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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition by Metropolitan Fiber Systems of Florida, Inc. for arbitration with BellSouth Telecommunications, Inc. concerning interconnection rates, terms, and conditions, pursuant to the Federal Telecommunications Act of 1996.) DOCKET NO. 960757-TP

In Re: Petition by AT&T Communications of the Southern States, Inc. for arbitration of certain terms and conditions of a proposed agreement with BellSouth Telecommunications, Inc. concerning interconnection and resale under the Telecommunications Act of 1996.) DOCKET NO. 960833-TP

In Re: Petition by MCI Telecommunications Corporation and MCI Metro Access Transmission Services, Inc. for arbitration of certain terms and conditions of a proposed agreement with BellSouth Telecommunications, Inc. concerning interconnection and resale under the Telecommunications Act of 1996.) DOCKET NO. 960846-TP

SECOND DAY - AFTERNOON SESSION

VOLUME VI

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BUREAU OF REPORTING

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1
2 PROCEEDINGS: HEARING
3 BEFORE: CHAIRMAN JULIA L. JOHNSON
4 COMMISSIONER J. TERRY DEASON
5 COMMISSIONER SUSAN F. CLARK
6 COMMISSIONER E. LEON JACOBS, JR.
7 COMMISSIONER JOE GARCIA
8
9 DATE: Tuesday, January 27, 1998
10
11 TIME: Commenced at 1:00 p.m.
12
13 PLACE: Betty Easley Conference Center
14 Room 151
15 4075 Esplanade Way
16 Tallahassee, Florida
17
18 REPORTED BY: NANCY S. METZKE, RPR, CCR
19
20 APPEARANCES:
21
22 (As heretofore noted.)
23
24
25

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P R O C E E D I N G S

(Hearing reconvened at 1:00 p.m.)

(Transcript follows in sequence from Volume V)

CHAIRMAN JOHNSON: On the record.

MR. LACKEY: BellSouth calls Mr. Smith.

Whereupon,

ELLIS E. SMITH

having been called as a witness on behalf of BellSouth, and
being duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. LACKEY:

Q Mr. Smith, will you please state your full name
and address?

A My name is Ellis E. Smith. I reside at 2514
Comanche Drive, Birmingham, Alabama, 35244.

Q By whom are you employed?

A I'm employed by and a part owner of Three Sigma,
Inc., a scientific statistical sampling consulting firm.

Q Have you caused to be prefiled in this proceeding
16 pages of testimony in question and answer form?

A Yes, I have.

Q Do you have any changes or corrections to that
testimony?

A No, I do not.

Q If I were to ask you the questions that appear in

1 your prefiled testimony today, would your answers be the
2 same?

3 A Yes, they would.

4 MR. LACKEY: Madam Chairman, I would ask that
5 Mr. Smith's prefiled testimony be included in the record as
6 if given from the stand.

7 CHAIRMAN JOHNSON: It will be so inserted.

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1 BELLSOUTH TELECOMMUNICATIONS, INC.
2 DIRECT TESTIMONY OF ELLIS E. SMITH
3 BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION
4 DOCKET NOS. 960833-TP, 960846-TP, 960757-TP, 971140-TP, 960916-TP
5 NOVEMBER 13, 1997

6
7 Q. PLEASE STATE YOUR NAME, ADDRESS AND OCCUPATION.

8
9 A. My name is Ellis E. Smith. My business address is 2514 Comanche
10 Drive, Birmingham, Alabama. I am employed by and a part owner of
11 Three Sigma, Inc., a scientific statistical sampling consulting firm.

12
13 Q. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR EDUCATIONAL
14 BACKGROUND AND WORK EXPERIENCE.

15
16 A. I attended the University of Alabama at Tuscaloosa, where I earned a
17 Bachelor of Science degree as well as a Master of Arts degree in
18 Mathematics. After joining South Central Bell in 1973, I completed a
19 series of post graduate courses in statistics at the University of
20 Alabama in Birmingham. While obtaining my Master of Arts degree, I
21 also taught mathematics courses at the University of Alabama at
22 Tuscaloosa.

23
24 During my 24 years with the AT&T and BellSouth companies (South
25 Central Bell, BellSouth Services, Inc., and BellSouth

1 Telecommunications, Inc.) I spent 20 years as an internal statistical
2 consultant handling scientific sample design, statistical analysis and
3 mathematical analysis. After my retirement from BellSouth in
4 December, 1996, I began my present employment with Three Sigma,
5 Inc.

6
7 While I was with South Central Bell and with BellSouth
8 Telecommunications, Inc., I regularly attended conferences and
9 programs with other statisticians where topics relevant to my work were
10 presented. In addition, I attended the basic two week course, and the
11 more advanced one week course offered by AT&T, related to statistics
12 and statistical sampling and successfully completed both courses.

13
14 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

15
16 A. The present proceeding is looking at certain cost studies that have
17 been prepared and offered by BellSouth Telecommunications, Inc.
18 One of those studies, examining the cost of a loop, was based in part
19 on a statistical sample which I was instrumental in developing. The
20 purpose of my testimony is to tell the Commission about statistical
21 sampling, to explain what I did in connection with the loop sample I
22 mentioned above, and to share with the Commission information about
23 the precision of the sample and what it means.

24
25

1 Q. CAN YOU BEGIN BY GIVING A SHORT BACKGROUND ON THE
2 USE OF STATISTICAL SAMPLING?

3

4 A. The best way to approach this may be with examples. If a person
5 wanted to learn something about the average height of a group of 20
6 people, the easiest way would be to measure the height of every
7 person in the group, add the results together and then divide by the
8 number of people in the group. This would yield the average height of
9 the group. Using this process to find out something about a limited
10 number of objects, the "universe" in statistical terms, is relatively
11 simple.

12

13 However, if the object were to find the average height of the total
14 population of Jacksonville, a different process would be used.

15 Specifically, you could take a "sample" of the relevant "universe," and if
16 properly done, a measurement derived from that "sample" should fairly
17 represent the same measurement for the "universe" as a whole.

18

19 To continue the example, if I wanted to find the average height of
20 people in Jacksonville, I could identify every person in the city, get
21 them to hold still while I measured them, sum the heights, divide by the
22 number of people, and get a resulting average. Alternatively, I could
23 determine a proper sample which would be representative of the entire
24 population of Jacksonville, calculate the average height of the sample,
25

1 and reach, with certain levels of precision, an estimate of the average
2 height of people in Jacksonville.

3

4 The concept of sampling is not a new one, and I am sure that it is
5 familiar to everyone. The difficulty comes in selecting the sample.

6

7 Q. CAN YOU EXPLAIN WHAT YOU MEAN BY YOUR LAST COMMENT?

8

9 A. The issue, basically, is determining whether the sample that has been
10 selected is actually representative of the "universe" that is being
11 measured. If I walk up to a McDonald's restaurant in Jacksonville, and
12 get the people there to stand still while I measure them and calculate
13 an average height for that particular group, I would know their average
14 height, but, absent pure chance, I would know nothing about the
15 average height of the people in Jacksonville, because my sample
16 probably would not be representative of the universe I am interested in
17 measuring.

18

19 Q. HOW DO YOU DETERMINE A REPRESENTATIVE SAMPLE WHICH
20 CAN BE USED TO MEASURE CHARACTERISTICS OF A UNIVERSE
21 THAT IS TOO LARGE TO MEASURE DIRECTLY?

22

23 A. The appropriate way is to take a random sample of the objects in the
24 universe which is large enough to allow us to estimate the size of the
25 attribute or variable in which we are interested. An attribute is a

1 characteristic that is either present, or not present, for a sample item
2 (i.e., agree/not agree, yes/no, on/off, etc.) so that the sample items with
3 the characteristic can be counted. A variable sample measures some
4 characteristic on a continuum, (i.e. height, weight, length, cost, etc.)

5

6 While I do not intend to teach a basic course in statistics, it is easy to
7 see that my answer suggests that there are two things which must be
8 present. First, the sample must be determined on a random basis
9 and, second, the sample must be large enough to allow us to
10 determine the result with the precision we seek.

11

12 The first task is the easier one to accomplish. Generally, where there is
13 a defined body of objects to be studied, a sample can be selected by
14 using a random number generator to determine the starting point, and
15 then selecting objects at intervals calculated to give the required
16 number of objects to achieve the precision that is desired.

17

18 To illustrate this point, assume that I have ten thousand people in a
19 group, all lined up and numbered 1 through ten thousand, and the
20 object is to determine the average height, a variable, of the people in
21 the group. Further, assume that I have already decided that I want my
22 sample size to be 50 people, a decision I will talk about more in a
23 moment. The first thing I would do is calculate the sampling interval by
24 dividing the universe by the sample size. Here, I would get an interval
25 of 200. Then I would use a "random number generator," which is

1 nothing more than a computer program or a table, to give me the
2 number between 1 and 200 to begin with. In this example, assume I
3 use a random number generator and it tells me to begin (and again,
4 this is completely at random; that is the point of the exercise) with the
5 person having number 67. Since I have ten thousand people and I
6 need a sample size of 50, I would begin with Person Number 67. I
7 would then select every two hundredth person, so that when I was
8 finished, I would have a group of 50 people. This is my random
9 sample.

10

11 Q. HOW WELL WILL YOUR SAMPLE GROUP REPRESENT THE
12 UNIVERSE?

13

14 A. That question takes us to the second part of my analysis. Simply
15 stated, assuming the sample is in fact a random one, the size of the
16 sample dictates the precision with which the sample represents the
17 universe as a whole. The logic of this is inescapable. Obviously if I
18 selected all ten thousand people and measured them, I could obtain
19 the exact average height of the group. If I only measured 9,999
20 people, I could get pretty close to the actual average, but I could be off,
21 although probably not by much. On the other hand, if I only selected
22 one person out of the entire ten thousand, the likelihood that my
23 sample actually matched the average of the group would be fairly
24 minimal.

25

1 The common error that people make, however, is thinking that this is a
2 linear relationship. In fact, a point is reached with sample sizes where
3 increasing the sample size simply does not add significantly to the
4 accuracy of the answer in a manner that is cost and time efficient.

5
6 This phenomenon is really well known to most of us, if we think about it.
7 Who has not seen a televised Presidential Election night news report
8 where, before the polls close, the television stations are predicting a
9 winner, based on questions, an attribute, asked of a sample of 500
10 people as they left the polls! How, when 50 or 60 million people are
11 voting (if we are lucky) can they predict the results of the election? The
12 answer is in the rest of the information that the television news report
13 gives. Normally, in small print, they will note that the results they are
14 projecting are accurate within "plus or minus 3 (or a similar number)
15 percentage points." That is, if Candidate A is selected as the winner
16 because the television station is projecting that the candidate will win
17 60% of the votes cast, with a possible error of 3 percentage points,
18 what the television station (or more accurately the pollster's
19 statisticians) is really saying is that the actual vote that Candidate A
20 will receive will fall between 57% of the vote and 63% of the vote, with
21 95% reliability.

22
23 This is nothing more than what a statistician calls a "confidence
24 statement." Normally, the statistician would say "I am 95% confident
25 that the real result will fall within 3 percentage points of the number that

1 I am reporting to you.” A ninety-five percent confidence interval is the
2 level normally used, although it can be lowered or increased.

3

4 The precision of the measurement, the “plus or minus 3 points” in my
5 election example above, can be affected by sample size. If the
6 pollsters for the television station had chosen to only interview 50
7 voters, they still would have been able to make a projection, but with 50
8 voters, they might have had to say “We think Candidate A will win with
9 60% of the vote, but the real result may vary within a range of plus or
10 minus 20 percentage points.” That is, the television station would have
11 had to conclude that it thought Candidate A would get 60% of the vote,
12 but it would have to admit that the real answer should fall between 40%
13 of the vote and 80% of the vote. As you can see, this range isn’t very
14 helpful because you really cannot tell whether Candidate A is going to
15 win by a landslide or lose!

16

17 The important point to remember is that while increasing the sample
18 size can narrow the range within which the actual result is expected to
19 fall, increasing the sample size may have limited benefits. For
20 instance, narrowing a confidence interval of 10% to an interval of 5%
21 would require quadrupling the sample size. To illustrate, go back to my
22 example where I was trying to find the average height of a group of
23 10,000 people. If we picked a sample of 200 people, and after
24 measuring them I found the average height was 5 feet, 11 inches, I
25 might be able to say that the actual average of the group of people

1 would be within a range from 10% below that height to 10% above that
2 height. If I wanted to decrease the interval so that I could say that the
3 average height of the group fell in a range within 5% of the number I
4 calculated from the sample, I would have to increase my sample size to
5 800. The question that persons employing statisticians have to ask is
6 whether the additional accuracy is worth the cost of taking the larger
7 sample. In my illustration regarding the Election Night results, the
8 sample size was limited to 500 voters, where the universe was 50 or 60
9 million voters, because the television station felt that increasing the
10 sample size simply would not improve the confidence level enough to
11 warrant the extra time and cost that would be involved.

12

13 Q. IF THERE IS A POINT BEYOND WHICH A LARGER SAMPLE WILL
14 ONLY marginally improve the results, is there a limit
15 below which the sample size should not go as well?

16

17 A. Yes. Although it is not an absolute rule, I try to keep my samples
18 above thirty, because of various statistical tests that suggest that level.

19

20 Q WITH THIS BRIEF BACKGROUND, CAN YOU TELL US WHAT YOU
21 DID IN CONNECTION WITH THE LOOP SAMPLE THAT YOU
22 MENTIONED EARLIER IN YOUR TESTIMONY?

23

24

25

1 A. Yes. I was asked to develop a process which would allow the company
2 to draw a sample of the loops which could be used to represent the
3 universe of loops as defined by the company.

4

5 I expected, consistent with previous statistical studies in which I had
6 participated, that we would want the sample to allow us to have a
7 precision level between five and ten percent. That is, I intended to
8 develop a loop sample where a measured characteristic or variable of
9 the sample, such as the average loop investment, could be said to be
10 within a range of 5 to 10 percent of the actual average loop investment
11 of the universe of loops. Therefore, I had to take steps to insure that a
12 random sample was drawn, and that the sample size was large enough
13 to allow us to obtain the precision interval that I mentioned.

14

15 Q. DID YOU DO THAT?

16

17 A. Yes I did. The random sample was easy to pull. BellSouth's Customer
18 Records Information System (CRIS) data base contains the identity of
19 every loop that the company has, by telephone number. All I had to do
20 was pick the numerical position of the beginning telephone number,
21 using a random number generator and then have every succeeding
22 working telephone number picked at a specified interval in order to
23 obtain a sample of the size needed. In fact, this process was followed
24 for each of the nine BellSouth states, since the cost study this was
25 being done for was to be developed for all nine states.

1

2 Q. HOW DID YOU SELECT THE SAMPLE SIZE THAT WOULD BE
3 NEEDED SO THAT YOU COULD ESTABLISH THE INTERVAL YOU
4 MENTIONED EARLIER?

5

6 A. I had an advantage there because I had access to a BellSouth loop
7 study done back in the 1980s. I could use the statistics calculated from
8 that study, including the precision, mean and variance, and calculate
9 an expected sample size for our study based on the desired precision
10 results.

11

12 However, the earlier loop sample had cut across all types of loops and
13 was not stratified in any way. Stratification is the grouping of a
14 universe according to specific criteria. For instance, separating a loop
15 universe into residence loops, business loops and pay telephone loops
16 is a form of stratification. Then a sample is selected from each stratum.
17 This will provide results for each stratum and these results can also be
18 weighted together to get overall results. The earlier sample was not
19 stratified in that manner. After looking at the earlier results, I concluded
20 that a sample size of about 175 loops representing residence
21 customers and about 175 loops representing business customers
22 would probably be sufficient to give me the precision interval I was
23 looking for in those strata.

24

25

1 I am sure that some one might question how I could use "judgment"
2 and get the "right" sample size, but that is not the issue. I could have
3 simply picked any sample size, and we could have done the analysis I
4 have been describing. If we did it with 50 loops, we would then test the
5 precision level, just as I illustrated with my Election Night example
6 above, and if the precision interval was too large, we would just have to
7 expand the size of the sample, by adding additional randomly selected
8 loops. The problem is that this adds cost, since it is very time
9 consuming and expensive to keep analyzing loops time after time.
10 Therefore, what I did was try to use prior information regarding sample
11 size to estimate the sample size that I thought, based on my
12 experience, would bring us within the desired precision intervals on the
13 first try. In fact, I asked that 25% more, or approximately 220, loops be
14 pulled so that the sample size could be increased if necessary to obtain
15 the necessary precision level.

16

17 Q. WAS THE SAMPLE OF LOOPS FOR RESIDENCE AND BUSINESS
18 LOOPS CREATED AS YOU DESCRIBED?

19

20 A. Yes, and I was then given the data associated with the loops so that I
21 could analyze the sample information in order to determine whether the
22 sample represented the universe within the precision levels that I
23 mentioned earlier. The loops were identified, the detailed records were
24 pulled and reviewed and the data from the loops in the overall sample
25 was provided to me. I then analyzed the sample loop data, determined

1 the mean investment as well as the variance around the mean, and
2 reached a conclusion, using standard statistical tools, as to the
3 precision interval for the sample.

4

5 Q. CAN YOU GIVE US THOSE RESULTS?

6

7 A. Yes. The characteristic that we were examining was the loop
8 investment. We were trying to determine, among residential and
9 business loops, the average investment required for each. I
10 determined, with a confidence level of 95%, that the actual average
11 investment in residential loops in the universe represented by our
12 sample fell within a range of 5.8% above or below the average
13 investment derived from the residential sample. Similarly, I determined,
14 with a confidence level of 95%, that the actual average investment in
15 business loops in the universe represented by our sample fell within a
16 range of 5.2% of the average investment determined from our business
17 sample.

18

19 Q. WHAT COULD YOU HAVE DONE IF THE RESULTS FELL OUTSIDE
20 OF THE PRECISION INTERVAL THAT YOU WERE SEEKING?

21

22 A. I would have simply increased the sample size, first by using the extra
23 loops that were initially selected to see if this would have put us in the
24 desired range. However, you should recall from my earlier example
25 that improving the precision interval does not involve a linear

1 relationship, and if I had been wrong, I might have had to increase the
2 sample size considerably more than these additional loops in order to
3 appreciably decrease my precision level. Doing this is not without a
4 tremendous cost, that is, the cost of having an additional number of
5 loop records pulled, examined, recast if necessary, and run through a
6 process to determine the investment in the additional loops.

7

8 Q. WHAT DO YOU MEAN BY YOUR COMMENT ABOUT RECASTING
9 THE LOOPS?

10

11 A. What we are trying to do here is not only select a sample that will
12 represent the existing universe of loops, but which will also represent
13 the universe of loops as it will exist in the future. As I understand what
14 we are doing, we are attempting to determine the cost of a loop using
15 forward looking, most efficient technology. I also understand that one
16 impact of this is that certain assumptions regarding the makeup of
17 these forward looking loops are made, such as one that says that all
18 loops beyond 12,000 feet in length will be carried on fiber instead of
19 copper. If loops in the sample were more than 12,000 feet in length,
20 but were carried on copper, the loop would have to be recast to treat it
21 as if it were actually carried on fiber, which it presumably would be in
22 the future.

23

24 Q. DO SUCH ADJUSTMENTS AFFECT THE REPRESENTATIVE
25 NATURE OF THE LOOP SAMPLE?

1

2 A. No. Remember, what we are trying to do is to find a sample that represents
3 the universe of loops under study. The universe we are trying to measure
4 consists of loops which are built using forward looking, most efficient
5 technology. The samples we selected, adjusted for the assumptions
6 necessary to make them meet these criteria, represented this forward looking
7 universe within the parameters that I have previously described in detail in
8 almost every situation.

9

10 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

11

12 A. I was asked to develop a sampling procedure to estimate the average
13 investment for a loop in Florida. I decided that a stratified systematic
14 sampling procedure would be an appropriate process to estimate the
15 investment for both residence and business loops, and would also allow the
16 weighting for a combined result in most cases. I used a previous loop study
17 to estimate an overall sample size and then decided that a sample of about
18 175 loops for residence and about 175 loops for business should be adequate
19 for current purposes. The sample was selected, recast, and the data was
20 developed and provided to me. I analyzed these data and concluded that for
21 almost every case the sample fell within the 5% - 10% precision range that
22 had been the original design criterion.

23

24 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

25

- 1 A. Yes it does.
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1 Q Mr. Smith, do you have a brief summary of your
2 testimony?

3 A Yes, I do.

4 Q Will you please give it?

5 A As I just said, my name is Ellis Smith. I'm now
6 a consult statistician. I was previously employed by
7 BellSouth for 24 years, about 20 of which were spent doing
8 statistical work on a variety of projects for a number of
9 clients within the company. In connection with this
10 proceeding, I was asked to develop a process which would
11 allow BellSouth to determine what a representative local
12 loop in Florida would look like. Now as you know, there
13 are approximately five million residence and business loops
14 in Florida. One way to find out what a representative loop
15 would look like would be to look at every loop in the
16 state. Quite frankly, this is simply not possible.

17 Looking at each loop is a time-consuming activity
18 and, in fact, would churn (phonetics) among customers --
19 you would probably never get finished with such a review.
20 The alternative is to use statistical sampling and analysis
21 of that sample to get information which will allow a
22 conclusion to be drawn about the universal loops in
23 Florida.

24 It should be noted at this point that statistical
25 analysis is mathematically provable and substantiated,

1 universally accepted and widely used. For instance,
2 everyone in the room has probably watched election night
3 television and seen the networks predict the presidential
4 elections with a sample of about 500 voters. They don't
5 want their projections to be wrong so they put a lot of
6 faith in these samples, especially when there may be as
7 many as 50 or 60 million voters.

8 The same is true of television we watch.
9 Everyone has heard of and some have been involved in the
10 Nielsen survey which uses the TV watching habits of a very
11 few families nationwide for a week or two to determine what
12 will be available for all of us to watch on which night and
13 at what time. The results are also used to set advertising
14 rates and thus effect the cost of items we purchase. We
15 are not always happy about the results, but that's the way
16 it is handled.

17 Now just what is required in order to get a
18 statistically valid sample? Well, it's really quite
19 simple. First, you have to have what we call a universe of
20 things to select from, and in this case we are talking
21 about telephone lines of residence and business customers.
22 Second, every item in the universe has to have an equal or
23 known chance of appearing in the sample. And third, you
24 have to have some way to randomly pick the sample from the
25 universe. It has to be a randomly selected sample of the

1 universe to be statistically valid.

2 Now picking a random sample, however, is fairly
3 simple. First you determine how many items you need in
4 your sample, and there are mathematical algorithms or
5 formulas which will allow to you do this. Alternatively,
6 if you have some experience in the area, you may have done
7 samples before and have some general expectations about the
8 sample size. But once you know how many you want, you use
9 a random number generator to pick the item to start with
10 and proceed from there through the entire universe by
11 selecting every inth item called a sample interval.

12 One of the issues in this proceeding has been the
13 sample size that was used. In our study we used about 175
14 residence and about 175 business loops. There have been
15 some questions about whether that was a small number for a
16 sample when compared to five million loops. Although
17 understandable, that's a question that only a
18 non-statistician or someone who doesn't use statistics very
19 often would ask. In fact, once you get a sample size of
20 around 30 items, you can start doing statistical analysis.
21 I could have sampled 30 residence loops and 30 business
22 loops and begun drawing conclusions about the loops in the
23 universe. The size of the sample above 30 loops was
24 dictated by the parameters I was trying to achieve with the
25 analysis.

1 Now I know this may sound more and more
2 complicated so I would like to take a few minutes to
3 discuss it with you. When you use a sample, what you end
4 up with is a confidence interval. For instance, the
5 confidence interval might say, I'm 95% sure that President
6 Clinton will win the presidential election with 60% of the
7 vote with a plus or minus error of three percentage points.
8 This means that based upon a sample I think that when all
9 the votes are counted President Clinton will win the
10 election and will have 60% of the votes, but the real
11 number will be between 57% and 63% with 95% certainty.

12 The sample size you see affects the plus or minus
13 numbers you always see in surveys. Basically, if the
14 sample is small, the range is usually wide. The larger the
15 sample, the narrower the band. Election pollsters
16 sometimes calculate election results within 5% based on a
17 sample of four to five hundred. If they had a sample of a
18 hundred, they could still predict the results, but it might
19 be 60% plus or minus 10%. On the other hand, if they had
20 selected two thousand, they might reach a conclusion that
21 it would win 60% of the vote, plus or minus 2%. In short,
22 the size of the sample is one of the items which will
23 dictate how big the range of results will be.

24 Now what did we do in this case? We obviously
25 could not examine every loop in Florida. It would have

1 taken more time than we had and been very expensive even if
2 it could be done, so we chose to use statistical sampling
3 to determine what constituted a representative loop. We
4 wanted a confidence interval of less than 10%. Based on my
5 experience, I suspected a sample size of about 175 loops
6 from residence and an equal number from business would put
7 me in that range. As a consequence, I determined a sample
8 of that size and instructed the client on how to pull the
9 sample, and they did so. They then gathered the data and
10 provided it to me. Once I got the data, I examined it by
11 using standard statistical analysis procedures and found
12 that the results were within the parameters we had set.

13 The sample was completed, and the results were
14 integrated into the study. You might ask what would have
15 happened if the results had been outside the parameters.
16 Well, we would have just added more loops to the sample
17 until the results fit within the precision level we
18 desired. It's just standard statistical procedure.

19 I know the entire topic of statistics is
20 sometimes confusing, and the more questions that are asked
21 and answered probably don't make it any easier to
22 understand, however, sampling is well accepted. It's
23 relatively easy if you work with it a lot and usually very
24 accurate. To summarize I believe the sample that was
25 developed is representative of the universe of interest and

1 that you can rely on the results obtained with it. Thank
2 you.

3 MR. LACKEY: Mr. Smith is available.

4 COMMISSIONER CLARK: I have a preliminary
5 question. Right here, Mr. Smith.

6 WITNESS SMITH: Oh, I'm sorry. I'm sorry.

7 COMMISSIONER CLARK: I just wanted to know, when
8 you have -- say you have five hundred, your universe is
9 five hundred people.

10 WITNESS SMITH: Yes.

11 COMMISSIONER CLARK: And you take, you decide
12 your sample size is going to be 50. Does that always
13 relate -- come out to the same degree of confidence? I
14 mean is that the ratio, or are there other factors that
15 determine the confidence level?

16 WITNESS SMITH: Well, there are two answers to
17 that. In the case that we are looking at, there are other
18 factors because we are looking at a variable. We were
19 looking at investment, which is on a continuum. An
20 attribute, such as a survey sample, where you either have a
21 particular attribute or not, it's either a yes or a no type
22 situation. It will come out the same there for the -- a
23 particular percentage.

24 COMMISSIONER CLARK: Okay.

25 WITNESS SMITH: In other words, if you selected

1 50 out of five hundred and got, say, ten, it would be 20%
2 plus or minus something; and it would be the same for any
3 study because the variance is the same. But in a variable
4 situation, like investment, it depends also on the
5 variation, how much variation there are in the individual
6 items that you selected for the sample. In other words, if
7 you had 50 items and there were a lot of small ones and
8 then some in the middle and a lot of large ones, you might
9 have a great deal of variance.

10 COMMISSIONER CLARK: I see.

11 WITNESS SMITH: Say it ranged from two dollars to
12 two thousand dollars, you might have a lot of variance.
13 But if your 50 items all range between 45 dollars and 55
14 dollars, you would have a very tight --

15 COMMISSIONER CLARK: Okay. Thank you.

16 WITNESS SMITH: Uh-huh.

17 CROSS EXAMINATION

18 BY MR. LAMOUREUX:

19 Q Good afternoon, Mr. Smith.

20 A Good afternoon.

21 Q I'm Jim Lamoureux, and I represent AT&T. I would
22 like to take a look at page 4 of your testimony, if I may,
23 and at line 9, you say the issue basically is determining
24 whether the sample that has been selected is actually
25 representative of the universe that is being measured.

1 A Uh-huh.

2 Q That's a high level description of what sampling
3 is used for; is that generally correct?

4 A Basically. It's one of the items, yes.

5 Q Okay. And my question is, in terms of the
6 exercise that we are dealing with here today, the cost
7 study for Florida, what was the universe that was being
8 measured as we talk about on page 4?

9 A That was being measured?

10 Q Yeah. I mean you say the issue is determining
11 whether the sample that has been selected is actually
12 representative of the universe that is being measured.

13 A Right.

14 Q So my question is what is the universe that we
15 are talking about in this proceeding?

16 A The universe is the recast loops that are in use
17 today.

18 Q Now when you say the recast loops that are in use
19 today, you mean all of the loops in the State of Florida?

20 A No, the loops that were included in my analysis
21 only are the only things I made any statements about,
22 business loops and residence loops.

23 Q Okay. Well, you said in your summary that you
24 were hired by BellSouth to determine what a representative
25 loop would look like in the State of Florida, right?

1 A I believe that's what I said, and I think that's
2 what that says here.

3 Q Okay. And that implies to me that the universe
4 that you were looking at was all the loops in the State of
5 Florida to be able to figure out what a representative loop
6 of that universe would be; is that correct?

7 A No, the universe -- well, the universe of loops
8 is whatever the client defines it as, and in this case it
9 was defined as the business loops and the residence loops.
10 It's not a statistician's decision.

11 Q So if I were to modify what you said in your
12 summary, really what you were hired by BellSouth to do was
13 determine what a representative business and residential
14 loop would look like; is that correct?

15 A You could put those words in there, yes.

16 Q Okay. The sample actually is not representative
17 of all of the loops in the State of Florida, is it?

18 A The sample only included business loops and
19 residence loops, that's right.

20 Q Okay. And as I understand your testimony, the
21 way this process worked was you took the entire universe of
22 all working loops in the State of Florida as found in
23 BellSouth's CRIS, CRIS data base; is that correct?

24 A It was stratified into, I believe it was nine
25 different categories. Whether there were other items in

1 there that didn't fit this one of those nine, I'm not sure;
2 but I believe initially there were nine categories.

3 Q Okay. I was going to get into the stratification
4 in just a second, but in terms of the pool of loops, that
5 came from the CRIS data base for Florida?

6 A That's correct.

7 Q Okay. And what is the CRIS data base?

8 A It's customer record information system which
9 contains all of the information about the various customers
10 that the company has.

11 Q So as I understand it, it's just a data base of
12 all of the lines that BellSouth has in Florida, generally;
13 does that sound about right?

14 A That sounds about right, yes.

15 Q Okay. And that's what you used as the universe
16 of all of the loops in Florida to start with?

17 A That's what was used, yes.

18 Q Okay. And then what you did was you stratified
19 the universe into nine different strata; is that right?

20 A Well, it was actually -- I didn't do it, but it
21 was stratified into at least nine strata, yes.

22 Q Okay. And you calculated sample sizes for each
23 of the nine different strata; is that right?

24 A I think actually what happened was I actually
25 calculated sample sizes for seven strata. There were some

1 others that were put in there that were like alarms. I
2 think in some states there are alarms, whatever that is,
3 and in other states there weren't; so that was one that
4 usually was so small that it was censused, but that was
5 added by whoever was doing the study. And there was
6 another category, I think it was called toll terminals. It
7 was listed TT, but basically I developed sample sizes for
8 at least seven.

9 Q Okay. And just so -- We might as well get the
10 record clear. As I understand it, those seven strata of
11 loops that you broke the entire universe of loops into were
12 residence, business, business trunks, public, semi-public,
13 ESSX, and COCOTS. Does that sound right?

14 A I think that's correct. That sounds right.

15 Q Okay. And then there were two other strata which
16 were toll terminals and alarms, and as I understand it,
17 when you say that the alarms were censused, that just means
18 they looked at all of the alarm loops that existed in the
19 state?

20 A I believe in the states where they did have
21 alarms that that was the plan. It was to census because
22 some states didn't have any, and the numbers I saw, when
23 there were some, they were very small numbers.

24 Q Okay. Putting aside toll terminals and alarms,
25 for the other seven strata, you calculated sample sizes for

1 each of those strata of loops in the State of Florida?

2 A Yes, I calculated sample sizes.

3 Q Okay. And just as an example, you picked sample
4 sizes of 174 and 175 for the residence and business strata
5 of loops; is that right?

6 A I think I actually said 175 for each, but for
7 matching purposes or whatever they had in their data bases,
8 they actually came up with 174 in one and 175 in the other.

9 Q Okay. Do you remember what your sample sizes
10 were for the other seven strata of loops in Florida?

11 A Not right offhand. Not individually. I had that
12 information. I have that information somewhere that I
13 provided.

14 Q Let me try one, do you remember what the sample
15 size was for ESSX loops in Florida?

16 A I think it probably was about the same size. I
17 don't remember precisely, but I would -- my guess would be
18 that it would be about the same size, 175.

19 Q Okay. And you instructed BellSouth personnel on
20 how to select a sample from each of those seven strata in
21 order to get the sample size that you had selected; is that
22 right?

23 A Right, I provided documentation on how to sample,
24 yes.

25 Q Okay. But although you calculated a sample size

1 for all seven strata, only the samples of loops from what
2 were called business and the residence strata were actually
3 used in the BellSouth cost study?

4 A Those are the only two strata that I analyzed,
5 yes.

6 Q Okay. So for example, you gave BellSouth sample
7 sizes for business, residence and ESSX. BellSouth only
8 gave you back data for business and residence, they didn't
9 give you any data for the ESSX loops, the COCOTS loops or
10 any of the other seven strata; is that right?

11 A That's right.

12 Q Okay. Would you agree that the loops which were
13 not included in the cost study account for a significant
14 percentage of all the loops in Florida?

15 A I really don't remember the universe sizes. I
16 would think it was -- I don't know what percentage it would
17 be, but I guess amassed together they could account for,
18 you know, some large percentage. I don't know if it would
19 be half or a third or what.

20 Q Do you think for Florida they might run as high
21 as seven -- or 10%, those other five strata for which you
22 calculated sample sizes but no loops were pulled?

23 A Without having seen the numbers in a long time, I
24 couldn't say. My guess would be probably yes.

25 Q Okay. I don't have the data for Florida, but as

1 I recall, at least for the other states, it's running about
2 10% that those other loops that were not included account
3 for the loops in those states; does that sound about right?

4 A I'll accept that. I really didn't look back at
5 it to see.

6 Q Okay. So you, I think, agreed with me at the
7 beginning that because the only strata for which you were
8 given data were residence and business the sample you were
9 working with is not representative of the entire universe
10 of loops in Florida; is that correct?

11 A If you mean the entire CRIS data base, no. If
12 you're talking about the universe of business and residence
13 loops, yes.

14 Q Okay. Let me try it differently, the only
15 universe that your sample is representative of is the
16 universe of business and residence loops, correct?

17 A Correct.

18 Q Okay. It's not representative of the universe
19 that includes all seven of the strata of loops?

20 A That's right. No conclusions were drawn about
21 the total of all seven strata.

22 Q And would you agree with me that ESSX loops are
23 generally shorter and less expensive than other loops?

24 A I really couldn't answer that. I'm not a network
25 expert, just a statistician.

1 Q Okay. Well, let me ask you to assume that.
2 Let's assume that in general an ESSX loop -- ESSX loops are
3 shorter and less expensive than other loops. If you were
4 to have included ESSX loops in the universe that you were
5 looking at and the samples that you were looking at --
6 Let me start that question again just to make sure it's a
7 clean question.

8 Assume with me that ESSX loops are shorter and
9 generally cheaper than other loops. If you were to include
10 the sample of ESSX loops in the samples that you were
11 analyzing, would you agree with me that generally the
12 results would be a less expensive representative loop?

13 A Under the assumption that ESSX loops were cheaper
14 and they were included, it probably would lower the average
15 loop investment for the combined results. I really don't
16 know if they are cheaper because my understanding was that
17 it was installed investment which included some equipment
18 behind the loops, and even though they might have been
19 shorter in length, maybe the equipment behind them was more
20 expensive; so I really don't know about, you know, the --
21 But under that assumption, yes.

22 Q Okay. Now the sample that was pulled for
23 business and residence loops, that was a sample of loops
24 that currently exist in Florida; is that right?

25 A At the time that the sample was pulled, yes.

1 Q Okay. And that time was April of 1995; is that
2 correct?

3 A It was around that time. Yes, it was 1995.

4 Q Okay. And those loops, the 174 residence loops
5 and the 175 business loops, were then recast by a group of
6 BellSouth engineers to make them forward-looking loops; is
7 that generally accurate?

8 A That's what I was told, yes.

9 Q Okay. And those recast loops then formed the
10 basis of the investment figures that BellSouth gave you to
11 do your statistical analysis on?

12 A That's correct.

13 Q Okay. And so from those investment figures for
14 recast loops, you calculated the average investment for the
15 recast business and residence loops?

16 A Yes.

17 Q Okay. And would you agree with me that the
18 recast loops are not loops which actually exist in Florida
19 today?

20 A I would assume that they still don't exist, but
21 that was, you know, two years ago. I don't know whether
22 any of that could have changed, that they would today; but
23 at the time they were selected that was the case. There
24 was nothing else to select from except those that were --

25 Q Okay. Well, all I'm trying to ask is those are

1 hypothetical loops because they took real loops as they
2 existed in the ground today and recast them to make them
3 forward-looking, so those recast loops are hypothetical in
4 the sense that they don't actually exist in the ground in
5 Florida?

6 A At the time it was -- Well, that's correct,
7 yeah.

8 Q And so would you agree with me then that the
9 sample set of loops which are the loops that actually exist
10 today is not, in fact, the same set of loops for which you
11 calculated an average investment figure which were the
12 recast loops?

13 A Would you repeat that question?

14 Q Sure. Would you agree with me that the sample
15 set of loops which were loops as they are in the ground
16 today in Florida is not, in fact, the same set of loops for
17 which you calculated an average investment figure because
18 those were the recast loops?

19 A I think I understand your question. That's true
20 if none of the loops have taken on those characteristics
21 since the time. In other words, if it's the same way that
22 it was in 1995, then yes, you had some in the ground that
23 were not recast; and the others were recast, but they would
24 be hypothetical.

25 Q Okay. Precision is not the same thing as

1 representativeness; would you agree with me on that?

2 A That's true. That's true.

3 Q Okay. Now for this study, other than set up the
4 strata of loops that you talked about before and establish
5 procedures to ensure a random sample, BellSouth didn't do
6 anything to your knowledge to verify that its sample was
7 representative of the universe of loops in Florida; is that
8 correct?

9 A I didn't have any information available to do
10 that. Whether anyone else did or not, I don't know.

11 Q So for example, once the 349 loops were pulled,
12 to your knowledge no one looked at those loops to see if
13 they were actually representative of the universe of loops
14 in Florida?

15 A I really don't know what they could have done.
16 You know, as I said, I didn't do anything. The only thing
17 I had available was investment and length, and I looked at
18 that as best I could, but I didn't do any test; and whether
19 anyone else did anything, I don't know.

20 Q Well, are you aware, Mr. Smith, that in this
21 proceeding the only loops for which prices will be set are
22 ADSL and HDSL loops?

23 A I knew it was just a few of the items, but I
24 didn't know which ones.

25 Q Okay. And you're not aware that anyone, once the

1 349 loops were pulled, actually went in to look at those
2 loops to see if any of them were, in fact, loops providing
3 ADSL or HDSL service in Florida?

4 A I don't know whether they did or not.

5 Q You're not aware of anybody doing that though,
6 are you?

7 A No. No, I'm not.

8 Q Okay. Are you aware that ADSL and HDSL loops
9 have different physical characteristics from other sorts of
10 loops?

11 A I knew they had certain characteristics in common
12 with some other loops. I don't know all of them. I know
13 one or two of the characteristics like for ADSL, but I'm
14 not sure if they are totally different.

15 Q Okay. And you're not aware personally whether
16 any of the loops in the sample of 349 were, in fact, loops
17 being used to provide ADSL or HDSL service?

18 A No, I'm not.

19 Q Okay. You said earlier, I think, that the loop
20 survey was begun in April of 1995; is that right?

21 A Around that time. In 1995, yes.

22 Q Are you aware if BellSouth had even begun to
23 deploy ADSL or HDSL service at that time in Florida?

24 A At that time?

25 Q (MR. LAMOUREUX NODDED HEAD AFFIRMATIVELY)

1 A I think I remember a conversation where someone
2 told me one time that there were no -- I don't know if it was
3 both or just one of them, but there were none available at
4 that time to sample, that ADSL and/or HDSL was not even
5 available at the time.

6 Q Okay.

7 MR. LAMOUREUX: I have no further questions.

8 MR. BOND: MCI has no questions.

9 CHAIRMAN JOHNSON: Staff.

10 MR. PELLIGRINI: Staff has no questions.

11 CHAIRMAN JOHNSON: Commissioners.

12 (No response)

13 CHAIRMAN JOHNSON: Redirect.

14 MR. LACKEY: Just a few, Madam Chairman.

15 REDIRECT EXAMINATION

16 BY MR. LACKEY:

17 Q Mr. Smith, just a couple of questions to follow
18 up on Mr. Lamoureux's questions.

19 Mr. Smith, does recasting a statistical sample
20 affect the validity of the sample?

21 A I don't believe it would.

22 Q Okay. Is it the statistician's job to pick the
23 universe that is being sampled?

24 A Not generally. You might confer with the client,
25 but the ultimate decision is the client's decision.

1 Q For instance, did you, following up on
2 Mr. Lamoureux's question, make the decision not to include
3 COCOT lines in the universe?

4 A No. No, I was not involved in any of those
5 conversations.

6 Q Okay. So can you explain why any strata was left
7 out or included in the universe?

8 A No.

9 MR. LACKEY: That's all I have. Thank you.

10 CHAIRMAN JOHNSON: Okay. And there were no
11 exhibits, so --

12 MR. LACKEY: No, ma'am.

13 CHAIRMAN JOHNSON: Okay. You're excused, sir.

14 WITNESS SMITH: Thank you.

15 MS. WHITE: BellSouth would call Dorissa
16 Redmond.

17

18

19

* * * *

20 Whereupon,

21

DORISSA C. REDMOND

22 was called as a witness on behalf of BellSouth and, having
23 been duly sworn, testified as follows:

24

DIRECT EXAMINATION

25

BY MS. WHITE:

1 Q Ms. Redmond, would you please state your name and
2 address for the record?

3 A My name is Dorissa C. Redmond. My address is 675
4 West Peachtree Street, Atlanta, Georgia.

5 Q And by whom are you employed and in what
6 capacity?

7 A I'm employed by BellSouth Telecommunications,
8 Incorporated. I'm an account representative in the
9 property management department, which would be like the
10 building and engineering department; and my account would
11 be the network department within BellSouth.

12 Q Okay. Have you previously caused to be filed in
13 this docket rebuttal testimony consisting of 24 pages?

14 A Yes.

15 Q Do you have any changes to make to that
16 testimony?

17 A No.

18 Q If I asked you the questions that are contained
19 in your rebuttal testimony today, would your answers be the
20 same?

21 A Yes.

22 MS. WHITE: I would like to have Ms. Redmond's
23 rebuttal testimony inserted in the record as though read.

24 CHAIRMAN JOHNSON: It will be so inserted.
25

1 BELLSOUTH TELECOMMUNICATIONS, INC.
2 REBUTTAL TESTIMONY OF DORISSA C. REDMOND
3 BEFORE THE
4 FLORIDA PUBLIC SERVICE COMMISSION
5 DOCKET NOS. 960833-TP, 960846-TP, 960757-TP, 971140-TP
6 DECEMBER 09, 1997
7

8 Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND
9 POSITION WITH BELLSOUTH TELECOMMUNICATIONS, INC.
10

11 A. My name is Dorissa C. Redmond. My business address is
12 Room 20C75, 675 West Peachtree Street, Atlanta, GA. I am employed
13 by BellSouth Telecommunications, Inc. (hereinafter referred to as
14 "BellSouth" or "the Company") in the Property and Services
15 Management department as an Account Representative in the
16 Strategic Planning group.
17

18 Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND,
19 WORK EXPERIENCE, AND CURRENT RESPONSIBILITIES.
20

21 A. I am currently a senior at the Southern Polytechnical Institute in
22 Marietta, Georgia. I have an Associate of Science degree from the
23 same institution. My Major field of study is Architectural Engineering
24 Technology and my Minor field of study is Technology Management. I
25 require three (3) classes to complete these fields for a Bachelor of

1 Science degree. I am a member of the Tau Alpha Pi National Honor
2 Society (Engineering).

3

4 I have been employed by BellSouth since 1978 and I have been in the
5 Property Management department (previously Building Design and
6 Construction) since 1979. I have held the following management
7 positions in this department:

8

9 Space Planner (administrative and equipment): I was responsible for
10 determining the space needs (programming) of the various
11 departments within BellSouth. After programming, I designed the
12 required space, be it a new facility or rearrangement of an existing
13 facility. Design was performed at all times to maximize functional
14 efficiencies while minimizing cost.

15

16 Project Manager: I was promoted to this position in 1995. As a Project
17 Manager, I was responsible for oversight of the design and
18 construction of space rearrangements, new facilities, environmental
19 projects, etc., for BellSouth facilities. This included coordination of any
20 architects, consultants, contractors, etc., required to complete
21 construction projects from start to finish. I was also responsible for the
22 high level cost estimating needed for budgeting purposes at the front
23 end of projects and for all accounting associated with the project.

24

25

1 Account Representative (current): I am the interface between the BST
2 Network and Property Management departments. I provide cost and
3 facility data as necessary to Network to aid in business decisions, and
4 design criteria for Network applications in BellSouth facilities. The
5 major portion of my job responsibility for the past year has been to
6 prepare the BellSouth Property Management Physical Collocation
7 Guidelines.

8

9 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

10

11 A. The purpose of my testimony in this proceeding is to rebut testimony
12 provided by ATT/MCI witnesses Rick Bissell and John C. Klick, and
13 WorldCom witness David N. Porter. I also validate BST methods and
14 procedures with respect to the construction of physical collocation
15 space. As the author of the Property Management Physical Collocation
16 Guidelines, I am familiar with the background of how and why these
17 guidelines were developed. My testimony will show, using real data
18 and planning practices, that BellSouth's construction cost estimating,
19 construction methods, and space planning for physical collocation are
20 appropriate. It is important to note from the outset that collocation, by
21 definition, involves the rearrangement of existing central office facilities,
22 and not new buildings. Thus, the MCI/AT&T model is totally
23 inappropriate in determining costs.

24

25

1 Q. ARE YOU FAMILIAR WITH THE FORWARD LOOKING MODEL
2 COLLOCATION AREA LAYOUT THAT HAS BEEN DEVELOPED BY
3 MCI AND AT&T?
4

5 A. Yes, I am. This central office ("CO") model assumes a new urban CO
6 designed for up to 150,000 lines. It is suggested that this CO would be
7 36,000 square feet in the form of three (3) 12,000 square foot
8 equipment floors plus a below ground cable vault. In addition, there
9 would be 3,000 square feet on each floor and an entire basement
10 (except for the cable vault) for building support and administrative
11 offices. This would equate to 15,000 square feet for four floors totaling
12 60,000 gross square feet.
13

14 MCI and AT&T assert that this model office is consistent with facilities
15 that have been constructed within the past five years. It is assumed
16 that rural CO's would be smaller than urban CO's; therefore, cable runs
17 would be shorter. This is mentioned as support for the promise that
18 the assumptions made for this model are conservative. Furthermore, all
19 assumptions made concerning the model purportedly deal with "best
20 practice" and new construction.
21

22 Q. IS THIS MODEL CO A REALISTIC REPRESENTATION OF
23 BELL SOUTH'S URBAN CENTRAL OFFICES?
24
25

1 A No. To assume that the model represents planning and construction
2 methods used for the past five years is wrong. There are only 15 urban
3 central offices in the state of Florida of the 60,000 sq. ft. magnitude (as
4 per the ATT/MCI model). The first of these -- Orlando -- was built in
5 1926, and the most recent -- Opa Locka -- was built in 1975. Even if
6 you considered a slightly smaller urban central office of say 30,000 to
7 60,000 sq. feet, the most recent one -- Miami -- was built in 1975,
8 almost 25 years ago. BellSouth's urban central offices are typically
9 very large facilities that were built when telecommunications switches
10 required greater footprints of floor space. Moreover, BellSouth does
11 not build new facilities just to employ the methods used in the model.
12 Today's planners are faced with the challenge of planning new
13 switches and existing switch growth to best fit with the circumstances
14 of the existing buildings. Years of previous additions often make these
15 building layouts convoluted planning nightmares. It would indeed be
16 nice to put a fairy tale facade on this issue with the forward looking
17 facility of our dreams, but that is just not reality.

18

19 Q. IF TECHNOLOGY HAS CREATED SWITCHING EQUIPMENT THAT
20 USES A SMALLER FOOTPRINT THAN PREVIOUS SWITCHES,
21 SHOULDN'T THERE BE PLENTY OF VACANT SPACE IN URBAN
22 CO'S FOR PHYSICAL COLLOCATION?

23

24

25

- 1 A. In many cases, there are large amounts of space in the urban facilities
2 due to the more space efficient switches of today. This space may be
3 in the form of various sized pockets or in large contiguous spaces.
4
- 5 As large pockets of space have come available in urban CO's,
6 however, the space has been renovated for use as administrative
7 offices, thus moving personnel from costly leased buildings into
8 Company-owned facilities. For the past several years, BellSouth has
9 undergone an aggressive program in which operating costs have been
10 reduced by reducing the amount of total floor space occupied and
11 maintained. By the end of 1997, it is estimated that the amount of
12 space reduced by this program will be around 4 million square feet.
13 Even though a lot of vacant CO space has been used for administrative
14 forces, generally, there is still room for physical collocation.
15
- 16 Q. DOES BELLSOUTH'S METHOD OF PLANNING PHYSICAL
17 COLLOCATION SPACE DIFFER FROM THE MCI AND AT&T MODEL,
18 AND IF SO, HOW?
19
- 20 A. Yes. The model calls for collocation space using small pockets of
21 space (550 SF) close to an incumbent local exchange carrier's ("ILEC")
22 cross-connects. This space is laid out in four 100 square foot
23 enclosures, two to a side, with a 7'6" center aisle for a point of
24 termination ("POT") bay and any necessary battery distribution fuse
25 boards ("BDFB").

1
2 This layout is not practical for real collocation arrangements. Out of the
3 61 Bona Fide Firm Orders for physical collocation BellSouth has
4 received to date region wide, only 15 (24.6%) involve requests for 100
5 square feet. Of course, the model could be converted from four 100
6 square foot enclosures to two 200 square foot enclosures with a center
7 aisle. Of the same 61 requests, only 28 (45.9%) involve requests for
8 200 square feet. Unfortunately, the model would not work for the
9 remaining 18 requests at all as they are for enclosures ranging from
10 300 to 5,000 square feet.

11
12 It is interesting to note here that all of MCI Metro's requests for space
13 have been for over 200 square feet. Therefore, their model would not
14 even accommodate their own requests.

15
16 Another aspect of the model that is not practical is the placement of the
17 POT bay and BDFB's in the center aisle. Typically, multiple POT bays
18 or a POT frame will be required for Alternative Local Exchange
19 Companies (ALECs), depending upon the number of connections
20 required. POT bays are approximately 12" deep, POT frames are 15"
21 deep, and each have wires protruding beyond this, to some degree.
22 The model aisle is 7'6" wide and the POT bay/frame is centered to this
23 aisle. That should leave, worst case, roughly 37" on either side of the
24 bay for an aisle. The minimum allowable aisle, according to the
25 Standard Building Code, is 44". Of course, there are probably tight

1 spaces like this in other areas of the central office, but this is a tight
2 space where multiple ALECs, and occasionally the ILEC, will be
3 entering and exiting. This smaller aisle increases the potential for
4 accidental mishaps or brushing of these connections.

5

6 Another interesting point is that in Georgia, MCI Metro has balked at
7 accepting physical collocation spaces built for them where the POT bay
8 is located such that other collocating companies can pass by it. Once
9 again, AT&T and MCI's cost model assumes a physical collocation
10 arrangement that they consider unacceptable.

11

12 One large, commonly shared collocation space is more practical and
13 economical. A large amount of space allows for the checkerboarding
14 of collocators. This is a method where gaps of space are left between
15 collocators for their future growth on a contiguous basis. The gaps left
16 are in various sizes that could also be used for new collocators if the
17 space fills up before existing collocators grow. Of course, there may
18 not always be the luxury of having this kind of space to deal with and
19 collocators are not guaranteed contiguous growth. BellSouth's plan will
20 accommodate contiguous growth for ALECs more frequently than MCI
21 and AT&T's plan.

22

23 Another reason to plan for large common spaces for collocators is the
24 presence of column spacing and vertical cable runs. The numbers of
25 these that consume space in the older urban CO's can be staggering.

1 Given a large enough space to work with, collocation arrangements
2 can be planned around these obstructions. In addition to providing
3 more flexibility in layouts, placing collocators in larger spaces is more
4 economical due to the sharing of HVAC (heating, ventilating, and air
5 conditioning) lighting, alarms, controls, electrical distribution, etc.

6

7 There is no method for determining precisely how much of a large
8 space should be planned for common physical collocation space in
9 these CO's. The facilities and the spaces within them are so unique
10 that individual planners must carefully evaluate each facility upon an
11 Inquiry for the best overall plan.

12

13 Q. WHAT CRITERIA DO BELLSOUTH'S PLANNERS USE TO DECIDE
14 WHICH AVAILABLE SPACE IN THE CO WILL BE USED FOR
15 COLLOCATORS?

16

17 A. The first thing that a planner does when an official Inquiry for space is
18 received is to verify the floor plan. This may require a visit to the site.
19 This step will confirm whether or not there is any space available, and
20 will pinpoint where the space is. As mentioned before, there may be
21 large areas or small pockets. The planner then confers with personnel
22 in the Network Capacity Management department about the projected
23 two year growth for BellSouth's equipment. This equipment is then
24 reflected on the floor plan in a growth pattern contiguous to like
25 equipment. It is not unreasonable for BellSouth to plan for its own

1 growth in this manner. Collocators have the option of providing for
2 their own two-year growth by requesting/reserving this additional space
3 with their Bona Fide Firm Order.

4

5 The Capacity Management personnel will also be looking at cable
6 routes and proximity of power equipment, frames, etc.

7

8 The next thing that the planner considers is the ingress / egress to the
9 space. Optimally, ALEC's must be able to reach their space without
10 passing through BellSouth's equipment space. Planning common
11 collocation space in this manner is felt necessary for the security of not
12 only BellSouth's equipment but also the ALECs', and may require new
13 entrances or corridors.

14

15 Interestingly, the MCI and AT&T model doesn't take note of possible
16 local code requirements. For example, BellSouth has run across at
17 least one case in Georgia where the local code official having
18 jurisdiction in the city where collocators were to be placed in a
19 BellSouth facility ruled that the collocation space had to be planned in
20 such a manner that collocators and BellSouth could not even use the
21 same entrance, nor could collocators pass through any BellSouth
22 space, not even corridors.

23

24 Another example, which BellSouth is experiencing in many areas
25 where physical collocation spaces are being constructed is the situation

1 where the occupancy code of the building has been changed. Local
2 code officials in Florida, Georgia and Alabama have determined that
3 physical collocation dictates a "multi-tenant" situation. Due to this,
4 protected corridors to each space must be erected and all enclosures
5 must have a one hour fire separation. This involves gypsum drywall
6 separation from the floor to the roof deck above. All penetrations such
7 as cable racks and HVAC duct work must be appropriately constructed.
8 The HVAC system, fire systems, alarms, environmental controls, etc.,
9 must all be reworked. Such requirements cause the cost of the project
10 to be increased significantly.

11

12 Q. DOES BELLSOUTH HAVE ELECTRONIC SECURITY CARD
13 SYSTEMS AT ALL OF ITS CENTRAL OFFICES?

14

15 A. No. Out of 197 central offices in Florida, only 58 have electronic
16 security card systems. The card access system used by BellSouth is
17 sold by Northern Computers and manufactured by Hughes (HID). The
18 proprietary firmware was developed especially for BellSouth. The cost
19 is \$10,000 per door. Therefore, it is installed in facilities only after
20 considering the risk factor. This is one reason why placing collocation
21 areas in space where ingress / egress renovations are minimal is very
22 important to the planning process.

23

24 Q. MR. BISSELL DISCUSSES IN HIS TESTIMONY ON PAGE 20 THAT
25 SMALLER CONTRACTORS COULD PROVIDE MORE

1 COMPETITIVE RATES AND MEET THE SHORTER TIME
2 INTERVALS THAN MAJOR CONSTRUCTION COMPANIES. DOES
3 BELLSOUTH HANDLE THE CONTRACTING OF PHYSICAL
4 COLLOCATION CONSTRUCTION IN A COST EFFICIENT MANNER?

5

6 A. Yes. Typically, bidding a construction project among five or six
7 contractors is the surest way to get the lowest price. In a bidding
8 process, drawings, specifications, and an invitation to bid are sent to
9 prospective contractors. If interested, these contractors would then
10 attend a pre-bid meeting to discuss the aspects of the project. The
11 contractors would then be given a reasonable amount of time to gather
12 cost data for submittal of their bid. This time period could be
13 lengthened if certain addenda are added to the project. The
14 contractors would then submit their bids for the project. Bidding a
15 project could become a very lengthy project.

16

17 Once a Bona Fide Firm Order for physical collocation is received by
18 BellSouth, there is a very short time frame in which to complete
19 construction of the collocation space. Some contracts with the ALECs
20 require, and the Florida Public Service Commission has determined,
21 that this time frame will be as short as 90 days maximum. That is, 90
22 days to have drawings and specifications developed, contracts
23 negotiated or bid, permits obtained, coordination meetings with the
24 ALEC conducted, and the space constructed. The compressed
25 timeframe of these projects prohibits the luxury of the lengthy bidding

1 process. Projects to construct physical collocation arrangements must
2 therefore be negotiated with general contractors under a BellSouth
3 master agreement.

4
5 The contractors under this master agreement were selected by sending
6 out samples of projects of less than \$100,000 to multiple contractors in
7 Florida, Louisiana, North Carolina and South Carolina for bids. The
8 result of this process was the guarantee of cost plus a percentage
9 lower than is standard for jobs of this size on negotiated projects of less
10 than \$100,000. The low percentage is made possible by the guarantee
11 of work from BellSouth. This figure was then used to negotiate the
12 same deal with contractors in the other five BellSouth states. Projects
13 of over \$100,000 are always bid unless time is a factor, wherein the
14 project will be negotiated under the cost plus agreement mentioned
15 above. When time is a factor in very large projects, say a million
16 dollars or more, the master agreement includes negotiating the cost
17 plus fee down as low as 4%. This process is not only advantageous in
18 giving BellSouth the most cost efficient process for construction
19 projects, it also assures that the Company enjoys the efficiencies
20 inherent in having the construction work performed by a small number
21 of contractors familiar with BellSouth's facilities.

22

23 Q. CONSTRUCTION COSTS FOR THE MCI AND AT&T COST MODEL
24 WERE BASED ON SQUARE FOOT COSTS AS SHOWN IN THE R.S.

25

1 MEANS BUILDING CONSTRUCTION COST DATA BOOK. IS THIS A
2 VIABLE METHOD FOR ESTIMATING COLLOCATION PROJECTS?

3

4 A. No. While the R.S. Means is perhaps the best estimating tool of its
5 type on the market, it must be used in the proper context. BellSouth
6 uses this tool only in the rare event that no real contractor data can be
7 found, and then, only for specific items, such as individual circuits or
8 light switches, etc., not for overall square foot costs. Also, the square
9 foot data in the R.S.Means is for new construction of a facility, whereas
10 collocation, by definition, involves rearrangement of existing facilities.

11

12 Values used for the MCI/AT&T cost study are from Division 17, *Square*
13 *Foot & Cubic Foot Costs*, 1997 edition. The median cost per SF of a
14 telephone exchange is given as \$135.00. This is multiplied by a cost
15 multiplier of 0.90 (due to the model CO being 60,000 square feet
16 rather than the 4,500 square foot typical CO quoted) for a cost of
17 \$121.50 per SF for telephone exchanges.

18

19 The use of Division 17 can be particularly risky. Individual owner's
20 requirements are not accounted for in this division. Although the
21 accepted rule of thumb in estimating is that "bigger is cheaper"
22 (economies of scale), this is not true in this situation. The median price
23 quoted is for a facility of 4,500 square feet. This puts it in the category
24 of a rural Community Dial Office. These buildings are not nearly as
25 complex as the urban central office of either the MCI/AT&T cost model

1 or BellSouth's existing urban facilities. Differences can include, but are
2 not limited to: ceiling heights, cable vaults, elevators,
3 generators/engines/rooms, uncrating rooms, multiple mechanical
4 systems/rooms, power rooms, complex fire systems, zoning
5 restrictions, and site constraints.

6
7 The cover sheet for Division 17 is full of disclaimers regarding the use
8 of square foot and cubic foot costs (Exhibit DCR-1). The disclaimer
9 that particularly applies to this testimony is: "These projects [Means
10 database] were located throughout the U.S. and reflect a tremendous
11 variation in square foot (S.F.) and cubic foot (C.F.) costs. This is due to
12 differences, not only in labor and material costs, but also in individual
13 owner's requirements." Consequentially, using data from R.S. means
14 to estimate the cost of collocation, as the AT&T/MCI collocation model
15 does, is inappropriate.

16
17 The R.S. Means book also does not take in to account that BellSouth
18 requires a full time superintendent on site at all times during
19 construction. This is an important requirement so that immediate action
20 can be taken in the event of a mishap that could otherwise cause an
21 interruption in service to existing ILEC or ALEC customers. No holiday
22 or overtime work is considered. There is no sub-contractor mark-up.
23 Weather, season, labor union restrictions, labor availability, and
24 substitute materials are not considered. No sales tax is included, and
25 all equipment is assumed to be rented, not owned.

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Another disclaimer on this page states: "As soon as details become available in the project design, the square foot approach should be discontinued and the project priced to its particular components." However, rather than using the component pricing in R.S. Means, which is not reflective of true central office construction costs, the actual component costs that BellSouth is expected to incur should be considered. This is the approach taken by BellSouth, which used a cost estimating spread sheet that has been created in-house by Property Management personnel. This tool has been developed by gathering data from previous jobs and updating the data as necessary. Some of the data have been populated from direct contractor quotes (Exhibit DCR-2). This spread sheet is used by Property Management for the high level cost estimating required at the inception of projects for the purpose of developing budgets for approval.

Q. THE MCI/AT&T MODEL USES WIRE MESH FOR ITS COLLOCATION ARRANGEMENTS. IS BELLSOUTH'S APPROACH TO PHYSICAL COLLOCATION, SPECIFICALLY THE DESIGN OF THE WALLS AND THE METHOD OF FINISHING THE WALLS, EXCESSIVE?

A. No. BellSouth's approach to physical collocation is not excessive at all. BellSouth must first maintain the integrity of service to existing ILEC and ALEC customers while engaging in construction in central offices. BellSouth must try to ensure the safety of all personnel working within

1 the central office environment. At the same time, BellSouth must also
2 provide for the security of all equipment spaces. These concerns are
3 reasonable, and they are the impetus for the methods BellSouth has
4 chosen for construction of collocation enclosures. Integrity of service is
5 addressed in two ways. The first is by ensuring that BellSouth and
6 ALEC equipment is not contaminated during construction of
7 subsequent collocation areas. The second is by ensuring the security
8 of all equipment.

9

10 Q. PLEASE EXPLAIN.

11

12 A. BellSouth must take measures to ensure that equipment is not
13 contaminated during construction of collocation areas. These
14 measures include the placing of a protective dust barrier during
15 construction of collocation areas, and by the use of the wet sponge
16 method to finish the gypsum board wall.

17

18 Safety is addressed by the use of gypsum board wall instead of wire
19 mesh in the construction of collocation enclosures. BellSouth is the
20 only ILEC that allows ALECs to place switching equipment within the
21 collocation enclosure area. Switches require their own isolated ground
22 plane rather than just being grounded to the common, integrated
23 electrical system.

24

25

1 Security is ensured through the placement of a gypsum board wall with
2 rigid security fencing at the top to separate BellSouth equipment
3 spaces from collocators' equipment spaces. The same wall, minus the
4 security fencing, will be used to separate the collocators from each
5 other, when an enclosure is requested. The security fencing will not
6 interfere with cable racking as it is easily trimmed around the racks.
7 Although it is unlikely that any individual is going to scale the drywall, it
8 is possible. BellSouth Network Operations feels that this extra
9 protection is necessary to protect the security of BellSouth's equipment
10 as well as the ALECs'.

11

12 Q. WHY DOES BELLSOUTH CONSIDER WIRE MESH WALLS TO BE
13 UNSAFE?

14

15 A. BellSouth believes that wire mesh walls are unsafe because their use
16 raises the possibility of introducing multiple isolated and integrated
17 ground planes in close proximity to each other. Any nongrounded
18 object, such as a human being, that touches equipment in two different
19 ground planes at one time will become the connection between the two
20 planes if an electrical current is introduced into the system. Collocators
21 typically squeeze as much equipment into the collocation space as they
22 possibly can, leaving little room for maintenance. It is quite reasonable
23 that given the limited space in which to operate, a maintenance worker
24 could contact two ground planes at once if there is no barrier. It would
25 be virtually impossible to properly ground a wire fence due to the

1 weave of the fabric as well as the attachments to the posts. Gaps are
2 inherent to the separate units of metal in a fence, therefore, complete
3 contact of a ground cannot be made.

4

5 Q. DO YOU THINK THAT IT IS REASONABLE THAT ALECS SHOULD
6 HAVE TO BEAR COSTS ASSOCIATED WITH THE AMERICANS
7 WITH DISABILITIES ACT, ASBESTOS REMOVAL, CODE REQUIRED
8 UPGRADES, ETC.?

9

10 A. Yes, I do. All construction is subject to the Americans With Disabilities
11 Act ("ADA"). BellSouth performs all new construction in compliance
12 with the ADA. All of BellSouth's "public access" facilities have been
13 brought into compliance with the ADA. Compliance for all other
14 facilities is done as a result of a handicapped employee reporting to
15 that facility, or as rearrangements occur within a building. A
16 percentage of all construction must go towards compliance.

17

18 BellSouth only removes asbestos that is friable. That is to say,
19 asbestos that is readily crumbled or brittle. Undisturbed asbestos is left
20 in place and tagged. Abatement is triggered by any construction
21 which will disturb this asbestos, making it break apart and enter the air
22 that is breathed.

23

24 Another situation to consider is when the local code official determines
25 that collocation changes the facilities occupancy code to "multi-tenant".

1 If upheld, the multi-tenant classification requires that fire rated
2 separations be constructed between each tenant. This would cause a
3 tremendous increase in the cost of the project, not just for the walls, but
4 also for items such as HVAC (heating, ventilating, and air conditioning)
5 which would require major modifications to handle a series of little fire
6 rated compartments.

7

8 Each of the examples stated above cause construction costs that
9 would not have been incurred by BellSouth except for the introduction
10 of ALECs in BellSouth's facilities. The ALEC's should certainly bear
11 the cost they cause to be incurred.

12

13 Q. SHOULD ALECS BEAR THE COST OF DEMOLITION IN
14 BELLSOUTH'S FACILITIES?

15

16 A. Yes. I have previously stated that administrative forces are often
17 moved into Company-owned central offices. Open central office space
18 is converted into administrative space by the addition of carpet, walls,
19 dropped ceilings, lay-in light fixtures, etc. Many of these administrative
20 spaces were later vacated due to down-sizing and centralization.
21 BellSouth does not demolish space as it is vacated by these forces. It
22 is not known if the space will be reused for equipment or personnel
23 needs. It would be ludicrous to spend funds on this effort until the
24 space is needed. If rearrangements / renovations are required as the
25 space is reused for BellSouth entities, the department that is requesting

1 the space provides the necessary funding. It should be no different in
2 the case where a ALEC is the entity requesting the space.

3

4 Q. THE MCI/AT&T MODEL BASES HVAC COSTS ON A STAND ALONE
5 AIR CONDITIONING UNIT FOR ALEC ARRANGEMENTS FOR
6 APPROXIMATELY \$1,785.00. IS THIS A REASONABLE
7 ASSUMPTION?

8

9 A. No, it is not. There is no cut and dried method of meeting the HVAC
10 needs of collocators. BellSouth will always evaluate existing systems
11 for capacity and for possible use for collocation. See Exhibit DCR-3 for
12 the Mechanical section of the Property Management Physical
13 Collocation Guidelines. These guidelines spell out the different HVAC
14 options and how BellSouth determines which will be used.

15

16 In instances where major renovations are required to the HVAC
17 system, collocators are only charged a pro-rated portion of the cost,
18 according to the floor space that they occupy. If the system renovated
19 also serves BellSouth, it too will pay a pro-rated portion according to
20 floor space.

21

22 Q. DO YOU AGREE WITH MR. PORTER'S CRITIQUE OF BST'S
23 FEBRUARY 14, 1997 PHYSICAL COLLOCATION STUDY?

24

25 A. No. There are several points on which I disagree with Mr. Porter.

1

2

First, he takes exception to the major portion of the application fee being attributed to "Business Marketing". He has incorrectly assumed that this is to "market" BellSouth central office space to potential collocators. This is not the case at all. Business Marketing deals with the group within BellSouth that is the contact for the potential collocators. They are the people that actually take the collocators' order and collect data from the collocator that is then passed to the groups that will be involved with provisioning the request.

10

11

Next, Mr. Porter has objected to the study reflecting a Space Construction charge that is "almost twice as high as the interim rate". He attributes this to the cost of materials which "is essentially 40 linear feet of chain link fence with a gate". However, this same study clearly states in SECTION 6 - SPECIFIC STUDY ASSUMPTIONS:

15

16

17

3. Space construction costs consist of an average of three gypsum walls, temporary dust barrier, additional mechanical fixtures and electrical outlets inside a minimum 100 sq. ft. "cage" area.

18

19

20

21

As to his pointing out that the cost study quotes a higher cost than the interim rate, this is true. The cost from the cost study was estimated according to what it would actually take to construct the basic enclosure (generic) requested by the collocator.

22

23

24

25

1 My final point of disagreement is when Mr. Porter assumes that ILECs
2 normally have a guard at the front door of its central offices, or there is
3 simply an electronic lock. In reality, there are very few BellSouth central
4 offices that are equipped with security guards and I have already stated
5 earlier in my testimony that very few central offices are equipped with
6 card readers. In reality, most of the security escort is provided by the
7 Network Operations personnel for that particular central office.

8

9 Q. YOU MENTIONED THAT THE COST STUDY REFLECTS THE
10 ESTIMATED COST OF THE COLLOCATORS' ENCLOSURE. CAN
11 YOU ELABORATE?

12

13 A. Yes. It was my direction to estimate what it would cost to construct the
14 individual collocators enclosure. Collocators request enclosures as a
15 100 sq. ft. minimum, then in increments of 50 sq. ft. for any additional
16 needed. I calculated every practical configuration for these enclosures,
17 keeping in mind that no dimension should be less than 10 feet. I then
18 developed a mean for what the total linear feet of gypsum board wall
19 for each arrangement would be. Cost for dust barriers, doors,
20 mechanical, and electrical considerations was applied, and finally,
21 architectural and engineering fees were assessed at 8% of the
22 construction cost. These are the basic components that are common
23 to all enclosures. The cost study only asks for this cost (\$8,759.62 for
24 the first 100 sq. ft. and \$1,152.16 for each additional 50 sq. ft.) and
25 doesn't even consider any extra items that may be necessary to

1 complete the enclosure, such as floor tile, etc. To my knowledge, none
2 of the actual enclosures that we have built for ALECs has been this
3 basic, nor have they cost this minimal an amount.

4

5 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

6

7 A. MCI and AT&T have proposed a hypothetical cost model for an urban
8 central office that would be drastically unrealistic in the real world. The
9 construction costs associated with this model have been derived from
10 the R.S. Means Building Construction Cost Data. The criteria for
11 planning, design or construction are not rooted in reasonable
12 assumptions when dealing with rearrangements / renovations to
13 existing central offices. My testimony has shown that there are many
14 variables to consider when providing for physical collocation in
15 BellSouth's facilities. Construction activities included in estimates and
16 costs provided by BellSouth are fair and reasonable and are intended
17 to compensate BellSouth for the legitimate expenses incurred when
18 preparing space for physical collocation.

19

20 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

21

22 A. Yes it does.

23

24

25

1 BY MS. WHITE:

2 Q Ms. Redmond, did you have three exhibits labeled
3 DCR-1, 2 and 3 attached to your rebuttal testimony?

4 A Yes, I did.

5 Q Do you have any changes to those exhibits?

6 A No, I don't.

7 MS. WHITE: I'd like to have exhibits DCR-1, 2
8 and 3 that were attached to Ms. Redmond's rebuttal
9 testimony identified as the next exhibit.

10 CHAIRMAN JOHNSON: It will be identified as
11 Exhibit 21 with a short title DCR-1, 2 and 3.

12 BY MS. WHITE:

13 Q Ms. Redmond, do you have a summary you can give
14 for us?

15 A Yes, I do.

16 My purpose for testifying in these proceedings is
17 two-fold. First, I wish to discuss the inappropriateness
18 of the AT&T/MCI physical collocation model. Second, I
19 would like to convince the Commission that BellSouth is
20 being reasonable in its methods for the design and
21 construction of physical collocation spaces and the
22 associated costs.

23 You must first realize that we are not dealing
24 with new facilities when we talk about BellSouth urban
25 central offices. Some of the central offices in Florida

1 were built as long ago as 1925. The most recent facility
2 of the 60 thousand square foot magnitude that the AT&T/MCI
3 cost model is based on was built 22 years ago.

4 Telecommunications equipment was placed in these buildings
5 in such a manner as was consistent with the technology of
6 the day. These same buildings have seen the amount of
7 miscellaneous equipment grow as number of access lines has
8 increased. They have seen many generations of switching
9 equipment come and go driven by the technology of the day.

10 I tell you all of that to tell you this, planning
11 physical collocation spaces is not as easy as just building
12 a new facility from scratch and plugging in neat little 550
13 square foot components for ALECs. The AT&T/MCI model
14 consists of a hundred -- I'm sorry, of a 550 square foot
15 area laid out such that there are two one hundred square
16 foot enclosures on each side of an aisle that is seven foot
17 six inches wide and 20 feet long.

18 Along the center of this aisle is a shared POTS
19 bay or bays and any necessary battery distribution fuse
20 boards. This method of design is impractical, inflexible
21 and not permissible by code. The majority of the bona fide
22 requests for physical collocation today have been for more
23 than one hundred square feet. Many of the collocators have
24 asked for as many as four POTS bays, and they don't want
25 them to be accessed by any other collocator. Some

1 companies have even refused to accept the space that was
2 built for them because of this. The 20-foot aisle length
3 will only accommodate a combination of four POTS and fuse
4 bays, and the seven foot six inch width does not leave
5 enough aisle space on either side of the bays to satisfy
6 the 44-inch minimum as dictated by the standard building
7 code.

8 BellSouth's method of planning collocation space
9 is to first evaluate the building for vacant space. A
10 large enough space when available is designated for
11 collocation with thoughts of placing as many collocators as
12 will fit into one area. The collocators will then be
13 checkerboarded in as space is requested. This method
14 allows a greater flexibility for the collocators. Future
15 growth now has the possibility of being in a contiguous
16 manner with the original installation. This is not
17 guaranteed and will not always be possible.

18 All different sizes of collocators will fit, and
19 the extra space is necessary to avoid the many columns and
20 open cable runs that are inherent to central offices. This
21 arrangement also has the benefit of being more cost
22 efficient due to shared lighting, HVAC systems, alarms,
23 economies of scale and so forth. A two-year future growth
24 of BellSouth equipment is established in a contiguous
25 manner for like equipment. This is not an unreasonable

1 exercise. Then adjacency of collocation space to frames,
2 power, access and any other consideration is discussed
3 between the network department and the property management
4 department to decide upon the best arrangement for all
5 parties.

6 There has been much controversy over the
7 BellSouth decision to build gypsum board walls rather than
8 to use less expensive wire mesh. How much value do we
9 place on a person's safety? This decision was based upon
10 the danger incurred when two different ground plains are
11 present. The majority of the metal and equipment in a
12 central office is grounded to an integrated system. Most
13 switching equipment and various other types of equipment
14 are grounded to an isolated system. This is so that if one
15 switch in the building is affected by current it is not
16 passed along to the other switches.

17 The danger is present when there is a situation
18 where items grounded to two different ground plains are
19 close enough to each other that a person can touch them
20 both. If there is any current on one of the grounds, the
21 person becomes the connection for the two and could be
22 electrocuted. Collocators typically request as small a
23 space as possible and cram as much equipment into the space
24 as possible. This increases the odds that any technician
25 working in the area will touch both plains.

1 Actually, this debate almost becomes a moot point
2 because we are experiencing more and more building code
3 officials that are interpreting collocation as a
4 multi-tenant situation. The standard building code
5 requires a fire rated structure between tenants in this
6 instance. Wire mesh would not be accepted.

7 It has been suggested that the cost quoted by
8 BellSouth for the construction associated with physical
9 collocation is exaggerated and totally unreasonable.
10 BellSouth estimates the cost based on a quick design and
11 uses an in-house cost estimating spread sheet. This spread
12 sheet has been developed based on the actual cost incurred
13 by BellSouth on previous construction jobs. It is adjusted
14 as noticeable changes occur in contractor pricing. The
15 AT&T/MCI model is based upon square footage estimates from
16 the R.S. Means construction cost data catalog. This is a
17 fairly good tool when used properly, but the user must take
18 into consideration that it has its shortfalls. The book
19 does not take into account an owner's special requirements,
20 overtime or holiday pay, subcontractors, weather or the
21 season, substitute materials or sales tax. But no matter
22 what the front-end estimate is, the cost of the collocator
23 is trued up after construction. They pay according to the
24 actual cost incurred by BellSouth.

25 The AT&T/MCI model mentions bidding the

1 construction jobs to obtain the lowest cost. The time
2 interval for designing and constructing this space would
3 almost never allow for the projects to be bid. However,
4 BellSouth is still assured the lowest cost through its use
5 of a select few general contractors that are under a master
6 agreement. These contractors were selected by bidding
7 sample projects. The result was a guarantee of cost plus a
8 percentage lower than the industry standard.

9 In conclusion, I hope that I have shown that
10 BellSouth has taken great care in its decision regarding
11 the design and construction of physical collocation
12 arrangements. We have had to consider actual circumstances
13 and deal with issues like building codes, age and safety
14 while at the same time we have been conscientious of
15 costs. Thank you.

16 MS. WHITE: Ms. Redmond is available for cross
17 examination.

18 MR. COX: Chairman Johnson, before we begin cross
19 examination, staff would request that the packet that we
20 have circulated identified as DCR-4 be marked as an exhibit
21 for the record. That includes the January 15th, 1998
22 deposition transcript and the late-filed deposition
23 exhibits.

24 CHAIRMAN JOHNSON: It will be marked as exhibit
25 22, short title, DCR-4.

1 Mr. Self, did you --

2 MR. SELF: I have no questions.

3 MR. LAMOUREUX: I have just a very few questions.

4 CHAIRMAN JOHNSON: Okay.

5 CROSS EXAMINATION

6 BY MR. LAMOUREUX:

7 Q Good afternoon, Ms. Redmond. I'm Jim Lamoureux
8 representing AT&T.

9 Would you agree with me that the cost of space
10 preparation is a substantial variable in determining the
11 overall price that a CLEC would pay for collocation?

12 A I really couldn't answer that, Mr. Lamoureux,
13 because I don't know what the network cost would be; and I
14 assume you are talking our portion plus theirs, and I have
15 no clue what theirs is.

16 Q Okay. And just so we are clear, your group
17 handles only the physical building of the collocated space;
18 is that generally right?

19 A Correct. Correct.

20 Q Okay. And what you're saying is in addition to
21 that physical building there would be other costs
22 associated with the network group in BellSouth that handles
23 the connections and all the other stuff that goes along --

24 A The cable racking and everything, yes.

25 Q Okay. Well, would you agree with me that the

1 amount of cost associated with space preparation for
2 collocation in a central office could be fairly substantial
3 for a particular central office?

4 A I would think so, and I would think that would
5 depend on what a particular CLEC's idea of substantial
6 would be, but it could vary widely.

7 Q Could it be more than, say, 250 thousand dollars?

8 A Their portion, I have not seen one that high so
9 far that I have seen. I haven't seen them all, so I really
10 don't know.

11 Q Do you have any idea what the range could be for
12 any particular CLEC for central offices in Florida for just
13 the space preparation part?

14 A Right. The problem with answering that question
15 is the ranges I have seen have been for the total, which
16 would be the whole common space that has been built and
17 then individuals would be plugged into that, so I don't
18 know how that has equated out to the individuals.

19 Q Okay. And just let me make sure I understand
20 that. What you are talking about is a common amount of
21 collocated space is planned for and then it's apportioned
22 for the individual spaces that the CLECs have within that
23 bigger common area?

24 A Correct.

25 Q And so you have arranged for the common area but

1 not for the individual portion that's for CLECs?

2 A Yes, I have recently looked at some of the ranges
3 for the overall, not -- That wouldn't be a fair
4 assessment because what I'm looking at I didn't know if one
5 CLEC went in it or if we planned for ten, so it would
6 really skew in trying to answer your question.

7 Q Okay. So there is no way to know in advance how
8 much a CLEC might pay for the space preparation associated
9 with collocation in a central office?

10 A No, there is no way until they request because we
11 have not looked at the buildings until they request to see
12 how we would provide physical collocation for that
13 individual.

14 Q And a CLEC cannot get any information about
15 collocated space, including what it might cost in a
16 particular central office, before it submits its
17 application for collocation?

18 A Correct. Correct.

19 Q Okay. So a CLEC won't know the price for space
20 preparation and the overall price for collocation until
21 after it pays its application fee and then after your space
22 preparation group comes back to the CLEC and says this is
23 what we think it's going to cost?

24 A Right, and an important point of what you said is
25 what we think it's going to cost, it's an estimate at that

1 point.

2 Q Okay. And so the CLEC won't know the actual
3 price that it will pay for collocation until the space is
4 actually built?

5 A Correct. We, as we are performing construction,
6 if we see that there is a tremendous variance in what we
7 have estimated and what it's going to cost, there will be
8 communication between ourselves and the CLEC. And then at
9 the end of the construction, it will take a month or two
10 typically because we are still getting architectural bills
11 and contractual bills, but as soon as we get those we know.

12 Q But the CLEC won't know the actual price for
13 collocation until after the space is already built?

14 A Correct, and as we said before, that's only the
15 building portion. The network portion would come in after,
16 after that even.

17 Q You have no basis to disagree that the AT&T and
18 MCI collocation model is forward-looking; is that correct?

19 A That's correct, yes.

20 MR. LAMOUREUX: I have no further questions.

21 CHAIRMAN JOHNSON: Okay. MCI.

22 CROSS EXAMINATION

23 BY MR. BOND:

24 Q Good afternoon, Ms. Redmond. I'm Tom Bond on
25 behalf of MCI, and I have a few questions.

1 Just as an initial matter, is it correct that one
2 difference between the BellSouth proposal on physical
3 collocation and the AT&T/MCI proposal is that BellSouth is
4 proposing the space be constructed using drywall whereas
5 MCI and AT&T are proposing chainlink separation?

6 A That's probably the biggest discrepancy.

7 Q Okay. And would you agree that the drywall costs
8 a good deal more than the chainlink?

9 A Yes, I would.

10 Q Okay. You had mentioned the multi-tenant
11 sharing, I believe. And you said that requires a one-hour
12 firewall separation; is that correct?

13 A Correct.

14 Q Okay. Does BellSouth's proposal comply with that
15 one-hour fire separation?

16 A No. Our proposal is for a partial gypsum board
17 wall. Here again, even that we have had to -- as we have
18 gone to municipalities that are going to strictly enforce
19 the multi-tenant, we have had to even alter our proposal to
20 be this fire rated wall.

21 Q Okay. And I believe in your late-filed
22 deposition exhibit you mentioned two Florida localities in
23 which building inspectors have opined that that rule
24 applies to collocation; is that correct?

25 A Yes.

1 Q And BellSouth has made no appeal or legal
2 challenge to either of those; is that correct?

3 A There's probably not been a legal challenge.
4 Typically what would happen, and I don't know for this
5 instance, typically if we -- if our contractors will go to
6 the building officials with a set of plans and
7 specifications, it is at that point that we go for a
8 building permit. It is at that point that they will
9 mention that it is a multi-tenant situation. We will make
10 the recommendations that they want for us to implement in
11 order to get a building permit.

12 Q I'm sorry, are you finished?

13 A Well, I guess the only thing in further with that
14 is that we typically at that point -- the contractor or if
15 necessary BellSouth personnel will make a verbal appeal to
16 them on the basis of it's not really multi-tenant and such
17 that it's people, it's telecommunications equipment; and
18 sometimes they will back off of that, other times they do
19 not.

20 Q Okay. And I believe you agreed during your
21 deposition that in your opinion the multi-tenant rule
22 shouldn't apply to collocation facilities; is that correct?

23 A You know, I'm not a building code official, but
24 the intent of what they are doing there is if you have a
25 multi-tenant building and you might have a tenant in one

1 office that is dealing with a substance that might be
2 volatile when mixed with something that would be in the
3 next office and if neither one of you knows what the other
4 one is dealing in, you'd have a dangerous situation there;
5 or you could be in an office and the guy next door is
6 making dynamite and you wouldn't know that that is going
7 on. So it's to protect the tenants, and in that situation
8 it's a good code; but when we are talking, we are putting
9 in the same stuff that you all are putting in and it's --
10 you really don't have that situation. That's why I would
11 like to appeal that with the code officials.

12 Q Now I believe one example that came up during the
13 deposition was a restaurant next to a clothing store or
14 something with a -- A hot dog stand next to a clothing
15 store perhaps.

16 A I don't remember, but --

17 Q Well, would that be a good analogy?

18 A Yeah, you never know what is going to be next to
19 another item.

20 Q Is it correct that the Georgia commission has
21 given CLECs the option of using chainlink fence for
22 physical collocation?

23 A That is what I understand. I have not seen that
24 in writing, but that is what I do understand.

25 COMMISSIONER CLARK: Let me ask a question on

1 that, Ms. Redmond. It sounded -- in your testimony you
2 gave the concern about grounding?

3 WITNESS REDMOND: Yes, ma'am.

4 COMMISSIONER CLARK: If that's the case, why
5 isn't that a code requirement?

6 WITNESS REDMOND: I don't know. I don't know how
7 it would relate to code. The problem that we have with the
8 standard building code is that there is not a whole lot of
9 telephone exchange information in the codes.

10 COMMISSIONER CLARK: Well, let me ask it
11 differently then. Is there -- like for electricians you
12 have to install things according to the electrical code.

13 WITNESS REDMOND: Yes, you have the national
14 electric code.

15 COMMISSIONER CLARK: Is there any code that
16 applies to the installation of telephone equipment and --
17 Is there?

18 WITNESS REDMOND: Well, I'm not even sure --
19 There is different BellCore information. There is not a
20 code that I know of like the national electric code that
21 would be a federal type of a thing or a state type of a
22 thing; but then again, I don't really know. I'm not real
23 familiar with that.

24 COMMISSIONER CLARK: Well, are there industry
25 standards?

1 WITNESS REDMOND: There probably are, and I'm not
2 familiar with them.

3 COMMISSIONER CLARK: All right. And you wouldn't
4 know if the industry standards takes a position on mesh
5 walls or chainlink walls?

6 WITNESS REDMOND: No, I don't. Where that has
7 arisen with us is with the network operations department's
8 experts. They have experts in grounding and in electrical
9 and things like that, and they came to me as their account
10 representative and their objection was -- it started in
11 Tennessee with some of the first collocations that were
12 going in. They came to me with this concern, and I took
13 their arguments and listened to what they had to say, and
14 it was valid in my eyes. A big thrust at BellSouth and a
15 lot of the plaques and banners you see discuss safety, and
16 that, of course, is of tantamount importance to us; and
17 with the network operations department making that rule,
18 you are not going to come into my central office with a
19 fence where there is switching equipment or close to the
20 switching equipment. It was my job to comply with that.

21 COMMISSIONER CLARK: And you are representing
22 today that BellSouth doesn't do that for itself?

23 WITNESS REDMOND: Not around the switching
24 equipment.

25 COMMISSIONER CLARK: Okay.

1 BY MR. BOND:

2 Q Would you agree that there is lots of other iron
3 work in a central office, such as overhead cable racks,
4 relay racks and other types of iron work?

5 A Yes, I would.

6 Q And even the BellSouth collocation proposal
7 includes some wire mesh that would be up above the drywall?

8 A No, that mesh above the drywall is a plastic or
9 nylon type. It's like the orange construction mesh that
10 you see on construction sites.

11 Q Okay. In the BellSouth proposal, would you agree
12 that the cost to ALECs differs based on where the
13 collocation is placed in the central office?

14 A Yes.

15 Q For example, if it's placed in an area that has
16 old administrative offices in it, then there would be
17 demolition costs that BellSouth would charge to the ALEC;
18 is that correct?

19 A Yes.

20 Q It's also cost sensitive because the further from
21 the cross connects, the more expensive the cables are; is
22 that your understanding?

23 A I can't speak to cables. That is not under my
24 area.

25 Q Okay. Would you agree that there may be

1 situations where BellSouth would choose to place the
2 collocation in an area that had an asbestos problem and
3 therefore the ALEC would have to incur that expense for
4 removal?

5 A That could especially happen given the age of our
6 facilities.

7 Q Okay. And under BellSouth's proposal, who
8 decides where that physical collocation is placed in the
9 central office?

10 A It's a joint decision between the property
11 management department and the network department.

12 Q Okay. But those are both BellSouth groups?

13 A Yes.

14 Q Okay. Suppose hypothetically that there is a
15 BellSouth central office that has two spots where
16 collocation could be placed, one is a vacant spot next to
17 the cross connect. The other is a spot on the opposite
18 corner of the building that contains abandoned
19 administrative space with an asbestos problem. Who would
20 get to decide where that physical collocation was placed?

21 A BellSouth would decide that, but there are other
22 factors that would play into it. We would have to see
23 where we had air conditioning capacity, where access to the
24 building would be; so you would have to consider all the
25 factors to decide which space. And it is an economic

1 decision in the property management side as to which is
2 going to cost less to build out.

3 Q If the further away space with the asbestos
4 problem and the administrative office space that needed to
5 be demolished was chosen, who would have to pay for the
6 demolition and the asbestos removal and the longer cables?

7 A The CLEC would.

8 Q Okay. And if BellSouth chose that spot for the
9 location of the physical collocation, what resource would
10 the CLEC have?

11 A There is -- when BellSouth makes its proposal
12 back to the CLEC, this typically includes the price and the
13 period that it would take to get it built and a rough
14 sketch of the area. At that point there is supposed to be
15 an initial meeting between the CLEC and BellSouth, and they
16 would discuss that issue at that point.

17 Q Okay. And if the CLEC said, well, I don't like
18 that place, there is a perfect place right up there next to
19 the cross connects, and BellSouth said, no, if you want
20 collocation, you need to be here, what recourse would the
21 CLEC have?

22 A I can't answer you completely. We would
23 certainly discuss what the differences are and what it is
24 that is unacceptable to the CLEC about the space.
25 Ultimately the decision would lie with BST.

1 MR. BOND: Okay. I have no further questions.

2 COMMISSIONER DEASON: Staff.

3 CROSS EXAMINATION

4 BY MR. COX:

5 Q Good afternoon, Ms. Redmond. Will Cox on behalf
6 of Commission staff.

7 Before we begin, I'm going to refer you to a
8 couple of documents, and I wanted to make sure you had a
9 copy. One is the rebuttal testimony that you filed in this
10 proceeding. Do you have a copy with you?

11 A Yes, I do.

12 Q And also the late-filed deposition exhibits that
13 were filed in this proceeding.

14 A Yes. Is that what was handed to me here?

15 Q Yes. It should be included in there, yes.

16 A Okay.

17 Q I'll refer you to the appropriate page numbers
18 when we get there.

19 A Okay.

20 Q First I would like to discuss what has been
21 marked as late-filed deposition exhibit 4 at pages 145 and
22 146. It's the physical collocation cost estimating spread
23 sheet that you submitted, and it's contained in exhibit 22.
24 On page 146 is where I would like to start.

25 A All right.

1 Q On the left-hand side of page 146, you show
2 various cost items.

3 A Yes.

4 Q And they all use a ten, a dash and a letter.

5 A Yes.

6 Q And are those standardized categories that
7 BellSouth uses for internal purposes only, or are those
8 some sort of industry --

9 A Those -- I don't know if they are industry or
10 BellSouth specific, but what they mean is like 10C would be
11 building capital money. 10X would be cost of removal, and
12 like I said, I have no idea if that is an industry standard
13 or just within BellSouth.

14 Q Okay. Now are all of the costs on this page
15 costs associated with space preparation?

16 A They could be.

17 Q Which ones -- looking at that page, which ones
18 would be?

19 A Well, the deal is each space preparation may or
20 may not have some or the others of these. There are all --

21 Q Okay. So --

22 A These are all possibilities.

23 Q They're all possibilities?

24 A Yes.

25 Q Now BellSouth has proposed that the cost for

1 space preparation be recovered on an individual case basis;
2 is that correct?

3 A Correct.

4 Q And the reason, I think you've explained that
5 earlier, is that each case is different; is that --

6 A Right. Like in Florida, there is 197 central
7 offices. No two are alike so no two projects will be the
8 same.

9 Q Across the top of this page there are some column
10 headers, and two of those are the common and the vendor?

11 A Correct.

12 Q What do those categories mean? Could you
13 describe what those categories are?

14 A Yes, it's the same thing I was discussing a
15 moment ago. What we like to do, and we are not always able
16 to, is go in and build out a large common area; and then
17 within that large common area we might put -- let's say
18 it's a three thousand square foot area. We might have an
19 individual CLEC that only wants a hundred square feet, and
20 that would be the individual or the vendor, so they are
21 getting that portion.

22 Q So not all of the costs that are listed in the
23 cost column here are assessed to the CLEC; is that correct?

24 A Correct.

25 Q The categories are further divided into capital

1 removal and cost components; is that correct?

2 A I'm sorry, I didn't hear you.

3 Q The categories are further divided into capital
4 removal and cost components; is that correct?

5 A And some expense, and that's more of an in-house
6 so that when we code things at the front end of a project
7 we would have to get approval to spend money; and we would
8 categorize the money that we would like to spend into these
9 categories. So it's kind of a little in-house so that it's
10 easier to keep up with what was spent for what.

11 Q Could you explain the other divisions that are
12 going on right here?

13 A Well, the code we have discussed, the description
14 column is pretty self descriptive. It's telling you
15 whether you are talking about a door or a wall or what have
16 you. The amount common, the amount collocator we just
17 discussed. Unit and cost, that would be the first one, the
18 demolishing the suspended ceiling. The cost is 60 cents,
19 and the unit would be per square foot, so that is what
20 those columns are. Common and vendor we have discussed,
21 and under common and vendor you have capital removal of
22 expense, the same thing for vendor; and as we discussed,
23 that is kind of an in-house bookkeeping item.

24 If you are talking about -- as you further work
25 down the page, the first several lines all have to deal

1 with demolition so we come up with a total demolition. The
2 next couple of lines, the card reader and the general read
3 key, that goes towards security, so we come up with a
4 total. The purpose for those is when we report back to the
5 CLEC what the cost -- what our estimated cost is, if we
6 gave them this big spread sheet, it would be as confusing
7 as it is to you, so we like to give them broad categories.
8 All right, your total for security was this much. Your
9 total for general construction would be this much. Then if
10 they want further detail, that is where we typically pick
11 up the phone and have that verbal discourse.

12 Q These spread sheets that you have given examples
13 of starting on page 146, are these spread sheets from
14 actual real customers?

15 A These are, yes.

16 Q Okay.

17 A But let me say also that a lot of the customers
18 in Florida have only been inquiries. They have not become
19 firm orders, so this would have been the up-front estimate
20 at the inquiry phase.

21 Q They are all from the inquiry phase; is that
22 right?

23 A Yes, that's when we fill out this sheet.

24 Q I would like to refer you to your testimony, page
25 16.

1 A Did you say 16?

2 Q Lines 8 through 10.

3 A Did you say 16?

4 Q Yes.

5 A Okay.

6 Q In your rebuttal testimony that you filed in this
7 proceeding, you state that BellSouth's approach to
8 estimating cost is to use a cost estimating spread sheet,
9 which is what we have been discussing here.

10 A Right.

11 Q Created by in-house property management
12 personnel. You also state that this tool has been
13 developed by gathering data from previous jobs and updating
14 the data as necessary.

15 A Correct.

16 Q And that some of the data has been populated from
17 direct contractor quotes. In your exhibit, DCR-2 to your
18 testimony consists of copies of those contractor quotes,
19 and we discussed some of those I think at the deposition in
20 this proceeding. Now were the quotes shown in your exhibit
21 DCR-2 used to populate the data in the cost estimating
22 spread sheet?

23 A Let me say this, that spread sheet is updated;
24 and as I was sitting out here, I was looking at the ones
25 that I did submit to you in the audit, those were done

1 previous to the latest update of the cost sheet. The
2 latest cost sheet, some of the -- When we came up with
3 the costs from the contractors in my exhibit, these
4 particular spread sheets were done prior to that. When we
5 did receive those, the more updated shows a direct
6 correlation. It does have the Bailey and Owens exhibit as
7 the prices that we are showing for the dust partition, for
8 the barrier wall and for the enclosure wall, but that would
9 not be on the ones that I provided you in the audit.

10 Q Now is it true that some of the data for
11 materials and labor costs in your spread sheet do not come
12 from the contractor quotes?

13 A The data for material and labor?

14 Q Yes.

15 A Yes, some of those would be from, and I have seen
16 in the project manager portion of our, of my department,
17 they keep up with costs. I don't know how often that they
18 run that to see where we are running with our own in-house
19 labor, with contractor fees and things like that, and some
20 of the data is populated from that.

21 Q Are there any other sources that are used?

22 A Data would be taken from the master contracts
23 that we do with general contractors. There could be other
24 sources, I just can't think of any right now.

25 Q Now for those materials and labor in the spread

1 sheet which did not come from the contractor quotes, so
2 you're saying you basically in those situations utilized
3 the judgment of in-house people?

4 A Judgment and historical data.

5 Q Okay. And the in-house BellSouth people who
6 contributed to this spread sheet, contributed some of the
7 data, you would consider those to be subject-matter
8 experts?

9 A Yes.

10 Q Okay. Is there any other data available that
11 could be used to back up the data in the cost estimating
12 spread sheet?

13 A I cannot think of any additional, you know, that
14 we could put our hands on, no.

15 Q Okay. I think just a minute ago you mentioned
16 that you utilized historical data. What did you mean by
17 historical data?

18 A At the time it was when you were asking me about
19 the percentages for the labor and all.

20 Q That's correct.

21 A Like I say, the project management portion of my
22 department, I have seen before where they have run reports
23 that tabulates like for the last year -- I don't know what
24 period they use -- what we are running at with those
25 percentages. That's some historical data. That's exactly

1 where I got three percent from that is on the cost sheet
2 that is the -- I think it's the bottom line that was the
3 in-house labor perhaps. BellSouth services, planning and
4 engineering, that was taken directly from that report.

5 Q In your testimony at page 23, starting at about
6 line 13 you describe the way in which you the develop the
7 cost of constructing collocation spaces.

8 A Correct.

9 Q And on page 23 you state that you developed a
10 mean for what the total linear feet of gypsum board wall
11 would be and then you applied the cost for dust barriers,
12 doors, mechanical and electrical considerations; and
13 finally you applied an additive of 8% of the total
14 construction cost to cover architectural and engineering
15 fees.

16 A Correct.

17 Q Now in your cost estimating spread sheet you
18 show -- referring back to the cost estimating spread sheet,
19 if you could keep both open -- you show a total basic
20 construction cost for labor, material, and subcontractor
21 labor to which you then added 25% markup, and that's about
22 three quarters down the page --

23 A Right.

24 Q -- to cover supervision, overhead and taxes. Now
25 is that 25% markup based on the judgment and experience of

1 in-house personnel?

2 A Yes, it is. Early on when I'm -- In my
3 testimony on page 23, I had to provide figures to the cost
4 office for their cost study. The grounds on which I, or
5 the parameters was what would it cost to build a hundred
6 square foot cubicle and what would it cost for every 50
7 square foot above that? That was with me sitting down and
8 me personally, all by myself, figuring out, gosh, it would
9 take -- I drew every dimension that you could possibly come
10 up with up to a thousand square feet of wall, and that's
11 what I took a mean of for the walls. I thought, all right,
12 how many lights would it take under each instance here?
13 For one hundred square foot, it would be this many lights.
14 For two hundred, this many, all that kind of information.
15 In doing so, it is more a case of I did not consider some
16 of these other fees and add to that, whereas later on as
17 this spread sheet that I became aware of did have them and
18 it's almost like, oh, gosh, I didn't add that; but that
19 would make the price that I quoted to the cost office even
20 less than what it should be.

21 Q Now how did you arrive at the 25% markup number?

22 A On the spread sheet?

23 Q Yes.

24 A I do not know. I did not do that.

25 Q After the 25%, you then add an additional 15% to

1 cover architectural and engineering design and inspection
2 fees?

3 A Right.

4 Q Can that percentage vary?

5 A Yes.

6 Q Under what circumstances would it vary?

7 A That will vary according to the size of a job.
8 If you have a very small job, that percentage is going to
9 go up. If you have a very -- just a tremendously huge job,
10 multi-million dollar job, it will take a much less
11 percentage.

12 Q Now did you have any role in determining this
13 percentage, the 15%? Do you know how that was determined?

14 A No, I do not.

15 Q Finally, after the 15%, you add 3% for BellSouth
16 services, planning and engineering; is that correct?

17 A Right.

18 Q These three markups we have talked about here,
19 the 25%, the 15% and the 3%, now how do they, these markups
20 relate to the 8% for architectural and engineering fees
21 that is described in your testimony on page 23 at line 21?

22 A The 8% in my testimony would be reflective of the
23 15% for the architectural. The architect could also hire
24 consultants or engineers that would need a percentage of
25 money also.

1 Q So the 8% is in addition to the 15% or is
2 included in the 15%?

3 A It's included in it. That was my version of what
4 the architectural fee would be, whereas the 15% was what
5 was developed on the spread sheet.

6 Q Also in your testimony, page 14, you discuss the
7 R.S. Means construction cost data book. Could you briefly
8 explain what that book is?

9 A R.S. Means is a -- it's a tool used in the
10 construction community, the architectural community. It
11 gives -- they collect data from across the United States
12 and come up with mean prices for -- well, there are any
13 number of R.S. Means books, and there is one book that you
14 can get that would have individual data. What does a light
15 switch cost? And then there is an assemblies data book
16 that would be I'm going to build a building, I don't know
17 exactly what the design is going to be, but I know that
18 it's going to be a metal frame building with glass walls,
19 and it's going to be four stories tall. That will give you
20 kind of the assembly or overall idea of what a building
21 will cost. Then there is square foot data and cubic foot
22 data that they have. Given a certain type of building, a
23 hospital, what have you, typically, or the mean for a
24 hospital would be this much money per square foot. It's a
25 quick reference. It's a front-end guide that you can use

1 to estimate your construction by.

2 Q In your testimony at page 14, you discuss AT&T's
3 use of R.S. Means. Now is it your position that R.S. Means
4 is not appropriate to use for construction, collocation
5 construction within central offices?

6 A That would be my position. There is any number
7 of reasons. First of all, if you use the R.S. Means, you
8 have to use it in the appropriate manner. There are
9 several disclaimers throughout the book, at the headings of
10 certain chapters telling you specifically in the -- one of
11 my exhibits was the square foot, the page at the front of
12 that. It will tell you right there that use at the very
13 front end when you know just almost nothing about your
14 project, once specifics come to be known, then you want to
15 get away from the square footage because it is such a
16 broad-brush estimate.

17 The R.S. Means I do not think is appropriate for
18 telephone exchanges in this instance. They do have under
19 their square foot data a price, I think it's \$135 a square
20 foot for a telephone exchange. The fallacy in that is they
21 tell you that when you are using a square foot data, you
22 have to go with a cost multiplier, and the theory behind
23 that is bigger is cheaper. So if you are going to build
24 something -- They give you what their range is and what
25 they base that -- this is the range and this is what it

1 should cost. If you are building bigger, then you multiply
2 that by a fraction because the cost should go down as you
3 build bigger. That just isn't going to work with a
4 telephone exchange because the example that they use is a
5 four thousand five hundred square foot telephone exchange.
6 My buildings that are that size are your small, your very
7 small central offices that are way out in the furthest
8 reaches of the state. These typically are your newer
9 buildings because -- well, let me finish a different
10 thought there.

11 These buildings don't even compare to the large
12 urban central offices that typical CLECs are requesting.
13 That's a building that's your large two-story, four-story,
14 eight-story central office. When you get past the ten
15 thousand square foot range on a building, then you have to
16 start compartmentizing items within the building. When you
17 have a four thousand five hundred square foot building, you
18 can have your batteries and your equipment, everything out
19 in one big open space with the exception of you would
20 probably want to put your toilet behind a wall. When you
21 get past ten thousand square feet, that is where the codes
22 come in on us again, and the batteries, they are going to
23 have to be compartmentized behind a fire-rated wall. You
24 get into a much larger building than that too, you are
25 starting to add generators to backup your equipment,

1 whereas in the small buildings, you pull up a little
2 generator and plug it in on the outside; but you'll have a
3 permanent generator inside the building. You'll have huge
4 air conditioning systems rather than the through-wall units
5 of a small building, loading docks, uncrating rooms, all
6 sorts of things that aren't even an issue with these small
7 buildings. So whereas, typically, as bigger is cheaper, it
8 just doesn't apply in this instance; and so that is what I
9 think is a main fallacy in using R.S. Means.

10 Q So am I understanding you right, your position is
11 more appropriate to use the state specific data and direct
12 contractor quotes to develop cost data for the purpose of
13 designing rates for collocation?

14 A Yes, and let me say too that every once in a
15 while one little item might come along that I'll look in
16 the R.S. Means. I keep it at my desk also. I think I did
17 look up a light switch or something like that when I
18 prepared my cost study. Not my cost study, but the cost
19 that I gave to the cost office. So there's, you know,
20 every once in a while you can't find any historical data or
21 contractor data that you have on hand and you will have to
22 pick it up and use it.

23 Q Okay. So in those instances, the R.S. Means --
24 use of R.S. Means would be appropriate?

25 A I would think so, in lieu of having nothing else.

1 It's better than taking a figure out of the air.

2 Q Now in the cost estimating spread sheet that we
3 have been talking about, can you tell us in which instances
4 you have used Florida specific data in developing the cost?

5 A I can't answer that specifically. We do have two
6 main creators of this cost sheet other than the inputs that
7 I have given to them, and the one main of the two that
8 developed is the North Florida Planner for Property
9 Management. So I would imagine a good bit of the data is
10 Florida specific, but I could not tell you what.

11 Q I know you earlier -- in response to MCI's
12 counsel, you indicated that you didn't have much
13 familiarity with the cabling; is that correct?

14 A That doesn't come under property management.

15 Q So you don't know anything about what is involved
16 with shielding power cable?

17 A With shielding power cable?

18 Q Yes.

19 A No.

20 Q Do you know if BellSouth shields power cable in
21 its collocation cages?

22 A I would assume they do, but I'm not familiar with
23 that.

24 Q You said you would assume they do, why would you
25 assume that they do?

1 A I would think that that would be the safe thing
2 to do. You don't want exposed power cable where somebody
3 can touch it.

4 Q But other than that comment in response, you
5 don't have --

6 A No.

7 Q -- any more knowledge?

8 A No.

9 Q Okay. Now earlier you stated on the record what
10 your position was with BellSouth. Could you state that
11 again?

12 A I'm the account representative in the strategic
13 planning portion of property management. That tells you
14 nothing. What I do is property management is the
15 department within BellSouth that builds and maintains the
16 buildings and facilities. There are several departments
17 within BellSouth, the network department being the largest
18 of all the departments within BellSouth, and they deal with
19 the outside plant, as Mr. Baeza has been your witness;
20 inside plant, which will be the telecommunications
21 equipment. So by far they are the largest department.
22 They are my account. I am the liaison between the network
23 department and property management, so I'm on the front end
24 as issues come up that are going to affect the network
25 department in respect to the building facilities. I'm

1 supposed to be on the front end of that, finding out what
2 they need, what the needs are, and taking care of policy
3 issues and a little bit of design type issues to take care
4 of the network department.

5 Q So you have decent familiarity with the building
6 facilities as far as the central offices go?

7 A I do have familiarity because I've been in
8 property management for 19 years, and the positions I have
9 held is I've been a designer with the main thrust being the
10 design of central offices, and equipment spaces. I have
11 been a project manager responsible for once they -- once we
12 did away with in-house design, I was responsible for hiring
13 out that part and then overseeing construction of the
14 central offices and other buildings within BellSouth.

15 Q Now you mentioned I think in the deposition taken
16 in this proceeding that you had visited many of the central
17 offices, and I think even in Florida you visited many of
18 the central offices?

19 A I have not been to a lot of the Florida central
20 offices. I have been to all the central offices in Georgia
21 and then some central offices in other states.

22 Q Okay. So just some in Florida?

23 A Yes.

24 Q Have you visited any of the central offices in
25 Miami?

1 A No.

2 Q So you aren't familiar at all with the Miami
3 Grande central office?

4 A I'm only familiar with the discussions I've had
5 with my personnel on that building.

6 Q Okay. Well, with regard to that building with
7 what you are familiar with, to your knowledge does
8 BellSouth have any virtual collocation areas in that
9 facility?

10 A From what I understand, they do; but the property
11 management department does not deal with virtual
12 collocation, so I would not be familiar with a lot about
13 that.

14 Q But you said you were familiar with the
15 facilities of the central office; is that -- Am I
16 misunderstanding you? Would you have a general familiarity
17 whether there was --

18 A Yes, I have a general familiarity with the
19 central office, but with specifics of the equipment what is
20 in -- Well, I know what a lot of equipment is, but as to
21 whether it would be a virtual, because in a lot of cases
22 you can walk right past a bay of virtual collocated
23 equipment and it looks just like the bay that is next to it
24 that is not a virtual piece of equipment; so with that --
25 you know, if there is nomenclature on it, and I have walked

1 in and seen a word on -- and I'll say MCI, I don't know if
2 it is MCI, but I have seen vendor names on equipment; but
3 I'm not real familiar with that arrangement.

4 Q Are you aware that BellSouth -- I think you --
5 Strike that question.

6 You mentioned in your deposition that it was
7 BellSouth policy that only gypsum walls be used and not the
8 wire mesh in the collocation, physical collocation section.

9 A For physical collocation, yes.

10 Q Now in the virtual collocation setting are you
11 familiar with that setting at all as far as whether wire
12 mesh is used?

13 A From my understanding of the Miami Grande central
14 office there has been some, but the virtual collocation
15 does not -- there is no switching equipment with that.
16 It's all interconnection.

17 Q So the switching equipment is what necessitates
18 the use of gypsum wall?

19 A Yes.

20 Q So it wouldn't be BellSouth's policy that gypsum
21 wall be used in the virtual collocation setting?

22 A That would not be our policy, no.

23 Q One last question. I'd like to turn to your
24 deposition exhibit 3, which is found at page 144 in exhibit
25 22, your late-filed deposition exhibit.

1 MS. WHITE: I'm sorry, what page?

2 MR. COX: It's found on page 144. It's
3 late-filed deposition exhibit 3, and it's found in exhibit
4 22.

5 A Is that the Florida specific physical collocation
6 firm orders?

7 Q Yes, that's correct. Now in the column there
8 that describes the makeup for the various physical
9 collocation orders --

10 A Right.

11 Q -- could you help us by explaining some of the
12 terms you used there?

13 A Yes.

14 Q Start with the hybrid wall.

15 A Yes. The hybrid wall is what is the barrier or
16 enclosure wall in the specifications in the collocation
17 guideline. That would be the wall that when network
18 operations came to me and said we are not going to let you
19 put a fence around physical collocation, my concerns were
20 that I was going to lose the free flow of air and the
21 advantages of having a fence. Their concern, of course,
22 was the safety issue that we have discussed, so we came up
23 with a compromise; we developed a hybrid wall. This wall
24 gives you a six-inch space at the bottom, and that six
25 inches was small enough that there's not many of us that

1 could crawl under it, and then eight feet of gypsum board.
2 And it was eight feet because eight feet is the increment
3 that gypsum is sold in and there wouldn't be a lot of
4 cutting to do with that. And then any space above that,
5 which would be eight foot six high, would be clear to the
6 deck. This is going to give us the natural ventilation,
7 not as much with a fence, but more ventilation than
8 building all the way to the deck with gypsum board. That
9 is what the hybrid wall is.

10 In the instance of -- And as I said, we have a
11 barrier wall and an enclosure wall. A barrier wall is the
12 barrier between BellSouth and all the CLECs, and the only
13 addition to what I just told you about the enclosure wall
14 is that this mesh that goes at the top that is the, like
15 the orange construction mesh, some -- in some instances the
16 code officials won't let us put that in, so we would leave
17 that off in those instances also.

18 Q And the full height would just be from the floor
19 to the ceiling?

20 A Yes. I'm assuming they are talking about fire
21 wall, but this is a description I did get from our local
22 people that built these buildings.

23 Q You mentioned two different types of collocation
24 rooms. One is the larger collocation room, and one is the
25 stand-alone?

1 A Yes.

2 Q Could you describe the difference there?

3 A Well, the larger is if we can build out a large
4 common space that we can then plug in a checkerboard,
5 individual collocators as they come along, that's the
6 difference.

7 Q Also on that page in the makeup column, the
8 second and third entries, it says there was no information
9 available by January 22nd.

10 A Right. As we discussed in the deposition, I had
11 told you at that point that this would be the only item
12 that you had asked for that I might have a little
13 difficulty with because that particular week a lot of our
14 personnel were in large strategic meetings in Atlanta, and
15 I just simply in that amount of time did not get a hold of
16 the person who was responsible for the construction of
17 those spaces.

18 Q Is that information available now?

19 A It could be when I get in touch with the project
20 manager, yes.

21 MR. COX: That concludes staff's questions.

22 COMMISSIONER DEASON: Commissioners, questions?

23 (NO RESPONSE)

24 COMMISSIONER DEASON: Redirect?

25 MS. WHITE: I have no redirect.

1 COMMISSIONER DEASON: Exhibits.

2 MS. WHITE: May Ms. Redmond be excused?

3 COMMISSIONER DEASON: Yes. Thank you.

4 MR. COX: Staff asks that you move exhibit 22.

5 COMMISSIONER DEASON: Without objection, exhibit
6 22 is admitted.

7 MS. WHITE: And BellSouth would move exhibit 21.

8 COMMISSIONER DEASON: Without objection exhibit
9 21 is admitted.

10 We are going to take a short recess, but let me
11 put everyone on notice that Chairman Johnson just received
12 news of the death of a close personal friend, and so that's
13 the reason that she has left the hearing. She will not be
14 back for the remainder of the day. She may not be with us
15 tomorrow, but we will go forward after a recess.

16 COMMISSIONER JACOBS: Excuse me, I was a bit
17 remiss. There was one question I did want to ask.

18 COMMISSIONER DEASON: Please ask your question.

19 COMMISSIONER JACOBS: There was an indication
20 that much of the preparation, some part of the preparation
21 needed for collocation comes about because of local
22 building codes?

23 WITNESS REDMOND: Yes.

24 COMMISSIONER JACOBS: And I saw an indication
25 that frequently BellSouth applies for a waiver or exemption

1 from those waiver codes.

2 WITNESS REDMOND: Yes, it's not as official as
3 applying for a waiver. It's as -- and it's typically
4 through our contractors. As they are dealing with the code
5 officials and the fire marshals, if these people then say
6 to us, well, gosh, you can't build it like this, we have to
7 take plans, and they look at the plans. They say, no,
8 we've got a multi-tenant situation; and then they will
9 usually spell out what they want you to do differently.

10 COMMISSIONER JACOBS: How --

11 WITNESS REDMOND: And -- I'm sorry.

12 COMMISSIONER JACOBS: How frequently, is it
13 likely or unlikely that --

14 WITNESS REDMOND: I would have to say it would be
15 neither one of those. In Georgia what we have experienced
16 is that probably 90% of them they are doing that to us. In
17 Florida we have come across it in some of the south Florida
18 more so than north Florida. It's about 50/50, I would say.

19 COMMISSIONER JACOBS: So you say it's --

20 WITNESS REDMOND: Overall.

21 COMMISSIONER JACOBS: It's as much likely as
22 anything else that you will have to abide by those local
23 codes as you will be exempt from --

24 WITNESS REDMOND: Yeah. As a matter of fact,
25 things we don't even expect have happened. Like at the

1 Miami Grande central office, once we completed the space,
2 we went to get a certificate of occupancy which we have to
3 have before we can turn the space over to the CLEC; and the
4 code officials said, well, we are not going to give you a
5 certificate of occupancy until you put a new sidewalk
6 around the building. That had nothing to do with the
7 collocation space itself, but it was something that they
8 required us to do before they would allow that.

9 COMMISSIONER JACOBS: Right. But going through
10 the requirements of the multi-tenant structure, what I'm
11 hearing you say is that it's probably as likely as anything
12 that you'll receive some exemption from those requirements?

13 WITNESS REDMOND: We will receive some
14 exemption. We have been successful once in Georgia.

15 COMMISSIONER JACOBS: Okay. That's it.

16 COMMISSIONER DEASON: We are going to take a
17 recess. We will reconvene promptly at 2:45.

18 (Brief recess taken)

19 COMMISSIONER DEASON: Call the hearing back to
20 order.

21 BellSouth, you may call your next witness.

22 MR. LACKEY: I was just going to ask you if
23 Mr. Cunningham could be excused. I don't guess that would
24 go over, okay.

25 BellSouth calls Mr. Cunningham to the stand

1 please.

2

3

4

* * * *

5 Whereupon,

6

G. DAVID CUNNINGHAM

7

was called as a witness by BellSouth and, after having been
8 previously sworn, testified as follows:

9

DIRECT EXAMINATION

10 BY MR. LACKEY:

11 Q Mr. Cunningham, have you been previously sworn?

12 A Yes, I have.

13 Q Would you please state your name and address for
14 the record?

15 A My name is Guy David Cunningham.

16 Q Mr. Cunningham, your microphone is not on. Let's
17 start over again. Would you please state your name and
18 address for the record?

19 A Yes, my name is Guy David Cunningham. My address
20 is 3535 Colonnade Parkway, Birmingham, Alabama.

21 Q By whom are you employed, Mr. Cunningham?

22 A I'm employed by BellSouth Telecommunications,
23 Incorporated.

24 Q Did you cause to be prefiled in this proceeding,
25 19 pages of rebuttal testimony in question and answer form?

1 A Yes, I did.

2 Q Do you have any changes or corrections to that 19
3 pages of testimony?

4 A No, I do not.

5 Q If I were to ask you the questions that appear in
6 that testimony today, would your answers be the same?

7 A Yes, they would.

8 MR. LACKEY: Mr. Chairman, I would like to ask
9 that the rebuttal testimony of G. David Cunningham be
10 included in the record as if given orally from the stand.

11 COMMISSIONER DEASON: Without objection it will
12 be so inserted.

13

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1 BELLSOUTH TELECOMMUNICATIONS, INC.
2 REBUTTAL TESTIMONY OF G. DAVID CUNNINGHAM
3 BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION
4 DOCKETS NO. 960833-TP, 960846-TP, 960757-TP, 971140-TP
5 December 9, 1997

6

7 Q. PLEASE STATE YOUR NAME, ADDRESS AND POSITION WITH
8 BELLSOUTH TELECOMMUNICATIONS, INC. (HEREINAFTER
9 REFERRED TO AS "BELLSOUTH" OR "THE COMPANY").

10

11 A. My name is G. David Cunningham and my business address is 3535
12 Colonnade Parkway, Birmingham, Alabama 35243. My position is
13 Director in the Finance Department of BellSouth.

14

15 Q. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR EDUCATIONAL
16 BACKGROUND AND BUSINESS EXPERIENCE IN THE
17 TELECOMMUNICATIONS INDUSTRY.

18

19 A. I graduated from Morehead State University, Morehead, Kentucky in
20 1971 with a Bachelor of Arts Degree in Economics. I was employed by
21 South Central Bell in 1972 and held various staff and line assignments
22 in the Kentucky Network Operations Department until mid-1983. In
23 July of 1983, I moved to Birmingham, Alabama with BellSouth
24 Services, Inc., holding positions in the Corporate Affairs Department
25 and later in the Regulatory Department. My current assignment

1 includes responsibility for Regulatory and Depreciation concerns within
2 the Finance organization.

3

4 Q. WHAT ARE YOUR CURRENT JOB DUTIES AND
5 RESPONSIBILITIES?

6

7 A. I am responsible for the preparation of depreciation studies for the nine
8 states comprising BellSouth to determine appropriate depreciation
9 parameters and depreciation rates for booking purposes and to meet
10 regulatory requirements as necessary.

11

12 Q. HAVE YOU PREVIOUSLY APPEARED IN REGULATORY
13 PROCEEDINGS REGARDING DEPRECIATION ISSUES?

14

15 A. Yes. I have testified, been deposed, and also participated in
16 workshops before various state commissions regarding depreciation. I
17 have served as BellSouth's chief representative on several occasions
18 in negotiations with the Federal Communications Commission (FCC)
19 and the various state commissions in depreciation prescription
20 meetings.

21

22 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

23

24 A. The purpose of my testimony in this proceeding is to respond to the
25 direct testimony of Michael J. Majoros, representing AT&T and MCI,

1 regarding the economic lives used in BellSouth's cost studies. My
2 testimony will demonstrate the appropriateness of the depreciation lives
3 developed by BellSouth's Depreciation organization and provided for
4 use in the cost studies.

5

6 Q. WHAT IS THE BASIS OF THE LIVES THAT MR. MAJOROS
7 RECOMMENDS FOR USE IN THE COST STUDIES?

8

9 A. Mr. Majoros recommends that the projection lives last prescribed by the
10 FCC in 1995 for booking depreciation expense on an interstate basis
11 be used in the Florida cost studies.

12

13 Q. DO YOU AGREE THAT THESE LIVES ARE APPROPRIATE FOR
14 THIS APPLICATION?

15

16 A. No, I do not.

17

18 Q. WHY ARE THE LIVES LAST PRESCRIBED BY THE FCC IN 1995
19 FOR INTERSTATE DEPRECIATION PURPOSES NOT
20 APPROPRIATE FOR USE IN THE BELL SOUTH COST STUDIES?

21

22 A. The lives last prescribed by the FCC in 1995 for interstate purposes,
23 particularly for the technology-sensitive accounts, are much too long.
24 They are based on the old regulatory paradigm in which plant lives
25 were artificially lengthened beyond their true economic lives so that the

1 investment in that plant would be recovered in smaller year-to-year
2 increments over longer periods of time. The assumption under this
3 paradigm was always that BellSouth was entitled to and would recover
4 all of its investments, but over a longer period of time, thus reducing the
5 amount the customer paid in the short term.

6
7 In today's competitive environment, however, the marketplace is not
8 likely to allow BellSouth to recover investment based on lives that are
9 inappropriately long. The rapid changes in technology, which
10 BellSouth must embrace in order to stay competitive, shorten asset
11 lives significantly beyond what the FCC has prescribed. BellSouth has
12 emphasized to the FCC that substantially more progress is needed in
13 moving to lives that adequately reflect the current pace of technology
14 and competitive changes.

15
16 Q. HAS THE FCC GIVEN ANY INDICATION THAT CHANGES MAY
17 NEED TO BE MADE TO ITS PRACTICES CONCERNING
18 DETERMINATION OF PLANT LIVES?

19
20 A. Yes. The FCC has acknowledged the need to examine its depreciation
21 practices in today's environment. On several occasions, including a
22 reference in the FCC's Notice of Proposed Rulemaking released
23 December 24, 1996, regarding Access Reform and other issues (FCC
24 Docket No. 96-488), the FCC has stated that it has plans to initiate a

25

1 separate proceeding to undertake a comprehensive review of its
2 depreciation rules.

3

4 Q. WHAT LIVES DOES BELLSOUTH CONSIDER TO BE APPROPRIATE
5 FOR USE IN THE COST STUDIES?

6

7 A. The asset lives that were developed and provided for use in the cost
8 studies are included in Exhibit GDC-1.

9

10 Q. WHAT IS THE SOURCE OF THE LIVES USED IN THE COST
11 STUDIES?

12

13 A. The source of the lives provided for use in the cost studies is the 1995
14 and 1996 BellSouth Depreciation Studies, attached to this testimony as
15 Exhibit GDC-2. The lives used in the cost studies were determined by
16 calculating a simple average of the proposed lives for the nine states
17 proposed in these two studies. Although this is not a depreciation
18 proceeding, the depreciation studies included as Exhibit GDC-2 are
19 being provided to demonstrate the appropriateness of the data.

20

21 BellSouth prepared the detailed depreciation studies in this exhibit,
22 analyzing the various asset accounts to determine appropriate
23 depreciation parameters for each account. The studies provide
24 explanations of methodology, data and analysis that support the asset

25

1 lives and other depreciation parameters that are presented in the
2 studies.

3

4 Q. PLEASE SUMMARIZE BELLSOUTH'S APPROACH IN DETERMINING
5 THE ASSET LIVES USED IN THE COST STUDIES.

6

7 A. As demonstrated in the attached depreciation studies, numerous
8 methods are utilized to determine the appropriate economic lives of the
9 different asset accounts. One factor used in determining the
10 appropriate lives of all accounts is an analysis of Company planning
11 data. This data is useful in assessing the near term portion of the life
12 cycles of most assets, and is particularly useful when the technology is
13 near the end of its life cycle.

14

15 A second factor used in assessing the life of an account is normal
16 mortality, i.e., wear and tear with usage, deterioration with age and
17 accidental removal, breakage, or damage. The technique used to
18 assess normal mortality is called Historical Mortality Analysis. For
19 some accounts, like poles, Company planning data and normal
20 mortality alone are the major considerations in determining the life. In
21 these cases, the Company does not expect that the future
22 characteristics of this type of plant will differ significantly from the past.

23

24 In cases where a newer technology is substituting for an established
25 embedded technology, use of Company planning data and the

1 Historical Mortality Analysis alone to assess the life will generally result
2 in an inappropriately long life. Over the long term, the substitution of a
3 new technology for the old is the primary force driving the displacement
4 of the old technology. Therefore, in the later stages of deployment, life
5 analysis techniques that take into account the technological substitution
6 must also be used. These technology-sensitive accounts (that is,
7 Digital Electronic Switching, Circuit-Digital, Circuit-Analog, Aerial
8 Metallic Cable, Underground Metallic Cable, Buried Metallic Cable)
9 comprise over 70% of BellSouth's total plant investment.

10

11 Q. MR. MAJOROS STATES THAT THE PROJECTION LIVES
12 PRESCRIBED BY THE FCC ARE FORWARD-LOOKING AND
13 APPROPRIATE FOR USE IN BELLSOUTH'S COST STUDIES. DO
14 YOU AGREE?

15

16 A. No, I do not. It is clear that forward-looking lives should be used for
17 depreciation purposes and for the cost studies. However, BellSouth
18 believes that the FCC has not properly assessed the impact of
19 technological evolution and increasing competition to determine
20 appropriate forward-looking lives. BellSouth's depreciation studies, as
21 demonstrated in Exhibit GDC-2, provide detailed analysis to support
22 forward-looking lives significantly below those prescribed by the FCC,
23 particularly for the technology-sensitive accounts.

24

25

1 In considering whether FCC prescribed lives are appropriately forward-
2 looking, it is of interest to examine Exhibit GDC-3, which compares the
3 lives used in BellSouth's cost studies for the major technology sensitive
4 accounts with the lives that the FCC prescribed in 1994 for AT&T, on
5 whose behalf Mr. Majoros is appearing in this proceeding. As shown in
6 this comparison, AT&T's depreciation life for Digital Electronic
7 Switching, for example, is 9.7 years. The life that BellSouth uses in its
8 cost studies for this account is 10 years. Mr. Majoros supports an
9 unrealistically long life of 16 years. The comparison in this exhibit
10 demonstrates that, for all the major technology sensitive accounts, the
11 lives used in BellSouth's cost studies are comparable or conservative
12 when compared to AT&T's lives.

13

14 Q. HOW DO THE ECONOMIC LIVES USED IN THE COST STUDIES
15 COMPARE TO THE PROJECTION LIVES USED TO DETERMINE
16 THE DEPRECIATION RATES THAT BELLSOUTH IS CURRENTLY
17 BOOKING IN FLORIDA FOR INTRASTATE DEPRECIATION
18 PURPOSES?

19

20 A. As shown in Exhibit GDC-4, the economic lives used in BellSouth's
21 cost studies are similar to the projection lives used to determine the
22 intrastate depreciation rates that BellSouth is currently booking. The
23 Florida PSC has historically been quite progressive in its determination
24 of appropriate asset lives for depreciation purposes.

25

1 Q. HOW DO YOU RESPOND TO MR. MAJOROS'S STATEMENT THAT
2 BELLSOUTH'S CURRENT INTRASTATE DEPRECIATION RATES
3 ARE BASED ON REMAINING LIVES, NOT PROJECTION LIVES, AND
4 THAT THESE RATES ARE INAPPROPRIATE FOR FORWARD-
5 LOOKING COST STUDIES?

6

7 A. While the Florida PSC has actually prescribed Average Remaining
8 Lives for depreciation rates calculations, corresponding Projection
9 Lives for each account can be determined. These projection lives are
10 shown in Exhibit GDC-4.

11

12 BellSouth agrees that depreciation rates used for booking purposes are
13 not appropriate to use in the cost studies. BellSouth's booked
14 depreciation rates include a component for the depreciation reserve,
15 that is, the accumulated depreciation. Including the reserve in the
16 calculation of depreciation rates adjusts for the level of past
17 depreciation expense on the embedded investment. In addition, the
18 depreciation rates used for booking purposes are calculated by
19 allocating the net book investment less anticipated future net salvage
20 over the average remaining life of the investment. The average
21 remaining life represents an estimate of the number of years, on
22 average, that the current investment in a given account will live.

23

24 The depreciation rates used in the cost studies do not include a
25 depreciation reserve component. Further, these rates are calculated

1 by allocating the investment less anticipated future net salvage over the
2 projection life, not average remaining life, of the assets. The projection
3 life represents the average life expectancy of new additions to plant.
4 Therefore, the depreciation rates used in the cost studies are not
5 impacted by past unrecovered investment. They are appropriate for
6 use in BellSouth's forward-looking cost studies.

7

8 Q. HOW DO THE ECONOMIC LIVES USED IN THE COST STUDIES
9 COMPARE TO THE LIVES USED TO DETERMINE THE
10 DEPRECIATION RATES THAT BELL SOUTH IS CURRENTLY
11 BOOKING IN FLORIDA FOR EXTERNAL REPORTING PURPOSES?

12

13 A. The economic lives used in the cost studies are generally consistent
14 with those used to determine the depreciation rates currently being
15 booked in Florida for external reporting purposes.

16

17 Q. IS THERE ANY MERIT TO A CONCERN RAISED IN OTHER
18 JURISDICTIONS THAT LIVES USED FOR EXTERNAL REPORTING
19 PURPOSES ARE INAPPROPRIATE FOR USE IN COST STUDIES
20 DUE TO THE "CONSERVATISM" PRINCIPLE OF GAAP?

21

22 A. No. The "conservatism" principle of GAAP does not determine
23 BellSouth's lives. BellSouth's economic lives, used for external
24 reporting purposes and in BellSouth's cost studies, are determined by
25 the approaches described earlier in this testimony and detailed in

1 Exhibit GDC-2. These lives are used to determine depreciation rates
2 that appropriately allocate the cost of BellSouth's assets over their
3 estimated useful lives in a systematic and rational manner.

4

5 Q. MR. MAJOROS FOCUSES ON HISTORICAL RETIREMENT
6 PATTERNS FOR SOME OF BELLSOUTH'S TECHNOLOGY
7 SENSITIVE ACCOUNTS, AND ATTEMPTS TO LINK LIFE
8 PROJECTIONS TO THIS INFORMATION. WHAT COMMENTS DO
9 YOU HAVE REGARDING THIS APPROACH?

10

11 A. BellSouth does not believe that simply looking at the past can possibly
12 indicate what will happen in the future with equipment that is sensitive
13 to rapid changes in technology. This rear-view mirror approach is
14 clearly not appropriate for projecting the future of this equipment.
15 Emphasis on historical retirement patterns is an indication that one
16 expects the future not to vary significantly from the past. Even a casual
17 observance of the telecommunications industry today leaves no doubt
18 that there is an evolution taking place that cannot help but have a major
19 effect on telecommunications assets.

20

21 Retirements, particularly for the technology sensitive accounts, lag well
22 behind the decline in economic value of the assets. Experience with
23 technologies that have been displaced in the past, such as Step-by-
24 Step and Crossbar Switching, shows that the bulk of retirements are
25 most often concentrated at the end of the life span of a technology.

1 These retirements are not captured for the technologies that are
2 currently being displaced by simply focusing on historical retirement
3 rates. Life estimates based on these past retirement patterns are much
4 too long for these accounts. The lives used in the Florida cost studies
5 result from BellSouth's analysis of how future events will impact these
6 asset lives.

7

8 Q. MR. MAJOROS POINTS TO AN INCREASE IN THE DEPRECIATION
9 RESERVE OVER TIME AS EVIDENCE THAT FCC-PRESCRIBED
10 LIVES HAVE BEEN FORWARD-LOOKING. HOW DO YOU
11 RESPOND TO HIS STATEMENTS?

12

13 A. The fact that the reserve has grown over time is not an indication that
14 the reserve is at the appropriate level. The depreciation reserve is the
15 accumulation of all past depreciation accruals, reduced by plant
16 retirements. In an environment in which one technology is rapidly
17 displacing another technology, it is obvious that the depreciation
18 reserve must be built up by appropriate accruals to a level high enough
19 to handle the inevitable asset retirements. Today, we have two
20 situations in which a major technology displacement is occurring,
21 specifically, digital is replacing analog and fiber is replacing copper.
22 Never in the history of this industry has technology displacement been
23 so pronounced. Huge retirements of these old technologies are
24 expected in bulk at the end of the technologies' life span. Depreciation
25 accruals over the years have not been high enough, due to

1 inappropriately long prescribed lives for copper and analog related
2 assets, to position the depreciation reserve for the avalanche of
3 retirements that will soon come.

4

5 Mr. Majoros contends that a rising reserve percent indicates that the
6 depreciation process is working well. It is obvious that the critical issue
7 here is not just that the reserve has increased over the past few
8 decades. The issue is whether the reserve has increased enough to
9 handle retirements caused by the dramatic paradigm shift that has
10 occurred in the telecommunications industry.

11

12 Q. HOW DOES ONE DETERMINE WHAT THE APPROPRIATE
13 DEPRECIATION RESERVE LEVEL SHOULD BE AT A PARTICULAR
14 POINT IN TIME?

15

16 A. BellSouth uses the theoretical reserve requirement for this purpose.
17 The theoretical reserve requirement determines in theory what the book
18 reserve level should be at any point of an asset account's life. For
19 example, if the investment has lived 55% of its expected life, the book
20 reserve level should be 55%. If the book reserve is less than the
21 theoretical reserve requirement, then a reserve deficiency may exist.

22

23 Q. DOES BELLSOUTH CURRENTLY HAVE A RESERVE DEFICIENCY
24 ON AN FCC BASIS?

25

- 1 A. Yes. In BellSouth's Comments filed in the FCC Access Reform
2 proceeding (Docket No. 96-262), BellSouth estimated its theoretical
3 reserve requirement at 1/1/97 to be 54.6%, and its book reserve to be
4 only 48.6%. This results in a \$2.6B reserve deficiency in total for
5 BellSouth.
6
- 7 Q. HAS THE FCC EVER ACKNOWLEDGED THAT BELLSOUTH HAD A
8 RESERVE DEFICIENCY?
9
- 10 A. Yes. In the late 1980s, the FCC ordered a large reserve deficiency
11 amortization for the local exchange carriers for which it prescribed
12 depreciation rates. This occurred even though the FCC had made
13 some positive changes to its depreciation practices in the 1980s, such
14 as allowing Equal Life Group methodology and the Remaining Life
15 Depreciation Rate formula. Results of these changes did not indicate,
16 as Mr. Majoros states in his testimony on page 6, "that the FCC's
17 projection life estimates have been forward-looking and unbiased."
18 Rather it shows that asset lives had been so inappropriately long that a
19 large reserve deficiency existed despite changes in depreciation
20 methodology.
21
- 22 Q. WHAT SPECIFIC ACTION HAS BELLSOUTH TAKEN THAT
23 INDICATES THAT THE FCC PRESCRIBED LIVES HAVE BEEN
24 INADEQUATE?
25

- 1 A. The most dramatic indication of the inadequacy of prescribed asset
2 lives was demonstrated by the action taken when BellSouth
3 discontinued use of the regulated Financial Accounting Standard (FAS)
4 71 in favor of the nonregulated FAS 101 in 1995. The Company's
5 obligation to show the true value of its assets caused BellSouth to write
6 up the depreciation reserve by approximately \$4.9B for financial
7 reporting purposes. Much of this increase was due to inappropriately
8 long asset lives as prescribed by the FCC.
9
- 10 Q. MR. MAJOROS REFERENCES A STREAMLINED DEPRECIATION
11 RATE-SETTING PROCESS DEVELOPED BY THE FCC. HE GOES
12 SO FAR AS TO SAY THAT THE STREAMLINED APPROACH
13 ASSURES THE DEVELOPMENT OF FORWARD-LOOKING LIVES.
14 WHAT EXACTLY IS THIS STREAMLINED PROCESS AND WHAT IS
15 ITS PURPOSE?
16
- 17 A. As part of CC Docket No. 92-296, the FCC issued a Notice of Proposed
18 Rulemaking in which it stated that it was continuing its "efforts to reduce
19 unnecessary regulatory burdens and their associated costs by
20 undertaking simplification of our depreciation prescription process."
21 The FCC's approach to simplification was to set up ranges of projection
22 life and future net salvage estimates for most of the asset accounts.
23 Under this procedure, if a company meeting certain predetermined
24 criteria proposes to use projection lives or future net salvage estimates
25 from within these ranges, the company need not submit the

1 voluminous, detailed supporting data otherwise required. Thus, the
2 main purpose of this simplification effort was merely to lessen
3 paperwork and the cost of unnecessary regulation. Simplification was
4 not designed to assure forward-looking lives.

5

6 Q. WHAT WAS THE BASIS FOR THE PROJECTION LIVES AND
7 FUTURE NET SALVAGE PERCENTAGES THAT WERE USED TO
8 ESTABLISH THESE FCC RANGES?

9

10 A. The FCC's ranges were generally developed by nothing more than
11 taking one standard deviation around the mean of the lives and salvage
12 values that the FCC had prescribed most recently for the various
13 accounts for the local exchange carriers. For the first set of accounts
14 for which the FCC ordered ranges, the ranges were based on 1990-
15 1992 represcriptions, and have not been updated since. Lives
16 prescribed in 1990-1992 could hardly be considered forward-looking
17 today.

18

19 Q. SOME CONCERN HAS BEEN EXPRESSED IN OTHER
20 JURISDICTIONS AS TO THE APPROPRIATENESS OF THE LIVES
21 USED IN BELL SOUTH'S COST STUDIES FOR A NARROWBAND
22 NETWORK. DO YOU HAVE COMMENTS REGARDING THESE
23 CONCERNS?

24

25

1 A. Yes. The lives used in BellSouth's cost studies are based on the
2 economics of providing traditional telecommunications services, and
3 would be appropriate even if the only services BellSouth ever provided
4 in the future were narrowband, traditional telephony services. Our
5 existing network can be described as narrowband, and fiber
6 deployment in the feeder is already at a significant penetration level.
7 This is due to the advantages of fiber's high capacity, low maintenance
8 and reliability. Deployment of fiber in the distribution will also be driven
9 by these advantages. Fiber deployment in the feeder is greater than
10 that in the distribution because traffic in the feeder can be aggregated
11 and carried more efficiently in larger "pipes". Increasingly, the
12 economics of fiber deployment make it desirable further and further out
13 in the network (closer and closer to customer premises).

14
15 It should be pointed out that many customers use modems that operate
16 at 28,800 bits per second (bps) and greater over our narrowband, voice
17 grade network. Data transmission at these rates meet the current
18 needs of most residential customers. However, customer needs are
19 expanding, and BellSouth is designing today's network to meet
20 customers' growing needs. Today's customers are requesting services
21 that require higher bandwidth, but this is a long way from broadband,
22 cable TV capability. Replacement of today's network will occur due to
23 normal mortality and technological obsolescence, that is, when the
24 current technology is not the most efficient means of providing
25 narrowband service in the future.

1

2 Two other characteristics of fiber which are closely related are reliability
3 and maintainability. Customer needs for reliability, which are
4 increasing, can be met through the use of fiber in our network.

5 Maintenance expense, which the Company is always seeking ways to
6 reduce, can also be improved through the use of fiber. Both factors
7 add to the economic attractiveness of fiber for a narrowband, voice
8 grade network.

9

10 As stated above, the lives used in BellSouth's cost studies are based
11 on the economics of providing traditional telecommunications services.
12 They do not include future demands for emerging digital and
13 multimedia services, nor do they include the impact of a paradigm shift
14 to a totally competitive marketplace. Including these impacts would
15 likely result in a reduction of lives below the Company's current
16 recommendations.

17

18 Q. ARE THE LIVES USED IN BELLSOUTH'S COST STUDIES SPECIFIC
19 TO FLORIDA?

20

21 A. BellSouth regional lives are used in the cost studies, but BellSouth's life
22 projections do not vary significantly among states. As can be seen in
23 BellSouth's 1995 and 1996 Depreciation Studies included as Exhibit
24 GDC-2, BellSouth's lives for the major technology-sensitive accounts
25 are the same in all nine BellSouth states. In addition, in BellSouth's

1 most recent represcription by the FCC (that is, prescription of asset
2 lives for the states of Florida, Georgia, North Carolina and South
3 Carolina in 1995), the FCC prescribed projection lives that were
4 identical among these four states for 18 of the 29 accounts that it
5 prescribed, including large technology accounts such as Aerial and
6 Buried Metallic Cable, all Circuit equipment, and General Purpose
7 Computers. The FCC never expressed concern that these lives were
8 the same for all states.

9

10 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

11

12 A. BellSouth's Depreciation organization has provided economic lives for
13 use in the cost studies, that were developed by performing detailed
14 analyses of each asset account. The BellSouth Depreciation Studies,
15 which document this analysis, are attached to this testimony as Exhibit
16 GDC-2. These lives are appropriate for use in BellSouth's cost studies.
17 Lives prescribed by the FCC for depreciation purposes are
18 inappropriately long, particularly for the technology-sensitive accounts.

19

20 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

21

22 A. Yes, it does.

23

24

25

1 BY MR. LACKEY:

2 Q Mr. Cunningham, were there four exhibits attached
3 to your testimony?

4 A Yes, there were.

5 Q Do you have any changes or corrections in the
6 four exhibits?

7 A No, I do not.

8 MR. LACKEY: Mr. Chairman, if I could have the
9 exhibits marked I think with the next four number. It
10 should start with 23.

11 COMMISSIONER DEASON: That's correct. They will
12 be identified as composite exhibit number 23.

13 BY MR. LACKEY:

14 Q Mr. Cunningham, do you have a brief summary of
15 your testimony?

16 A Yes, I do.

17 Q Would you please give it?

18 A Good afternoon. I am the director in BellSouth's
19 finance organization. I direct the group that has
20 responsibilities for determining the appropriate economic
21 lives for the company's various asset categories. As part
22 of my responsibilities, I provide the economic lives for
23 each asset account using BellSouth's cost study. These
24 lives are set out in my exhibit GDC-1.

25 The purpose of my testimony is to respond to the

1 direct testimony of Michael Majoros regarding the economic
2 lives used in BellSouth's cost studies and to demonstrate
3 the appropriateness of economic depreciation lives
4 developed by BellSouth's depreciation organization and
5 provide it for use in BellSouth cost studies. Mr. Majoros
6 on behalf of AT&T and MCI argues that the appropriate lives
7 to be used in BellSouth's cost studies are the lives last
8 prescribed by the FCC.

9 The last time that the FCC prescribed
10 depreciation lives for BellSouth in Florida was 1995 for
11 interstate depreciation rates. The company's position is
12 that the lives prescribed in '95 by the FCC are much too
13 long, particularly in the technology sensitive accounts.
14 They are based on the old regulatory paradigm in which
15 plant lives were artificially lengthened beyond their true
16 economic lives so that the investment in the plant would be
17 recovered in smaller year-to-year increments over longer
18 periods of time. The assumption under this paradigm was
19 always that BellSouth was entitled to and would recover all
20 of its investment but over a longer period of time thus
21 reducing the amount that customers paid in a short term.

22 In today's competitive environment, however, the
23 marketplace is not likely to allow BellSouth to recover new
24 investments based on lives that are inappropriately long.
25 The rapid changes in technology which BellSouth must

1 embrace in order to stay competitive shorten asset lives
2 significantly beyond what the FCC has prescribed.
3 Mr. Majoros does not present any analysis of his own as to
4 appropriate asset lives. Unlike BellSouth's detailed
5 depreciation study mentioned earlier, he merely recommends
6 that FCC prescribed lives are appropriate for this
7 application.

8 BellSouth's depreciation studies attached to my
9 testimony provide detailed analysis of the various asset
10 accounts. They provide explanations of data, methodology
11 and analysis that support the asset lives that are used in
12 BellSouth's cost studies. In summary, BellSouth has
13 provided detailed analysis in its depreciation studies to
14 support the economic lives that it used. These lives are
15 appropriate for use in BellSouth's cost studies. That
16 concludes my summary.

17 MR. LACKEY: Mr. Chairman, Mr. Cunningham is
18 available.

19 COMMISSIONER DEASON: Mr. Self.

20 MR. SELF: No questions.

21 CHAIRMAN JOHNSON: Mr. Hatch.

22 MR. HATCH: Just a couple.

23 CROSS EXAMINATION

24 BY MR. HATCH:

25 Q Good afternoon, Mr. Cunningham. My name is Tracy

1 Hatch. I'll be asking you just a couple of questions on
2 behalf of AT&T.

3 A Good afternoon.

4 Q Could you turn to your, since you just filed
5 rebuttal testimony please, page 14?

6 A Yes, sir.

7 Q At the top there, does it indicate that BellSouth
8 has a reserve deficiency of approximately 2.6 billion?

9 A As it says, that was a calculation that was made
10 to file an FCC access reform proceeding for BellSouth as a
11 total, yes, sir.

12 Q How current is that number in terms of that
13 estimate?

14 A 1/1/97.

15 Q Okay. I'm going to hand you a document.

16 MR. HATCH: Mr. Chairman, if I could have that
17 marked for identification, please.

18 COMMISSIONER DEASON: Yes, it will be identified
19 as exhibit number 25.

20 MR. HATCH: A title would be FCC depreciation
21 study guide.

22 BY MR. HATCH:

23 Q Are you familiar with the FCC's study guide,
24 Mr. Cunningham?

25 A Yes, I am.

1 Q What is your involvement or your responsibility
2 with respect to BellSouth's filings to the FCC for
3 depreciation purposes?

4 A I'm responsible for depreciation matters
5 associated with the BellSouth states and working with the
6 FCC as well as with the state public service commissions.

7 Q Are you familiar with page C-1 of the study
8 guide?

9 A The study guide is voluminous. I do recall
10 seeing this page, yes.

11 Q Okay. Does the FCC require that the theoretical
12 reserve studies use the FCC prescribed parameters?

13 A Yes.

14 Q Could you turn to the last page of the document
15 that I handed you?

16 A Okay.

17 Q Is this BellSouth's submission to the FCC for
18 6/30/97 with respect to Florida on a statement of reserves?

19 A I will accept subject to check that this is it.
20 It looks like our document, yes, sir.

21 Q And this would be a document -- Subject to
22 check, this would be the document that you would have filed
23 with the FCC?

24 A That is correct, based on their guidelines and on
25 their parameters.

1 Q Would you examine that document to determine
2 whether it shows that as of January the 1st, 1997
3 BellSouth's Florida FCC basis book reserve was
4 \$5,411,262,261?

5 A It does say that, yes.

6 Q And if you look over in the theoretical reserve
7 amount, I believe that number is \$5,083,527,036; would that
8 be correct?

9 A Yes, sir.

10 Q Then if you subtracted your theoretical reserve
11 from your book reserve, would that indicate that you have a
12 depreciation excess in your reserve?

13 A What that would indicate, there would be an
14 imbalance, and it would be known to the FCC the terms they
15 would use would be reserve deficiency.

16 Q Run that by me again. I'm sorry, I missed your
17 answer.

18 A I'm sorry. It said that -- what I said is that
19 under the FCC's terminology that would be described as a
20 reserve deficiency; that is, the adjusted book reserve is
21 greater than the reserve, the theoretical reserve using the
22 FCC's prescribed lives back in 1990 -- from back in 1995.

23 Q Your book reserve shows you as having actually
24 recovered more than what your theoretical reserve would
25 have had you recover; would that be correct?

1 A That's correct, again, based on what I just said,
2 based on their parameters, not on the company's parameters.
3 Based on the company's parameters, there would actually be
4 a reserve -- I'm sorry, let me rephrase what I said before.
5 Based on this, the FCC would call this a surplus, not a
6 deficiency. Based on the company's lives and parameters,
7 we would think there would be a deficiency here, but they
8 don't ask -- they never ask for that conveniently.

9 MR. HATCH: That's all I have. Thank you.

10 COMMISSIONER DEASON: Mr. Bond.

11 MR. BOND: No questions. Thank you.

12 COMMISSIONER DEASON: Staff.

13 MR. PELLEGRINI: At this time, Commissioner
14 Deason, staff would ask that the packet identified as GDC-5
15 be marked for identification purposes. It consists of
16 Mr. Cunningham's January 9, 1998 deposition transcript as
17 well as deposition and late-filed deposition exhibits
18 numbers 1 through 5, 6, 7 and 8.

19 COMMISSIONER DEASON: Exhibit number 24.

20 MR. HATCH: We are kind of confused as to the
21 numbering.

22 COMMISSIONER DEASON: I anticipated this would be
23 identified before the handed out exhibit, and I'm going by
24 my notes.

25 MR. HATCH: I understand.

1 COMMISSIONER DEASON: Okay?

2 MR. HATCH: Got you.

3 COMMISSIONER DEASON: So this is 24, and what you
4 handed out is 25.

5 MR. HATCH: 25, thank you, sir.

6 CROSS EXAMINATION

7 BY MR. PELLEGRINI:

8 Q Good afternoon, Mr. Cunningham.

9 A Good afternoon.

10 Q Let me refer you to begin with to your late-filed
11 exhibit 6 from your January 9, 1998 deposition.

12 A Yes, sir.

13 Q There in the third paragraph you state that the
14 loop and interoffice portions of the total metallic cable
15 account is determined as part of BellSouth's periodic
16 separation study. Do you see that, the first sentence?

17 A Yes, sir.

18 Q All right. How often is this separation study
19 performed?

20 A I'm not sure. I know that there was a study
21 done -- I would think that for the interoffice. That
22 information is available via a system that they have. So
23 for interoffice that would be available each year, but for
24 the loop portion, that's the piece that we rely on, the
25 loop survey that we talked about in our deposition, and

1 that is not done every year. That is a voluminous
2 undertaking, and I think I recall that that's been done
3 twice in the last six, seven years.

4 Q All right. Can you explain how this study is
5 used to determine the loop and interoffice portions?

6 A I'm sorry, could you rephrase your question?

7 Q Well, how is -- how is a separation study used to
8 determine the portions of the loop and interoffice
9 portions?

10 A Well, again, the separations -- the separations
11 information, if you'll look at my attachment B to exhibit
12 6, that's the information that comes from the separations
13 organization. In other words, they separate the investment
14 between loop and IOF and aerial, underground, buried and
15 submarine cable as it states there.

16 Q But how is the separation determined?

17 A Well, through systems that we have, we know what
18 the interoffice portion is, so it's simply a matter of
19 mathematics. You just subtract that from the total amount,
20 and that would be the loop.

21 Q You say through systems which you have. Can you
22 be more specific?

23 A The separations folks access. I believe it comes
24 from the TIRKS data base is my understanding.

25 Q Next I need to have you turn to your late-filed

1 exhibit 5.

2 A Yes, sir.

3 Q Are you there?

4 A Yes, sir, I am.

5 Q There you state that the percentage of fiber
6 penetration in Florida feeder facilities at the end of 1996
7 was 32%. Do you see that?

8 A Yes, sir.

9 Q And you also give an explanation as to how this
10 percentage was calculated and the source of the
11 information; is that true?

12 A Yes, sir.

13 Q Can you provide us with a late-filed exhibit --
14 Can you provide as a late-filed exhibit the FCC report
15 referred to as the source of the data?

16 A Yes, sir, I'm sure we can. I'm not, I don't
17 remember how big -- I think it's fairly voluminous, but we
18 can provide that if that's what you need.

19 Q Is this properly designated FCC 43-07?

20 A That is FCC 43-07, that's correct.

21 Q All right. Yes, I'd ask you to do that.

22 MR. PELLEGRINI: And that would be tentatively --
23 That would be marked as late-filed exhibit 26?

24 COMMISSIONER DEASON: That's correct, and it will
25 be identified as FCC 43-07; is that correct?

1 MR. PELLEGRINI: FCC 43-07, yes, Commissioner
2 Deason.

3 COMMISSIONER DEASON: Okay. Late-filed exhibit
4 26.

5 BY MR. PELLEGRINI:

6 Q Now I want to ask you a few questions,
7 Mr. Cunningham, regarding the depreciation study you
8 submitted with your rebuttal testimony.

9 A Yes, sir.

10 Q Does this study contain all planning material and
11 forecasting assumptions used in the development of your
12 proposed economic lives for each account?

13 A It contains a summary of most all that
14 information. We provided several other items in a data
15 request, what I recall, to you earlier; but it does have
16 most all that type of information in it.

17 Q Would you say it's complete with respect to
18 planning and forecasting assumptions?

19 A I think it's complete from a summary point of
20 view. There may be other details that are used. For
21 example, a lot of the data comes from subject-matter
22 experts throughout the network organization and through
23 other organizations in BellSouth, for example our
24 information systems organization, our property and
25 procurement organization. Depending on the particular

1 account, a lot of this information is derived from study
2 analysts having conversations with those folks, and we try
3 to summarize that and put all the significant information
4 that we use to rely on our life analysis in the narratives
5 of our study.

6 Q Specifically with respect to metallic cable
7 accounts --

8 A Yes, sir.

9 Q -- you used a forecasting tool known as
10 substitution analysis to develop projection lives for these
11 accounts; isn't that correct?

12 A A substitution analysis is used in those
13 accounts, that's correct.

14 Q Right. And the specific model used was the
15 Fischer-Pry model; is that correct?

16 A The Fischer-Pry model is used, yes, along with
17 other data.

18 Q Okay. And this model uses something called the
19 substitution ratio defined as the percent of new technology
20 divided by the percent of old technology; is that correct?

21 A I would accept that.

22 Q All right. There is also something called the
23 substitution rate, is there not?

24 A Yes, there is, displacement rate and --
25 Displacement rate is what we normally refer to it, I think

1 that is what you mean.

2 Q How would you define that, the displacement rate
3 or the substitution rate?

4 A The displacement rate is that rate that is
5 calculated using that Fischer-Pry model, as I mentioned,
6 along with most recent historical or with the appropriate
7 historical mortality information. Those items are meshed
8 together statistically and used to determine how fast or
9 how one technology is displacing another technology. For
10 example, in the case of cable, how fast fiber cable is
11 displacing metallic cable.

12 Q Can you express that in mathematical terms or by
13 way of formula?

14 A It can be, yes, and I don't have all those in my
15 head; but, yes, we have models that are based on
16 mathematical calculations that are pretty common. They
17 are those referred to in the industry and in writings that
18 Mr. Fischer and Mr. Pry developed years ago when they
19 worked for General Electric.

20 Q All right. Another term which is used is
21 penetration rate, correct?

22 A We use the term penetration rate, yes, in our
23 study.

24 Q And you've essentially defined this in your
25 response to late-filed exhibit 5?

1 A I believe we did.

2 Q As the percent of new technology; is that
3 correct?

4 A In five we described that for cable as the
5 percent of -- we describe exactly how that is calculated
6 here. It's the percent of fiber fed working channels as
7 divided by total working channels, for example, for the
8 feeder.

9 Q But this is an expression of the presence of new
10 technology, in other words; is that correct?

11 A Yes, sir.

12 Q All right. Your testimony and study both discuss
13 the fact that fiber is displaced in copper facilities,
14 correct?

15 A Yes.

16 Q All right. And would you agree that the annual
17 rate of displacement would be equal to the percent old at
18 the beginning of the year minus the percent old at the end
19 of the year divided by the percent old at the beginning of
20 the year?

21 A I believe that's correct, yes, sir.

22 Q Your study of the copper cable segmented the
23 investment into the interoffice feeder and distribution
24 functional groupings; isn't that correct?

25 A That's correct.

1 Q All right. Did you run the Fischer-Pry model on
2 each of these functional groupings?

3 A Yes, sir. I didn't personally, but it was run on
4 each of those, yes, sir.

5 Q And that's reflected in the study?

6 A Yes, sir.

7 Q Isn't it correct that the Fischer-Pry
8 substitution model is based on several assumptions that are
9 under the control of the person performing the analysis?

10 A There are inputs, yes, that are under control,
11 that's correct, of the -- of whoever is running the model,
12 that is correct, yes.

13 Q So one should think that different assumptions
14 could yield different results; is that correct?

15 A That's correct.

16 Q Can you itemize some of the assumptions which you
17 used in your analysis?

18 A Well, there are, I guess there are a lot of
19 assumptions, and I don't recall each of the assumptions.

20 Q Well, are there some that are more critical than
21 others?

22 A Well, some that are critical would be what -- for
23 each of those areas that you just mentioned, the
24 interoffice cable or the feeder cable, distribution cable,
25 where you are in that substitution. For example, are you

1 in the early stage of that substitution where you would use
2 more planning data at the beginning of the distribution
3 curve, the survivor curve and later as you move into the
4 model, the model takes over and calculates how the
5 displacement would take place after those early years? So
6 knowing where you are in the substitution process is
7 probably the most critical input or knowledge that you need
8 to run this, plus other information in our network
9 organization that our network experts have concerning
10 deployment plans, what the company's plans are, for
11 example, for deploying fiber cable versus copper, things of
12 that nature.

13 Q Would the status of competition now be a critical
14 consideration?

15 A I think it will continue to grow to be a critical
16 piece of that. We have not put any specific inputs into
17 our model concerning a paradigm shift from a regulated
18 environment to a completely competitive environment. We
19 didn't do that in this study, but as we look down the road,
20 as competition becomes more of a reality and continues to
21 grow, then we will probably have to use that as some kind
22 of an overlay to our analysis.

23 Q Do you recall when BellSouth began adding fiber
24 in the feeder plant?

25 A I don't recall specifically, but I would say it

1 was in the early 80s.

2 Q In the early 80s. Have you some idea of what the
3 replacement rate has been in a time which has past?

4 A I don't have that information with me.

5 Q Would you hazard a guess?

6 A I really wouldn't, no.

7 Q Could you supply that information by means of a
8 late-filed exhibit?

9 A Specifically what would you want?

10 Q Specifically what I would want is the annual
11 average rate of displacement of copper feeder since its
12 inception in the early 80s.

13 A We could probably give you the, for example,
14 the -- we could probably calculate the penetration rate
15 over that period of time. We can try. I think that -- if
16 the information is available.

17 Q First, do you consider the displacement and
18 penetration rates to be one and the same?

19 A When you are looking at actuals, they probably
20 would be. I haven't really thought about that until you
21 asked that question.

22 Q I'm not sure I know what you mean when you say
23 when you look at actuals.

24 A Well, you asked for -- could I supply you the
25 actual --

1 Q Yes.

2 A -- displacement rates or penetration rates, and I
3 just don't know how much of that history resides out
4 there. I'm sure we could calculate something similar to
5 what we gave you in this data request where we used working
6 channels compared to -- on fiber compared to the total
7 channels. Other information I'm just not sure what's
8 available, but I think we can probably find what you need.
9 If it's displacement rate you are looking for, I'll try to
10 find that.

11 Q Do you normally use the working channels to
12 determine displacement rate?

13 A For -- That's my understanding, we use that --
14 the network folks are using that when they are doing their
15 analysis of the cable accounts, yes, sir, because working
16 channels for looking at fiber cable, that's the best
17 information we have available and it's appropriate
18 information.

19 Q All right. Then let me ask you to supply the
20 late-filed exhibit on that basis.

21 A Okay.

22 MR. PELLEGRINI: Commissioner Deason, that would
23 be late-filed exhibit 26, am I correct?

24 COMMISSIONER DEASON: No, 27.

25 MR. PELLEGRINI: 27.

1 COMMISSIONER DEASON: Could I have a short title
2 please?

3 MR. PELLEGRINI: Average rate of displacement of
4 copper feeder.

5 BY MR. PELLEGRINI:

6 Q Mr. Cunningham, the Fischer-Pry substitution
7 model requires the selection of a measurement to define the
8 fraction of total usage of each technology; isn't that
9 correct?

10 A I'm sorry, I didn't hear the last part of your
11 question, excuse me.

12 Q I'll repeat. The Fischer-Pry substitution model
13 requires the selection of a measurement to define the
14 fraction of total usage of each technology; is that
15 correct?

16 A I'm really not familiar with that detail of the
17 Fischer-Pry model. We have, our technology forecasting
18 group runs that model for us, and I just really don't
19 recall the answer to that question.

20 Q Would you know --

21 A I would accept it subject to check.

22 Q Would you know whether circuits or number of
23 channels, for example, may have been used as a measurement?

24 A Well, we do use basically access lines or
25 circuits in our analysis, I do know that.

1 Q All right. Doesn't the Fischer-Pry substitution
2 model also require data on the amount of the new technology
3 and of the old for each year since the new technology was
4 implemented?

5 A Well, you would have to have some point -- some
6 reference point in time where you start the analysis of
7 actual information or of expected levels. If you don't
8 have that actual information, you would have to have some
9 type of a forecast of that information.

10 Q The point of reference would be the inception of
11 the new technology, I assume?

12 A It would be the -- it would be what part of the
13 plant the new technology has penetrated versus the old
14 technology.

15 Q Can you describe the sources of the data which
16 you gathered?

17 A Sources of those units that we use in that
18 analysis?

19 Q Yes.

20 A Yes, I think I've provided those actually in a
21 data request where we provide the access line type
22 information that we use in calculating the survivors of a
23 particular study group.

24 Q The source was the TIRKS data base, was it not?

25 A Well, that's for interoffice.

1 Q Yes.

2 A And then for, if you want -- I'm sorry, I think
3 I've fallen off the track.

4 Q I'm looking for the data bases with respect to
5 interoffice circuits, interoffice circuits and feeder.

6 A For interoffice --

7 Q And for distribution.

8 A For interoffice circuits we do use the TIRKS data
9 base is my understanding.

10 Q All right.

11 A And then we have to calculate the percent of
12 feeder and distribution as we indicate in the late-filed
13 deposition exhibit 6. We demonstrate the spread sheets to
14 show how we back into the feeder and distribution.

15 Q Just one or two more, Mr. Cunningham. Are you
16 familiar with James R. Bright of Technology Futures, Inc.?

17 A James R. Bright?

18 Q Yes.

19 A I don't recall meeting Mr. Bright, no.

20 Q He has a publication entitled Practical
21 Technology Forecasting. Are you familiar with that?

22 A I do recall seeing that, but I don't remember the
23 details of it.

24 Q I'm going to bring you an excerpt from
25 Mr. Bright's publication for discussion purposes.

1 A Okay.

2 (DOCUMENT TENDERED TO WITNESS CUNNINGHAM)

3 A Any particular area you would like me to look at
4 here?

5 Q Yes, I want you to look at page 90.

6 MR. LACKEY: Just a minute, Mr. Cunningham, wait
7 until I catch up with you.

8 Q Do you have that page 90?

9 A I do, yes, sir.

10 Q Okay. Mr. Bright makes a caution that the
11 accuracy of predictions using the -- that the accuracy,
12 that is, of predictions using the Fischer-Pry model based
13 on the first 5 to 10% of displacements may be very poor.
14 Do you see where he says that?

15 A Yes, I do.

16 Q And then he says that in his opinion the forecast
17 should be based on a 20 to 25% displacement data. Do you
18 see that?

19 A No, I don't see where it says that.

20 Q Well --

21 A I see that it says forecast based on 20 to 25%
22 displacement data seemed to be quite accurate.

23 Q Well, all right.

24 A That doesn't say that the 5 to 10% or 15% may not
25 also be accurate. It's just -- But I agree, I mean I

1 agree that what he says is what he says.

2 Q Well, what my question is, he thinks, I think,
3 that one would be on sounder ground with 20 to 25%
4 displacement data than with 5 to 10% displacement data.

5 A I would agree that that would be sounder ground,
6 yes, sir.

7 Q Okay. Would you agree with him that reliance on
8 5 to 10% displacement would be ill advised?

9 A No, I wouldn't say it would be ill advised. I
10 would say with the proper information that you could make a
11 forecast based on something less than 20% and that those,
12 that analysis could very well be accurate. I mean what he
13 is saying here is that you are just more assured once you
14 get to a 20 or 25% range.

15 Q Let me be sure I understand what you --

16 A We all would like to -- excuse me, we all would
17 like to have as much information as possible, but you have
18 to make an analysis to determine the appropriate life of a
19 technology account, and you use what you have; and if you
20 are not at the 20 to 25% range, then you use something less
21 than that based on that and other information that you have
22 about your particular assets and your plans.

23 Q Then I guess you are telling me that even with 5
24 to 10% displacement the predictions based upon -- the
25 predictions based upon that level are nevertheless reliable

1 predictions in your opinion?

2 A Well, they can be.

3 Q They can be?

4 A Or as he says, they may be poor. I mean it just
5 depends on the work and the information that go into your
6 analyses.

7 Q Okay.

8 MR. PELLEGRINI: Thank you, Mr. Cunningham.

9 WITNESS CUNNINGHAM: You're welcome.

10 COMMISSIONER DEASON: Commissioners?

11 (No response)

12 COMMISSIONER DEASON: Redirect?

13 MR. LACKEY: No redirect. I'd move exhibit 23.

14 COMMISSIONER DEASON: Without objection exhibit
15 23 is admitted.

16 MR. PELLEGRINI: And staff moves exhibit 24.

17 COMMISSIONER DEASON: Without objection exhibit
18 24 is admitted.

19 MR. HATCH: Move exhibit 25.

20 COMMISSIONER DEASON: Without objection exhibit
21 25 is admitted.

22 Thank you, Mr. Cunningham. You may be excused.

23 WITNESS CUNNINGHAM: Thank you, sir.

24 MR. LACKEY: Mr. Chairman, our next witness is
25 Doctor Billingsley whose testimony has been stipulated, so

1 I think what I need to do is move into the record at this
2 point the stipulated testimony and his exhibits, if that
3 would be appropriate.

4 COMMISSIONER DEASON: That will be appropriate.
5 We need to identify his exhibits.

6 MR. LACKEY: Yes. Doctor Billingsley had 41
7 pages of rebuttal testimony accompanied by 11 exhibits,
8 RSB-1 through 11. I think we would probably want to mark
9 the testimony and the exhibits as a composite exhibit in
10 its entirety; is that the --

11 COMMISSIONER DEASON: Well, I would think that we
12 would insert the testimony as though read.

13 MR. LACKEY: All right. In that case I'd ask
14 that the 41 pages of stipulated testimony be included in
15 the record as if given orally from the stand and that the
16 11 exhibits be marked as composite exhibit 26 (sic).

17 COMMISSIONER DEASON: Okay. Without objection
18 the prefiled testimony of Doctor Billingsley will be
19 inserted into the record, and the prefiled exhibits RSB-1
20 through 11 will be identified as composite exhibit 28 and
21 likewise will be admitted into the record without
22 objection.

23 MR. PELLEGRINI: Commissioner Deason, staff would
24 ask that RSB-12 be marked for identification at this time.
25 It consists of Doctor Billingsley's January 8th, 1998

1 deposition transcript, deposition and late-filed deposition
2 exhibits numbers -- number 1, which is too voluminous to
3 have been copied, as well as 2 and 3, as well as updates to
4 exhibits are RSB-6, RSB-8, and RSB-9.

5 COMMISSIONER DEASON: What you have described as
6 RSB-12 will be identified as exhibit number 29 and without
7 objection will be admitted into the record.

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BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION
DOCKET NO. 960833-TP
REBUTTAL TESTIMONY OF
DR. RANDALL S. BILLINGSLEY
DECEMBER 9, 1997

I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Randall S. Billingsley. I am a finance Professor at Virginia Polytechnic Institute and State University. I also act as a financial consultant in the areas of cost of capital analysis, financial security analysis, and valuation. More details on my qualifications may be found in Billingsley Exhibit No. RSB-11. My business address is: Department of Finance, Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0221.

This statement presents my independent professional opinions and is not presented by me as a representative of Virginia Polytechnic Institute and State University.

1 Q. Have you prepared exhibits to accompany this testimony?

2

3 A. Yes, my testimony and 11 exhibits were prepared by me or under my
4 direction and supervision.

5

6 II. PURPOSE OF TESTIMONY AND SUMMARY OF CONCLUSIONS

7 A. PURPOSE OF TESTIMONY

8

9 Q. What is the purpose of your testimony in this proceeding?

10

11 A. My purpose is to provide the Florida Public Service Commission
12 (Commission) with a rebuttal of Professor Bradford Cornell's direct
13 testimony on behalf of AT&T Communications of the Southern States,
14 MCI Telecommunications Company, and MCI Metro Access
15 Transmission Services, Inc. wherein he erroneously estimates the cost
16 of equity capital for BST to be only 10.99% to 11.05% and BST's
17 overall average cost of capital to be only 9.43%. I also determine the
18 reasonableness of BellSouth Telecommunications' (BST's) use of an
19 overall cost of capital of 11.25% in its cost studies. In so doing I
20 estimate BST's forward-looking cost of capital for providing
21 interconnection and unbundled network services.

22

23 B. SUMMARY OF REBUTTAL OF PROFESSOR BRADFORD
24 CORNELL'S TESTIMONY

25

1 Q. What issues does your rebuttal focus on in Professor Cornell's direct
2 testimony concerning BST's capital costs?

3

4 A. My rebuttal explains the errors and inconsistencies in Professor
5 Cornell's DCF analysis of BST's cost of equity capital, his cost of debt
6 estimation, and his misunderstanding of the nature and significance of
7 the riskiness of investing in the telecommunications industry. His errors
8 in estimating BST's cost of equity using the discounted cash flow (DCF)
9 approach include: 1) use of a highly subjective three-stage model that
10 is not representative of the investor's perspective; 2) use of growth rate
11 forecasts that do not reflect consensus investment community
12 expectations; 3) inappropriate reliance on BellSouth, the other regional
13 bell holding companies (RBHCs), and selected independent telephone
14 companies as comparable in risk to BST; 4) failure to adjust for flotation
15 costs, and 5) failure to use the appropriate form of the DCF model that
16 recognizes the quarterly payment of dividends.

17

18 My rebuttal shows that Professor Cornell's cost of debt analysis is
19 flawed by its use of shorter-term rather than long-term debt costs. He
20 also incorrectly includes debt in his analysis that was not issued to
21 finance long-term telephone network assets. Finally, I show that
22 Professor Cornell's views on the risks that are relevant to assessing
23 capital costs in the telecommunications industry are confused and
24 inconsistent. In the same vein, I show that his argument that the

25

1 business of leasing network elements is of relatively low risk is
2 unsupported.

3

4 C. SUMMARY OF BST COST OF CAPITAL ANALYSIS

5

6 Q. Please describe the approaches that you use to determine BST's cost
7 of equity capital and summarize your conclusions.

8

9 A. My analysis uses objective market data to determine BST's cost of
10 equity capital from three distinct but complementary approaches. Since
11 BST is a subsidiary of BellSouth Corporation, it does not have equity
12 trading in the market. Thus, there is no direct market evidence on
13 BST's cost of equity capital. It is consequently necessary to infer BST's
14 cost of equity using available market data.

15

16 In the first approach I apply the DCF model to a group of firms
17 identified as comparable in risk to BST. An average cost of equity
18 capital is calculated by applying the DCF model to this group of
19 comparable firms in order to provide an objective, market-determined
20 cost of equity capital for BST. In the second approach, I use the capital
21 asset pricing model (CAPM) to estimate BST's cost of equity capital for
22 the group of publicly traded firms that are comparable in risk to BST.
23 Finally, I conduct a risk premium analysis.

24

25

1 The cost of equity for BST is in the range of 15.11% to 15.20% using
2 the comparable firm group DCF model approach. The CAPM approach
3 indicates that BST's cost of equity capital is in the range of 14.72% to
4 14.87%. The risk premium approach indicates that the expected return
5 on the overall equity market, as measured by the Standard and Poor's
6 Composite 500 Index (S&P 500), is currently between 14.10% and
7 15.09%. Billingsley Exhibit No. RSB-1 explains how my analytical
8 approaches are consistent with well-accepted regulatory and economic
9 standards in cost of capital analysis. From these analyses, I conclude
10 that the current cost of equity capital for BST is within the range of
11 14.72% to 15.20%.

12

13 Q. Please describe how you evaluate the reasonableness of BST's use of
14 an overall cost of capital of 11.25% in its cost studies and summarize
15 your findings.

16

17 A. Two tests of the reasonableness of BST's use of an 11.25%
18 overall cost of capital are performed. The first uses BST's actual
19 capital structure of 58.84% equity and 41.16% debt and its embedded
20 cost of debt of 6.46%. An overall cost of capital of 11.25% using these
21 parameters implies a cost of equity of 14.60%. The second test uses
22 an equity ratio for BST of 60%, an associated debt ratio of 40%, and a
23 current forward-looking cost of debt of 7.25%. An overall cost of capital
24 of 11.25% implies a cost of equity of 13.92%. Both of these tests
25 logically imply costs of equity that are lower than my estimated range

1 for BST's cost of equity capital of 14.72% to 15.20%. Therefore, BST's
2 use of an 11.25% cost of capital in its cost studies is reasonable and
3 conservative.

4

5 III. CURRENT STATUS OF COMPETITION IN THE
6 TELECOMMUNICATIONS INDUSTRY

7

8 Q. What is the current status of competition in the telecommunications
9 industry?

10

11 A. Competition in the telecommunications industry has increased
12 dramatically in recent years. The sources of that increased competition
13 include a greater threat of new entrants in the industry, a significant
14 increase in the number and strength of existing competitors, a greater
15 threat of substitute telecommunications products and services, more
16 intense rivalry among existing competitors in the industry, and
17 enhanced regulatory risk at both the state and the federal levels. Thus,
18 both actual and potential competition have increased and the business
19 risk of the industry has consequently increased. What investors believe
20 about the future competition that the local exchange companies (LECs)
21 will face is critical to cost of capital analysis. Investors' expectations of
22 competition and its impact on risk is what is reflected in the Company's
23 cost of capital.

24

25 Q. Specifically how has competition increased in recent years?

1
2 A. The interLATA, intraLATA, and local exchange markets have become
3 much more competitive in recent years. Large businesses have been
4 able to bypass the LECs' private line and access services using fiber
5 optic networks, microwave transmission and very small aperture
6 terminals (VSAT). The growth of competitive access providers (CAPs)
7 such as Metropolitan Fiber Systems (MFS) and the Teleport
8 Communications Group (TCG) has allowed large business customers
9 in major cities to connect with long distance carriers (interexchange
10 carriers or IXCs) without paying an access charge to a LEC such as
11 BST.

12
13 It is clear that investors believe that major CAPs, IXCs, and cable
14 television (CATV) companies are positioning themselves to compete
15 vigorously for customers in the local exchange market. LECs like BST
16 face heightened potential competition that poses additional risk to their
17 operations and their ability to recoup extensive infrastructure
18 investments. Investors see such competition coming from wired,
19 wireless, and internet sources. Consider the representative recent
20 observations on competition in Business Week ("Zooming Down The I-
21 Way," Andy Reinhardt, Peter Elstrom, and Paul Judge, April 7, 1997,
22 pp. 76-87):
23 [O]utside the boardrooms of telecom's giants, innovation is sweeping
24 the wired and wireless world-bubbling up from the bottom. Hundreds of
25

1 alternative carriers and nimble startups are leaping head-first into the
2 newly deregulated environment (p. 76).

3

4 The Internet is also giving rise to new products that could undermine
5 traditional phone services. The one that sends shivers down the
6 spines of telecom execs: software that lets you place phone calls over
7 the net (p. 77);

8

9 The Internet is not the only threat to the telephone companies. A slew
10 of startups are finding ways to eat into traditional telephone
11 usage...PCs are becoming telephone command centers for video
12 conferencing and unified messaging that combines e-mail, fax, and
13 voicemail (p. 78).

14

15 The provision of wireless services such as personal communication
16 systems by CAPs, CATV operators, and electric utilities also enhances
17 the ability of customers to completely bypass local exchange services.
18 Wireless services are becoming a viable consumer alternative to LEC
19 services. These alternatives will only increase the competitiveness of
20 that environment and thus magnify the business risk of LEC operations.
21 This growing risk is increasing BST's cost of raising capital.

22

23 Q. Has the business risk of the telecommunications industry increased in
24 recent years and is it expected to continue increasing in the future,

25

1 especially due to the passage of and uncertainties in implementing the
2 Telecommunications Act of 1996?

3

4 A. Yes. The recent passage of the Telecommunications Act and
5 responses to its passage dramatically indicate that business risk has
6 been increasing and will increase even more in the future. The Act,
7 which was signed into law by President Clinton on February 8, 1996,
8 essentially allows local, long-distance, and cable companies to get into
9 one another's businesses. Thus, the traditional barriers that separated
10 these industry sectors are now officially being dropped. While market
11 pressures have been eroding these limits in recent years, the various
12 competitors are now moving forward rapidly. However, open
13 competition brings a significant increase in risk.

14

15 The passage of the Telecommunications Act is apparently viewed as
16 risky by investors, competing telecommunications firms, and by the
17 Federal Communications Commission (FCC). Indeed, the FCC has
18 recently observed:

19 ... [I]ncumbent LECs face potential competition as a result of the act
20 that they did not face previously. This potential competition could
21 increase the risks facing the incumbent LECs, and thus increase their
22 cost of capital, thus mitigating, to some extent, the factors suggesting
23 that incumbent LECs' cost of capital has decreased since 1990 (Notice
24 of Proposed Rule Making, Third Report and Order, And Notice of
25 Inquiry, FCC 96-488, December 24, 1996, p. 101, paragraph 228).

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The implication is that investors are requiring higher rates of return to compensate for the higher investment risk resulting from the new competitive environment fostered by the implementation of the Telecommunications Act.

IV. REBUTTAL OF PROFESSOR CORNELL'S DIRECT TESTIMONY ON BEHALF OF AT&T, MCI TELECOMMUNICATIONS, AND MCI METRO ACCESS SERVICES

A. ERRORS IN DCF COST OF EQUITY ANALYSIS

1. FAILURE TO REFLECT INVESTORS' PERSPECTIVE

Q. Is Professor Cornell's use of a three-stage DCF model representative of investors' valuation perspective and is it a common approach in regulatory proceedings?

A. No, Professor Cornell's three-stage model is complex, subjective, and uses growth rate forecasts that reflect his own opinions rather than those of the investment community. Due to these limitations, three-stage approaches are not commonly used in regulatory proceedings.

Professor Cornell's three-stage approach only makes use of firm-specific investment community consensus growth rate forecasts, as measured by Institutional Brokerage Estimation Service (IBES), for the first stage (five years) of his analysis. After this five-year period, he

1 assumes a second stage of 15 years during which the growth rate falls
2 from the initial IBES growth rate to a projected growth rate for the
3 overall U.S. economy by the end of the 20th year. After that time,
4 Professor Cornell assumes that the growth rate remains at that
5 projected rate for the economy indefinitely (Direct Testimony, p. 16, line
6 21 - p. 22, line 16).

7
8 While his analysis is logical, it unfortunately misses the mark in the
9 current proceeding. The goal here is to estimate BST's cost of meeting
10 its equity investors' return requirements in market terms. Thus, the
11 analysis should reflect the investment analysis process and
12 expectations of investors. Professor Cornell's analysis of BST's cost of
13 equity departs from investors' perspective by substituting his
14 expectations for those of investors for two out of the three stages in his
15 analysis.

16

17 Q. How relevant is Professor Cornell's criticism of the constant growth
18 DCF model on the basis that telecommunications firms' projected
19 growth rates are not sustainable "into perpetuity?"

20

21 A. While Professor Cornell's criticism of the constant growth version of the
22 DCF model is theoretically correct, it is practically irrelevant and
23 misguided in the current context. He observes:
24 ...modern telephone companies are composed of a variety of
25 businesses, some of which are expected to grow at rates of 30 percent

1 or more in the short run. Such high growth rates are clearly not
2 sustainable into perpetuity, so that the simple constant growth model
3 cannot be applied...(Direct Testimony, p. 16, lines 8-12).

4

5 Professor Cornell's unsupported apparent concern is that "telephone
6 companies are composed of a variety of businesses" that cannot be
7 captured by a single growth rate. However, investors routinely price
8 securities for firms composed of numerous business units by evaluating
9 the net contribution of each unit to the overall growth of the firm.

10

11 Professor Cornell's rejection of the constant growth DCF model
12 because he assumes that telephone company growth rates are "not
13 sustainable into perpetuity" does not adequately relate valuation theory
14 to practice in light of realistic investor concerns. While the constant
15 growth DCF model does theoretically assume a constant growth rate
16 for perpetuity, there is no evidence that investors practically consider
17 perpetuity in their valuation decisions. Simply put, the present value of
18 the cash flows projected from an investment beyond the foreseeable
19 future is so small that it has little practical effect on investors' decisions.
20 While it is very difficult to forecast the distant future, it is also not
21 practically relevant to attempt to do so in a present value sense.

22

23 Professor Cornell's theoretical criticism of the constant growth DCF
24 model is irrelevant. His decision to replace it with a three-stage DCF
25 model only introduces a more subjective, complicated approach that

1 substitutes his growth forecasts for those of the investors who are
2 actually putting money into stocks.

3

4 Q. What support does Professor Cornell offer for limiting the long-term
5 growth of telecommunications firms to the growth rate of the U.S.
6 economy?

7

8 A. He offers only his opinion that "a perpetual growth rate that exceeded
9 the growth rate of the economy would illogically imply that eventually
10 the whole economy
11 would be comprised of nothing but telephone companies" (Direct
12 Testimony, p. 17, lines 9-11). Professor Cornell's observation has no
13 practical relevance in assessing the usefulness of the constant growth
14 DCF model in the current proceeding. Investors could easily believe
15 that telecommunications firms' consensus growth rate projections are
16 sustainable beyond the next five years to the foreseeable future but
17 less than forever, which is not a realistic emphasis of investors in their
18 valuation efforts anyway.

19

20 Q. Would you provide an example that shows how unrealistic Professor
21 Cornell's constraint on long-term growth rate is?

22

23 A. Yes. Zacks' and IBES' current (October 1997) consensus five-year
24 growth rate forecasts for MCI are 11.80% and 11.61%, respectively.
25 Professor Cornell would presumably argue that these rates are

1 unsustainable beyond five years and that the use of this rate for a
2 longer period of time would imply that MCI would dominate the U.S.
3 economy. However, according to Value Line, MCI's average earnings
4 growth rate of earnings over the past ten years has been 28%, which is
5 more than twice either of the above consensus growth rates.

6
7 From a practical perspective, I believe that most investors would relate
8 these projections to the past performance of MCI and thereby use them
9 to assess MCI's foreseeable future. It does not seem reasonable that
10 such investors would be tempted to conclude that "eventually the whole
11 economy would be comprised of nothing but telephone companies" or
12 MCI in particular. Further, Professor Cornell offers no evidence to
13 support his use of a second stage that is 15 years long. Why not 10,
14 25, or 30 years? His three-stage model is unnecessarily subjective,
15 unrepresentative of investors' growth rate expectations, and contrary to
16 investors' realistic concerns. While Professor Cornell's model is
17 admittedly inventive, it is not informative concerning BST's realistic,
18 market-based capital costs in the state of Florida.

19
20 Q. In attempting to justify his use of a three-stage rather than a constant
21 growth version of the DCF model, Professor Cornell cites a book by
22 Aswath Damodaran as a key reference (see pages 16-17 and footnote
23 4 of his testimony). Is Professor Cornell's decision to use a three-stage
24 version of the model consistent with Damodaran's stated conditions
25 under which the model is appropriate?

1

2 A. No, Professor Cornell's use of the three-stage model is inconsistent
3 with the circumstances described for the best use of the model.

4 Damodaran indicates that "...this may be the more appropriate model to
5 use for a firm whose earnings are growing at a very high rates..." where
6 "...growth rates over would 25% qualify as very high..." (Damodaran On
7 Valuation, John Wiley & Sons, 1994, p. 119).

8

9 B. Cornell Exhibit BC-4 shows that none of the companies to which
10 Professor Cornell applies his three-stage DCF model have growth rates
11 "over 25%." Thus, his decision to use this form of the model is
12 inconsistent with the conditions for its appropriate use described in the
13 Damodaran reference cited in his testimony.

14

15 Q. Does this reference cited by Professor Cornell discuss any limitations in
16 using the three-stage version of the DCF model?

17

18 A. Yes. In comparing the three-stage model to the other versions of the
19 DCF model, Damodaran observes that:

20 ... it requires a much larger number of inputs: year-specific payout
21 ratios, growth rates, and betas. For firms in which there is substantial
22 noise in the estimation process, the errors in these inputs can
23 overwhelm any benefits that accrue from the additional flexibility in the
24 model (Damodaran on Valuation, John Wiley & Sons, 1994, pp. 118 -
25 119).

1
2 Damodaran's concern over the effect of "substantial noise" is
3 particularly relevant to Professor Cornell's analysis. He applies a three-
4 stage DCF model to the RBHCs, GTE, and selected independent
5 telephone holding companies. The dramatic effects of deregulation,
6 increasing competition, and the implementation of the
7 Telecommunications Act of 1996 certainly introduce much noise into
8 the estimation of such firms' equity costs. Thus, Professor Cornell's
9 DCF model is particularly inappropriate for estimating BST's cost of
10 equity. My methodological approach is more reliable because it uses a
11 group of firms that are demonstrably comparable in risk to BST that are
12 not affected by such "noise" and my approach does not require the
13 highly subjective inputs that Professor Cornell's three-stage model
14 does.

15

16 2. INCORRECT RELIANCE ON BELLSOUTH, THE OTHER
17 RBHCS, AND SELECTED INDEPENDENT TELEPHONE
18 COMPANIES AS COMPARABLE IN RISK TO BST

19

20 Q. What justification does Professor Cornell give for applying the DCF and
21 the CAPM approaches to BellSouth, the other RBHCs, and selected
22 independent telephone companies as firms comparable in risk to BST?

23

24 A. Professor Cornell offers no justification for the use of these firms and
25 only observes in passing that they are "selected as likely comparables

1 to BellSouth" (Direct Testimony, p. 19, lines 8-10) and that they "...were
2 derived from the list of telephone operating companies in Standard and
3 Poor's Industry Survey" (Direct Testimony, p. 11, lines 8-9). These
4 supposedly comparable firms are listed in B. Cornell Exhibit BC-2.
5 Thus, Professor Cornell assumes that BST is comparable in risk to
6 BellSouth, the other RBHCs, and selected independent telephone
7 companies rather than proves comparability. My analysis shows that
8 the RBHCs are not, as a group, comparable in risk to BST and that the
9 independent telephone companies are not as well.

10

11 3. FAILURE TO ADJUST FOR FLOTATION COSTS

12

13 Q. Do you agree with Professor Cornell's decision to ignore the impact of
14 flotation costs in estimating BST's cost of equity capital?

15

16 A. No, I do not agree with his decision. Professor Cornell attempts to
17 justify ignoring flotation costs because the price of BellSouth's stock
18 "...has accounted for flotation costs already" (Direct Testimony, p. 49,
19 lines 12-14). While his argument implicitly assumes that flotation costs
20 materially affect equity costs, he presents no evidence that the market
21 has made such an adjustment. Professor Cornell's unsupported
22 decision not to adjust for flotation costs biases his cost of equity
23 estimates downward.

24

25

1 4. FAILURE TO ADJUST FOR QUARTERLY DIVIDEND
2 PAYMENTS

3

4 Q. Is Professor Cornell's use of the annual form of the DCF model
5 consistent with the investor's perspective on valuing equity securities?

6

7 A. No, it is not. Professor Cornell uses the annual form of the DCF model
8 even though all of the members of his sample of supposedly
9 comparable firms pay dividends on a quarterly basis. The annual form
10 of the DCF model does not accurately portray the investor's
11 perspective, and consequently, significantly underestimates BST's cost
12 of equity capital.

13

14 B. ERRORS IN CAPM COST OF EQUITY ANALYSIS

15

16 Q. Is Professor Cornell's estimate of the equity market risk premium using
17 the three-stage DCF model economically meaningful?

18

19 A. No, it is not economically meaningful. Professor Cornell uses his
20 flawed three-stage DCF model to estimate an expected return on the
21 overall equity market, as measured using selected members of the
22 S&P 500 index, of 11.26% (see B. Cornell Exhibit BC-6).

23

24 Q. What effect does Professor Cornell's exclusion of all members of the
25 S&P 500 not paying a dividend yield of at least 3% (p. 31, lines 13-15

1 of Cornell's testimony) have on his estimated market return of only
2 11.36%?

3

4 A. Professor Cornell's arbitrary screening criterion biases downward his
5 estimated expected return on the market and thereby causes all of his
6 CAPM calculations to underestimate equity capital costs. This partially
7 explains why his analysis underestimates BST's capital costs.

8

9 Consider the type of firms that pay a dividend yield of less than 3%.
10 Such firms typically pay lower dividend yields because they reinvest
11 above-average amounts in their businesses. Thus, lower dividend
12 yields are associated with higher growth companies that have higher
13 equity capital costs. Professor Cornell's screening criterion
14 consequently excludes those members of the S&P 500 with the highest
15 capital costs and thereby underestimates the expected returns
16 composing the market proxy. His CAPM-based equity costs that use
17 this biased measure of equity market expectations clearly produce
18 unrealistically low capital cost estimates.

19

20 C. ERRORS IN COST OF DEBT ESTIMATION

21

22 Q. What mistakes does Professor Cornell make in estimating BST's cost
23 of debt?

24

25

1 A. Professor Cornell fails to measure the cost of debt that is relevant to
2 determining the forward-looking cost of BST providing unbundled
3 network services to retail providers of local telephone service. BST's
4 network assets that provide such services are long-lived and would
5 traditionally be financed using long-term debt. In contrast, Professor
6 Cornell has relied on the yields on BST debt that are maturing within
7 the next few years rather than on appropriate long-term debt costs.

8
9 B. Cornell Exhibit BC-3 shows that the yields to maturity on selected
10 BST debt issues generally increase with the maturity dates. Thus, it is
11 obvious that Professor Cornell's use of shorter-term debt costs explains
12 why his cost of debt estimates significantly underestimates BST's
13 forward-looking cost of debt. Further, he considers debt issues that are
14 clearly irrelevant to assessing the cost of financing long-lived network
15 assets. My analysis of the relationship between the yields in long-term
16 Aaa-rated public utility debt and long-term Treasury bonds indicates
17 that a more representative, forward-looking cost of debt for BST is
18 7.25%.

19

20 Q. Would you elaborate on which debt issues Professor Cornell incorrectly
21 includes in his analysis that are irrelevant to assessing BST's forward-
22 looking cost of financing long-lived network assets?

23

24 A. Yes. B. Cornell Exhibit BC-3 incorrectly includes debt issued by
25 BellSouth Capital Funding, which was not issued to finance BST's

1 network assets. Because the yields to maturity on these issues are as
2 much as 100 basis points lower than Professor Cornell's weighted-
3 average estimate of BST's cost of debt of only 7.06%, this mistake in
4 part explains why his analysis underestimates BST's forward-looking
5 debt capital costs.

6

7

D. MISUNDERSTANDING OF THE NATURE AND

8

SIGNIFICANCE OF THE RISKINESS OF INVESTING IN THE

9

TELECOMMUNICATIONS INDUSTRY

10

11 Q. Do you agree with Professor Cornell's observations about the
12 supposedly low relative risk of "leasing" local exchange telephone
13 network elements to retail providers?

14

15 A. No, I do not. Professor Cornell only offers his unsupported opinion
16 that:

17 This leasing of network facilities... should have relatively low risk
18 compared to many of the risky business endeavors being pursued by
19 the telephone holding companies (Direct Testimony, p. 44, lines 3-6).
20 However, he acknowledges later in his testimony that "...there remains
21 some risk that consumers, particularly business users, will bypass the
22 network as other alternatives become available" (Direct Testimony, p.
23 46, lines 3-5). Professor Cornell consequently recognizes the
24 significant risk of consumers and businesses bypassing BST's network
25 but only offers his unsubstantiated opinion that this is a "relatively low

1 risk” endeavor. Once again Professor Cornell has substituted his
2 opinion for that of investors in appraising capital costs.

3

4 Q. Why is leasing long-term telephone network assets particularly risky?

5

6 A. The leasing of long-term assets can be quite risky, especially when
7 leasing rates are regulated. In order for BST to earn a reasonable
8 return on its network assets, it must obtain revenues over the “leasing”
9 period that cover its costs and an appropriate risk-adjusted profit.
10 However, BST is partially dependent on regulators rather than solely on
11 the market to obtain such a return. Professor Cornell obviously
12 recognizes that regulators’ decisions may well not be appealing to
13 shareholders’ when he notes:

14 There is still the risk of regulation itself. The rate of return a network is
15 allowed to earn depends on the outcome proceedings such as this and
16 remains somewhat uncertain (Direct Testimony, p. 45, lines 20-22).

17

18 Because such uncertainty implies risk to the investor, Professor Cornell
19 acknowledges that there is substantial risk in the leasing of BST’s
20 network elements. This risk implies higher required rates of return and
21 capital costs. However, Professor Cornell’s comments on the
22 supposedly low relative risk of network leasing are inconsistent with his
23 recognition of high regulatory risk and the significant risk of consumer
24 and business bypass of BST’s local service network.

25

1 Q. How does technological change affect the risk of investing in long-term
2 telephone network assets?

3
4 A. Network facilities reflect a given technology that often becomes
5 obsolete quickly. BST must consistently invest to keep its network
6 elements up to date and should have the flexibility to establish leasing
7 rates accordingly. However, as noted above, it does not have this
8 ability under current regulations. This risk of technological
9 obsolescence makes leasing network elements risky. Thus, such
10 obsolescence imposes costs and therefore risks. The leasing of BST's
11 network assets poses significant risks to its investors that put upward
12 pressure on the cost of equity.

13
14 Q. Do you agree with Professor Cornell's views on the risks that are
15 reflected in capital costs?

16
17 A. No. Professor Cornell's views are steeped more in pristine theory than
18 the investor's practical reality and are presented inconsistently in his
19 testimony. For example, he emphasizes that:

20 ...the risk that a company will lose customers to competition -
21 such as a network leasing company or a local exchange company - is
22 a diversifiable risk which does not increase the risk premium according
23 to capital market theory" (Direct Testimony, p. 25, lines 1-3).

24 However, in discussing what he presumably considers to be the
25 relevant risks associated with the business of leasing unbundled

1 network elements he notes that "...there remains some risk that
2 consumers, particularly business users, will bypass the network as
3 other alternatives become available" (Direct Testimony, p. 46, line 3 -
4 5).

5
6 On the one hand Professor Cornell argues that the risk of losing
7 customers to competition should not affect capital costs and, on the
8 other hand, he inconsistently asserts that the risk of bypass, which is
9 just one way of losing customers, is relevant and thus affects capital
10 costs.

11
12 Professor Cornell also inconsistently argues that:
13 In this case, the company in question is not a diversified telephone
14 holding company, but a company in the more specialized (and less
15 risky) business of providing network elements (Direct Testimony, p. 51,
16 lines 14-16).

17 This observation is logically flawed and inconsistent. If we accept
18 Professor Cornell's assumption that diversification reduces relevant or
19 priced risk, then the fact that the " the company in question is not a
20 diversified telephone holding company" should imply that is it riskier,
21 not "less risky" than a diversified holding company. Professor Cornell's
22 positions on relevant risk are confusing and inconsistent.

23
24 Professor Cornell's view that greater risk of competition is not
25 compensated in the cost of capital is not practically relevant. While this

1 is strictly true in the pristine theoretical world of the CAPM, the practical
2 realities of investing suggest otherwise. Indeed, as noted above, the
3 FCC has recently noted that "...potential competition could increase the
4 risks facing the incumbent LECs, and thus increase their cost of capital"
5 (Notice of Proposed Rulemaking, Third Report and Order, and Notice
6 of Inquiry, FCC 96-488, December 24, 1996, page 101, paragraph
7 228). Consequently, in contrast to Professor Cornell, the FCC views
8 the enhanced risk posed by competition as a practical, significant
9 influence on capital costs. While the CAPM provides useful insights
10 into capital costs, it must be supplemented with other methods that
11 recognize the full array of practical risks facing investors. Professor
12 Cornell's expressed views on risk are incomplete and logically
13 inconsistent.

14

15 E. SUMMARY OF REBUTTAL OF PROFESSOR CORNELL'S
16 COST OF CAPITAL ESTIMATES FOR BST

17

18 Q. Please summarize your evaluation of Professor Cornell's cost of equity
19 estimates for BST.

20

21 A. Professor Cornell incorrectly estimates BST's cost of equity to be
22 between 10.99% and 11.05% due to numerous errors in his
23 applications of the DCF and CAPM approaches. His DCF model is
24 flawed due to: 1) failure of his subjective three-stage model to reflect
25 investors' perspective; 2) incorrect reliance on BellSouth, the other

1 RBHCs, and selected independent telephone companies as
2 comparable in risk to BST; 3) failure to adjust for flotation costs; 4)
3 failure to adjust for quarterly dividend payments, and 5) unrealistic
4 underestimation of the risks of investing in telephone network assets in
5 the new, highly competitive environment. Professor Cornell's CAPM
6 cost of equity analysis for BST is also unreliable because it is based on
7 his flawed three-stage DCF model.

8

9 Q. Please summarize your assessment of Professor Cornell's cost of debt
10 estimate for BST.

11

12 A. Professor Cornell incorrectly estimates BST's cost of debt as only
13 7.06%. This underestimates BST's cost of debt because he relies on
14 shorter-term debt issue costs that are not representative of the costs
15 associated with financing long-term telephone network assets. Further,
16 he incorrectly includes debt issues in his analysis that were not issued
17 to telephone network assets. My testimony shows, however, that
18 under current capital market conditions BST's forward-looking cost of
19 debt is about 7.25%.

20

21 V. DCF MODEL ESTIMATES OF BST'S COST OF EQUITY CAPITAL

22 A. FORM OF THE DCF MODEL USED IN THE ANALYSIS

23

24 Q. What form of the DCF model do you use to estimate BST's cost of
25 equity capital?

1

2 A. I use the constant growth form of the DCF model that assumes an
 3 indefinite or infinite holding period. Since most U.S. firms pay
 4 dividends quarterly, I use the quarterly form of the DCF model under
 5 the realistic assumption that such dividends are changed by firms once
 6 a year, on average in the middle of the year. Specifically, the cost of
 7 equity K is calculated as:

8

$$9 \quad K = [D_0^q (1 + G) / P_{mkt}] + G = [D_1^q / P_{mkt}] + G,$$

10

11

12 where G is the most recent average five-year earnings per share
 13 growth rate projected by analysts, as reported by either Zacks
 14 Investment Research Inc. (Zacks) or by the IBES, and P_{mkt} is the
 15 average of the three most recent months (August 1997 to October
 16 1997) of high and low prices for the equity. D_0^q and D_1^q reflect the most
 17 recent annual and the anticipated next year amount of quarterly
 18 dividends, respectively. D_1^q is calculated as:

19

$$20 \quad D_1^q = d_1 (1 + K)^{75} + d_2 (1 + K)^5 + d_3 (1 + K)^{25} + d_4,$$

21

22 where d_1 and d_2 are the quarterly dividends paid prior to the assumed
 23 yearly change in dividends and d_3 and d_4 are the two quarterly
 24 dividends paid after the given change in the amount paid by a firm.

25

1 Thus, dividend D_1^q captures the quarterly payment of dividends that
2 grow at rate G .

3

4 In order to reflect the significant effect of flotation costs on the cost of
5 equity, I directly reduce the market price P_{mkt} used in my analysis by a
6 conservative 5 percent. Billingsley Exhibit No. RSB-2 elaborates on the
7 nature and applicability of the DCF model in estimating the cost of
8 capital in regulatory proceedings. It also discusses the importance of
9 adjusting for both the payment of quarterly dividends and for flotation
10 costs.

11

12 B. SPECIFIC APPLICATION OF THE DCF MODEL TO
13 ESTIMATE BST'S COST OF EQUITY

14

15 Q. Specifically how do you apply the above DCF model to BST, since it
16 does not have equity trading in the marketplace?

17

18 A. Since BST is part of its parent holding company, BellSouth
19 Corporation, it does not have equity trading in the market. It is
20 consequently necessary to infer BST's cost of equity by applying the
21 DCF model to a group of firms identified as comparable in risk to the
22 company.

23

24 Q. What method is used to identify firms of comparable risk to BST?

25

1 A. I use a cluster analysis model to identify firms that are comparable in
2 risk to BST. Two dimensions of risk are used to compare firms. First,
3 the financial risk of firms is measured and used as a basis of
4 comparison. Second, business or operating risk is compared among
5 firms. These dimensions are, in effect, averaged in a manner that
6 generates a comprehensive risk profile. Thus, firms are not just
7 compared on a characteristic-by-characteristic basis, they are
8 compared in light of those chosen characteristics and the relationship
9 among those characteristics.

10

11 A summary measure expresses the distance between each firm and
12 BST. A group of the 20 firms that are closest to BST in terms of this
13 summary distance measure is chosen for analysis. A more detailed
14 discussion of this cluster analysis is contained in Billingsley Exhibit No.
15 RSB-4.

16

17 Q. How do the individual measures of riskiness relate to the comparability
18 of the group of firms in the cluster in terms of overall riskiness?

19

20 A. It may be tempting to single out one company in my cluster of
21 comparable firms and incorrectly attempt to compare its various risk
22 measures individually to those of BST. However, none of the individual
23 companies identified in the cluster are precisely like BST in every
24 respect. The firms are alternative investment opportunities that, in the
25 aggregate, have overall risk similar to that of BST.

1

2

In summary, none of the individual firms in my cluster are precisely like

3

BST in terms of each individual measure of risk. The cluster should be

4

viewed as a portfolio of firms that, as a group, are comparable in risk to

5

BST.

6

7

C. DCF MODEL COST OF EQUITY ESTIMATES FOR BST

8

9

Q. What cost of equity capital do you estimate for BST using the DCF

10

model?

11

12

A. Billingsley Exhibit No. RSB-3 lists the portfolio of 20 firms that are

13

comparable in risk to BST and reports the average cost of equity for the

14

portfolio using both IBES and Zacks growth rate forecasts. The

15

evidence indicates that the cost of equity for BST is in the range of

16

15.11% to 15.20%.

17

18

VI. CAPITAL ASSET PRICING MODEL ANALYSIS OF BST'S COST

19

OF EQUITY CAPITAL

20

21

Q. What form of the CAPM do you use to estimate BST's cost of equity

22

capital?

23

24

A. I use the common form of the model, which calculates the risk-adjusted

25

rate of return K as:

1

2
$$K = R_f + B [R_m - R_f],$$

3

4 where R_f is the expected return on a risk-free security like a U.S.5 Treasury bond B is the expected beta or systematic risk of the equity6 security, and R_m is the expected return on a broad index of equity

7 market performance like the S&P 500.

8

9 Q. How and where do you obtain the beta coefficient data needed to
10 estimate BST's cost of equity capital using the CAPM?

11

12 A. Since BST is a subsidiary of BellSouth Corporation, it does not have its
13 own equity trading in the market and therefore does not have the beta
14 coefficient required by the CAPM. Thus, as discussed above in my
15 DCF analysis, it is necessary to identify a group of firms comparable in
16 risk to BST that do have traded equity and therefore measurable beta
17 coefficients. Consequently, the beta coefficients for the group of firms
18 used in my DCF analysis that are identified in Billingsley Exhibit No.
19 RSB-3 are relied on to estimate the cost of equity for BST. Specifically,
20 the average beta of 0.90 for the group of firms is used in the CAPM
21 equation presented above.

22

23 The beta coefficients used in my CAPM analysis are the most recent
24 prospective measures supplied by BARRA, a widely recognized
25 provider of data and decision support systems for institutional investors.

1 Billingsley Exhibit No. RSB-5 elaborates on the nature and significance
2 of using prospective rather than historical beta estimates.

3

4 Q. How do you estimate the risk-free rate of return needed in the CAPM
5 equation?

6

7 A. In order to be consistent with the expectational emphasis of the CAPM,
8 I use the 6.73% average expected yield implied by the prices of the
9 treasury bond futures contracts quoted during October of 1997. The
10 prices of these contracts reflect the market's consensus forecast of
11 long-term, low-risk interest rates. Billingsley Exhibit No. RSB-6
12 describes the futures contracts used in the analysis in more detail and
13 shows the calculations necessary to derive the implied expected future
14 risk-free rate of return.

15

16 Q. How do you estimate the expected return on a broad index of equity
17 market performance for use in the CAPM?

18

19 A. I use expectational data to estimate the return of the S&P 500 as my
20 proxy for overall equity market performance. Billingsley Exhibit No.
21 RSB-7 elaborates on how the DCF model is applied to estimate the
22 expected return on the S&P 500 using both Zacks and IBES growth
23 rate forecasts. The expected return during the most recent month
24 (October 1997) for which data is available is used in the CAPM
25 analysis.

1

2 Q. What cost of equity capital do you estimate for BST under the CAPM
3 approach?

4

5 A. Summarizing the results of the above analysis, I use a risk-free rate of
6 return of 6.73%, an average beta of 0.90 for firms comparable in risk to
7 BST, and IBES and Zacks growth rate estimates that imply an
8 expected return on the S&P 500 of 15.61% and 15.77%, respectively.
9 These objective, market-determined data indicate that BST' s cost of
10 equity capital is 14.72% using the IBES growth rate and 14.87% using
11 the Zacks growth rate forecast.

12

13 VII. MARKET RISK PREMIUM ANALYSIS OF THE COST OF
14 EQUITY CAPITAL

15 A. NATURE OF THE APPROACH

16

17 Q. What is the market risk premium approach?

18

19 A. The market risk premium approach quantifies the risk/return trade-off
20 discussed in detail in Billingsley Exhibit No. RSB-1 on the economic
21 standards used in cost of equity analysis. The equity market risk
22 premium is defined as the difference between the return on a broad
23 basket of equity securities (the "market") and the return on a low-risk or
24 "riskless" benchmark security or portfolio. The return on long-term U.S.

25

1 Treasury bonds and the return on utility bonds are common
2 benchmarks.

3

4 B. SPECIFIC TYPE OF RISK PREMIUM ANALYSIS USED

5

6 Q. What specific form of the risk premium approach do you use?

7

8 A. Since the DCF model and the CAPM are prospective in nature, I also
9 use a prospective approach to estimate the equity risk premium. I
10 examine the relationship between expected returns on the S&P 500, as
11 estimated by the DCF model using IBES growth rate forecasts, and the
12 current market yields on public utility bonds from October of 1987 to
13 October of 1997. Additional detail on the issues and the techniques
14 associated with calculating the expected return on the market is
15 presented in Billingsley Exhibit No. RSB-7.

16

17 Billingsley Exhibit No. RSB-8 shows that the average expected risk
18 premium from 1987 to 1997 is 6.80%. The average yield on AAA-rated
19 public utility bonds, which are used because this is the bond rating on
20 BST's debt, over the most recent three months (August to October of
21 1997) is 7.30%. Thus, the average risk premium of 6.80% is added to
22 the recent average public utility bond return of 7.30% to yield an
23 expected cost of equity return on the S&P 500 of 14.10%.

24

25 C. ADJUSTMENT FOR POTENTIAL INSTABILITY IN THE

1 RISK PREMIUM

2 1. EVIDENCE ON THE INSTABILITY OF RISK PREMIUMS
3 OVER TIME

4

5 Q. Can any instability in the risk premium be adjusted for so as to increase
6 the confidence in its representativeness?

7

8 A. Yes. As elaborated on in Billingsley Exhibit No. RSB-7, studies of the
9 historical behavior of the equity risk premium indicate that it varies
10 considerably over time. Importantly, there is evidence that the equity
11 risk premium is related inversely to the returns on low-risk benchmark
12 debt securities. Thus, when interest rates decline, the equity risk
13 premium widens and when interest rates rise, the equity risk premium
14 narrows.

15

16 research on this phenomenon by Professors R. S. Harris and
17 F.C. Marston, published in Financial Management in 1992, finds that
18 the equity risk premium moves an average of $-.651$ of
19 contemporaneous changes in the return on a benchmark low-risk
20 security (index). In other words, if interest rates decline by 100 basis
21 points, the equity risk premium will increase by an average of about 65
22 basis points.

23

24 2. SPECIFIC ADJUSTMENT FOR INSTABILITY IN THE
25 EQUITY RISK PREMIUM

1

2 Q. What specific adjustment do you make to your risk premium analysis in
3 light of the above evidence on the inverse relationship between the risk
4 premium and the level of interest rates?

5

6 A. During the period of Harris and Marston's study, the average risk
7 premium was 6.47% and the average yield on long-term Treasury
8 bonds was 9.84%. As noted above, the equity market risk premium is
9 expected to change an average of -.651 of changes in the level of long-
10 term Treasury bond yields. Given that the current average yield on 30-
11 year Treasury bonds is 6.33% (October 1997), the appropriate current
12 risk premium is 8.76%. This is calculated by multiplying the 3.51%
13 decline in rates since the time period of Harris and Marston's study by -
14 .651 and adding back the average risk premium of 6.47% to the
15 indicated change of 2.29%. This alternative approach consequently
16 provides an expected return on the S&P 500 of 15.09%, which is the
17 current average level of 30-year Treasury yields of 6.33% added to the
18 adjusted risk premium of 8.76%.

19

20 Q. What is your conclusion with regard to BST's cost of equity capital?

21

22 A. Based on my cost of equity analysis, I believe BST's cost of equity is in
23 the range of 14.72% to 15.20%.

24

25 VIII. COST OF DEBT

1

2 Q. How do you determine BST's current cost of debt capital?

3

4 A. The cost of debt capital is estimated using current forward-looking
5 market data.

6

7 Q. How can BST's forward-looking cost of debt be empirically estimated?

8

9 A. BST's forward-looking cost of debt can be estimated by adding the
10 current yield to maturity on 30-year U.S. Treasury bonds to the average
11 spread (difference) between the yields on such U.S. Treasury bonds
12 and AAA-rated public utility bonds.

13

14 For the period from August to October of 1997, 30-year U.S.
15 Treasury bonds yielded an average of 6.47%. As shown in Billingsley
16 Exhibit RSB-9, the spread between AAA-rated public utility bonds and
17 30-year Treasury bonds averaged 0.79% from October of 1987 through
18 October of 1997. Adding the average spread of 0.79% to the above
19 current Treasury bond yield to maturity of 6.47% produces a yield of
20 7.26%, which does not reflect the material effect of flotation costs.

21

22 Q. What is your estimate of BST's forward-looking cost of debt?

23

24 A. Based on my analysis, I believe that BST's forward-looking cost of debt
25 is 7.25%.

1

2 IX. OVERALL COST OF CAPITAL

3

4 Q. How did you test the reasonableness of BST's overall cost of capital of
5 11.25% in its cost studies?

6

7 A. I used two different sets of assumptions, one using BST's reported
8 capital structure and embedded cost of debt of only 6.46% and the
9 other using an equity ratio of 60% and a current forward-looking cost of
10 debt of 7.25%.

11

12 Q. Please describe the first test of the reasonableness of BST's use of an
13 11.25% overall cost of capital.

14

15 A. As shown in Billingsley Exhibit RSB-10, as of September 30, 1997,
16 BST's reported capital structure was 58.84% equity and 41.16% debt
17 and the embedded cost of debt was 6.46%. An overall cost of capital
18 of 11.25% implies a cost of equity of 14.60%.

19

20 Q. Please describe the second test of the reasonableness of BST's use of
21 an 11.25% overall cost of capital.

22

23 A. Assuming the 60% equity and 40% debt capital structure that is used in
24 BST's cost studies and a current forward-looking cost of debt of 7.25%,
25 an 11.25% overall cost of capital implies a cost of equity of 13.92%.

1

2 Q. What conclusions do you draw concerning the reasonableness of
3 BST's use of an 11.25% overall cost of capital in its cost studies?

4

5 A. Based on my cost of equity estimate for BST of 14.72% to 15.20% and
6 the above tests, the use of an 11.25% overall cost of capital by BST is
7 reasonable and conservative.

8

9 X. SUMMARY OF DETERMINATION OF REASONABLENESS OF
10 BST'S 11.25% COST OF CAPITAL IN COST STUDIES

11

12 Q. Is it your opinion that it is reasonable for BST to use an overall cost of
13 capital of 11.25% in its cost studies?

14

15 A. Yes. My analysis shows that BST's cost of equity is in the range of
16 14.72% and 15.20% and that its forward-looking cost of debt is at least
17 7.25%. Two tests are used to determine the reasonableness of BST's
18 use of an overall cost of capital of 11.25% in its cost studies.

19

20 The first test uses BST's actual capital structure of 58.84% equity and
21 41.16% debt and a conservative embedded cost of debt of 6.46%.

22 This set of assumptions implies that a 14.60% cost of equity is
23 consistent with an overall cost of capital of 11.25%. The second test
24 uses a capital structure of 60.00% equity and 40.00% debt and a
25 current cost of debt of 7.25%. This set of assumptions implies that a

1 13.92% cost of equity is consistent with an overall cost of capital of
2 11.25%. Thus, the above tests and my estimated range for BST's cost
3 of equity capital of 14.72% to 15.20% show that BST's use of an
4 11.25% cost of capital in its cost studies is reasonable and
5 conservative.

6

7 Q. Are you aware that the Commission has not previously recognized the
8 need to adjust cost of equity estimates for flotation costs or the
9 quarterly payment of dividends?

10

11 A. Yes, I am aware of this. I have estimated BST's cost of equity with
12 adjustments for both flotation costs and the quarterly payment of
13 dividends because I believe that these factors affect equity costs. The
14 economic rationales for these adjustments are elaborated in Billingsley
15 Exhibit RSB-2.

16

17 Q. What are your revised estimates of BST's cost of equity assuming
18 annual dividend payments and no flotation costs?

19

20 A. An annual DCF model that ignores flotation costs produces a cost of
21 equity for BST of 15.02% using IBES growth rate forecasts and 15.16%
22 using Zacks growth forecasts. The revised CAPM approach indicates
23 that BST's cost of equity is in the range of 14.74% to 14.88%. Thus,
24 under the assumption of annual compounding and no flotation costs

25

1 the revised estimate of BST's cost of equity is within the range of
2 14.74% to 15.16%.

3

4 Q. Do you believe that it would be reasonable for BST to use an overall
5 cost of capital of 11.25% in its cost studies if flotation costs and
6 quarterly compounding adjustments are omitted from your estimates?

7

8 A. Yes. The revised cost of equity capital estimates are in the range of
9 14.74% to 15.16%. The same two tests of reasonableness used above
10 imply costs of equity that are lower than these revised cost of equity
11 estimates. Thus, BST's use of an 11.25% cost of capital in its cost
12 studies is conservative even in the absence of adjustments for flotation
13 costs and the quarterly payment of dividends.

14

15 Q. Does this conclude your testimony?

16

17 A. Yes, it does.

18

19

20

21

22

23

24

25

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