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

RECEIVED 2-9-98

DOCUMENT NUMBER-DATE
01998 FEB-9 98
FPSC-RECORDS/REPORTING

PROCEEDINGS:	HEARING
BEFORE:	CHAIRMAN JULIA L. JOHNSON COMMISSIONER J. TERRY DEASON COMMISSIONER SUSAN F. CLARK COMMISSIONER E. LEON JACOBS, JR. COMMISSIONER JOE GARCIA
DATE:	Tuesday, January 27, 1998
TIME:	Commenced at 1:00 p.m.
PLACE:	Betty Easley Conference Center Room 151 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	NANCY S. METZKE, RPR, CCR

APPEARANCES:

(As heretofore noted.)

I N D E X

WITNESSES

EXHIBITS - VOLUME VI

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

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

A Yes, they would.

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

CHAIRMAN JOHNSON: It will be so inserted.

BELLSOUTH TELECOMMUNICATIONS, INC.

DIRECT TESTIMONY OF ELLIS E. SMITH

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NOS. 960833-TP, 960846-TP, 960757-TP, 971140-TP, 960916-TP

NOVEMBER 13, 1997

Q. PLEASE STATE YOUR NAME, ADDRESS AND OCCUPATION.

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

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

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

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

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

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

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

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

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

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

However, if the object were to find the average height of the total population of Jacksonville, a different process would be used. Specifically, you could take a "sample" of the relevant "universe," and if properly done, a measurement derived from that "sample" should fairly represent the same measurement for the "universe" as a whole.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. IF THERE IS A POINT BEYOND WHICH A LARGER SAMPLE WILL ONLY MARGINALLY IMPROVE THE RESULTS, IS THERE A LIMIT BELOW WHICH THE SAMPLE SIZE SHOULD NOT GO AS WELL?

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

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

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

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

Q. DID YOU DO THAT?

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

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

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

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

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

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

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

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

Q. CAN YOU GIVE US THOSE RESULTS?

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

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

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

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

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

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

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

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

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

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

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

Q Mr. Smith, do you have a brief summary of your testimony?

A Yes, I do.

Q Will you please give it?

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

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

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

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

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

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

universe to be statistically valid.

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

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

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

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

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

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

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

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

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

MR. LACKEY: Mr. Smith is available.

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

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

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

WITNESS SMITH: Yes.

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

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

COMMISSIONER CLARK: Okay.

WITNESS SMITH: In other words, if you selected

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

COMMISSIONER CLARK: I see.

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

COMMISSIONER CLARK: Okay. Thank you.

WITNESS SMITH: Uh-huh.

CROSS EXAMINATION

BY MR. LAMOUREUX:

Q Good afternoon, Mr. Smith.

A Good afternoon.

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

A Uh-huh.

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

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

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

A That was being measured?

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

A Right.

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

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

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

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

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

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

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

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

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

A You could put those words in there, yes.

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

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

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

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

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

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

A That's correct.

Q Okay. And what is the CRIS data base?

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

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

A That sounds about right, yes.

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

A That's what was used, yes.

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

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

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

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

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

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

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

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

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

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

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

A Yes, I calculated sample sizes.

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

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

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

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

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

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

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

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

Q Okay. But although you calculated a sample size

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

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

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

A That's right.

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

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

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

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

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

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

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

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

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

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

A Correct.

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

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

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

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

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

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

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

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

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

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

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

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

A That's what I was told, yes.

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

A That's correct.

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

A Yes.

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

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

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

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

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

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

A Would you repeat that question?

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

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

Q Okay. Precision is not the same thing as

representativeness; would you agree with me on that?

A That's true. That's true.

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

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

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

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

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

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

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

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

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

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

A No. No, I'm not.

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

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

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

A No, I'm not.

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

A Around that time. In 1995, yes.

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

A At that time?

Q (MR. LAMOUREUX NODDED HEAD AFFIRMATIVELY)

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

Q Okay.

MR. LAMOUREUX: I have no further questions.

MR. BOND: MCI has no questions.

CHAIRMAN JOHNSON: Staff.

MR. PELLIGRINI: Staff has no questions.

CHAIRMAN JOHNSON: Commissioners.

(No response)

CHAIRMAN JOHNSON: Redirect.

MR. LACKEY: Just a few, Madam Chairman.

REDIRECT EXAMINATION

BY MR. LACKEY:

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

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

A I don't believe it would.

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

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

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

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

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

A No.

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

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

MR. LACKEY: No, ma'am.

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

WITNESS SMITH: Thank you.

MS. WHITE: BellSouth would call Dorissa Redmond.

* * * *

Whereupon,

DORISSA C. REDMOND

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

DIRECT EXAMINATION

BY MS. WHITE:

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

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

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

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

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

A Yes.

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

A No.

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

A Yes.

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

CHAIRMAN JOHNSON: It will be so inserted.

BELLSOUTH TELECOMMUNICATIONS, INC.

REBUTTAL TESTIMONY OF DORISSA C. REDMOND

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NOS. 960833-TP, 960846-TP, 960757-TP, 971140-TP

DECEMBER 09, 1997

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

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

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

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

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

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

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

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

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

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

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

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

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

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

Q. IS THIS MODEL CO A REALISTIC REPRESENTATION OF BELLSOUTH'S URBAN CENTRAL OFFICES?

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

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

A. In many cases, there are large amounts of space in the urban facilities due to the more space efficient switches of today. This space may be in the form of various sized pockets or in large contiguous spaces.

As large pockets of space have come available in urban CO's, however, the space has been renovated for use as administrative offices, thus moving personnel from costly leased buildings into Company-owned facilities. For the past several years, BellSouth has undergone an aggressive program in which operating costs have been reduced by reducing the amount of total floor space occupied and maintained. By the end of 1997, it is estimated that the amount of space reduced by this program will be around 4 million square feet. Even though a lot of vacant CO space has been used for administrative forces, generally, there is still room for physical collocation.

Q. DOES BELLSOUTH'S METHOD OF PLANNING PHYSICAL COLLOCATION SPACE DIFFER FROM THE MCI AND AT&T MODEL, AND IF SO, HOW?

A. Yes. The model calls for collocation space using small pockets of space (550 SF) close to an incumbent local exchange carrier's ("ILEC") cross-connects. This space is laid out in four 100 square foot enclosures, two to a side, with a 7'6" center aisle for a point of termination ("POT") bay and any necessary battery distribution fuse boards ("BDFB").

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. PLEASE EXPLAIN.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

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:

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.

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.

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

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

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

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

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

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

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BY MS. WHITE:

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

A Yes, I did.

Q Do you have any changes to those exhibits?

A No, I don't.

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

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

BY MS. WHITE:

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

A Yes, I do.

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

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

were built as long ago as 1925. The most recent facility of the 60 thousand square foot magnitude that the AT&T/MCI cost model is based on was built 22 years ago. Telecommunications equipment was placed in these buildings in such a manner as was consistent with the technology of the day. These same buildings have seen the amount of miscellaneous equipment grow as number of access lines has increased. They have seen many generations of switching equipment come and go driven by the technology of the day.

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

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

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

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

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

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

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

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

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

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

The AT&T/MCI model mentions bidding the

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

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

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

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

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

Mr. Self, did you --

MR. SELF: I have no questions.

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

CHAIRMAN JOHNSON: Okay.

CROSS EXAMINATION

BY MR. LAMOUREUX:

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

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

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

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

A Correct. Correct.

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

A The cable racking and everything, yes.

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

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

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

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

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

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

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

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

A Correct.

Q And so you have arranged for the common area but

not for the individual portion that's for CLECs?

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

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

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

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

A Correct. Correct.

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

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

point.

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

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

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

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

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

A That's correct, yes.

MR. LAMOUREUX: I have no further questions.

CHAIRMAN JOHNSON: Okay. MCI.

CROSS EXAMINATION

BY MR. BOND:

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

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

A That's probably the biggest discrepancy.

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

A Yes, I would.

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

A Correct.

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

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

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

A Yes.

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

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

Q I'm sorry, are you finished?

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

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

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

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

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

A I don't remember, but --

Q Well, would that be a good analogy?

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

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

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

COMMISSIONER CLARK: Let me ask a question on

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

WITNESS REDMOND: Yes, ma'am.

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

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

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

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

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

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

COMMISSIONER CLARK: Well, are there industry standards?

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

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

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

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

WITNESS REDMOND: Not around the switching equipment.

COMMISSIONER CLARK: Okay.

BY MR. BOND:

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

A Yes, I would.

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

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

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

A Yes.

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

A Yes.

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

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

Q Okay. Would you agree that there may be

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

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

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

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

Q Okay. But those are both BellSouth groups?

A Yes.

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

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

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

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

A The CLEC would.

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

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

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

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

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

COMMISSIONER DEASON: Staff.

CROSS EXAMINATION

BY MR. COX:

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

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

A Yes, I do.

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

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

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

A Okay.

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

A Okay.

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

A All right.

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

A Yes.

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

A Yes.

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

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

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

A They could be.

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

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

Q Okay. So --

A These are all possibilities.

Q They're all possibilities?

A Yes.

Q Now BellSouth has proposed that the cost for

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

A Correct.

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

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

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

A Correct.

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

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

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

A Correct.

Q The categories are further divided into capital

removal and cost components; is that correct?

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

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

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

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

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

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

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

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

A These are, yes.

Q Okay.

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

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

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

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

A Did you say 16?

Q Lines 8 through 10.

A Did you say 16?

Q Yes.

A Okay.

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

A Right.

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

A Correct.

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

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

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

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

A The data for material and labor?

Q Yes.

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

Q Are there any other sources that are used?

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

Q Now for those materials and labor in the spread

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

A Judgment and historical data.

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

A Yes.

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

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

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

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

Q That's correct.

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

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

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

A Correct.

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

A Correct.

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

A Right.

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

in-house personnel?

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

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

A On the spread sheet?

Q Yes.

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

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

cover architectural and engineering design and inspection fees?

A Right.

Q Can that percentage vary?

A Yes.

Q Under what circumstances would it vary?

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

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

A No, I do not.

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

A Right.

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

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

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

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

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

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

to estimate your construction by.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

A That doesn't come under property management.

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

A With shielding power cable?

Q Yes.

A No.

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

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

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

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

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

A No.

Q -- any more knowledge?

A No.

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

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

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

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

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

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

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

Q Okay. So just some in Florida?

A Yes.

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

A No.

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

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

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

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

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

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

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

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

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

A For physical collocation, yes.

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

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

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

A Yes.

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

A That would not be our policy, no.

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

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

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

A Is that the Florida specific physical collocation firm orders?

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

A Right.

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

A Yes.

Q Start with the hybrid wall.

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

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

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

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

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

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

A Yes.

Q Could you describe the difference there?

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

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

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

Q Is that information available now?

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

MR. COX: That concludes staff's questions.

COMMISSIONER DEASON: Commissioners, questions?

(NO RESPONSE)

COMMISSIONER DEASON: Redirect?

MS. WHITE: I have no redirect.

COMMISSIONER DEASON: Exhibits.

MS. WHITE: May Ms. Redmond be excused?

COMMISSIONER DEASON: Yes. Thank you.

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

COMMISSIONER DEASON: Without objection, exhibit 22 is admitted.

MS. WHITE: And BellSouth would move exhibit 21.

COMMISSIONER DEASON: Without objection exhibit 21 is admitted.

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

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

COMMISSIONER DEASON: Please ask your question.

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

WITNESS REDMOND: Yes.

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

from those waiver codes.

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

COMMISSIONER JACOBS: How --

WITNESS REDMOND: And -- I'm sorry.

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

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

COMMISSIONER JACOBS: So you say it's --

WITNESS REDMOND: Overall.

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

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

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

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

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

COMMISSIONER JACOBS: Okay. That's it.

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

(Brief recess taken)

COMMISSIONER DEASON: Call the hearing back to order.

BellSouth, you may call your next witness.

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

BellSouth calls Mr. Cunningham to the stand

please.

* * * *

Whereupon,

G. DAVID CUNNINGHAM

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

DIRECT EXAMINATION

BY MR. LACKEY:

Q Mr. Cunningham, have you been previously sworn?

A Yes, I have.

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

A My name is Guy David Cunningham.

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

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

Q By whom are you employed, Mr. Cunningham?

A I'm employed by BellSouth Telecommunications, Incorporated.

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

A Yes, I did.

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

A No, I do not.

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

A Yes, they would.

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

COMMISSIONER DEASON: Without objection it will be so inserted.

BELLSOUTH TELECOMMUNICATIONS, INC.

REBUTTAL TESTIMONY OF G. DAVID CUNNINGHAM

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKETS NO. 960833-TP, 960846-TP, 960757-TP, 971140-TP

December 9, 1997

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

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

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

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

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

Q. WHAT ARE YOUR CURRENT JOB DUTIES AND RESPONSIBILITIES?

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

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

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

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

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

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

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

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

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

A. No, I do not.

Q. WHY ARE THE LIVES LAST PRESCRIBED BY THE FCC IN 1995 FOR INTERSTATE DEPRECIATION PURPOSES NOT APPROPRIATE FOR USE IN THE BELLSOUTH COST STUDIES?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Q. HOW DO THE ECONOMIC LIVES USED IN THE COST STUDIES COMPARE TO THE LIVES USED TO DETERMINE THE DEPRECIATION RATES THAT BELLSOUTH IS CURRENTLY BOOKING IN FLORIDA FOR EXTERNAL REPORTING PURPOSES?

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

A. Yes. In BellSouth's Comments filed in the FCC Access Reform proceeding (Docket No. 96-262), BellSouth estimated its theoretical reserve requirement at 1/1/97 to be 54.6%, and its book reserve to be only 48.6%. This results in a $2.6B reserve deficiency in total for BellSouth.

Q. HAS THE FCC EVER ACKNOWLEDGED THAT BELLSOUTH HAD A RESERVE DEFICIENCY?

A. Yes. In the late 1980s, the FCC ordered a large reserve deficiency amortization for the local exchange carriers for which it prescribed depreciation rates. This occurred even though the FCC had made some positive changes to its depreciation practices in the 1980s, such as allowing Equal Life Group methodology and the Remaining Life Depreciation Rate formula. Results of these changes did not indicate, as Mr. Majoros states in his testimony on page 6, "that the FCC's projection life estimates have been forward-looking and unbiased." Rather it shows that asset lives had been so inappropriately long that a large reserve deficiency existed despite changes in depreciation methodology.

Q. WHAT SPECIFIC ACTION HAS BELLSOUTH TAKEN THAT INDICATES THAT THE FCC PRESCRIBED LIVES HAVE BEEN INADEQUATE?

A. The most dramatic indication of the inadequacy of prescribed asset lives was demonstrated by the action taken when BellSouth discontinued use of the regulated Financial Accounting Standard (FAS) 71 in favor of the nonregulated FAS 101 in 1995. The Company's obligation to show the true value of its assets caused BellSouth to write up the depreciation reserve by approximately $4.9B for financial reporting purposes. Much of this increase was due to inappropriately long asset lives as prescribed by the FCC.

Q. MR. MAJOROS REFERENCES A STREAMLINED DEPRECIATION RATE-SETTING PROCESS DEVELOPED BY THE FCC. HE GOES SO FAR AS TO SAY THAT THE STREAMLINED APPROACH ASSURES THE DEVELOPMENT OF FORWARD-LOOKING LIVES. WHAT EXACTLY IS THIS STREAMLINED PROCESS AND WHAT IS ITS PURPOSE?

A. As part of CC Docket No. 92-296, the FCC issued a Notice of Proposed Rulemaking in which it stated that it was continuing its "efforts to reduce unnecessary regulatory burdens and their associated costs by undertaking simplification of our depreciation prescription process." The FCC's approach to simplification was to set up ranges of projection life and future net salvage estimates for most of the asset accounts. Under this procedure, if a company meeting certain predetermined criteria proposes to use projection lives or future net salvage estimates from within these ranges, the company need not submit the

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

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

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

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

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

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

Two other characteristics of fiber which are closely related are reliability and maintainability. Customer needs for reliability, which are increasing, can be met through the use of fiber in our network. Maintenance expense, which the Company is always seeking ways to reduce, can also be improved through the use of fiber. Both factors add to the economic attractiveness of fiber for a narrowband, voice grade network.

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

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

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

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

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

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

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

BY MR. LACKEY:

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

A Yes, there were.

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

A No, I do not.

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

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

BY MR. LACKEY:

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

A Yes, I do.

Q Would you please give it?

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

The purpose of my testimony is to respond to the

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

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

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

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

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

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

COMMISSIONER DEASON: Mr. Self.

MR. SELF: No questions.

CHAIRMAN JOHNSON: Mr. Hatch.

MR. HATCH: Just a couple.

CROSS EXAMINATION

BY MR. HATCH:

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

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

A Good afternoon.

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

A Yes, sir.

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

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

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

A 1/1/97.

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

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

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

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

BY MR. HATCH:

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

A Yes, I am.

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

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

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

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

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

A Yes.

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

A Okay.

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

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

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

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

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

A It does say that, yes.

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

A Yes, sir.

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

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

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

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

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

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

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

COMMISSIONER DEASON: Mr. Bond.

MR. BOND: No questions. Thank you.

COMMISSIONER DEASON: Staff.

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

COMMISSIONER DEASON: Exhibit number 24.

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

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

MR. HATCH: I understand.

COMMISSIONER DEASON: Okay?

MR. HATCH: Got you.

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

MR. HATCH: 25, thank you, sir.

CROSS EXAMINATION

BY MR. PELLEGRINI:

Q Good afternoon, Mr. Cunningham.

A Good afternoon.

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

A Yes, sir.

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

A Yes, sir.

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

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

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

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

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

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

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

Q But how is the separation determined?

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

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

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

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

exhibit 5.

A Yes, sir.

Q Are you there?

A Yes, sir, I am.

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

A Yes, sir.

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

A Yes, sir.

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

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

Q Is this properly designated FCC 43-07?

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

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

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

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

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

COMMISSIONER DEASON: Okay. Late-filed exhibit 26.

BY MR. PELLEGRINI:

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

A Yes, sir.

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

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

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

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

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

Q Specifically with respect to metallic cable accounts --

A Yes, sir.

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

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

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

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

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

A I would accept that.

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

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

that is what you mean.

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

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

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

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

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

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

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

A I believe we did.

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

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

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

A Yes, sir.

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

A Yes.

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

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

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

A That's correct.

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

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

Q And that's reflected in the study?

A Yes, sir.

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

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

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

A That's correct.

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

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

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

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

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

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

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

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

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

was in the early 80s.

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

A I don't have that information with me.

Q Would you hazard a guess?

A I really wouldn't, no.

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

A Specifically what would you want?

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

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

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

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

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

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

Q Yes.

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

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

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

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

A Okay.

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

COMMISSIONER DEASON: No, 27.

MR. PELLEGRINI: 27.

COMMISSIONER DEASON: Could I have a short title please?

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

BY MR. PELLEGRINI:

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

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

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

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

Q Would you know --

A I would accept it subject to check.

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

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

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

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

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

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

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

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

Q Yes.

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

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

A Well, that's for interoffice.

Q Yes.

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

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

A For interoffice --

Q And for distribution.

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

Q All right.

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

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

A James R. Bright?

Q Yes.

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

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

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

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

A Okay.

(DOCUMENT TENDERED TO WITNESS CUNNINGHAM)

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

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

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

Q Do you have that page 90?

A I do, yes, sir.

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

A Yes, I do.

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

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

Q Well --

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

Q Well, all right.

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

agree that what he says is what he says.

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

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

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

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

Q Let me be sure I understand what you --

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

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

predictions in your opinion?

A Well, they can be.

Q They can be?

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

Q Okay.

MR. PELLEGRINI: Thank you, Mr. Cunningham.

WITNESS CUNNINGHAM: You're welcome.

COMMISSIONER DEASON: Commissioners?

(No response)

COMMISSIONER DEASON: Redirect?

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

COMMISSIONER DEASON: Without objection exhibit 23 is admitted.

MR. PELLEGRINI: And staff moves exhibit 24.

COMMISSIONER DEASON: Without objection exhibit 24 is admitted.

MR. HATCH: Move exhibit 25.

COMMISSIONER DEASON: Without objection exhibit 25 is admitted.

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

WITNESS CUNNINGHAM: Thank you, sir.

MR. LACKEY: Mr. Chairman, our next witness is Doctor Billingsley whose testimony has been stipulated, so

I think what I need to do is move into the record at this point the stipulated testimony and his exhibits, if that would be appropriate.

COMMISSIONER DEASON: That will be appropriate. We need to identify his exhibits.

MR. LACKEY: Yes. Doctor Billingsley had 41 pages of rebuttal testimony accompanied by 11 exhibits, RSB-1 through 11. I think we would probably want to mark the testimony and the exhibits as a composite exhibit in its entirety; is that the --

COMMISSIONER DEASON: Well, I would think that we would insert the testimony as though read.

MR. LACKEY: All right. In that case I'd ask that the 41 pages of stipulated testimony be included in the record as if given orally from the stand and that the 11 exhibits be marked as composite exhibit 26 (sic).

COMMISSIONER DEASON: Okay. Without objection the prefiled testimony of Doctor Billingsley will be inserted into the record, and the prefiled exhibits RSB-1 through 11 will be identified as composite exhibit 28 and likewise will be admitted into the record without objection.

MR. PELLEGRINI: Commissioner Deason, staff would ask that RSB-12 be marked for identification at this time. It consists of Doctor Billingsley's January 8th, 1998

deposition transcript, deposition and late-filed deposition exhibits numbers -- number 1, which is too voluminous to have been copied, as well as 2 and 3, as well as updates to exhibits are RSB-6, RSB-8, and RSB-9.

COMMISSIONER DEASON: What you have described as RSB-12 will be identified as exhibit number 29 and without objection will be admitted into the record.

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.

Q. Have you prepared exhibits to accompany this testimony?

A. Yes, my testimony and 11 exhibits were prepared by me or under my direction and supervision.

II. PURPOSE OF TESTIMONY AND SUMMARY OF CONCLUSIONS

A. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. My purpose is to provide the Florida Public Service Commission (Commission) with a rebuttal of Professor Bradford Cornell's direct testimony on behalf of AT&T Communications of the Southern States, MCI Telecommunications Company, and MCI Metro Access Transmission Services, Inc. wherein he erroneously estimates the cost of equity capital for BST to be only 10.99% to 11.05% and BST's overall average cost of capital to be only 9.43%. I also determine the reasonableness of BellSouth Telecommunications' (BST's) use of an overall cost of capital of 11.25% in its cost studies. In so doing I estimate BST's forward-looking cost of capital for providing interconnection and unbundled network services.

B. SUMMARY OF REBUTTAL OF PROFESSOR BRADFORD CORNELL'S TESTIMONY

Q. What issues does your rebuttal focus on in Professor Cornell's direct testimony concerning BST's capital costs?

A. My rebuttal explains the errors and inconsistencies in Professor Cornell's DCF analysis of BST's cost of equity capital, his cost of debt estimation, and his misunderstanding of the nature and significance of the riskiness of investing in the telecommunications industry. His errors in estimating BST's cost of equity using the discounted cash flow (DCF) approach include: 1) use of a highly subjective three-stage model that is not representative of the investor's perspective; 2) use of growth rate forecasts that do not reflect consensus investment community expectations; 3) inappropriate reliance on BellSouth, the other regional bell holding companies (RBHCs), and selected independent telephone companies as comparable in risk to BST; 4) failure to adjust for flotation costs, and 5) failure to use the appropriate form of the DCF model that recognizes the quarterly payment of dividends.

My rebuttal shows that Professor Cornell's cost of debt analysis is flawed by its use of shorter-term rather than long-term debt costs. He also incorrectly includes debt in his analysis that was not issued to finance long-term telephone network assets. Finally, I show that Professor Cornell's views on the risks that are relevant to assessing capital costs in the telecommunications industry are confused and inconsistent. In the same vein, I show that his argument that the

business of leasing network elements is of relatively low risk is unsupported.

C. SUMMARY OF BST COST OF CAPITAL ANALYSIS

Q. Please describe the approaches that you use to determine BST's cost of equity capital and summarize your conclusions.

A. My analysis uses objective market data to determine BST's cost of equity capital from three distinct but complementary approaches. Since BST is a subsidiary of BellSouth Corporation, it does not have equity trading in the market. Thus, there is no direct market evidence on BST's cost of equity capital. It is consequently necessary to infer BST's cost of equity using available market data.

In the first approach I apply the DCF model to a group of firms identified as comparable in risk to BST. An average cost of equity capital is calculated by applying the DCF model to this group of comparable firms in order to provide an objective, market-determined cost of equity capital for BST. In the second approach, I use the capital asset pricing model (CAPM) to estimate BST's cost of equity capital for the group of publicly traded firms that are comparable in risk to BST. Finally, I conduct a risk premium analysis.

The cost of equity for BST is in the range of 15.11% to 15.20% using the comparable firm group DCF model approach. The CAPM approach indicates that BST's cost of equity capital is in the range of 14.72% to 14.87%. The risk premium approach indicates that the expected return on the overall equity market, as measured by the Standard and Poor's Composite 500 Index (S&P 500), is currently between 14.10% and 15.09%. Billingsley Exhibit No. RSB-1 explains how my analytical approaches are consistent with well-accepted regulatory and economic standards in cost of capital analysis. From these analyses, I conclude that the current cost of equity capital for BST is within the range of 14.72% to 15.20%.

Q. Please describe how you evaluate the reasonableness of BST's use of an overall cost of capital of 11.25% in its cost studies and summarize your findings.

A. Two tests of the reasonableness of BST's use of an 11.25% overall cost of capital are performed. The first uses BST's actual capital structure of 58.84% equity and 41.16% debt and its embedded cost of debt of 6.46%. An overall cost of capital of 11.25% using these parameters implies a cost of equity of 14.60%. The second test uses an equity ratio for BST of 60%, an associated debt ratio of 40%, and a current forward-looking cost of debt of 7.25%. An overall cost of capital of 11.25% implies a cost of equity of 13.92%. Both of these tests logically imply costs of equity that are lower than my estimated range

for BST's cost of equity capital of 14.72% to 15.20%. Therefore, BST's use of an 11.25% cost of capital in its cost studies is reasonable and conservative.

III. CURRENT STATUS OF COMPETITION IN THE TELECOMMUNICATIONS INDUSTRY

Q. What is the current status of competition in the telecommunications industry?

A. Competition in the telecommunications industry has increased dramatically in recent years. The sources of that increased competition include a greater threat of new entrants in the industry, a significant increase in the number and strength of existing competitors, a greater threat of substitute telecommunications products and services, more intense rivalry among existing competitors in the industry, and enhanced regulatory risk at both the state and the federal levels. Thus, both actual and potential competition have increased and the business risk of the industry has consequently increased. What investors believe about the future competition that the local exchange companies (LECs) will face is critical to cost of capital analysis. Investors' expectations of competition and its impact on risk is what is reflected in the Company's cost of capital.

Q. Specifically how has competition increased in recent years?

A. The interLATA, intraLATA, and local exchange markets have become much more competitive in recent years. Large businesses have been able to bypass the LECs' private line and access services using fiber optic networks, microwave transmission and very small aperture terminals (VSAT). The growth of competitive access providers (CAPs) such as Metropolitan Fiber Systems (MFS) and the Teleport Communications Group (TCG) has allowed large business customers in major cities to connect with long distance carriers (interexchange carriers or IXCs) without paying an access charge to a LEC such as BST.

It is clear that investors believe that major CAPs, IXCs, and cable television (CATV) companies are positioning themselves to compete vigorously for customers in the local exchange market. LECs like BST face heightened potential competition that poses additional risk to their operations and their ability to recoup extensive infrastructure investments. Investors see such competition coming from wired, wireless, and internet sources. Consider the representative recent observations on competition in Business Week ("Zooming Down The I-Way," Andy Reinhardt, Peter Elstrom, and Paul Judge, April 7, 1997, pp. 76-87):

[O]utside the boardrooms of telecom's giants, innovation is sweeping the wired and wireless world-bubbling up from the bottom. Hundreds of

alternative carriers and nimble startups are leaping head-first into the newly deregulated environment (p. 76).

The Internet is also giving rise to new products that could undermine traditional phone services. The one that sends shivers down the spines of telecom execs: software that lets you place phone calls over the net (p. 77);

The Internet is not the only threat to the telephone companies. A slew of startups are finding ways to eat into traditional telephone usage...PCs are becoming telephone command centers for video conferencing and unified messaging that combines e-mail, fax, and voicemail (p. 78).

The provision of wireless services such as personal communication systems by CAPs, CATV operators, and electric utilities also enhances the ability of customers to completely bypass local exchange services. Wireless services are becoming a viable consumer alternative to LEC services. These alternatives will only increase the competitiveness of that environment and thus magnify the business risk of LEC operations. This growing risk is increasing BST's cost of raising capital.

Q. Has the business risk of the telecommunications industry increased in recent years and is it expected to continue increasing in the future,

especially due to the passage of and uncertainties in implementing the Telecommunications Act of 1996?

A. Yes. The recent passage of the Telecommunications Act and responses to its passage dramatically indicate that business risk has been increasing and will increase even more in the future. The Act, which was signed into law by President Clinton on February 8, 1996, essentially allows local, long-distance, and cable companies to get into one another's businesses. Thus, the traditional barriers that separated these industry sectors are now officially being dropped. While market pressures have been eroding these limits in recent years, the various competitors are now moving forward rapidly. However, open competition brings a significant increase in risk.

The passage of the Telecommunications Act is apparently viewed as risky by investors, competing telecommunications firms, and by the Federal Communications Commission (FCC). Indeed, the FCC has recently observed:

... [I]ncumbent LECs face potential competition as a result of the act that they did not face previously. This potential competition could increase the risks facing the incumbent LECs, and thus increase their cost of capital, thus mitigating, to some extent, the factors suggesting that incumbent LECs' cost of capital has decreased since 1990 (Notice of Proposed Rule Making, Third Report and Order, And Notice of Inquiry, FCC 96-488, December 24, 1996, p. 101, paragraph 228).

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

assumes a second stage of 15 years during which the growth rate falls from the initial IBES growth rate to a projected growth rate for the overall U.S. economy by the end of the 20th year. After that time, Professor Cornell assumes that the growth rate remains at that projected rate for the economy indefinitely (Direct Testimony, p. 16, line 21 - p. 22, line 16).

While his analysis is logical, it unfortunately misses the mark in the current proceeding. The goal here is to estimate BST's cost of meeting its equity investors' return requirements in market terms. Thus, the analysis should reflect the investment analysis process and expectations of investors. Professor Cornell's analysis of BST's cost of equity departs from investors' perspective by substituting his expectations for those of investors for two out of the three stages in his analysis.

Q. How relevant is Professor Cornell's criticism of the constant growth DCF model on the basis that telecommunications firms' projected growth rates are not sustainable "into perpetuity?"

A. While Professor Cornell's criticism of the constant growth version of the DCF model is theoretically correct, it is practically irrelevant and misguided in the current context. He observes:

...modern telephone companies are composed of a variety of businesses, some of which are expected to grow at rates of 30 percent

or more in the short run. Such high growth rates are clearly not sustainable into perpetuity, so that the simple constant growth model cannot be applied...(Direct Testimony, p. 16, lines 8-12).

Professor Cornell's unsupported apparent concern is that "telephone companies are composed of a variety of businesses" that cannot be captured by a single growth rate. However, investors routinely price securities for firms composed of numerous business units by evaluating the net contribution of each unit to the overall growth of the firm.

Professor Cornell's rejection of the constant growth DCF model because he assumes that telephone company growth rates are "not sustainable into perpetuity" does not adequately relate valuation theory to practice in light of realistic investor concerns. While the constant growth DCF model does theoretically assume a constant growth rate for perpetuity, there is no evidence that investors practically consider perpetuity in their valuation decisions. Simply put, the present value of the cash flows projected from an investment beyond the foreseeable future is so small that it has little practical effect on investors' decisions. While it is very difficult to forecast the distant future, it is also not practically relevant to attempt to do so in a present value sense.

Professor Cornell's theoretical criticism of the constant growth DCF model is irrelevant. His decision to replace it with a three-stage DCF model only introduces a more subjective, complicated approach that

substitutes his growth forecasts for those of the investors who are actually putting money into stocks.

Q. What support does Professor Cornell offer for limiting the long-term growth of telecommunications firms to the growth rate of the U.S. economy?

A. He offers only his opinion that "a perpetual growth rate that exceeded the growth rate of the economy would illogically imply that eventually the whole economy would be comprised of nothing but telephone companies" (Direct Testimony, p. 17, lines 9-11). Professor Cornell's observation has no practical relevance in assessing the usefulness of the constant growth DCF model in the current proceeding. Investors could easily believe that telecommunications firms' consensus growth rate projections are sustainable beyond the next five years to the foreseeable future but less than forever, which is not a realistic emphasis of investors in their valuation efforts anyway.

Q. Would you provide an example that shows how unrealistic Professor Cornell's constraint on long-term growth rate is?

A. Yes. Zacks' and IBES' current (October 1997) consensus five-year growth rate forecasts for MCI are 11.80% and 11.61%, respectively. Professor Cornell would presumably argue that these rates are

unsustainable beyond five years and that the use of this rate for a longer period of time would imply that MCI would dominate the U.S. economy. However, according to Value Line, MCI's average earnings growth rate of earnings over the past ten years has been 28%, which is more than twice either of the above consensus growth rates.

From a practical perspective, I believe that most investors would relate these projections to the past performance of MCI and thereby use them to assess MCI's foreseeable future. It does not seem reasonable that such investors would be tempted to conclude that "eventually the whole economy would be comprised of nothing but telephone companies" or MCI in particular. Further, Professor Cornell offers no evidence to support his use of a second stage that is 15 years long. Why not 10, 25, or 30 years? His three-stage model is unnecessarily subjective, unrepresentative of investors' growth rate expectations, and contrary to investors' realistic concerns. While Professor Cornell's model is admittedly inventive, it is not informative concerning BST's realistic, market-based capital costs in the state of Florida.

Q. In attempting to justify his use of a three-stage rather than a constant growth version of the DCF model, Professor Cornell cites a book by Aswath Damodaran as a key reference (see pages 16-17 and footnote 4 of his testimony). Is Professor Cornell's decision to use a three-stage version of the model consistent with Damodaran's stated conditions under which the model is appropriate?

A. No, Professor Cornell's use of the three-stage model is inconsistent with the circumstances described for the best use of the model. Damodaran indicates that "...this may be the more appropriate model to use for a firm whose earnings are growing at a very high rates..." where "...growth rates over would 25% qualify as very high..." (Damodaran On Valuation, John Wiley & Sons, 1994, p. 119).

B. Cornell Exhibit BC-4 shows that none of the companies to which Professor Cornell applies his three-stage DCF model have growth rates "over 25%." Thus, his decision to use this form of the model is inconsistent with the conditions for its appropriate use described in the Damodaran reference cited in his testimony.

Q. Does this reference cited by Professor Cornell discuss any limitations in using the three-stage version of the DCF model?

A. Yes. In comparing the three-stage model to the other versions of the DCF model, Damodaran observes that:

> ... it requires a much larger number of inputs: year-specific payout ratios, growth rates, and betas. For firms in which there is substantial noise in the estimation process, the errors in these inputs can overwhelm any benefits that accrue from the additional flexibility in the model (Damodaran on Valuation, John Wiley & Sons, 1994, pp. 118 - 119).

Damodaran's concern over the effect of "substantial noise" is particularly relevant to Professor Cornell's analysis. He applies a three-stage DCF model to the RBHCs, GTE, and selected independent telephone holding companies. The dramatic effects of deregulation, increasing competition, and the implementation of the Telecommunications Act of 1996 certainly introduce much noise into the estimation of such firms' equity costs. Thus, Professor Cornell's DCF model is particularly inappropriate for estimating BST's cost of equity. My methodological approach is more reliable because it uses a group of firms that are demonstrably comparable in risk to BST that are not affected by such "noise" and my approach does not require the highly subjective inputs that Professor Cornell's three-stage model does.

2. INCORRECT RELIANCE ON BELLSOUTH, THE OTHER RBHCS, AND SELECTED INDEPENDENT TELEPHONE COMPANIES AS COMPARABLE IN RISK TO BST

Q. What justification does Professor Cornell give for applying the DCF and the CAPM approaches to BellSouth, the other RBHCs, and selected independent telephone companies as firms comparable in risk to BST?

A. Professor Cornell offers no justification for the use of these firms and only observes in passing that they are "selected as likely comparables

to BellSouth" (Direct Testimony, p. 19, lines 8-10) and that they "...were derived from the list of telephone operating companies in Standard and Poor's Industry Survey" (Direct Testimony, p. 11, lines 8-9). These supposedly comparable firms are listed in B. Cornell Exhibit BC-2. Thus, Professor Cornell assumes that BST is comparable in risk to BellSouth, the other RBHCs, and selected independent telephone companies rather than proves comparability. My analysis shows that the RBHCs are not, as a group, comparable in risk to BST and that the independent telephone companies are not as well.

3. FAILURE TO ADJUST FOR FLOTATION COSTS

Q. Do you agree with Professor Cornell's decision to ignore the impact of flotation costs in estimating BST's cost of equity capital?

A. No, I do not agree with his decision. Professor Cornell attempts to justify ignoring flotation costs because the price of BellSouth's stock "...has accounted for flotation costs already" (Direct Testimony, p. 49, lines 12-14). While his argument implicitly assumes that flotation costs materially affect equity costs, he presents no evidence that the market has made such an adjustment. Professor Cornell's unsupported decision not to adjust for flotation costs biases his cost of equity estimates downward.

4. FAILURE TO ADJUST FOR QUARTERLY DIVIDEND PAYMENTS

Q. Is Professor Cornell's use of the annual form of the DCF model consistent with the investor's perspective on valuing equity securities?

A. No, it is not. Professor Cornell uses the annual form of the DCF model even though all of the members of his sample of supposedly comparable firms pay dividends on a quarterly basis. The annual form of the DCF model does not accurately portray the investor's perspective, and consequently, significantly underestimates BST's cost of equity capital.

B. ERRORS IN CAPM COST OF EQUITY ANALYSIS

Q. Is Professor Cornell's estimate of the equity market risk premium using the three-stage DCF model economically meaningful?

A. No, it is not economically meaningful. Professor Cornell uses his flawed three-stage DCF model to estimate an expected return on the overall equity market, as measured using selected members of the S&P 500 index, of 11.26% (see B. Cornell Exhibit BC-6).

Q. What effect does Professor Cornell's exclusion of all members of the S&P 500 not paying a dividend yield of at least 3% (p. 31, lines 13-15

of Cornell's testimony) have on his estimated market return of only 11.36%?

A. Professor Cornell's arbitrary screening criterion biases downward his estimated expected return on the market and thereby causes all of his CAPM calculations to underestimate equity capital costs. This partially explains why his analysis underestimates BST's capital costs.

Consider the type of firms that pay a dividend yield of less than 3%. Such firms typically pay lower dividend yields because they reinvest above-average amounts in their businesses. Thus, lower dividend yields are associated with higher growth companies that have higher equity capital costs. Professor Cornell's screening criterion consequently excludes those members of the S&P 500 with the highest capital costs and thereby underestimates the expected returns composing the market proxy. His CAPM-based equity costs that use this biased measure of equity market expectations clearly produce unrealistically low capital cost estimates.

C. ERRORS IN COST OF DEBT ESTIMATION

Q. What mistakes does Professor Cornell make in estimating BST's cost of debt?

A. Professor Cornell fails to measure the cost of debt that is relevant to determining the forward-looking cost of BST providing unbundled network services to retail providers of local telephone service. BST's network assets that provide such services are long-lived and would traditionally be financed using long-term debt. In contrast, Professor Cornell has relied on the yields on BST debt that are maturing within the next few years rather than on appropriate long-term debt costs.

B. Cornell Exhibit BC-3 shows that the yields to maturity on selected BST debt issues generally increase with the maturity dates. Thus, it is obvious that Professor Cornell's use of shorter-term debt costs explains why his cost of debt estimates significantly underestimates BST's forward-looking cost of debt. Further, he considers debt issues that are clearly irrelevant to assessing the cost of financing long-lived network assets. My analysis of the relationship between the yields in long-term Aaa-rated public utility debt and long-term Treasury bonds indicates that a more representative, forward-looking cost of debt for BST is 7.25%.

Q. Would you elaborate on which debt issues Professor Cornell incorrectly includes in his analysis that are irrelevant to assessing BST's forward-looking cost of financing long-lived network assets?

A. Yes. B. Cornell Exhibit BC-3 incorrectly includes debt issued by BellSouth Capital Funding, which was not issued to finance BST's

network assets. Because the yields to maturity on these issues are as much as 100 basis points lower than Professor Cornell's weighted-average estimate of BST's cost of debt of only 7.06%, this mistake in part explains why his analysis underestimates BST's forward-looking debt capital costs.

D. MISUNDERSTANDING OF THE NATURE AND SIGNIFICANCE OF THE RISKINESS OF INVESTING IN THE TELECOMMUNICATIONS INDUSTRY

Q. Do you agree with Professor Cornell's observations about the supposedly low relative risk of "leasing" local exchange telephone network elements to retail providers?

A. No, I do not. Professor Cornell only offers his unsupported opinion that:

> This leasing of network facilities... should have relatively low risk compared to many of the risky business endeavors being pursued by the telephone holding companies (Direct Testimony, p. 44, lines 3-6).

However, he acknowledges later in his testimony that "...there remains some risk that consumers, particularly business users, will bypass the network as other alternatives become available" (Direct Testimony, p. 46, lines 3-5). Professor Cornell consequently recognizes the significant risk of consumers and businesses bypassing BST's network but only offers his unsubstantiated opinion that this is a "relatively low

risk" endeavor. Once again Professor Cornell has substituted his opinion for that of investors in appraising capital costs.

Q. Why is leasing long-term telephone network assets particularly risky?

A. The leasing of long-term assets can be quite risky, especially when leasing rates are regulated. In order for BST to earn a reasonable return on its network assets, it must obtain revenues over the "leasing" period that cover its costs and an appropriate risk-adjusted profit. However, BST is partially dependent on regulators rather than solely on the market to obtain such a return. Professor Cornell obviously recognizes that regulators' decisions may well not be appealing to shareholders' when he notes:

There is still the risk of regulation itself. The rate of return a network is allowed to earn depends on the outcome proceedings such as this and remains somewhat uncertain (Direct Testimony, p. 45, lines 20-22).

Because such uncertainty implies risk to the investor, Professor Cornell acknowledges that there is substantial risk in the leasing of BST's network elements. This risk implies higher required rates of return and capital costs. However, Professor Cornell's comments on the supposedly low relative risk of network leasing are inconsistent with his recognition of high regulatory risk and the significant risk of consumer and business bypass of BST's local service network.

Q. How does technological change affect the risk of investing in long-term telephone network assets?

A. Network facilities reflect a given technology that often becomes obsolete quickly. BST must consistently invest to keep its network elements up to date and should have the flexibility to establish leasing rates accordingly. However, as noted above, it does not have this ability under current regulations. This risk of technological obsolescence makes leasing network elements risky. Thus, such obsolescence imposes costs and therefore risks. The leasing of BST's network assets poses significant risks to its investors that put upward pressure on the cost of equity.

Q. Do you agree with Professor Cornell's views on the risks that are reflected in capital costs?

A. No. Professor Cornell's views are steeped more in pristine theory than the investor's practical reality and are presented inconsistently in his testimony. For example, he emphasizes that:

> ...the risk that a company will lose customers to competition - such as a network leasing company or a local exchange company - is a diversifiable risk which does not increase the risk premium according to capital market theory" (Direct Testimony, p. 25, lines 1-3).

However, in discussing what he presumably considers to be the relevant risks associated with the business of leasing unbundled

network elements he notes that "...there remains some risk that consumers, particularly business users, will bypass the network as other alternatives become available" (Direct Testimony, p. 46, line 3 - 5).

On the one hand Professor Cornell argues that the risk of losing customers to competition should not affect capital costs and, on the other hand, he inconsistently asserts that the risk of bypass, which is just one way of losing customers, is relevant and thus affects capital costs.

Professor Cornell also inconsistently argues that:

In this case, the company in question is not a diversified telephone holding company, but a company in the more specialized (and less risky) business of providing network elements (Direct Testimony, p. 51, lines 14-16).

This observation is logically flawed and inconsistent. If we accept Professor Cornell's assumption that diversification reduces relevant or priced risk, then the fact that the " the company in question is not a diversified telephone holding company" should imply that is it riskier, not "less risky" than a diversified holding company. Professor Cornell's positions on relevant risk are confusing and inconsistent.

Professor Cornell's view that greater risk of competition is not compensated in the cost of capital is not practically relevant. While this

is strictly true in the pristine theoretical world of the CAPM, the practical realities of investing suggest otherwise. Indeed, as noted above, the FCC has recently noted that "...potential competition could increase the risks facing the incumbent LECs, and thus increase their cost of capital" (Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry, FCC 96-488, December 24, 1996, page 101, paragraph 228). Consequently, in contrast to Professor Cornell, the FCC views the enhanced risk posed by competition as a practical, significant influence on capital costs. While the CAPM provides useful insights into capital costs, it must be supplemented with other methods that recognize the full array of practical risks facing investors. Professor Cornell's expressed views on risk are incomplete and logically inconsistent.

E. SUMMARY OF REBUTTAL OF PROFESSOR CORNELL'S COST OF CAPITAL ESTIMATES FOR BST

Q. Please summarize your evaluation of Professor Cornell's cost of equity estimates for BST.

A. Professor Cornell incorrectly estimates BST's cost of equity to be between 10.99% and 11.05% due to numerous errors in his applications of the DCF and CAPM approaches. His DCF model is flawed due to: 1) failure of his subjective three-stage model to reflect investors' perspective; 2) incorrect reliance on BellSouth, the other

RBHCs, and selected independent telephone companies as comparable in risk to BST; 3) failure to adjust for flotation costs; 4) failure to adjust for quarterly dividend payments, and 5) unrealistic underestimation of the risks of investing in telephone network assets in the new, highly competitive environment. Professor Cornell's CAPM cost of equity analysis for BST is also unreliable because it is based on his flawed three-stage DCF model.

Q. Please summarize your assessment of Professor Cornell's cost of debt estimate for BST.

A. Professor Cornell incorrectly estimates BST's cost of debt as only 7.06%. This underestimates BST's cost of debt because he relies on shorter-term debt issue costs that are not representative of the costs associated with financing long-term telephone network assets. Further, he incorrectly includes debt issues in his analysis that were not issued to telephone network assets. My testimony shows, however, that under current capital market conditions BST's forward-looking cost of debt is about 7.25%.

V. DCF MODEL ESTIMATES OF BST'S COST OF EQUITY CAPITAL

A. FORM OF THE DCF MODEL USED IN THE ANALYSIS

Q. What form of the DCF model do you use to estimate BST's cost of equity capital?

A. I use the constant growth form of the DCF model that assumes an indefinite or infinite holding period. Since most U.S. firms pay dividends quarterly, I use the quarterly form of the DCF model under the realistic assumption that such dividends are changed by firms once a year, on average in the middle of the year. Specifically, the cost of equity K is calculated as:

$$K = [D^q_0(1 + G) / P_{mkt}] + G = [D^q_1 / P_{mkt}] + G,$$

where G is the most recent average five-year earnings per share growth rate projected by analysts, as reported by either Zacks Investment Research Inc. (Zacks) or by the IBES, and P_{mkt} is the average of the three most recent months (August 1997 to October 1997) of high and low prices for the equity. D_0^q and D_1^q reflect the most recent annual and the anticipated next year amount of quarterly dividends, respectively. D_1^q is calculated as:

$$D_1^q = d_1 (1 + K)^{.75} + d_2 (1 + K)^{.5} + d_3 (1 + K)^{.25} + d_4,$$

where d_1 and d_2 are the quarterly dividends paid prior to the assumed yearly change in dividends and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a firm.

Thus, dividend D_1^q captures the quarterly payment of dividends that grow at rate G.

In order to reflect the significant effect of flotation costs on the cost of equity, I directly reduce the market price P_{mkt} used in my analysis by a conservative 5 percent. Billingsley Exhibit No. RSB-2 elaborates on the nature and applicability of the DCF model in estimating the cost of capital in regulatory proceedings. It also discusses the importance of adjusting for both the payment of quarterly dividends and for flotation costs.

B. SPECIFIC APPLICATION OF THE DCF MODEL TO ESTIMATE BST'S COST OF EQUITY

Q. Specifically how do you apply the above DCF model to BST, since it does not have equity trading in the marketplace?

A. Since BST is part of its parent holding company, BellSouth Corporation, it does not have equity trading in the market. It is consequently necessary to infer BST's cost of equity by applying the DCF model to a group of firms identified as comparable in risk to the company.

Q. What method is used to identify firms of comparable risk to BST?

A. I use a cluster analysis model to identify firms that are comparable in risk to BST. Two dimensions of risk are used to compare firms. First, the financial risk of firms is measured and used as a basis of comparison. Second, business or operating risk is compared among firms. These dimensions are, in effect, averaged in a manner that generates a comprehensive risk profile. Thus, firms are not just compared on a characteristic-by-characteristic basis, they are compared in light of those chosen characteristics and the relationship among those characteristics.

A summary measure expresses the distance between each firm and BST. A group of the 20 firms that are closest to BST in terms of this summary distance measure is chosen for analysis. A more detailed discussion of this cluster analysis is contained in Billingsley Exhibit No. RSB-4.

Q. How do the individual measures of riskiness relate to the comparability of the group of firms in the cluster in terms of overall riskiness?

A. It may be tempting to single out one company in my cluster of comparable firms and incorrectly attempt to compare its various risk measures individually to those of BST. However, none of the individual companies identified in the cluster are precisely like BST in every respect. The firms are alternative investment opportunities that, in the aggregate, have overall risk similar to that of BST.

In summary, none of the individual firms in my cluster are precisely like BST in terms of each individual measure of risk. The cluster should be viewed as a portfolio of firms that, as a group, are comparable in risk to BST.

C. DCF MODEL COST OF EQUITY ESTIMATES FOR BST

Q. What cost of equity capital do you estimate for BST using the DCF model?

A. Billingsley Exhibit No. RSB-3 lists the portfolio of 20 firms that are comparable in risk to BST and reports the average cost of equity for the portfolio using both IBES and Zacks growth rate forecasts. The evidence indicates that the cost of equity for BST is in the range of 15.11% to 15.20%.

VI. CAPITAL ASSET PRICING MODEL ANALYSIS OF BST'S COST OF EQUITY CAPITAL

Q. What form of the CAPM do you use to estimate BST's cost of equity capital?

A. I use the common form of the model, which calculates the risk-adjusted rate of return K as:

$$K = R_f + B [R_m - R_f],$$

where R_f is the expected return on a risk-free security like a U.S. Treasury bond B is the expected beta or systematic risk of the equity security, and R_m is the expected return on a broad index of equity market performance like the S&P 500.

Q. How and where do you obtain the beta coefficient data needed to estimate BST's cost of equity capital using the CAPM?

A. Since BST is a subsidiary of BellSouth Corporation, it does not have its own equity trading in the market and therefore does not have the beta coefficient required by the CAPM. Thus, as discussed above in my DCF analysis, it is necessary to identify a group of firms comparable in risk to BST that do have traded equity and therefore measurable beta coefficients. Consequently, the beta coefficients for the group of firms used in my DCF analysis that are identified in Billingsley Exhibit No. RSB-3 are relied on to estimate the cost of equity for BST. Specifically, the average beta of 0.90 for the group of firms is used in the CAPM equation presented above.

The beta coefficients used in my CAPM analysis are the most recent prospective measures supplied by BARRA, a widely recognized provider of data and decision support systems for institutional investors.

Billingsley Exhibit No. RSB-5 elaborates on the nature and significance of using prospective rather than historical beta estimates.

Q. How do you estimate the risk-free rate of return needed in the CAPM equation?

A. In order to be consistent with the expectational emphasis of the CAPM, I use the 6.73% average expected yield implied by the prices of the treasury bond futures contracts quoted during October of 1997. The prices of these contracts reflect the market's consensus forecast of long-term, low-risk interest rates. Billingsley Exhibit No. RSB-6 describes the futures contracts used in the analysis in more detail and shows the calculations necessary to derive the implied expected future risk-free rate of return.

Q. How do you estimate the expected return on a broad index of equity market performance for use in the CAPM?

A. I use expectational data to estimate the return of the S&P 500 as my proxy for overall equity market performance. Billingsley Exhibit No. RSB-7 elaborates on how the DCF model is applied to estimate the expected return on the S&P 500 using both Zacks and IBES growth rate forecasts. The expected return during the most recent month (October 1997) for which data is available is used in the CAPM analysis.

Q. What cost of equity capital do you estimate for BST under the CAPM approach?

A. Summarizing the results of the above analysis, I use a risk-free rate of return of 6.73%, an average beta of 0.90 for firms comparable in risk to BST, and IBES and Zacks growth rate estimates that imply an expected return on the S&P 500 of 15.61% and 15.77%, respectively. These objective, market-determined data indicate that BST' s cost of equity capital is 14.72% using the IBES growth rate and 14.87% using the Zacks growth rate forecast.

VII. MARKET RISK PREMIUM ANALYSIS OF THE COST OF EQUITY CAPITAL

A. NATURE OF THE APPROACH

Q. What is the market risk premium approach?

A. The market risk premium approach quantifies the risk/return trade-off discussed in detail in Billingsley Exhibit No. RSB-1 on the economic standards used in cost of equity analysis. The equity market risk premium is defined as the difference between the return on a broad basket of equity securities (the "market") and the return on a low-risk or "riskless" benchmark security or portfolio. The return on long-term U.S.

Treasury bonds and the return on utility bonds are common benchmarks.

B. SPECIFIC TYPE OF RISK PREMIUM ANALYSIS USED

Q. What specific form of the risk premium approach do you use?

A. Since the DCF model and the CAPM are prospective in nature, I also use a prospective approach to estimate the equity risk premium. I examine the relationship between expected returns on the S&P 500, as estimated by the DCF model using IBES growth rate forecasts, and the current market yields on public utility bonds from October of 1987 to October of 1997. Additional detail on the issues and the techniques associated with calculating the expected return on the market is presented in Billingsley Exhibit No. RSB-7.

Billingsley Exhibit No. RSB-8 shows that the average expected risk premium from 1987 to 1997 is 6.80%. The average yield on AAA-rated public utility bonds, which are used because this is the bond rating on BST's debt, over the most recent three months (August to October of 1997) is 7.30%. Thus, the average risk premium of 6.80% is added to the recent average public utility bond return of 7.30% to yield an expected cost of equity return on the S&P 500 of 14.10%.

C. ADJUSTMENT FOR POTENTIAL INSTABILITY IN THE

RISK PREMIUM

1. EVIDENCE ON THE INSTABILITY OF RISK PREMIUMS OVER TIME

Q. Can any instability in the risk premium be adjusted for so as to increase the confidence in its representativeness?

A. Yes. As elaborated on in Billingsley Exhibit No. RSB-7, studies of the historical behavior of the equity risk premium indicate that it varies considerably over time. Importantly, there is evidence that the equity risk premium is related inversely to the returns on low-risk benchmark debt securities. Thus, when interest rates decline, the equity risk premium widens and when interest rates rise, the equity risk premium narrows.

research on this phenomenon by Professors R. S. Harris and F.C. Marston, published in Financial Management in 1992, finds that the equity risk premium moves an average of -.651 of contemporaneous changes in the return on a benchmark low-risk security (index). In other words, if interest rates decline by 100 basis points, the equity risk premium will increase by an average of about 65 basis points.

2. SPECIFIC ADJUSTMENT FOR INSTABILITY IN THE EQUITY RISK PREMIUM

Q. What specific adjustment do you make to your risk premium analysis in light of the above evidence on the inverse relationship between the risk premium and the level of interest rates?

A. During the period of Harris and Marston's study, the average risk premium was 6.47% and the average yield on long-term Treasury bonds was 9.84%. As noted above, the equity market risk premium is expected to change an average of -.651 of changes in the level of long-term Treasury bond yields. Given that the current average yield on 30-year Treasury bonds is 6.33% (October 1997), the appropriate current risk premium is 8.76%. This is calculated by multiplying the 3.51% decline in rates since the time period of Harris and Marston's study by -.651 and adding back the average risk premium of 6.47% to the indicated change of 2.29%. This alternative approach consequently provides an expected return on the S&P 500 of 15.09%, which is the current average level of 30-year Treasury yields of 6.33% added to the adjusted risk premium of 8.76%.

Q. What is your conclusion with regard to BST' s cost of equity capital?

A. Based on my cost of equity analysis, I believe BST's cost of equity is in the range of 14.72% to 15.20%.

VIII. COST OF DEBT

Q. How do you determine BST's current cost of debt capital?

A. The cost of debt capital is estimated using current forward-looking market data.

Q. How can BST's forward-looking cost of debt be empirically estimated?

A. BST's forward-looking cost of debt can be estimated by adding the current yield to maturity on 30-year U.S. Treasury bonds to the average spread (difference) between the yields on such U.S. Treasury bonds and AAA-rated public utility bonds.

For the period from August to October of 1997, 30-year U.S. Treasury bonds yielded an average of 6.47%. As shown in Billingsley Exhibit RSB-9, the spread between AAA-rated public utility bonds and 30-year Treasury bonds averaged 0.79% from October of 1987 through October of 1997. Adding the average spread of 0.79% to the above current Treasury bond yield to maturity of 6.47% produces a yield of 7.26%, which does not reflect the material effect of flotation costs.

Q. What is your estimate of BST's forward-looking cost of debt?

A. Based on my analysis, I believe that BST's forward-looking cost of debt is 7.25%.

IX. OVERALL COST OF CAPITAL

Q. How did you test the reasonableness of BST's overall cost of capital of 11.25% in its cost studies?

A. I used two different sets of assumptions, one using BST's reported capital structure and embedded cost of debt of only 6.46% and the other using an equity ratio of 60% and a current forward-looking cost of debt of 7.25%.

Q. Please describe the first test of the reasonableness of BST's use of an 11.25% overall cost of capital.

A. As shown in Billingsley Exhibit RSB-10, as of September 30, 1997, BST's reported capital structure was 58.84% equity and 41.16% debt and the embedded cost of debt was 6.46%. An overall cost of capital of 11.25% implies a cost of equity of 14.60%.

Q. Please describe the second test of the reasonableness of BST's use of an 11.25% overall cost of capital.

A. Assuming the 60% equity and 40% debt capital structure that is used in BST's cost studies and a current forward-looking cost of debt of 7.25%, an 11.25% overall cost of capital implies a cost of equity of 13.92%.

Q. What conclusions do you draw concerning the reasonableness of BST's use of an 11.25% overall cost of capital in its cost studies?

A. Based on my cost of equity estimate for BST of 14.72% to 15.20% and the above tests, the use of an 11.25% overall cost of capital by BST is reasonable and conservative.

X. SUMMARY OF DETERMINATION OF REASONABLENESS OF BST'S 11.25% COST OF CAPITAL IN COST STUDIES

Q. Is it your opinion that it is reasonable for BST to use an overall cost of capital of 11.25% in its cost studies?

A. Yes. My analysis shows that BST's cost of equity is in the range of 14.72% and 15.20% and that its forward-looking cost of debt is at least 7.25%. Two tests are used to determine the reasonableness of BST's use of an overall cost of capital of 11.25% in its cost studies.

The first test uses BST's actual capital structure of 58.84% equity and 41.16% debt and a conservative embedded cost of debt of 6.46%. This set of assumptions implies that a 14.60% cost of equity is consistent with an overall cost of capital of 11.25%. The second test uses a capital structure of 60.00% equity and 40.00% debt and a current cost of debt of 7.25%. This set of assumptions implies that a

13.92% cost of equity is consistent with an overall cost of capital of 11.25%. Thus, the above tests and my estimated range for BST's cost of equity capital of 14.72% to 15.20% show that BST's use of an 11.25% cost of capital in its cost studies is reasonable and conservative.

Q. Are you aware that the Commission has not previously recognized the need to adjust cost of equity estimates for flotation costs or the quarterly payment of dividends?

A. Yes, I am aware of this. I have estimated BST's cost of equity with adjustments for both flotation costs and the quarterly payment of dividends because I believe that these factors affect equity costs. The economic rationales for these adjustments are elaborated in Billingsley Exhibit RSB-2.

Q. What are your revised estimates of BST's cost of equity assuming annual dividend payments and no flotation costs?

A. An annual DCF model that ignores flotation costs produces a cost of equity for BST of 15.02% using IBES growth rate forecasts and 15.16% using Zacks growth forecasts. The revised CAPM approach indicates that BST's cost of equity is in the range of 14.74% to 14.88%. Thus, under the assumption of annual compounding and no flotation costs

the revised estimate of BST's cost of equity is within the range of 14.74% to 15.16%.

Q. Do you believe that it would be reasonable for BST to use an overall cost of capital of 11.25% in its cost studies if flotation costs and quarterly compounding adjustments are omitted from your estimates?

A. Yes. The revised cost of equity capital estimates are in the range of 14.74% to 15.16%. The same two tests of reasonableness used above imply costs of equity that are lower than these revised cost of equity estimates. Thus, BST's use of an 11.25% cost of capital in its cost studies is conservative even in the absence of adjustments for flotation costs and the quarterly payment of dividends.

Q. Does this conclude your testimony?

A. Yes, it does.

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