

Telecom Regulatory Authority of India

Notification

New Delhi, the 8th September, 2005

No.310-3(1)/2003-Eco. In exercise of the powers conferred upon it under sub-section (2) of the section 11 read with section 11(1)(b)(i) of the Telecom Regulatory Authority of India Act, 1997, the Telecom Regulatory Authority of India hereby further amends the Telecommunication Tariff Order, 1999 as under, namely:-

1. Short title, extent and commencement:

- (i) This Order shall be called “ The Telecommunication Tariff (Thirty Ninth Amendment) Order, 2005” (6 of 2005).
- (ii) This Order shall come into force from the date of its publication in the Official Gazette.

2. In the Telecommunication Tariff Order, 1999 :-

- (i) In Clause 3, the number ‘X’ shall substitute the number ‘IX’ appearing after the word and number ‘Schedule I to’; and,
- (ii) After Schedule IX, the following new schedule shall be inserted, namely :-

Schedule X

International Private Leased Circuit (IPLC)-(Half Circuit)

ITEM	TARIFF								
(1) Date of implementation	16.09.2005								
(2) Coverage	<p>(a) All tariffs specified as ceilings</p> <p>(b) The ceiling tariff in respect of each capacity specified in Item No.3 of this Schedule will be applicable for all destinations and types of cable systems used for carrying either voice or data.</p> <p>(c) Service providers may offer discount on the ceiling tariff. Discounts, if offered, shall be transparent, non-discriminatory based on laid down criteria and should be reported to TRAI.</p> <p>(d) It is mandatory for International Private Leased Circuit Service Providers to offer Half Circuits for all routes/destinations for which circuits are offered by them.</p>								
(3) Tariff for IPLC	<table border="1"> <thead> <tr> <th>Capacity/Speed</th> <th>Ceiling Tariff per annum (Rupees in Lakhs)</th> </tr> </thead> <tbody> <tr> <td>E1</td> <td>13</td> </tr> <tr> <td>DS-3</td> <td>104</td> </tr> <tr> <td>STM-1</td> <td>299</td> </tr> </tbody> </table>	Capacity/Speed	Ceiling Tariff per annum (Rupees in Lakhs)	E1	13	DS-3	104	STM-1	299
Capacity/Speed	Ceiling Tariff per annum (Rupees in Lakhs)								
E1	13								
DS-3	104								
STM-1	299								
(4) Tariff for capacity/speed below E1	Forbearance								
(5) Tariff for IPLC through satellite media	Forbearance								
(6) All other matters relevant to IPLC	Forbearance								

General

In case of any doubt with regard to the interpretation of any provision of this Order, the decision of the Authority shall be final.

This Order contains at Annexure-A, an Explanatory Memorandum, which explains the reasons for this amendment to the Telecommunication Tariff Order, 1999.

By Order,

(M. Kannan)
Advisor (Economic)

Explanatory Memorandum

Cable based International Private Leased Circuit (IPLC) that offers global connectivity through submarine cable is a critical input for provision of Broadband and Internet services, International Long Distance Voice Telephony and for a number of key industries like Information Technology (IT) and Information Technology-Enabled Services. These industries play a key role in the economic development of the country at this point of time and they are also considered to be quite critical to the future socio-economic development of India. It is therefore important that the price at which IPLC services are made available to the user industries are competitively determined.

Tariffs for Domestic Bandwidth fixed twice

2. Considering the fact that the cost of bandwidth – both domestic and international constitute a significant part of the total cost of providing Broadband and Internet services, the Authority revised the ceiling tariff of domestic bandwidth vide its Tariff Order (36th Amendment) notified on 21.4.2005. The revised ceiling tariff of domestic leased circuit in respect of STM 1 was 70% lower than the then prevailing market rate and in respect of DS-3, the tariff was reduced by as much as 67% from the then prevailing market rate. The extent of reduction in respect of other capacities varied. It is to be noted that this was the second instance of fixation of ceiling tariff in respect of domestic leased circuits. When the ceiling tariff was fixed for the first time i.e. in 1999, the reduction from the then existing tariff was as high as 90% in certain capacities.

Market Failure in IPLC Services

3. The Authority got signals from the users that the market for IPLC (submarine cable based) is not sufficiently competitive. In fact, the Authority received representations from user groups such as NASSCOM, Internet Service Providers Association of India (ISPAI), and other Business Process Outsourcing (BPO) units requesting to regulate the tariff for IPLC on the ground that the tariffs in India for IPLC were much higher than in several other countries. Protracted discussions with the incumbent operator {i.e. VSNL who holds a substantial market share in the IPLC market and complete control over four out of five cable landing stations (CLS)} for a reduction in the tariffs for IPLC services did not yield fruitful result. A consultation process was therefore initiated with the issue of a consultation paper (No.10 of 2004) on fixation of ceiling tariff for IPLC in April 2004 followed by Open House Discussions in July 2004 in Delhi and Bangalore.

Tariff Regulation desired by many Stakeholders

4. The overwhelming opinion of the stakeholders to the consultation paper was that despite the opening up of the International Long Distance (ILD) sector in 2002, effective competition in the IPLC business segment has not yet emerged and therefore they are of the view that the Authority should not only regulate tariffs for IPLC but also take further steps to encourage competition in this segment. Further, they pointed to the substantial spill over benefit that would accrue as a result of cost based tariffs for IPLCs, including greater penetration of Internet and Broadband Services. Promotion of broadband is now a major objective of the Government as demonstrated by the Broadband Policy 2004 of the Government, which also provides a basis for fundamentally transforming the socio-economic opportunities in rural India. This requires consumer prices for the service to be affordable. The summary of various comments

of the stakeholders on the consultation paper are given in **Appendix 1 of Annexure A**

Authority found justification for Tariff Regulation

5. During the process of consultation, the Authority considered the existing market conditions in India for IPLC including prices, its market structure, the conditions prevalent elsewhere in the region including prices for IPLC and the practices governing regulation of IPLC in other jurisdictions. The state of competition and the factors that constrain competition in the IPLC market in India are given in **Appendix 2 of Annexure A**. The comparison of Indian IPLC tariffs with International benchmarks are given in **Appendix 3 of Annexure A**. Further, the Authority noted that the IPLC service providers are also Internet Service Providers (ISP) (i.e they are integrated) and thus they compete with other standalone ISPs who use international bandwidth resources. Similarly, ILDOs owning international capacities, which provide IPLC services, are also providing international long distance telephony and to that extent ILDOs not owning international capacities have to depend upon facilities of their own competitors. Keeping in view these factors and likely developments in the Indian market for IPLC, the Authority concluded that the immediate need would be to mandate ceilings for IPLC prices primarily based on costs. This measure would thus promote a level playing field in the industry.

Fixation of Ceiling Tariff

6. The Authority fixed ceiling tariff for IPLC (half circuit) to be made applicable w.e.f. 1.4.2005 vide the Telecommunication Tariff (34th Amendment) Order 2005 dated 11.3.2005. The ceiling tariff per annum for IPLC (half circuit) was fixed for three different capacities i.e. E-1, DS-3 & STM-1 at Rs. 13 lakhs, Rs. 104 lakhs and Rs. 299 lakhs, respectively. The prescribed ceiling tariff for specified capacities was

made applicable for all destinations, capacities and types of cable systems used for carrying either voice or data. The tariff for capacity / speed below E-1 was kept under forbearance i.e. left to market forces. The said ceiling tariffs were determined based on cost data supplied by the incumbent.

Approach/Methodology of Tariff Fixation

7. With separated accounts coming into force, the data provided by VSNL as part of Accounting Separation Regulation was used to arrive at cost estimates. The approach of Top Down, Fully Allocated Cost (with historical cost) was used to arrive at the relevant cost estimate by using the cost data of Separated Accounts of VSNL. Although, Forward Looking Long Run Incremental cost (FLLRIC) is used to arrive at tariffs by most regulators, the Authority did not use FLLRIC as it was thought that such an approach would give a major shock to the market and is also likely to make transition to competition much more difficult. This implied that the cost base that had been used to arrive at the ceiling price had a buffer in it. Further, it is noteworthy that the cost based tariffs determined by the Authority were not based on the extremely low levels of investments / cost of acquisitions of submarine cable systems recently executed by the ILDOs in India. Using these costs would have resulted in a drastic reduction in the cost based tariff of IPLC and would have gone against the Authority's attempt to fix cost based ceiling tariffs without causing major shock to the market during the transition period. For the same reasons, the Authority also did not use the cost of providing submarine cable IPLC services by new entrants including that of the Tata Indicom Cable System. The detailed methodology and the method of calculation of costs adopted by the Authority in the fixation of IPLC ceiling tariff are given in the **Appendix 4 of Annexure A.**

VSNL's Challenge of Tariff Order

8. The 34th Amendment to TTO, which fixed the ceiling tariff for IPLC (half circuit) was challenged by VSNL in TDSAT vide Appeal No.5 of 2005, mainly on the ground that TRAI did not disclose various documents and information on the basis of which it fixed the tariffs for IPLC. TDSAT vide its Order dated 28.4.2005 set aside the impugned order and remanded the matter to TRAI to have a fresh look after sharing with VSNL relevant material.

Authority carried out TDSAT mandated disclosures

9. With a view to bringing quick remedy to the user industries and consumers at large who continue to pay high tariffs for IPLC (half circuit) because of the existing detrimental market structure, TRAI complied with the directions of TDSAT and proceeded to engage with and share the relevant reports, cost data, detailed calculations of tariff for E-1 and price ratios for higher capacities, etc. with VSNL. This was done with the purpose of keeping the best interests of the industry and consumers in mind to deliver an expedited Order based on the requirements for transparency contained in the TDSAT orders in this regard. The cost data and calculation of costs pertaining to the IPLC service provision of M/s Reliance Infocomm, M/s Bharti Infotel and that relating to Tata Indicom Cable System have not been shared with VSNL, because IPLC ceiling tariff was determined based on VSNL's historical cost only. The TDSAT orders on disclosure covered only the case of VSNL and not of others.

TRAI's Appeal in Supreme Court

10. While the Authority proceeded with disclosure to VSNL as directed by TDSAT, it also filed an appeal with the Supreme Court vide Civil Appeal No.3362/2005 (since admitted) on the larger regulatory issue of

the extent of transparency required in its exercise of function like tariff fixation and the other issue of applicability of the principles of natural justice in the matter of tariff fixation. In the views of the Authority, these are crucial issues that need to be resolved on an urgent basis for discharging its regulatory functions without which the regulatory process would get seriously undermined.

Process of Sharing Data/Reports with VSNL

11. After sharing the information, VSNL was given opportunity by the Authority for being heard. VSNL made use of this opportunity provided by the Authority and made presentations before the Authority on two occasions, on 1.7.2005 and on 8.7.2005. Separately, VSNL also gave written submissions to the Authority. The issues raised in the submissions of VSNL were considered and taken into account by the Authority in the fixation of IPLC tariff notified vide this Order. Apart from providing VSNL all the relevant cost data, cost calculation, copy of Ernst and Young Report, etc., the Authority gave hearing to VSNL on two occasions in which VSNL made presentations. Further, the report of verification of Books of Accounts and other documents of VSNL made by TRAI officials was also shared with them and their comments obtained. After this, the reply received from VSNL was examined and the points of view of the Authority along with the revised calculation details were also communicated to the VSNL. Key issues raised by VSNL in this process have been addressed and are given in the following Sections.

Section-II

Observations of VSNL relating to the need for regulation of IPLC and the comments thereof.

12. The observations of VSNL in this regard are to argue against the need for regulation of IPLC, and these include that the comparison of price information for benchmarking is 'erroneous' and use of appropriate

benchmarks would show 'IPLC prices in India are competitive'. These are discussed in the following paragraphs.

International Benchmarks, its role and relevance

13. The Authority has used the international benchmark and other factors only to know and compare the situation in India with that outside the country. It has no other relevance for fixation of tariff which is based on cost. Further, the absolute comparison of prices between India and other countries was not the basis for the Authority's consideration to regulate the tariff in India in the IPLC sector. **The reasons why regulation is required include a lack of significant decline in tariff over time in India as compared to international benchmarks and also as compared to the decline in the cost of provision of services that signalled market failure to the Authority.** Furthermore, the TDSAT judgment did not question the need to regulate the sector, therefore, raising no objection to the Authority performing this exercise. Notwithstanding this, the specific issues raised by VSNL in this regard are fully and adequately addressed in the following paragraphs:

Erroneous Comparison of Time Period and Markets by VSNL

14. VSNL contested the period of comparison of IPLC prices and sought a comparison since 2000 instead of 2002. The comparison of trends in the IPLC prices in India and the International prices for the same service made by the Authority for the period since 2002 is appropriate. The year 2002 is significant for comparison because it saw the opening of the ILDO Sector to competition and the transfer of ownership of VSNL to a private company. Strangely enough, the evidence before the Authority is that after the sector had been opened for competition, VSNL's tariff declines have been marginal, if at all (See Table No. 4 in Appendix 3 of Annexure A.). VSNL showed comparison of IPLC

prices since 2000 and preferred comparison not after transfer of ownership that coincided with opening up of the sector for competition.

Independent Reports Classify Indian Market for IPLC as Least Competitive

15. Further, VSNL has sought a comparison between India and countries like Indonesia, Malaysia, Thailand, Middle East etc. which are considered to be among the least competitive markets. It is noteworthy that independent international report by Gartner (2004) in this regard has concluded that the IPLC market in India is lacking in competition. The findings of Gartner Report in this regard are reproduced below:-

‘The most-competitive markets for international bandwidth are Hong Kong, Singapore, Japan, Taiwan and South Korea. The least-competitive markets are Indonesia, India and Malaysia’.

(Source: Gartner, Inc 2004, “Market Focus: International Bandwidth Pricing Trends, Asia-Pacific, 2004”)

When the goal is to achieve competitive efficiency, the submission of VSNL that comparison has to be made with less competitive markets goes against the objective itself.

Comparison of Markets for the Near-end and the Farther-end half Circuits

16. VSNL has also argued that the Indian end half circuit E-1 prices compare favourably with the distant end. The Authority has considered this point and also the evidence produced by VSNL in this regard. Evidence was in the form of very few selective invoices unaccompanied by the relevant details. It was not possible to verify whether the prices cited by VSNL have prevailed in the far-end were for a short-term supply of an additional capacity or the comparison itself was being made for the equivalent services and standards. In fact the **Report on International Bandwidth 2005, (PRIMETRICA, INC. California 2005)** has provided

evidence to the effect that the market is more competitive in the farther-end than the near-end. The report states thus:-

*“In 2004, **bandwidth pricing on routes to India did not vary by region of origin.** Prices for full circuits – based on a combination of two half circuits – between Mumbai and Europe, Asia and the US were highly uniform in 2004...**Much of this uniformity can be attributed to the fact that the price of the incumbent’s half-circuit was effectively fixed** and competition only affected prices on the foreign owned half circuit.” (emphasis added)*

Perspective of NASSCOM’s Observations

17. In this context, VSNL has referred to the observations of NASSCOM in response to the consultation paper on IPLC tariff fixation. To put the issue in proper perspective, the Authority recalled some of the key submissions made by NASSCOM to the Authority prior to and in response to the consultation paper on fixation of ceiling tariff for IPLC. These are given below:-

- The cost of a 45 MB/155 MB link from India to US is nearly two to three times (200-300%) as expensive as a similar one from Singapore and of great concern 8-10 times as expensive as China.
- Of particular concern is the fact that while the price for 2 MB link is higher than international norms, as you go to 45 MB and 155 MB the differential is huge. **The price multiplier in going from 2 MB to 45 MB and then to 155 MB is about 17 and 53 times for the India end, for the foreign end it is only about 7 and 18 times respectively. Our disadvantage on this front is therefore getting literally multiplied.**

- With the proposed tariff of Rs.12 lakhs for a half circuit E-1 (as in the consultation paper), the end-to-end Indian price will be three to four times that of the Philippines.
- The methodology used in setting the ratio is in the right direction and is a good start. The ratio of price for E-1, DS-3 and STM-1 which has been calculated as 1:8:23 should be lower so as to be in line with the world wide industry standards (Japan-US 1:4:10; China-US 1:5:12; Hong Kong-US 1:5:11; Singapore-US 1:4:9)
- ILDOs specially those having ‘incumbent’ facilities should be made to offer a discounted rate to other ILDOs so as to reflect the higher order capacity need and also to encourage sharing of this bottleneck facility.
- TRAI must implement the spirit of sharing of these bottleneck resources to meet the need of flexibility, higher SLA and cost reductions needed by the industry to keep India competitive.

18. It is thus evident that the feedback of one of the key user industry associations like NASSCOM confirms some of the major findings of the Authority in the context of its analysis of IPLC market in India.

19. It has been erroneously concluded by VSNL that the comparison used by the Authority for benchmarking the international prices of IPLC is between the wholesale price and retail price. According to VSNL, the prices compared by the Authority for benchmarking reflect wholesale transit volumes particularly in the case of higher capacity and thus the comparison is too simplistic. This is an incorrect inference by VSNL. It is well known that it is hard to differentiate between a wholesale capacity purchase and a retail purchase of IPLC particularly in respect of higher capacities like STM-1. The buyers of these levels of capacity in those

markets are invariably a telecom operator or large trans-national companies (TNC) with very high capacity demands. Both the operators and TNCs would be buying their capacity in the same market. If at all anything could be considered as the 'wholesale only product', that would be the market for wavelengths and/or dark fiber which are extremely high capacities without any additional services at the terminating ends. Sales of such capacity are not common and these were not considered by the Authority to be part of the international comparison of IPLC prices.

20. In its attempt to prove that the comparison made by the Authority is inappropriate, VSNL made a wrongful comparison of international prices of IPLC sourced by its own consultant i.e. Boston Consulting Group (BCG) with that of the prices reported in the *Ernst & Young* report (Shared with them by TRAI as part of TDSAT's mandated disclosure). The comparison is wrongful because BCG relied upon the list prices while *Ernst & Young* had taken the market prices in their final analysis. The relevant price for comparison in such situation is the average actual prices prevalent in the market and not the listed prices.

21. The incumbent has further submitted to the Authority that certain lower prices for IPLC shown to be prevalent in certain Asian countries are in fact prices between hubs and prices of IPLC between such hubs ought to be lower. This assertion of VSNL is not entirely true under the prevailing circumstances. Where there are specific dedicated links – like for Singapore – the capacity available there is on the order of magnitude of a Hub to Hub link. Further, India has the advantage of being on the direct routes of the major trunk cable systems landing in India. The "Hub- Spoke" framework of analysis propounded by BCG on behalf of VSNL in their report is applicable to a market where there is a lack of demand and corresponding lack of international capacity which is not true of Indian market considering the growth of data services in India

and the investments of ILDOs including VSNL in augmenting international private line capacity. The usage of international bandwidth in India as projected by Primetrica for 2005, 2006 and 2007 are in the order of 12.8 Gbps, 28 Gbps and 45.9 Gbps respectively. The utilization of international Bandwidth by India (as estimated for 2005) is higher than in countries like Thailand, Malaysia, Philippines, Indonesia, Vietnam, UAE, Saudi Arabia, New Zealand, Egypt and South Africa (Source: Primetrica Inc. 2005, International Bandwidth Report 2005). Needless to say, the demand for international Bandwidth is stimulated by the success of the Business Process Outsourcing Industry and also by the high rate of growth of the economy itself. In this regard, the Authority further noted that the tariffs fixed for IPLC have been determined based on actual costs and in that cost also sufficient margin and buffer have been provided.

Low international submarine bandwidth prices in other markets is not in all cases due to the distress of cable owners

22. The argument of VSNL that prices in other market are route specific and the low international submarine bandwidth prices in other markets is due to the distress of cable owners on account of Chapter 11 bankruptcy is not entirely true. If that was so, VSNL has not explained as to why heavy downward pressures on pricing exist on routes that are not catered to by carriers who are distressed. In fact, according to the data provided by the VSNL (BCG Report), the large share of capacity for such bankrupt companies was in the trans-Atlantic segment, and not in links to South, South East and East Asia. Further, recent investments by the cable operators in i2i, TIC cable system, SEA-ME-WE-4 and FALCON run contrary to the theory of VSNL that 'price falls on either side of India has been a compulsion to recover any thing possible' and thus 'cable investments of carriers are uneconomical'. VSNL had in fact admitted that

“all the ILDO players are entering the market aggressively with significant investments in cable systems. In the near term (6 to 12 months) it is anticipated that Indian companies are likely to invest around US \$ 500 million in various new cable system that land in India.”

(source : p.11 of 24 of VSNL submissions dated 6.7.2005 in response to consultation paper on ‘Measures to Promote Competition in International Private Leased Circuits in India’).

Lastly, the operators in India, including VSNL have themselves also been in a position to take advantage of the unfortunate financial conditions of various international circuit operators by buying or sourcing submarine bandwidth from them at tremendous discount to actual investments. This is not included in the cost based calculations of the Authority. Since cost is being fully allocated on a Historical Basis, the bankruptcy of operators in other markets is not relevant.

Regulation of market will not hamper investments

23. VSNL was of the view that any effort to regulate the market will hamper investments and hence the growth. They also believe that it might introduce rigidity in offering packages to the customers. The Authority is of the view that setting a ceiling price as set by the Authority will not affect future investments, as there is considerable under utilized existing capacity and sufficient margin has already been provided in the cost estimates owing to the adoption of historical cost and providing a buffer in those cost estimates as discussed elsewhere in this Explanatory Memorandum. Further, these capacities of the incumbent have earned huge surplus owing to high prices prevailed during the last several years. Since the price proposed for IPLC will be in the form of Ceiling, the operators will be at liberty to offer any tariff package to the consumers within the ceiling prescribed.

Significance of IPLC in Broadband Penetration

24. Further, VSNL has stated that the cost of IPLC is too small a percentage of the total cost/revenue of ITES-BPO Enterprises and therefore tariff regulation will not provide any significant relief to these industries. The Authority is not convinced of this argument for two reasons: firstly, it is not the intention of the Authority to provide relief to any industry by bringing in tariff regulation. Next, as long as the prices paid by user industries like ITES, BPO enterprises for IPLC Services are not competitively determined because of the distorted market structure, there arises the need for regulation irrespective of the relative importance of the cost of that item in the total cost. IPLC is a key input for broadband/internet service. In this regard it is relevant to quote from the Mid-term Appraisal of 10th five year Plan made by Planning Commission (source: <http://planningcommission.nic.in/midterm/midtermapp.html>) :

“Bringing broadband to all citizens by the end of this decade should be the national priority for every modern country and also for India (para 9.2.18-page 300)”

“To become an engine of growth and change broadband has to be made easily accessible, affordable and useful to the masses (para 9.2.22-page 301)”.

“Broadband is fast becoming a prerequisite for rapid economic growth and social transformation. Broadband enabled internet applications promise to fuel productivity growth in virtually every sector..... Effective and affordable broadband services would hold the key to maintaining India’s competitive advantage in the international markets (para 9.2.17-page 300).”

“.....Cost of international bandwidth is another bottleneck that needs to be quickly addressed. Enormous efforts need to be made to reduce the costs of international bandwidth and make it affordable (para 9.2.22-page 301)”

25. In this regard, the **Planning Commission has also advocated to device a system aimed at substantially reducing the cost of international bandwidth.**

Further Examination of Issues Relating to Competition in the Market

26. VSNL has claimed that it has lost significant market share to its competitors since the ILD sector was opened to competition and thus it was no longer a monopoly. It has also claimed that there are formidable competitors in the form of Bharti and Reliance who have substantial market share of IPLC.

27. The Authority noted that presently VSNL controls 4 out of the 5 cable landing stations in India and as of now VSNL is the only IPLC service provider who besides having control over so many cable landing stations, has also access to multiple cable systems having full restorable capacity. VSNL has ownership interest/capacity/indefeasible rights of usage (IRU) in several undersea cable networks across the world that enables it to carry data and voice traffic seamlessly with no restorability issues. Besides its own cable system from Chennai to Singapore, VSNL owns Bandwidth capacity in several key operational undersea optic fibre cable networks landing in India. Telegeography (an international Bandwidth research agency) that has launched coverage of Indian Bandwidth prices in the year 2004, has stated in its report on International Bandwidth 2005 (Primetrica Inc. International Bandwidth Report, 2005) that **'85% of the revenue for Indian half circuits went to VSNL'**. The report goes on to state that pricing has generally been based upon two separate half circuit prices: one from the Indian incumbent, VSNL and the other from a foreign carrier. This goes to

prove that VSNL's contention that it has formidable 'competitors' in the IPLC market is not borne out of facts.

28. Continuing with the same argument, VSNL has quoted from a Background Paper on 'Competition Policy in Telecommunication' (November 2002) that there are number of factors both quantitative and qualitative that are to be taken into account while assessing whether a **level of dominance in the market place** has been reached.

29. The Authority would limit its comment on this issue to the point that the same report quoted by VSNL, also states in paragraph 3.13 that, ***"although the relative importance of these factors is determined largely on a case by case basis, market share is commonly used as a starting point in determining dominance. In general, a market share of 40% to 50% is highly indicative of dominance."*** By VSNL's own admission, it has a market share of 60%.

30. VSNL has contended that it is in fact a **standalone operator and is dependent upon access providers** in International Bandwidth as well as other segments of its operations.

31. The Authority tested the above statement of VSNL based on certain facts contained in its own Annual Report 2003-04 and these are reproduced below:-

- VSNL remains India's top international long distance services provider, offering telephone services to 237 international destinations.
- In September 2002, VSNL entered the NLD services market.

- VSNL is a leading player in Internet services such as Internet access and Internet Telephony and is planning a major thrust in the retail Broadband business.
- VSNL's leased line business grew 83% in volume during 2003-04 and the company expects it to remain a large growth driver.
- In November 2002, VSNL became India's first VPN vendor.
- VSNL's total investment in TTSL's equity as on March, 31st, 2004, stood at Rs.6 billion, which will give substantial access to attractive end customers across the entire country.

32. Page 7 of the Annual Report of VSNL states thus :

“VSNL also benefits greatly by being part of the US\$ 12 billion Tata Group and is fully leveraging synergies with other Tata group companies in the telecom and software sectors to give customers a broad range of end-to-end solutions.”

33. Thus it is evident from the above that the operations of VSNL in conjunction with other group companies of TATA's as a telecom service provider is in the nature of vertically integrated service provision and not in the nature of a “stand alone operator”.

34. VSNL has contended that its financial performance is deteriorating over the last three years due to loss of monopoly three years back. The Authority is of the view that IPLC market requires tariff regulation because the market is lacking competition. This cannot therefore be linked to the financial performance of VSNL which is dependent upon a large number of factors. Further, Investment Analysis Report by Morgan Stanley in their report on VSNL in April 2005 has stated that VSNL's data business would grow from Rs.3.7 billion in F2005 to Rs.8 billion in F2007, thereby raising its contribution to the company's total EBITDA

from 54% to 73% and they also expect the data business of VSNL to yield an operating margin of 43-45% going forward, versus a 6% operating margin for the ILD telephony business (source : JM Morgan Stanley, Equity Research, Asia-Pacific, Report on Videsh Sanchar Nigam Ltd., April 5, 2005). In fact, the reduction in IPLC tariff can be expected to stimulate the demand for more capacity by end users which in turn would enhance the capacity available for services and thus the overall cost would come down for VSNL. Therefore, VSNL cannot oppose tariff regulation of IPLC on the ground that its non-IPLC business is less remunerative.

35. VSNL has in its submissions to the Authority made certain observations about its dealings with other telecom operators and issues relating to access to cable capacity, etc. Since the Authority has issued a separate Consultation Paper (No.5/2005) on Measures to Promote Competition in International Private Leased Circuits in India, the Authority would consider and address these submissions in an appropriate manner while framing its regulatory policy with a view to promote competition in IPLC.

Evidence of IPLC Regulation in many countries

36. The Authority made a detailed review of the International practices governing regulation of the IPLC market in a number of countries. The results of the review are tabulated and a detailed exposition of the regulatory practices governing IPLC sector in many countries are given in **Appendix 5 of Annexure A**. As per that review, a number of markets, which are now considered to be competitive, have at one time or other been subjected to regulation of various kinds including tariff regulation. Even now, in some of the competitive markets for IPLC, the dominant operator is subjected to tariff regulation in that they are required to file their tariffs with the regulator, which are then subjected to detailed

scrutiny and prior approval has to be obtained which is given only after the regulator is satisfied with the prices proposed by these operators. Even the submissions of the incumbent to the Authority clearly indicate that IPLC sector is regulated in countries like Vietnam, Singapore and Taiwan. In the case of Vietnam, it is in the form of price band/ceiling and prior approval of the regulator. In the case of Taiwan, for dominant operators the type of regulation in IPLC is through price band/ceiling. In Singapore, the dominant IPLC providers have to obtain the prior approval of the regulator for the tariffs. **Each country has to decide whether or not to regulate a particular market, and in the case of India there is a good case for regulation of IPLC.**

37. Thus, conclusions drawn by the Authority in regard to the need for tariff regulation for IPLC have been based on objective factors and analysis of relevant data including the submissions of various stake holders.

Recent Developments

38. VSNL in their submissions has cited certain recent developments and argued that there is no rationale for regulating IPLC pricing in the light of these developments in the international bandwidth market in India. These are discussed below:-

“Price cuts effected in anticipation of new capacities and competition”

39. The Authority noted with appreciation the recent voluntary reduction in IPLC tariffs offered by VSNL (applicable w.e.f. 15th August, 2005) on two routes, one on Chennai- Singapore and another on Chennai- USA (Pacific route). Such a reduction however, is not made in respect of the more important route of the Atlantic Ocean connecting India to Europe and USA (East coast), and to destinations in the Intra-

Asia Pacific (excepting Singapore). Further, IPLC providers other than VSNL have not offered reduction in the tariffs consequent upon this development. Thus, it is equally important that the IPLC price in general to all destinations, for all routes and capacities, and for all operators needs to come down. The tariff regulation mandated by the Authority vide this order provides for ceiling tariff and to that extent there is considerable flexibility for all operators to keep their price band within the ceiling.

“Bharti’s cable i2i can now provide restorable services”

40. The Authority noted that the mutual restoration agreement between VSNL and Network i2i Ltd. is another welcome development in the recent past as such an arrangement has the potential to enhance the quality of services to the customers. This development may have favourable impact on the state of competition in the IPLC market in the near future since now one more operator has restorable capacity on the India-Singapore route. But this is independent of determining the overall tariff since potential competition from this development would only effect a limited portion of the market, e.g. routes to or via Singapore. On the other hand, all other routes and destinations are likely to be unaffected.

“Reliance Infocomm is also laying a submarine cable system called Falcon BSNL is planning to have its own cable landing stations and planning to construct multiple cable systems”

41. In the views of the Authority, these developments, as and when they fructify, would be significant for the IPLC market as they are most likely to make the market competitive. These indications also signal the importance of the data services market of India in the global context and thus such investment decisions of major ILDOs in India are consistent with projections made about the growth of the international services market of India. The Authority is of the view that the need for regulation

of IPLC services or otherwise has to be assessed on the basis of the present and recent past trends in this market. Expected/projected developments when they actually fructify and become sufficiently effective to impact the market will provide the necessary opportunity for a review of decisions taken to correct the present situation.

Indian IPLC Market Requires Regulation

42. **In view of the fact that the decline in the tariffs for IPLC half circuit services in India is substantially less than the extent of decline witnessed in other parts of the world over time and also as compared to the cost of provision of services owing to skewed market structure and also considering the fact that the services of IPLC are critical to the penetration of Broadband/Internet services and to IT and IT Enabled Services, the Authority has concluded that it is necessary to fix ceiling tariff for IPLC at present. This measure would also promote level playing field in the industry.**

Section-III

Observations of VSNL in regard to issues connected with the methodology used for determination of cost based tariff and comments thereof.

43. VSNL has contended that it is not appropriate to determine ceiling tariffs based on weighted average of costs, because of the 'perfect correlation' between distance and costs. The Authority believes that this assertion is not based on a complete understanding of the issues as discussed below:

Distance and cost are not 'Perfectly Correlated'

44. The cost of submarine cable system is not a linear function of distance. In fact, given the high design capacities of submarine cable system, the additional costs associated with longer cables are not high

enough to substantially impact the unit capacity cost. The high capacity capabilities of a cable system means that the individual unit capacity cost associated with the additional cable/repeaters is low. Further, technological progress has led to the reduction in the number of amplifiers/repeaters required on cable systems bringing down their contribution to the overall cost of the cable system.

45. It is a known fact that costs of submarine capacity (as a percentage of total cost) to international operators is rapidly falling and it is very often packaged in such a manner that it is not proportional to distance. The tariffs for IPLCs charged for ILDOs in India confirm this fact. This position has been aptly summarized by Telegeography given in the following Table.

Tariffs are not Distant Dependent

Route/Destination	Q2.2004	Q3.2004	Q4.2004
London – Mumbai	\$ 10,605	\$ 8,156	\$ 9,638
Hong Kong – Mumbai	\$ 8,174	\$ 7,450	\$ 7,611
Mumbai – Singapore	\$ 8,174	\$ 7,519	\$ 8,065
Los Angeles – Mumbai	\$ 8,636	\$ 7,301	\$ 9003
Mumbai – New York	\$ 8,869	\$ 7,061	\$ 8,614

Notes : Prices reflect average E-1 monthly leased price, exclusive of installation fees. Prices reflect the combined price of two half circuits.

Source :TeleGeography research (Primetrica Inc. 2005, International Bandwidth, 2005).

46. In VSNLs own submissions made in November 2004 (BCG report) in their recommended price structure, VSNL also indicated only an average price and not a distance dependent pricing model.

47. It is important to realize that all the relevant costs incurred by VSNL have been taken into account by the Authority in the fixation of ceiling tariff. In fact, a substantial portion of VSNL’s investment in

consortium cable systems has already been recovered, as has been demonstrated in the consultation paper No.10/2004 dated 30th April, 2004 (paras 17-20).

48. Further, the ceiling tariff so fixed by the Authority contains a number of elements of buffer in it. Since the tariff mandated by the Authority is a ceiling tariff, it provides full liberty to the service providers to offer different tariffs to different destinations/routes etc. provided such tariffs are not above the ceiling tariff and transparent in nature. With the acquisition of new cable systems and establishment of fully owned private cable system to Singapore, the weighted average cost for VSNL in respect of providing IPLC services across various destinations ought to be much lower and thus, substantial buffer is still available to VSNL. The tariffs of VSNL filed recently with the Authority prove the point that IPLC price is not directly linked to distance. For example the rates for Chennai to USA per E-1 per annum is Rs.11 lakhs and for Chennai to Singapore per E-1 per annum is Rs.10 lakhs.

49. Lastly, the costs associated with the entire submarine or wet elements of a cable system are very much in the nature of sunk costs. Therefore, no incremental wet segment costs are incurred when upgrading longer distance cables. The only relevant costs on such up gradation on a longer distance cable are the dry end costs which are distant independent. It is noteworthy that cable systems like SEA-ME-WE-3, SAFE and SEA-ME-WE-4 etc. are consortium cable systems. VSNL does not incur the full cost of building the full length of the cable system. Rather it is shared among consortium members. In such consortium cables, the method of purchase of capacity can be a system of Minimum Investible Unit (MIU) kms. A pool of these MIU kms is assigned to each landing party/partial owner and capacities/routes are then “bought” in exchange for “spending” MIU km, in partnership with a

party for the distant half. While the concept of purchasing MIU kms exists on these cables, the MIU kms associated with each route may not be directly linked to the distance.

50. In view of the above, the 'perfect correlation' between distance and costs claimed by VSNL is not tenable and thus this should not be a reason for not using averages for prescribing ceiling tariffs.

Arbitrage Opportunity Significantly Overstated by VSNL

51. VSNL has also stated that the tariff structure for IPLC fixed by the Authority i.e. Rs.13 lakhs per E-1 with a price multiple of 8 times and 23 times that of E-1 for DS-3 and STM-1 would create an opportunity for arbitrage enabling its competitors to buy an STM-1 from VSNL and profitably sell the same at below cost at E-1 level to customers. This point has been carefully considered by the Authority and it is seen that the apprehensions of VSNL in this regard are misplaced for the following reasons:-

52. The arbitrage opportunity is one that is repeated in many markets and that has been significantly overstated by VSNL. For that matter, even in the existing tariff structure of VSNL for IPLC there does exist an arbitrage opportunity. But this is an over simplification of the complex situation involving resale and that too only by other ILDOs. Resale of E-1s after purchasing STM-1 capacity involves acquiring 63 E-1 customers, which involves substantial cost and time. This would also further require the facilities of an NLD operator and a BSO/UAS Licensee to sell this capacity directly to a customer. Beyond that, equipment and IT infrastructure is required to technically take STM-1 capacity from one operator and to then attempt to resale it as E-1 capacity in the market. Rather, the advantages for the seller of STM-1 like VSNL would include, a large financial commitment from the customer, a simpler selling and

service process and thus a lower administrative cost in general, and better utilization of capacity and thus reduced cost for that capacity.

Price Multiple and its Economic Rationale

53. Closely related to this issue is the price ratio multiple adopted by the Authority and reservations of VSNL about it. Economies of scale arise when any goods/services are traded in bulk. This is also applicable in the case of IPLC services. STM-1 is a larger capacity than DS-3 and DS-3 is again a larger capacity than E-1. The physical capacity ratio known to exist among the three capacities that are discussed here are 1:21:63. The price ratios for the three capacities i.e. E-1, DS-3 and STM-1 would not be in the same ratio because of economies of scale in operations. That is to say for example, the STM-1 price has to be less than 3 times of the price of DS-3. When larger capacities are purchased, the prices are less because the cost of selling larger capacities is also less when compared to selling smaller capacities. This economic rationale behind the price multiple has been acknowledged by a recent international report on “International Bandwidth – Submarine Networks, It states:-

“Capacity-Price Multiples

Bandwidth, like most goods, tends to be cheaper on a per-unit basis when it’s purchased in large volumes. For example, DS-3 circuits, which have 22 times more capacity than E-1 circuits, frequently cost only four to eight time more than an E-1. Carriers charge proportionally more for small circuits because, on a bit-for-bit basis, smaller capacities cost sellers more to administer than larger circuits. Some provisioning costs including sales, legal fees, installation, and some maintenance costs are fixed regardless of circuit size.

Traditionally, prices across different capacities tended to fall into fairly predictable multiples. At each successive circuit increase, from DS-3 to STM-16, price roughly doubles, while capacity sometimes quadruples. However, bulk discounts have become increasingly aggressive in recent years, as operators have come under growing financial pressure. Since prices of high-capacity circuits have fallen faster than prices of smaller circuits, capacity-price multiples have declined sharply. Consequently, an STM-1 can carry about 76 times more data than an E-1, but can be leased for only three to 15 times the price of an E-1.”

(Source: PriMetrica Inc., International Bandwidth Report, 2004)

54. The evidence given above implies the following:-

- a) The price ratios have to be less than the ratios of respective capacities.
- b) The price ratios prevalent worldwide are far less than the capacity multiple ratios for E-1, DS-3 and STM-1 that are obtained in Indian market for IPLCs.
- c) The maximum price ratios reported to be prevalent internationally are: Price for DS-3 = 8 times the price for E1 and Price for STM-1 = 15 times the price of E1.
- d) Thus, if one goes by this alone, then the price ratio for international Bandwidth in respect of E-1, DS-3 and STM-1 shall at the maximum be 1:8:15.

55. From this analysis, it emerges clearly that the price ratios fixed by the Authority i.e. 1:8:23 are higher than the ones prevalent elsewhere in the world. And more importantly, the revenue realization for VSNL on a weighted average basis (with these multiples) would comfortably cover the cost for VSNL and still leave a surplus. This has been demonstrated

to VSNL by TRAI in the material made available to it as part of the TDSAT mandated disclosure **(for details see Appendix 4 of Annexure A)**. The prevalent tariffs offered by ILDOs in India gave the ratio for these capacities that were very high as compared to international price ratios (see Table below).

International comparison of IPLC price (E-1 prices and price multiples)

	(1)	(2)	(3)	(4)
Country	E-1 US\$'000	DS-3 US\$ Million	STM-1 US\$ Million	Ratio of Columns (1):(2):(3)
Japan	23	0.10	0.2	1:4:8
South Korea	23	0.10	0.2	1:4:8
Hong Kong	24	0.12	0.3	1:5:11
Singapore*	33	0.17	0.3	1:5:11
India**	41	0.70	1.8	1:17:44

Source of International data: ERNST & YOUNG/Telegeography

Note :-US \$=Rs.44

- * Singapore's E1 price is high inter-alia on account of low multiple for DS-3 and STM-1
- ** IPLC half circuit tariffs of VSNL offered w.e.f. June 2005 for India-USA (Atlantic route). Not adjusted for discounts as discount is dependent upon a number of criteria

No Evidence of Consortium Imposed Constraint on VSNL in pricing matters

56. VSNL has contended the pricing ratio on the ground that, most submarine cable capacity sold out of India is on consortium cables. The Authority noted that this argument has no basis because consortium members do have complete freedom to set their prices and VSNL has not brought before the Authority any evidence of constraint being imposed on VSNL in the matter of pricing by the consortium.

57. Further, raising these ratios above the ones fixed by the Authority will give undue surplus to VSNL which has been verified by the Authority based on full cost recovery on a weighted average basis for various

capacities, and the share of each of these capacities to the total. Once full cost recovery is ensured to VSNL for the price fixed for E-1 and on the basis of the price ratios for other higher capacities, the question of revenue realization going below the cost does not arise.

Appropriate capacity mix assumptions used in the calculations

58. VSNL has submitted that the capacity mix assumptions used in the tariff fixation exercise are “inappropriate”. In the calculation sheets containing detailed calculations of costs, provided to VSNL (as part of the disclosures made), it has been amply demonstrated that even if 50% of the total capacity is sold in terms of DS-3 and STM-1, the revenue to VSNL is more than adequate. Even if it is assumed that large capacity as projected by VSNL would be sold in terms of higher capacities like STM-1 in future, it is logical that the operating expenses would also substantially come down because of economies of scale in selling STM-1 as against selling in terms of E-1s. Using a range of capacity mix assumptions, an iterative process revealed that the weighted average recovery of revenue would still be above the average cost leaving a surplus (demonstrated in the cost calculations shared with VSNL). Further, in a given period of time, if there has to be shift of customers from lower capacity to higher capacities like STM-1 (of a greater magnitude), it can take place only if the total capacity sold also goes up simultaneously and in which eventuality, unit cost per capacity would come down on account of higher utilization of capacity in services.

Section-IV

Issues relating to Cost data and calculations of cost, raised by VSNL and comments thereon

59. One of the points raised by VSNL on the costing exercise is that the cost arrived at by the Authority is an under estimation. The detailed examination of each of the arguments advanced by VSNL for its claim of

higher cost per E-1 is contained in various paragraphs in this Section. Further, VSNL contends that certain additional investment/operating expenses have been made/incurred in their new cable system all of which could significantly impact the effective cost of providing IPLC services and therefore a fresh exercise for examining costs is required. This is discussed in the following paragraphs.

Falling cost of building a Submarine Cable

60. VSNL's argument of new cable cost is not correct as in reality it gives lower cost than the one arrived at by the Authority using historical cost. The cost comparison of submarine cable system (see Table below) made by Morgan Stanley in their report of April 2005 reveals that the cost of building a submarine cable is falling rapidly.

Cost of Building a Submarine Cable is Falling

Cable System	Design Capacity		Length (000 Km.)	Cost (Us \$ Million)
	RFS	(Gbps)		
TGN			60.00	3,246*
Trans Pacific	2002	7,680		
Trans Atlantic	2001	2,560		
Western Europe		3,840		
Northern Europe Ring		640		
FLAG				3,150*
Atlantic 1	2001	2,400	14.5	
Europe – Asia	1997	80	28.0	
North-Asian Loop	2002	2,880	9.5	
i-2-i	2002	8,400	3.2	650
SEA-ME-WE-2	1994	1,100	18.0	800
SEA-ME-WE-3	1999	505	38.0	1,500
SEA-ME-WE-4	2005	1,000	20.0	500
Tata Indicom Cable	2004	5,120	3.2	100

*Morgan Stanley Research estimates

Source : JM Morgan Stanley, Equity Research, Asia-Pacific, Report on Videsh Sanchar Nigam Ltd., April 5, 2005.

RFS : Ready for Service.

61. Further, the Authority has not taken recourse to determining the tariffs based on investment in new cable systems, acquisition of cable systems by the ILDOs, for that would have meant a much lower price

than the one prescribed. Having said that, the Authority will review the IPLC tariffs fixed vide this Order, if necessary, after watching the market developments subsequent to the tariff regulation.

Buffers in the Calculation of Costs – FLLRIC Not Used

62. VSNL in their submissions has contended (without any basis) that the buffers indicated in the cost calculations are incorrect. It is widely accepted that FLLRIC is a method of pricing that forces Service Providers to become efficient. However, the Authority has chosen not to use FLLRIC at this stage, so as to avoid a shock to the system. Instead, the Authority has used a fully allocated costing method in which a buffer is available for VSNL, thus making the transition to a competitive environment gradual. The fact that FLLRIC is not used in the present calculations for determining the tariffs which itself gives rise to buffer has been contested by VSNL merely by saying that applying FLLRIC is impracticable and highly complex. Complexity involved in a costing approach does not take away its advantages in pricing the provision of IPLC services in an accurate manner. Similarly, the buffers that arise out of using historical cost of VSNL as against using a weighted average cost of other operators/cable systems has been simply dismissed by stating that the 'cost of capital is highly understated'. This has no relevance to the arguments on the basis for buffer indicated in the tariff order.

63. One of the submissions of VSNL in regard to cost calculations is that the data on cost, capital employed and capacity sold pertain to different points of time. In fact, in the revised calculations (shared with VSNL), the Authority has considered the capacity reported to have been utilised by VSNL as at the end of March 2004 and capital employed during the period ending March 2004. It would have been appropriate for the Authority to have concluded that the capital employed reported in separated accounts for 2003-04 could be allocated to the capacity

available in September 2004 or even a later period because this includes capital work in progress also and thus this could be considered as giving rise to the available capacity during the later period. This has however not been done by the Authority and to that extent there is an element of buffer in the cost estimates arrived at by the Authority. Further, the costing was being done for fixation of a price that would be applicable for a future period and not for the past period and to that extent the Authority should have been more futuristic in their approach itself by adopting the FLLRIC approach which has not been done thereby giving rise to surplus over-cost (Historical). Moreover, it is evident that the average cost of IPLC services has been declining over time both for investment and operational cost. This trend is likely to continue in the future as well owing to technological advances, which implies that the marginal cost of acquiring additional capacity is substantially below the average cost estimate and will decrease further in the future. It would have been valid for the Authority to have used the much lower cost estimates taking account of the new capacity of the new entrants and even the incumbent. However, the Authority has not done so to ensure smooth transition to lower cost and has kept a buffer in the cost based tariff.

64. VSNL has submitted to the Authority that the value of depreciation taken for costing capital should be higher because the depreciation amount has been taken on the basis of a lifetime of 18 years, where as for all practical purposes, the economic life of the cable is only 5 to 8 years.

65. The Authority noted that it is using the actual depreciation amounts for IPLC that are given by VSNL in the audited separated accounts submitted under a Regulation to the Authority, on 31st December, 2004. Moreover, the Authority noted that in the Annual

Report of VSNL for 2003-2004, they have stated with respect to Tata Indicom India Singapore Cable (TIIS Cable) thus:

“With an estimated life of 25 years, the new cable aims to significantly enhance India’s connectivity into the Asia-Pacific region and the U.S. via the Pacific” (emphasis added; page 12 of the Annual Report).

66. If we use this estimate of lifetime, then the amount of depreciation should be even lower. However, the Authority has not done this and has relied on the audited accounts submitted to it with separated accounts. The Authority also noted that the cable in its physical form normally does not cease to function at least until its full life assumed in the calculation of TRAI. Further, the capacity of cables can be enhanced phenomenally at a very low cost owing to the availability of new techniques. Based on various data submitted by VSNL, the Authority also noted that the prices have been very high in the past (e.g. in 2000, the E-1 Half-Circuit IPLC price was Rs. 163.7 lakhs), which have already provided large returns on the investment.

67. VSNL has also contended that Authority has underestimated cost of capital. The Authority noted that the equity-debt structure of VSNL was substantially different from normal and reasonable capital structure. The Authority has examined the average of the ROCE for other operators in the industry and that figure amounts to less than 14%. In the above-mentioned submission of VSNL too, if we change the equity-debt ratio to 60:40, which is a reasonable ratio for an efficient capital structure, the ROCE become similar to the one used by the Authority. In fact, the Authority has in some other previous exercises, used an equity-debt ratio of 1:1 and if this ratio is used then the ROCE would be even lower at 13.46%. Above all, VSNL has used 14.42% as the WACC (Weighted Average Cost of Capital) in the accounting separation statement, which

are audited accounts submitted to the Authority on 31st December, 2004 under a Regulation (notified in the Gazette). For these reasons, the Authority has continued to use the ROCE of 14.42%.

68. VSNL has contended that money raised from GDR issue of capital have been excluded and such an exclusion of capital has the effect of significantly reducing the cost. Further, VSNL has submitted that the inclusion of monies raised during the GDR issue is in compliance of the Accounting Separation Regulations, 2004. The Authority noted that the amount of capital employed for IPLC in VSNL's separated account includes money raised from its GDR issue, which is presently lying in the bank. This has been excluded for costing as they are not relevant for IPLC service for which costing is done. These funds are not linked to the operation of IPLC *per se*, and the costs related to them should not be imposed on the customers of IPLC and thus this has been excluded.

69. As stated earlier, in compliance to TDSAT's Order of 28.4.05, the Authority shared the relevant data/information/reports with VSNL. After sharing of information / data by the Authority with VSNL, they made certain submissions to the Authority regarding calculation of cost wherein some data used by the Authority in the IPLC tariff fixation exercise was contested. One relates to the amount of capital considered by the Authority as relevant for IPLC pricing and the other major item relates to the data on International Bandwidth charges that is relevant for IPLC pricing. After examination of these submissions including certain documents submitted by VSNL, the Authority found it appropriate to verify the Books of Accounts and other documents of VSNL to ascertain the validity of its contentions. The verification exercise undertaken by a team of officials from TRAI not only did not prove the service providers point, it opened up further areas of doubt. The documents produced by VSNL during the verification process did not

conclusively establish the veracity of allocation of bandwidth charges to various products and the criteria for apportionment of expenditure relating to joint costs/common costs. Further, the actual capacity of submarine cable bandwidth utilized for IPLC reported by VSNL at several points of time in the past and as found during the verification process has been inconsistent.

70. The Authority considered the submissions of VSNL on the data used for costing and the treatment of that data, and the data made available to the Authority on earlier occasions by VSNL and those found during the verification process now. The findings of the verification carried out by the TRAI officials were communicated to VSNL. Reply of VSNL to the observations contained in the report of the team of TRAI deputed for verification of Books and other documents has also been examined by the Authority. The analysis of the observations made by VSNL on the report of Inspection (made by TRAI officers) was made available to VSNL along with the revised calculation. Since these matters involving commercial data of VSNL are sensitive, the Authority does not wish to share the details of the findings of verification of Books of Accounts and other documents of VSNL in this Explanatory Memorandum. However, in the final analysis, the Authority is of the view that even conceding that the claims of VSNL in this respect are correct, the ceiling tariffs fixed by the Authority in its earlier exercise require no alterations. Considering the fact that the tariffs are being made applicable now in September, 2005, as against the 34th Amendment that was to take effect from April, 2005 (5 months passed), the cost of providing services should still be lower now. The Authority does not at this point of time intend to involve itself in detailed inquisition which would only delay matters further. These and other related matters like acquisition / installation / expansion of submarine cable capacity in this part of the world and the emerging pattern of demand and its

implications for IPLC prices will be dealt with by the Authority in the next review of IPLC tariff.

71. Accordingly, the Authority reiterates the ceiling tariff framework for IPLC services in India as under:

Capacity	Price (Rupees in lakhs)
E-1	13
DS-3	104
STM-1	299

Price for capacity below E-1

72. It is proposed not to specify separate ceiling price for IPLC capacities below E1 as smaller capacities form a low proportion of total demand for international bandwidth now which would become an insignificant proportion in future. Therefore, the tariffs for such capacities are forborne.

Price for Different Use

73. Another issue raised in the Consultation Paper relates to the applicability of this ceiling tariff for various usages i.e. voice or data. There appears no cost based rationale for the associated IPLC tariff ceiling to vary when it is used for different products/services. The majority of the stakeholders were of the view that the proposed ceiling tariff should be the same whether it is used for voice or for data services. In view of the above, the Authority has mandated that the ceiling tariff for IPLC half circuit shall be the same irrespective of its end use i.e. whether for voice or for data.

Tariff forbearance for satellite IPLC

74. As mentioned in the methodology, the costs related to satellite IPLC have not been considered. Thus, tariff for satellite IPLC are forborne.

Standard Tariff for Half-circuit IPLC to be mandatory

75. There are two components involved in the provision of IPLC service i.e half circuit of the Indian end and the other half-circuit of the farther end. TRAI's regulation/tariff orders for IPLC can cover only the near end portion of the IPLC that is offered by a licensed ILDO of India. ILDOs in India do provide full circuit services of IPLC by having commercial arrangements with the foreign carriers; but the Tariff order of TRAI applies only for the near-end Half-circuits linked to India. Therefore, the Authority mandates a Standard Tariff Package in which Half-circuit will be offered in compliance with the ceiling tariff for each of the capacities and destinations for which full circuit services are offered by the ILDOs. This would enable the Authority to monitor the compliance of the tariff order by the service providers. However, the ILDOs are at liberty to offer any other Alternative Tariff Packages subject to the ceiling fixed to match competitive activity in the market. The choice from among all the tariff packages including the mandatory Standard Tariff Package will rest with the buyers of IPLC Services.

Conclusions

76. The Authority recalls the growth experience in mobile telephony consequent upon tariff declines witnessed in India. Similarly, reduction in lease price for IPLC would also stimulate strong growth. The experience with growth in India has been that with low prices, there has been explosive growth of subscriber base in voice telephony and it would be reasonable to expect that the same story would be repeated in the growth of Broadband /Internet and other data services that are crucially dependent upon international bandwidth. Therefore the intervention of the Authority by stipulating a cost based tariff for IPLC becomes important but the growth in demand induced by the lower prices being mandated by the Authority will itself act as demand stimulant leading to

higher utilization of capacity of the operators that would have secondary effects in pushing down the price levels. A number of other reasons have also been given in this Explanatory Memorandum to show the basis of the Authority's intervention with respect to IPLC tariffs.

77. The Authority is of the view that the process of tariff ceiling regulation has been significantly extended to accommodate various and repeated submissions by IPLC providers, and it is expected that the IPLC service providers appreciate the necessity for regulatory intervention at this stage and implement the ceiling tariffs wherever applicable and report the same as per existing reporting requirements.

-----x-----x-----

Appendix 1 of Annexure A

Summary of Main Comments

The various comments of the stakeholders on the consultation paper (No 10 of 2004) are summarized below:-

a) Should IPLC (half circuit) be henceforth regulated?

- The user groups and consumer organizations were of the view that the tariff for IPLC should be regulated till adequate competition is established in the market.
- Telecom service providers in general have expressed their concern that despite the opening up of the ILD sector in 2002, effective competition in the IPLC business segment has not yet emerged and therefore they are of the view that the Authority should not only regulate tariffs for IPLC but also take further steps to encourage competition in this segment.
- TRAI's intervention in regulating the tariff of IPLC is considered necessary at this point of time by many stakeholders on the ground that availability of IPLC at cost based prices would stimulate the growth and lead to greater penetration of the Internet and broadband services.
- One of the telecom service providers has stated in their submissions to consultation paper that fixation of tariff for IPLC by TRAI is essential so as to make IPLC prices in India more affordable and to make in line with market prices within the Asia-Pacific region.
- One view was that the stimulation and encouragement of Internet use and availability of affordable broadband services is dependent upon among other things, the access to lower priced international bandwidth because IPLCs are the main international carriage platform for these services.

- There was also a view that the high prices for IPLC's in India are constraining the potential growth of Indian international data revenues and by inference the underlying demand for capacity as well. Thus high IPLC prices tend to stifle demand for consumer services, which would otherwise employ large amounts of bandwidth capacity.
- Unless the IPLC prices are brought down, the customers for BPO services would turn to the growing number of other countries that seek to provide BPO services at lower prices. This could have negative consequences for the BPO industry in India.
- TRAI should set tariff ceilings to ensure that VSNL's rate moves towards cost orientation. The tariff should be reviewed periodically but should remain in place until there is a basis to conclude that effective market forces will sufficiently constrain IPLC rates.
- One of the ILDOs commented that the market forces should be allowed a free reign such that price is a function of market demand and supply. But the regulator should ensure that the operators who hold significant capacities (bottleneck facilities) do not resort to restricting bandwidth supply thereby artificially inflating prices. Accordingly, the regulator should ensure easy access to bottleneck facilities such as landing stations owned by the significant operators.
- The incumbent was of the view that market forces should be allowed to decide the price and thus there should be no price regulation of IPLC. Further, VSNL was of the view that any effort to regulate the market will hamper investments and hence the growth. They also believe that it might introduce rigidity in offering packages to the customers.
- The incumbent is of the view that IPLC prices in India are likely to fall by 30% over the next 12-18 months with increase in supply.
- VSNL has submitted that IPLC price constitute a very small proportion of the cost structure of IT, IT-ES and Broad Band services.

(b) Whether the reduction proposed by the Authority is adequate, less than adequate or too high.

- One of the ILDOs submitted that, the proposed tariff ceiling for E1 circuit of Rs.12 lakhs per annum seems very aggressive and more realistic level should be 15% to 20% reduction on the current tariff of VSNL. Similarly the multiple of 8 times of E1 ceiling price proposed for DS3 capacity should be revised to 11 times of E1 based on international practice
- One other ILDO was of the view that the reduction in tariffs proposed by the Authority is impressive. However the tariffs for the half circuits should be made more attractive than in those countries competing with India in BPO/ITES sector. This is absolutely necessary to create an attractive business atmosphere.
- One of the standalone players in telecom services submitted that while the cost+ method could be adopted to work out the prices for different Circuits, this should be benchmarked against the international prices so as to ensure that VSNL, the monopoly service provider, does not unduly realize the benefits of its inefficiencies.
- ISPAI was of the view that the reduction proposed by the Authority in the consultation paper is too little, too late. The reduction is highly inadequate considering the rapid reductions in the ISD tariffs by the very same ILDOs who have deliberately not passed on similar benefits to the users of IPLC.
- COAI in their written comments stated that the reduction proposed by the Authority in the consultation paper is too little, too late. The reduction is highly inadequate considering the rapid reductions in the ISD tariffs by the very same ILDOs who have deliberately not passed on similar benefits to the users of IPLC.

- One of the ISPs commented that the greatest weight should be given to market rates charged elsewhere in the Asia-Pacific region for similar IPLC capacities when making the initial determination of VSNL's IPLC tariff.

(c) On the methodology and related issues including price-multiples

- One of the ILDOs was of the view that the cost based approach taken by the Authority for fixing of the tariffs seems appropriate. However there are overestimates in some places.
- The ISPAI submitted that, most international cables land in many countries and hence, the investment decisions are not based on the potential or current market in a single country like India. This aspect becomes crucial in computing the costs.
- COAI has commented that loading the entire costs of the ILD on IPLC alone is unjustified.
- One of the foreign carriers has stated that TRAI should adopt the proposed rate reductions in an initial phase, but should conduct a full LRIC study for the methodology in a subsequent stage.
- One of the Telecom service providers has submitted that the methodology seems to be reasonable. However it should be recognized that installed capacity is much more. The capacity utilized is very nominal. If installed capacity was made available, cost per E1 would be substantially lower. It is to be noted that demand has been there and the market absorbs Capacity as soon as it is made available.
- VSNL has observed that the Paper assumes that the total available cable capacity will be sold on the day one and will remain committed to be sold for the next 15 years and there would not be any vacuum or churn. This is far from factual position. The assumption that there will be no downward price revision-taking place in the next 15 years is

not a reality in practical scenario. Assumption that the Opex of 10% is sufficient to recover the entire operational cost of the entity is not a correct assumption. This methodology does not differentiate between the physical life of assets and economic life of assets.

- VSNL in its submission has commented on certain assumptions of the methodology contained in the consultation paper. These include that the proportion of satellite costs in the total cost assumed by the Authority is higher, there is under estimation of capital cost, and lower provision of supervision and administration charges
- VSNL has also observed that while the Authority has approved the ratio of 1:21: 63 for NLD pricing, it has proposed 1:8:23 for IPLC pricing. However, in both the services, the technology being used is similar and associated costs for multiplexing/demultiplexing are also in the similar proportion.
- One other ILDO has pointed out that they are in agreement with methodology that an E1 can be used as benchmark for higher multiples of the bandwidth. However, the cost and O&M charges for an E1 and its higher capacities are not in linear relationship. Hence it is not appropriate to consider bandwidth multiple as cost multiple. Thus there is no reason why the international standard for cost multiple be any different from that in India. They therefore recommend that prevailing international ratio should be accepted.
- NAASCOM was of the view that the methodology used and setting the ratio are in the right direction and is a good start. However, as the usage of both DS3 and STM1 will increase, same benchmark and current multiples will not be valid and need to be periodically reviewed. Then the TRAI needs to have a look at factors like utilization factor, quality and reliability of services and congestion levels.
- One of the Investment analyst firms has commented that they agree with the pricing-multiples specified by the TRAI in the CP since these

have a rational basis and are also in line with corresponding multiples in other countries.

- A telecom service provider has said that given the rapidly changing dynamics of the telecom sector, whatever tariffs the TRAI fixes may be reviewed after 12 months.
- The notified ceilings should be reviewed regularly, at least twice a year and ceilings modified, if so necessitated. However, once the 'Retail Minus' pricing is introduced, over one year, there may be no more a need to review, except intervening in exceptional circumstances.
- On the issue of whether the same tariff be made applicable irrespective of end use i.e. voice or data, the overwhelming opinion of the stakeholders was that from an economic and cost causality perspective, there is little or no difference in the cost of providing IPLCs for either data or Voice. There is, therefore, no cost-based rationale for the associated IPLC. Indian businesses and consumers would both benefit from the availability of the wide spread and higher quality standards normally associated with PSTN based international voice services at lower prices.
- An industry Association has submitted that ILDO's are bound by the conditions of the license to offer bottleneck facilities to all users and other ILDO's. The cable capacity is a bottleneck at this time as India has limited landing stations. ILDO's especially those having "incumbent" facilities should be made to offer a discounted rate to other ILDO's so as to reflect the higher order capacity need and also to encourage sharing of this bottleneck facility.
- The incumbent has stated that they invested in the infrastructure in the past when the country needed it and when the costs were on a higher side. They need to recover composite cost of its network while it offers IPLC services to its competitors. The tariff for the competitors

(ILDOS) who resell the services, need to be different as compared to the tariff for corporate customers, who do not resell the services.

(d) Other comments

- Long run incremental cost (LRIC) on a forward looking basis of all cost elements including capacity increase in the long term, should not be used as they require deep understanding of network economics, and modeling assumptions are subjective.
- LRIC would more accurately reflect underlying service economics and will not protect inefficient incumbents.
- Lower prices are observed on routes where bandwidths demand and hence supply is abundant.
- The capacities existing in various markets have resulted in the creation of 'hubs' (e.g. Hong Kong, US, UK) and 'spokes' (e.g. Thailand, Indonesia, Brazil). The prices between hub to hub will be lower than hub to spoke or spoke to spoke.
- Prices also different according to routes.
- The methodology in the Consultation Paper is incorrect because it takes both capital recovery of 28% and asset life of 18 years
- Costs differ for owned and consortium cables, both for prevailing costs and for incremental costs.
- There is little flexibility for changing prices for consortium cables.
- Comparison with international prices is not correct because these prices reflect bankruptcy and write down of assets.

Appendix 2 of Annexure A

Factors Constraining Competition

Limited Number of Players

In India, the international long distance (ILD) segment was opened to competition in 2002. Videsh Sanchar Nigam Ltd. (VSNL) is the incumbent operator with landing station facilities at Mumbai, Cochin and Chennai. The other ILDOs who also supply submarine cable bandwidth services are Bharti Infotel and Reliance Infocomm. Bharti Infotel owns a landing station facility at Chennai. As of now, Reliance Infocomm has not yet established their own cable landing facilities. VSNL is likely to maintain its dominance in the IPLC market for some more time. Thus, the prevalent market structure in IPLC in India is such that there are only three active players and of them only two have landing facilities. It is gathered that in many countries the number of players is large and most of the operators are Non-Facility based operators. At present, resale of capacity is not permitted in India because the focus has been on building additional capacity. The table below shows the number of bandwidth providers in each location (including resellers):

Location	Number of bandwidth providers
London	33
USA-NY	32
Germany	32
France	24
South Korea	14
India	3

Source: ERNST & YOUNG/NRA websites

Access to Facilities

Access to submarine cable landing stations is considered an essential input for many telecom services. Any unnecessary access restrictions tend to limit operator's competitive scope to provide international telecom services. Thus the submarine cable landing stations are critical telecom infrastructure and efforts should be made to ensure that they do not become bottlenecks to telecom service provision. Access barriers constrain the competitiveness of telecom operators and are detrimental to healthy growth of the telecom market. The Authority has received a number of complaints that competition is being restricted due to constraints on access to facilities.

VSNL's continued control of cable landing stations and associated facilities are said to constitute bottlenecks, which allow the incumbent to stall or delay entry (or efficient operations) by other operators. Access problems are faced not only by the underlying cable operators but also by operators who have acquired capacity in a cable system and wish to access the capacity at the landing station. Discussions with industry sources suggest that establishing a cable landing station facility in India not only requires a huge amount of investment but is also a time consuming process involving various clearances including security clearance, etc. Thus, the control of access to the cable landing stations make it possible for the supplier of the access facility to impose constraints which are in the nature of non-price factors affecting the competition.

The Authority noted that there is a need to enhance competition in the IPLC market in India and to promote competition certain other measures are required to be taken. Towards this end a separate consultation process has been initiated by the Authority with the issue of Consultation paper No. 5 of 2005.

Appendix 3 of Annexure A

Comparison of Indian IPLC tariffs with Benchmarks

i) Comparison with List Prices

1. The tariffs prevalent in India for IPLCs were compared with international benchmarks, and with the cost based estimates arrived at using cost data available in the separated accounts of VSNL. Through intensive interaction with domestic and international experts, the Authority examined various aspects of International lease prices for bandwidth including international benchmarking exercises, trends in the cost of cable construction for sub-marine network, market structures in various countries where prices are competitive, the regulatory environment governing the IPLC sector etc.

2. Owing to various factors, the international market for Bandwidth has steadily witnessed a deflationary spiral for more than five years. For purposes of comparing price trends across regions, STM-1 lease prices are said to be the most useful common denominator. In what follows, a comparison is made of the trends in the lease price of STM-1 across regions. It has been found that in the Trans-Atlantic region, the median STM-1 price had plummeted 70% in 2000, 65% in 2001, 26% each in 2002 and 2003 and 25% in 2004. In the Trans-Pacific region, the median price of an STM-1 in a representative route fell 56% in 2003 and 40% in 2002. In the Europe-Asia region, the median STM-1 circuit prices fell by approximately 42% in 2003, which is comparable to the decline witnessed in the previous year. Median STM-1 lease prices in Asia fell by 50-60% in 2003 (source: PRIMETRICA, INC.2004, Vol.I: submarine networks). The report of PRIMETRICA, 2005 has given more evidence of further decline in IPLC prices in the year 2004 across many regions and routes. As against this backdrop, lease price for STM-1 originating from India, has declined only by about 12.5% in terms of Compounded Annual Growth Rate (CAGR) (from India to USA) during the

period 2002 to 2005 (till June, 2005). The corresponding percentage decline in the lease price of DS-3 and E1 capacities originating from India was 12.5% and 15.7% (from India to USA) respectively. A comparison of the above with the Indian prices shows that the extent of decline in the lease price of international capacity of services in India is substantially less than the extent of decline witnessed in other parts of the world.

3. A review was also made of the trends in the underlying cost of providing the IPLC service and it was found that the cost of cable construction and other associated activities for submarine network have declined significantly mainly on account of technological advances and increased competition among equipment suppliers. For instance, upgrading cables has been found to be a cost effective way to stay competitive in the market. Technological advances, such as new modulation techniques, etc. allow older cables to boost their capacities beyond their initial design capacities. Thus, upgradations are a key aspect of cable system because they allow the operator to very cheaply add capacity instead of constructing a new cable. This is evident from the fact that the cost of construction of submarine cable in 2003 was a little over US\$ 1 billion as compared to US\$ 12 billion in 2001 (source: PRIMETRICA, INC.2004, Vol.I submarine networks). This is reflected not only in the lease prices of bandwidth but also in the IRU prices (Indefeasible Right of Use) in the international market.

ii) **Comparison with Actual Prices, i.e. List Prices Corrected for Discounts**

4. The Authority considered it necessary to compare the market prices (IPLC lease rental) in other countries with that of IPLC half circuit tariffs in India. This type of information is typically very difficult to source and usually only list price is available, which is often significantly

higher than the actual market price. For this purpose, TRAI conducted thorough research and information on market prices from international experts was obtained. Tables 1, 2 and 3 below give a comparison of IPLC lease rentals reported (by international experts) to have prevailed during December 2004 in select Asian countries with that of the tariffs prevalent for IPLC in India for the farthest destination i.e. the USA. Subsequent to this, reduction was offered by VSNL in June 2005, amounting to 10% in IPLC E1 tariff for India-USA from the then existing levels. Further reduction in IPLC tariff applicable in Pacific route on Tata-Indicom India-Singapore cable system was made by VSNL w.e.f. 15th August, 2005 (see Table No.4, 5, 6 and 7 given below). This reduction was also not considered to be adequate given the market conditions both in India and abroad.

Table No.1 - International comparison of IPLC (Half-Circuit) E1 price

Countries	Existing price (US\$ Thousands)
Japan-USA	23
South Korea-USA	23
Hong Kong-USA	24
Singapore-USA	33
India-USA	39

Table No.2 - International comparison of IPLC (Half-Circuit) DS-3 price

Countries	Existing price (US\$ Thousands)
Japan-USA	99
South Korea-USA	102
Hong Kong-USA	124
Singapore-USA	174
India-USA	656

Table No.3 - International comparison of IPLC (Half-Circuit) STM-1 price

Countries	Existing price (US\$ Thousands)
Japan-USA	191
South Korea-USA	229
Hong Kong-USA	269
Singapore-USA*	346
India-USA	1931

* E-1 tariffs of Singapore are high on account of their low tariffs of DS-3 and STM-1.

- Note:1) In other countries also, price multiples for DS-3 and STM-1 are much lower than in India.
 2) Comparison pertains to December, 2004.
 3) Maximum discount on volume offered by VSNL taken into account in arriving at India-USA price.

Source: For International Data *ERNST&YOUNG/* Telegeography

Table No.4 - Trends in IPLC (Half Circuit) Lease rentals in India – VSNL

(Exchange rates as prevalent during the relevant period have been applied)

Year	Annual Lease Rentals					
	E-1 (2 Mbps)		DS-3 (45 Mbps)		STM-1 (155 Mbps)	
	Rs. in lakhs	US \$ ('000)	Rs. in lakhs	US \$ ('000)	Rs. in lakhs	US \$ ('000)
2002*	26	55	471	990	1365	2,868
2003#	30.8	67	471	1,027	1365	2,974
1.1.04#	23.7	52	445	980	1235	2,720
1.4.04#	21.3	49	401	913	1112	2,533
2005(till May.05)#	20.2	46	361	820	1000	2,273
June,05#	18.2	41	307	698	800	1,818

Note: Discounts offered have not been taken into account, as they are dependent upon various criteria.

* Tariff for IPLC services irrespective of the destination.

Tariff applicable for Restorable Category and for the farthest destination from India

Table No.5 - Recently filed tariffs of VSNL for IPLC (Half Circuit)*

(India-US)	Rs. in lakhs	US \$ ('000)
E-1	11	25
DS-3	114	259
STM-1	330	750
(India-Singapore)		
E-1	10	22
DS-3	106	241
STM-1	310	705

Note :- These tariffs are applicable only on Tata Indicom India Singapore Cable system through the **Pacific route**.

* Applicable w.e.f. 15th August, 2005.

Table No.6 - Existing IPLC(Half Circuit) Tariff – Bharti Infotel

Capacity	Annual lease rental	
	Rs. In lakhs	US \$ ('000)
E-1	10	22
DS-3	176	399
STM-1	419	951

- Note:**
1. IPLC services of Bharti Infotel are for Non-Restorable category only (as reported).
 2. The above tariff is for farthest destination from India.
 3. Discounts offered have not been taken into account, as they are dependent upon various criteria.
 4. Exchange rate applied: US\$=Rs.44.

Table No.7 - Existing IPLC(Half Circuit) Tariff – Reliance Infocomm

Capacity	Annual lease rental	
	Rs. In lakhs	US \$ ('000)
E-1	(Full circuit tariff – Rs.70 lakhs)	(Full circuit tariff 159)
DS-3	427	972
STM-1	1238	2815

- Note:**
1. Above Tariff is applicable to all destinations.
 2. Discounts offered have not been taken into account.

5. The international benchmark analysis suggests that prices for Indian IPLCs are substantially higher than in comparative markets especially for higher bandwidth circuits. It is therefore evident that international bandwidth is not competitively priced in India when compared with many countries in Asia, some of which are India's competitors in global Business Processing Operations business. These prices are an integral part of the costs of broadband and thus should be specially considered in any strategy to remove constraints and boost broadband in India, in particular rural India. Price regulation becomes important in the above context, based on costs and reasonable profits.

6. The evidence indicated above shows that the actual Indian IPLC prices are high in comparison to international benchmarks, which suggests lack of effective competition in the market for IPLCs in India. This has been confirmed in a recent study conducted by an independent consulting agency (Gartner, Inc 2004, 'Market Focus: International Bandwidth Pricing Trends, Asia-Pacific, 2004'). The conclusion of the Gartner study in regard to international bandwidth markets in Asia-Pacific is reproduced as under:-

'The most-competitive markets for international bandwidth are Hong Kong, Singapore, Japan, Taiwan and South Korea. The least-competitive markets are Indonesia, India and Malaysia.'

Appendix 4 of Annexure A

Methodology/Calculations of IPLC pricing

There were a number of costing approaches available to the Authority, but it was decided to adopt that approach which would reduce market shock and ensure a smooth transition. This approach was Fully Allocated Historical Cost. The other options were:

- a. Weighed Average of Historical Cost of operators
- b. Full Replacement Cost of cable system
- c. Pricing based on recent acquisition costs in global markets
- d. Various versions of forward-looking costs, such as Forward Looking Long-Run Incremental Costs (FLLRIC). Most of the regulators internationally use this approach, leading to much lower tariffs.

2. It is noteworthy that the cost based tariffs determined by the Authority are not based on the extremely low levels of investments/cost of acquisitions of submarine cable systems by the ILDOs in India because this would imply a fraction of the prevailing investment per E1. Using these costs would result in a drastic reduction in the cost based price of IPLC and would go against the Authority's attempt to fix cost based ceiling tariffs without causing major shock to the market during the transition period.

3. One new entrant has provided data on the IRU lease rentals paid by them for leasing cable on a long term basis. Another new entrant has provided data on investments made in cable landing facility and IRU lease rentals paid by it. Based on these data, cost estimates were derived for E1 capacity. These estimates, also give a very low price as compared to the cost estimates based on historical cost in respect of investments in older cable systems of the incumbent. As stated earlier, the Authority decided to manage the transition smoothly without a major

shock to the market particularly to the incumbent and thus, the cost estimates of new entrants were not considered appropriate at this stage for fixing the ceiling tariff.

4. It is noted that VSNL has built a new cable system between Chennai and Singapore and a landing station at Chennai in the year 2004. This cable system is already in operations. The cost estimates of providing IPLC services through this new cable system set up by VSNL were derived based on the cost data provided by them. A range of capacity utilization was considered for arriving at cost estimates in terms of E1 capacity taking relatively low capacity utilization that is shown by the incumbent in its submissions to the Authority on this matter, and it was found by the Authority that these too show a cost based tariff much lower than that derived from VSNL's separated accounts for its older cable systems. For the reasons already mentioned above, the Authority is not relying at all on these relatively lower costs also, even in terms of a weighted average cost for VSNL, and thus a substantial buffer is provided in the cost based tariff.

5. It is further noted that the most detailed information is from the separated accounts of the incumbent, and the cost based tariff estimate has been derived after detailed examination and analysis of the data. As mentioned above, estimates based on the other data have also been made and they provide a useful background for our analysis and cost based tariffs derived from the separated accounts of the incumbent. The estimates based on alternative cost information are lower, and as a regulatory policy it would have been valid for the Authority to use such information for determining its tariff ceiling. The Authority has not used these alternative lower cost estimates at all in order to avoid major shocks to the system and to maintain a reasonable buffer in the specified ceiling.

6. The method used for calculating cost by the Authority based on VSNL's data is as follows:

- Cost data as given in Separated Accounts under Accounting Separation Regulation and Annual Accounts for year 2003-04 was used in respect of VSNL's IPLC activities. These were allocated in various costing categories
- The values of Opex, Capex and Number of E-1's considered were first arrived at, based on this data and the capacity reported to have been utilized by VSNL.
- The fully allocated cost per E-1 was arrived at by taking the results from the above information.
- The price ratio for capacities was then fixed as constant based on various factors and data examined during the consultation process (for details see Section-III).
- Then, an iterative process was used to ensure full cost recovery occurred to VSNL, using the inputs of the fully allocated cost per E-1 and the price ratio set. To illustrate, average cost per E-1 was derived for a given ratio of E-1, DS-3 and STM-1 circuits utilised by VSNL. To ensure full recovery at that price level per E-1, the higher capacities would be required to have a price ratio of 1:21:63, which is equivalent to the number of E-1 circuits in higher capacities. But, as explained above, price ratio for capacities was fixed as constant (1:8:23) based on various factors and data examined during the consultation process. Using an iterative method, it therefore had to be ensured that there would be full cost recovery given this pricing ratio. The price of Rs. 13 lakhs per E-1 circuit was determined using this method and was also tested in many different scenarios of capacity utilised and ratio of circuits utilised and it

was ensured that there is a comfortable margin for full cost recovery in all these scenarios.

- Furthermore, the total capacity utilized and the share of various capacities was varied (considering recent shifts in the market) to ensure that full cost recovery occurred in all instances.
- Price was then set based on various scenarios of market dynamics and iterations, again ensuring full cost recovery for VSNL.
- Further, the costs for various other operators and cable systems were analyzed for comparative purposes.
- The ceiling tariffs fixed are still higher than international benchmarks, leaving a scope for further reduction (see Table No. 8 below).

Table No 8 - International comparison of IPLC price (Asian Region) E-1 prices and price multiples

	(1)	(2)	(3)	(4)
Country	E 1 price US\$'000	DS-3 price US\$ Millions	STM-1 price US\$ Millions	Ratio of Columns (1):(2):(3)
Japan	23	0.10	0.2	1:4:8
South Korea	23	0.10	0.2	1:4:8
Hong Kong	24	0.12	0.3	1:5:11
Singapore*	33	0.17	0.3	1:5:11
India (ceiling fixed) @ Rs.	29.55	0.24	0.68	1:8:23

Source of International data: ERNST & YOUNG/Telegeography

Note :-US \$=Rs.44

* Singapore's E1 price is high inter-alia on account of low multiple for DS-3 and STM-1

7. Finally, the buffers allowed during the costing exercise, over and above the already allowed profit margin through return on capital (which

is the same value as claimed by VSNL as their WACC in Separated Accounts). These have been discussed in the main text of the Explanatory Memorandum. This discussion, therefore demonstrates that there has been complete transparency in the methodology, source of data used, and the analysis conducted by the Authority in setting the tariffs for IPLC.

Appendix 5 of Annexure A.

Countrywide Regulatory and Competitive environment governing IPLC

Country	Regulation
Australia	National and International leased lines were under a CPI-X% price cap control between 1992 and 2001. This was subsequently removed when the market for international leased lines was determined to be competitive.
China	All leased line rates set by the government.
Hong Kong	The carrier license regime for providing fixed telecom network services (FTNS) came into effect in April 2001, and imposed price ceilings on dominant operators. REACH was the only dominant operator. On March 2002, OFTA declared that REACH was no longer dominant and removed the price ceiling.
Ireland	ComReg currently believes that the domestic market for IPLCs is competitive and proposes to withdraw all obligations on Eircom, which currently include cost orientation, and non-discriminatory access to competitors.
Japan	Japan defines operators as Type I or Type II. Type I operators were subject to price ceilings, and any tariff changes needed to be approved by the regulator before implementation. All regulations were abolished in April 2004 as the regulator determined that the market for DPLCs and IPLCs was now competitive.
Singapore	In Singapore, dominant licensees have to file tariffs with the regulator for approval. Singtel is considered a dominant provider of IPLCs and therefore has to file any tariff amendments with the IDA, the IDA will assess as to whether these tariffs are inline with those observed in other jurisdictions, check whether they are discriminatory, and whether they are cost based. Furthermore, in 2001 the IDA ruled that alternative operators could co-locate their equipment at SingTel's landing station. In April 2002 this was amended to require SingTel to provide connection to alternative operators. The IDA's approach is to impose interconnection rights, then allowing the market to set the retail tariff.
South Korea	In the International leased line market there are 14 license holders – the market for IPLCs is considered competitive.
UK	Market considered competitive - no regulation.
USA	Market considered competitive - no regulation.

Source: ERNST & YOUNG