C.P.U.NO . 885

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COMMITTEE ON PUBLIC UNDERTAKINGS

(2004 - 2005)

(FOURTEENTH LOK SABHA)

FIRST
STUDY TOUR REPORT

ANTRIX CORPORATION LIMITED

Laid in Lok Sabha on 21.12.2004

Laid in Rajya Sabha on...21.12.2004

LOK SABHA SECRETARIAT

NEW DELHI

December, 2004 / Agrahayana, 1926 (S)

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(2003 – 2004)

CHAIRMAN

Prof. Vijay Kumar Malhotra

MEMBERS
LOK SABHA

2. Shri Mani Shankar Aiyar
3. Shri Ram Tahal Chaudhary
4. Smt. Reena Choudhary
5. Smt. Sangeeta Kumari Singh Deo
6. Shri C. K. Jaffer Sharief
7. Shri K. E. Krishnamurthy
8. Dr. Rama Krishna Kusmaria
9. Shri Vilas Muttemwar
10. Shri Shriniwas Patil
11. Shri Prabhat Samantray
12. Shri Tarit Baran Topdar
13. Prof. Rita Verma
14. Shri A K S Vijayan
15. Shri Dinesh Chandra Yadav

RAJYA SABHA

16. Shri Suresh Kalmadi
17. Shri Lalitbhai Mehta
18. Shri Kalraj Mishra
19. Shri Satish Pradhan
20. Shri K. Kalavenkata Rao
21. Shri Jibon Roy
22. Smt. Ambika Soni

COMPOSITION OF COMMITTEE ON PUBLIC UNDERTAKINGS
(2004 – 2005)

CHAIRMAN

Shri Rupchand Pal

MEMBERS, LOK SABHA

2. Shri Manoranjan Bhakta
3. Shri Gurudas Dasgupta
4 Shri P. S. Gadhavi
5. Shri Suresh Kalmadi
6. Dr. Vallabhabhai Kathiria
7. Smt. Preneet Kaur
8 Shri Sushil Kumar Modi
9. Shri Kashiram Rana
10. Shri Mohan Rawale
11. Shri Rajiv Ranjan Singh
12. Shri Bagun Sumbrui
13. Shri Rajesh Verma
14. Shri Parasnath Yadav
15. Shri Ram Kripal Yadav

MEMBERS, RAJYA SABHA

16. Prof. Ram Deo Bhandary
17. Shri Ajay Maroo
18. Shri Pyarimohan Mohapatra
19. Shri Jibon Roy
20. Shri Shahid Siddiqui
21. Smt. Ambika Soni
22. Shri Dinesh Trivedi

SECRETARIAT

1.	Shri John Joseph	Additional Secretary
2.	Shri S Bal Shekar	Director
3.	Shri Raj Kumar	Under Secretary

INTRODUCTION

In pursuance of the procedure adopted under Rule 281 of the Rules of Procedure and Conduct of Business for laying the Study Tour Reports on the Tables of both the Houses of Parliament, I, Chairman, Committee on Public Undertakings having been authorised by the Committee to lay the Study Tour Report on their behalf, lay this First Study Tour Report of the Committee on their discussions with the officials of Antrix Corporation Limited.

2. The Committee held discussions with the officials at Bangalore on 11.10.2003. A copy of the tour programme is annexed (Annexure-I).

3. The Committee considered and approved the Report at their sitting held on 15th December, 2004.

4. The Committee wish to express their thanks to Antrix Corporation Ltd. for providing facilities during the visit of the Committee and for supplying necessary material and information required in connection with the Study Tour.

5. They would also like to place on record their sense of appreciation for the invaluable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

New Delhi
15 December, 2004
24 Agrahayana 1926 (S)

RUPCHAND PAL
CHAIRMAN
COMMITTEE ON PUBLIC UNDERTAKINGS

STUDY TOUR NOTES OF THE COMMITTEE ON PUBLIC UNDERTAKINGS

DISCUSSION WITH THE REPRESENTATIVES OF ANTRIX CORPORATION LIMITED AT BANGALORE ON 11.10.2003

At the outset, the Convener, Committee on Public Undertakings (COPU) made opening remarks and requested the Chairman, Antrix Corporation Limited (ACL) to introduce himself and his colleagues to the Committee. The Convener, COPU also requested him to give a brief account of the Company.

2. After introduction of officers of Antrix Corporation Ltd., the Chairman, ACL informed the Committee that the Antrix Corporation was incorporated in September 1992 as a Corporate Front of Indian Space Research Organisation (ISRO) for promotion and commercial exploitation of space products, technical consultancy services and transfer of technologies developed by ISRO. Another major objective was to facilitate development of space related industrial capacities in India.

The Committee have been informed that the main mission of ISRO is self-reliant development of space technology and its application for a variety of national needs. The requirement for the commercial arm arises from the specialized human resources and broad based technical infrastructure developed in ISRO for space technology and the excellence it had established in this field. This capacity is intended to be tapped to for commercial opportunities. In the execution of the national space projects, a number of Indian industries are developed to assist space activities. Their involvement for commercial activities at a wider international level could increase their sustainability, quality

upgradation and global recognition. To address these needs Antrix Corporation was established. Its main mission is marketing and interfacing. Thus, by itself it does not invest in costly technical facilities or engage a large number of people. On the other hand, it effectively makes use of capacity separable from ISRO and industry both in terms of facilities and technical human resources. Since the space business such as satellite building or launch serves are highly risky needing large investments and long gestation periods, this approach was practical to gain entry into export markets that are highly restricted.

The commercial opportunities in space are also strongly influenced by the export and import policies of advanced countries having regard to dual use concerns of space. From our stand point, space is a strategic capability and it is necessary to sustain our independence even while we promote cooperation at international level and pursue commercial opportunities. Hence the interaction and coordination between Antrix and ISRO is crucial and important. Having regard to these factors Antrix is evolved as a wholly owned entity of Department of Space.

3. The Committee have also been informed that the space infrastructure like satellites enable a wide range of down stream services by industry such as Television broadcasting, dedicated communication networks such as Very Small Aperture Terminal (VSAT) networks and provision of spatially referenced information for a variety of projects. Antrix plays a promotive role in enabling growth of such industries by technology transfers and also by marketing the capacity available from Indian satellites. As Government policy even allows

private sector to set up Indian satellite systems, Antrix extends its support for technical consultancy, supply of satellite and launch services and the mission support, etc.

Although relatively a late entrant to the global space industry, Antrix has made good beginning to spread Indian Space capabilities into global markets. Today India has established a position of pre-eminence in the World in the field of Remote Sensing. Antrix has successfully placed Indian Remote Sensing Satellites in the Global Map along with other leaders, in collaboration with space Imaging Incorporated of USA. Continuous growth in the international stations demanding access to IRS is a testimony to the acceptance of the international community of our eminence in this field.

With six consecutive successes, our Polar Satellite Launch Vehicle (PSLV) has shown a good record of reliability. While the international market demands a large number of successful launches to attract customers, PSLV could prove worthy of the confidence placed by customers in Germany, Korea and Belgium by successfully launching four small satellites along with Indian satellites. Antrix will continue to explore further opportunities for managing international satellites, subject to the capacity available. Indian industry is also geared up to meet this challenge.

4. The Committee have further been informed that recently Antrix has also taken up marketing of transponder capacity from INSAT to VSAT service providers and television channels. The leasing of transponders of INSAT 2E satellites by the International Television Satellite Organisation had been a good

benchmark for the quality of INSAT satellites. Antrix look forward to develop this segment further with appropriate alliances with service providers.

The challenges of international space markets have been tremendous in recent times and resulting in greater level of consolidation of space industries across the continents. The market competition also has become intense and barrier for new entrants is formidable. Notwithstanding these challenges Antrix looks forward to grow its business taking advantage of new systems which are currently being developed in ISRO and provide scope for marketing their services.

5. As per the information furnished to the Committee, the growth in revenues as well as profit over the last five years out of the commercial activities of the Company are as follows :-

(Rs. In lakh)

YEAR	GROSS REVENUES	PROFIT AFTER TAX
1998-99	3258.42	769.34
1999-00	3011.51	674.71
2000-01	4267.40	603.31
2001-02	6151.66	1891.09
2002-03	10855.16	1856.56

6. When enquired about the reasons for decline in profits during 1999-2000 and 2000-2001, the Committee have been intimated that the marginal decrease in profit during 1999-2000 is mainly due to completion of IRS software supply to IRS Ground stations and decrease in royalty on sale of IRS data products. The

marginal decrease in profit during 2000-2001 is due to short provision for Income Tax made for earlier year.

When asked to state the reasons for sudden increase in profit during 2001-02 in comparison to 2000-2001, the Committee have been informed that the increase in profit is mainly due to additional income from new contracts for establishment of IRS Ground stations at Iran and Myanmar and increase in sale of IKONOS Satellite products.

7. The Company's achievements in the areas of marketing Indian Remote Sensing Satellite data products and related hardware and software items, satellite launch and mission support services, ground systems, satellite systems and telecommunication transponder services from 1998-99 to 2002-03 are as under :-

1998-99	• International marketing of IRS data is expanded through addition of three stations in Alaska (USA), Japan and Republic of Korea. • Provision of in-orbit test services to Space Systems / Loral of USA for American Satellite PAS-7
1999-00	• Launch contracts for PROBA satellite form Belgium and BIRD satellite of Germany • Launch contract for ROCSAT-2 from Taiwan • Provision of Mission Support for European Eutelsat W-24 and ROCSAT-1 of Taiwan • Ground stations at Ecuador (market entry into Latin America) and Saudi Arabia added to IRS network
2000-01	• Setting up of Network Monitoring Centre for Americom Asia Pacific, USA • Expansion of IRS network through station at Abu Dhabi and Mobile Station

2001-02	• Successful launch of PROBA and BIRD satellites • Contract with Mitsubishi Electric corp (MELCO), Japan for supply of Solar Sail and boom mechanism for MTSAT-2 • Occeansat satellite access stations in Korea, USA and Europe & IRS network market entry into Russia
2002-03	• Launch contract for NTU, Singapore for X-Sat • IRS Ground network expansion to Myanmar and National Intelligence mapping Agency stations of USA • Setting up Multi Mission Remote Sensing Ground Station in Iran • Transponder services to VSAT network operators

8. The major export products of the Company include IRS data, the ground hardware mission support services, launch services and supply of satellite parts to USA and Japan.

The export earnings of the Company during the last five years are as under :-

(Rs. In lakh)

YEAR	EXPORT EARNINGS
1998-99	2486.39
1999-00	1526.03
2000-01	2561.64
2001-02	3005.06
2002-03	3004.27

9. When asked about the reasons for decrease in export earnings during 1999-00 and 2002-03, the Committee have been informed that the decrease in the export earnings during 1999-2000 in comparison to 1998-99 is attributed to stiff global competition with the entry of additional players in the remote sensing (IKONOS, USA and EROS, Israel) and launch services market (Russia). The decrease in export earnings in 2002-03 as compared to 2001-02 is due to the negative growth in the overall industry itself. Rest of the years, Antrix has been able to maintain average cumulative growth, that is better than the industry average, which ranged from 5-10% for satellite hardware and about 15% for services.

10. On the question of collaborative ventures the Company have undertaken or proposes to initiate with the Indian industry to provide value added services, both in domestic and in international markets, the Committee have been informed that the Company actively promotes the role of value adding industries in Geo-information and Mapping and other services which have emerged with initial support of ISRO technology transfers and diversified to provide services with an estimated export market of 40 million US dollars. The Company has assisted to provide linkages for outsourcing from Germany / US for such services. The Company is also in touch with VSAT service providers and their association to assist in their requirements for satellite capacities. The Company has organized exhibitions at Houston, USA and Bremen, Germany with participation of Indian Industry to promote awareness and linkages. The company is also in touch with various industries that work on satellite data and

those in the field of mapping for collaborative efforts to service future markets such as Urban Information Systems.

11. When enquired about the major competitors in the international market and the modalities by which the Company have been tackling or proposes to tackle the competition, the Committee have been informed that for satellite systems, ANTRIX competitors include large multi-national companies from advanced markets of US and Europe such as Boeing Satellite systems, Lockheed Martin, Orbital Sciences Corporation, Astrium (Europe) and Alcatel. For Remote Sensing data products, Antrix has to compete with leaders like SPOT Imaging, Imagesat International and Digital Globe. For launch services, Antrix competitors are Eurokot, Cosmos International (German & Russian), EADS of Europe, Greatwall Industries Corporation of China, and Boeing, Lockheed Martin, ILS of USA and Ariane Space (partly). Hence through strategic alliances, products pricing and use of cooperative links with space agencies, Antrix aims to deal with competition. In addition, continuous update of technologies by ISRO will be a favourable factor for competitive positioning.

The major challenges the Company had to meet in the context of global markets had been in (i) shrinkage of markets needs in recent years due to constraints on global space budgets; (ii) technology advances which increased satellite life and digital communications that demand lower capacity from satellites; and (iii) intense competition from major multi nationals from USA and Europe and geopolitical factors extending influence on export / import policies and regulations.

12. When asked about the steps taken or proposed to be taken for the growth of export market, the Committee have been apprised that the Company aims to grow export markets in the medium term through (i) new product offerings such as India's Resourcesat and Cartosat which are planned to be launched in 2004 and 2005; (ii) tie ups with leaders like Boeing Satellite Systems for joint manufacturing of medium class satellite; (iii) On orbit satellite delivery proposals involving GSLV; and (iv) alliances for international marketing of telecommunication transponders.

13. When asked about the on-going projects as well as the new activities the Company proposes to undertake with a view to diversify and grow, the Committee have been informed as under :-

(a) Antrix is globally marketing Indian Remote sensing satellite data in alliance with space Imaging of USA. The operations cover USA, Canada, Europe, Middle East, Russia, Asia and parts of Latin America. With the forthcoming launches of Resourcesat (IRS P6) and Cartosat (IRS P5), Antrix expects to secure a wider market for data (including relevant hardware and software) and make inroads into the value added services market in selected areas.

With increasing competition from high-resolution data service providers such as IKONOS, ORBIMAGE, DIGITAL GLOBE, etc., and new entrants from Korea and Israel, Antrix services are expected to face more competition. However, with unique stereo mapping features of Cartosat, Antrix expects to enhance its market.

(b) Antrix has started supporting the lease of transponder capacity from the INSAT series of satellites to VSAT service providers, Satellite TV broadcasters and telecom operators. With the forthcoming launches of the high power satellites, INSAT 4A and 4E, Antrix expects to serve the high end applications such as DTH, HITS, etc. in addition to the present services being provided. Further, efforts would be directed towards expanding telecommunication service capabilities of INSAT system into regional markets through appropriate alliances.

(c) Antrix has secured an international launch contract from Nanyang Technological University (NTU), Singapore for the launch of its Earth Observation LEO micro-satellite, (X-SAT) onboard PSLV. Antrix is actively following up with prospective customers for providing primary and auxiliary launch services through PSLV and also GSLV in the future. In the post-cold war scenario, availability of cheap launches converted missiles had been a threat to the market. Competition has become severe. Added to this, Geo-political considerations also have a direct bearing on the launch market segment. Antrix will endeavor to overcome this with appropriate alliances with service providers of advanced countries.

(d) ISRO has pioneered the technology of establishing TTC stations for tracking satellite and launch vehicles and has successfully installed indigenously designed stations for its various facilities in India and abroad. It is this expertise that was utilized in establishing the Telemetry, Command and Ranging (TCR) station for World Space. This station is being used to provide audio broadcasting services to he African, Middle East and Asian regions. A state-of-the art Network

Monitoring Station including the tracking antenna was also established for monitoring the AAP-1 satellite of Americom Asia Pacific and services are being provided by Antrix. Similar ground infrastructure for satellite communication is also being established for national users.

(e) Antrix has been offering technical consultancy services in several areas. One such project being undertaken for Korean Aerospace Research Institute (KARI) involves conducting a feasibility study of meteorological and Ocean monitoring payloads and generating a request for proposal for the Korean multi-purpose satellite planned by Korea.

(f) For future, Antrix will also actively explore possibilities for building satellites for operators, who play to set up their own satellite systems for services over India.

14. When asked about the Satellite Communications Policy, it has been informed to the Committee that the Satellite Communications Policy of the Government permits private sector to establish own and operate Indian Satellite Systems. The Government has also liberalized its uplinking policy to permit Indian private companies to set up uplinking hub-teleports for licensing or hiring out to other broadcasters. This policy also permits uplinking of any television channel from India and further it allows news agencies to have their own uplinking facilities for purposes of news gathering and its further distribution. Subsequent to the adoption of Satellite Communications Policy initiatives, Agrani Satellite Services Limited (ASSL) has planned to set up a communication and broadcasting satellite system. Antrix is providing consultancy services for this

project and also proposed to provide training and other support services for satellite operations when the satellite comes up.

15. About the Remote Sensing Centre in Bhubaneswar, the Committee have been informed that the remote sensing centre facility in Bhubaneswar namely ORSAC, is set up by the State Government of Orissa. This does not come under ISRO, although ISRO has provided some support. As regards to activities, a very innovative experiment in the KBK region has been taken up. When the programme was started, it was only three districts and now it is eight districts. TV sets are placed in selected villages in these eight districts for conducting programmes on literacy, health, sanitation and so on. Generation of maps which indicate ground water potential in a few districts like Kalahandi, etc., has been taken up.

16. Given the nature of the Company, if a dispute arises of any kind, under what law it is resolved – whether under International law or Indian law. In this regard, the Committee have been intimated that since Antrix has dealings with international companies, normally these are put in the provision of Indian Acts. Wherever relevant, the Company also provide for arbitration under international laws and making use of bodies like International Chamber of Commerce in Paris.

17. On the question of maintaining the price competitivity of the Company's products, the Committee have been apprised that the price competitivity is based on lower cost of expert human resources. For example, in satellite systems, the design, testing and integration demand fairly large component of labour and this

is why our remote sensing satellites are cheaper by 2 to 3 times when compared to those of advanced countries.

18. On the question of launching of vehicles, the Committee have been apprised that the launch vehicles like PSLV and GSLV are carried out from Shriharikota and the customers bring the satellites to India for integration with the launch vehicle and for launch operations.

19. On the question of vision of India to set up equilibrium in global arena and the role of Antrix therein, the Committee have been informed that the vision of India to set up equilibrium in global arena as it pertains to space competition encompasses several aspects such as (i) maintaining self reliance; (ii) providing strategic technology capability; (iii) applications services relevant to national development; (iv) International cooperation; (v) scientific exploration of space; and (vi) development of space industry. Among such diverse dimensions, Antrix's role addresses the promotion of commercial space activities relevant to global standard. The aim of Antrix is to utilize new developments in ISRO and its infrastructure for the commercial operation in the world markets while also promoting the role of Indian Industries in carrying out such services. The Company has been looking into various aspects of policy that is relevant in the context of global business in matters such as Intellectual Property Rights, Import / Export policies, etc. and will provide inputs to the Government for maintaining global competitivity in this field.

20. About the status of Antrix Corporation Limited in the global market, the Committee have been apprised that in the highly competitive global market

relating to Space, Antrix was able to make entry into launch services for foreign customers for launch of small satellites from Germany, Republic of Korea and Belgium. Antrix has also been able to establish a significant share in the global market for remote sensing data. Antrix has also provided mission support services to international satellites from Europe and USA and it has sold satellite parts to leading companies like Hughes Spacecraft Corporation, USA and Mitsubishi Electric Company of Japan.

21. The composition of the Board of Directors of the Company is as follows :-

Shri G Madhavan Nair	Chairman
Shri S K Das	Director
Dr. P S Goel	Director
Dr. R R Navalgund	Director
Dr. K Kasturirangan	Director
Shri Ratan Tata	Director
Shri Jamshyd Godrej	Director
Shri P Ravindra Reddy	Director

22. When asked about the modalities followed in selecting the members of the Board and the role played / functions discharged by them, the Committee have been informed that all the Directors of the company are part-time Directors. Keeping in view the strategic aspects of space and special nature of the company as marketing arm of ISRO, performing the technology transfer and industry interface coordination function, certain special dispensations were accorded by the Cabinet while approving the formation of the Company. The Cabinet approved that selection and appointment of Board level functionaries

including the Chairman by Space Commission / Department of Space, instead of by Public Enterprises Selection Board. The composition of the Board, as approved by the Space Commission and the Government comprises of Chairman of the Space Commission as the Chairman of the Board, the Additional Secretary, who is also the Internal Financial Advisor of Department of Space and three Directors / eminent Space program leaders of key centers of ISRO / DOS such as ISRO Satellite Centre, National Remote Sensing Agency and Vikram Sarabhai Space Centre and three external part-time Directors from industry based on eminence. The necessary high level linkage, coordination and direction between Antrix and ISRO and industrial experience are enabled by above constitution. Under the overall direction of the Chairman, Executive Director guides and directs the day-to-day operational functions. The Executive Director, a techno-managerial professional is drawn from ISRO with extensive experience in industrial / commercial interface and space projects.

RECOMMENDATION / OBSERVATION OF THE COMMITTEE

RECOMMENDATION

NEED TO INCREASE THE SHARE OF ACL IN GLOBAL MARKET

The Committee note that the Antrix Corporation Ltd. (ACL) has been constituted as the Corporate Front of Indian Space Research Organisation (ISRO) for promotion and commercial exploitation of space products, technical consultancy services and transfer of technologies developed by ISRO. In pursuance of this objective, ACL has succeeded in offering several space products and services in the highly competitive international markets. ACL is marketing IRS data and has helped the leasing of transponder capacity of INSAT and VSAT to commercial users for TV and for other net-works. ACL has helped in entering into contracts with various countries to launch their satellites through our launch vehicles. The Committee further note that ACL has supplied satellite parts to USA and Japan and has also helped transfer of ISRO technology to Indian industries to enable them to develop various structures for satellites. The Company has recorded a profit of Rs.18.56 crore in 2002-03 as compared to the profit of only Rs.7.69 crore in the year 1998-99. The export earnings of the

Company for the year 2002-03 were of the order of Rs.30.04 crore. The Committee note that the Company has an ambitious target of increasing its global share in the imageries market from 15% to 20%. The Committee recommend that ACL should make all-out efforts to increase the share of India in the global market not only in the field of remote sensing but also in other areas, such as, leasing of transponder capacity, contracts for launch of satellites, etc. The Committee recommend that the Government should provide all necessary support to ACL which is critically required by them to achieve their target.

ANNEXURE – I

TOUR PROGRAMME OF COMMITTEE ON PUBLIC UNDERTAKINGS TO MUMBAI, HYDERABAD AND BANGALORE, FROM 7 TO 11 OCTOBER 2003 AS ACTUALLY PERFORMED

(MEMBERS ASSEMBLED AT MUMBAI)

DATE & DAY	TIME	SUBJECT
7.10.2003 (Tuesday)	1730 hrs	Discussion with the representatives of Rashtriya Chemicals & Fertilizers Ltd. (Audit Para No.10.3.1 of C&AG's Report No.3 {Comml} of 2003)
	1845 hrs	Discussion with the representatives of New India Assurance Co. Ltd. (Audit Para No.11.1.1 of C&AG's Report No.3 {Comml} of 2003)
		(NIGHT HALT ATMUMBAI)
8.10.2003 (Wednesday)	1100 hrs	Discussion with the representatives of Indian Oil corporation (Audit Para No.17.6.2 of C&AG's Report No.3 {Comml} of 2003)
	1430 hrs	Departure for Hyderabad by IC – 928
	1730	Arrival Hyderabad
		(NIGHT HALT AT HYDERABAD)
9.10.2003 (Thursday)	1100 hrs	Discussion with the representatives of Housing & Urban Development Corporation
	1245hrs	Discussion with the representatives of Food Corporation of India (Audit Para No.2.1 of C&AG's Report No.4 {Comml} of 2003)
	1600 hrs	Discussion with the representatives of Bharat Heavy Electricals Ltd. (Audit Para No.13.2.2 of C&AG's Report No.3 {Comml.} of 2003
		(NIGHT HALT AT HYDERABAD)
10.10.2003 (Friday)	1530	Departure for Bangalore by IC-977 (1700 hrs)
	1800 hrs	Arrival Bangalore
		(NIGHT HALT AT BANGALORE)
11.10.2003 (Saturday)	1000 hrs	Discussion with the representatives of Antrix Corporation Ltd.
	1115 hrs	Discussion with the representatives of Spices Trading Corporation
		D I S P E R S A L

ANNEXURE – II

COMPOSITION OF THE COMMITTEE ON PUBLIC UNDERTAKINGS WHICH VISITED MUMBAI, HYDERABAD AND BANGALORE FROM 7 TO 11 OCTOBER, 2003

S. No.	NAME
	LOK SABHA
1.	Prof Vijay Kumar Malhotra, Chairman
2.	Shri Ram Tahal Chaudhary
3.	Smt Reena Choudhary
4.	Smt Sangeeta Kumari Singh Deo.
5.	Shri C K Jaffer Sharief
6.	Sh. K.E.Krishnamurthy
7.	Dr. Ramkrishna Kusmaria
8.	Shri Vilas Muttemwar
9.	Shri Shriniwas Patil
10.	Shri Prabhat Samantray
11.	Shri Tarit Baran Topdar
12.	Prof Rita Verma
13.	Shri A K S Vijayan
	RAJYA SABHA
14.	Sh. Suresh Kalmadi
15.	Sh. Lalitbhai Mehta
16.	Sh. Kalraj Mishra
17.	Shri Satish Pradhan
18.	Sh. Jibon Roy
	SECRETARIAT
1.	Shri S Bal Shekar, Director
2.	Shri Raj Kumar, Under Secretary

ANNEXURE – III

LIST OF OFFICALS OF ANTRIX CORPORATION LIMITED WHO WERE PRESENT DURING DISCUSSION WITH THE COMMITTEE ON PUBLIC UNDERTAKINGS AT BANGALORE ON 11-10-2003.

1.	Shri G Madhavan Nair	Chairman
2.	Shri S K Das	Director
3.	Shri K R Sridhara Murthi	Executive Director