

**Consultation Paper No. 99/2**

**TELECOM REGULATORY AUTHORITY OF INDIA**

**CONSULTATION PAPER**

**ON**

**GLOBAL MOBILE PERSONAL COMMUNICATIONS by SATELLITE**

**July 27, 1999**

## **PREFACE**

1. During the past few years, the market segment of mobile phones has expanded from being a business tool for senior executives to a more general utility. The phenomenal growth of terrestrial cellular market appears to have convinced companies in the space and communications business as well as a growing band of investors that there is a market for mobile satellite services. The satellite telephony is now targeting the niche market of the world's mobile users who want the convenience of being able to make a call from wherever in the world they may be at any point of time. Global Mobile Personal Communications by Satellite (GMPCS) service providers are taking up positions to exploit recent advances in satellite technology to provide global mobile satellite telephony service at economical cost.

2. The Government of India recently opened up the market for GMPCS Service. The policy in this regard provides for issue of licenses on a non-exclusive basis without any restriction on the number of service providers, coverage being voice and non-voice messages, data services and information services.

3. First license has been issued in October 1998 to M/s Iridium India Telecom Ltd. (Iridium) on a provisional basis. Final license will be based on recommendations of the TRAI in the matter of license fee structure, and terms and conditions of the License Agreement.

4. This Consultation Paper presents various issues relevant for licensing of GMPCS service. Even though the basis of this Paper is the Provisional License Agreement with Iridium, the issues have been dealt with in a generic manner so as to formulate recommendations, which would apply to all the GMPCS service providers who may wish to enter the Indian market.

5. The broad structure and format of the Provisional License Agreement for GMPCS service is the same as that for other services licensed in India. In this present exercise, the TRAI has analyzed all the clauses/ conditions of the Provisional License Agreement for GMPCS service to flag the relevant points for initiating public debate. An attempt has also been made to present the alternate draft by restructuring and rationalising the terms & conditions of the Provisional License Agreement. It is expected that debate on the structure and contents of these draft Agreements (Appendix III and IV of this Paper) will facilitate TRAI in formulating its recommendations on model terms and conditions of the License Agreement for GMPCS services.

6. On the issue of license fee structure, we have raised certain substantive issues for debate, having a bearing on the rationale for levying license fee as a percentage of the revenue share.

7. The options in the Paper in regard to structure of license fee, and comments on the terms and conditions of License Agreement do not constitute any preferences of the TRAI at this point in time. Any expression of opinion in the document is to be read in the context of analysis of the existing status/ options and is not necessarily a view of this Authority, presently.

8. Comments on any or all issues raised in this Paper are solicited on or before 13<sup>th</sup> August 1999. Public consultation through Open House Session would be held thereafter, which alongwith views/ opinions of all stakeholders would form the basis for formulating the recommendations in this regard. For any clarification in the matter, **Mr. Rakesh Kapur, Joint Secretary (Commercial)** or **Mr. Sanjay Kumar, Deputy Secretary (Commercial)** may be contacted on telephone number **331 6782 or 335 6523**, respectively (Fax No. **373 8708 / 335 6083**) (E-Mail No. [trai@del2.vsnl.net.in](mailto:trai@del2.vsnl.net.in)).

**(Justice S. S. Sodhi)**

**Chairperson**

**Dated: July 27, 1999**

## CHAPTER I

### INTRODUCTION

#### Scope of this Paper

1. The satellite-based services are globally becoming increasingly important in the competitive telecommunications market. In its capacity as the Licensor, the Department of Telecommunications (DOT) granted a provisional license to M/s Iridium India Telecom Ltd. (Iridium) for setting up and operating GMPCS network and providing GMPCS service in the country on a non-exclusive basis. An agreement to this effect was signed on 28.10.98, the contents of which are discussed in Appendix III of this Paper.
2. The Telecom Regulatory Authority of India (TRAI) was informed by the DOT that the terms and conditions of the provisional License Agreement for GMPCS service were based on the recommendations of an inter-ministerial committee, which consisted of DOT, Department of Space, Ministry of Home Affairs, Ministry of Defence and Department of Electronics. The inter-ministerial Committee had recommended that the license fee as well as other terms and conditions of the provisional License Agreement should be subject to such modifications as may be finally decided after obtaining the recommendations of the TRAI. Suitable clauses to this effect had been incorporated in the Provisional License Agreement. Accordingly, **the DOT made a reference to the TRAI seeking its recommendations on the quantum and structure of license fee as well as other terms and conditions of license agreement for the provision of GMPCS service.**
3. **The reference made by the DOT is specific in regard to the Provisional License Agreement entered into with Iridium. The consultative exercise initiated by the TRAI through this Paper, however, deals in a generic manner with the various issues that need to be addressed in respect of the licensing of GMPCS services. This includes the issues connected with competition and licensing regime for the GMPCS service with a focus on the terms and conditions of License Agreement, and the structure and quantum of license fee.**
4. This Consultation Paper provides information on technical and operational aspects of GMPCS service by way of background along with substantive policy and regulatory issues. It contains clause-by- clause analysis of the provisional license agreement entered into with Iridium, which forms the basis for initiating public debate on the license fee structure, and terms and conditions of license agreement for the GMPCS service providers. The TRAI has also presented in this Paper a draft of a re-structured License Agreement for the GMPCS service to facilitate the public debate.

**5. Open consultations with the service providers, licensor, consumers' organizations and other concerned agencies will lead to formulation of the Authority's recommendations in the matter in accordance with the provisions of Section 11 (1)(b) of the TRAI Act, 1997.**

### **GMPCS Policy Framework as per NTP 1999**

6. The policy framework in regard to GMPCS Service as contained in the New Telecom Policy (NTP) 1999 (announced in March 1999) mentions that the Government has opened up the GMPCS market in India and has issued a provisional license. The terms of the final license would need to be finalised in consultation with TRAI. All the calls originating or terminating in India shall pass through VSNL gateway or in case of bypass, it should be possible to monitor these calls in the Indian gateways. VSNL is also to be compensated in case its gateway is bypassed. The GMPCS operators shall be free to provide voice and non-voice messages, data service and information services utilising any type of network equipment, including circuit and/or packet switches that meet the relevant International Telecommunication Union (ITU) / Telecommunication Engineering Center (TEC) standards. However, the licenses will be awarded after the proposals are scrutinised from the security angle by the Government. The appropriate entry fee/revenue sharing structure would be recommended by TRAI, keeping in view the objectives of the NTP 1999.

7. NTP 1999 also envisages direct interconnectivity between licensed service providers (such as Cellular Mobile Service Providers, Fixed Service Providers, Cable Service Providers, Radio Paging Service Providers and Public Mobile Radio Trunking Service Providers) and any other type of service providers in the area of operation. In addition, sharing of infrastructure among service providers within the same service area has also been permitted. Interconnectivity between service providers in different service areas is to be reviewed in consultation with the TRAI.

**8. The above policy initiatives are relevant while looking at the issues connected with the licensing regime for GMPCS service.**

### **Structure of the Paper**

9. This Consultation Paper consists of four Chapters, as under, including this Introductory Chapter:

- Chapter II provides an overview of the technical and operational features of GMPCS systems. It also covers briefly the regulatory issues with details mentioned in Appendix I and II.
- Chapter III deals with the existing terms and conditions of licensing GMPCS service in India. It analyses the terms and conditions of the provisional license agreement and provides comments on its different conditions/ clauses (in Appendix III) which need to be debated. An alternate draft has also been

suggested as per Appendix IV, rationalising the structure of the existing license agreement.

- Chapter IV deals with the Selection Criteria and License Fee structure for GMPCS service. The information on licensing regime and license fee structure for GMPCS service in other countries is contained in Appendix V and VI, respectively.

## **CHAPTER II**

### **AN OVERVIEW OF GMPCS SYSTEMS**

#### **Definition of GMPCS**

10. The term Global Mobile Personal Communications by Satellite (GMPCS) encompasses all communications satellite systems. At the GMPCS MOU group meeting held in Geneva on October 6-7, 1997, following definition of GMPCS system was agreed to:

"Any satellite system (i.e. fixed or mobile, broad band or narrow band, global or regional, geo stationary or non-geo stationary, existing or planned) providing telecommunication services directly to end users from a constellation of satellites".

11. GMPCS MOU essentially commits its signatories to developing arrangements on issues such as type approval and marking of terminals, licensing, customs duties and traffic data reporting.

12. GMPCS systems have been technically designed to be able to provide roaming capability of terminals over all places within the extent of their satellite beam coverage. The systems have capability wherein GMPCS terminal in any geographical location within the beam coverage can be detected and identified through radio contact between terminals and satellites, and the subscriber management function of the GMPCS network. Big LEO GMPCS systems have global beam-coverage and can, therefore, provide global service because the roaming availability spans over the entire globe. On the other hand, regional GMPCS systems like GEO-MSS will permit their subscriber terminal roaming within the service region of the system, which falls within the beam coverage. These regional GMPCS systems may offer extended connectivity through mutually compatible interface standards and agreements with other regional systems.

13. Through global service capability, GMPCS systems can extend the coverage of mobile services beyond terrestrial wireless network (PLMN) services. GMPCS systems are not designed to replace the basic telecommunications infrastructure (PSTN) services

and, hence, are not competitive with the services offered by terrestrial wireless and wired services. This may be clearly recognized by the service features of GMPCS terminals. Big LEO and GEO-MSS GMPCS terminals will offer two modes of access features in the network level, i.e. GMPCS terminal mode and terrestrial PLMN terminal mode. In addition, Big LEO GMPCS terminals will also offer multiple modes of compatibility features in the signal level, i.e. GSM, CDMA and TDMA, etc. Big LEO services are, therefore, complementary to, rather than competitive with, PSTN and PLMN services.

14. Most little LEOs rely heavily on the integration with existing terrestrial networks to provide messaging, tracking, and monitoring services.

15. The GMPCS initiatives have until now been largely on the planning board, with sophisticated marketing of ambitious plans and promises thrust into the public spotlight to gain maximum publicity and venture capital. But with real deadlines to meet, commercial realities have taken over as GMPCS operators struggle to be first to orbit and then to market. A number of GMPCS initiatives are finally heading for the Information Super Skyway. Till recently, portable satellite telephony and data was available using briefcase-size luggage costing upwards of US \$ 10,000 and around US \$7 per minute. A number of **Afro-centric** data satellites scheduled to be launched will further expand the embryonic sky network forming over the continent. Competitive systems plan to blanket the globe by 2004 with coverage from a constellation of over 1,500 satellites that could integrate with existing terrestrial cellular and PSTN networks.

16. Almost all of the GMPCS will offer a combination of all-digital voice, data, fax and paging services to and from hand-held telephone devices, some no larger than current GSM cellular handsets.

17. Background details on the technical and operational features of GMPCS Systems are given in Appendix I.

## **Regulatory Issues**

18. Satellite systems providing GMPCS service do have some important differences compared to terrestrial telecom networks, such as their ability to provide global or regional coverage from day one and the freedom of positioning gateways at any convenient location, enabling instant connectivity from virtually anywhere in the world. This feature makes satellite services uniquely suitable in some situations (e.g. disaster relief, remote areas, etc.) For that reason, there can be regulatory treatment different to that of terrestrial networks. Broad policy and regulatory issues on GMPCS service include National Sovereignty, Security Issues, Frequency Spectrum Availability and Management, and Fair Competition.

19. Details of the Regulatory Issues connected with GMPCS System are discussed in Appendix II.

## **The Iridium System**

20. Unlike the other Mobile Satellite Service systems, Iridium claims to use an ambitious network of inter-satellite switches for global coverage and GSM-type technology to link mobiles to the satellite network. As of July 21, 1998 all of Iridium's **66 Low Earth Orbit (LEO)** satellites were in the sky. Having gone commercial, the system provides voice, fax, data (only at 2,400 band), messaging and paging services. It expects 1 million users by 1999. Costs were projected around \$3 per minute for calls.

21. Globalstar, Odyssey, and ICO Systems will, however, do switching on the ground using local earth stations.

## **Iridium Service in India**

22. Iridium operates in India through its US\$ 70 million company called Iridium India Telecom Ltd. (IITL). IITL is owned by a consortium of Indian Investors led by IDBI (Industrial Development Bank of India) and with major investments by EXIM bank, IL & FS, SBI, SCICI etc. IITL has set up an Iridium gateway station in India at Dighi (near Pune), which caters as the interface for the transport of calls from/to the PSTN in the franchised territory. The gateway is maintained solely and exclusively by VSNL. This will be the sole Iridium gateway in the South Asian region and would cover Bangladesh, Bhutan, Maldives, Nepal, India and Sri Lanka. Pakistan is served by the Middle East gateway at Jeddah. The gateway is one of the 12 gateways established for the Iridium System.

23. The services proposed to be offered include Mobile satellite service, Iridium Cellular Roaming Service (in alliance with other cellular operator), Iridium Paging Service and Solar powered phone booths. Iridium has a provisional license valid for one year starting October 28, 1998 for the service.

## **Market Structure in India**

24. Iridium plans to market its service through cellular operators, supplementing their services rather than competing with them. It plans to target 5% of the cellular market over the next 5 years with a gradual increase of 1% each year. It is understood that Iridium anticipates 600,000 voice subscribers to break even with the cost, which it expects to achieve by the year 2000-2001. It would be targeting corporate segments and high-end business segments as potential customers. Remote and inaccessible areas would be another major customer segment. Railways, ONGC, Defence, Mining, Off-shore applications and Airlines are some of the potential Indian customers.

### CHAPTER III

#### **LICENSING OF GMPCS SERVICE IN INDIA**

25. Iridium India Telecom Ltd. (Iridium) is the first company to have commenced GMPCS service in India in February 1999 on the basis of the provisional license granted to it in October 1998.

26. The provisional License Agreement with Iridium permits the licensee to set up and operate GMPCS network and to provide service on a non-exclusive basis in accordance with the terms and conditions mentioned therein. The license fee payable on provisional basis consists of the Fixed Component of Rs.1 Crore per annum, and Variable Component @ 16 percent of Gross Revenue per annum. License period is indicated as 10 years with the option of extension for a period of one year or more at one time in case the licensee makes a request to this effect latest by the end of 9<sup>th</sup> year from the effective date. Service area for GMPCS Service is defined as the territorial jurisdiction of the Union of India except for specified areas (that may be notified to be excluded) from time to time.

27. DOT had previously offered the provisional license agreement for Satellite Mobile Telephone Service to M/s Afro-Asian Satellite Communications Ltd. in 1995. The licensee was required to provide the service through its AGRANI satellite. A snap shot of the variations in some of the salient clauses/conditions proposed by the DOT in the provisional License Agreement with Afro-Asian (in 1995) and as included now in the provisional license agreement with Iridium (in 1998) is captured in the tabulation given below:

<b>Provisional License Agreements</b>			
<b>Sl.No.</b>	<b>Clause/Condition</b>	<b>Afro-Asian</b>	<b>Iridium</b>
1.	License period	License is granted for a period of 13 years extendable for another 13 years at one time at the	License is granted for a period of 10 years with extension for a period of 1 year or more at one time

		sole discretion of the Authority.	on request made by the licensee latest by the end of 9 <sup>th</sup> year.
2.	License fee	Licensee shall pay a license fee consisting of a fixed amount of Rs.1 crore plus 5% of his gross turn over resulting from the operation of services in India per annum excluding the PSTN/PSPDN/Telex utilisation charge paid to DOT by the licensee. The Government reserves the right to revise the license fee after completion of 3 years from the effective date.	License fee for the provisional license period shall consist of an amount of fixed component of Rs.1 crore per annum and variable component equal to 16% of the gross revenue generated from the services per annum. Provisional license fee shall be adjusted retrospectively as per final license fee structure to be finalised based on TRAI's recommendations.
3.	Requirement to provide the service	The licensee shall install and run applicable system within 36 months of the effective date	The licensee shall install and run the applicable system within 6 months from the effective date.

### **Provisional License Agreement with IRIDIUM**

28. The structure and format of the Provisional License Agreement for GMPCS service are similar to that for other telecommunication services licensed in this country. The license format typically contains the following clauses/conditions, which are mentioned in the License Agreement, and Schedules A and B (Part I & II) attached to it:

- Details of licensee;
- License period;
- Quantum of license fee and schedule of payments;
- Service area;
- Application of relevant Acts;
- Tariffs;
- Restrictions on sub-licensing;
- Definitions, Interpretations and Transitional provisions relating to the Conditions;
- Requirements to provide the service;
- Quality of Service;
- Mean Time to Restore;
- Security considerations;

- Prohibition of certain activities by the licensee;
- Right to Inspect;
- Requirement to furnish information to the Licensor/ Telecom Authority;
- Engineering details;
- Acceptance Testing and Quality of Service;
- Delivery of service;
- Complaint-Booking and Treatment;
- Force-Majeure;
- Network connectivity;
- GMPCS Mobile Terminals;
- Termination of License;
- Dispute with other parties;
- Arbitration of Disputes;
- Financial Conditions;
- Preparation of Accounts;
- Financial Bank Guarantee;
- Payment of License Fee and other payments;
- Access Charges;
- Charges for Network Resources;
- Publication of the Service Directory;
- Set Off of dues;
- WPC Wing' License
- Compliance Statement.

29. There are repetitions and duplications with many conditions re-appearing at different places of the license format. In addition, some of the clauses/ conditions are one sided and tend to ignore the provisions of other legislation including the TRAI Act, 1997.

30. The provisional License Agreement gives an idea of the basic framework for the GMPCS service that the Licensor has in view. Appendix III of this Paper contains in a tabular form the clause-by-clause review of the provisional License Agreement, which has been entered into with Iridium. The analysis highlights the areas where the license agreement needs to be improved/ modified.

31. The overview comments tabulated against different conditions/ clauses of the provisional license agreement as per Appendix III may be categorized as under:

- Comments of a general nature;
- Comments relating to the operation of the license agreement;
- Provisions where regulatory functions need to be defined appropriately;
- Issues raised by specific clauses;
- Topics needing incorporation in the agreement.

**32. These comments have been tabulated to initiate the debate on the terms and conditions of the license for GMPCS Service. Taking cue from the overview comments on the provisional License Agreement, the TRAI has attempted to**

**present (in Appendix IV) an alternate draft of the License Agreement for the GMPCS service. This re-structured draft provides a rationalized framework of the License Agreement to facilitate public consultations for evolving model terms and conditions that a generic License Agreement for GMPCS service must contain. Public consultation on these terms and conditions will facilitate TRAI in formulating its recommendations in the matter including on the revised format for the License Agreement.**

## **CHAPTER IV**

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### **SELECTION CRITERIA AND LICENSE FEE STRUCTURE**

33. GMPCS policy of the Government of India envisages issue of license for GMPCS service on first come first served basis without artificially limiting the number of operators. Perhaps the policy assumes that the GMPCS service providers will primarily be network providers i.e., the owners of the GMPCS system and related ground segments, and that they will be supported mainly by cellular service providers, who will provide the GMPCS as an extended cellular service.

34. The allotment of orbital slots and allocation of frequency are amongst the prime pre-requisites for operating satellite systems, which are coordinated under the aegis of ITU. In other words, an ITU approved system only may qualify for a license to operate GMPCS services in India.

#### **Selection Criteria**

35. As stated above, GMPCS policy of the Government of India permits entry of service providers on a non-exclusive basis with no restriction on the number of service providers subject to availability of spectrum. Introduction of unrestricted competition needs a simple selection process with the objective of eliminating undesirable entities, without any requirement of a comparative evaluation of different proposals.

36. By the very nature of the service, there may be a limited number of GMPCS network operators who will take on the business of providing the actual service. Bandwidth

constraints also may pose limitation on accommodating unlimited number of providers. However, in case at any time in future, technological developments make it possible to permit unlimited number of players, it may become necessary to delineate the basis for selection of GMPCS service providers. Any such selection criteria will have to be transparent, non-discriminatory, simple and easy to implement with minimum cost ensuring that only serious entities enter the market. It will include delineation of eligibility criteria, selection parameters and evaluation criteria.

37. GMPCS service providers may operate at the Regional or Global level depending upon the beam coverage/ footprint of their satellite system. In view of security considerations associated with the GMPCS Service, Government agencies other than DOT/TRAI would also be involved in the scrutiny of license applications.

38. An applicant entity must normally be required to meet the basic standards to become eligible for providing the service. These may include qualifying conditions such as:

- The applicant being a corporate entity registered in India
- Restrictions on minimum equity stake of the promoter company in the entity.
- The share holding pattern conforming to the FIPB guidelines for telecommunications sector in terms of foreign equity participation.
- Total net worth of the entity with criteria for minimum net worth (such as Rs. 100 crore).
- Arrangement for the Satellite System/Space Segment.

39. The applicant will need to demonstrate that it has adequate resources to provide the intended service. This will typically involve the production of a business plan identifying sources and guarantees of finance, and detailing its business strategy.

### **Issue for Consideration**

**40. GMPCS service has just commenced. As per the policy for this service, there is no restriction on the number of service providers. Licenses will be issued on first come first served basis to every applicant on the similar terms and conditions. NTP 1999 does not contemplate seeking TRAI's recommendations on the basis for selection of new GMPCS Service providers. It is, therefore, not relevant to have an extensive debate on the selection criteria for the issue of GMPCS license.**

### **License Fee**

### **Objectives of the New Telecom Policy 1999**

41. The New Telecom Policy (NTP), 1999 enunciated by the Government in March 1999 envisages that an environment be created for continued investment in the telecom sector for speedy augmentation of the communication infrastructure. The key objectives of NTP 1999 include:

- Access to telecommunications for achievement of the country's social and economic goals;
- Strive to provide a balance between the provision of universal service to all uncovered areas, including the rural areas, and the provision of high-level services capable of meeting the needs of the country's economy;
- Encourage development of telecommunication facilities in remote, hilly and tribal areas of the country;
- Create a modern and efficient telecommunications infrastructure taking into account the convergence of IT, media, telecom and consumer electronics and thereby propel India into becoming an IT superpower;
- Transform in a time bound manner, the telecommunications sector to a greater competitive environment in both urban and rural areas providing equal opportunities and level playing field for all players.

**42. One of the important areas of attention for achieving the above objectives is an arrangement of payment of one-time entry fee and license fee as a percentage of revenue share for the new licenses, replacing the previous system of up-front license fee. The new policy has, however, not laid down any guideline for fixing the one-time entry fee or for license fee as a revenue share on annual basis.**

### **Rationale for levy of License fee**

43. License fee structure is normally linked to the competition strategy and policy objectives that the licensing system intends to sub-serve. It may relate to:

- Eliminating non serious players through entry barriers;
- Mopping up rents expected to accrue especially in a market situation with limited competition;
- Raising resources for the budget;
- Regulating scarce resources to which the service roll out is linked; and/ or
- Recovering the cost of administering the license from the service providers.

44. License fee, which permits the licensee to provide service should not be perceived in the market as deterrent to market entry. The cost of license should be reasonable and fair. Any fee associated with the required licenses will inevitably be reflected in the cost to customers. The policy decision relating to license fee has, therefore, to be evaluated carefully to avoid potentially undesirable consequences.

45. High license fee could also be for augmentation of State's budgetary resources. However, this does not appear to be among the objectives of the NTP 1999. High license fee will reflect in costs of providing services to the consumers thereby defeating the objective of making the telecom services ubiquitous and for being used for the overall development of the country.

46. As per experience in this country, the bidding process adopted for awarding licenses for other telecom services (based on highest up- front license fee) with limited

competition has not proved successful. The bidders had based their projections on high market expectations, which did not materialize. High up-front license fee imposed heavy tax on the private operators, eroding the financial viability of their projects with most of the operators in the red, encountering difficulties in effecting financial closures, and feeling threatened for their survival. This is true of the cellular mobile telephone service, basic service, paging service as well as value added services like E-Mail.

47. In addition, the existing practice of levy of license fee from telecommunication services as a source of revenue for the Central Budget has created various distortions. Although not applicable in respect of GMPCS service, license fee obligation on new entrants in the private sector has created an uneven playing field between the incumbent and the new entrant. It has also turned out to be contrary to the intention of providing telecom services to all people at affordable and reasonable prices. If at all it is felt that the telecom sector has to be used to garner resources for the ex-chequer, there are alternate ways of achieving this objective instead of levying high license fee on the service and thereby raising the cost of service to the subscriber. This would be equally applicable if the percentage of revenue share to be fixed were substantially high. Substituting high incidence of license fee/ revenue share with differential service tax would perhaps minimize such distortions and draw upon the resources directly.

48. Even when the levy of license fee is directed towards charges for scarce resources it should be imposed in a manner, which reflects the need to ensure the optimal use of these resources. Such charges should not be discriminatory, and should take into account the need to foster the development of innovative services and competition. Allocation of resources (such as spectrum) should be done without placing financial burden on operators that will inhibit the deployment of their service.

### **License fee as per Provisional License Agreement with Iridium**

49. The Provisional License Agreement with Iridium for the GMPCS service had proposed

(in October 1998) the annual license fee under a two-tier structure with fixed component of Rs 1crore and variable component at the rate of 16 percent of the gross revenue. The rationale for quantification of fixed and variable components of license fee has not been made available by the DOT.

50. In an earlier Provisional License Agreement proposed to M/s Afro-Asian Satellite Communications Ltd. (in 1995), the license fee consisted of fixed component of Rs. 1crore per annum and variable component at the rate of 5 percent of the gross revenue (excluding PSTN/PSPDN/Telex utilization charge paid to DOT). This was to remain in force for the initial period of 3 years. **The DOT may like to indicate the basis for fixing the variable component of license fee in the Provisional License Agreement for Afro Asian @ 5% of the gross revenue, and the rationale of increasing it from 5% to 16% of gross-revenue in the Provisional License Agreement with Iridium.**

51. As per Iridium, the provisional license fee of Rs.1 crore per annum as the fixed component and 16% of the gross revenue as the annual variable component is the highest license fee charged by any country for the Iridium GMPCS service license.

### **Structure of License Fee**

52. As stated above, NTP 1999 announced by the Government (in March 1999) intends one time entry fee and license fee based on percentage of revenue sharing for the GMPCS service. **Obviously, the Policy does not envisage any fixed component of license fee on a recurring basis.**

53. Fixed component of a license fee regime is normally operated as an entry fee to establish the bonafides of prospective service providers, and to act as the barrier for keeping out non-serious fly-by-night entities (with inadequate stakes) from entering the sector. Ideally, the entry fee should ensure elimination of non-serious players and meet the cost of inducting a service provider. Any charges in addition to that should be only by way of revenue sharing in case the degree of competition is limited and there is scope for rental gains to the operators.

54. The policy on license fee in most other countries is informed by this rationale. Article 11 in the Directive 97/13/EC of the European Community (EC) specifically deals with Fees and Charges for individual licenses under the common framework for general authorizations and individual licenses in the field of telecommunications. It requires the Member States to ensure that any fee imposed on licensees as part of authorization procedures seeks only to cover the administrative costs incurred in the issue, management, control and enforcement of the applicable individual license. Such fee is required to be proportionate to the work involved. The directive also requires the Member States to review their existing systems of calculating and collecting license fee so as to make them compliant with this directive.

55. Lump sum license fee puts a heavy burden on the operator when operation is yet to take off. Under the revenue sharing arrangement the licensor has to wait till the operations pick up for reasonable revenue to accumulate. An alternate option is to prescribe a three-stage structure for the license fee. Apart from an entry fee to enable selection of a suitable service provider, a low fixed fee in the initial gestation period of the project is levied during the 2<sup>nd</sup> stage. Thereafter, a recurring fee consisting of a variable component (linked to annual revenues) is levied. Such variable component could be based on percentage of revenue or charge per subscriber.

56. Under such an arrangement of three-stage structure for license fee, pre-determined level of one-time entry fee may recover the administrative costs associated with the processing of applications and allotment of license. If kept reasonable, it would facilitate crossing the threshold level specific to the new service without acting as an entry barrier. Steady payments at reasonable level could be recovered during the gestation period, appreciating that heavy cash outflows take place in these initial years for setting up the project without commensurate revenues. This system also tends to keep some pressure on

the Licensee to complete the project on schedule. Subsequent annual license fee could be linked to revenues as a percentage of revenue sharing. The quantum would grow as the revenues increase, reducing the risk otherwise associated with high up front license fee committed before the start of service based on some projections.

### **Quantum of License Fee**

57. The consideration for levy of higher one time entry fee to regulate the competition and for keeping away non-serious players is not relevant for the GMPCS service. Keeping in view the scale of operations and investment levels involved in the roll out of GMPCS service, non-serious players are not likely to enter the fray. There is no point in imposing a high level of fixed entry fee, which would increase the cost of the service. Often the rationale of mopping up high entry fee may be argued on the grounds that GMPCS is a premium service used by affluent strata of the society who have the capacity to pay. Such an objective could be better realized through the mode of imposing a differential service tax on the subscribers of GMPCS service. This methodology would offer a more transparent and direct levy without introducing any distortions in the system.

58. The revenue sharing component for the annual license fee should be fair and equitable, and determined to serve the overall objective of developing a world class service and making it affordable in a competitive market as the service will be used for trade and industry applications. Such annual fee is normally linked to the cost of regulation and enforcement of the license or as a contribution to sector development through research and studies. NTP 99 does not lay down any guidelines on the modalities of calculating the percentage of revenue share.

59. As per the available information compiled in Appendix VI, the quantum of annual recurring license fee for Iridium systems either as lump sum or as a percentage of revenue sharing in other countries is nominal. Its summary is depicted below:

<b>COUNTRY</b>	<b>LICENSE FEE (US \$ PER ANNUM)</b>
USA	9,300
ITALY	13,200
THAILAND	8,400
RUSSIA	79,000
JAPAN	1,400
INDIA	250,000 + 16%

60. One methodology for determining the 'revenue share' is to undertake a viability study of the service segment based on growth projections of the service in terms of subscriber base, average revenue per user (ARPU), operating ratio, and costs of essential resources such as capital expenditure per subscriber, interconnection, spectrum fee etc., apart from the license fee. This option is, however, not feasible in the present case. The underlying costs for providing the infrastructure for the service have not been entirely incurred in India. By the very nature of the service, the costs are scattered across the globe. It is difficult to undertake a comprehensive viability study without global study of such costs and revenue streams. Further Iridium is so far the single GMPCS service provider, which has commenced commercial service (as recently as in February 1999). No past performance data is available to assess the viability of GMPCS service providers based on their operating and financial performance. The sole basis available for such an exercise is the projections and business plan of the service provider, which are fairly adhoc. As stated in Chapter II, Iridium plans to target 5% of the cellular market over the next five years with a gradual increase of 1% each year. The projections made by Iridium anticipate 600,000 voice subscribers to break even the costs by 2000-2001. As the competition is building up and new service providers are moving in to take up position, drastic changes in pricing structure of some of the Iridium products are being mentioned. This would obviously result in wide changes in their business plan. It may, therefore, not be proper to base any viability assessment on such volatile projections for arriving at the quantum of license fee that can be imposed. Even where viability analysis is carried out, it may often not lead to very reliable results.

61. It may be mentioned here that for the same reasons of difficulty in costing the service, the TRAI has already decided to forbear from tariff fixation for the GMPCS service. The service providers are free to fix the tariffs subject to reporting requirement. It is expected that suitable cost-based tariffs will emerge in a commercial and competitive environment in which new entities are free to develop or provide services.

**62. The modality for arriving at the entry fee could be based on the judgement about keeping out non-serious players, and recovering the cost of inducting a service provider and granting him the license. The manner in which such costs can be quantified is open for public debate. The issue of percentage of revenue share for the annual license fee is also open for debate. This has to be debated in the context of the overall policy objective of developing a world class telecom infrastructure in the country and making affordable high-level services capable of meeting the needs of the country's economy in a competitive market.**

### **Gross Revenue**

63. The term Gross Revenue has not been defined in the provisional License Agreement. It has to be spelt out. While seeking TRAI's recommendations on the definition of Gross Revenue, the DOT has opined that it could mean Gross Revenue generated from the service operated under the ambit of the license.

64. Iridium has offered the following definition of "Gross Revenue from Services" for calculation of the license fee:

- Income accruing to Iridium India, when an Iridium subscriber makes a call from India in the satellite mode to either PSTN or to another Iridium handset or to a cellular handset should be calculated.
- This would be applicable for an Indian subscriber or a visitor who is visiting India and is a subscriber of some other Gateway.
- Monthly access charges, activation fees and revenues from any other value added service provided to the Iridium subscriber in India, would also form part of the income accruing to Iridium India.
- From this income, the following amounts be deducted to arrive at "Gross Revenue":
  - a. Amount payable to Iridium LLC;
  - b. PSTN interconnect payable to VSNL/DOT;
  - c. Service Provision Charges paid to Service Providers (Cellular Network Operators).

65. "Gross Revenue" may also be defined in terms of all such revenues accruing to the Licensee, which are related to the rendering of the services under the license including revenue on account of value-added services and supplementary services. Thus, revenues resulting from the supply of goods and services that can be provided without the license, e.g. the retail sale of subscriber equipment (like the mobile hand set), may not be included in the turnover figure. In case, however, the service provider subsidizes the sale of handsets by offering rebates on rental/ call charges, the revenue thus 'foregone' may be added to the gross revenue. Revenue foregone may be the difference between the purchase price of the handset by the GMPCS service provider and the sale price to the subscriber. It may, however, be argued that since the GMPCS mobile handset is a proprietary item with its usage specific to a particular GMPCS network, revenue earned on account of sale of handset should also be treated as a part of the Gross Revenue. Proceeds of any service tax collected by the service provider and passed on to the Government may not be included in the Gross Revenue.

66. The treatment to be given to annual charges payable by the Licensee to the Satellite Constellation/ Space Segment Provider for arriving at the Gross Revenue will need a debate. There may be double counting of related turnover on account of revenue earned from subscribers roaming into the country from other Networks, as the same will have to be shared. Similar revenue sharing would be involved when licensee's subscriber roams out to other Networks as well as for the calls transported on GMPCS network but originating from and terminating into terrestrial networks within the country. These issues have also to be resolved during the public consultation in the context of defining Gross Revenue.

67. Total Income as per the books of accounts of the Licensee may have to be adjusted to arrive at the Gross Revenue. It is essential that the term Gross Revenue is so defined that

it can easily be derived from the audited accounts. The quantum of the Gross Revenue declared by the Licensee should be verifiable from the books of account of the Licensee, in terms of the physical volume of traffic carried through the Licensee's Network during the relevant period. Its definition should not offer scope for accounting manipulation or in raising disputes about its interpretation. Whether deductions such as those claimed by Iridium for arriving at the 'gross revenue' be allowed? Perhaps compensation for not excluding such revenues, which are otherwise a direct charge on the service provider, could be in terms of lower incidence of revenue sharing percentage.

### **Issues for consideration**

- a. **NTP 1999 envisages one-time entry fee and annual license fee as a percentage of revenue sharing for the GMPCS Service. However, the policy does not lay down any guideline for its quantification. What should be the basis of license fee structure (in terms of fixed and/or variable components) for the GMPCS service?**
- b. **What should be the definition of Gross Revenue?**
- c. **What items of receipts appearing in the total turnover have to be excluded in arriving at the Gross Revenue?**
- d. **What mechanism should be prescribed for independent verification of the declared Gross Revenue?**
- e. **Since mobile handset would be sold as a proprietary item in the initial years and its usage would be specific to a particular GMPCS network, should the sales proceeds thereof be included as an integral part of the network revenue?**
- f. **What should be the modalities for payment of License fee i.e.,**
  - **Initial payment;**
  - **Quarterly or half- yearly instalments;**
  - **Due dates for payments;**
  - **Interest for delayed payments;**
  - **Basis for quantification of revenue during the financial year pending annual audit of accounts;**
  - **Final reconciliation of the License Fee payable based on audited annual accounts.**

## TECHNICAL AND OPERATIONAL FEATURES OF GMPCS SYSTEMS

1. There are several different types of the GMPCS systems, for example:

a. Geo-stationary Mobile Satellite Services (GEO-MSS):

- o Global
- o Regional

Geo-stationary satellites occupy an orbital position about 35000 km above the earth, and remain in a stationery position relative to the Earth itself. The world's major existing telecommunications and broadcasting satellites fall into this category.

a. Non-Geo-stationary Mobile Satellite Systems:

- o Little LEO

A small non-geostationary satellite, which operates in Low Earth Orbit providing mainly mobile **data** services.

- o Big LEO:

A larger non-geostationary satellite, which operates in Low Earth Orbit, providing mainly mobile telephony services. It provides narrow band GMPCS Service. Many of the new proposed 'global mobile phone' services wouldl be provided by this type of satellite. These are located between 700-1500 km from the Earth.

- o MEO:

A non-geostationary satellite, which operates in Medium Earth Orbit providing mobile telephony services. These satellites are also to be used as part of new global mobile telephone system. They are located 10,000 km from the Earth.

c) Broad band Fixed Satellite Services (Broadband GMPCS)

The major global players that will offer primarily voice include

- Globalstar
- Iridium
- ICO
- Elippsa
- Odyssey

They will be placed in GEO, Big LEO, Little LEO, or MEO orbits.

2. Of all the GMPCS networks, the US \$3.4 billion Motorola-backed Iridium network is the front runner, with Globalstar and Odyssey not far behind. ICO has had a late start because of system design problems related to their space segments and operational frequencies.

3. Most of the GMPCS systems will provide dual and possible even multi-modes on their handsets. This means that GMPCS phones will have terrestrial and satellite components, for example Iridium/GSM or even Iridium/GSM/AMPS. However because of the extremities of the frequencies, CDMA and TDMA protocols, and the engineering needed to shield multiple modes, the first multi-mode will probably only be dual.

4. Odyssey, Globalstar and Iridium have already produced some dual-mode prototypes that will allow users to use the cheaper GSM mode when they are in a GSM coverage area, and then hand-over automatically to GMPCS satellite mode the moment they lose GSM coverage-without dropping the call.

5. While the GSM component will allow the user to roam normally on other GSM cellular networks, it is highly unlikely that multi-mode phones will also encompass satellite network roaming. This means that phones manufactured for use on one GMPCS system will probably be useable only on that satellite system, although users will be able to choose at the outset which cellular system - for example, either GSM or AMPS - they want as their phone's alternative (terrestrial) mode.

## Technical specifications of GMPCS Systems

### GMPCS CHARACTERISTICS:

<b>Characteristics</b>	<b>Data-only GMPCS</b>	<b>Narrowband GMPCS</b>	<b>GEO-MSS</b>	<b>Broadband GMPCS</b>
Known as...	Little LEO	Big-LEO	Narrow/ Broadband MSS	Broadband-FSS

Services available	Data only	Voice and Data	Voice, data, video	Multimedia including voice and data
Terrestrial counterpart	Messaging services such as paging and mobile data	Cellular telephone	Cellular ISDN	Fibre
Bit rate	1.2-4.8 Kbit/s	About 9.6 kbit/s	2.4-144 Kbit/s	Upto 1.5 Gbit/s
Frequency range	Below 1 GHz	1 to 3 GHz	1.5-1.6 GHz and around 2 GHz	Above 10 GHz
Type of service	Store-and-Forward	Real-time	Store-and-Forward Real-time	Real-time

### GMPCS System Specifications

Name	Orbit	Satellites	Lifetime	Services	Modes	Operational
Orbecomm		28		D		Full, mid-1997
E-Sat		6		D		1997
FAISAT (Final Analysis)		26		D.Vm.P.		1997
VIT Asat (VITA)		2		D		1997

Koskon (Polyot)	B-LEO	32		V.D.F.P.		1997
Globalstar	B-LEO	48	7.5y	V.D.F.P. GPS	CDMA	1998
I-CO	MEO	10	12y	V.D.F.P.	TDMA	1998
Iridium	B-LEO	66	5y	V.D.F.P.	FDMA+ TDMA	1998
GE Starsys		24		Dm		1998
GEMnet (CTA Commercial Systems)		38		D		1999
LEO One USA		48		D		1999
M-Star (Motorola)	Brdbnd LEO	72		Broadband services		1999
ECCO (Constellation/ TELEBRAS)	B-LEO	46		V.D.F.P.		2000
Ellipso (MCH)	LEO/ MEO	17		V.D.F.P.		2000
Odyssey	B-LEO	12	15y	D.V.F.SMS	CDMA	1998
Teledesic	Brdbnd LEO	840	10y	Broadband services	ATDMA +CDMA	2000









































































































































































































