Sprint

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February 12, 1998

BY HAND DELIVERY

Ms. Blanca S. Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Resolution of Petition to Establish Non Discriminatory Rates, Terms, and Conditions for Resale Involving Local Exchange Companies and Alternative Local Exchange Companies pursuant to Section 364.161, Florida Status Docket No. 961230-TP

Dear Ms. Bayo:

Enclosed for filing in the above-styled docket are the original and 15 copies of the pre filed direct testimony of Randy G. Farrar, Kent W. Dickerson, & John D. Quackenbush also, the original non-confidential portion of Sprint-Florida, Inc.'s cost studies. The confidential portion of the cost studies was filed on this date with the Division of Records and Reporting under a separate confidential cover.

Please acknowledge receipt and filing of the above by stamping the duplicate copy of this letter and returning the same to this writer.

Thank you for your assistance in this matter.

Sincerely,

Charles J. Rehwinkel /RKH

Charles J. Rehwinkel

Enclosures

cc: All parties of record (w/o encl.)

CERTIFICATE OF SERVICE
DOCKET NO. 961230-TP

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by Hand Delivery (*) or U.S. Mail this 12th day of February, 1998 to the following:

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ORIGINAL

SPRINT-FLORIDA, INC.
DOCKET NO. ~~961230~~-TP
FILED: February 11, 1998

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY

OF

RANDY G. FARRAR

I. Introduction

Q. Please state your name, occupation, and business address.
A. My name is Randy G. Farrar. I am presently employed as Senior Manager - Network Costing for Sprint/United Management Company. My business address is 2330 Shawnee Mission Parkway, Westwood, Kansas, 66205.

Q. What is your educational background?
A. I received a Bachelor of Arts degree from The Ohio State University, Columbus, Ohio, in June 1976 with a major in history. Simultaneously, I completed a major program in economics. Subsequently, I received a Master of Business Administration degree, with an emphasis on market research, in March 1978, also from The Ohio State University.

Q. What is your work experience?
A. From 1978 to 1983 I was employed by the Public Utilities Commission of Ohio. My positions were Financial Analyst

(1978 - 1980) and Senior Financial Analyst (1980-1983). My duties included the preparation of Staff Reports of Investigation concerning rate of return and cost of capital. I also designed rate structures, evaluated construction works in progress, measured productivity, evaluated treatment of canceled plant, and performed financial analyses, for electric, gas, telephone, and water utilities. I presented written and oral testimony on behalf of the Commission Staff in over twenty rate cases.

I have worked for Sprint Corporation or one of its predecessor companies since 1983. From 1983 to 1986 I was Manager - Rate of Return. I presented written and oral testimony before state public utilities commissions in Iowa, Nebraska, South Carolina, and Oregon.

From 1986 to 1987 I was Manager - Local Exchange Pricing. I investigated alternate forms of pricing and rate design, including usage sensitive rates, extended area service alternatives, intraLATA toll pricing, and lifeline rates.

Since 1987, I have held various positions dealing with telecommunications cost issues. From 1987 to 1992 I was

Manager - Local Exchange Costing. In 1992 I was promoted to Manager - Network Costing and Pricing. In 1997 I was promoted to my present position. I perform financial analyses for various business cases, which analyze the profitability of entering new markets and expanding existing markets, including Custom Calling, Centrex, CLASS and Advanced Intelligent Network features, CPE products, Public Telephone and COCOT, and intraLATA toll. I am an instructor for numerous training sessions for subsidiary companies, designed to support corporate policy on pricing and costing theory, and to educate and support the use of various costing models. I was a member of the United States Telephone Association's New Services and Technologies Issues Subcommittee from 1989 to 1992, and the Economic Analysis Training Work Group from 1994 to 1995. Since 1995, I have presented written and/or oral testimony before the Illinois Commerce Commission, the Pennsylvania Public Utility Commission, the New Jersey Board of Public Utilities, the Florida Public Service Commission, and the Nevada Public Service Commission on the avoided costs of resold services, the cost of unbundled network elements, access reform, and universal service issues.

Q. What is the purpose of your testimony?

A. I am testifying on behalf of Sprint - Florida, Inc., hereafter referred to as Sprint. My testimony will discuss Total Service Long Run Incremental Cost (TSLRIC) concepts for the following unbundled network elements.

1. Local Switching
2. Tandem Switching
3. Transport
4. SS7 Switching
5. Operator / Directory Assistance / Call Related Database Services

Q. Is Sprint's perspective on pricing and costing unique?

A. Yes, it is. Sprint's perspective on the pricing and costing of unbundled network elements is neither solely one of a local telephone company, nor solely one of an interexchange carrier. Rather, Sprint's perspective represents an accommodation of interests similar to those that the Florida Public Service Commission must balance in this docket. Sprint provides traditional local exchange service, long distance service, and PCS/wireless communication. In addition, Sprint Communications Company, L.P. will compete as a competitive local exchange carrier (CLEC).

II. LOCAL SWITCHING

Q. What does the FCC Order state about the rates for unbundled local switching?

A. The FCC Order states,

> We believe that a combination of a flat-rated charge for line ports, which are dedicated to a single new entrant, and either a flat-rate or per-minute usage charge for the switching matrix and for trunk ports, which constitute shared facilities, best reflects the way costs for unbundled switching are incurred and is therefore reasonable. (Paragraph 810).

Q. How does Sprint propose to price unbundled switching?

A. Sprint agrees with the basic logic of the FCC. Local switching shall be priced as three separate components; a flat-rated port, usage sensitive switching, and flat-rated features.

A. Local Switching (Usage)

Q. Please describe the local switching TSLRIC methodology.

A. The TSLRIC methodology for local switching consists of an

Excel worksheet model, SWIM (Switching Model). SWIM takes total investment derived from the Bellcore SCIS (Switching Cost Information System) model, and combines it with actual usage information to derive TSLRIC results for each host office complex.

Q. Please describe the SCIS model.

A. The SCIS model is a widely used industry model for determining switching investment. Arthur Andersen conducted a review of SCIS on behalf of the FCC in 1993. Their report concluded,

> After conducting an extensive review, Arthur Andersen has concluded that the SCIS model is fundamentally sound and provides reasonable estimates of the switching system investment attributable to service and feature usage of the switch.

Q. Have any external adjustments been made to the SCIS information?

A. Yes. Nortel provides Sprint two different discounts on switching equipment, a "growth" discount on existing switches, and a "new" discount for entirely new switches. (The actual level of discounts is proprietary to Nortel.) Sprint has traditionally used the lower "growth" discount in its SCIS modeling. Since a TSLRIC standard must be as forward-looking as possible, Sprint has modified its SCIS information to reflect the larger "new" discount. The result is significantly lower investment, and lower switching costs.

Q. Please describe the SWIM model.

A. The SWIM TSLRIC methodology for switching consists of six basic steps. The calculations for one particular switch, West Kissimmee, Florida, titled "Local Switching Calculations", can be found in the Pricing and Costing Studies, Section E, Local Switching / Features. This process is repeated for each switch studied.

The first step is to determine the total forward-looking switching investment using the SCIS model. Individual Nortel DMS-100/200 switches in Florida were modeled, assuming a minimum Supernode-60 processor capability. Supernode-60 is the minimum processor size currently supported by Nortel. Although earlier vintage processors may be currently in use, they represent obsolete technology and do not represent forward-looking technology as required by TSLRIC standards. The DMS-100/200 switch represents the predominant technology deployed by Sprint in Florida.

This investment is segregated into six investment categories. These are,

[redacted]

[redacted]

This investment information is summarized on Page 1 of "Common Switching Calculations."

The SCIS model considers only the hardware investment in the central office. One-time software investment required to provide basic switching must also be included. This proprietary information was provided to Sprint by Nortel.

The second step is to accumulate the demand data needed to complete the study. Traffic studies are used to gather MOU and call set-up data. This information is shown on Page 1 of "Common Switching Calculations."

The third step is to determine the number of processor milliseconds required to process each type of call. This information, shown on Page 2 of "Common Switching Calculations", is proprietary to Nortel.

The fourth step is to derive monthly expense per investment category by multiplying the investment by the appropriate forward-looking annual charge factor. This is shown on Page 3 of "Common Switching Calculations."

The fifth step is to calculate the cost per call set-up per call type. This is done by determining the total processor cost per call type, and dividing by the appropriate MOU. This calculation is shown on Page 4 of "Common Switching Calculations."

The sixth step is to calculate the cost per MOU per call type. This is done by determining the total CCS investment by call type, and dividing by the appropriate MOU. This calculation is shown on Page 5 of "Common Switching Calculations." The TSLRIC results (excluding the common cost factor) for each central office in Florida are summarized in "Local Switching Results", found in the Pricing and Costing Studies, Section E, Local Switching / Features.

Note that SWIM does not include common costs.

Q. How and why does SWIM segregate costs?

A. The SWIM TSLRIC switching results are segregated into two distinct cost zones:

1. Host offices, and remote switches within the host office's exchange.
2. Remote offices outside of the host office's exchange.

Switching costs are provided on an exchange basis. Each exchange reflects the cost characteristics of the switch providing service to that exchange. Host switches generally require less investment per line than remotes due to economies of scale. In addition, there are additional costs associated with remote switches, including processor, power, and umbilical investment. Thus these two cost zones reflect the cost differences between exchanges served by a host, and exchanges served solely by a remote.

Q. How has Sprint developed proposed rates for local switching?

A. Sprint supports a usage charge per originating and terminating MOU. However, Sprint is not currently able to bill originating and terminating MOU on a switching port. As an interim, Sprint proposes to bill flat-rate per port surrogate rates based on average MOU in Florida, deaveraged into six rate bands.

Q. Please describe the rate band development.

A. This process consists of six basic steps. First, the individual cost components derived by SWIM are used to develop a composite cost per local switching MOU for each office. An example of this process for the West Kissimmee office is shown on the "Cost Development" page included in the Pricing and Costing Studies, Section E, Local Switching / Features. This process is repeated for every central office.

The second step is to sort each office from low to high cost, as shown in the "Local Switching Rates Bands" page included in the Pricing and Costing Studies, Section E, Local Switching / Features, Columns A and G. Offices are then grouped into bands such that the variance in usage costs for most offices and their rate band average is less than 10% (see Column O).

The third step is to aggregate the total MOU for each band (see Column K).

The fourth step is to aggregate the total costs of each band (see Column T). This aggregate includes MOU cost and the fixed port cost (described in Section II.B., below).

The fifth and final step is to add the common cost factor (see Column V). Again, this column includes MOU cost and fixed port cost.

B. SWITCHING PORT

Q. Please describe the costing methodology for switching ports.

A. The total line termination investment for each office is multiplied by the annual charge factor, divided by twelve, and divided by the number of lines per office. The calculations for one particular switch, West Kissimmee, Florida, titled "Local Switching Calculations", can be found in the Pricing and Costing Studies, Section E, Local Switching / Features. This process is repeated for each switch studied.

C. FEATURES

Q. Please describe the *TSLRIC* methodology for features.

A. The TSLRIC methodology is illustrated on the "Centrex Features", "CLASS Features", and "Custom Calling

Features" pages included in the Pricing and Costing Studies, Section E, Local Switching / Features. The TSLRIC methodology consists of five steps. First, the SCIS model is used to determine the cost of the most prevalent features. In total, nineteen Centrex features, nine CLASS features, and eleven Custom Calling Features were studied. Actual usage and demand information for Florida was used in the SCIS model.

Second, since the SCIS model only considers hardware costs, software costs must be added.

Third, the annual charge factor is applied to derive an annual cost.

Fourth, the annual cost is divided by twelve to derive a monthly cost.

Fifth, and finally, the common cost factor is applied.

Q. How does Sprint propose to price switching features purchased with an unbundled port?

A. Sprint has developed feature packages that CLECs may purchase with a switching port. CLECs may select the individual feature packages they wish to provision on individual access lines. This will prevent the CLEC from being forced to purchase feature capability for their customers who do not desire features, while allowing Sprint to recover its feature-specific costs on a per port basis.

Q. Should carriers be permitted to purchase unbundled features without purchasing the switching port?

A. No. As supported by the FCC, feature capability is an integral part of the switch. Sprint's approach is to allow the CLEC to customize the switching ports it purchases from Sprint. The CLEC cannot purchase feature capability without first purchasing the switching port.

III. TANDEM SWITCHING

Q. Please describe the TSLRIC methodology for local tandem switching.

A. The methodology is the same as for local switching. It is assumed that the cost of local tandem switching is equal to local trunk to trunk switching. An example for the West Kissimmee office is shown in the "Cost Development" page included in the Pricing and Costing Studies, Section E, Local Switching / Features.

Q. What is the rate for local tandem switching?
A. Sprint calculated a single weighted average rate for its entire service area, as can be seen in the Pricing and Costing Studies, Section D, Tandem Switching.

Q. How is the tandem switching rate applied?
A. If local traffic goes through both a tandem switch and an end-office switch to reach the customer, both rates apply (as well as common transport) and are simply added together.

IV. Transport

Q. What does the FCC Order say about the rates for transport?

A. The FCC Order states,

> Our rule that dedicated facilities shall be priced on a flat-rated basis applies to dedicated transmission links because these facilities are dedicated to the use of a specific customer. (Paragraph 820).
>
> Typically, transmission facilities between tandem switches and end offices are shared

> facilities. Pursuant to our rate structure guidelines, states may establish usage-sensitive or flat-rated charges to recover those costs. (Paragraph 822).

Sprint agrees, and has calculated its TSLRIC for dedicated transport on a flat-rated basis. Sprint has calculated common transport TSLRIC on a per-MOU basis. A summary titled "Transport Cost Model" is included in the Pricing and Costing Studies, Section C, Transport.

A. DEDICATED TRANSPORT

Q. Please describe the transport TSLRIC methodology for dedicated transport.

A. The method is similar for both dedicated and common transport. Sprint created its own Transport Cost Model (TCM), which exists as an Excel workbook. TCM determines the TSLRIC of interoffice transport, individually for each fiber optic transmission ring.

It is projected that demand will grow approximately 40% over the next five years. Current levels of demand are increased by at least 20% to reflect the mid-point of this projected growth. Existing transmission capacity may be expanded in the TCM in order to meet growth in demand.

Q. What is the difference between point-to-point and fiber ring transmission systems?

A. While I am not an engineer, fiber ring technology represents the current state-of-the-art transport design. The most significant characteristic is the use of fiber rings, rather than point-to-point connections, which provide route diversity. Should the cable making up part of the ring be broken, traffic is automatically rerouted over the remainder of the ring. Ring technology has become the industry standard technology, such that point-to-point systems can no longer be purchased from vendors.

Q. What percent of Sprint's transmission network in Florida did Sprint model?

A. Sprint modeled 100% of its transmission systems in Florida.

Q. Please describe the TCM.

A. An example of the TCM for a single transmission ring, Beverly Hills - Inverness (BVHL - INVR), is included in the Pricing and Costing Studies, Section C, Transport.

The TCM has two user input sheets, and several calculating worksheets. The first input sheet is "Material Costs." The user inputs the following information.

Current material cost

*Fiber optic cable

*Fiber tip cable

*Fiber patch panel

*Fiber optic terminals (OC-3, OC-12, and OC-48)

*OC-3 cards

*DS-3 cards

*DS-1 cards

Installation cost

Capacity

Utilization factors

Pole and conduit factors

Annual charge factors

Aerial, buried, underground mix

The second input sheet is "Route Information." The user inputs each transport ring, redesigned as necessary using state-of-the-art, forward-looking technology. For example, a current transport system between three locations may be provided through three separate, point-to-point transmission systems. TCM redesigns this network as a single fiber ring with three fiber optic terminals.

Q. Please describe the calculations performed by the TCM worksheets.

A. There are four basic steps to the TCM calculations for dedicated (DS1 and DS3) transport. The first step is performed by Worksheet B of the TCM, which converts the total utilized capacity of each type of transmission equipment into a cost per DS1.

The second step is performed by Worksheet C, which calculates the costs of each of four types of interconnections. The four interconnection types are DS3 termination, DS1 termination, terminal pass-through, and fiber pass-through.

The third step is performed on Worksheet D, which calculates the cost per route mile of fiber facilities, or transit. This cost includes the costs of providing route diversity, or protection.

The fourth step is performed by Worksheet E. The termination and transit costs of each fiber ring is determined using the information in Worksheets B, C, and D. The end result is the termination and transit costs of dedicated DS1 and DS3 transport.

TCM does not include the common cost factor, which is added to the results to develop the forward-looking economic cost.

Q. **Please describe what is meant by "reasonably accurate fill factors" (FCC Order Paragraph 682).**

A. Fill or utilization factors are the percentage of available network capacity actually used. Utilization is due to three factors.

1. When engineering and building telecommunications facilities, LECs attempt to anticipate future needs. For example, it is more cost-effective to dig a trench once and install additional facilities, than to dig up the trench and install new facilities every time a new loop is required.
2. It is the nature of the telecommunications industry that capacity is acquired in large blocks. Additional capacity will exist while demand grows into the available capacity.

3. An engineering interval, a period of time necessary to plan and construct facilities, is required when replacing or expanding capacity.

Efficient deployment balances the cost-benefit relationship of unused capacity and the cost of installation. Not enough capacity results in inefficient rework (e.g. digging new trenches every month); too much capacity is an inefficient use of resources (e.g., burying plant that will never be used).

Q. Is the use of a high, optimal utilization factor appropriate for a primarily rural telephone company such as Sprint - Florida?

A. No. A primarily rural telephone company does not have sufficient traffic to maintain a high utilization factor. This is due in large part to the nature of transmission capacity. For example, an OC-3 system has the capacity of 3 DS3s. An OC-12 system has the capacity of 12 DS3s. When an OC-3 system is exhausted and replaced with the larger OC-12 system, its maximum utilization at the time of cut-over is only 25% (3 DS3s / 12 DS3s). In reality, the cut-over takes place prior to absolute exhaustion, so the actual utilization at cut-over must be less than 25%.

The same phenomenon occurs when cutting over from an OC-12 to an OC-48 system.

Q. How does Sprint calculate the cost of fiber optic cable material (glass) in the TCM?

A. The material (glass) costs of fiber are assigned equally to all installed fibers.

Q. How does Sprint/United calculate the costs of fiber optic cable installation and sheath in the TCM.?

A. An installation and sheath allocation factor is used to <u>reduce</u> transport costs. *This factor recognizes two* characteristics.

First, the costs of installation and sheath are assigned to the lighted (in use) fibers only. For example, if only four fibers are required in the foreseeable future for a certain transport route, it may be cost efficient to install a 24-fiber sheath because the incremental cost of actually installing the additional 20 fibers is virtually zero. The unused fiber will be held for future growth, and no additional installation costs will need to be incurred. However, the cost-causer of the initial installation cost is the four lighted fibers, not the 20 dark (unused) fibers. Thus it is appropriate to assign the installation costs only to the lighted fibers.

Second, some fiber rings may use common physical routes and therefore share common cable installation and sheath.

Q. How are the ring costs converted into transport route prices?

A. This process consists of four steps. As an example, the cost of the Beverly Hills - Inverness DS1 route will be described here, and illustrated in Exhibit RGF1. The same process is repeated for each route listed on the "Interoffice Transport Rate Table", included in the Pricing and Costing Studies, Section C, Transport.

The first step is to sort the termination costs of each individual ring (as determined by the TCM) from low to high, as shown on Exhibit RGF1, pages 1 - 2 of 13. These individual rings are then grouped into three categories, low, medium, and high cost, based upon dividing the entire cost range into three equal parts. Although the three bands are of equal size in terms of cost, the number of rings in each band will vary. The detailed calculations for the Beverly Hills - Inverness (BVHL - INVR) ring are shown on Exhibit RGF1, page 3 of 13. This process is repeated for transit costs on Exhibit RGF1, pages 4 - 7 of 13. An individual ring may be in a low termination cost band and a medium transit cost band, or any other combination.

The second step is to calculate a weighted average termination and transit costs for the low, medium, and high cost bands. The weighted average cost for the low, medium, and high cost termination bands are [redacted] respectively, as shown on Exhibit RGF1, page 2 of 13. The weighted average cost for the low, medium, and high cost transit bands are [redacted] respectively, as shown on Exhibit RGF1, page 5 of 13.

The third step is to combine all of the possible low, medium, and high cost band combinations into a single Rate Element Table, as shown on Exhibit RGF1, page 11 of 13. There are three types of DS1 ring interconnections, depending upon the type of termination equipment. These are graphically shown on Exhibit RGF1, page 12 of 13. Type A is when both ring terminations are at the DS1 level. This will include all single ring configurations, OC-3, OC-12, or OC-48. Type A also occurs in multiple rings when an OC-3 ring is interconnected with any other ring, since OC-3 rings interconnect to other rings at the

DS1 level. Type B is when one ring termination is at the DS1 level, while the other is at the DS3 level. OC-12 and OC-48 rings interconnect at the DS3 level. Type C is when both ring terminations are at the DS3 level. Detailed calculations for the combination of low termination and low transit are shown on Exhibit RGF1, page 13 of 13.

The fourth step is to match a specific transport route to with the physical fiber optic rings. The Beverly Hills - Chassahowitzka route traverses two individual rings, Beverly Hills - Inverness (BVHL - INVR), an OC-12 ring; and Chassahowitzka - Homosassa Springs (SR26B CHSW - HMSP), an OC-3 ring. This configuration matches diagram #2 on Exhibit RGF1, page 12 of 13. The cost of this route is simply the sum of the two individual rings.

This same process is repeated for DS3 dedicated transport (see Exhibit RGF1, pages 7 - 10 of 13).

B. COMMON TRANSPORT

Q. Please describe your transport TSLRIC methodology for common transport.

A. As mentioned above, the method is similar for both dedicated and common transport, except that a fifth step is added.

The cost per common transport MOU is equal to the average DS1 ring cost, weighted across all routes, divided by 216,000 MOU per DS1. 216,000 MOU per DS1 is equal to 9,000 MOU per DS0 times 24 voice-grade circuits per DS1, as assumed by the FCC:

> Specifically, when the transport rate restructure was implemented, the initial levels of tandem-switched transmission rates were presumed reasonable if they were based on a weighted per-minute equivalent of direct-trunked transport DS1 and DS3 rates that reflects the relative number of DS1 and DS3 circuits used in the tandem to end office links, calculated using a loading factor of 9000 minutes per month per voice-grade circuit. (Paragraph 822, Footnote 1949)

Note that in the May 16, 1997 Order on Access Charge Reform, paragraphs 206 - 209, the FCC indicated that this factor may be too high.

Q. How is the rate for common transport determined?

A. Sprint calculated a single weighted average rate for its entire service area of $0.000711 per MOU, as can be seen on the "Interoffice Transport Rate Table" included in the Pricing and Costing Studies, Section C, Transport.

V. SS7

Q. What are the forward-looking economic costs of common channel signaling interconnection?

A. SS7 interconnection consists of Signal Transfer Point (STP) ports, STP transport links, and STP switching usage. The costs for these unbundled network elements are included in the Pricing and Costing the Pricing and Costing Studies, Section G, SS7). The common channel signaling interconnection service provides a signaling path for Signaling System 7 (SS7) / Common Channel Signaling (CCS). The carrier customer is provided with an interconnection to the out-of-band signaling network in order to transmit and receive information related to call completion.

A. SS7 TRANSPORT LINKS

Q. Please describe the STP Transport Links service.

A. The STP transport link represents the facilities to connect from the carrier customers designated premises to the Sprint STP. The link may be provisioned at a DS0 (56 Kbps) or as a DS1 (1.544 Mbps), at the option of the requesting carrier. STPs are deployed in mated pairs for network reliability, and interconnecting carriers must provision links to each STP in a mated pair.

Q. Please describe the TSLRIC methodology for DS1 SS7 Transport links.

A. The TSLRIC methodology for a DS1 link consists of three steps. First, the average monthly TSLRIC of a DS1 link is determined, as determined from the TCM discussed in Section IV.A.

Second, the common cost factor is applied.

Third, the cost of a single DS1/DS0 multiplexer is added. The result is shown on the "SS7 Link Interoffice Transport Cost Support" study included in the Pricing and Costing Studies, Section G, SS7.

Q. Please describe the TSLRIC methodology for DS0 SS7 Transport links.

A. The TSLRIC methodology for a DS0 link consists of four steps. First, the average monthly TSLRIC of a DS1 link is determined, as determined from the TCM discussed in Section IV.A.

Second, this cost is assumed to be shared by four carriers.

Third, the common cost factor is applied.

Fourth, the cost of two DS1/DS0 multiplexers (one at each end) is added. The result is shown on the "SS7 Link Interoffice Transport Cost Support" study included in the Pricing and Costing Studies, Section G, SS7.

Q. Please describe the TSLRIC methodology for DS1 to DS0 multiplexing.

A. The TSLRIC methodology consists of four steps. First, the EF&I (Engineered, Furnished, and Installed) material cost of a DS1/DS0 multiplexer is determined. This includes the actual equipment vendor price, installation and engineering costs, and any applicable sales taxes. This cost includes six DS0 cards, one for each of four carriers plus two spare.

Second, a forward-looking annual charge factor is applied.

Third, this annual cost is divided by twelve to produce a monthly TSLRIC result.

Fourth, the common cost factor is added to the above TSLRIC result to produce the forward-looking economic cost of the unbundled network element. The result is shown on the "DS1/DS0 Mux Cost Support" study included in the Pricing and Costing Studies, Section G, SS7.

B. STP PORTS

Q. Please describe the STP Port service.

A. The STP port provides the customer access to the Sprint STP, which acts as a packet switch to route out-of-band signaling. It is in some respects similar to the concept of access to a local switch through a port. An STP port requires use of a link port card and processor costs.

Q. Please describe the TSLRIC methodology for the STP Port.

A. The TSLRIC methodology is summarized in the Pricing and Costing Studies, Section G, SS7.

The TSLRIC methodology consists of four steps. First, the EF&I (Engineered, Furnished, and Installed) material cost of the Link Port Card, MP1624 Processor Card, Cluster Card Kit, and Frame is determined. This includes the actual equipment vendor price, installation and engineering costs, and any applicable sales taxes.

Second, these investments are adjusted for fill factors and capacity.

Third, a forward-looking annual charge factor is applied.

Fourth, this annual cost is divided by twelve to produce a monthly TSLRIC result.

Fifth, the common cost factor is added to the above TSLRIC result to produce the forward-looking economic cost of the unbundled network element. The result is shown on the "SS7 Port Connection Cost Support" study included in the Pricing and Costing Studies, Section G, SS7.

Q. Has Sprint developed an SCP interconnection rate?
A. No. Sprint does not have an SCP in Florida. When a CLEC interconnects at the Sprint STP, they have access to Call-Related Database service described in Section VI.C,

below.

C. **SS7 SWITCHING**

Q. Please describe SS7 Switching.

A. The SS7 Switching service is for the routing of signaling traffic through the STP, and reflects the relative switching load placed over the STP by ports. The cost of SS7 switching is determined by the number of individual interoffice trunks using an STP port.

Q. Please describe your TSLRIC methodology for SS7 switching.

A. Sprint has developed its own levelizing model to develop TSLRIC results when investment must be recovered over an extended period of time.

The TSLRIC methodology consists of four basic steps. First, the model levelizes total STP - end-office link demand and investment over the economic life of the investment, using the current intrastate rate of return, to develop a total cost per link per month.

Second, since the SS7 Port investment is already accounted for in Section II.D.2., the port cost is removed from the total cost to develop a net cost per link per month.

Third, the monthly link cost is then divided by the number of trunks, assuming a 10:1 access line to trunk ratio, to develop a cost per trunk per month.

Fourth, the common cost factor is applied.

The result is shown on the "SS7 Usage Component" study included in the Pricing and Costing Studies, Section G, SS7.

VI. OPERATOR / DIRECTORY ASSISTANCE / CALL RELATED DATA BASE SERVICES

Q. Please summarize the results of Sprint's cost studies for these services.

A. Sprint has developed TSLRIC studies for most of these services. The results can be seen in the Pricing and Costing Studies, Sections H and I.

Q. Please describe the TSLRIC methodology for these services.

A. Except for those services which utilize interstate access tariffs, the following TSLRIC methodology is used for all services

1. Determine direct expense associated with the service.
2. Determine the direct investment associated with the service.
3. Multiply the investment by the annual charge factor to determine the annual return.
4. Add the annual return, direct expenses, and other direct operating expenses to determine TSLRIC.
5. Add TSLRIC plus common cost to determine total economic cost.
6. Divide total economic cost by the appropriate number of units to determine the total economic cost per unit.

A. OPERATOR SERVICES

Q. Please describe Toll and Local Assistance Service (Live).
A. This service provides live assistance to an end user to complete a telephone call. This service requires a live operator and recording equipment for billing and/or completion of the call.

B. **DIRECTORY ASSISTANCE SERVICES**

Q. Please describe Directory Assistance Operator Service (Live).

A. This service provides live assistance to an end user to obtain directory listing information and/or to complete a telephone call. This service requires a live operator, operator position equipment, networking equipment, and database maintenance.

Q. Please describe Directory Assistance Database Listing and Update Service.

A. This service is the provision of subscriber listing information. This enables the competitive LEC to provision its own directory assistance databases in order to support its own directory assistance service to end users. The major cost is labor.

Q. Please describe Directory Assistance Database Query Service.

A. This service allows the competitive LEC to access Sprint's electronic directory listing information. This service requires hardware, software, and local area networking investment.

C. CALL RELATED DATABASE SERVICES

Q. Please describe the Line Information Database (LIDB) Access Service.

A. This service provides access to billing validation data stored on Sprint's LIDB. Proposed rates are based on Sprint's interstate access tariff.

Q. Please describe the Toll Free Code (TFC) Access Service.

A. This service provides routing services for toll-free 800 and 888 dialed numbers. Proposed rates are based on Sprint's interstate access tariff.

Q. Please describe the Originating Point Code (OPC) Service.

A. This is a manual service which allows Sprint's SS7 network to identify the originating point of a call.

Q. Please describe the Global Title Translation (GTT) Service.

A. This is a manual service which provides translations to the network for routing purposes.

D. MISCELLANEOUS SERVICES

Q. Please describe the 911 Tandem Ports service.

A. Where Sprint provides 911 service, the competitive LEC will need to provision trunks from its switch to the Sprint selective routing tandem. The TSLRIC cost for the 911 port is included in the pricing and Costing Studies, Section H.

Q. Does this conclude your direct testimony?
A. Yes, it does.

DS1 TERMINATION

Ring #	Term $	With common @ 0.1500	Band	*Working* DS1s	*Total* Term $s
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

DS1 TERMINATION

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Breakpoints	Low	[redacted]
	Medium	
	High	

		Weighted Average
Average	Low	[redacted]
Average	Medium	
Average	High	

CALCULATIONS FOR DS1 TERMINATION BANDS

			Calculations
1	**INPUTS**		
2	*Ring:*	[redacted]	
3	DS1 Single Termination Cost Per Month		Source: Transport Cost Model Summary
4	OC DS1 Capacity		
5	OC Terminal Utilization Factor		Source: Transport Cost Model Input Sheet #1
6	OC48 Availability Factor (OC48 Only)		
7	Number of Nodes on Ring (OC48 Only)		Source: Transport Cost Model Input Sheet #1
8	Common Factor		
9			
10	**TERMINATION COST**	[redacted]	
11	Single Termination Cost		L3
12	Two Terminations Cost		2 * L11
13	Total Termination Cost		L12 * (1 + L8)
14			
15	Working DS1s	[redacted]	If L4 = 672 or 1344: L4 * L5 * L6 * L7
16			If L4 = 84 or 336: L4 * L5
17	Total Ring Termination Cost	[redacted]	L13 * L15
18			
19			
20	**TERMINATION BAND BREAK POINTS**		
21	Maximum	[redacted]	As calculated for each ring
22	Minimum		As calculated for each ring
23			
24	Range	[redacted]	L21 - L22
25	Band Size		L24 / 3
26			
27	Low Band Break Point (Maximum)	[redacted]	L22 + L25
28	Medium Band Break Point (Maximum)		L27 + L25
29	High Band (Maximum)		L21
30			
31	**WEIGHTED AVERAGE BANDS**		
32	Low Band Break Point (Maximum)	[redacted]	For Each Band =
33	Medium Band Break Point (Maximum)		Σ(Total Ring Termination Costs) /
34	High Band (Maximum)		Σ(Total Working DS1s)
35			

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DS1 TRANSIT

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	$ [redacted]	$ [redacted]	[redacted]	[redacted]	[redacted]

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]					
	Low				
	Medium				
	High				

		Weighted Average
Average	Low	[redacted]
Average	Medium	
Average	High	

CALCULATIONS FOR DS1 TRANSIT BANDS

				Calculations
1	**INPUTS**		[redacted]	
2	Ring:			
3	DS1 Transit Cost Per Month			Source: Transport Cost Model Summary
4	OC DS1 Capacity			
5	OC Terminal Utilization Factor			Source: Transport Cost Model Input Sheet #1
6	OC48 Availability Factor (OC48 Only)			
7	Number of Nodes on Ring (OC48 Only)			Source: Transport Cost Model Input Sheet #1
8	Common Factor			
9				
10				
11	**TRANSIT COST**			
12	Transit Cost	$		L3
13	Total Transit Cost	$		L12 * (1 + L8)
14				
15	Working DS1s			If L4 = 672 or 1344: L4 * L5 * L6 * L7 If L4 = 84 or 336: L4 * L5
16				
17				
18	Total Ring Transit Cost	$		L13 * L15
19				
20	**TRANSIT BAND BREAK POINTS**			
21	Maximum	$		As calculated for each ring
22	Minimum	$		As calculated for each ring
23				
24	Range	$		L21 - L22
25	Band Size	$		L24 / 3
26				
27	Low Band Break Point (Maximum)	$		L22 + L25
28	Medium Band Break Point (Maximum)	$		L27 + L25
29	High Band (Maximum)	$		L21
30				
31	**WEIGHTED AVERAGE BANDS**			
32	Low Band Break Point (Maximum)	$		For Each Band =
33	Medium Band Break Point (Maximum)	$		Σ(Total Ring Termination Costs) /
34	High Band (Maximum)	$		Σ(Total Working DS1s)
35				

DS3 TERMINATION

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	$ [redacted]	$ [redacted]	[redacted]	[redacted]	$ [redacted]

DS3 TERMINATION

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	[redacted]	[redacted]	[redacted]		[redacted]

Breakpoints		
	Low	[redacted]
	Medium	
	High	

		Weighted Average
Average	Low	[redacted]
Average	Medium	
Average	High	

DS3 TRANSIT

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	$ [redacted]	[redacted]	[redacted]	[redacted]	$ [redacted]

DS3 TRANSIT

Ring #	Term $	With common @ 0.1500	Band	Working DS1s	Total Term $s
[redacted]	[redacted]	[redacted]	[redacted]		[redacted]

Low
Medium
High [redacted]

Weighted Average

Average

Low
Medium
High [redacted]

INTEROFFICE TRANSPORT RATE ELEMENTS

DS1

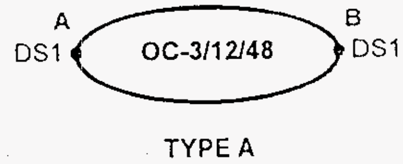
	Weighted Average for Terms	Weighted Average for Transit			Type A Single and OC3 multiple rings Rate Element Combinations	Term + Transit			Type B Multiple rings with one DS3 Term Rate Element Combinations	Term + Transit		Type C Multiple rings with two DS3 Terms Rate Element Combinations	Term + Transit
B	C	D	E	F	G	H	I	J	K	L	M	N	O
Low	$ [redacted]	$ [redacted]		DS1	HH	$ [redacted]		DS1	HH	$ [redacted]	DS1	HH	$ [redacted]
Medium				DS1	HL			DS1	HL		DS1	HL	
High				DS1	HM			DS1	HM		DS1	HM	
				DS1	LH			DS1	LH		DS1	LH	
				DS1	LL			DS1	LL		DS1	LL	
				DS1	LM			DS1	LM		DS1	LM	
				DS1	MH			DS1	MH		DS1	MH	
				DS1	ML			DS1	ML		DS1	ML	
				DS1	MM			DS1	MM		DS1	MM	

DS3

	Weighted Average for Terms	Weighted Average for Transit			Type D Single and multiple rings Rate Element Combinations	Term + Transit
B	C	D	E	F	G	H
Low	$ [redacted]			DS3	HH	[redacted]
Medium				DS3	HL	
High				DS3	HM	
				DS3	LH	
				DS3	LL	
				DS3	LM	
				DS3	MH	
				DS3	ML	
				DS3	MM	

APPLICATION OF RATE ELEMENTS

1



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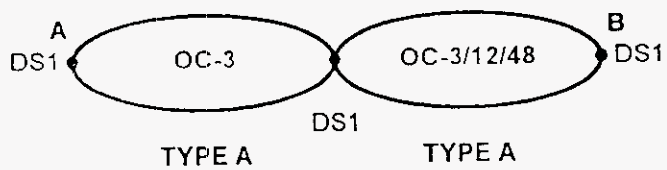

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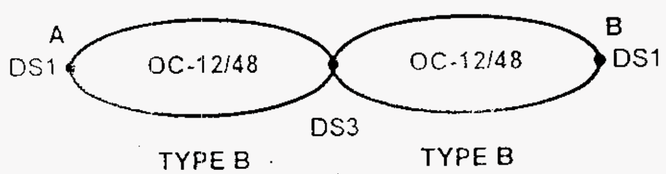

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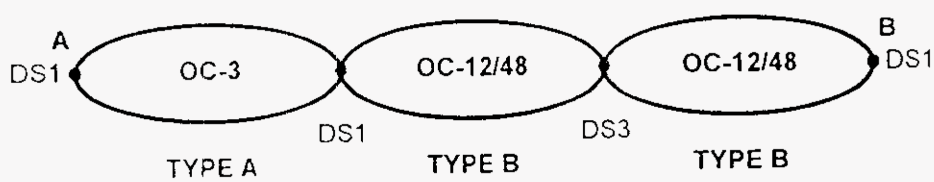

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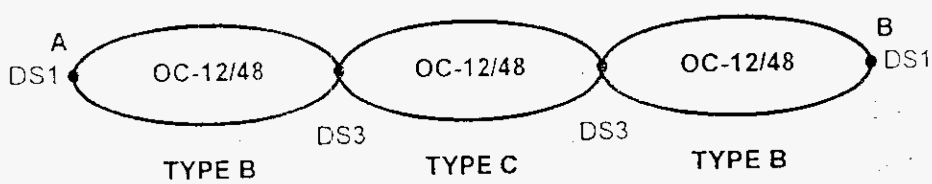

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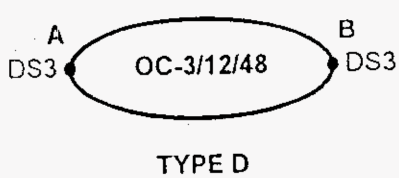

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CALCULATIONS FOR RATE ELEMENTS

Example: Low Termination, Low Transit Costs

				Calculations
1	**INPUTS**			
2	Low Band DS1 Termination Cost	$	[redacted]	
3	Low Band DS1 Transit Cost	$		
4	Low Band DS3 Termination Cost	$		
5	Low Band DS3 Transit Cost	$		
6	DS1s per DS3			
7				
8	**DS1 - SINGLE AND OC3** MULTIPLE RINGS (TYPE A INTERCONNECTION)			
9	LL (Low Termination, Low Transit)	$	[redacted]	L2 + L3
10				
11	**DS1 - MULTIPLE RINGS WITH** ONE DS3 TERMINATION (TYPE B INTERCONNECTION)			
12	LL (Low Termination, Low Transit)	$	[redacted]	(L2 / 2)+(L4 / L6 / 2) + L3
13				
14	**DS1 - MULTIPLE RINGS WITH TWO DS3 TERMINATIONS (TYPE C INTERCONNECTION)**			
15	LL (Low Termination, Low Transit)	$	[redacted]	(L4 / L6) + L3
16				
17	DS3 - SINGLE AND MULTIPLE RINGS (TYPE D INTERCONNECTION)			
18	LL (Low Termination, Low Transit)	$	[redacted]	L4 + L5
19				