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October 3, 2001

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

**Re: 960786-A-TL (Section 271)**

Dear Ms. Bayó:

Enclosed is an original and fifteen copies of BellSouth Telecommunications, Inc.'s Revised Direct Testimony of Wylie (Jerry) G. Latham, W. Keith Milner and Thomas G. Williams, and Revised Surrebuttal Testimony of Ken L. Ainsworth, Cynthia K. Cox (CKC-10 has also been stricken), W. Keith Milner, Ronald M. Pate, David T. Scollard, and Alphonso Varner, which we ask that you file in the captioned docket. This filing is pursuant to Order No. PSC-01-1830-PCO-TL issued September 11, 2001.

A copy of this letter is enclosed. Please mark it to indicate that the original was filed and return the copy to me. Copies have been served to the parties of record as shown on the certificate of service.

Sincerely,

  
Lisa S. Foshee (KA)

Enclosures

cc: All Parties of Record  
Marshall M. Criser III  
R. Douglas Lackey  
Nancy B. White

DNS 12566-01 thru 12574-01

**CERTIFICATE OF SERVICE  
DOCKET NO. 960786-A-TL**

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by Federal Express this 3rd day of October, 2001 to the following:

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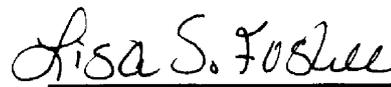
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(+) Signed Protective Agreement

1                                   BELLSOUTH TELECOMMUNICATIONS, INC.  
2       **REVISED** DIRECT TESTIMONY OF WILEY (JERRY) G. LATHAM  
3                                   BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION  
4                                   DOCKET NO. 960786A-TL  
5                                   OCTOBER 3, 2001  
6

7 Q.   PLEASE STATE YOUR NAME AND YOUR JOB RESPONSIBILITIES.

8  
9 A.   My name is Jerry Latham. I am the Project Manager for Unbundled  
10       Loops within the Interconnection Services unit of BellSouth  
11       Telecommunications, Inc. ("BellSouth"). I am responsible for Product  
12       Development and Product Management for unbundled loops and other  
13       unbundled network elements in BellSouth's nine-state territory.  
14

15 Q.   WHAT IS THE PURPOSE OF YOUR TESTIMONY?

16  
17 A.   The purpose of this testimony is to partially address Issue 5 by  
18       describing the transmission requirements of certain types of Digital  
19       Subscriber Line (DSL) services and the various unbundled loops that  
20       CLECs may choose to provide DSL services to its end user customers.  
21       Additionally, I will identify the attributes of BellSouth xDSL-capable  
22       loops. I will also demonstrate that these loops are offered in a non-  
23       discriminatory fashion and that they provide CLECs a meaningful  
24       opportunity to compete in the DSL market place.  
25

1 **Issue 5:** In Order PSC-97-1459-FOF-TL, issued November 19, 1997, the  
2 Commission found that BellSouth met the requirements of Section  
3 271 (c)(2)(B)(IV) of the Telecommunications Act of 1996. Does  
4 BellSouth currently provide unbundled local loop transmission  
5 between the central office and the customer's premises from local  
6 switching or other services, pursuant to Section 271 (c)(2)(B)(IV) and  
7 applicable rules and orders promulgated by the FCC?

8 (a) Does BellSouth currently provide all currently required forms  
9 of unbundled loops?

10 (b) Has BellSouth satisfied other associated requirements, if  
11 any, for this item?

12

13 **UNBUNDLED xDSL AND IDSL CAPABLE LOOPS**

14

15 Q. WOULD YOU GIVE A GENERAL DESCRIPTION OF THE VARIOUS  
16 TYPES OF DSL LOOPS OFFERED BY BELLSOUTH?

17

18 A. The viability of DSL services is dependent, in part, on the end user's  
19 distance from his serving wire center (SWC), as well as the length,  
20 gauge, and status of the copper that serves that customer. To  
21 compensate for these parameters, BellSouth offers CLECs a variety of  
22 unbundled loops that may support DSL services from the CLEC to its  
23 end user customers. The loops are known as "ADSL<sup>1</sup> Capable loop,"

24

25

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<sup>1</sup> ADSL stands for Asymmetrical Digital Subscriber Loop.

1 "HDSL<sup>2</sup> Capable loop," "ISDN loop," "Unbundled Digital Channel  
2 (UDC)," "Unbundled Copper Loop (UCL), Short and Long" and  
3 "Unbundled Copper Loop – Non Designed" (UCL-ND).

4

5 Q. WHICH OF THE XDSL LOOPS OFFERED BY BELLSOUTH ARE THE  
6 MOST VERSATILE?

7

8 A. The most versatile of BellSouth's xDSL-capable loops are the  
9 Unbundled Copper Loops-Short and Long ("UCL"). These loops were  
10 designed to meet CLEC requests for a basic copper loop.

11

12 Q. PLEASE DESCRIBE THE UCL LOOPS OFFERED BY BELLSOUTH.

13

14 A. Unbundled Copper Loop (UCL) - Short - The UCL-Short is a 2-wire or  
15 4-wire loop that provides a non-loaded or "clean" copper pair to an end  
16 user using the Resistance Design (RD) industry standard. Under the  
17 RD standard, these loops may be up to 18,000 feet long and may have  
18 up to 6,000 feet of bridged tap ("BT") exclusive of the loop length. In  
19 other words, a UCL-Short loop can be 18,000 feet long and have up to  
20 6,000 feet of BT. BellSouth cannot guarantee that CLEC-provisioned  
21 DSL service will function properly over the UCL-Short loop, as the  
22 physical characteristics (length and BT) may be inconsistent with the  
23 maximum distance for many DSL services and equipment. BellSouth

24

25

---

<sup>2</sup> HDSL stands for High Bit Rate Digital Subscriber Line.

1 will, however, verify that these loops have no more than 1300 ohms of  
2 resistance, electrical continuity, and balance relative to the tip-and-ring,  
3 and will maintain them to these requirements.

4

5 BellSouth developed the UCL-Short in direct response to CLEC  
6 requests for an unbundled loop with the same specifications that  
7 BellSouth uses for its own wholesale ADSL service. This loop meets  
8 those criteria. The UCL-Short has been available to CLECs since the  
9 second quarter 2000.

10

11 Unbundled Copper Loop (UCL) - Long - The UCL-Long is a 2-wire or  
12 4-wire copper loop that is longer than 18,000 feet. This loop was  
13 developed in response to CLEC requests, as well as the UNE Remand  
14 Order's directive that ILECs should provide xDSL-capable loops  
15 *wherever* requested by the CLEC.<sup>3</sup> Normal telephony standards  
16 dictate that all copper loops exceeding 18,000 feet in length must be  
17 loaded to properly service dial-tone or POTS type customers.

18 Therefore, in almost all cases, a CLEC seeking to provide functioning  
19 DSL service will need, in addition, to place an order for "loop  
20 conditioning" - BellSouth's Unbundled Loop Modifications (ULM)  
21 product - to remove the load coils and/or BT from these loops in order  
22 to transform them into "dry" or "clean" copper loops. The CLEC would  
23 pay the ULM costs separate from the cost of the loop itself.

24

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25 <sup>3</sup> *In the Matter of Implementation of the Local Competition Provisions of the  
Telecommunications Act of 1996*, Third Report and Order and Fourth Notice of Proposed  
Rulemaking, Docket No. 96-98, 15 FCC Rcd 3696, at 3783-3784, ¶191 (1999).

1 By the end of April 2001, BellSouth had received orders for and  
2 deployed 10,337 UCL Short and Long loops region-wide and 2,511 in  
3 Florida.

4

5 Q. WHAT OTHER TYPES OF XDSL LOOPS ARE OFFERED BY  
6 BELLSOUTH?

7

8 A. In addition to the UCL-Short and Long, BellSouth offers CLECs four  
9 other xDSL-capable loops: ADSL-capable loop; HDSL-capable loop;  
10 ISDN-capable loop; and Universal Digital Channel ("UDC") loop.

11

12 Q. CAN YOU BRIEFLY DESCRIBE THE HISTORY OF THE  
13 DEVELOPMENT OF THESE OTHER TYPES OF LOOPS?

14

15 A. Yes. BellSouth developed two of these xDSL-capable loop offerings,  
16 the HDSL-capable loop and the ADSL-capable loop, in direct response  
17 to the FCC's *Local Competition Order*. That Order defined loops to  
18 include "two-wire and four-wire analog voice-grade loops, and two-wire  
19 and four-wire loops that are conditioned to transmit the digital signals  
20 needed to provide services such as ADSL, HDSL and DS1-level  
21 signals."<sup>4</sup>

22

23 Q. PLEASE DESCRIBE THE HDSL AND ADSL LOOPS.

24

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25 <sup>4</sup> *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*,  
First Report and Order, ¶ 380, 11 FCC Rcd 15499, ¶380 (1996).

1 A. HDSL-Capable Loop – For technological reasons, high-speed DSL  
2 services work best on short, clean-copper loops. BellSouth’s HDSL-  
3 capable loop meets these requirements. BellSouth screens HDSL-  
4 capable loops to ensure that they meet stringent industry standards for  
5 Carrier Serving Area (CSA) transmission specifications to better  
6 support DSL services. Under these strict technical standards, the end  
7 user must be served by non-loaded copper and the loop typically  
8 cannot be more than 12,000 feet long. If 26-gauge copper is used, the  
9 limit is 9,000 feet or less. HDSL-Capable loops may have up to 2,500 ft  
10 of BT, and 850 ohms or less of resistance.

11  
12 The HDSL-capable loop has been available to CLECs since fourth  
13 quarter 1996. By the end of April 2001, BellSouth had deployed 457  
14 HDSL-capable loops region-wide, of which 108 are in Florida.

15  
16 ADSL-Capable Loops – Originally, the ADSL loop offering was set to  
17 the same CSA criteria as the HDSL-capable loop. In response to  
18 CLEC requests, however, and with the establishment of industry  
19 guidelines for loop types that support ADSL service, BellSouth modified  
20 the design criteria for the ADSL-capable loop in the first quarter 2000 to  
21 the Revised Resistance Design (RRD) standards. RRD standards  
22 require a non-loaded copper loop, up to 18,000 feet in length, with up  
23 to 6,000 ft of BT inclusive of loop length, and 1300 ohms or resistance.  
24 “Inclusive of loop length” means that for every foot of BT, the loop  
25 length is reduced by an equal amount. Therefore, a RRD loop that has

1 4,000 ft of BT could be no longer than 14,000 ft.

2

3 This loop has been available to CLECs since fourth quarter 1996. By  
4 the end of April 2001, BellSouth had provided CLECs 13,261 ADSL-  
5 capable loops region-wide, of which 4,525 are in Florida.

6

7 Q. PLEASE DESCRIBE HOW BELLSOUTH CAME TO DEVELOP THE  
8 ISDN-CAPABLE AND UDC LOOPS.

9

10 A. As with the ADSL and HDSL loops mentioned above, the ISDN-  
11 capable loop was developed in response to the release of the *Local*  
12 *Competition Order*. However, as described below, the ISDN loop is not  
13 always suitable for Integrated Digital Subscriber Line (IDSL) services.  
14 Therefore, the CLECs requested that BellSouth provide a loop that  
15 could support the hybrid form of DSL service known as IDSL. In  
16 response to these requests, BellSouth developed the UDC loop.

17

18 Q. PLEASE DESCRIBE THE ISDN-CAPABLE AND UDC LOOPS.

19

20 A. *ISDN-Capable Loops* – While not intended for xDSL use, ISDN-  
21 capable loops may be used to support the DSL service known as IDSL.  
22 BellSouth provisions its ISDN-capable loops according to applicable  
23 industry standards (i.e., ANSI), which means they may be provisioned  
24 over copper or via a Digital Loop Carrier (DLC) system. These loops  
25 are free of load coils, but are not referred to as "clean copper loops"

1 because they may be provisioned via DLC systems that are completely  
2 compatible with ISDN service, but not most xDSL services.

3

4 Q. PLEASE DESCRIBE UDC LOOPS.

5

6 A. UDC Loops - As recognized by the FCC, not all ISDN loops are  
7 completely compatible with IDSL service. Because of this, BellSouth  
8 developed the UDC loop, which was introduced on May 31, 2000. This  
9 loop is identical to the ISDN loop, but is provisioned in a manner that  
10 supports "data-only" ISDN, which will better meet the needs of CLECs  
11 who want to deploy IDSL. This loop has been available to CLECs  
12 since June 1, 2000. By the end of April 2001, BellSouth had provided  
13 CLECs 6,988 UDC loops region-wide, of which 3,000 are in Florida.

14

15 Q. IS BELL SOUTH DEVELOPING ANY OTHER TYPE OF XDSL LOOP?

16

17 A. Yes. At the request of CLECs, BellSouth has developed another xDSL-  
18 capable loop. This loop is known as the Unbundled Copper Loop –  
19 Non Designed (UCL-ND). It is a non-loaded copper loop that generally  
20 has 1300 ohms or less of resistance and does not have a specific  
21 length limitation. The length is driven by many factors but is generally  
22 less than 18,000 feet long. This loop does not go through the "design"  
23 process. Therefore, it does not have a remote access test point and  
24 does not come standard with a Design Layout Record (DLR). This loop  
25 was developed to respond to the CLECs' desire for an xDSL loop with

1 a lower non-recurring cost.

2

3 Q. WHY DOES BELLSOUTH OFFER SO MANY TYPES OF XDSL  
4 LOOPS?

5

6 A. To understand why BellSouth offers a variety of xDSL loops, one need  
7 only review the history of xDSL-capable loops. BellSouth has  
8 developed this variety of xDSL loop types in direct response to CLEC  
9 requests as well as the evolving scope of its obligations under  
10 applicable FCC rules and regulations. As described above, BellSouth  
11 first developed the HDSL and ADSL-capable loops to comply with the  
12 obligations stated in the *Local Competition Order*. Once developed,  
13 these loops were included in CLEC interconnection agreements. In the  
14 months following the release of the *Local Competition Order*, BellSouth  
15 developed several additional xDSL loop offerings at the request of  
16 CLECs operating within BellSouth's region. Again, BellSouth's  
17 obligation to provision these loops was memorialized in various  
18 interconnection agreements. These continuing contractual obligations  
19 for all of the loop types make it impossible for BellSouth to discontinue  
20 any xDSL loop; rather, as BellSouth develops new product offerings,  
21 BellSouth simply adds to the list of options from which the CLEC can  
22 choose.

23

24 The benefit to the CLECs of this historical growth of offerings is that  
25 CLECs have a variety of loop types from which they can choose to best

1 meet their technical needs in providing telecommunications services to  
2 its customers for the least cost. The fact that BellSouth offers different  
3 loop types, however, does not in any way restrict a CLEC's ability to  
4 offer any particular type of xDSL service it may desire over any loop in  
5 BellSouth's network. Indeed, the only restrictions that limit a CLEC's  
6 choice of DSL technologies are those established by industry standards  
7 bodies to ensure the integrity of voice service.

8

9 Q. HAS BELL SOUTH ENTERED INTO INTERCONNECTION  
10 AGREEMENTS WITH FACILITIES-BASED CLECS THROUGH  
11 WHICH IT IS PROVIDING THESE XDSL CAPABLE LOOPS?

12

13 A. Yes. BellSouth has entered into interconnection agreements with  
14 facilities-based carriers in Florida to provide each of the loops  
15 described above, with the exception of the UCL-ND, which is currently  
16 being negotiated with several CLECs. See *e.g.* Interconnection  
17 Agreement between BellSouth and Covad, approved by the Florida  
18 Commission on February 18, 1999, Att. 2.

19

20 Q. WHERE CAN YOU FIND MORE INFORMATION ON THESE TYPES  
21 OF LOOPS?

22

23 A. Additional information about all of BellSouth's xDSL loops can be  
24 viewed in Exhibits 1 through 5 to my testimony and on BellSouth's  
25 internet web site at:

1            ["www.interconnection.bellsouth.com/products/unnes.html"](http://www.interconnection.bellsouth.com/products/unnes.html).

2

3 Q.    CAN YOU SUMMARIZE THE TYPES OF AVAILABLE LOOPS AND  
4            THEIR CHARACTERISTICS?

5

6 A.    Yes. The HDSL capable loop (using CSA standards) will provide clean  
7            copper pairs to customers up to 12,000 feet from the Central Office  
8            (CO).

9

10            The ADSL capable loop (using RRD standards) and the UCL-Short  
11            (using RD standards) will provide clean copper pairs to customers up to  
12            18,000 feet from the CO (using different criteria for BT).

13

14            The UCL-Long, in conjunction with the ULM conditioning product,  
15            allows CLECs to serve customers beyond 18,000 feet from the CO  
16            using clean copper pairs.

17

18            The ISDN and UDC capable loops will give the CLEC the option of  
19            providing IDSL service to any customer even if that customer does not  
20            have clean copper pairs available at their address.

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<b>LOOP TYPE</b>	<b>UDL – HDSL</b>	<b>UDL – ADSL</b>	<b>UCL Short</b>	<b>UCL Long</b>	<b>UCL - ND</b>	<b>ISDN/IUCD</b>
<b>Max loop length</b>	12 kft	18 kft	18 kft	Unlimited	Undefined (generally 18kft)	18 kft (Copper) No limit (DLC)
<b>Max total bridge tap</b>	2.5 kft inclusive	6 kft inclusive	6 kft exclusive	12 kft exclusive	6 kft exclusive	6 kft inclusive
<b>Longest single Bridge tap</b>	2.0 kft	6 kft	6 kft	6 kft	6 kft	6 kft
<b>Max Resistance In Ohms</b>	850	1300	1300	2800	1300	1300 (copper)
<b>Max Loss (per 73600)</b>	35db@100KHz	42db@40KHz	46db@40KHz	N/A	Varies (Similar to UCL-Short)	42db@40KHz
<b>Service Inquiry Required</b>	Yes	Yes	Yes	Yes	No	No
<b>Number of wires</b>	2 or 4 wire	2 wire	2 or 4 wire	2 or 4 wire	2 wire	2 wire

The chart above shows the technical specifications for each of BellSouth's xDSL-capable loops. BellSouth developed each of these loops, to the extent possible, in accordance with industry standard physical characteristics and specifications. Application of these standards allows BellSouth to provision, maintain and repair these loops efficiently while retaining network integrity for all of BellSouth's services, including non-DSL services. If, however, a CLEC wants other, non-standard loop types, BellSouth will work cooperatively with the CLEC to develop these through our interconnection agreement negotiation sessions (as we have done for the UCL-Short) or through the Bona Fide Request (BFR) process.

If the CLEC makes the decision to provide service using the facility but needs to have the loop conditioned, it can use BellSouth's Unbundled

1 Loop Modification (ULM) process in order to modify any existing loop to  
2 be compatible with each CLEC's particular hardware requirements.  
3 The ULM process conditions the loop by the removal of any devices  
4 that may diminish the capability of the loop to deliver high-speed  
5 switched wireline capability, including xDSL service. Such devices  
6 include, but are not limited to load coils, bridged taps, low pass filters,  
7 and range extenders. The ULM offering provides for removal of  
8 equipment on loops equal to or less than 18,000 feet, as well as loops  
9 that are longer than 18,000 feet. These devices are placed on copper  
10 loops to enhance the voice characteristics when provided on long  
11 copper facilities or to otherwise comply with standards for other  
12 services such as PBX trunks. The CLEC may select the level of line  
13 conditioning it desires and will be required to pay only for the level of  
14 conditioning it selects. BellSouth will provide line conditioning on a  
15 CLEC request for unbundled loops, whether or not BellSouth offers  
16 advanced services to the end-user customer on that loop. BellSouth  
17 has established cost-based rates for the ULM offering.

18

19 **SPECTRUM MANAGEMENT**

20

21 Q. PLEASE DESCRIBE SPECTRUM MANAGEMENT.

22

23 A. CLECs are free to provide any telecommunications service they choose  
24 on any unbundled loop, as long as that service does not negatively  
25 impact other services and providers. BellSouth's TR73600 document

1 and other industry standards for Power Spectral Density masks, once  
2 established, will help control these negative impacts and allow multiple  
3 carriers' services to co-exist harmoniously. BellSouth provides CLECs  
4 access to TR73600 via BellSouth's internet website. It should be  
5 noted, however, that BellSouth cannot be expected to guarantee a  
6 CLEC's service will work on loops not intended for a particular service.  
7 For example, a CLEC may order a voice-grade loop and attempt to put  
8 some type of high-speed data service on that loop. If that service  
9 works (without disrupting other services), then all is well. If not,  
10 BellSouth can only maintain and repair the circuit as a voice-grade line  
11 (i.e., the type of loop ordered). Of course, the CLEC would have the  
12 option to replace the voice grade line with an xDSL-capable loop, and  
13 could use the ULM product to condition the loop to support the CLEC's  
14 chosen service.

15

16 Currently, efforts are underway at the national level to adopt standards  
17 that minimize the potential for interference when loops adjacent to one  
18 another in a binder group are used to provide divergent technologies  
19 (e.g., ADSL and HDSL). National standards bodies are working  
20 towards establishing industry consensus on how best to accommodate  
21 xDSL-based services on a wireline network originally designed to carry  
22 voice transmissions. BellSouth strongly supports this effort and is  
23 involved in the national standards bodies working on these issues.

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25 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

1 A. Yes.

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