to 30 Sep 2013	16 Months 10 days	4.4	5.06	6	5.39	
3	Sun DTH	INSAT 4B	19 February 2005	1 April 2011 to 30 November 2012	20 Months	4.7	5.40	1	1.17	93
4	Airtel	INSAT 4CR	26 December 2006	1 April 2011 to 03 Sep 2011	5 Months 03 days	4.8	5.52	7	2.14	72
			26 December 2006	04 Sep. 2011 to 05 October 2011	01 Month 02 days	4.8	5.52	6.75	0.43	
			26 December 2006	06 October 2011 to 15 December 2011	02 Months 10 days	4.8	5.52	6.67	0.93	
			26 December 2006	16 December 2011 to 01 March 2012	02 Months 15 days	4.8	5.52	6.5	0.97	

³¹ The pricing differential is worked out by considering an increase of 15 per cent in prices, as was decided by DOS in April 2012. The loss is calculated as 15 % of Column (7) x Column (6)/12 x Col.(8)

Sl. No.	Customer	Satellite	Date of agreement	Period*	Duration	Rate of transponder on April 2011	Rate of transponder considering increase of 15%	Number of transponders	Pricing differential ³¹	Duration since dates of original agreement (months)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			26 December 2006	02 March 2012 to 03 July 2012	04 Months 02 days	4.8	5.52	6	1.46	
			26 December 2006	04 July 2012 to 13 July 2012	10 days	4.8	5.52	5	0.10	
			26 December 2006	14 July 2012 to 31 August 2012	01 Month 18 days	4.8	5.52	4.5	0.43	
			26 December 2006	01 September 2012 to 30 September 2012	01 Month	4.8	5.52	3	0.18	
			26 December 2006	01 October 2012 to 31 December 2012	03 Months	4.8	5.52	1	0.18	
TOTAL									36.17	

*taken upto validity of the agreement or September 30, 2013, which ever was earlier.

An analysis of prices of transponders from the details shown in the Tables 8 and 9 also revealed that whereas, prices of the transponders on foreign owned satellites upon revision ranged from ₹4.86 crore to ₹8.86 crore per transponder per year, the prices of INSAT transponders remained constant at ₹4.40 crore to ₹4.80 crore for over a period of six to ten years. The poor marketing strategy of DOS to continue with the same prices, when foreign satellite providers regularly revised their prices resulted in loss of transponder charges and provided an extra advantage to the service providers who were allocated INSAT capacity.

DOS stated (December 2012) that the long term contract was consciously decided considering the award of 10 year licence by MIB and also due to difficulties in re-location to other orbital locations within a short period. DOS also added that a fixed tariff was entered with DTH users to improve the acceptability of INSAT/ GSAT system and to make the INSAT/ GSAT satellite system commercially dependable and viable in the country. DOS added (March 2014) that the policy for revised transponder pricing was in the process of approval by the Cabinet. DOS further stated (May/June 2014) that the contract with Tata Sky had

been re-negotiated and Tata Sky had agreed for renewal of prices with effect from 18 July 2013.

The fact, however, remained that though prices were to be revised after March 2011, the same was not done on the pretext that the contract could not be terminated as the service providers were issued licences for 10 years. Revised prices were also yet to be charged from Tata Sky as of March 2014.

4.2.2 Special terms and conditions of transponder lease agreement with Tata Sky

As discussed in para 3.4.1 and 3.4.2 of this report, DOS allocated satellite capacity to Tata Sky on INSAT 4A out of turn and by offering it exclusive rights over the orbital slot 83° east. Audit further observed that the transponder lease agreement entered (November 2005) with Tata Sky gave the following benefits to Tata Sky, which were not offered to any of the other DTH service providers such as Airtel and Sun DTH:

- Commitment for satellite capacity was open ended, with provision for additional transponder capacity whereas in other agreements the satellite capacity was committed for the period of lease only.
- Credits were provided in the case of interruption in service for more than 30 minutes to 24 hours at slab rates, whereas in the other agreements the credits were provided for interruption of more than one hour on proportionate basis.
- There was a provision for inspection of customer's earth station by DOS at the request of Tata Sky, where as this facility was not extended to the other DTH service providers.
- Tata Sky was allowed to assign any of its rights or delegate any of its obligations to its affiliates upon reasonable prior written notice to DOS, whereas this was not extended to the other DTH service providers.
- Chairman of Tata group was one of the non-functional directors in the board of directors of Antrix. Although there might be no direct impact on the decision making process within Antrix, allocation of Ku band transponders of INSAT 4A on exclusive basis to Tata Sky does raise the question of conflict of interest.

While admitting the above, DOS stated (December 2012) that the contract with Tata Sky was entered during initial period of marketing INSAT/GSAT system with a vision to bring private users towards INSAT/GSAT system. DOS added (March 2014) that such clauses were

accepted based on customer specific request as a part of negotiations and were intended to provide certain confidence to the users as well as flexibility in contract management.

The reply needs to be viewed in the context that the special terms benefited Tata Sky as explained under para 2.2.2 (ii), 3.4.1 and 3.4.2. Further, substantial differences between agreement entered into with Tata Sky vis-à-vis other transponder lease agreements, especially grant of exclusive rights over the prime orbital slot, were also noticed by Ministry of Finance, which requested (March 2013) DOS to re-negotiate the terms of agreement entered with Tata Sky. However, this was yet to be done (as of June 2014).

4.2.3 Loss due to undercharging of transponder prices

DOS entered (February 2005) into agreement with Sun DTH for the lease of 4 transponder units³² in INSAT 4B satellite. Subsequently DOS decided (February 2007) to lease additional 2.25 transponders to Sun DTH and charge for only six transponders at the rate of ₹4.75 crore per transponder against 6.25 transponders on the ground that Sun DTH had agreed for leasing with the condition that they would be charged only for six transponders. The justification was however, not acceptable as DOS leased 6.25 transponders to the firm. Under charging of transponders resulted in a loss of ₹2.94 crore over the period from 15 January 2008 to 6 July 2010.

Audit further observed that without citing any reason, DOS also reduced the price of these transponders with effect from January 2010 to ₹4.70 crore per transponder, which resulted in loss of ₹46.92 lakh to DOS as shown in Table 10.

Table-10: Under charging of transponders

Sl. No.	Period	Number of transponders leased	Rate as per agreement (₹ lakh)	Rate charged (₹ lakh)	Duration	Loss (₹ lakh)
1.	21 January 2010 to 7 July 2010	06	475	470	5 months and 17 days	13.92
2.	08 July 2010 to 07 December 2010	01	480	470	5 months	4.17
3.	08 July 2010 to 31 December 2010	01	480	470	5 months 24 days	4.83
4.	08 July 2010 to 30 November 2012	01 ³³	480	470	28 months and 24 days	24.00
TOTAL						46.92

³² One transponder is equivalent to 36 Mhz. Sun DTH was leased four transponders of 36 MHz each and three transponders of 27 MHz each.

³³ Due to power constraints in INSAT 4B, the allocation was reduced to one transponder and four transponders were arranged from the foreign satellite Measat 3.

While repeating the justification, DOS stated (March 2014) that the Standing Committee was empowered to take the decision. The reply is not acceptable as already mentioned above.

4.2.4 Allocation of bonus time

The agreement entered between DOS and Sun DTH provided that the customer was permitted free access to the capacity 60 days prior and three months after the start of the lease period as an early bid incentive to the customer. DOS, however, allowed bonus free period of 1.5 months after the permitted three months time to Sun DTH. The additional free time was allowed in lieu of the delay in getting operational approvals required for providing the DTH service. Since obtaining operational approvals was the responsibility of the customer, the additional bonus free time resulted in unintended benefit³⁴ of ₹ 3.56 crore to Sun DTH.

DOS stated (March 2014) that the decision was taken by the Standing Committee, which was empowered to take the decision. The reply of DOS is not acceptable since the Standing Committee was only mandated to establish the minimum price for each type of transponders and was not mandated to extend bonus free time for usage of transponders.

4.2.5 Revenue of ₹ 5.90 crore not collected due to failure to sign MoU

Article 2.6.5 of NGP of SATCOM Policy stipulated that for leasing of capacity, DOS was to enter into transponder lease agreements with the DTH service providers. DOS, however, did not enter into such an agreement with DD instead, signed MoU (March 2004) with Prasar Bharti for leasing five transponders of INSAT 4B to DD for DTH service. Although the MoU stated that DD would be charged for the Ku band transponders at the prevailing rates, the rates to be charged were not indicated.

Prasar Bharti requested (May 2012) DOS for allocating one additional Ku band transponder in INSAT 4B for DD's DTH service. It also requested for an assurance for allocation of sixth transponder and its frequency details so as to carry out procurement and installation of additional ground facilities required for the additional transponder. DOS allocated (May 2012) the additional transponder to Prasar Bharti but it neither provided the information sought by Prasar Bharti nor entered into a firm agreement/MoU. Due to non-receipt of advance information from DOS, Prasar Bharti was unable to procure the equipment and obtain the necessary clearances in time. Prasar Bharti further informed (June 2013) that the additional Ku Band transponder was not put to use since MOU had not yet been signed. As

³⁴ 1.5 x 4.75 x 6 /12.

a result, revenue of ₹5.90 crore³⁵ worked out as lease charges for the additional transponder from May 2012 up to July 2013 was not collected by DOS.

DOS replied (March 2014) that Prasar Bharti subsequently signed MOU and had agreed to pay lease charges for the additional Ku band transponder with effect from May 2012. DOS, however, remained silent on the status of the said payment.

4.3 Outstanding dues from back to back agreements

As discussed in para 2.3, DOS arranged foreign satellite capacity to Indian DTH service providers for short term period through Antrix as a temporary measure to ensure that the service could be brought back to INSAT system when Indian satellite capacity was eventually available. DOS entered in back to back agreements for Dish TV, Sun DTH, Airtel, Reliance and Videocon. Audit observed that transponder lease charges to the tune of ₹62.55 crore remained to be recovered from these parties.

DOS stated (March 2014) that amount of ₹57.17 crore was since recovered. The balance of ₹5.38 crore remained outstanding. Outstanding dues in back to back arrangement suggest that in these cases Antrix did not collect money in advance from service providers as per the conditions of the transponder lease agreements and allowed them to make payment on credit basis, thereby extending undue favour and resultant accumulation of transponder lease charges.

³⁵ Outstanding amount as on June 2013 (A) = ₹5,48,87,256. Amount for July to September 2013 = ₹1,23,59,600. Amount for July 2013 (B) = ₹1,23,59,600/3 = ₹41,19,866.67. Total (A+ B) = ₹5.90 crore

Chapter 5 – Conclusion and Recommendations

DTH services were introduced in India in November 2000. Recognising the heavy demand of communication satellites for rendering the service, Government of India approved a broader SATCOM policy by introducing an 'open sky' concept that allowed both Indian and foreign satellites to be used in DTH services with the condition that Indian Satellite would get preferential treatment.

Allocation of satellite capacity for DTH services came with the challenges of not only meeting the bulk requirement for satellites but also maintaining a continuous and permanent presence of the satellite at the same position in the sky. Being a satellite builder and research and development agency, it was a major opportunity for DOS not only to exploit its research efforts in establishment of indigenous satellite communication technologies for the DTH sector but also to generate revenue for the country. The 'open sky' policy also posed the challenge on DOS of maintaining the scarce and valuable orbital slots in the Indian skies.

DOS could not realise the planned/committed satellite capacity due to delayed satellite launches, power problems in the existing satellites, allocation of capacity for other purposes, etc. As a result, satellite capacity was arranged from foreign satellites for DTH services. Greater dependence on foreign satellites for Ku band transponders for DTH services eventually led to their dominance over Indian sky, to the extent that of the 76 Ku band transponders in use as of 2013, 57 were on foreign satellites and only 19 were on the INSAT system. The number of INSAT Ku band transponders for DTH services was expected to reduce further to only seven, as one of the DTH service providers viz. Tata Sky had also decided to move to foreign satellite system. By Department's own estimate, the future demand of Ku band transponders was also planned to be met entirely from foreign satellites.

Failure to realise the satellites for Ku band transponders as planned also resulted in a situation where foreign satellites had occupied five orbital slots above Indian sky, thereby putting India at a disadvantage in maintaining its own INSAT fleet. DOS did not consider procured launches or hiring satellites to reduce the demand supply imbalance of Ku band transponder despite having sufficient funds. Instead, large amount ranging between ₹792 crore and ₹2,809 crore were surrendered annually during the last five years.

In addition, satellite capacities created by DOS remained idle. The communication satellites GSAT 8 and GSAT 10 which were planned for DTH service remained idle for seven to ten

months. While GSAT 8 was eventually allocated for non DTH purpose, capacity on GSAT 10 was not allocated due to special terms of first right of refusal over the orbital slot extended to Tata Sky.

The arrangement of foreign satellite capacity to Indian DTH industry was envisaged to be a short term measure to ensure that the service could be brought back to INSAT system as and when Indian satellite capacity was available. For the purpose, DOS and Antrix entered into back to back agreements with the DTH service providers and foreign satellite owners respectively so that foreign satellite capacity was arranged for the Indian DTH service providers for a short period. However, this arrangement was unsuccessful due to inherent issues in migration of satellite capacity such as substantial migration expenses for the DTH service provider and inconvenience to the millions of customers in re-orienting their TV dish antennas. Inability of DOS to provide satellite capacity from its own system created a trust deficit, due to which most of the DTH service providers such as Reliance, Videocon, Sun DTH and Airtel moved to foreign satellites. Tata Sky, the major non Government DTH service provider in the INSAT system had also decided to move to a foreign satellite for a long term engagement. Thus, in spite of being aware of the risks in the 'open sky' policy of allocation of satellite capacity, DOS failed to take adequate measures to protect the interest of the country and exploit the commercial opportunity.

Allocation of satellite capacity for DTH service was to be done in accordance with the SATCOM policy, which stipulated that ICC was to earmark a certain percentage of the capacity in the INSAT system for non-government users and evolve a procedure for allocation of satellite capacity to the users. Once the capacity was earmarked by ICC, allocation of the satellite capacity was to be done by DOS in a transparent manner, which could be any equitable method such as auction, good faith, negotiation or first come-first served. Audit observed that ICC was not convened for nearly seven years between June 2004 and July 2011. In the meantime, three satellites were launched, in which capacity was allocated to DTH service providers directly by DOS without an ICC approved procedure.

Audit observed that Tata Sky was allocated satellite capacity on INSAT 4A out of turn, though Doordarshan was first in the order of precedence. Tata Sky was also granted exclusive rights over India's prime orbital slot of 83° east, which was in violation of SATCOM policy that clearly stated that satellite capacity to non-government users was to be given on non-exclusive basis. When INSAT 4A developed power problems, DOS offered 12 Ku band transponders on GSAT 10 as a substitute to Tata Sky, which neither accepted nor rejected the same. Since Tata Sky had the first right of refusal, the 12 transponders had to be kept with DOS.

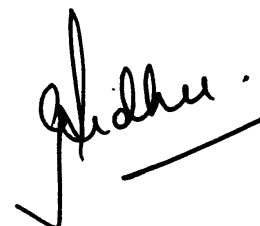
There was no price revision clause in the agreements, although the minimum price fixed by DOS had provision for revision after three years. As a result, the same prices were maintained for periods of six to ten years. In contrast, agreements entered for DTH

providers receiving capacity from foreign satellites underwent price revision after one to six years. Comparatively, the prices charged by DOS for INSAT systems for DTH service providers were significantly lower than the cost of capacity on foreign satellites. Audit also observed instances of losses due to undercharging of transponders, allocation of free bonus time not covered in the agreement and failure to enter into agreement/MoU for transponder allocated in addition to the number committed in the original MoU.

Audit makes the following recommendations:

1. *DOS and ICC may frame a transparent policy for allocation of satellite capacity for DTH services and all future satellite capacity allocations may be made based on the same.*
2. *DOS may consider creating Ku band satellite capacity for DTH services commensurate with the demand in the sector and requirement for national and strategic applications.*
3. *DOS may clearly define short term and long term strategy for allocation of Ku band satellite capacity to DTH service providers on domestic and foreign satellites to ensure continuity to the existing users as well as to bring those DTH service providers using foreign satellites back to INSAT/GSAT system.*
4. *DOS may incorporate price revision clause in long term transponder lease agreements and revise the transponder prices in time to avoid extending undue benefit to the service providers.*

New Delhi
Dated: 23 July 2014



(GURVEEN SIDHU)
Principal Director of Audit,
Scientific Departments

Countersigned



New Delhi
Dated: 30 July 2014

(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

ANNEXURES

Annexure - I

Chronology of events in allocation of satellite capacity to DTH service providers

Date	Event
June 1972	The Space Commission and DOS are created.
1977	Government constitutes the INSAT Coordination Committee (ICC).
1983	INSAT system established with the commissioning of INSAT-1B.
1997	The Union Cabinet approves the SATCOM policy framework.
1997	World Radio Communication Conference ³⁶ (1997) makes changes in filing of orbital slots, their coordination and notification. Introduces due diligence and filing charges to avoid non-serious filings.
January 2000	The INSAT Coordination Committee prescribes practices and procedures to be followed in the allocation of satellite capacity to non-Government users.
January 2000	Government of India approves the SATCOM policy laying down norms, guidelines and procedures for implementation of the policy framework for satellite communication in India.
March 2000	INSAT-3B satellite launched using Ariane-5 (procured launch)
July 2000	ICC clarifies in its 62 nd meeting that the private service providers will have the option of using INSAT systems on a non-exclusive basis.
November 2000	Cabinet approves DTH broadcasting service in India.
March 2001	MIB issues guidelines for obtaining licence for providing DTH broadcasting service in India.
2002	Based on the International Telecommunication Union's ³⁷ allotment of frequencies to various countries for various applications, the Wireless Planning and Coordination (WPC) Wing of Department of Telecommunication formulates a National Frequency Allocation Plan.

³⁶ World Radio communication Conferences (WRC) are held to review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits. WRC is held every three to four years.

³⁷ The International Telecommunication Union is the United Nation's specialised agency for information and communications technologies, which allocates global radio spectrum and satellite orbits.

Date	Event
January 2002	As per Finance Ministry and Planning Commission's recommendation ICC came to a conclusion that all private operators to pay the transponder lease charges to ISRO/DOS.
June 2002	DOS Constituted a Pricing Committee, consisting of the Additional Secretary, Director, Satellite Communication and Navigational Programme Office (SCNPO), Executive Director, Antrix, Director, Contract Management and Legal Services (CMLS) and a representative of the Member (Finance) of Space Commission to decide the minimum price and review the market strategy periodically in respect of various types of INSAT transponders.
April 2003	INSAT-3A satellite launched using Ariane 5-V160 (procured launch).
May 2003	GSAT-2 satellite was launched using GSLV-D2 vehicle.
18 March 2004	DOS signed MoU with DD for providing transponder on lease in INSAT-4A/4B satellite for DTH service.
27 May 2004	DOS signed contract with Dish TV (erstwhile ASC Enterprises Limited) for providing transponder on lease in NSS satellite for DTH service.
17 June 2004	68 th meeting of ICC.
19 February 2005	DOS signed contract with Sun DTH for providing transponder on lease in INSAT-4A satellite for DTH service.
28 June 2005	DOS signed contract with Reliance for providing transponder on lease in INSAT-4G satellite for DTH service.
12 November 2005	DOS signed contract with Tata Sky for providing transponder on lease in INSAT-4A satellite for DTH service
December 2005	INSAT-4A satellite was launched using ARIANE-5-V169 (procured launch)
July 2006	Failed launch of INSAT-4C satellite
26 December 2006	DOS signed contract with Bharti Telemedia Ltd. (Airtel) for providing transponder on lease in INSAT-4G satellite for DTH service
27 February 2007	DOS signed contract with Bharat Business Channel Limited (Videocon) for providing transponder on lease in INSAT-4A/4B satellite for DTH service
March 2007	INSAT-4B satellite was launched using ARIANE-5 vehicle (procured launch)
August 2007	TRAI recommends that all spectrums for terrestrial operations in India should be auctioned.

Date	Event
September 2007	INSAT-4CR satellite was launched using GSLV-F04 vehicle.
March 2008	Pricing Committee fixes minimum transponder lease price.
May 2008	Space Commission, DOS approves transponder lease charges for three years (1 April 2008 to 31 March 2011)
November 2010	INSAT-3B satellite de-orbited
December 2010	Failed launch of GSAT/INSAT-5P satellite
March 2011	GSAT-2 satellite de-orbited
May 2011	GSAT 8/INSAT-4G satellite was launched using ARIANE-5 VA-202 (procured launch)
July 2011	69 th meeting of ICC held (after seven years; 68 th meeting held in June 2004)
August 2011	TAG in its 131 st meeting formed a sub-committee to formulate guidelines and methodology to be followed for allocation of transponders for private commercial sectors and method of monitoring the efficient usage of the allocated transponders.
November 2011	Committee on revised pricing of transponder lease referred the costing aspects to Advisor (Cost) Ministry of Finance and met a team headed by the Chief Advisor of Cost in MoF on Nov 28, 2011. ICC decided that by 01 April, 2012 revised price of transponders should be available for DOS.
November 2011	ICC approves DOS recommendation of allocation of 3 MHz in GSAT 8 at 55° East (transponder 19) on commercial basis to M/s Gazprom, Russia till operationalisation of YAMAL-402, as per obligation of DOS/ISRO under ITU rules.
November 2011	ICC directs DOS/ISRO to include a suitable clause in all future contracts in such a way that the users shall pay the revised cost of transponders as and when the prices are revised.
April 2012	Sub committee constituted by ICC opined not to proceed with the leasing of Asiasat-7 at 83° East based on the strong views expressed by MIB and ICC in its 72 nd meeting agreed with the same.
July 2012	72 nd ICC noted that the revised prices for 2012-13 will be implemented with retrospective effect from 1 April 2012.

Date	Event
September 2012	GSAT 10 was launched using procured launch (ARIANE-5 VA-209)
October 2012	Prime Minister's office conveyed DOS to fulfil its contractual obligations or make it possible for Tata Sky to find alternatives.
November 2012	73 rd ICC meeting decided that the <i>inter se</i> priority and percentage share of capacity that will be provided to each user category will be decided by ICC from time to time depending upon prevailing situations. It was also decided that emergency requirements can be met on priority by DOS based on the assessment of utilisation plan and specific approval of Chairman, ICC to be ratified by ICC.
November 2012	73 rd ICC decided to prepare a revised draft policy paper connected with allocation and pricing guidelines for INSAT transponder capacity and circulate to all the ICC members to provide their comments.
November 2012	73 rd ICC decided that 12 transponders in GSAT 10 can be allotted to Tata Sky in lieu of INSAT-4A on a swapping mode.
January 2013	Prime Minister's office directed DOS to send an updated status report on allocation of DTH transponders to Tata Sky including the status of allocation of GSAT 10 capacity.
February 2013	In the 74 th ICC meeting, ICC members suggested that all allotments to commercial users, including petty allotments should be on auction basis. The committee also noted the need to ensure transparency and reduce discretion.
February 2013	ICC 74 recommended that DTH operators could be allowed to acquire capacity directly from satellite operators subject to fulfilling all the security, licence, regulatory requirements and permissions from all the concerned/ respective administrative departments.
March 2013	Member, Finance DOS suggested to re-negotiate the agreement with Tata Sky in consultation with Ministry of Law before considering allotting transponder capacity on GSAT 10 in lieu of existing capacity allotted in INSAT-4A.
May 2013	DOS offered 12 transponders in Ku band in GSAT 10 satellite in lieu of existing INSAT-4A satellite on a swappable basis for the remaining period of existing contract.
May 2013	Tata Sky accepted the offer to swap the existing 12 transponders on INSAT-4A with 12 transponders on GSAT 10.
May 2013	Ministry of Finance agreed to retain the existing price for leasing of transponders for a period of six months i.e. up to 30 September 2013.

Date	Event
July 2013	Tata Sky refused to accept the GSAT 10 capacity on swapping mode since it would not provide additional capacity.
July 2013	Tata Sky agreed to relinquish the first right of refusal on the orbital slot for further capacity.
September 2013	DOS retained the existing price for leasing of transponders up to 31 March 2014.

Annexure - II

Satellite wise capacity available and allocation over the years

Year	Description	Capacity													
		Domestic							Foreign						
		INSAT 4A	INSAT 4B	INSAT 4CR	GSAT 8	GSAT 10	GSAT 15	Total	NSS6	ST	M3	SES	Asiasat	Total	
2004	Planned														
	Existing								6.5						6.5
2005	Planned	12							12						
	Executed+ Existing								9						9
2006	Planned														
	Executed+ Existing	12							12	9					9
2007	Planned		12	12					24						
	Executed+ Existing	12	5						17	9					9
2008	Planned														
	Executed+ Existing	12	11.25	6.5					29.75	11	4.5	8			23.5
2009	Planned														
	Executed+ Existing	12	11.25	6.67					29.92	12	3	8			23
2010	Planned														
	Executed+ Existing	12	8	6.67					26.67	12	9	10			31

against the demand raised by the DTH service providers

Demand								Remarks
Description	Dish TV	Tata Sky	Door darshan	Sun DTH	Reliance	Airtel	Videocon	
Raised	6.5 (NSS6)	12-18 (INSAT4A)	6 (INSAT4B)					
Met	6.5 (NSS6)							
Raised				4-9 (INSAT4B)	6-18 (GSAT8)			
Met	9 (NSS6)							
Raised						12-15 (GSAT8)		
Met	9 (NSS6)	12 (INSAT4A)						
Raised							6-8 (GSAT8)	
Met	9 (NSS6)	12 (INSAT4A)	5 (INSAT4B)					
Raised								
Met	11 (NSS6)	12 (INSAT4A)	5 (INSAT4B)	6.25 (INSAT4B)	8 (M3)	6.5 (INSAT 4CR)	4.5 (ST)	Balance capacity of 5.5 units of INSAT4CR given for non-DTH purpose.
Raised								
Met	12 (NSS6)	12 (INSAT4A)	5 (INSAT4B)	6.25 (INSAT4B)	8 (M3)	6.67 (INSAT 4CR)	3 (ST)	
Raised								
Met	12 (NSS6)	12 (INSAT4A)	5 (INSAT4B)	3 (INSAT4B) 1 (M3)	9 (M3)	6.67 (INSAT 4CR)	9 (ST)	Due to power problems in INSAT4B, the capacity was reduced by 3.25.

Year	Description	Capacity												
		Domestic							Foreign					
		INSAT 4A	INSAT 4B	INSAT 4CR	GSAT 8	GSAT 10	GSAT 15	Total	NSS6	ST	M3	SES	Asiasat	Total
2011	Planned				24			24						
	Executed+ Existing	12	6	7	24 (shifted to non DTH use after 8 months)			25	12	9	13	11	6	51
2012	Planned					12		12						
	Executed+ Existing	12	7	4.5		12 (not allocated)		23.5	12	12	13	11	6	54
2013	Planned													
	Executed+ Existing	12	7					19	12	15	13	11	6	57

Demand								Remarks
Description	Dish TV	Tata Sky	Door darshan	Sun DTH	Reliance	Airtel	Videocon	
Raised								
Met	12 (NSS6) 6 (Asia sat)	12 (INSAT4A)	5 (INSAT4B)	1 (INSAT4B) 4(M3)	9 (M3)	7 (INSAT 4CR) 11 (SES)	9 (ST)	Due to power problems in INSAT4B, the capacity was further reduced by two.
Raised								
Met	12 (NSS6) 6 (Asia sat)	12 (INSAT4A)	6 (INSAT4B)	1 (INSAT4B) 4(M3)	9 (M3)	4.5 (INSAT 4CR) 11 (SES)	12 (ST)	Though the launch of GSAT 10 was planned as a replacement satellite to INSAT 4A which was to be decommissioned in the year 2017, this was advanced at the instance of Tatasky.
Raised								
Met	12 (NSS6) 6 (Asia sat)	12 (INSAT4A)	6 (INSAT4B)	1 (INSAT4B) 4(M3)	9 (M3)	11(SES)	15 (ST)	GSAT 15 was yet to be launched

Glossary of Terms

Antrix	Antrix Corporation Limited
DOS	Department of Space
DOT	Department of Telecommunication
DRDO	Defence Research and Development Organisation
DTH	Direct to Home
Edusat	Education Satellite
GSAT	Geo Stationary Satellite
GSLV	Geo Synchronous Launch Vehicle
Hylas	Satellite realised for Avanti of United Kingdom
ICC	INSAT Coordination Committee
INSAT	Indian National Satellite System
ISRO	Indian Space Research Organisation
ITU	International Telecommunication Union
MHz	Mega Hertz
MIB	Ministry of Information and Broadcasting
MOF	Ministry of Finance
MOU	Memorandum of Understanding
MPEG	Moving Picture Experts Group
NGP	Norms Guidelines and Procedure
NOCC	Network Operation Control Centre
NSS	New Skies Satellite
PSU	Public Sector Undertaking
SACFA	Standing Advisory Committee on Radio Frequency Allocation
SATCOM	Satellite Communication
SCNPO	Satellite Communication and Navigation Programme Office
SCPO	Satellite Communication Programme Office (erstwhile name of SCNPO)
ST	Singtel (Singapore Telecommunications)
TAG	Technical Advisory Group
TRAI	Telecom Regulatory Authority of India
Txpr	Transponder
Unit of Txpr	One unit is 36 MHz transponder per year
USA	United States of America
VSAT	Very Small Aperture Terminal
W2M	Satellite realised for Eutelsat
WPC	Wireless Planning and Coordination
WRC	World Radio Conference