BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY OF

JOHN C. DONOVAN

ON BEHALF OF

AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC.

And

MCI WORLDCOM, INC.

Docket No. 990649A-TP

December 10, 2001

PUBLIC VERSION

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John C. Donovan. I am President of Telecom Visions, Inc., a telecommunications consulting company. My business address is 11 Osborne Road, Garden City, NY 11530.

Q. PLEASE DESCRIBE YOUR BACKGROUND.

A. I received a Bachelor of Science degree in Engineering from the United States Military Academy at West Point, NY, and a MBA degree from Purdue University. I have also completed the Penn State Executive Development Program. I have more than 30 years of telecommunications experience. My last employment before forming Telecom Visions, Inc. was with the NYNEX Corporation, also recently known as Bell Atlantic-North, and subsequent to the merger with GTE, as Verizon. I retired as a General Manager under an early retirement offer from NYNEX after 24 years of experience in a variety of line and staff assignments, primarily in outside plant engineering and construction. That experience included everything from personally splicing fiber and copper cables to heading an organization responsible for the procurement, warehousing, and distribution of approximately $1 million per day in telecommunications equipment. I have had detailed hands-on experience in rural, suburban,

and high-density urban environments. I spent several years on the corporate staff of NYNEX responsible for the development of all Methods and Procedures for Engineering and Construction within that company, including methods used to determine material and labor costs associated with building outside plant infrastructure. To summarize, I have planned outside plant, I have designed outside plant, I have purchased telecommunications materials and contract labor, I have personally engineered and constructed outside plant, and I have designed methods for those who do such functions. I have also performed other functions, or have supervised those who do, in installing, connecting, repairing, and maintaining the various parts of the telecommunications network.

I have also taught undergraduate students as an Adjunct Professor of Telecommunications at New York City Technical College, and have attended numerous courses in telecommunications technologies, methods and procedures. For the past five years, I have submitted affidavits, written testimony, and appeared as an expert telecommunications witness in proceedings before state regulatory commissions in Alabama, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Nevada, New Jersey, New York, Oklahoma, Pennsylvania, Texas, Washington, and before the Federal Communications Commission ("FCC").

Attachment JCD-1 to this testimony provides further detail concerning my qualifications and experience.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, I previously testified in this proceeding on July 31, 2000 and August 28, 2000, and appeared to present testimony before this Commission on September 21, 2000.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by AT&T Communications of the Southern States, Inc. (AT&T) and MCI WorldCom ("WorldCom") to review and comment on the revised BellSouth Telecommunications Loop Model© ("BSTLM") as filed in this proceeding in response to this Commission's May 25, 2001 Order No. PSC-01-1181-FOF-TP ("*FL UNE Order*"). I will also respond to the direct testimony of BellSouth Telecommunications, Inc. ("BellSouth") witness D. Daonne Caldwell. My testimony will primarily focus on outside plant input values to the model, the inconsistent "pick and choose" methods BellSouth has used to supposedly justify its unreasonably high outside plant input values, errors in alleged "support data" calculations that BellSouth claims supports its outside plant input values, those areas where BellSouth has ignored this Commission's order to change the methods of determining outside plant input values, how BellSouth has simply ignored features of the BSTLM that could have been used to meet this Commission's Order, and in some cases the ways in which the internal structure of the BSTLM handles outside plant.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. **In Section II**, I identify the requirements of the *FL UNE Order*.

In Section III, I explain how BellSouth's continued use of linear Engineering Factors fails to satisfy the Commission's requirements put forth in the *FL UNE Order*. Further, I explain how the factors proposed by BellSouth are unreasonably high, are unsupported within its filed evidence, and are far beyond generally accepted industry opinion.

In Section IV, I discuss the inputs used in BSTLM to determine outside plant structure costs (aerial poles/anchors/guys, buried trenching/plowing/boring, and underground conduit/manholes) as well as costing methodologies that have been used by BellSouth in this filing for outside plant structure. I explain how BellSouth's proposed inputs for outside plant structure are fraught with correctable errors and fail to satisfy the requirements set forth in the *FL UNE Order*.

In Section V, I discuss the inputs used in BSTLM to determine outside plant copper cable costs and the costing methodologies proposed by BellSouth in its filing. I explain how BellSouth fails to satisfy the requirements set forth in the *FL UNE Order* and show that inputs proposed by BellSouth for outside plant copper cable are unreasonably high and unsupported by fact or generally accepted industry opinion.

In Section VI, I discuss the same issues discussed in Section V; however, in this section I do so in regards to outside plant fiber optic cable.

In Section VII, I summarize my testimony and explain why the BSTLM and the BellSouth Cost Calculator ("BSCC"), with proper modifications, can be used to generate bottoms-up UNE results for the outside plant portion of the local telephone network.

A Summary of each input category, identified issues, recommended changes, and general impacts of changes on UNE costs is included as Attachment JCD-8 to this testimony.

II. REQUIREMENTS OF THE COMMISSION'S MAY 25TH ORDER

Q. WHAT DID THE COMMISSION ORDER IN ITS MAY 25TH DECISION?

A. In its May 25th Order, the Commission required BellSouth to re-file its cost studies. The new cost studies were to "explicitly" model "all cable and associated supporting structure engineering and installation placements" (*FL UNE Order*, page 234), as opposed to utilizing ratios to develop engineered, furnished and installed costs – as was done in BellSouth's initial application of the BSTLM in this proceeding.

The Commission gave BellSouth 120 days to refile the model using a "bottoms up approach," including "all BellSouth assumptions used

in developing cable placements, the basis and source data for the revised input values, and a clear identification and listing of all input values."

Regarding my specific areas of outside plant engineering and construction expertise, I find the following excerpts from the *FL UNE Order* most important to this proceeding.

> Upon review, it appears that BellSouth's use of linear loading factors, while easy for BellSouth to apply, can generate questionable results, especially in light of deaveraged rates ... no economies of scale for exempt material, engineering, or labor, for example, ever occur. It seems very unlikely that there are no economies generated as cable sizes grow larger. (*FL UNE Order* at 282).

> [E]specially recognizing the capability of the model and the fact that loops and loop type items are being deaveraged, it is disconcerting that BellSouth did not avail itself of the model's flexibility. Additionally, we are concerned that BellSouth could not provide any evidence demonstrating that installation costs are directly proportional to material prices or that the relationships for land and building factors or pole and conduit loadings would be representative of the future forward-looking study period as its factors imply. (*FL UNE Order* at 283).

> [I]n order to determine the magnitude of discrepancies between using a loading factor approach as opposed to a "bottoms up" approach for placements of plant directly related to the loops and loop type items, we shall require BellSouth to refile the BSTLM within 120 days from the issuance of this order explicitly modeling all cable and associated supporting structure, engineering, and installation placements ... The refiling shall include all BellSouth assumptions used in developing cable placements, the basis and source data for the revised input values, and a clear identification and listing of all input values. (*FL UNE Order* at 284; see also *FL UNE Order: Loading Factors Summary and Conclusion* at 306-307).

When questioned if the structure cost results would be more accurate and representative if the BSTLM were utilized to directly place structures rather than using loading factors, [BellSouth] witness Caldwell responded that she did not know. While the BSTLM has the ability to accurately build and calculate poles and conduit, witness Caldwell asserts that BellSouth chose to use pole and conduit loading factors because the information was more readily available. This choice was made even though BellSouth recognizes that we have rejected the use of loadings in previous cases. (*FL UNE Order* at 287-288).

Upon consideration, we note that we share Sprint's witness Dickerson's concern that the pole and conduit loading factors, because they are based on statewide average relationships and applied to unit material prices, will distort the costs of wire centers in high density areas and understate the costs in low density areas. In a proceeding where deaveraging loops and loop type items are at issue, this is particularly troublesome. In principle, we expect that modeling cable and conduit structure costs bottoms-up would be preferable and more accurate. (*FL UNE Order* at 294).

Loading Factors Summary and Conclusion: As set forth herein, we find some of the loading factors BellSouth has recommended are appropriate for use in setting UNE rates. However, recognizing the capability of the BSTLM to model placements and structures, a "bottoms up" approach is preferable [and] it appears that such an approach would tend to be more accurate. We are concerned with BellSouth's use of linear in-plant factors and agree with AT&T and WorldCom and Sprint that linear loadings are particularly disconcerting in a proceeding where rates are being deaveraged. We have not lost sight of the fact that linear factors will distort the cost relationships between rural and urban areas ... We are also concerned that BellSouth did not provide any evidence demonstrating that installation costs are directly proportional to material prices or that relationships for land and building factors or pole and conduit loadings would be representative of the future forward-looking study period, as its factors imply. (*FL UNE Order* at 305).

> [R]ecognizing that engineering and installation costs should vary depending on the specific plant, soil and environmental conditions of the installation, we are unable to determine based on this record what would be a fair adjustment to make to reflect these things. Further, the basic problem with BellSouth's loading factors is that they are linear. Therefore, adjusting each factor may not correct the problems we have defined. (*FL UNE Order* at 306).

Q. WHY DID THE COMMISSION ORDER BELLSOUTH TO REFILE ITS COST MODELS?

A. The Commission ordered the use of a "bottoms up approach" because it was "troubled by BellSouth's use of linear in-plant factors" which "will distort the costs of wire centers in high density areas and understate the costs in low density areas." (*FL UNE Order*, page 294) The Commission also noted that, "BellSouth could not provide any evidence demonstrating that installation costs are directly proportional to material prices." (*FL UNE Order*, page 283).

III. BELLSOUTH'S CONTINUED USE OF AN ENGINEERING FACTOR VIOLATES THE COMMISSION'S ORDER AND IS UNREASONABLE

Q. IN ITS UNE ORDER, WHAT DID THIS COMMISSION DIRECT BELLSOUTH TO DO ABOUT ENGINEERING COSTS?

A. This Commission ordered BellSouth to refile its cost models using a bottoms-up approach to engineering costs, rather than using a linear Engineer, Furnish & Install ("EF&I") factor. Specifically, the *FL UNE Order* stated,

> Upon review, it appears that BellSouth's use of linear loading factors, while easy for BellSouth to apply, can generate questionable results, especially in light of deaveraged rates ... no economies of scale for exempt material, **engineering**, or labor, for example, ever occur. It seems very unlikely that there are no economies generated as cable sizes grow larger. (*FL UNE Order* at 282, Emphasis Added).

> we shall require BellSouth to refile the BSTLM within 120 days from the issuance of this order explicitly modeling all cable and associated supporting structure, **engineering**, and installation placements. (*FL UNE Order* at 284, Emphasis Added).

It is clear that the Commission recognized that it does not take 42 times as long to engineer the placement of one thousand feet of 4200-pair cable as it does to engineer the placement of one thousand feet of 100-pair cable.

Q. WHAT METHOD HAS BELLSOUTH USED TO CAPTURE ENGINEERING COSTS IN THE REFILING OF ITS COST MODEL?

A. BellSouth has ignored the Commission's *FL UNE Order*, and has filed costs using a linear Engineering Factor. BellSouth's witness, Ms. Caldwell, suggests in her November 8, 2001 direct testimony that BellSouth has complied with the *FL UNE Order* because it changed its Engineering Factor from being a factor applied to material to a factor applied to material plus installation labor. In my opinion, that does not comply with the *FL UNE Order*.

Q. HOW SHOULD ENGINEERING COSTS BE CALCULATED?

A. In my opinion, based on decades of personal experience in performing outside plant engineering, teaching others how to engineer, and in writing corporate methods on how to engineer, engineering costs should ideally be broken down into three components in order to accurately estimate total engineering costs.

First, for sheath feet of cable or structure engineered, a linear engineering cost is appropriate. An engineer normally performs a records check and field survey for cable or structure work being engineered, and designs appropriate details associated with an engineering work order. Therefore, one component is a "feet per day engineered" cost.

Second, for cable splicing, a fixed component is appropriate. An engineer must review records and dedicate an amount of time to establishing a splice location at a fixed point. Therefore, another component is a "minutes of engineering time per splice" location.

Third, for groups of copper pairs spliced and units of fibers spliced, a linear engineering cost is appropriate. Since engineers do not engineer the splicing of individual copper pairs or fiber strands, the appropriate cost would be based on "minutes of engineering time per 300 pairs spliced," or "minutes of engineering time per 12 fibers spliced."

BellSouth has not filed costs based on any such approach to engineering costs.

Q. CAN BELLSOUTH'S MODEL BE MODIFIED TO CORRECTLY CALCULATE BOTTOMS-UP ENGINEERING COSTS?

A. Unfortunately, no. The method I described above cannot be implemented without performing some level of "surgery" on BellSouth's model. Mr. Pitkin has not attempted what is expected to be a complex modification to BellSouth's model.

Q. IF ONE TYPE OF FACTOR COULD BE USED, WHAT WOULD BE THE MOST APPROPRIATE FACTOR?

A. Opinions in the industry vary, but several knowledgeable parties filed comments during the *FCC's Inputs Order* activities advocating the position that engineering cost probably correlates best with linear sheath feet of cable:

> §166. Sprint contends that we should calculate the loadings for LEC engineering on a flat dollar basis rather than on a fixed percentage of the labor and material costs of cable. We find persuasive Sprint's contention that LEC engineering costs do not vary with the size of the cable and therefore do not vary with the cost of the cable. Accordingly, we find it reasonable to apply the loading for LEC engineering in the manner that Sprint recommends. [*FCC Final Inputs Order*. Original footnotes omitted].

Given the fact that one of the most import aspects of detailed engineering is to instruct construction technicians on how to physically build outside plant across a piece of geography, I would agree that a factor based on sheath feet is one appropriate way.

Q. DID THE FCC EXAMINE USING AN ENGINEERING FACTOR BASED ON TOTAL OUTSIDE PLANT INVESTMENT?

A. Yes. Many parties filed comments advocating engineering cost as a percent of total installed outside plant cost. In fact, during the *Inputs Order* proceedings at the FCC in the FCC's Universal Service proceeding, BellSouth appeared before the FCC as a co-sponsor of the BCM2/BCPM

model, advocating an engineering component of 5% of outside plant cost. AT&T/WorldCom appeared before the FCC sponsoring the HAI Model. Part of the HAI Model used discrete engineering costs that accounted for economies of scale, and part of the HAI Model used engineering costs as 15% of copper cable costs for cables smaller than 400 pairs. The FCC concluded that engineering costs at 10% of material and labor cost of cable is reasonable. In its *Final Inputs Order*, the FCC stated:

> §164. LEC Engineering. The second adjustment we proposed to the regression equations used to estimate cable costs was to account for LEC engineering costs, which were not included in the RUS data. As we noted, the BCM2 default values include a loading of five percent for engineering. In contrast, the HAI sponsors claimed that engineering constitutes approximately 15 percent of the cost of installing outside plant cables. This percentage includes both contractor engineering and LEC engineering. The cost of contractor engineering already is reflected in the RUS cable cost data. In the *Inputs Further Notice*, we tentatively concluded that we should add a loading of 10 percent to the material and labor costs of cable (net of LEC engineering and splicing costs) to approximate the cost of LEC engineering.
>
> §165. We affirm our tentative conclusion to add a loading of 10 percent to the material and labor for the cost of cable (net of LEC engineering and splicing costs) to approximate the cost of LEC engineering. [original footnotes not shown].

Q. HAS BELLSOUTH PROVIDED ANY VALID EVIDENCE SUPPORTING ITS ENGINEERING COSTS?

A. No. BellSouth's witness, Ms. Caldwell, alludes to substantiation of engineering factors by stating, "Engineering costs were obtained from the OSPCM system." (Caldwell November 8, 2001 direct testimony at page 16). Elsewhere in her testimony, Ms. Caldwell alludes to the fact that OSPCM information is contained in BellSouth's Attachment 4 in Appendix B of its November 8, 2001 filing. I have reviewed the materials filed by BellSouth, and find no adequate substantiation of its engineering factors of 35.72% for fiber cable and 27.07% for all other outside plant items such as copper cable and structures. Based on my experience, those percentages are so far out of the realm of reality, that they are absurd.

For example, using these inflated factors I calculate the engineering costs generated by BSTLM would represent 73% as much to engineer as it takes to place and splice a 24-fiber underground cable, and 107% as much to engineer as it takes to place and splice a 144-fiber cable (Attachment 8-B to Mr. Pitkin's testimony indicates BellSouth's engineering cost per foot at Line 21, compared to the sum of placing and splicing costs on Lines 18 and 19). This would mean that if placing and splicing installation costs were $10,000 on a 144 pair underground fiber project, the engineering cost alone would be another $10,700. Incredibly, BellSouth is suggesting that it spends much more time and money engineering fiber cable than it does actually building it. Engineering fiber

cable is extremely easy - I have taught many engineers to design fiber cable systems - it is one of the easiest tasks in outside plant engineering. The cable is lightweight, up to 35,000 feet of cable can be delivered on a single placing reel, and its placement is drawn as a long single line on an Engineering Work Order.

Q. WHAT DO YOU RECOMMEND?

A. To move forward with this proceeding, this Commission should order BellSouth to refile its cost model using the 10% engineering factor that the FCC found reasonable. Given that BellSouth in late 1998 supported a 5% engineering factor in BCM2/BCPM, a 10% engineering factor is more than reasonable here.

IV. BELLSOUTH'S STRUCTURE INPUTS FAIL TO SATISFY THE COMMISSION'S REQUIREMENTS AND ARE FRAUGHT WITH CORRECTABLE ERRORS

Q. WHAT IS THE PRIMARY METHOD USED BY BELLSOUTH TO JUSTIFY THE INPUT VALUES THAT IT PROPOSES FOR OUTSIDE PLANT STRUCTURE?

A. BellSouth claims that its input values for outside plant structures are supported by its outside plant contractor costs for each district in Florida.

This claim is based on data submitted in Attachment 3 of Appendix B of BellSouth's cost study details (Caldwell direct at pg. 7). Even if one were to assume that these data are accurate, the calculations performed by BellSouth on these data are fraught with errors. Although I take issue with some of the data, the Commission should accept the BellSouth data for now, but should order corrections to how the inputs derived from this data are used within BSTLM. I recommend specific input value modifications based on my analysis of BellSouth's Attachment 3 data, which I have included as Attachment JCD-2 to this testimony. My recommendations are also reflected in the attachments to Brian Pitkin's testimony.

Q. HOW WOULD YOU CHARACTERIZE MANY OF BELLSOUTH'S ERRORS IN USING ITS CONTRACTOR DATA?

A. In general, many of BellSouth's errors involve a mismatch between numerator and denominator. For example, there is a mismatch between the number of manholes and the number of manhole covers and collars. BellSouth disregarded the fact that cost data for manhole covers & collars involved many more installations than the data for its number of manholes. BellSouth's manhole cost calculations equate to an average of 30 manhole covers per manhole. This is obviously an absurd result.

After discussing an overarching issue of spreading miscellaneous costs over all structure accounts, I will address each of the structure issues

in the same order as did BellSouth's witness Ms. Caldwell, starting at page 8 of her November 8, 2001 direct testimony.

Q. WHAT IS THE MAJOR CAUSE FOR BELLSOUTH FAILING TO MEET THE COMMISSION'S ORDER REGARDING OUTSIDE PLANT STRUCTURE COSTS?

A. For structure costs, BellSouth fails to meet the Commission's order regarding a bottoms-up approach, primarily because of its treatment of "Miscellaneous Contractor Charges."

BellSouth data includes a potpourri of charges for "stuff" for which BellSouth could find no home. Therefore, in an attempt to recoup these non-TELRIC embedded base expenditures, BellSouth created a "closing factor" to spread these costs over all structure costs as a 25.43% miscellaneous markup to actual contractor costs for modeled TELRIC items. These charges should be disallowed by the Commission and removed across the board. The details of BellSouth's data for this category are shown at pages 1 and 2 of Attachment JCD-2. This miscellaneous loading applies to each category of structure cost; I will not bring this up repeatedly although the issue applies to every item discussed below, opting instead to ask this Commission to have the charges uniformly removed.

Q. PLEASE DESCRIBE IN DETAIL ALL OF THE ERRORS YOU HAVE UNCOVERED TO DATE IN BELLSOUTH'S CLAIM OF USING CONTRACTOR BILLING DATA.

A. I describe below, by category, each of the errors I have uncovered to date in BellSouth's use of contractor billing data. My approach is to correct BellSouth's errors to allow this proceeding to move forward using BellSouth's data, rather than applying any other method, such as arguing about unreasonableness. Although I may not agree with BellSouth's data, it is important to move forward to achieve a reasonable approximation of TELRIC-based UNE rates.

Aerial Structure Contract Labor:

BellSouth's calculations involving contract labor costs for placing poles are flawed. BellSouth includes costs for placing power company poles without taking credit for the number of poles placed. Because the objective is to determine the installed cost per pole, it is inaccurate to divide the costs of installing two poles (one telco pole + one power pole) by only a single (telco) pole. In similar fashion, BellSouth includes costs for placing "Carry-In" poles without taking credit for the number of poles placed. These pole placements without pole counts must be excluded to balance the numerator and denominator. Details of this correction, using BellSouth's data, are included at page 3 of Attachment JCD-2.

Aerial Structure Material:

No issues or recommendations are being presented in this testimony.

Buried Excavation Contract Labor:

BellSouth's witness Caldwell claims that buried excavation contract labor costs do not vary by type of excavation because BellSouth's agreements with its contractors do not vary with terrain type. I believe this to be a misleading statement. Although BellSouth contracts with excavators may not list different costs for different soil types with differing levels of difficulty, there are differences available in BellSouth's actual Attachment 3 data. There are 12 types of buried excavation and restoration available in BSTLM as follows:

Type	BellSouth Assumption
1. Rocky Plow	(0% Occurrence)
2. Rocky Trench	(0% Occurrence)
3. Trench Provide by Developer at no charge	(0% Occurrence)
4. Trench & Backfill	(Equal Cost Item)
5. Backhoe Trench	(Equal Cost Item)
6. Hand Dig Trench	(Equal Cost Item)
7. Cut & Restore Asphalt	(Equal Cost Item)
8. Cut & Restore Concrete	(Equal Cost Item)
9. Cut & Restore Sod	(Equal Cost Item)
10. Plow Cable	(Equal Cost Item)
11. Bore Buried Cable	(Unique Cost Item)
12. Push Pipe/Pull Cable	(Unique Cost Item

Of the seven types of excavation that BellSouth uses in BSTLM (e.g. types 4 through 12), BellSouth combines seven of them together as equal cost items and only distinguishes higher costs for Bore Buried Cable and Push Pipe/Pull Cable. I will address errors in calculating the last two later in this section of testimony.

Plowing Cable:

BellSouth's contractor data simply lists Place [Buried] Cable 12, 18, 24, 30, 36, 42, and 48 inches deep. Based on BellSouth testimony and level of cost, this cost appears to reflect only trenching operations. As such there appears to be a notable category missing from the data. BellSouth has omitted any data for plowing cable even though it assumes such a method will be used 78% of the time in the rural density zone, and 15.75% of the time in the Suburban density zone. I find it extraordinarily difficult to believe that contractors have the right to decide whether they want to trench or plow, at their option, without regard to direction from BellSouth engineers, or that BellSouth is willing to pay backhoe trenching prices for cable plowing operations. During my career, in every instance of which I am aware, a contractor hired to install cable was specifically directed to install that cable in a particular manner, as directed by the engineer. This allows the engineer to specify the exact type of construction, and allows the economical use of much less expensive plowing where appropriate. The cost difference between low cost cable plowing and much higher backhoe trenching for cable placements is so substantial that it is

unreasonable to expect a procuring and contracting organization to lump those two functions together.

Given the soil types in Florida, I am not surprised that there would be a significant amount of cable plowing being performed. In fact, Florida conditions make for easy plowing, and I find BellSouth's high plowing percentage in rural areas to be reasonable. Also, based on my experience in negotiating contracts for hundreds of miles of cable placement, plowing is a very inexpensive alternative. Although not Florida-specific, my experience with plowing cable in the much more difficult Adirondack Mountains of New York State cost me only $0.60/ft. to $0.80/ft. The FCC examined thousands of Rural Utility Service ("RUS") contracts, and concluded that even lower costs than mine are reasonable. In fact, the FCC's Synthesis Model generated an overall average cost of buried structures of all types (including the higher costs of trenching) in the rural density zones of only $0.77 per foot. BellSouth, on the other hand, uses its across-the-board buried structure input value of ***BEGIN PROPRIETARY [redacted] END PROPRIETARY***per foot for costs of plowing in buried cable. This level of cost disparity is beyond reason.

I recommend this Commission order the cable plowing input be set at no more than $0.80 per foot.

Buried Restoration:

BellSouth has taken a conglomeration of costs, declared them restoration activities, and has spread them uniformly, on a per foot basis, onto Buried Cable (BurCa) and Bore Buried Cable (BORECA) costs. Worthy of note is that performing Boring Cable operations is done to avoid the need to cut and restore the ground surface; therefore, surface restoration costs are inappropriate for Boring Cable. Plowing Cable also requires no appreciable surface restoration activities.

BellSouth's restoration cost allocation is incorrect for several additional reasons. First, in BellSouth Attachment 3 there is significant contractor data for the costs of Cut & Restore Asphalt, Cut & Restore Concrete, and Cut & Restore Sod, even though BellSouth claims that it cannot break out those items separately. As I indicate at page 4 of Attachment JCD-2, I recommend that buried excavation inputs be revised to reflect restoration costs under the proper categories, rather than spreading that cost arbitrarily across all categories as BellSouth has proposed.

Second, costs such as Furnish & Place 12", 15", 18", 24", and 30" diameter Corrugated Pipe should not be included in calculating buried cable restoration costs, because, by definition, buried cable involves cable in contact with dirt, not in pipe.

> §65. Outside plant consists of a mix of aerial, underground, and buried cable. Aerial cable is strung between poles above ground. Underground cable is placed underground within conduits for added support and protection. Buried cable is placed underground but without any conduit. A significant portion of outside plant investment consists of the poles, trenches, conduits, and other structure that support or house the copper and fiber cables. In some cases, electric utilities, cable companies, and other telecommunications providers share structure with the LEC and, therefore, only a portion of the costs associated with that structure are borne by the LEC. Outside plant investment also includes the cost of the SAIs and DLCs that connect the feeder and distribution plant. [FCC Tenth Report and Order, FCC99-304, October 21, 1999 {"*FCC Final Inputs Order*"}]

Third, restoration costs do not apply to cable boring and plowing operations. Therefore, it is improper to spread restoration costs to these inputs as BellSouth has done.

I have removed inappropriate buried structure charges, segregated the costs for Asphalt, Concrete, and Sod, and have applied them to the appropriate categories in the BSTLM inputs. I have performed calculations on using my segregation versus BellSouth's arbitrary spreading method, and overall contractor buried placing cost increases by $1.27/ft. in the Urban density zone, increases by $0.47/ft. in the Suburban density zone, and decreases by $0.31/ft. in the Rural density zone, as opposed to BellSouth's allocations of such costs. I believe this is a fair

---

[1] The phrase "plant mix" refers to the ratio of outside plant that is aerial, underground, or buried in a network or particular area.

method of cost allocation and will result in costs that more accurately reflect geographic differences.

Buried Splice Pits:

BellSouth has taken contractor costs for buried splice pits (see Attachment JCD-2, page 5) and evenly distributed them across buried structure categories. Splice pits are not needed for normal buried splicing operations because such splices are routinely placed in above ground pedestal closures (See Attachment JCD-3 for pictures of typical above-ground closures). Since costs for such closures are already cared for with the Exempt Material Loading Factor, these costs should be excluded from TELRIC calculations.

Bore Buried Cable:

Boring for buried cable involves using a drilling type of device, or a mechanical "Mole" that bores a hole in soil under pavement. After the hole is bored, a cable is pulled through the hole in the dirt. BellSouth's calculations for this contractor activity involve a mismatch of numerator and denominator because BellSouth inappropriately adds the cost of steel pipe, PVC pipe, and Flex-pipe into the bore buried cable contractor costs (see Attachment JCD-2, page 6), and then divides by the feet of contractor Boring performed (different footages). Costs for pipe should be excluded, because Boring Buried Cable does not normally use pipe. Such pipe is best included under the category "Push Pipe/Pull Cable", which is

addressed next. I recommend the Commission correct the inputs based on my recommendations listed in Attachment JCD-2.

Push Pipe/Pull Cable:

BellSouth is completely in error regarding its calculated costs for Push Pipe/Pull Cable, because its costs are based on a single line of contractor data that has nothing to do with Push Pipe/Pull Cable. I have been able to construct what I believe is a fair input value for the Commission's consideration, based on more appropriate BellSouth contractor cost data.

As indicated on page 7 of Attachment JCD-2, BellSouth made a mistake in designating "Place Cable or Wire in Conduit" as representing "Push Pipe/Pull Cable" ("PPPC"). Placing cable or wire in conduit has nothing to do with PPPC.

A more appropriate method for developing such costs is to use the cost per foot for Bore Buried Cable discussed above, and add the cost of pipe on a per foot basis. This information is available under BellSouth data that it incorrectly categorized under Bore Buried Cable. By adding those two per foot costs together, I arrived at my recommendation in Attachment JCD-2, page 7.

Buried Cable:

The primary base number for buried cable (before BellSouth's inappropriate spreading of costs) was incorrectly calculated by BellSouth.

and should be corrected based on BellSouth-supplied contractor data. BellSouth's numerator does not match its denominator because it includes inappropriate costs and, even if deemed appropriate, it excludes matching footages from the denominator. (See Attachment JCD-2, page 8). These inappropriate "Buried Cable" costs included by BellSouth consist of placing of conduit (not a "Buried Cable" item), extra cables in the same trench, and other inappropriate costs. Only contractor costs labeled as Placing Buried Cable, along with associated footages, should be used to calculate buried cable placing costs per foot. I have included those calculations in my recommended input values listed in Attachment JCD-2, page 8.

Underground Excavation Contract Labor:

Similar to Buried Excavation Contract Labor, Ms. Caldwell's testimony oversimplifies the methods used by BellSouth, and is not completely accurate. There are eight types of underground excavation and restoration available in BSTLM as follows:

Type	BellSouth Assumption
1. Rocky Trench	(0% Occurrence)
2. Trench & Backfill	(Equal Cost Item)
3. Backhoe Trench	(Equal Cost Item)
4. Hand Dig Trench	(Equal Cost Item)
5. Cut & Restore Asphalt	(Equal Cost Item)
6. Cut & Restore Concrete	(Equal Cost Item)
7. Cut & Restore Sod	(Equal Cost Item)

8. Bore Underground Cable (Unique Cost Item)

Of the eight underground conduit placing input categories available in BSTLM, BellSouth used the same input for seven of them (one of the seven, Rocky Trench, has zero percent usage). The single non-uniform category is Bore Underground Cable. BellSouth's overall combined weighted input costs for underground conduit placing per foot vary significantly between Rural, Suburban, and Urban density zones. One might ask, if excavation costs are the same regardless of the excavation method, then why are the costs by density zone not the same? The answer is simple. BellSouth inappropriately used an extremely high Bore Underground Cable cost, and then applied varying percentages of use by density zone as a "fudge-factor" to make the cost per density zone vary.

Although boring cable under the surface may be used sparingly for Buried Cable, it is even more unusual to build duct banks of multiple 4-inch diameter plastic cable ducts between manholes using subsurface boring methods - in fact, it is rare. In my experience, such a rare occurrence would only take place to cross under an Interstate Highway or railroad line where no overpass or underpass is available for several miles. BellSouth's own data shows this to be true, in that it only used this type of construction for only ***BEGIN PROPRIETARY [redacted] END PROPRIETARY*** out of ***BEGIN PROPRIETARY [redacted] END PROPRIETARY*** of underground construction activity. In fact,

the percentage of this type of construction was less than one half of one percent, or 0.47% of underground feet of excavation activity (see Attachment JCD-2, pages 9 and 10). However, allegedly based on BellSouth management opinion, BellSouth allocated BSTLM percentages for this rare, and extremely high cost type of construction, as 2.67% in Rural, 5.75% in Suburban, and 12.5% in Urban density zones, even though BellSouth experiences only 0.47% of this type of underground excavation activity in its entirety. I recommend adjusting these BSTLM input percentages, based on underground route feet produced by BSTLM, to result in an overall average of 0.47%, but varying by density zone based on sheath feet differences. This method reflects highest use in Urban, less in Suburban, and the smallest amount in Rural density zones.

I also recommend re-allocating restoration costs for Asphalt, Concrete, and Sod discretely to appropriate underground excavation categories, rather than spreading them inappropriately across all types of excavation. Results are the same as for Buried Structure, with increases of $1.27/ft. in the Urban density zone, increases of $0.47/ft. in the Suburban density zone, and decreases of $0.31/ft. in the Rural density zone, as opposed to BellSouth's allocations of such costs. Once again, I believe this is fair treatment to all parties, and results in a more accurate calculation of cost by geographic area.

Conduit Material:

BellSouth's input value for conduit material is another case of mismatching the numerator and denominator. The conduit material input should reflect the cost of 4-inch PVC conduit pipe, and should not contain any placing labor. However, BellSouth has included one line of contractor cost that inappropriately includes labor. This line of data, which is captioned, "This is conduit placed by contractor," should therefore be excluded from the average material cost of PVC conduit. In addition, and as noted on page 11 of Attachment JCD-2, I was unable to determine how BellSouth went from its proposed conduit material cost per foot plus 25.43% miscellaneous loading (***BEGIN PROPRIETARY [redacted] END PROPRIETARY***) to its input value of (***BEGIN PROPRIETARY [redacted] END PROPRIETARY***), or an unexplained additional increase in material cost of another 50% of material. I therefore recommend that the Commission order a conduit material cost based on my correction to BellSouth data as indicated in Attachment JCD-2. This input value is slightly higher than my experience of $0.60/ft. and the FCC's decision in its USF proceeding adopting an input value of $0.72/ft.

Manholes:

BellSouth attempted to use contract data to compute an average manhole cost per cubic foot. It then applied that cost to BSTLM manholes designated as Type-1, Type-2, Type-3, and Type-5. The BSTLM *Input Table - Underground Labor* describes manhole Type-1, Type-2, and

Type-3 as "Contract Labor installation cost of one vault/manhole that accomodates [sic] three or four cables. This is the minimum size manhole available." (see Attachment JCD-4). Although all three manholes are identical, BellSouth uses costs for 72 cubic-foot manholes for Type-1 and Type-2, but 224 cubic-foot manholes for Type-3. In addition, for manhole Type-5 BellSouth assumes a huge 703 cubic-foot manhole to allow capacity for just one more cable, described in the BSTLM Input Table as "Contract Labor installation cost of one vault/manhole that accomodates [sic] five cables." Because Type-1, Type-2, and Type-3 manholes should be identical, with a capacity of 3 to 4 cables, a cost for a 72 cubic-foot manhole should suffice. Because Type-5 manholes only need to be slightly larger to accommodate 5 cables (such as a 4 ft. wide by 8 ft. long by 7 ft. high manhole), a 224 cubic-foot manhole should suffice. This size manhole is more reasonable and should be used in the BSTLM inputs.

For manhole costs, BellSouth once again mismatches numerator and denominator by using its contractor costs (see Attachment JCD-2, page 12). I believe BellSouth has provided Attachment-3 costs for only 7 large legacy-sized manholes, such as the classic 20 cable capacity Type-A manhole which measures 6 ft. wide by 12 ft. long by 7 ft. high. It is a 504 cubic foot manhole. BellSouth's contractor data appears to reflect six Type-A manholes at a cost that is above normal, based on my experience. However, absent additional data, I will accept BellSouth's costs. In addition, however, BellSouth has included the cost of one exceptionally

high-cost Type-A manhole that is almost 3 times the cost of the other 6 manholes in its sample. Because the sample size consists of only seven manholes, I recommend excluding the cost of the one extreme case from the average as an aberration. Using the average per cubic-foot cost for the 6 manholes in the sample, and using manhole sizes of 72 cu. ft. for BSTLM Type-1, Type-2, and Type-3 manholes, and 224 cubic feet for Type-5 manholes, I have calculated recommended costs as shown in Attachment JCD-2, page 12.

In addition, BellSouth claims that it incurs separate costs for manhole covers & collars. BellSouth, on the other hand, distributed all of the costs for 207 manhole covers & collars to the 7 manholes in its sample, creating the equivalence of 5 manhole covers per manhole Type-1 and Type 2, 16 manhole covers for manhole Type-3, and 52 manhole covers for manhole Type-5, or an average of 30 manhole covers per average manhole due to the mismatch between numerator and denominator. In addition, manhole covers & collars should be assigned on a one-per-manhole basis, rather than BellSouth's method of calculating these costs on a per cubic foot basis. This is because manhole covers do not get bigger as manholes get bigger, they stay the same standard 30-inch diameter size. Contrary to BellSouth, I have used the average cost per manhole cover & collar and added that to my basic cost per manhole in reaching my recommendations.

Q. DO YOU HAVE ADDITIONAL CRITICISMS REGARDING BELLSOUTH'S PROPOSED UNDERGROUND AND BURIED STRUCTURE INPUTS?

A. Yes. Besides the engineering factor issue addressed in the earlier section of this testimony, I believe BellSouth's position regarding forward looking opportunities for structure sharing are short-sighted, do not reflect emerging competitive realities, and reflect violation of FCC structure sharing rules.

The Telecommunications Act of 1996 and the FCC's implementation of that Act make it clear that Competitive Local Exchange Carriers ("CLECs") should have unfettered equal access to structure space. BellSouth's claim that other parties are leasing only 129,754 feet of conduit space, or an average of 0.07% of the space is highly suspect. Whereas Verizon claims that more than 30 different companies occupy its conduits in Manhattan, it appears that BellSouth is either monopolizing access to its own ducts and creating severe barriers to entry, or is mistaken in its forward looking structure sharing projections. If competition comes to Florida, then either Florida streets will be dug up time and time again, as CLECs build their own underground conduit systems, or else significant amounts of structure sharing will take place. I recommend a forward-looking telco share of 50% in the rural density zone, and 33% in the suburban and urban density zones.

For buried structures, BellSouth has assumed that it never encounters cases where housing development contractors provide free trenches for BellSouth. In addition, BellSouth claims that joint buried trenching only occurs 6% of the time. Based on my experience, this is an extremely low number. Again, it appears that BellSouth is engaging in barrier to entry practices and making no effort to encourage joint trenching, or is mistaken about forward looking structure sharing opportunities. Once again, if competition takes place in Florida, there will either be extensive buried structure sharing, or repeated excavations of streets will take place.

For these reasons, I believe this Commission should reject BellSouth's almost non-existent structure sharing percentages, and encourage competition by advocating 50% structure sharing between power companies and BellSouth in the Rural density zone, and 33% structure sharing between power companies, BellSouth, and any number of competitors and cable TV companies making up the third 33% in Suburban and Urban density zones.

Q. IN A FORWARD LOOKING ENVIRONMENT, IF FEEDER AND DISTRIBUTION CABLE WERE PLACED ALONG THE SAME ROUTE, WOULD AN ENGINEER DESIGN THE NETWORK TO SHARE FACILITIES?

A. Yes. Good planning engineers have been taught that structures are a high cost limited resource, and all efforts should be made to share that investment not only with other service providers, but to use that resource for both feeder and distribution cables. It makes no sense economically, and is environmentally unsound, to build multiple structures along a cable route. An engineer in a forward-looking environment would certainly not construct duplicate feeder and distribution structures along the same route. Instead, an engineer would design the network to take advantage of the shared facilities where available, and I am sure that BellSouth engineering practices encourage this approach.

Q. HAS BELLSOUTH APPROPRIATELY ACCOUNTED FOR FACILITY SHARING IN ITS MODEL?

A. No. In its model, BellSouth assumes that feeder and distribution cable laid along the route only share the distribution cable structure with the feeder cable structure 25% of the time; according to BellSouth's inputs to BSTLM feeder would require its own unique structure 75% of the time. In a forward-looking environment, such as TELRIC, I would expect facility sharing to occur frequently, and recommend changing this input to

reflect the fact that feeder facilities ride on or in structures already built by distribution plant 75% of the time.

Q. FOR AERIAL STRUCTURE, HAS BELLSOUTH USED A REASONABLE AVERAGE DISTANCE BETWEEN POLES?

A. No. BellSouth claims that it used data it filed with the FCC, as reflected in ARMIS reports, to calculate its average span length between poles. BellSouth's witness, Ms. Caldwell suggests that if what she deems to be a reasonable average of 1.5 cable sheaths per pole line were considered, then a realistic actual average aerial span length between poles in Florida would be only 75 feet. BellSouth then claims that it is offering a very conservative number at 120 feet between poles for Rural, Suburban, and Urban density zones. Although BellSouth purports to support its input value with (ARMIS) numbers, it does not appear to pass the "red-face" test. One of the easiest things to observe is the nature of aerial plant because it is readily visible to anyone. My observations during visits to Florida are that span lengths are much longer than 75 feet or even 120 feet. This is consistent with other opinions around the country. Even BellSouth agreed with BCPM inputs supported by it before the FCC in 1998. In its *Final Inputs Order*, the FCC stated:

> §214. ... We proposed to use the following values for the distance between poles: 250 feet for density zones 1 and 2; 200 feet for zones 3 and 4; 175 feet for zones 5 and 6; and 150 feet for zones 7, 8, and 9. For the most part, these

values are consistent with both the HAI and BCPM defaults.

Since there is no FCC, BCPM, or HAI distance less than 150 feet between poles, BellSouth's claim of 75 feet, 112 feet, and even 120 feet average span length between poles in far out of line. A simple average of the generally accepted span lengths equals 189 feet. Mr. Pitkin performed an average based on sheath feet of cable produced by BSTLM, and the weighted average came out to be 184 feet. Therefore, I propose 184 feet be used in the BSTLM inputs for this case.

Q. WHAT COMMON TEST CAN BE PERFORMED TO CHECK ON SPAN DISTANCES BETWEEN POLES?

A. An easy observation is to go into one or more areas of Florida that have pole lines. Using the odometer in an automobile, one can count the number of poles per mile. It is then simple to divide 5,280 feet per mile by the number of aerial spans between poles observed. For example, an average of 184 feet between poles would equate to observing approximately 30 poles in a mile (29 spans). By contrast, Ms. Caldwell's claim of 75 feet between poles would mean one would have to observe 71 poles in a mile (70 spans).

Q. HAS BELLSOUTH PROPOSED APPROPRIATE INTERVALS FOR DOWNGUYS AND ANCHORS?

A. No. In order to stabilize pole lines, anchors are sunk into the ground and downguys are attached from the earth anchor to the cable point of connection at the end of a run of poles (there may also be an infrequent occasion where a sharp bend in the road requires downguy/anchor stabilization). In my experience, downguys and anchors should be expected to occur about every 1,000 to 1,200 feet. In fact, developers of BellSouth's BSTLM agree with that, and included a default value of 1,200-foot spans. The BSTLM Methodology Manual states the following at page 72:

> The Investment Process calculates anchors, guys, and poles on a per foot basis. Per foot development assumes an average span of 1200 feet to determine the number of anchors and guys needed. For poles, it is assumed that one pole is on each end of the span with poles spaced in between based on values in the aerial spacing table. Once the investment is determined for an average span, it is divided by 1200 to put it on a per foot basis. This per foot value is then applied to each foot of aerial distance.

Even in the face of common industry knowledge, BellSouth elected to change this input value to 500 feet, from a reasonable value of 1,200 feet. BellSouth does not offer any evidence to support the change. In testimony, Ms. Caldwell makes the statement (at page 15), "Anchor and guy spacing is estimated to be every 500 feet (roughly every 4 poles) and manhole spacing is assumed to be every 625 feet based on subject matter

expert estimates." BellSouth does not identify the expert, nor does it offer the expert up for cross-examination. There is no evidence or validation provided by BellSouth for changing this 1200-foot anchor/guy span length, and this Commission should order BellSouth to return this input to 1200 feet.

Q. PLEASE SUMMARIZE YOUR POSITION ON STRUCTURE COSTS:

A. In general, I believe this Commission can use most of BellSouth's Attachment 3 raw data, exclude inappropriate items, fix BellSouth errors, and reach conclusions about reasonable bottoms-up inputs on most structure items. BellSouth attempts to recover its non-TELRIC embedded costs by spreading inappropriate costs across categories, and by applying inappropriate costs within a category (what I have described as a mismatch between numerator and denominator). Those costs can be readily removed, as I suggest in this testimony. Costs for Aerial Structures (Poles) and costs for manholes can also be fixed in that manner. In addition, BellSouth claims that it cannot distinguish between types and kinds of structure excavation costs for Buried, Underground Conduit, and Manhole costs. This is not correct. By including a reasonable cost for the plowing of cable, which BellSouth has omitted, and by properly allocating individual discrete Cut & Restore costs for Asphalt, Concrete, and Sod, different costs can be determined by density zone in a valid logical

method. This is in stark contrast to using BellSouth's high cost Underground Boring costs as a "fudge factor" to cause differences by density zone. There is enough information in this case to justify the Commission adopting my bottoms-up structure input recommendations, primarily using BellSouth's own data, as defined by this testimony.

V. BELLSOUTH'S COPPER CABLE INPUTS FAIL TO SATISFY THE COMMISSION'S REQUIREMENTS AND REFLECTS UNACCEPTABLY POOR PRODUCTIVITY

Q. IN ITS UNE ORDER, WHAT DID THIS COMMISSION DIRECT BELLSOUTH TO DO ABOUT COPPER CABLE COSTS?

A. This Commission ordered BellSouth to refile a cost model that includes a bottoms-up approach to copper cable costs, rather than using a linear EF&I factor. Specifically, the *FL UNE Order* stated,

> Upon review, it appears that BellSouth's use of linear loading factors, while easy for BellSouth to apply, can generate questionable results, especially in light of deaveraged rates ... no economies of scale for exempt material, engineering, or labor, for example, ever occur. It seems very unlikely that there are no economies generated as cable sizes grow larger. (*FL UNE Order* at 282).

> [E]specially recognizing the capability of the model and the fact that loops and loop type items are being deaveraged, it is disconcerting that BellSouth did not avail itself of the model's flexibility. (*FL UNE Order* at 283).

> [I]n order to determine the magnitude of discrepancies between using a loading factor approach as opposed to a "bottoms up" approach for placements of plant directly related to the loops and loop type items, we shall require BellSouth to refile the BSTLM within 120 days from the issuance of this order explicitly modeling all cable and associated supporting structure, engineering, and installation placements (*FL UNE Order* at 284).

Q. WHAT METHOD HAS BELLSOUTH USED TO CAPTURE COPPER CABLE PLACING COSTS IN THE REFILING OF ITS COST MODEL?

A. BellSouth has ignored the Commission's *FL UNE Order*, has failed to avail itself of BSTLM's flexibility, and has filed costs using a linear Cable Placing Factor. Although BellSouth filled in a few of the BSTLM placing inputs, its failure to populate placing setup times with forward looking (or any) values ignores the model's capability to perform a bottoms-up approach, and results in a linear loading factor.

Q. HOW CAN FAILURE TO POPULATE ONE OF THE COPPER CABLE PLACING INPUTS END UP RESULTING IN A LINEAR LOADING FACTOR?

A. I was surprised to see that BellSouth did not follow the typical industry standard *Fixed Setup Time plus Cable Feet Placed Per Day* method of estimating outside plant costs - a method built into BSTLM. In my

opinion, it is reasonable to expect BellSouth to encounter 15 minutes of travel time, and 30 minutes of setup time for cable placing operations, using a 2-technician crew size for underground placing and a 1-technician crew size for buried and aerial placing. I would expect an underground placing crew to place approximately 3,000 feet of cable per day, a buried crew to place approximately 8,000 feet of cable per day, and an aerial crew to place approximately 5,000 feet per day.

As indicated in Attachment JCD-5, I believe that BellSouth's manipulated costs for copper cable placing reflect *****BEGIN PROPRIETARY [redacted] END PROPRIETARY*** of travel and setup, and a placing rate of ***BEGIN PROPRIETARY [redacted] END PROPRIETARY***** (It may be noted that BellSouth does not populate cable placing inputs for buried cable because it contends that cable placing is performed as part of the excavation contractors costs). Such a productivity figure for placing underground and aerial cables is less than I would expect of a competitive, well managed company, but is still not totally unreasonable if such setup and feet per day productivity inputs were actually used via the proper inputs to the model, which they are not.

The reason why BellSouth's method fails is simple. The result of BellSouth combining setup costs into a Cable Feet Placed per Day productivity figure is equivalent to BellSouth assuming that its technicians will travel to the work site, place 100 feet of cable, and stop work. The

work crew would then travel to another work site, place 100 feet of cable, and stop work. It would then travel to a third work site, place 100 feet of cable, and return to the garage. Alternatively, the result would be that a work crew would travel to a work site, perform setup operations, place only ***BEGIN PROPRIETARY [redacted] END PROPRIETARY*** feet of cable, and quit for the day. That level represents absurdly poor productivity, and equates to placing only***BEGIN PROPRIETARY [redacted] END PROPRIETARY*** of underground cable, or less than ***BEGIN PROPRIETARY [redacted] END PROPRIETARY*** of aerial cable for the day. This is inconsistent with TELRIC principles and inconsistent with my experience.

Q. WHAT DO YOU RECOMMEND?

A. This Commission should compel BellSouth to comply with its *FL UNE Order* and file a bottoms-up cable placing inputs with reasonable productivity numbers.

Q. WHAT METHOD HAS BELLSOUTH USED TO CAPTURE COPPER CABLE SPLICING COSTS IN THE REFILING OF ITS COST MODEL?

A. As it did in the copper cable placing portion of the model, BellSouth failed to utilize the travel and setup time in its copper cable splicing portion of the model. The result of BellSouth combining setup costs into a Copper Cable Pairs Spliced per Hour productivity figure is equivalent to the creation of a linear Loading Factor.

In the case of any copper cable larger than 100 pairs, such as splicing a 200-pair cable, BellSouth's model creates costs equivalent to traveling to the job location, preparing the splice, splicing 100 pairs, closing up the splice case, driving around the block, opening up the same splice case, splicing 100 more pairs, closing up the splice case, and then going home for the day. In the case of a 4200-pair copper cable, the example is simply 42 iterations of the 100-pair splice operation. I illustrate this issue in Attachment JCD-5.

Q. IS BELLSOUTH'S WIREWORK RATE FOR SPLICING INDIVIDUAL COPPER PAIRS ADEQUATE?

A. No. As prescribed by BellSouth, the wire work splicing rate of pairs per hour works out to a consistent ***BEGIN PROPRIETARY [redacted] END

PROPRIETARY* pairs per hour, which is unacceptable because it indicates extremely poor productivity.

Q. WHAT COPPER SPLICING RATE SHOULD BE USED IN THE BSTLM?

A. I recommend a conservative rate of 250 pairs per hour be used.

Q. ARE YOU QUALIFIED TO RENDER AN OPINION ON COPPER SPLICING RATES, AND IF SO, WHAT IS YOUR OPINION REGARDING AN ACCEPTABLE RATE OF PAIRS SPLICED PER HOUR, EXCLUSIVE OF TRAVEL, SETUP, AND CLOSURE TIMES?

A. Yes, I am very qualified to address copper cable splicing rates. The technology of performing modular splicing in 25-pair increments has existed since approximately 1970, and is a mature technology still being used every day. Splicing copper cable involves sorting out color-coded wires into a color coded "comb" that separates the wires in a standard 25-pair group prior to splicing. When all 25-pairs are sorted by color, then a pneumatic press seats the wire pairs into a 25-pair connector and cuts off the unnecessary ends of the wires flush with the connector, leaving the pairs terminated in a connector. The same function is performed on the wires to be matched to the first 25 pairs. The connectors are then snapped

together. I personally can continuously perform wire-splicing operations at a rate in excess of 500 pairs per hour using standard modular splicing methods.

Q. DO YOU HAVE ANY DOCUMENTATION TO SUPPORT SUCH HIGH SPLICING RATES?

A. Yes. Attachment JCD-6 is a letter from the AMP Corporation - one of the manufacturers of such modular cable splicing equipment and modules. In that letter, AMP indicates that a rate of 300 pairs per hour is readily achievable, and that it is not unusual to observe rates in excess of 500 pairs per hour.

Q. WHAT DID THE FCC DECIDE IN ITS FINAL INPUT ORDER?

A. During the FCC's USF deliberations, I introduced a retired splicing instructor to the FCC Staff. That instructor performed a splicing demonstration, taught members of staff to splice, and told them that when teaching copper splicing, he would not graduate a student who could not demonstrate a sustained splicing rate of at least 300 pairs per hour. The FCC found that rate to be reasonable, but in consideration that splicing conditions may not always be optimal, decided that a rate of 250 pairs per hour was a reasonable input value. The FCC's *Final Input Order* states:

§218. We also conclude that the record demonstrates that a splicing rate of 250 pairs is reasonable, and adopt it accordingly. As we explained in the *Inputs Further Notice*, the HAI sponsors proposed a splicing rate of 300 pairs per hour, while Sprint argued for a splicing rate of 100 pairs per hour. We believed that HAI's proposed rate was a reasonable splicing rate under optimal conditions, and therefore, we tentatively concluded that Sprint's proposed rate was too low. We noted that the HAI sponsors submitted a letter from AMP Corporation, a leading manufacturer of wire connectors, in support of the HAI rate. We recognized, however, that splicing under average conditions does not always offer the same achievable level of productivity as suggested by the HAI sponsors. For example, splicing is not typically accomplished under controlled lighting or on a worktable. Having accounted for such variables, we proposed a splicing rate of 250 pairs per hour.

I am prepared to make the same demonstration to this Commission during this hearing.

Q. WHAT IS YOUR OPINION REGARDING BELLSOUTH'S COSTS RELATED TO THE USE OF COPPER CABLE STUBS IN UNDERGROUND COPPER CABLE CONSTRUCTION?

A. For underground copper cable, BellSouth doubles the cost of copper cable splicing at every splice point to allegedly account for copper cable stubs. A copper splice case is limited to four entrance/exit holes. A copper stub cable is required only if more than four entrance/exit holes are needed. This is a very unusual situation. Please see Attachment JCD-7 to view a diagram representing proper use of cable stubs.

Normally, one cable enters a splice case, and if the splice is a simple straight-splice (because the length limit for a particular size cable on one reel has been reached), then one cable exits the splice case, which requires use of two holes.

If the splice point is a branch point, then one cable enters the splice case from the central office, one cable exits the splice case to serve a side-leg branch off the main cable path, and one cable exits the splice case to continue on down the main cable path, which requires use of three holes. BSTLM never requires more than this 3-way splice configuration, so a cable stub is never required. BSTLM documentation states the following:

> The model will place a splice at each point at which the cable changes size. Splicing can occur at any plant locations (DTBT, FDI, and DLC). In addition to these plant locations, the model will place a splice at each junction point of the network. A junction point typically represents a road intersection where the cable splits into two directions. This would occur where a road segment intersects a perpendicular road segment forming a "T." Junction points are noted in the data as JCTN. [BSTLM Methodologies Manual, pages 61-62]

Because no more than 3 cables exist at any splice point in BSTLM, therefore copper cable stubs are unnecessary, and the Commission should order BellSouth to remove any cable stub costs.

For information only, the following is provided to explain why a cable stub might be required, even though BSTLM does not construct outside plant in such a way.

If the splice point is unusual by having a double branch point, then one cable enters the splice case, two side-leg branch cables exit the splice case, and one cable exits the splice case to continue on down the main cable path.

If, for some reason, more than four holes are required, such as, for example bridged tapping pairs (which should not be done in a forward-looking construct), then a method is required to allow more than four splice case entrance/exit points. That is accomplished by having one splice case contain the entering cable (from the central office), two branch cables, and the fourth hole contains a short piece of cable called a cable stub that contains the remaining unused cable pairs. The other end of that short cable stub becomes the entrance cable for another splice case in the same manhole, so that up to two more branch cables can sprout from the one location, while the final remaining pairs continue straight on. This very complex arrangement is seldom used, has no place in a TELRIC model, and in fact is completely unnecessary in BSTLM because there are never more than three holes used in any one splice case.

Q. WHAT DO YOU RECOMMEND?

A. The Commission should re-order BellSouth to file a bottoms-up cable splicing model, using reasonable travel, setup and closure inputs for which I recommend 2 hours for splice setup and closure. In addition, the Commission should require BellSouth to use an input representing a

splicing rate of 250 pairs per hour, which would be 0.40 hours per 100 pairs, and to remove all cable stub costs.

Q. WHAT OTHER ISSUES HAVE YOU FOUND WITH BELLSOUTH'S COPPER CABLE SPLICING COSTS?

A. As stated in the Engineering Section of this testimony, BellSouth's inputs should be adjusted to reflect a 10% Engineering Loading Factor. In addition, there are also several issues involving miscellaneous material related costs.

In his testimony, Mr. Pitkin identifies several model coding errors associated with the application of Material Loading Factors. I will address several inputs-related issues. BellSouth's Material Loading Factor includes the following categories:

1. Miscellaneous Material Rate
2. Other - Plant Labor - Indirect Salaries, Benefits, and Other
3. Other - Interest During Construction Items
4. Right-of-Way Items
5. Supply Expense Rate
6. Tax Rate
7. Inflation

I will address issues with the first three items.

Q. WHAT IS THE MISCELLANEOUS MATERIAL RATE AND HOW IS IT NORMALLY HANDLED BY MAJOR TELEPHONE COMPANIES?

A. The Miscellaneous Material Rate represents what is normally called Exempt Material. The FCC System of Accounts requires major telephone companies to do "cradle to grave" tracking of certain investments, such as telephone poles, feet of cable, and manholes. Other less expensive items are tracked in a less detailed manner. These "nuts & bolts" items are known as Exempt Material, because they are exempt from being tracked individually in telephone company's Continuing Property Records. For decades, major telephone companies, with the FCC's approval, have found it most appropriate to track exempt material as a component of the technician's fully loaded labor rate. The exempt material load on labor is normally computed by conducting an audit of technician Exempt Material usage every two years. During the study period, a sample group of technicians keeps track of every single item of material that they use over the course of one to two weeks - down to the nut and bolt level in many companies. That data is then related to the hours expended, and an exempt material clearing rate is established. As a major telephone company purchases minor items of material, the cost is kept in a holding account. Dollars are cleared out of the holding account, and into Final Plant Accounts, such as Aerial Copper Cable, on the basis of the number

of hours charged to each particular Final Plant Account. In that manner, costs for minor materials are cleared to the final books of account.

I have observed the exempt material component of fully loaded labor rates for many years in my work, and among a variety of major telephone companies. That labor load component normally varies between ***BEGIN PROPRIETARY $6.00 and $10.00 END PROPRIETARY*** per hour for cable splicing technicians and cable placing technicians.

Q. HOW HAS BELLSOUTH INCLUDED EXEMPT MATERIAL IN ITS COST MODEL?

A. BellSouth has included Exempt Material/Miscellaneous Material as a percentage loading on Non-Exempt Material. This is not the manner in which major telephone companies handle this cost. In fact, the testimony of BellSouth's witness, Ms. Caldwell, indicates that this is not the method used to account for Exempt Material by BellSouth (Mr. Pitkin explicitly cites Ms. Caldwell's Reply Affidavit before the FCC in the Georgia 271 proceeding as providing substantial evidence in this regard).

In addition, on its surface, the Miscellaneous Material Rate filed by BellSouth in this proceeding appears to be unreasonably high. However, I have not been able to do a direct analysis against a labor loading rate method, because by improperly treating Exempt Material as a load on

Non-Exempt Material, BellSouth has created an "apples to oranges" problem. In addition, BellSouth has failed to comply with this Commission's order to create a bottoms-up approach to address the Commission's concern that BellSouth's use of linear loading factors reflects no economies of scale for exempt material.

I believe that Exempt Material is already included in the fully loaded labor rate proposed by BellSouth, and that the Miscellaneous Material Rate proposed by BellSouth should be disallowed as double counting.

In the alternative, if Exempt Material can be proven by BellSouth to have been excluded from its proposed fully loaded labor rate with adequate supporting evidence, then I recommend that this Commission adopt a reasonable Exempt Material load on labor not to exceed 20% of direct labor costs (***BEGIN PROPRIETARY [redacted] END PROPRIETARY***).

Q. WHAT CONCERNS DO YOU HAVE WITH BELLSOUTH'S USE OF A FACTOR FOR "OTHER - PLANT LABOR - INDIRECT SALARIES, BENEFITS, AND OTHER"?

A. It is unacceptable to include other plant labor, indirect salaries, benefits, and other expenses as a load on Non-Exempt Material. First, direct supervision and other indirect expenses are already components of BellSouth's fully loaded labor rate, and including them as another loading on Non-Exempt Material results in double counting and over-recovery. Second, these costs are not part of the material procurement organization, because large telephone companies book those costs as part of Supply Expense, which is already an uncontested loading being applied by BellSouth as a separate component. Therefore, I conclude that any application by BellSouth of Other-Plant Labor-Indirect Salaries, Benefits, and Other is a double count of expenses that would result in over-recovery, and this Commission should disallow this loading.

Q. WHAT CONCERNS DO YOU HAVE ABOUT BELLSOUTH'S PROPOSED LOADING OF "INTEREST DURING CONSTRUCTION" ONTO NON-EXEMPT MATERIAL?

A. As Mr. Pitkin indicates in his testimony, we have elected to not alter some of BellSouth's proposed Material Loading Factor items. In particular, I believe that BellSouth has included Interest During Construction in an improper manner. Interest During Construction has unique application to

large regulated telecommunications companies under FCC Uniform System of Accounts practices. I believe that BellSouth inputs have misapplied such a charge in this case. I urge this Commission to require BellSouth to produce all necessary information to determine exactly what items are included in its Interest During Construction Factor, including the source of this cost, how interest during construction is calculated, and what it is applied to, on a detailed basis.

VI. BELLSOUTH'S FIBER CABLE INPUTS FAIL TO SATISFY THE COMMISSION'S REQUIREMENTS

Q. PLEASE IDENTIFY YOUR CRITICISMS REGARDING BELLSOUTH'S FIBER CABLE INPUTS IN GENERAL.

A. BellSouth's inputs for fiber optic cable generally suffer from the same problems as BellSouth's copper cable inputs. Specifically, BellSouth does not have separate cable placing setup and cable placing productivity parameters; there are no separate splicing setup and fiber splicing productivity parameters; the Miscellaneous Material loading on Non-Exempt Material is inappropriate; Other-Plant Labor-Indirect Salary, Benefits, and Other loading on Non-Exempt Material is inappropriate, Interest During Construction is inappropriate, and BellSouth's 35.72% Engineering linear loading factor absurdly high.

Q. WHAT DO YOU RECOMMEND?

A. I recommend the following:

1) Reduce the Engineering Linear Loading Factor to 10%;

2) Remove Miscellaneous Material loading on Non-Exempt Material. If BellSouth adequately demonstrates, with hard evidence, that Exempt Material is not included in its fully loaded labor rate, it should be ordered to provide a rate not to exceed 20% of direct labor hour costs.

3) Disallow Other-Plant Labor-Indirect Salary, Benefits, and Other loading on Non-Exempt material, and order BellSouth to produce all necessary information to determine exactly what items are included in its Interest During Construction Factor, including the source of this cost, how interest during construction is calculated, and what it is applied to, on a detailed basis.

4) Direct BellSouth to use the appropriate BSTLM inputs for fiber cable placing, splicing and productivity minutes. BellSouth should be directed to utilize the inputs available in BSTLM to populate separate costs for setup under fiber cable placing and under fiber cable splicing, as well as productivity costs based on Minutes per Fiber Spliced (i.e., Hours per Fiber Strand Spliced). Absent BellSouth data, I recommend Fiber Cable Placing values of 45 minutes for Travel and Setup; a Fiber Cable Placing rate equivalent to 3,000 feet per day for Underground, 8,000 feet

per day for Buried, and 5,000 feet per day for Aerial; a Fiber Travel and Setup of 2 hours, and a Fiber Splicing productivity rate of 5 minutes per fiber strand spliced.

Interestingly, my recommendation for fiber splicing results in a higher cost per fiber splice than recommended by BellSouth. However, my estimate of 2 hours plus 6 minutes per fiber is a fair representation of industry norms regarding the splicing of fiber optic cables.

Q. DO YOU HAVE ANY OTHER UNIQUE FIBER OPTIC CABLE RELATED CONCERNS WITH BELLSOUTH'S SUBMISSION?

A. Yes. A few days ago, BellSouth provided AT&T/WorldCom with a method, via discovery in the current Georgia UNE case, on how to determine the average distance between copper splices and the average distance between fiber cable splices produced by BSTLM. Mr. Pitkin has applied that method to the BSTLM filed in Florida, and results indicate an absurdly short distance between fiber cable splices. Because the outcome is so unusual, we will be going back to BellSouth to question the methodology that it has provided to determine distance between splices. I believe it would be more equitable to give BellSouth a chance to re-examine this method, and I would like to reserve the opportunity to address average distance between fiber splices, at a later date, if it is truly a significant issue.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.

JOHN C. DONOVAN

11 Osborne Road
Garden City, NY 11530
516-739-3565 (Office) 516-739-0181 (Fax)
Internet Address:donovan@telecomexpertwitness.com
Website: http://www.telecomexpertwitness.com

Executive Summary

Expert witness in telecommunications for a number of major companies, including AT&T, MCI WorldCom, Covad Communications, Rhythms Links, the NYNEX Corporation (now Verizon), Chubb Insurance, Audubon Insurance and other clients involving telecommunications arbitration and litigation, including extensive experience in xDSL technologies for Internet access, unbundling and leasing of local loop facilities, fiber optic damage claims, equipment damage claims, patent infringement law suits, a very large multimillion dollar class action law suit against a major regional telephone company , and cost estimation efforts to assist in due diligence efforts for other consulting companies. Corporate experience included setting major corporate strategy, imaginative and innovative problem solving, in-depth analysis, large scale project management involving engineering, physical construction and Information Services systems development. Expert in fiber optics and electronics. Extensive leadership and technical telecommunications background, especially in outside plant design, construction, maintenance, xDSL systems, project implementation, cost estimating, network modeling theory, procurement, and logistics. Experienced lecturer and producer of material for presentations to customers and senior management, and in writing strategic position papers.

Professional Experience

Telecom Visions, Inc. **1996 - Present**
Garden City, New York
President

- *Nationally known expert witness before the FCC and state public utility commissions. Appeared before the FCC and 22 state jurisdictions[1] on behalf of AT&T, MCI WorldCom, Covad Communications, or Rhythms Links as a technical witness for implementation of the Telecommunications Act of 1996. Providing outside plant local loop expert advice and modeling theory for the HAI Model, a key economic model referenced by the FCC and various state jurisdictions to determine compliance with the Telecommunications Act of 1996, to set Unbundled Network Element Prices, and to determine the level of the multi-billion dollar Universal Service Fund.*
- *Expert witness in many arbitration and litigation efforts regarding xDSL Internet access for industry-leading carriers such as Covad Communications, Rhythms Net Connections, and several other significant xDSL companies.*
- *Expert witness for several U S Patent Infringement law suits, several fiber optic cable damage and telecommunications equipment damage cases, a service related class action law suit against a major regional telephone company, and others.*

[1] *Alabama, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Nevada, New Jersey, New York, Oklahoma, Pennsylvania, Texas, and Washington; advised witnesses and/or prepared testimony for Alaska, Delaware, Illinois, Iowa, Kentucky, Minnesota, Mississippi, Montana, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Virginia, West Virginia, Washington DC, and Wisconsin.*

DOCKET NO.990649A-TP
WITNESS: DONOVAN
EXHIBIT NO. _____ (JCD-1)
PAGE 1 OF 12

- *Currently providing telecommunications consulting services involving various organizations and individuals, including telecommunications and data services management in the northeast for a major financial management firm, strategic advice on the effect of local loop competition to an equipment manufacturer, and valuation studies for due diligence, claims settlements, and other purposes .*
- *Provided Marketing Strategy for a large fiber optic multiplexer manufacturer introducing a new line of SONET based products, and worked with a major management consulting firm to provide advice to the government of Portugal.*
- *Manufacturer's representative for automated electronic cross connection devices.*

NYNEX **1994 - 1996**

New York City, New York
General Manager, Plug-In Management.

- *Led a group of 350 people in managing all NYNEX logistics functions for NYNEX's $10 billion investment in electronic printed circuit boards for switching systems and digital carrier systems.*
- *Responsibilities included purchasing, billing verification, warehousing, and repairing all NYNEX printed circuit boards.*
- *Scope of operation included average capital purchases of $1 million in new plug-ins per work day, and managing an expense budget of $30 million per year.*
- *Personally responsible for setting NYNEX's strategic direction in this area through major process re-engineering design. This effort included examining business plans, evaluating goals and objectives, and measuring effectiveness of achieving business plan goals. Efforts determined that major realignment was necessary.*
- *Results included consolidating 3 warehouses into one, 50% expense savings, improving repair intervals from 45 days to 5 days, and developing a multi-million dollar, "state-of-the-art" plug-in tracking system. The plug-in tracking system was a major Information Services development effort requiring large scale project management, definition of requirements, detailed design, and supervision of coding by contract programming companies.*

NYNEX **1991 to 1994**

New York City, New York
Managing Director, Engineering & Construction Methods & Systems.

- *Led a group of 115 managers and 45 contractors in maintaining existing computerized design and support systems for Central Office Engineers, Outside Plant Engineers, and Construction Managers that design and construct NYNEX's $2.4 billion annual capital construction program.*
- *Personally devised new, innovative methods for converting paper outside plant records to digital mapping formats, which reduced conversion costs from $150 million to $30 million. This innovative breakthrough has been the cornerstone of records conversion methods by successful companies such a Lucent and IGS (Information Graphics Systems Inc.).*
- *Devised a new Construction Work Management System[2] that mechanized the scheduling and reporting of work (profitability of 41% Rate of Return with a 2 year payback). Project managed a large scale IS development effort involving IS personnel recruited into the organization plus 35 contract IS development personnel from the Oracle Corporation. This multimillion dollar project was successfully completed, and upon completion comprised the second largest distributed platform developed in North America involving mini-computers and PCs.*
- *Supervised the development of all new Methods & Procedures for emerging technologies such as Fiber To The Curb, and for Open Network Architectures such as Signaling System 7 and Co-Location of Competitive Access Providers in telco switching centers.*

[2] *ECRIS – Engineering Construction Records information System.*

NYNEX **1989 - 1991**

Albany, New York

Director of Operations, Engineering & Construction, Northeastern Region, New York

- *Directed the overall operations of 600 employees and contract personnel to plan, engineer and construct pole line, conduit, fiber cable, copper cable, fiber optic multiplexers, and pair gain equipment to provide service throughout the Northeast region of New York State ($75 million annual budget supporting 86 central office switching center areas).*
- *Developed the NYNEX strategy of using a "business case" method for substantiating outside plant infrastructure improvements now used throughout the company.*
- *Helped create the "All Fiber Feeder" strategy implemented by NYNEX.*
- *Devised and implemented rapid fiber optic deployment to 225 sites in 16 months.*
- *Served as the Outside Plant Expert Witness for the 1990 Rate Case, providing the successful rebuttal case for the largest New York Public Service Commission Staff recommended disallowance of $110 million.*
- *Headed the Core Support Team handling the Public Service Commission Operational Audit of Outside Plant throughout New York Telephone.*

NYNEX **1989**

Albany, New York

Director, Customer Services Staff, Upstate New York

- *Directed the Upstate Vice President-Customer Services Staff in support of all 3 Upstate New York regions. Disciplines included Personnel & Training, Capital & Expense Budgets, Installation & Repair Operations, Business Offices, Outside Plant Construction & Engineering, Facilities Assignment Centers, and managing the New York Telephone Annoyance Call Bureau.*

NYNEX **1987 - 1989**

New York City, New York

Director of Operations, Engineering & Facilities Assignment Centers, Midtown Manhattan

- *Directed a force of 150 personnel in engineering and assigning the rapid expansion of all local loop facilities in Midtown Manhattan (Approximately $40 Million Annual Budget).*
- *Worked to create NYNEX's strategy for the aggressive deployment of high technology to customer locations to meet competitor initiatives (primarily Teleport).*
- *In an area responsible for 25% of New York Telephone's revenues, rapid deployment of fiber optics to 450 buildings was achieved in less than 2-1/2 years.*
- *Worked with Lucent Technologies to invent the AUA-45 Private Line card used in their SLC-Series 5 Digital Loop Carrier system, saving New York Telephone $10 million.*
- *Made active sales calls to major customers to design private line networks and disaster recovery systems, resulting in $8 - $10 million in new sales revenue.*
- *Number 1 rated district manager in New York City.*

NYNEX Service Company (Corporate Staff) **1986 - 1987**

New York City, New York

Staff Director, Engineering & Construction Methods

- *Formed the first combined New York/New England corporate staff group supporting engineering and construction after divestiture.*
- *Developed strategies and directed the development of Central Office Engineering, Outside Plant Engineering, and Construction for New York and New England Telephone Companies.*
- *Efforts included start-up activities for the new organization, implementation of new Central Office Engineering design systems, trials on Digitized/Mechanized Outside Plant Records in Burlington Vermont, initiating a mechanized planning system for New England Telephone, and expanding the introduction of high technology into the local loop.*

New York Telephone Company **1982 - 1985**

New York City, New York

Staff Manager, Corporate Staff, Outside Plant Engineering Methods

- *Corporate lightguide expert for Outside Plant.*
- *Authored the Manhattan Overlay Strategy for fiber optic deployment to over 650 commercial buildings.*
- *Conceived, supervised and implemented innovative rapid deployment plan for 13,500 fiber mile interoffice trunk project, completed in 5 months.*
- *Corporate Divestiture expert for Outside Plant.*
- *Wrote the post-divestiture Outside Plant Marketing Business Plan.*
- *Assigned all Outside Plant assets, and negotiated all Outside Plant contracts with AT&T Communications.*
- *Corporate evaluator for employee innovative suggestions.*
- *Corporate evaluator for major projects.*

New York Telephone Company **1980 - 1982**

Garden City, New York

Staff Manager, Long Island Area Staff.

- *Directed a staff group of 17 personnel to track, analyze, evaluate, and make recommendations to upper management concerning operational results for an 800 person Engineering, Construction and Facilities Assignment Center organization.*

New York Telephone Company **1974 - 1980**

Garden City, New York

Engineering Manager, Nassau County

- *Directed an operations center of 55 personnel responsible for cable TV coordination, conduit design, pole engineering, highway improvement coordination, securing Rights of Way, claims adjustments, drafting blue prints, and posting outside plant records.*
- *Supervised a Long Range & Current Planning group of 35 engineering personnel responsible for planning, design, project evaluation, and implementation of major feeder and trunk cable.*
- *Prepared and administered a $20 million per year construction program.*
- *Worked as a Long Range and Current Planner, Feeder Cable Design Engineer, Estimate Case Evaluator and Preparer, and Capital Program Administrator.*
- *Developed new budgeting methods, including writing 30-40 computer programs.*
- *Developed the Cost Estimating Program used by NYNEX and incorporated in the former Bell System JMOS Cost Estimating Model.*

New York Telephone Company **1972 - 1974**

Long Island, New York

Field Manager, Cable Maintenance and Construction, Nassau & Suffolk Counties

- *"Hands-on" craft through second level management experience in constructing and repairing outside plant cable, including analysis, locating, repair, dispatch, and cable trouble trend tracking.*
- *Developed several computer programming systems to track and analyze cable troubles.*

United States Army Signal Corps **1966 – 1970**
Germany; Viet Nam; Fayetteville, North Carolina
Captain

- *Airborne, Ranger, Decorated Viet Nam Veteran (Bronze Star Medal + others), Top Secret Clearance.*
- *Germany: Platoon Leader, Company Executive Officer, Battalion Operations Officer, Battalion Executive Officer*
- *Vietnam: Chief of the Communications Branch - Saigon Support Command*
- *Ft. Bragg, North Carolina: Battalion Communications Officer-82nd Airborne Division*

Education

Penn State Graduate School of Business **1988**
University Park, Pennsylvania
Executive Development Program

Purdue University Graduate School of Business **1970 - 1971**
West Lafayette, Indiana
MBA, Marketing & Finance

United States Military Academy **1962 - 1966**
West Point, New York
BS Electrical & Mechanical Engineering

Organizations

New York City Technical College **1987 - 1993**
Brooklyn, New York
Adjunct Professor of Telecommunications, Chairman of the Transmission Laboratory, Member of the Telecommunications Executive Committee, Member of the Board

Shenendehowa School Board **1991**
Clifton Park, New York
Served on the Technology Planning Committee for the local school board

AM/FM International **1993 - 1994**
Boulder, Colorado
Member of Executive Management Board, representing the telecommunications industry for the world's largest organization of digitized mapping and facilities management professionals.

Member of Various Other Organizations:
MENSA High IQ Society, IEEE, Amateur Radio Emergency Services group.

American Legion **1998 - Present**
Garden City, New York
Commander -- William Bradford Turner Post No. 265 (2001 – 2002).

Recent Published Articles

"The Multi-Billion Dollar Outside-Plant Estimate Case", OSP Engineering & Construction Magazine, February 1999 issue, pp. 14-15. See this published article at: http://www.broadband-guide.com/cbl4man/standards/stand0299.html

Recent Testimony

- Before the District of Columbia Public Service Commission, Washington, DC;

Case No. TAC-12: For Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Verizon – Washington, DC Inc.; On behalf of Yipes Transmission Inc.;

Prefiled Affidavit:	August 24, 2001	Testimony & Cross Examination:	August 27-30, 2001

- Before the Public Utilities Commission of California, San Francisco, California;

Applications 01-02-024 & 01-02-035: Joint application of AT&T Communications of California, Inc. (U 5002 C) and WorldCom, Inc. for the Commission to Reexamine the Recurring Costs and Prices of Unbundled Switching and of Unbundled Loops in Its First Annual Review of Unbundled Network Element Costs Pursuant to Ordering Paragraph 11 of D.99-11-050; On behalf of AT&T and WorldCom;

Prefiled Direct Testimony:	August 20, 2001		

- Insurance Claim, State of Nevada:

Airport Authority of Washoe County claim against airport's insurance carrier Chubb & Son – Division of Federal Insurance Company, Inc., for alleged damage to conduit system; Expert Report on behalf of Insurance Carrier, Chubb & Son;

Expert Report:	August 6, 2001	Case still pending.	

- Before the Pennsylvania Public Utility Commission, Harrisburg, Pennsylvania;

Docket No. A- 310964: For Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Verizon – Pennsylvania, Inc.; On behalf of Yipes Transmission Inc.;

Prefiled Affidavit:	July 24, 2001	Testimony & Cross Examination:	July 27, 2001

- Before the Department of Telecommunications and Energy, Boston, Massachusetts;

Case No. D.T.E. 01-20: Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Pricing, based upon Total Element Long-Run Incremental Costs, for Unbundled Network Elements and Combinations of Unbundled Network Elements, and the Appropriate Avoided Cost Discount for Verizon New England, Inc. d/b/a Verizon Massachusetts' Resale Services in the Commonwealth of Massachusetts;

Prefiled Direct Testimony:	May 1, 2001	Ex Parte Presentation to Commission	June 5, 2001
Prefiled Rebuttal Testimony:	July 18, 2001		

- Before the California Public Service Commission;

Case No. A.01-02: Application of AT&T Communications of California, Inc. (U 5002 C) for the Commission to Reexamine the Recurring Costs and Prices of Unbundled Loops in Its First Annual Review of Unbundled Network Element Costs Pursuant to Ordering Paragraph 11 of D.99-11-050; On behalf of AT&T;

Filed Declaration:	February 28, 2001	Ex Parte Presentation to Commission	March 29, 2001
Appearance at Commission Workshop	August 9, 2001		

- Before the State Office of Administrative Hearings for the Public Utility Commission of Texas, Austin, Texas;

Docket No. 23537: Complaint of Covad Communications Company Against Verizon Southwest, Inc. for Post-Interconnection Agreement Dispute Resolution and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line-Sharing; On behalf of Covad Communications Company;

Prefiled Direct Testimony: February 23, 2001	Prefiled Rebuttal Testimony: March 23, 2001

- United States District Court for the Eastern District of Pennsylvania;

Case No. 2:00CR00026-01 Re: United States of America vs. Eric J. Dalius (Defendant), on behalf of defendant; case settled in pre-hearing conference;

Advice to Counsel: January 17, 2001	Pre-settlement Conference: January 18, 2001

- Before the Connecticut Department of Public Utility Control;

Docket No. 00-08-14: In the Matter of the Application of Southern New England Telecommunications Corporation and SNET Personal Vision, Inc. to Relinquish SNET Personal Vision, Inc.'s Certificate of Public Convenience and Necessity;

Prefiled Direct Testimony: November 18, 2000	Testimony & Cross Examination: November 21, 2000 & December 8, 2000

- Before the Michigan Public Service Commission, Lansing, Michigan;

Case No. U-12540: In the Matter of the Application of Ameritech Michigan for Approval of Cost Studies and Resolution of Disputed Issues Related to Certain UNE Offerings; On behalf of Rhythms Links, Inc. and Covad Communications Company;

Prefiled Direct Testimony: September 15, 2000	Testimony & Cross Examination: October 27, 2000

- Before the State Office of Administrative Hearings for the Public Utility Commission of Texas, Austin, Texas;

Docket Nos. 22168 & 22469 Phase 2: Complaint of Covad Communications Company and Rhythms Links, Inc. Against Southwestern Bell Telephone Company and GTE Southwest Inc. for Post-Interconnection Agreement Dispute Resolution and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line-Sharing; On behalf of Covad Communications Company and Rhythms Links, Inc.;

Prefiled Direct Testimony: September 5, 2000	Revised Prefiled Direct Testimony: October 6, 2000
Prefiled Reply Testimony: October 20, 2000	Deposition: November 7, 2000
Testimony & Cross Examination: November 28, 2000 – December 1, 2000	

- Before the Georgia Public Service Commission, Atlanta, Georgia;

Docket No. 5825-U: Complaint of Covad Communications Company and Rhythms Links, Inc. Against BellSouth Communications re: Universal Access Fund Transition to Phase II Pursuant to O.C.G.A. § 46-5-167; On behalf of AT&T Communications and WorldCom;

Prefiled Direct Testimony: August 1, 2000	Prefiled Rebuttal Testimony: September 8, 2000
Prefiled Reply to Rebuttal Testimony: October 2, 2000	Testimony & Cross Examination: October 18, 2000

- Before the State Office of Administrative Hearings for the Public Utility Commission of Texas, Austin, Texas;

Docket No. 22168 and 22469, Phase 2: Complaint of Covad Communications Company and Rhythms Links, Inc. Against Southwestern Bell Telephone Company and GTE Southwest Inc. for Post-Interconnection Agreement Dispute Resolution and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line-Sharing; On behalf of Covad Communications Company and Rhythms Links, Inc.;

Prefiled Direct Testimony: September 17, 2000	Testimony & Cross Examination: Pending

- Before the Florida Public Service Commission;

Docket No. 990649-TP: Re: Investigation into pricing of Unbundled Network Elements; On behalf of AT&T Communications of the Southern States, Inc. and MCI WorldCom, Inc.;

Prefiled Rebuttal Testimony: July 31, 2000	Prefiled Supplemental Rebuttal Testimony: August 28, 2000
Deposition: September 8, 2000	Testimony & Cross Examination: September 21, 2000

- Before the Kansas Corporation Commission;

Docket No. 00-DCIT-997-ARB: Re: In the Matter of the Petition of Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements for Line-Sharing with Southwestern Bell Telephone Company; On behalf of Covad Communications Company;

Prefiled Direct Testimony: June 12, 2000	Testimony & Cross Examination: June 15, 2000

- Before the Public Utilities Commission of the State of Hawaii;

Docket No. 7702: In the Matter of the Public Utilities Commission Instituting a Proceeding on Communications, Including an Investigation of the Communications Infrastructure of the State of Hawaii; On behalf of AT&T Communications of Hawaii Inc.;

Prefiled Direct Testimony: June 2, 2000	Partial settlement reached among parties.

- Before the State Office of Administrative Hearings for the Public Utility Commission of Texas, Austin, Texas;

Docket No. 22469: Complaint of Covad Communications Company and Rhythms Links, Inc. Against Southwestern Bell Telephone Company and GTE Southwest Inc. for Post-Interconnection Agreement Dispute Resolution and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line-Sharing; On behalf of Covad Communications Company and Rhythms Links, Inc.;

Prefiled Direct Testimony: May 17, 2000	Testimony & Cross Examination: May 23, 2000

- United States District Court for the District of Minnesota;

Case No. 98-CV-2055 DWF: Re: U.S. Patent No. Re. 34,955; ADC Telecommunications, Inc. Plaintiff, vs. Thomas & Betts Corporation and Augat Communications Products, Inc. Defendants; On behalf of Defendants Thomas & Betts Corporation and Augat Communications Products, Inc.;

Expert Report: March 26, 2000	Case settled among litigants

- United States District Court for the Eastern District of New York;

Case No. 98 Civ. 5020 (DHR)(ETB)[1]: Re: U.S. Patent No. 4,600,814; Davox Corporation, Plaintiff vs. Manufacturing Administration & Management Systems, Inc., Defendants; On behalf of Davox Corporation, which is being accused of infringing U.S. Patent No. 4,600,814 by Manufacturing Administration & Management Systems, Inc.;

Expert Report: March 8, 2000	Deposition: May 30, 2000
Case still pending	

- Insurance Claim, State of Texas:

Audubon Insurance Group Claim No. 316-53650-JJG, Charter Communications, Plaintiff vs. P. Penix Company, Defendant; Expert Report on behalf of Defendant's Insurance Carrier, Audubon Insurance Group;

Expert Report: February 1, 2000	Successfully negotiated the settlement between Plaintiff and Defendant.

- Before the New York Public Service Commission;

Case No. 98-C-1357: Re: Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements; On behalf of AT&T and MCI WorldCom, Inc.; Additional testimony on behalf of Covad Communications and Rhythms Net Connections;

Prefiled Direct Testimony: February 7, 2000	Prefiled Direct Testimony: February 22, 2000
Prefiled Responsive Testimony: June 26, 2000	Prefiled Rebuttal Testimony: October 19, 2000
Testimony & Cross Examination: December 20, 2000	

- Before the Kansas Corporation Commission;

Docket No. 00-DCIT-389-ARB: Re: In the Matter of the Petition of DIECA Communications, Inc. d/b/a Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Southwestern Bell Telephone Company; On behalf of Covad Communications Company;

Prefiled Direct Testimony: January 7, 2000	Prefiled Rebuttal Testimony: January 28, 2000
Prefiled Surrebuttal Testimony: February 21, 2000	Oral Deposition: February 8, 2000
Testimony & Cross Examination: February 23, 2000	

- Before the Missouri Public Service Commission;

Docket No. TO-2000-322: Re: In the Matter of the Petition of DIECA Communications, Inc. d/b/a Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Southwestern Bell Telephone Company; On behalf of Covad Communications Company;

Prefiled Direct Testimony: January 7, 2000	Prefiled Rebuttal Testimony: January 28, 2000
Prefiled Surrebuttal Testimony: February 10, 2000	Oral Deposition: February 8, 2000
Testimony & Cross Examination: February 15, 2000	

[1] Includes also 98 Civ. 6532 (DRH)(ETB) Manufacturing Administration & Management Systems, Inc., Plaintiff vs. ICT Group, Inc., Precision Response Corporation, RMH Teleservices, Inc. & Telespectrum Worldwide, Inc., Defendants; and also includes 98 Civ. 4687 (DHR)(ETB) EIS International, Inc., Plaintiff, vs. Manufacturing Administration & Management Systems, Inc., and William B. Cunniff, Defendants.

- Before the Kansas Corporation Commission;

Docket No. 99-GIMT-326-GIT: Re: In the Matter of an Investigation into the Kansas Universal Service Fund (KUSF) Mechanism for the Purpose of Modifying the KUSF and Establishing a Cost-based Fund; On behalf of AT&T Communications of the Southwest, Inc.;

Prefiled Direct Testimony: November 16, 1999	Prefiled Rebuttal Testimony:November 22, 1999
Testimony & Cross Examination: November 30, 1999	

- Before the New York Public Service Commission;

Case No. 98-C-1357 (DSL Track): Re: Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements; On behalf of Covad Communications Company, Rhythms Links Inc., and MCI WorldCom, Inc.;

Prefiled Affidavit: September 23, 1999	Prefiled Initial Testimony: October 18, 1999
Prefiled Responsive Testimony: Oct. 22, 1999	Testimony & Cross Examination: November 19, 1999

- Insurance Claim, State of New Jersey:

Wausau Insurance Companies Claim No. 324-016435, Answer Tel, Plaintiff vs. Bell Atlantic-New Jersey, Defendant; Expert Report on behalf of Defendants;

Expert Report: July 29, 1999	Settlement in favor of Defendant based on Expert Report: August 1999

- Before the Georgia Public Service Commission;

Docket No. 10692-U: Re: Generic Proceeding to Establish Long-Term Pricing Policies for Unbundled Network Elements; On behalf of AT&T Communications of the Southern States, Inc.;

Oral Deposition: June 17, 1999	Prefiled Testimony: June 30, 1999
Prefiled Rebuttal Testimony: July 9, 1999	Testimony & Cross Examination: July 13 & 14, 1999

- Before the Massachusetts Department of Telecommunications and Energy;

Docket Nos. 96-73/74, 96-75, 96-80/81, 96-83, and 96-84: Re: Consolidated Petitions for Arbitration of Interconnection Agreements – Dark Fiber; On behalf of AT&T Communications of New England, Inc.;

Prefiled Direct Testimony: September 25, 1998	Testimony & Cross Examination: February 17 & 19, 1999

- Before the Maryland Public Service Commission:

Docket No. 8786: Re: Investigation of Non-Recurring Charges for Telecommunications Interconnection Service; On behalf of AT&T Communications of Maryland, Inc. and MCI Telecommunications, Inc.;

Prefiled Rebuttal Testimony: November 16, 1998	Testimony & Cross Examination: January 15, 1999

- 19th Judicial District Court, East Baton Rouge, LA:

Case No. 436582, Division J, Petition for Damages: TCI Cablevision of Georgia, Inc. DBA TCI of Louisiana, Plaintiff vs. Barber Brothers Contracting, Inc., Defendant; Expert Report on behalf of Defendant's Insurance carrier Audubon Insurance Group;

Expert Report: December 30, 1998	Settlement in favor of Defendant based on Expert Report: February 5, 1999

- Before the Nevada Public Utilities Commission;

Docket No. 98-6005: Re: Filing of Central Telephone Company-Nevada d/b/a Sprint of Nevada's Unbundled Network Element (Unbundled Network Element) Cost Study; On behalf of AT&T Communications of Nevada, Inc.;

Prefiled Direct Testimony: July 1, 1998	Testimony & Cross Examination: August 12-13, 1998
Testimony & Cross Examination: December 7, 1998	

- Before the Nevada Public Utilities Commission;

Docket No. 98-6004: Re: Filing of Nevada Bell Unbundled Network Element (UNE) Cost Study; On behalf of AT&T Communications of Nevada, Inc.;

Prefiled Direct Testimony: July 1, 1998	Prefiled Supplemental Testimony: September 3, 1998
Testimony & Cross Examination: September 19, 1998	Testimony & Cross Examination: December 3, 1998

- United States District Court for the Southern District of New York;

Civil Action No. 95-CV-7052 (BSJ): Re: U.S. Patent No. 4,706,275; Aerotel, Ltd., and Aerotel U.S.A., Inc., Plaintiffs, vs. National Applied Computer Technologies, Hello Card, Inc., GST Telecommunications, Inc., GST USA, Inc., Thomas Sawyer, and Kyle Love, Defendants; On behalf of Plaintiffs;

Expert Report: June 26, 1998	Case settled in favor of plaintiffs in late 1998

- Before the Alabama Public Service Commission;

Docket No. 25980: Re: Implementation of Universal Service Requirements of Section 254 of the Telecommunications Act of 1996; On behalf of AT&T Communications of the South Central States, Inc.;

Prefiled Direct Testimony: February 3, 1998	Prefiled Rebuttal Testimony: February 13, 1998
Testimony & Cross Examination: February 26, 1998	

- Before the Louisiana Public Service Commission;

Docket U-20883, Subdocket A: In re: Submission of the Louisiana Public Service Commission's Forward-Looking Cost Study to the FCC for Purposes of Calculating Federal Universal Service Support Pursuant to LPSC order No. U-20883 (Subdocket A), dated August 12, 1997; On behalf of AT&T Communications of the South Central States, Inc.;

Prefiled Direct Testimony: January 9, 1998	Prefiled Rebuttal Testimony: January 20, 1998
Oral Deposition: January 21, 1998	Testimony & Cross Examination: January 30, 1998

- Before the State of Maine Public Utilities Commission;

Docket No. 97-505: In re: Public Utilities Commission Investigation of Total Element Long-Run Incremental Cost (TELRIC) Studies and Pricing of Unbundled Network Elements; On behalf of AT&T Communications;

Testimony & Cross Examination: December 2, 1997	Written Testimony: December 22, 1997

- Before the State of New Jersey Board of Public Utilities;

Docket No. TX95120631: In the Matter of the Board's Investigation Regarding Local Exchange Competition for Telecommunications Services; On behalf of AT&T Communications of New Jersey, Inc. and MCI Telecommunications Corp.;

Oral Deposition: October 27, 1997	

- Before the Pennsylvania Public Utility Commission;

Docket No. I-00940035: In re: Formal Investigation to Examine and Establish Updated Universal Service Principles and Policies for Telecommunications Services in the Commonwealth; On behalf of AT&T Communications of Pennsylvania, Inc. and MCI Telecommunications Corp.;

Testimony & Cross Examination: October 21 & 23, 1997	

- Before the Georgia Public Service Commission;

Docket No. 10692-U: Re: Generic Proceeding to Establish Long-Term Pricing Policies for Unbundled Network Elements; On behalf of AT&T Communications of the Southern States, Inc.;

Oral Deposition: August 28, 1997	

- Before the Public Utilities Commission of the State of Colorado

Re: The Investigation and Suspension of Tariff Sheets Filed by U S WEST Communications, Inc. with Advise Letter No. 2617, Regarding Tariffs for Interconnection Local Termination, Unbundling, and Resale of Services; On behalf of AT&T of the Mountain States and MCI Telecommunications Corporation;

Oral Deposition: April 9, 1997	

- Before the Arizona Corporation Commission;

Docket No. U-2428-96-417: In the Matter of the Petition of AT&T Communications of the Mountain States, Inc. for Arbitration with U S WEST Communications, Inc. of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. § 252(b) of the Telecommunications Act of 1996; On behalf of AT&T Communications of the Mountain States;

Docket No. U-3175-96-479: In the Matter of the Petition of MCI Metro Access Transmission Services, Inc. for Arbitration of Interconnection Rates, Terms, and Conditions Pursuant to 47 U.S.C. § 252(b) of the Telecommunications Act of 1996; On behalf of MCI Metro Access Transmission Services, Inc.

Prefiled Direct Testimony: October 25, 1996	Testimony & Cross Examination: November 20, 1996

- Before the State Office of Administrative Hearings for the Public Utility Commission of Texas, Austin, Texas;

Docket No. 16226: Petition of AT&T Communications of the Southwest, Inc. for Compulsory Arbitration to Establish an Interconnection Agreement Between AT&T and Southwestern Bell Telephone Company; On behalf of AT&T of the Southwest;

Docket No. 16285: Petition of MCI Telecommunications Corporation and Its Affiliate MCIMetro Access Transmission Services, Inc. for Arbitration and Request for Mediation Under the Federal Telecommunications Act of 1996; On behalf of MCI Telecommunications Corporation;

Oral Deposition: August 30, 1996	Testimony & Cross Examination: October 2-3, 1996

P.O. Box 3608
Harrisburg, PA 17105-3608
Phone: 717-564-0100
Internet: http://www.amp.com

AMP

AMP Incorporated

August 18, 1998

Mr. John Donovan
President, Telecom Visions
11 Osborne Road
Garden City, NY 11530

Dear Mr. Donovan

As requested, enclosed please find materials related to our AMP-STACK™ Modular Splicing System. Our products are designed to splice 5, 10, and 25 pair complements of standard gauge telecommunications wire.

AMP-STACK has been designed and manufactured to meet all applicable Bellcore documents, and in fact, passes or exceeds all requirements.

AMP-STACK is especially efficient when used in splicing "high-count" telecommunications cable. In fact, most Telco's mandate the use of modular connectors when cable counts exceed 300 pair. We have found that the "average" splicing technician can splice 300 pair per hour with modular connectors, and that highly skilled personnel can splice in excess of 500 pair per hour. This is certainly more efficient than splicing via "discrete" (or "single-wire") connectors.

If you would like additional samples or material, please call.

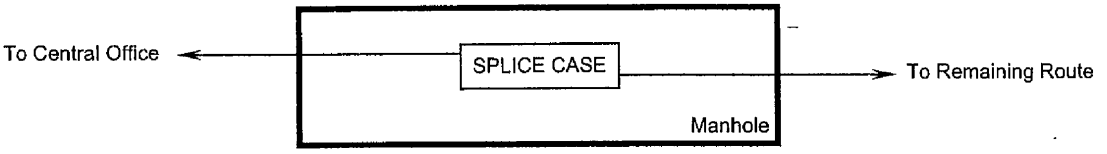
Sincerely,

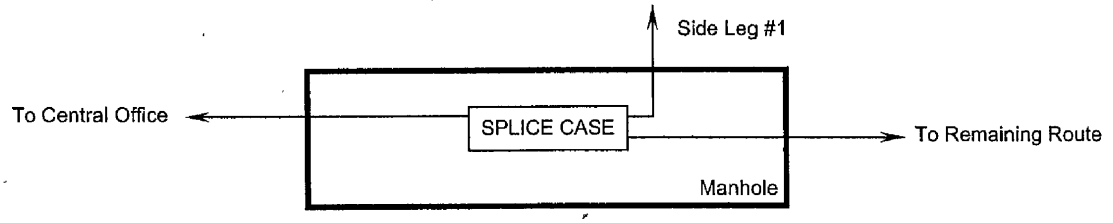
Dennis J. Thompson

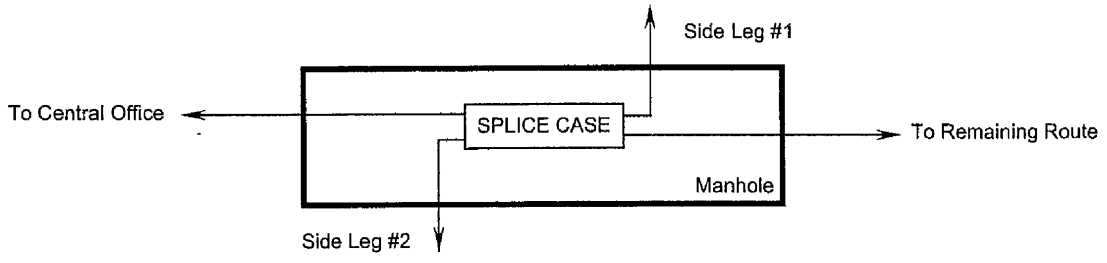
U.S. Regional Sales Manager,
Global Communication Group
Phone: 717 985-2092
Fax: 717 986-7321
Internet: djthomps@amp.com

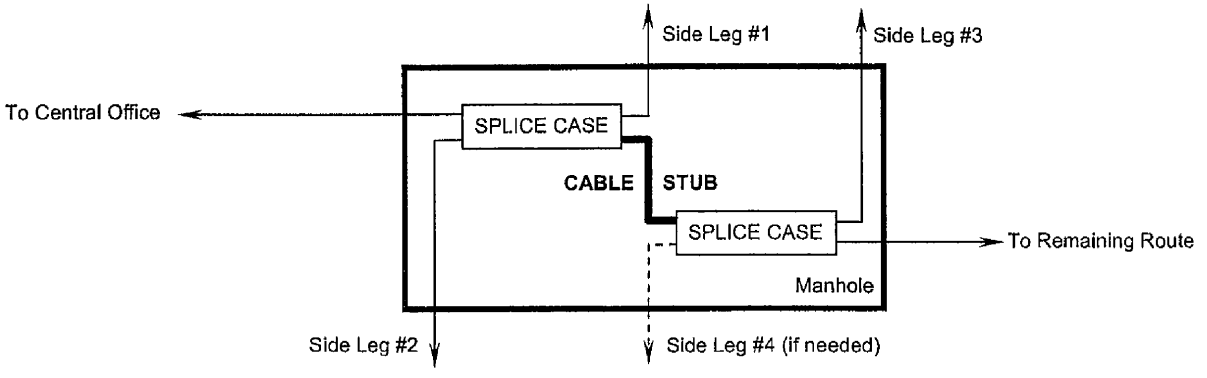
DOCKET NO. 990649-A-TP
WITNESS: DONOVAN
EXHIBIT NO. _____ (JCD-6)
PAGE 1 OF 1

PROPER USE OF OUTSIDE PLANT COPPER CABLE STUBS









DOCKET NO. 990649-A-TP
WITNESS: DONOVAN
EXHIBIT NO. _____ (JCD-7)
PAGE 1 OF 1

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the Rebuttal Testimony of John C. Donovan in Docket 990649A-TP has been served on the following parties by Hand Delivery (*) and/or U. S. Mail this 10th day of December, 2001.

Wayne Knight, Esq.*
Division of Legal Services, Room 370
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Nancy B. White
c/o Nancy H. Sims
BellSouth Telecommunications, Inc.
150 South Monroe Street, Suite 400
Tallahassee, FL 32301

Claudia Davant-DeLoach, Esq.
AT&T
101 N. Monroe St., Suite 700
Tallahassee, FL 32301

Jim Lamoureux, Esq.
AT&T
1200 Peachtree St., Suite 8068
Atlanta, GA 30309

Jeffrey Whalen, Esq.
John Fons, Esq.
Ausley Law Firm
P.O. Box 391
Tallahassee, FL 32302

Michael A. Gross
Vice President, Regulatory Affairs
& Regulatory Counsel
Florida Cable Telecommunications Assoc., Inc.
246 E. 6th Avenue
Tallahassee, FL 32301

Kimberly Caswell
Verizon Select Services
P.O. Box 110, FLTC0007
Tampa, FL 33601-0110

Donna McNulty, Esq.
WorldCom
The Atrium Building, Suite 105
325 John Knox Road
Tallahassee, FL 32303

Mr. Brian Sulmonetti
WorldCom, Inc.
6 Concourse Parkway, Suite 3200
Atlanta, GA 30328

Marc W. Dunbar, Esq.
Pennington, Moore, Wilkinson, Bell &
Dunbar, P.A.
P.O. Box 10095
Tallahassee, FL 32302-2095

Charles J. Rehwinkel
Sprint-Florida, Incorporated
MC FLTHO0107
P.O. Box 2214
Tallahassee, FL 32399-2214

Mark Buechele
Supra Telecom
1311 Executive Center Drive, Suite 200
Tallahassee, FL 32301

Carolyn Marek
Vice President of Regulatory Affairs
Southeast Region
Time Warner Communications
233 Bramerton Court
Franklin, TN 37069

Ms. Wanda Montano
US LEC of Florida, Inc.
401 North Tryon Street, Suite 1000
Charlotte, NC 28202

Vicki Kaufman, Esq.
Joe McGlothlin, Esq.
McWhirter, Reeves, McGlothlin,
Davidson, Rief & Bakas, P.A.
117 S. Gadsden Street
Tallahassee, FL. 32301

Patrick Wiggins
Charles Pellegrini
Katz, Kutter Law Firm
106 East College Avenue, 12th Floor
Tallahassee, FL 32301

Richard D. Melson
Hopping Green Sams & Smith, P.A.
P.O. Box 6526
Tallahassee, FL 32314

BlueStar Networks, Inc.
Norton Cutler/Michael Bressman
5 Corporate Centre
801 Crescent Centre Drive, Suite 600
Franklin, TN 37067

Mr. John Spilman
Broadslate Networks of Florida, Inc.
675 Peter Jefferson Parkway, Suite 310
Charlottesville, VA 22911

Ms. Catherine F. Boone
Covad Communications Company
10 Glenlake Parkway, Suite 650
Atlanta, GA 30328-3495

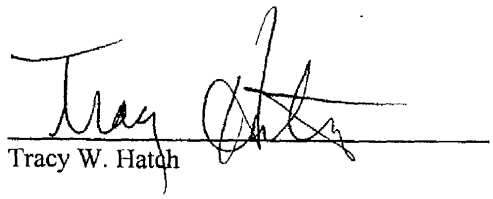
Florida Digital Network, Inc.
390 North Orange Avenue, Suite 2000
Orlando, Florida 32801

Mr. Don Sussman
Network Access Solutions Corporation
Three Dulles Tech Center
13650 Dulles Technology Drive
Herndon, VA 20171-4602

Rodney L. Joyce
Shook, Hardy & Bacon LLP
600 14th Street, NW, Suite 800
Washington, DC 20005-2004

Michael Sloan
Swidler & Berlin
3000 K Street, NW #300
Washington, DC 20007-5116

George S. Ford
Z-Tel Communications, Inc.
601 S. Harbour Island Blvd.
Tampa, FL 33602-5706



Tracy W. Hatch