

In The Name of Allah , The Most Beneficent, The Most Merciful



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CONSULTATION PAPER ON BANDWIDTH TARIFFS

This Consultation Paper is an extension to the Consultation Paper issued by the Authority on April 17, 2006. The purpose of this paper is to seek response of stakeholders including the ISPs, Call Centres & LL/LDI operators on the questions raised in the Paper. The stakeholders are requested to send their comments on the Paper in writing within 15 days. This Paper does not convey in any sense a decision of the Authority in respect of the issues discussed in this Paper. Your response, queries and clarifications may be addressed to Ms. Fatima Khushnud, Assistant Director (fatima@pta.gov.pk) and Mr. Aadil Umar Khalil, Assistant Director (aadil@pta.gov.pk) PTA Building, F-5/1 Islamabad Fax: 2878133

INTRODUCTION

The Pakistan Telecommunication (Reorganization) Act, 1996:

1. The Pakistan Telecommunication Authority (The Authority) is responsible for the regulation of the telecom sector, through following sections of the Telecommunication (Reorganization) Act, 1996 (Amended in 2006):

Sections 4(c) and 6(e)

2. The Authority is required to promote and protect the interest of users to telecommunication services as well as to encourage fair competition in the telecommunication sector.

Section 4(d)

3. The Authority shall promote the availability of wide range of high quality, efficient, cost effective and competitive telecommunication services throughout Pakistan.

Section 26

4. The level of tariffs for telecommunication services including basic telephone service shall be regulated by the Authority in accordance with the following general principles:

(a) The regulations shall be made with a view to achieving the greatest possible degree of pricing flexibility and stability compatible with safeguarding and protecting the interest of consumers.

- (b) The regulations shall apply to comparable providers or users of any regulated telecommunication service.
- (c) Tariffs shall be at a level, which provides a reasonable rate of return on investments taking into account the cost of operation.

Broadband Policy, 2004

5. The Broadband Policy asserts:
- (a) Spreading of an affordable, 'always on', broadband high speed internet service in Pakistan in the corporate / commercial and residential sectors across Pakistan
 - (b) Encourage the entry and growth of new service providers while stimulating growth of existing ones at the same time.
 - (c) Encourage private sector investment in local content and broadband services.

6. The policy has defined a roadmap to proliferate broadband in the country and in section 1.6 has set the target of 500,000 broadband users within five years. The broadband policy has suggested some measures (such as hosting of content in Pakistan, reduction in prices of domestic as well as international IP bandwidth and establishment of national and regional peering points), which could help in the promotion of broadband growth.

Telecom Rules, 2000

Rule 17(1)

An operator shall be presumed to have significant market power when it has a share of more than 25% of a particular telecommunication market. The relevant market for these purposes shall be based on sectoral revenues.

7. It is pertinent to mention that the Authority vide its determination dated August 25, 2004 has already declared Pakistan Telecommunication Company Limited (PTCL) as SMP in the leased line market as per Pakistan Telecommunication Rules 2000.

Rule 16(1)

8. As per section 16 (1) of Pakistan Telecommunication Rules 2000 "*subject to these rules, a relevant operator shall be entitled to fix different tariffs and terms and conditions in respect of*

interconnection services for different categories of operator and different categories of interconnection services, where those differences can be objectively justified on the basis of the costs incurred in providing such interconnection services and which are approved by the Authority from time to time”.

Fixed-Line Tariff Regulations, 2004

9. In continuation to the above, the Fixed-line Tariff Regulations 2004 states:

Section 11(1)

The tariffs for leased line services of an operator, who is determined to have SMP status in the leased line market by the Authority, shall be on cost. Until the determination of cost, the Authority may take into account the international benchmarks of comparable countries while setting/ approving tariffs of leased lines.

(2) The operator may set the tariffs of leased lines below the approved tariffs provided they shall inform the Authority about their proposed tariffs thirty (30) days before the applicability of new prices.

THE PURPOSE

10. The purpose of this Consultation Paper is to identify, review and remove the anomalies that exist in the tariff structure of domestic as well as international bandwidth of PTCL. The bandwidth tariffs offered by different countries have also been analyzed in this Paper.

11. The issues raised in the Paper require feedback from the stakeholders to assist the Authority in resolving these issues.

BRIEF OVERVIEW OF LEASED LINES

12. In today's world, the competitiveness of any economy heavily relies on the availability of advanced telecommunication infrastructure. Leased lines form the critical building blocks used by service providers as the basic infrastructure upon which their services are built. The availability of leased lines, thus, can be considered as the foundation of new economy. With the expansion of the internet and data related services, leased lines are used by internet service providers to build backbone networks thus becoming crucial for the availability and affordability of the networks.

13. International Telecommunications Union (ITU) has defined Leased Lines or Leased Circuits as follows: “Leased circuits refer to a two-way link for the exclusive use of a subscriber regardless of the way it is used by the subscriber (*e.g., switched subscriber or non-switched, or voice or data*). Leased circuits can be either national (DPLC) or international (IPLC) in scope.

INTERNATIONAL PRIVATE LEASED CIRCUITS (IPLC)

14. IPLC forms the basic building block for international communications, providing raw bandwidth for global communications networks. These point-to-point private line services are dedicated to the customer’s exclusive use, reliable digital transmission, seamlessly integrating data, voice and imaging services. A wide variety of applications are supported by IPLC including internet access, LAN-to-LAN connectivity, telemedicine, video and teleconferencing.

15. IPLC provides businesses with a global reach to serve their international requirements by an extensive range of bandwidth options.

16. IPLC that offers global connectivity through submarine cable or Satellite 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 services. Amongst other crucial inputs, the cost of IPLC forms a substantial portion of the total cost of the users of IPLC bandwidth. The competitiveness of these industries in the global market to a large extent is dependent on the prices they pay for IPLC. In addition, Internet Service Providers (ISP) also use IPLC for their upstream connectivity abroad and high cost of IPLCs get reflected in the tariff which has an adverse effect on the growth of broadband in the country.

INTERNATIONAL SCENARIO

17. Different countries have adopted different approaches concerning regulation of IPLC. In order to examine regulatory practices, case studies of few countries have been analyzed. It has been observed that the countries, which are now considered competitive are

regulating IPLC tariffs through Price-Cap / ceilings. A brief synopsis of the prevailing regulatory regime in few countries is discussed in the following paragraphs.

India

18. In India, the international long distance segment was liberalized in 2002. In 2005, Telecom Regulatory Authority of India (TRAI) initiated consultation process on Domestic as well as International Leased Circuits. Regarding international private leased circuits, TRAI observed that only VSNL (the incumbent operator) had landing station facilities in Mumbai, Cochin and Chennai. However, the other two operators Bharti Info Tel and Reliance Infocomm were in the process of establishing cable landing facilities.

19. It may be noted that TRAI has regulated IPLC tariffs , irrespective of the fact that three new cable operators are expected to commence their services in 2006-07. The same was also highlighted in Gartner Report on International Bandwidth Price Trends Asia/Pacific 2004. As per Gartner's forecast, IPLC price war will occur after the commissioning of Tata Indicom, Chennai Singapore (TICS) cable, the FLAG Falcon Cable and SMW-4 Cable.

20. Moreover, recently VSNL (TATA owned Videsh Sanchar Nigam Ltd) one of the dominant operators in International long distance market of India has further reduced its IPLC prices by 25% and internet lease line up to 40% effective from September 1, 2006.

Japan & South Korea

21. In Japan, the dominant operator was required to take prior approval of their tariffs and the ministry was regulating IPLC tariffs in the form of price ceilings. In April 2004, all the regulations were abolished as the DPLC and IPLC markets were considered competitive. In South Korea alone, there are 14 broadband service providers.

22. The following table presents the number of international bandwidth providers in different countries:

Table 1

Location	Number of Bandwidth Providers
London	33
USA-NY	32
Germany	32
France	24
Pakistan	2
India	4
Bangladesh	1

Singapore

23. In Singapore, the IDA has published the Code of Practice for Competition through which a dominant licensee is required to take prior approval of tariffs. Singtel (incumbent operator) has been declared as dominant operator in Singapore and has regularly filed tariffs with IDA for approval. In April 12, 2005, the IDA partially exempted Singtel from dominant license obligations for provision of International IP transit, Leased Satellite Bandwidth, Satellite IPLC and VSAT. For these services, Singtel was no longer required to file tariffs and was given the flexibility in packaging and bundling different services. In IDA's opinion, the above-mentioned markets are fully competitive and Singtel did not have the significant market power to impede competition. However, for terrestrial IPLC and backhaul, Singtel was still required to file its tariffs for prior approval.

Hong Kong

24. In April 2001, OFTA (Office of the Telecommunications Authority) imposed ceilings on dominant operators. Reach was declared the dominant operator in international private leased circuit. However, in March 2002, OFTA declared that Reach was no longer dominant and removed the price ceilings.

25. Lastly in Taiwan & Vietnam, the regulator / ministry is regulating IPLC tariffs in the form of price ceilings.

IPLC PROVIDERS IN PAKISTAN

26. At present there are two market players i.e. PTCL and TWA that are offering IPLC services in Pakistan.

PTCL's IPLC

27. PTCL is offering international bandwidth through SMW-3 (South East Asia Middle East and Western Europe) SMW-4 and Fiber Optic Link around the Globe (FLAG). Prior to the commencement of operations by TWA, PTCL has enjoyed the market monopoly over the provision of international and domestic leased lines. The reduction in the international leased line charges since 1998 is shown in the following table.

Table 2
Reduction in IPLC Tariff for ISPs
 (2 MB Half Circuit charges)

Fig in USD per month

Date of Tariff Review	Bandwidth charges	Reduction (%)
01-07-1998	56,333	-
01-07-1999	47,883	15%
01-01-2000	32,325	32%
01-05-2000	20,000	38%
01-09-2000	15,000	25%
June 2002	6,000	60%
Aug 2004	3,950	34%
July 2006	3,000	24%

28. PTCL has reduced its IPLC tariffs effective from July 01, 2006. The summary of changes in IPLC tariffs is illustrated below:

Table 3
IPLC Tariffs (Half Circuits) offered through SMW-3 & SMW-4

Fig in USD per month

Capacity	Data Services*				Voice Service**
	ISPs		Call Centers		LDI
	<i>Aug 04 – Jun 06</i>	<i>Eff Jul 06</i>	<i>Aug 04 – Jun 06</i>	<i>Eff Jul 06</i>	<i>Eff May 05</i>
E1 (2Mbps)	3,950	3,000	3,500	2,400	2,852
DS3 (45 Mbps)	67,150	48,000	57,150	38,500	-
STM1 (155 Mbps)	184,950	112,500	-	90,000	-

* Distance-Less

** Up to landing station

TWA IPLC

29. Transworld Associates (a joint venture of Saif Group and Orascom) is the first privately owned Submarine Fiber Optic Cable between Karachi - Pakistan, Muscat - Oman, and Fujairah - UAE. The cable spans over 1,300 kms and is providing end-to-end direct broadband, high-speed connectivity to telecom operators, internet service providers, and corporate customers in Pakistan only up to the landing station.

NEED FOR REGULATION

30. Keeping in view the other sectoral priorities, PTA has been observing forbearance regarding regulation of IPLC tariffs. PTCL being the bulk provider of bandwidth in Pakistan is likely to maintain its dominance in the market for the next few years. During the past few years, there has been a major decline in the cost of building submarine cables. In

the Trans-Atlantic region, the STM-1 prices decreased by 70% in FY00, 65% in FY01, 26% each in FY02 and FY03 and 25% in 2004. In the Trans-Pacific region, the price of STM-1 fell by 56% in FY03 and 40% in FY02. In the Europe-Asia region, the STM-1 dropped by 42% in FY03. The STM-1 prices in Asian region dropped by 50-60% in FY03.* Keeping in view the worldwide trends of tariffs, PTA has decided to review IPLC tariffs of PTCL in order to bring them in line with the international benchmarks and to promote proliferation of ICT business that is crucially dependent on international bandwidth including IPLC.

Regulatory provision concerning bandwidth pricing in Pakistan

31. As indicated in the foregoing paragraphs, in the absence of cost, the fixed-line tariff regulation 2004 empowers the Authority to use benchmarks while fixing ceiling of IPLC. In this regard, the regulation 11(1) states *“the tariffs for leased line services of an operator, who is determined to have SMP status in the leased line market by the Authority shall be based on cost. Until the determination of cost, the Authority may take into account the international benchmarks of comparable countries while setting/ approving tariffs of leased lines.”*

32. In addition to this, the Authority is in the process of awarding consultancy on cost based fixed and mobile interconnection charges, whereby the consultant would also determine cost of domestic as well as international private leased circuit. Until the determination of cost, it becomes imperative upon PTA to determine IPLC tariffs based on international benchmarks.

IPLC TARIFFS FOR OTHER COUNTRIES

33. The IPLC bandwidth tariffs prevailing in the regional countries are tabulated as below. It may be noted that the IPLC tariffs for most of the countries were valid for 2004.

Table 4

Fig in USD per month

Capacity	India	B.Desh	Japan	China	Hong Kong	Malaysia	Singapore	South Korea
E-1	2,462	2,750	1,916	2,300	2,000	1,408	2,750	1,196
DS-3	20,000	33,000	8,333	11,500	10,000	16,469	14,166	8,333
STM-1	56,666	82,500	16,666	27,416	25,000	40,737	25,000	16,666
Ratio	1:8:23	1:12:30	1:4:8	1:5:12	1:5:11	1:12:29	1:5:11	1:4:8

* These reductions have been quoted from TRAI consultation Paper

34. In China, all the operators are government owned and thus their IPLC tariffs are fixed by the government. In Malaysia, the incumbent operator (Telecom Malaysia) is offering restorable and non-restorable IPLC via eight different routes. The tariffs of these routes are also lower than those of Pakistan.

35. In Bangladesh, the tariffs for Middle East segment have been included for IPLC services. For E-1 (2Mbps) capacity, the tariffs range from US\$ 2,400 to US\$ 2,900 for South East Asia and Western Europe Routes. In addition, BTTB (incumbent operator) is also offering discounted IPLC tariffs (for E-1 capacity) to software exporters, BPOs and call centers which ranges from US \$ 1,800 to US \$ 2,175 depending upon the distance. The details of IPLC tariffs in Bangladesh are tabulated as under:

Table 5
IPLC Tariffs

Fig in USD per month

<i>Route*</i>	<i>Software, BPO, CC</i>	<i>Others</i>
SEA (Singapore, Malaysia, Thailand, India & Srilanka)	1,800	2,400
ME (Pakistan, UAE, KSA, Egypt)	2,063	2,750
WE & WA (Italy, France, Tunisia, Algeria)	2,175	2,900

*The prices of IPLC for E-1 capacity are applicable through SMW-4 from Cox's Bazar to cable landing station.

36. Although TRAI has fixed IPLC tariffs at US\$2,462 per E-1, the end-to-end tariffs in India are still three to four times higher than Philippines. Moreover, recently VSNL (TATA owned Videsh Sanchar Nigam Ltd) one of the dominant operators in International long distance market of India has further reduced its IPLC prices by 25% and internet lease line upto 40% effective from September 1, 2006.

37. It is also pertinent to mention that one of the licensed operators has provided information to the Authority, which shows that T-Systems (UK) is offering E -1 capacity for half circuit IPLC for United Kingdom through SMW-3 for US\$1,026 per month. The same operator has also confirmed that the rates offered by T-Systems are equally applicable for Data and Voice.

38. As per Gartner Report 2004, International Bandwidth Prices will continue to decline by 20% – 25% annually during the next three years i.e. from 2005 to2007. Moreover, the

monthly recurring charge for high traffic competitive routes that connect open markets such as Singapore, Hong Kong and Japan turns out to be approximately US\$ 1,000 for an E-1 IPLC. When the cost per Mbps is calculated for higher speed links such as DS-3¹, it is as low as US\$ 200 per month. In exceptional deals the prices can be below US \$ 100 Mbps.

Do you think that the list of countries should be further expanded for benchmarking purposes? The stakeholders can also send tariffs of other countries that are authentic and verifiable.

Price Multiples of IPLC

39. Analysis of global multiples reveals that the price differential of E1 to DS3 ranges between 4-7 times, and that of E1 to STM is between 8-17 times. This is illustrated in the following Table.

Table 6

	E1 : DS3 : STM1
High	1:7:17
Low	1:4:8

Source: Telegeography

40. Japan & South Korea are offering 1:4:8 while Singapore has a differential of 1:5:11. Malaysia, which is considered as a least-competitive market by Gartner, is offering price multiples at 1:12:29 whereas Bangladesh is offering price multiples at 1:12:30.

Should IPLC be priced up to the landing stations in Pakistan? And DPLC charges for local access should be separated from IPLC tariffs?

Do you agree with the level of tariffs in terms of E-1 capacity as well as price multiples for higher capacities?

IPLC for Licensed Operators

41. In developed economies, there is no differentiation between voice and data services and the same has also been decided by TRAI in its recent tariff order on IPLC bandwidth. Currently PTCL is offering uniform IPLC tariffs for Karachi, Lahore and Islamabad for

¹ Digital Signature Three

data/ISP licenses. On the contrary, the voice services are offered up to the landing station only and the operators have to pay the domestic leg in order to connect in cities other than Karachi.

Should IPLC tariffs for voice and data services be charged separately? Can different tariffs for IPLC be objectively justified on the basis of costs incurred in providing IPLC for voice and data services?

INTERNET PROTOCOL (IP)

42. IP bandwidth or commonly known as internet bandwidth is a facility where bandwidth providers offer capacities to multiple users. Bandwidth is the amount of data that can be transferred over the network in a fixed amount of time. For digital devices, the bandwidth is usually expressed in bits per second (bps) or bytes per second. For analog devices, the bandwidth is expressed in cycles per second, or Hertz (Hz). In technical terms, it is usually expressed in bits per second (bps) or in higher units like Mbps (millions of bits per second). E1 is around 2Mbps and E3 is around 34Mbps Internet bandwidth provided by OPERATORS in Pakistan is coming from a giant pool of bandwidth coming from different worldwide bandwidth providers. IP bandwidth is not a point to point circuit between two parties like IPLC. The quality parameters on IP bandwidth are dependent on the number of hops between two parties. Operators usually do not control the Quality of Service (QoS). Hence, it is difficult to manage the bandwidth on the overall network. Another important feature of IP bandwidth is that it is offered on a distance less basis as the traffic flows in multiple directions to reach multiple destinations.

IP Bandwidth for Data Services

43. PTCL is also offering IP bandwidth to ISPs, DNOPs and Call Centres on Committed Information Rate (CIR) basis. The tariffs for IP bandwidth offered by PTCL are summarized below:

Table 7

Fig in USD per month

Capacity	Prices for ISPs/DNOPs/Call Centers
E1 (2Mbps)	1,600
DS3 (45 Mbps)	25,000
STM1 (155 Mbps)	60,000

44. For cities other than Karachi, Lahore and Islamabad, the Local Media charges are also applicable ranging from Rs.1,750 to Rs.44,100 (depending upon the distance and capacities).

45. Review of PTCL's IP tariffs depicts that the price differential charged by PTCL prior to the issuance of the Broadband Policy for E-1: DS-3: STM-1 was 1:16:31 but despite reduction in IP bandwidth tariffs, PTCL increased the differential for E1 to STM1 by 7 times in 2005 as illustrated in the table given below:

Table 8
Data Services

Fig in USD per month

Capacity	Before Broadband Policy	After Broadband Policy	Present Scenario
			<i>Eff July 06</i>
E-1	3,950	2,000	1,600
DS-3	61,913	31,348	25,000
STM-1	123,826	76,000	60,000
Price Multiples	1:16:31	1:16:38	1:16:38

Should price multiples for IP tariffs be kept at the same level as they were before the issuance of the Broadband Policy? Is there a need for further revision in IP Tariffs? If yes, then please provide authentic and verifiable information.

IP Bandwidth Tariffs for Voice Services

46. PTCL is offering following IP bandwidth tariffs to **LDI operators**:

Table 9
Voice Services

Fig in USD per month

Capacity	IP tariff for LDI (Voice Services)		
	KHI	LHR	ISB
E1	3,500	9,373	10,842
DS3	42,000	114,743	132,929
STM1	133,000	387,602	451,252

47. It is pertinent to mention that PTCL has priced IP tariffs at US\$1,600 (distance independent) for data services, whereas the tariffs for voice services range from \$3,500 – \$10,842 (depending on the distance). Since IP for data service is distance independent,

therefore it can be argued that the tariffs applicable for IP for voice in Karachi should be approximately the same as IP tariffs for data service.

Table 10
Price Multiples for IP (Voice & Data Services)

	Voice Services			Data Services
	Karachi	Lahore	Islamabad	
Price Multiples	1:12:38	1:12:41	1:12:42	1:16:38

48. As evident from above table, there is inconsistency between the price multiples of voice and data services. Moreover the price multiples for STM-1 capacity for IP for voice are also inconsistent when compared with above tabulated cities. It is important to note here that in developed as well as in many developing countries IP tariffs are not segregated on the basis of voice and data.

49. The wide gap between the tariffs offered for voice and data services needs to be narrowed down in order to rationalize IP tariffs and remove the disparity accordingly. The above-mentioned tariffs appear to be discriminatory in nature and require rationalization.

Whether PTCL should offer same tariffs for Voice and Data Services? Can different tariffs for IP services be objectively justified on the basis of costs incurred in providing IP for voice and data services?

50. PTCL has informed during the previously held consultative meetings that it is providing clean and unshared IP bandwidth, whereas some of the operators argued that PTCL is offering shared IP bandwidth. Furthermore, they also provided tariffs of Shared IP bandwidth prevailing in other countries and insisted that PTCL should match their IP tariffs in order to bring them in line with the international trends.

Should PTCL offer IP bandwidth on shared basis as offered in other countries such as India?

DOMESTIC PRIVATE LEASED CIRCUIT (DPLC)

51. DPLCs are dedicated, fixed, point-to-point digital transmission channels between two points within a country. DPLCs can carry data, digitized voice, video or any other form of digital transmission at bandwidths ranging from 64kbps to 155 Mbps.

DPLC Bandwidth Tariffs for Data & Voice Services

52. PTCL has segmented/ bifurcated their DPLC tariffs on the basis of voice and data services. However, recent reduction made by PTCL in DPLC charges has further increased the disparity between the tariffs offered to ISPs and LDI operators. The tariffs for voice services covered in PTCL's RIO, were valid till June 30, 2006 and are now due for review. It may be noted that during the previous consultation on bandwidth tariffs, the local loop and LDI operators also requested the Authority to rationalize voice related DPLC tariffs and therefore, the Authority intends to address them in this process.

53. The DPLC tariffs for **voice services** are given below:

Table 11
Voice Services

Capacity	Rs. per Km per Annum			
	0-100 km <i>If exceeds 25 km</i>	0-200 km If exceeds 100 km	0-600 km If exceeds 200 km	0 - > 600 km If exceeds 600 km
E-1 (2Mbps)	4,000	3,318	3,047	2,800
E-3 (34Mbps)	46,464	39,816	36,564	33,600
STM-1 (155Mbps)	162,624	139,356	127,974	117,600

54. The DPLC tariffs (**data**) for ISPs prior to the recent reduction by PTCL (Eff. July 06) are given in Table 12:

Table 12
Data Services

Speed	Rs. per Km per Annum			
	0-200 Kms	200-600 Kms	600-1000	Above 1,000 Kms
2 Mbps	2,333	2,104	1,488	1,400
45 Mbps	44,327	39,976	28,272	26,600
155 Mbps	97,986	88,368	62,496	58,800

55. As evident from the above table, significant disparity prevails between tariffs for data and voice services. However, after recent reduction in the DPLC tariffs for **data** services (Eff. from July 01, 06) the disparity has further aggravated the situation.

Table 13
Data Services

Speed	Rs. per Km per Annum			
	0-200 Km	200-600 Km	600-1,000 Km	Above 1,000 Km
Eff. Jul 06				
2 Mbps	1,750	1,578	1,116	1,050
45 Mbps	33,246	29,982	21,204	19,950
155 Mbps	73,490	66,275	46,872	44,100

Should DPLC tariffs for voice and data services be charged separately? Can different tariffs for DPLC be objectively justified on the basis of costs incurred in providing DPLC for voice and data services?

All the stakeholders are also encouraged to offer additional comments pertaining to the subject of this consultation paper, where necessary.

SCHEDULE OF EVENTS

56. This consultation process is expected to follow the following schedule of events:

Events	Dates
<i>Issuance of Consultation Paper</i>	Sep 04, 2006
<i>Receipt of Comments from stakeholders</i>	Sep 18, 2006
<i>Pre – Hearing</i>	Sep 25, 2006
<i>Final Hearing</i>	Oct. 02, 2006
<i>Issuance of Determination</i>	Oct. 06, 2006