BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	**DOCKET NO. 990649-TP**
INVESTIGATION INTO PRICING OF UNBUNDLED NETWORK ELEMENTS.	

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PROCEEDINGS:	HEARING
BEFORE:	CHAIRMAN J. TERRY DEASON COMMISSIONER E. LEON JACOBS, JR. COMMISSIONER LILA A. JABER
DATE:	Thursday, September 21, 2000
TIME:	Commenced at 8:15 a.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	JANE FAUROT, RPR FPSC Division of Records & Reporting Chief, Bureau of Reporting (850) 413-6732

APPEARANCES:

(As heretofore noted.)

I N D E X

INDEX OF EXHIBITS

BY MR. MARCUS:

Q Ms. Murray, can you please give a brief summary of your testimony to the Commission?

A Yes. Good afternoon. My prefiled testimony addresses the economic and policy issues concerning the pricing of unbundled network elements. I focus on the elements that competitors must lease from BellSouth to offer advanced services based on digital subscriber line, or DSL technology. The prices that the Commission adopts for these elements can make or break competition for advanced services in Florida. The Commission can best promote competitive choice for all Florida consumers by making just a few key decisions.

First, recognize that a loop really is just a loop. When BellSouth builds loop plant it doesn't know how any given loop is going to be used over the entire economic life of that loop, so BellSouth builds one network, not three or four networks as its cost study shows, to serve the total expected demand for all types of services.

Particularly in a forward-looking world, BellSouth will place loop plant to enable any type of service to be offered over that loop. I recommend that the Commission base prices for all unbundled loop types, including both DSL capable and ISDN, or IDSL loops on

costs that reflect a single set of network architecture assumptions. In particular, the recurring and nonrecurring charges for unbundled network elements should reflect the same network architecture as the stipulation in this proceeding requires.

Key decision number two. Reject BellSouth's backward-looking copper-only scenario. In both its recurring cost studies for DSL capable loops and a broad array of its nonrecurring cost studies, BellSouth has assumed an all-copper network architecture. That assumption has no place in a forward-looking cost study regardless of what you mean by forward-looking.

BellSouth began migrating away from an all-copper network in the early 1980s, nearly 20 years ago. It does not have an all-copper network in place today, and it certainly does not plan to build an all-copper network in the future. Thus, the Commission cannot set prices for unbundled loops based on any BellSouth cost estimates that reflect its copper-only assumptions and still adopt forward-looking prices.

A copper-only network is truly a hypothetical network. BellSouth is the only party in this proceeding that advocates the use of a completely hypothetical network that has no foundation in either its current or its future network plans.

Key decision number three. Reject BellSouth's conditioning charges. Chairman Deason asked yesterday whether nonrecurring conditioning charges are consistent with BellSouth's forward-looking network plans. My testimony answers this question with a resounding no. There will be no load coils or excessive bridged tap in BellSouth's forward-looking network, so there is absolutely no basis for computing forward-looking conditioning costs. And, of course, if there is no forward-looking basis for nonrecurring conditioning charges, then there is also no forward-looking basis for the additive that BellSouth is proposing in this proceeding.

As you will recall, BellSouth has designed that additive to recover the 40 percent of its nonrecurring conditioning costs that BellSouth claims would otherwise be unrecoverable. BellSouth's additive would impose a nearly $58 nonrecurring charge on each and every DSL capable loop that competitors order, thus adding insult to the injury of the already extraordinarily high nonrecurring charges that BellSouth seeks to recover from DSL competitors.

Key decision number four. Require BellSouth to correct modeling errors that systematically overstate the costs of loops used for advanced services, such as DSL and

ISDN. My testimony discusses two modeling errors that you have already heard a lot about this morning from Mr. Donovan and Mr. Pitkin; BellSouth's use of in-plant factors rather than direct estimates of plant placement costs, and BellSouth's method of allocating the cost of digital loop carrier common equipment, fiber feeder plant, and related structure based on DS-0 equivalence instead of pairs.

I illustrate the effect of these errors in my testimony by comparing BellSouth's cost for voice grade SL-1 loops versus its cost for ISDN or IDSL loops. BellSouth, remember, can use the exact same fiber-fed loop to provide either a POTS service or an ISDN service by simply using a different line card at the digital loop carrier.

Except for the difference in the cost of this line card, the cost for a POTS loop and the cost for an ISDN loop or an IDSL loop is exactly the same. At least it should be. But the two modeling errors that I just mentioned lead BellSouth to greatly exaggerate the cost difference between ISDN loops and POTS loops, thus inhibiting the advanced services growth in Florida.

My testimony also explains how the Commission can arrive at cost-based prices that avoid the flaws inherent in BellSouth's proposals. I suggest that the

Commission use the BellSouth recurring and nonrecurring cost assumptions for an SL-1, or nondesigned loop, as the starting point for the cost calculations for all DSL capable loops including the so-called UDC or IDSL capable loops.

This is completely appropriate because DSL competitors want nothing more from BellSouth than an SL-1 loop with the right to reserve the specific loop that those competitors have selected after reviewing BellSouth's loop makeup data. And BellSouth has not shown any technical impediment or cost associated with making such a reservation available.

On the recurring cost side, the Commission should require BellSouth to recalculate its loop costs after correcting the two modeling errors that I have just mentioned, the use of in-plant factors and a DS-0 equivalent allocation of fiber and related costs, as well as other modeling errors identified by witnesses such as Mr. Donovan and Mr. Pitkin.

On the nonrecurring cost side, the Commission should also require BellSouth to recalculate its nonrecurring loop costs after correcting the tasks and task times to reflect efficient practices and eliminate unnecessary manual intervention. I rely on Mr. Riolo's engineering expertise for the specific necessary

corrections which he described in his prefiled testimony.

Finally, I provide recommendations for forward-looking pricing of the function of loop conditioning and access to loop makeup information. As I have already stated, BellSouth's forward-looking network would eliminate the need for loop conditioning, therefore, recurring loop prices based on this forward-looking network would fully compensate BellSouth for the cost of providing conditioned loops suitable for DSL services, and there should be no nonrecurring conditioning charges.

Even if the Commission does not agree with this part of my analysis, I explain that BellSouth's proposed conditioning charges do not reflect the kinds of efficient practices that Mr. Riolo will address. Therefore, if the Commission adopts any nonrecurring conditioning charges at all, I recommend that it base those charges on the efficient tasks and task times that Mr. Riolo describes.

Similarly, I recommend that the Commission require BellSouth to provide electronic access to loop makeup information without any charge. The forward-looking cost of processing electronic queries for such information, and that is the element we are talking about here, is virtually zero, so there is no basis for any loop makeup query charge. The Commission should address the bulk of the costs that BellSouth has included

in its loop makeup cost study in a future docket concerning the development costs for OSS interfaces because the costs in BellSouth's study have nothing to do with the actual processing of loop makeup inquiries.

That concludes my summary.

MR. MARCUS: The witness is available for cross-examination.

CHAIRMAN DEASON: BellSouth.

MR. ROSS: Thank you, Mr. Chairman.

CROSS EXAMINATION

BY MR. ROSS:

Q Good afternoon.

A Good afternoon, Mr. Ross.

Q You mentioned in your summary that you were testifying and providing recommendations primarily concerning those elements necessary to provide advanced services, such as xDSL, is that correct?

A Yes.

Q And is that because your clients, BlueStar, COVAD, and Rhythms Link are primarily xDSL providers?

A That is my understanding. But in any event, that is the assignment that was given to me for this proceeding.

Q Fair enough. To your knowledge do BlueStar, COVAD, or Rhythms Link provide voice service to local

exchange customers in the State of Florida?

A I have no knowledge one way or the other.

Q Let me ask you a few questions about BellSouth's xDSL offerings. You testify, and I believe this is at Page 22 and 23 of your direct testimony -- that BellSouth's distinctions among DSL capable loops and voice grade loops are inappropriate, is that correct?

A Yes.

Q Is BellSouth the only incumbent that you are aware of that draws a distinction between DSL capable loops and voice grade loops?

A I don't think that BellSouth is the only incumbent that distinguishes between DSL capable loops and voice loops. My testimony that you referred me to, though, doesn't reference that distinction, it references distinctions among types of DSL capable loops.

Q To your knowledge is BellSouth the only incumbent that draws a distinction between types of xDSL loops?

A No. But an increasing proportion of incumbents at the direction of public utilities commissions sometimes have eliminated such distinctions. They have no valid basis in an environment in which there is access to loop makeup information, and such distinctions can actually inhibit the introduction of innovative new DSL

technologies.

Q Isn't it fair to say that practically every incumbent, if not every incumbent has a different rate for an ADSL capable loop and an HDSL capable loop as opposed to a simple voice grade loop?

A No.

Q Which incumbents are you aware of do not have that specific distinction?

A As to the rate, Southwestern Bell, for example, in Texas has the exact same rate for a generic xDSL capable loop as it has for an analog voice grade loop. Pacific Bell has the identical rate for an xDSL capable loop as for a voice grade loop. The former Bell Atlantic companies, now Verizon, have identical rates for xDSL capable loops generally as for voice grade loops.

Let me see if I can think of an exception to that rule, I'm having trouble. GTE, now part of Verizon, offers xDSL capable loops at the same price as voice grade loops. I am having trouble thinking of an exception to that rule; that is, an incumbent that has a different rate.

Q So your testimony is that, for example, Bell Atlantic -- would this be in New York, has the same rate for a voice grade loop as it does for an ADSL or HDSL capable loop?

A The same rate. There is a different name for the element which allows Bell Atlantic, now Verizon, to track the fact that it is a DSL capable loop and avoid -- and be able to have the kind of reservation, avoid a rollover problem. But the price is based on exactly the same cost. Now, let me carefully distinguish. There is something called a four-wire HDSL loop. I am talking about two-wire loops so we have an apples-to-apples comparison.

Q Going back to Verizon, why is it important for Verizon to be able to keep track of ADSL and HDSL loops as opposed to voice grade loops?

A What I have indicated in my previous answer is that competitors need to be able to have DSL capable loops over the facilities that have been qualified to be capable of providing DSL services. So that is why you need some method of tracking. Simply calling the element something different, which by the way is something that BellSouth is now proposing in this proceeding for the UDC, the universal digital channel, which is just an ISDN loop that can be used for IDSL. There is a certain difference in the methods and procedures, a few slots in the Marconi DLC can't be used for IDSL, but can be used for ISDN. BellSouth correctly has simply created this new loop name so they can track that it is an IDSL loop, but the price,

as Ms. Caldwell testified, is going to be exactly the same. The cost is exactly the same.

Q Thank you, Ms. Murray. And when you talk about the distinctions that BellSouth draws among DSL capable loops on Page 22, you don't necessarily oppose the distinctions between the DSL capable loops, but rather the difference in price, is that fair?

A That is not entirely accurate. If you look at the four different DSL loop types listed on that page, they are distinguished as to the maximum length of the loop. And those distinctions which are sometimes tied to the ability to reserve or not reserve a loop, and to have various procedures included in the costing and pricing seem to me unnecessary and potentially inhibitory of competition. So I would propose a single type of two-wire xDSL capable loop without any of these artificial limitations on loop length.

Q You believe the 18,000-foot limitation on an ADSL compatible loop is an artificial limitation?

A I believe the limitation on any DSL capable loop type is artificial. It is my understanding that the ADSL technology currently deployed can sometimes be used somewhat beyond 18,000 feet. Probably not 30,000 feet, but some ADSL applications might work over some loops at 19,000 feet or 20,000 feet. I see no reason for Florida

consumers to be denied a competitive alternative because BellSouth wants to make this unnecessary and artificial distinction.

Q Well, if there is, in fact, a service that an ALEC wants to provide for a loop that is 19,000 feet or 20,000 feet, BellSouth does have an unbundled copper loop long that will support that. And let's put aside the price, because I'm not talking about price, I'm talking about product distinctions. That product is available that would be an option for an ALEC that wanted to provide an xDSL service beyond 18,000 kilofeet, correct?

A There is such a product that BellSouth has defined. However, quite apart from price, subtle differences in terms and conditions, methods and procedures or just the mere inconvenience of having to squabble, perhaps, about whether a loop length is 18,005 feet including bridged tap or not, makes it not worth the distinction. I can see no useful purpose for such a distinction.

Q Would you agree that BellSouth is required by the FCC's UNE remand order to provide unbundled loops of any length?

A It is my understanding that BellSouth is required by the FCC, and this is my understanding as an economist, not as a lawyer, because I am not a lawyer, but

it is my understanding that BellSouth is required not to restrict the length of the loops that competitors can purchase.

Q At Page 25 of your direct testimony you make the statement that it is your understanding that the practical limit for providing DSL services over copper loops is generally around 21,000 feet, is that correct?

A Today is generally not in excess of 21,000 feet, yes.

Q Are you aware that the FCC has noted that some ALECs intend to provide xDSL services on loops up to 30,000 feet?

A I don't have that specific quotation in mind, but that would not change my answer that today the practical generally does not exceed 21,000 feet. It is not something I would expect a large percentage of ALECs to be doing based on what I have heard talking to the industry about the existing current technology.

Q Ms. Murray, on Page 24 of your direct testimony, Lines 10 through 11, you observe that neither GTE nor Sprint has proposed to make pricing distinctions for any loop types based on loop length, is that correct?

A I didn't catch the page, but I recall making a statement like that.

Q Page 24, Lines 10 through 11.

A Yes.

Q You are referring to the cost studies that GTE and Sprint have withdrawn from this proceeding, is that correct?

A I am proposing -- referring to the prices and the definition of unbundled network elements that GTE and Sprint had put forward before this Commission regardless of what the costs underlying those were.

Q Well, do you understand that GTE and Sprint's prices were based upon the costs as they developed them using their respective models that they have since withdrawn from this proceeding?

A Yes, but there still would not be a pricing distinction if neither company had proposed a loop type that distinguished by loop length.

Q To your knowledge do either GTE's or Sprint's models have the capability to determine the cost of anything other than a voice grade two-wire loop?

A I haven't explored all the possibilities within those models, but I don't know why they would have made a particular attempt to distinguish since there is no basis that I know of for making a distinction in a forward-looking network.

Q To your knowledge, how many different types of loops does BellSouth offer?

A I don't know the number off the top of my head.

Q Would you agree, subject to check, that it is 19 different types?

A Subject to check. I presume that if I were to check this you are referencing some tariff or something that you could point me to.

Q Actually, Mr. Varner's testimony where BellSouth has proposed rates for each of the various unbundled loops that it offers.

A Okay. So you are referencing what BellSouth has proposed in this proceeding?

Q That's correct.

A I will accept that subject to check.

Q Is there any particular service that your clients want to offer which you believe it cannot offer by virtue of the 19 loops that BellSouth is offering? And let's put aside price. I mean just technically.

A I have not explored with my clients all the services they wish to offer, so I can't answer that question.

Q Let's talk a little bit about this loop is a loop issue that you discussed during your summary.

Would you agree that distance and length of the copper loop poses a barrier to providing DSL service?

A By distance you mean distance from the central

office?

Q Yes, ma'am.

A I would agree that loop length can affect the ability to offer DSL services over an all copper loop and it can affect the type of service and speed of service that could be offered.

Q Would you agree that xDSL service can be disrupted by bridged tap, load coils, and DLC systems?

A Yes. And that is precisely why my clients using the electronic access to loop makeup data that BellSouth is providing pursuant to the UNE remand order will be checking for those attributes of loops and ensuring that they obtain loops that work for their services, including working as to the loop length.

Q To your knowledge do loop length, bridged tap, load coils, or DLC systems have any impact on providing voice service?

A Yes.

Q In what respect?

A Well, for example, Mr. Riolo's testimony indicates that the existence of load coils can impair the ability of using a voice grade loop for analog modems, can slow down the speed at which the analog modem works, and cause lower quality of service. And, in fact, the very reason that load coils were even considered for loops is

that loop length on an all-copper loop can affect the quality of voice grade service.

Q I apologize if my question wasn't clear, Ms. Murray. My question was asking about voice service. To your knowledge does loop length, bridged tap, load coils, or DLC systems have any adverse impact on voice service?

A My answer is still yes for the exact reasons I just gave you. Customers use analog modems over services that they buy as voice grade services, so I am talking about a voice service. And as for the load coil issue and the problems with transmitting regular voice services over longer loops, that indeed was something that I was discussing with respect to ordinary POTS service. I am not an engineer, however. If you want to go into these questions in-depth, I suggest you speak to Mr. Riolo.

Q And I appreciate that, and I am not going to hopefully badger you with these questions that much longer, but when I'm talking about voice service, I mean picking up the phone and calling the pizza parlor to order a pizza. In that type of situation, a voice call, is that at all interfered with by load coils, bridged tap, loop lengths, or DLC systems?

A Well, once again, I think I have already answered with respect to loop length that that was the very reason that load coils were added to very long all

copper loops. But to answer your question with respect to that narrow use of a voice grade loop, which is not a service that I am aware of that any incumbent local exchange carrier provides, that is, the use of a voice grade loop only to make voice telephone calls, I would agree with you that other than the loop length issue that I just discussed, I do not know of any impediments. But I suggest you speak to Mr. Riolo.

Q Let's talk about DLC systems for just a moment. Would you agree that requesting carriers are functionally precluded from deploying xDSL services on unbundled loops served by DLC?

A I'm sorry, I missed part of that. Could you repeat the question.

Q Yes, ma'am. Would you agree that requesting carriers are functionally precluded from deploying xDSL services on unbundled loops served by DLC systems?

A No.

Q Would you agree that the difficulties associated with providing xDSL services over DLC facilities was one reason the FCC required that the subloop element be unbundled?

A I would agree that the FCC required subloop unbundling because at the time the FCC was writing there were certain legacy, I will call them, DLC systems

deployed by incumbent local exchange carriers that were not compatible with forms of xDSL service other than what is called IDSL.

Subsequent to that time, carriers such as SBC Communications with its project Pronto, a description of which was attached to my direct and rebuttal testimony, and other carriers, including Verizon, have begun to test and even to deploy DLC technology, modern DLC technology, that is capable of transmitting other forms of xDSL services over fiber-fed DLC loops. And I will simply say that there is nothing that I can say in public about BellSouth's documents. But that there is nothing that I have read in the discovery provided in this proceeding that would lead me to conclude that BellSouth would differ in a forward-looking environment from these other carriers.

Q The Project Pronto you mentioned, would you agree that that project that SBC has undertaken is designed to allow SBC to provide its ADSL service over fiber facilities in DLC systems?

A That is one, but only one of the purposes of SBC's Project Pronto as I understand that project.

Q Could I ask you to look at Page 26 of your direct testimony?

A Yes.

Q When you make the statement at Lines 3 through 4 that two-wire DSL capable loops should be priced at the two-wire basic voice grade loop price, and four-wire DSL capable loops should be priced at the four-wire basic loop price, do you see that?

A Yes.

Q Do you believe the two-wire DSL capable loops should be provisioned the same way as two-wire basic voice grade loops?

A Yes, with one exception. I believe that two-wire DSL capable loops should be provisioned in a manner that allows requesting carriers to obtain access to loop makeup data to identify part of that subset of what we call SL-1, or basic voice grade loops, that I believe both Mr. Latham and Mr. Greer earlier testified to this week as being fully equivalent to and suitable for the carriage of DSL services, including ADSL services, and then to identify to BellSouth and reserve the requested circuit that has been qualified as being suitable for the requesting carrier's preferred DSL application. That would be the only provisioning difference that I am advocating.

Q Are you asking for any kind of limitations on BellSouth's ability to make any changes to the loop, to an SL-1 loop that is being used to support xDSL service?

A I am asking or on behalf of the clients for whom I am testifying, I am recommending that the reservation process include the right that the facility not be rolled over to a facility other than the one that has been qualified. This makes perfect sense.

Imagine, if you will, that a carrier obtains an all-copper loop for DSL capable service, a DSL capable loop. And further, that the carrier actually obtains loop conditioning; the removal of load coils, removal of bridged taps. And let's even assume in this case that BellSouth prevails and there is a nonrecurring conditioning charge. That poor carrier will have paid a substantial amount to bring that particular loop in BellSouth's network up to current network standards so that it can be used for DSL service.

It would be extremely unfair for that carrier then to have to have BellSouth yank the rug from it and take away what the carrier paid for. Why else would we have access to loop makeup data to qualify loops if you can't keep the loop that you qualified?

Q Have you seen anything in BellSouth's testimony or procedures where BellSouth is proposing after having removed load coils and bridged tap to put it back on a loop?

A I haven't seen anything that proposes putting

the load coil or the bridged tap back on the loop. But what I have heard repeatedly this week is that there is no process for guaranteeing a carrier that that carrier will continue to have the unbundled loop facility that the carrier originally obtained.

In fact, I heard Mr. Latham and others say that you can buy an unbundled SL-1 loop and use it to provide DSL service. But there is no way that you can be guaranteed that that loop will not be changed out for a fiber-fed loop tomorrow, the day after you buy it, even though Mr. Pate testified that there is no technical reason that BellSouth couldn't make such a reservation.

Q I guess what I'm asking is, you are asking this Commission that when your clients buy an SL-1 loop that BellSouth be precluded from making changes to the facilities that are being used to provision the loop when you buy it, is that correct?

A I am asking that --

Q Can you answer yes are no and then please explain.

A Yes, I'm sorry. Yes, I am asking that -- and there could be something worked out about what the exceptions to this rule would be, but I am certainly asking that the general rule be that access to loop makeup data for purposes of loop qualification be meaningful.

That whatever you qualify when you look at the loop makeup data is what you get and what you keep.

Q Now, when we are talking about voice service on a DLC system, do you believe that the end user customer cares whether their service is being provided over a copper or over a fiber-fed DLC system when it comes to simple voice grade service?

A No. I don't believe that the customer cares today with respect to simple voice grade service, nor do I believe that a DSL provider will care once BellSouth deploys a forward-looking network in which its DLCs are all capable of carrying DSL services.

The only reason that DSL providers care about qualifying specific loops is that they are paying in recurring charges for a forward-looking network, but they are getting a backward-looking or at least a current-looking network that isn't what they are paying for.

So, once carriers get what they are paying for this problem won't exist. Mr. Greer told us his network, his forward-looking network through the wonder of meeting the carrier serving area guidelines is going to be able to carry DSL services ubiquitously.

Q So is it your view that BellSouth should not be allowed to upgrade its network by moving copper facilities

to fiber-fed DLC systems without getting permission from an ALEC?

A No, I wouldn't go that far. It is my view that BellSouth should work with all of the carriers that are using its network to make sure that the network modernization process is an orderly and fair process that doesn't unnecessarily disrupt the service of not even so much the carrier, but the end user customer who is depending on that DSL service, just as Mr. Latham indicated that he didn't know but he suspected because it would be good service practice that BellSouth doesn't just yank the rug out from under customers that subscribe today to BellSouth's retail ADSL service in a line shared mode. It is just not good practice to change out customers' service without notice or planning.

Q Your view is that BellSouth consults with its ADSL customers before modifying its network that may affect its ADSL customers?

A No. My view is that BellSouth's network planning organization, the people who are in charge of the modernization of the network, undoubtedly consult with its retail DSL organization, give them notification of what is going to happen to the loop plant as it is getting modernized, coordinate and work with them so that customers are not put out of service unexpectedly,

including perhaps pair swaps or something that will make the situation work for the customer. And that is the kind of thing -- we are here talking primarily about costing and pricing. But from a provisioning standpoint, that is the kind of thing I think would be good public policy to treat competitors as BellSouth, I'm sure, must treat its own retail DSL arm.

Q Do your proposals for rates include any type of costs associated with the coordination and the network planning that your proposal envisions?

A No. Because I think that is part of an industry process that would go on that every carrier in a competitively neutral way bears its own costs, just as, frankly, I have now seen through the discovery process BellSouth's retail ADSL cost study and do not recall seeing any costs in that study for the kind of coordination that I am talking about between BellSouth's network management folks and its retail ADSL folks.

Q Let me ask you to assume two customers who are neighbors, one who is being served by COVAD with a particular xDSL service, and the other customer being served by BlueStar with a different type of xDSL service. And as part of -- and under your proposal they have ordered just voice grade loops, and BellSouth is upgrading its network to provide fiber-fed DLC systems to serve

those customers. Are you with me so far?

A I have that assumption in mind.

Q What happens in the event BellSouth goes to COVAD and says we are going to remove the copper facilities and put fiber-fed DLC systems in place. COVAD says yes. But when they go to BlueStar, BlueStar says no, because my xDSL service won't work over the DLC system. What do you propose there?

A Well, in the first place I don't speak for either company from a provisioning standpoint, and I haven't prepared testimony on provisioning for this costing and pricing proceeding. But I will attempt to answer your question.

Recall that in a previous answer I said I am not proposing that there be some kind of veto power on the part of competitors, such as COVAD or BlueStar. What I am proposing is notification and working with the carrier. Typically, even when plant is modernized, there often is old copper plant left in the ground. If BlueStar's technology, for example, wouldn't work over the fiber-fed system, it is entirely possible that BellSouth could do what is called a pair swap, and allow BlueStar to continue using what would now be a spare or even a sunk, in the economic sense, facility, an obsolete facility to provide DSL source to that customer.

There are a lot of things that could be worked out. And I would suggest that the Commission have some kind of workshops or other proceeding to deal with these kinds of provisioning issues. But we shouldn't let these provisioning issues get in the way of setting procompetitive costs and prices that reflect forward-looking network assumptions. That is what we are doing here today. Pricing does not equal provisioning.

Q Ms. Murray, you do understand that BellSouth's position is when it provides an xDSL capable loop such as an HDSL/ADSL loop, that it will not touch that facility without advising the particular ALEC, do you understand that to be the case?

A I will take that subject to check, but then I don't even understand your questions. Why just because we go to a generic xDSL capable loop, as opposed to the individual flavors, would BellSouth have a problem with the kind of notification process that I am describing?

Q Can you understand that BellSouth may want a little bit more control over its voice network and its ability to upgrade the network without contacting every particular ALEC that may serve every particular customer over those facilities?

A No, Mr. Ross, I wouldn't, because that would be a complete mischaracterization of my proposal. I have

proposed that there be a DSL capable loop, a different name of a loop that the DSL provider would obtain for DSL service, that is priced like the voice grade loop. Just as BellSouth has proposed a universal digital channel that is priced like the ISDN loop. So under my proposal there is no problem for BellSouth, there is no difference from the one flavor DSL versus the fourth flavor DSL.

Q Ms. Murray, Ms. White is going to hand you a response from Sprint to BellSouth's discovery dated September 12, 2000. Interrogatory Number 43.

MS. BOONE: You don't have a copy for us to see, do you?

MR. ROSS: I believe all the parties were served with this, but -- and I'm not making it an exhibit, I'm just asking Ms. Murray to take a look at it.

THE WITNESS: Yes, I have that response in front of me.

BY MR. ROSS:

Q Would you agree that Sprint has indicated that it would not order an SL-1 for xDSL capable loops because an SL-1 may be provisioned over digital loop carrier system and most xDSL services will not currently work through a DLC?

A Yes. But I assume -- I cannot know, I assume Sprint is responding in the context of the current SL-1

offering. We already heard testimony from Mr. Latham that BellSouth does not allow carriers to order an SL-1 with reservation. This is exactly the problem I am talking about. I don't see anything in this answer that contradicts what I am suggesting to the Commission, that there be an xDSL capable loop that is priced and provisioned the same as an SL-1 loop except for this reservation that already can apply in BellSouth's view of the world to other kinds of subdivided DSL capable loops.

Q Ms. Murray, Ms. White is going to be handing you comments by one of your clients, Rhythms Net Connections, Inc., and Rhythms Link. They were filed with the FCC dated June 23, 2000.

COMMISSIONER JACOBS: Could I jump in quickly with a question. When you say subdivided DLC loop, and I remember there was some testimony earlier that there are some DLC loops that can provision DSL services?

THE WITNESS: Yes. Although I may have misspoken. When I was saying subdivided, I meant to say subdivided DSL loops, and I was referencing there the ADSL, HDSL, and so on.

COMMISSIONER JACOBS: I see. I see.

THE WITNESS: But to go back to your question, yes, IDSL, which is a lot like ISDN, can be provisioned over digital loop carrier, or DLC. So many acronyms.

COMMISSIONER JACOBS: And would you propose that it could be provided under this generic of DSL capable loops, would that be one of those, or would you have it specifically with a caveat, have it separate with a caveat?

THE WITNESS: I would have the separate definition, the UDC, that BellSouth has proposed similar pricing except, of course, as I said in my summary for this line card, the ISDN line card, which costs a little more. But you would want to have a different tag, if you will, in BellSouth's records so they would know that it is perfectly fine to provide that over a fiber-fed loop.

MR. ROSS: Mr. Chairman, I would like Rhythms comments marked as Exhibit 143.

CHAIRMAN DEASON: That would be so identified.

(Exhibit Number 143 marked for identification.)

BY MR. ROSS:

Q Ms. Murray, I would like you to take a look Page 6 of this document. Specifically the last paragraph, and I will give you a minute to take a look at it.

A Now, is this the page that is numbered as 6, as opposed to the sixth page, just so I'm clear?

Q Yes, ma'am, Page 6.

A Okay. And the last paragraph, beginning "finally"?

Q Yes, ma'am.

A Okay.

Q Have you had a chance to read that?

A Quickly through, obviously this is a part of a somewhat lengthy document that I have not previously read, but I have skimmed the paragraph to which you pointed me.

Q That's fair. And in this particular paragraph is it fair to say that what Rhythms is advocating is that the Commission, the FCC, adopt rules that allow a requesting carrier to opt for a copper loop instead of a DLC-provisioned loop?

A I think the second sentence of the paragraph speaks for itself that -- and actually it is in the context of the first sentence, that Rhythms was indicating that it wanted rules that would ensure that CLECs have the ability to select loops from the ILEC loop inventory to maximize services to the customer. This sounds to me something like the process we have been discussing today, looking at the loop makeup data and selecting or reserving a particular loop, yes.

Q So the answer to my question is yes?

A The answer to your question is yes, as I have described my understanding of the plain words here. I can't speak for what Rhythms was saying. I had no role in preparing this document and have not seen it before.

Q That's fine. And also do the plain words indicate in the next sentence that if the customer has two loops currently provisioned, one on fiber and one on copper, the incumbent should at the requesting carrier's request rearrange the loops to provide the DSL over the copper loop, do you see that?

A I see that. And, again, I think that it speaks for itself. Whether or not there would be a price for such rearrangement isn't discussed here. It is a suggested arrangement that is not, as I understand it, what is being offered today by BellSouth in this proceeding.

Q Let me give you a hypothetical and just taking Rhythms and based on their comments to the FCC. If under your proposal Rhythms could go into -- do a loop makeup, find a copper loop, and let's say it is 18,000 kilofeet, buy that copper loop, and it is not being served over DLC, they would pay the same price as an SL-1 voice grade that may be served over DLC, is that correct?

A Yes. Just as BellSouth's retail DSL service can be provided by BellSouth's personnel selecting a desirable loop, using that loop, and in the line shared mode, not paying any incremental loop cost or loop charge because the underlying voice service cost by BellSouth's statements to the North Carolina Commission and the FCC

already recovers the relevant loop cost. So I think both BellSouth, at least in that context, and I agree that a loop is a loop and a voice grade loop cost recovery is sufficient to recover the cost of a DSL loop.

Q So if the cost of a loop is calculated assuming the use of DLC, would you agree that that would be a lower cost than just if it were assumed all on copper?

A Not necessarily.

Q You don't believe DLC is cheaper than -- fiber is cheaper than copper?

A It depends on what you mean by the term cost. I would say yes to your question if you are talking about a forward-looking cost study with an economic crossover point. I would say no in answer to your question if you are asking about the difference between the forward-looking cost of a mixed network with fiber and copper versus the depreciated cost of an all-copper loop that wouldn't be placed in that forward-looking network.

I should also clarify that what I am talking about is nothing different in terms of the distinction between pricing and provisioning than what exists for voice grade loops. People pay for voice grade loops based on the future mix of fiber and copper. People get the loops that exist in the network today and often get an all copper loop for voice service or an unbundled voice loop

even though BellSouth's cost study properly shows that local would be served over fiber and DLC going forward.

Q Fair enough. And we are in a forward-looking cost proceeding, correct?

A Yes.

Q So you would agree that in a forward-looking cost proceeding a loop that is being served over a DLC system and fiber is going to be less expensive, all other things being equal, than a loop of the same length being served entirely over copper?

A No. I have to be really careful. Because if we are talking about, say, a 6,000-foot loop, it might be more expensive even in a forward-looking world served over DLC and fiber. That's why we have the economic crossover point.

Q Let's assume it is an 18,000 kilofoot loop.

A Generally, in the forward-looking cost studies, I have seen an 18,000 kilofoot loop would be more economically served on a forward-looking basis over fiber feeder and DLC than over copper feeder.

Q And under your proposal Rhythms, in this case, could pay a price for a two-wire voice grade loop that is costed out in a forward-looking cost study assuming IDLC, or assuming DLC, but always use copper when the facilities are in place, is that correct?

A Yes. But Rhythms would also be buying from a cost study that included the average cost of loops of all lengths even though, as we have agreed, that Rhythms probably can't use an all-copper loop much longer than I said 21,000, someone else said 30,000, can't use loops of all the possible lengths in BellSouth's cost study. Other things being equal, longer loops cost more than shorter loops. So the average forward-looking cost of the voice grade loops could actually be higher than the average forward-looking cost of the shorter average length loop that Rhythms would be buying.

Q Let's finally turn to loop conditioning. And I think you mentioned this in your summary. Your view is that BellSouth should not be permitted to charge for loop conditioning, is that correct?

A No. My view is that BellSouth should not be allowed to levy a separate nonrecurring loop conditioning charge, because the recurring charge for unbundled loops on a forward-looking basis recovers all of the cost of providing a loop that is conditioned to be suitable for DSL services.

Q Would you agree that the FCC has foreclosed state commissions from concluding that the TELRIC recurring monthly loop rate, which is based on a forward-looking network design, already compensates

incumbent LECs for the removal of such devices?

A No, I would completely disagree with that statement. And, in fact, the Utah Commission has reached such a conclusion, has ordered zero conditioning costs, and I am not aware of any attempt or effort by the FCC to say that that Utah decision is improper.

Q Would you agree that the UNE remand order authorizes incumbents to recover the costs of removing load coils and other impediments that exist in the embedded plant, even though these devices would not exist in a forward-looking network?

A Yes, with a major, major caveat. The pricing rules that are attached to the UNE remand order say two things. First, conditioning costs and charges must be based on forward-looking economic costs, just like the costs of all other unbundled network elements. And, second, that the rules that apply to conditioning costs include the pricing rule that is in 47 CFR Section 51, 507, Subparagraph E. That rule states that the total of the recurring and nonrecurring charges for an unbundled network element, and the FCC has defined loop element to include conditioning, cannot exceed the total forward-looking economic cost of that element.

When the FCC issued the UNE remand order, it didn't look at any cost studies to see if the

forward-looking costs -- the recurring costs already equaled the total forward-looking cost of providing conditioned loops. It left it to commissions like this Commission to say what is going on in the actual cost study that is in front of you.

And given the actual cost study that is in front of you here, this Commission should conclude that the recurring charge for unbundled loops will recover the full cost of providing conditioned loops on a forward-looking basis, just as the Utah Commission has done with respect to the cost studies that it reviewed.

MR. ROSS: Mr. Chairman, Ms. White is going to hand Ms. Murray a document that is already in evidence. This was attached as an exhibit to Mr. Varner's prefiled testimony. It was the rebuttal testimony.

BY MR. ROSS:

Q If I understand your last statement, you believe this Commission can look at the forward-looking network design and conclude that the costs of loop conditioning are being recovered through recurring rates, is that correct?

A Yes.

Q Can I ask you to look at Page -- first of all, just so the record is clear, the document that I have handed you is the joint petition for reconsideration filed

by Rhythms and COVAD with the FCC, January 21, 2000, is that correct?

A I believe that is correct, yes.

Q And this petition for reconsideration specifically asked the FCC to reconsider its decision on loop conditioning charges, correct?

A I have only skimmed this document. I wasn't involved in preparing it, so let me just review quickly and remind myself.

Q The first paragraph I think will --

A I wanted to see what the entire statement -- yes, I see that the first paragraph talks about reconsidering conditioning. When I spoke to clients after becoming aware of this petition, I was informed -- and this is a nonlegal opinion -- that this form of obtaining clarification of the seemingly contradictory language in the FCC order was the requisite legal form. This does not necessarily constitute my opinion. And I have given the basis for my opinion of the proper interpretation of the FCC's pricing rules.

Q That's fine. And if I could ask you to look at Page 7, the last sentence of that paragraph on the page. This is what Rhythms and COVAD has said, "The FCC has foreclosed state commissions from concluding that the TELRIC recurring monthly loop rate, which is based on the

forward-looking network design that has no electronic impedences already compensates incumbent LECs fully for removal of such devices." Do you see that?

A I see that sentence. And I see that it appears to follow a sentence that says, "Yet competitive LECs will now be handicapped in making this argument before state commissions by the FCC's statement that incumbent LECs must be permitted to recover conditioning costs as nonrecurring charges." I actually believe -- I'm sorry to say this, that my clients were in error because if you look at the pricing rules, the rule reference specifically authorizes the recovery of even a nonrecurring cost through a recurring charge.

Q And, again, your interpretation is an economic one whereas one would think that a legal pleading filed with the FCC might be a legal one, would you agree?

A My interpretation --

Q That is a yes or no.

A Yes. My interpretation is an economic interpretation. I certainly would say that whatever was filed before the FCC by my clients would represent their concerns from a legal perspective. I am not here to offer a legal opinion.

MR. ROSS: No further questions, Mr. Chairman.

CHAIRMAN DEASON: Staff.

MS. KEATING: Staff has no questions.

CHAIRMAN DEASON: Redirect.

MR. MARCUS: Thank you.

REDIRECT EXAMINATION

BY MR. MARCUS:

Q Mr. Ross asked you a number of questions about DSL loops and asked you to ignore costs. Do you believe that it is appropriate to address distinctions between BellSouth's loops without looking at price?

A No.

Q Why?

A Price is something that is integral to the determination of whether the offering of an unbundled network element facilitates or inhibits competition. The prices that BellSouth has arrived at based on its unnecessary distinctions among DSL capable loop types are prices that I understand to be so high that they may very well persuade carriers not to enter the Florida market and offer Florida consumers competitive DSL alternatives.

MR. MARCUS: Thank you.

CHAIRMAN DEASON: Exhibits.

MR. ROSS: Mr. Chairman, BellSouth would move Exhibit 143 into the record.

CHAIRMAN DEASON: Without objection, Exhibit 1143 is admitted.

(Exhibit Number 143 received in evidence.)

MR. MARCUS: We would move Exhibits 139 through 142.

CHAIRMAN DEASON: Without objection, Exhibits 139 through 142 are admitted.

(Exhibit Number 139 through 142 received in evidence.

CHAIRMAN DEASON: Thank you, Ms. Murray. You are excused.

MS. MURRAY: Thank you.

CHAIRMAN DEASON: All right. We will take a ten-minute recess.

(Brief recess.)

CHAIRMAN DEASON: Call the hearing back to order. Mr. Self.

MR. SELF: Thank you, Mr. Chairman. I have a correction to make to Exhibit 130, which was the confidential testimony pages of AT&T/WorldCom Witness Catherine Pitts. I inadvertently omitted Page 23, and I would ask that that also be added to that exhibit.

CHAIRMAN DEASON: Okay. We will make that modification to -- did you say Exhibit 130?

MR. SELF: Yes, sir.

CHAIRMAN DEASON: Very well. And what page was that?

MR. SELF: Page 23. It's in a footnote.

CHAIRMAN DEASON: Okay. We will make that notation.

MR. SELF: Thank you very much.

CHAIRMAN DEASON: All right. Next witness.

MR. MELSON: COVAD, Rhythms, and BlueStar call Joe Riolo.

JOSEPH PHILLIP RIOLO

was called as a witness on behalf of COVAD Communications Company, Rhythms Links, Inc., and BlueStar Networks, Inc., and, having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. MELSON:

Q Mr. Riolo, you were sworn the other morning?

A Yes, I was.

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

A My name is Joseph Phillip Riolo. My business address is 102 Roosevelt Drive, East Norwich, New York 11732.

Q And what is your occupation or profession?

A My occupation is an independent telecommunications consultant.

Q And have you prefiled two pieces of testimony in this case, the first one dated July 31st, called direct

and rebuttal testimony consisting of 92 pages?

A Yes, I did.

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

A Yes, I do. On Page 31, the last line of the chart that is labelled total cost, the number that appears, $4.67 should read $5.33.

Q And with that correction, if I were to ask you the same questions today that are in your direct and rebuttal testimony, would your answers be the same?

A Yes, they would.

MR. MELSON: Mr. Chairman, I would ask that the redacted version, the public version of the July 31st testimony be inserted into the record as though read.

CHAIRMAN DEASON: Without objection, it shall be so inserted.

MR. MELSON: And there were several pages of that testimony that contained confidential information. I would ask to have those pages, which are included in your red folder, identified as an exhibit.

CHAIRMAN DEASON: Exhibit 144.

MR. MELSON: And do you need the page numbers?

CHAIRMAN DEASON: Yes, please.

MR. MELSON: It would be Pages 27 through 29, 32, 52 through 53, 55 through 58, 72, 76 through 77, and

86.

CHAIRMAN DEASON: Thank you.

(Exhibit Number 144 marked for identification.)

BY MR. MELSON:

Q Mr. Riolo, did you also have three exhibits attached to that original testimony called Exhibits JPR-1 through JPR-3?

A Yes, I did.

MR. MELSON: I would like to ask that those three exhibits be identified as a composite exhibit.

CHAIRMAN DEASON: 145.

(Exhibit Number 145 marked for identification.)

BY MR. MELSON:

Q And, Mr. Riolo, did you also have supplemental rebuttal testimony, dated August 28th, 2000, consisting of 15 pages?

A Yes, I did.

Q And that was totally nonproprietary, is that correct?

A That is correct.

Q And if I were to ask you the same questions today that are in that testimony, would your answers be the same?

A Yes, they would.

MR. MELSON: I would ask that Mr. Riolo's

supplemental rebuttal testimony of 15 pages be inserted into the record as though read.

CHAIRMAN DEASON: Well, I've got a question on that. How do we insert charts in a transcript?

MR. MELSON: You photocopy them the same way you insert everything else.

CHAIRMAN DEASON: It just goes straight in like that?

MR. MELSON: Yes, sir.

CHAIRMAN DEASON: Okay. If everybody is happy with it, I am, too. Without objection, the testimony shall be inserted into the record.

BY MR. MELSON:

Q And there were no exhibits to that testimony, is that correct?

A No, there were not.

Q All right. Mr. Riolo, could you --

MR. MELSON: Commissioner, before we do that, let me identify two other things. We have handed out a set of color photographs. Those will be useful when Mr. Riolo gives his demonstration. They are actually color copies of something that appears already in Exhibit 89 in black and white, but it might be easier to mark these as a separate exhibit.

CHAIRMAN DEASON: Very well. The next number,

146.

(Exhibit Number 146 marked for identification.)

MR. MELSON: And we also handed out one sheet of paper, which is Late-filed Exhibit Number 3 to Mr. Riolo's deposition. That was previously identified as part of Exhibit Number 89, but was not available at the time the copies were made. We would simply like to have that sheet included in Exhibit 89.

CHAIRMAN DEASON: We will make that modification. It will be part of Exhibit 89.

I. INTRODUCTION AND SUMMARY

Q. Please state your name, title and business address.

A. My name is Joseph P. Riolo. I am an independent telecommunications consultant. My business address is 102 Roosevelt Drive, East Norwich, New York 11732.

Q. Please briefly describe your qualifications and experience as they relate to this proceeding.

A. I have been an independent telecommunications consultant since 1992. As a consultant I have submitted expert testimony on matters related to telephone plant engineering in California, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, New Jersey, Pennsylvania, Virginia, West Virginia, Wisconsin and the District of Columbia.

I have personally engineered all manner of outside plant including underground, aerial and buried plant in urban, suburban and rural environments. I have engineered copper and fiber plant as well as provisioned analog and digital services. I have participated in the design, development and implementation of methods and procedures relative to engineering planning, maintenance and construction. During the course of my career, I have had opportunities to place cable (both copper and fiber), splice cable (both copper and fiber), install digital loop carrier, test outside plant, and perform various installation and maintenance functions. I have prepared and awarded contracts for the procurement of materials. I have

audited and performed operational reviews relative to matters of engineering, construction, assignment, and repair strategy in each company throughout the original 22 company Bell System.

I directed operations responsible for an annual construction budget of $100 million at New York Telephone Company. My responsibilities included but were not limited to engineering, construction, maintenance, assignment and customer services.

Further detail on my education, relevant work experience and qualifications can be found in my curriculum vitae, which is included as Exhibit _____ (JPR-1) to this testimony.

Q. What is the purpose of your testimony?

A. BlueStar Networks, Inc. ("BlueStar"), DIECA Communications, Inc. d/b/a Covad Communications Company ("Covad") and Rhythms Links Inc. ("Rhythms") have asked me to address the direct testimony and cost study presentations of all three incumbents, BellSouth Telecommunications, Inc. ("BST"), GTE Florida Incorporated ("GTE") and Sprint – Florida, Incorporated ("Sprint") in this proceeding, and to provide technical support for cost witness Terry L. Murray as well as factual information for the Commission.

Q. Please summarize the conclusions in your testimony.

A. Overall, my testimony introduces sound, engineering-based reason in contrast to the erroneous positions that BST and GTE have introduced into

their cost analyses of the unbundled loops that competitors such as BlueStar, Covad and Rhythms require to provide what I will refer to as "xDSL" services, *i.e.*, services based on Digital Subscriber Line technologies. Both BST and GTE substantially inflate the costs and prices that would apply for the elements competitors require to provide xDSL services — primarily by asserting that xDSL services require a "designed" loop and other complex/exceptional support processes.

That is simply not the case. Instead, an xDSL service requires the same "basic" loop as does basic analog or voice grade exchange service — *i.e.*, either a simple all-copper pair or a fiber-fed loop with service-appropriate plug-in electronics. The incumbent local exchange carriers' ("ILECs") convoluted assumptions and cost assertions regarding xDSL-capable loops have no basis in sound engineering practices either now or in the foreseeable future. They can benefit only the ILECs' desire to dominate the emerging broadband market and to stifle competition through outrageous loop rates. Therefore, the Commission should begin by simply dismissing BST's and GTE's wrongly constructed and incorrect analyses of xDSL-related costs. Instead, the Commission should generally adopt costs and set prices for each xDSL-related rate element at the same level as the corresponding price for that element's twin — the parallel unbundled voice-grade loop element. However, as I will also discuss below, both BST and GTE have substantially overstated the cost to provision even basic unbundled voice-grade loops. Therefore, the

Commission should correct the incumbents' estimates of voice-grade loop costs before using those costs to set prices for xDSL-capable loops. I will also discuss the importance of the requirement that ILECs provide competitors with access to the information that competitors need to determine which xDSL services a given set of facilities can support. Access to information, which the ILECs should have been maintaining for years, eliminates many of the nonrecurring costs reported by the ILECs in this proceeding. Specifically, I explain that, with electronic access to the ILEC databases, competitors can qualify their own facilities thereby eliminating the need for the ILEC's to perform any qualification function. I will explain why it is reasonable for the Commission to base costs on the forward-looking presumption that the data needed to qualify loops is available to competitors electronically for the relatively minimal cost of an electronic "dip" into the ILEC databases.

Based on the foundation I have just described, I will provide a methodology for estimating a reasonable cost to provision both xDSL- and ISDN-capable unbundled loops for each of the Florida ILECs in this proceeding.

I will explain the difference between recurring cost of basic and ISDN-capable loops in a current network architecture.

I will explain in detail why nonrecurring "conditioning" charges for xDSL loops are inconsistent with current (let alone forward-looking) engineering practice. In addition I will show that, even if the Commission

allows the ILECs to charge competitors nonrecurring rates for "conditioning," the ILECs' proposed costs for that activity are vastly overstated relative to the cost they would actually incur using efficient outside plant management practices.

Finally, I explain that, because splitters are *only* needed in line sharing arrangement, which are not being considered in this proceeding, the Commission should ignore BST's proposed splitter costs and prices in this proceeding.

Q. Please describe in very basic terms how DSL providers in Florida want to use the various elements being priced in this docket.

A. As required by the FCC, DSL providers like Covad, Rhythms and BlueStar will have electronic access to loop makeup information. Given nondiscriminatory access to loop data, a DSL provider can determine which, if any, of its services existing loop facilities can support, with or without "conditioning." If it finds a facility it can use, the DSL provider will reserve that loop. Such loops are identical to basic exchange service/voice grade service loops and have the same cost as those loops. Likewise, ordering such a loop is not more complicated than ordering a voice-grade loop. In some cases the DSL provider may find an older loop that can support its xDSL product once that loop is "conditioned" to comply with current engineering standards. If the DSL provider determines to use such a loop it can first order "conditioning" and then order that loop on an unbundled basis. Again, once the DSL carrier makes

the determinations as to whether "conditioning" work is necessary, the underlying loop and the process to order and install it are no different from that of a basic unbundled loop, and the cost is also identical. DSL carriers are ordering the Ford Escort of loop facilities and should not be forced to pay for the Rolls Royce, inflated with unnecessary features and costs that add nothing to the essential functions of the loop.

II. ISSUE 3A: XDSL-CAPABLE LOOPS ARE LOOPS THAT CAN BE USED TO PROVIDE XDSL SERVICES. FROM AN ENGINEERING PERSPECTIVE, XDSL SERVICES USE THE SAME LOOP PLANT FACILITIES AS THE ILECS HAVE USED AND PLAN TO CONTINUE USING FOR VOICE-GRADE SERVICES.

Q. Please define the term "xDSL."

A. "DSL" is the acronym for Digital Subscriber Line. "x" is a variable, meant to encompass the various types of Digital Subscriber Line technologies and is used when referring generally to DSL. Digital Subscriber Line technologies are transmission technologies used on circuits that run between a customer's premises and the central office that provide the end-user "broadband" service capability — essentially, the ability to receive and/or transmit data at substantially higher rates than the modem-based technology on which many customers rely today. To date, most DSL services have been deployed on loops that are copper end-to-

end from the central office to the customer premises. However, DSL technologies are now evolving such that DSL services may be deployed on fiber-fed loops. Such loops consist of copper facilities from the customer's premises to a mid-point equipment location, known as a remote terminal ("RT"), where signals are combined and transmitted over fiber optics from the RT to the central office. The ability to deliver xDSL services over both all-copper and fiber-fed facilities now promises to enable carriers to provide xDSL services on a nearly ubiquitous basis, thereby enabling carriers to build service volumes (and economies) in delivery of this exciting new body of services.

Q. Please describe generally the different types of xDSL technologies that are available.

A. There are a variety of DSL technologies available for use by carriers today. Some of the major categories have subsets characterized by different line coding approaches (*i.e.*, data transmission protocol or practice) or amounts of bandwidth. Major categories of xDSL include: Asymmetric Digital Subscriber Line, or ADSL; Rate Adaptive Digital Subscriber Line, or RADSL (a type of ADSL); Symmetric Digital Subscriber Line, or SDSL; High-bit-rate Digital Subscriber Line, or HDSL; Very high speed Digital Subscriber Line, or VDSL; ISDN Digital Subscriber Line, or IDSL, and G.Lite (which is a form of ADSL). Moreover, new forms of xDSL are evolving at a rapid pace.

Q. How do xDSL-capable loops differ from voice-grade loops?

A. In a forward-looking local exchange network, the facilities used to provide xDSL services are identical or nearly identical to those used to provide voice-grade services. In fact, for loops that would be provisioned entirely on copper facilities given current engineering practices, xDSL-capable loops are identical to loops used to provide voice-grade service. BST witness Milner acknowledged as much at page 6 of his direct testimony:

> Significantly, the same copper loops that are used to provide DSL services are also utilized to provide voice service to BellSouth's customers, as well as to other ALECs' customers.

At page 36 of his direct testimony, Sprint witness Dickerson agrees:

> The forward-looking network design used within BCPM to develop the 2-wire voice grade loop is also capable of supporting xDSL for those loops served on copper.

In its response to Rhythms' Interrogatory No. 81, GTE admits the same thing practically (but refuses to so state directly) when it confirms that "GTEFL utilized the ICM-developed cost of an analog loop ... for an xDSL loop". (In the same response, GTE claims that its cost analysis makes no assumptions at all regarding what an xDSL-capable loop might actually be: "... no contention is made by GTEFL as to the specific designing, provisioning, maintenance, and repairing of an xDSL loop.")

Q. You stated that the facilities used to provision xDSL loops are the same as those used to provide basic voice grade loops. Does your answer vary between all-copper loops and fiber-fed loops?

A. No. If the incumbents have built their existing loop plant to comply with decades-old design standards, all-copper loops under 18,000 feet in length should be xDSL-capable today. The maximum copper loop facility length included in an analysis based on forward-looking, efficient engineering practices would be 18,000 feet. In practice, the economic crossover point between the use of copper feeder versus fiber feeder and Digital Loop Carrier ("DLC") systems is generally a loop length substantially below 18,000 feet.

At some length at or below 18,000 feet, current economic considerations and engineering practices call for the use of fiber feeder facilities and DLC systems to achieve efficiencies such as allowing concentration in the feeder portion of the loop and to extend the portion of the loop that is provided in a fully digital format closer to the end user. In this arrangement, as with all-copper loops, the copper distribution portion of the loop is identical whether the service provided is basic voice-grade analog service or an xDSL-based service. Likewise, incumbents can provision both basic exchange voice grade services and xDSL-based services using the same DLC systems and the same fiber feeder facilities. In the fiber-fed arrangement for longer loops, however, xDSL capability requires a current technology/upgraded DLC remote terminal and requires

the use of a different "channel unit" or plug-in card from the voice-only channel units assumed in the incumbents' recurring cost studies for unbundled analog loops.

Q. Can incumbents physically provision xDSL-capable loops over the same existing facilities that they use to provision voice-grade loops today?

A. Yes. If the Florida ILECs have been building and maintaining their networks in a manner that meets engineering standards that have been in place for decades (and that they say they are following), they can provision xDSL-capable loops over the same facilities used to provision voice-grade loops, in most cases.

For all-copper loops up to 18,000 feet in length, competitors providing xDSL services need nothing more than a basic loop free of impediments such as load coils, excessive bridged tap, repeaters, Digital Added Main Lines ("DAMLs"), noise, or any other condition that has a deleterious effect on xDSL-based services.

I will explain in Section VII.A below why a forward-looking network should not include impairing devices such as load coils and bridged taps longer than 2,500 feet. The other impairing conditions that I just described are equally incompatible with current network design standards. Repeaters and other old local loop devices either render local loops unusable for even Plain Old Telephone Service ("POTS") service or are so obsolete that they should have been removed by ILECs when their

use was no longer necessary as a part of ongoing maintenance over the last several decades. Likewise, DAMLs are placed as a temporary expedient on loops to mitigate a lack of outside plant facilities and are replaced with adequate normal outside plant facilities by ILECs as a standard aspect of facility maintenance as soon as is practical.

For loops longer than 18,000 feet, several different possibilities arise. First, if the loop is provisioned over a current fiber feeder and a DLC system, that system can support xDSL-based services with the addition of the correct channel unit, *i.e.*, plug-in card (an older DLC system might also require an upgrade). Second, if the most readily available loop is on older, all-copper facilities, the incumbent may, in limited cases, need to remove load coils that were originally required to provide voice-grade basic exchange service to enable xDSL services. The incumbents should be removing these load coils in any case as they continually upgrade their outside plant to conform with their own engineering guidelines. Third, the incumbent might employ a "pair swap" or "line-and-station transfer" to substitute an available all-copper line for a line provisioned on an older DLC system. Fourth, the competitor might opt to obtain a digital/ISDN-capable unbundled loop and provide an IDSL service. The Commission should remember, however, that the second and third options are incompatible with a network designed to forward-looking, efficient or even current standards.

In other words, these options are workarounds resulting from the fact that the ILEC might not actually have in place a network that parallels the design assumed in an analysis based on the incumbents' own recurring cost studies and current engineering guidelines. As Ms. Murray explains in her testimony, the costs associated with such workaround efforts to squeeze current functionality out of older plant investments should not be considered in addition to the forward-looking recurring cost of constructing facilities. Indeed, such plant maintenance and upgrade issues traditionally have no place in any form of nonrecurring cost analysis with which I am familiar.

In a forward-looking network design, all of the cost associated with extending xDSL capability to even the longest loops results from the investment in DLC systems and the use of the correct channel unit card for the given xDSL service. This network design for costing of xDSL services is no different from the basic costing approach that all ILECs typically use to study the cost of ISDN-capable loops (although the ILECs inflated that cost in other ways). That is the case for good reason. At its core, the ISDN loop is a DSL loop according to ANSI standard 601. Thus, providing xDSL service requires an architecture that is substantially similar to ISDN.

Q. You have just shown that xDSL services are (by design) intended to be provisioned over the same basic loops and network architecture that the ILECs have deployed for years (and continue to deploy). Are

the ILEC cost studies submitted in this proceeding consistent with that fact?

A. No. BST's cost analysis, in particular, greatly distorts the nature and requirements of xDSL service providers. BST initially defines an artificially limited set of loop types and loop transmission standards that it would impose on xDSL loops. To meet these artificial restrictions BST then constructs a plethora of special processing steps that, BST claims, add huge costs to the provision of an xDSL loop. None of these steps are useful or desirable for xDSL providers such as Blue Star, Covad and Rhythms. For example, BST adds costs to dispatch a technician to the end user premise to test the loop relative to its self-imposed standards. To coordinate that test, BST has an engineer "design" the circuit to include wiring BST remote testing access capabilities. That process breaks the normal, inexpensive, flow-through provisioning of the loops and, in turn, leads to additional recurring and nonrecurring costs to wire in that testing facility. These and other related costs are entirely unnecessary and do nothing but harm to the competitive market for xDSL services in Florida.

III. THE ILECS' ESTIMATES OF THE NONRECURRING COST TO CONNECT XDSL UNBUNDLED LOOPS AND BASIC LOOPS ARE GREATLY OVERSTATED.

Q. Should the Commission give any weight to the BST analysis of the nonrecurring cost to provision various types of unbundled loops for use to provide xDSL services?

A. No. I have reviewed the BST nonrecurring cost studies for elements such as the long and short-unbundled copper loops and the ADSL loop and concur with the assessment in Ms. Murray's testimony. BST's analysis is simply irrelevant to the work effort that would reasonably be required to provision the xDSL-capable unbundled loops that data ALECs such as BlueStar, Covad and Rhythms need. Indeed, after having reviewed the BST study and supporting materials, it is still not clear to me what BST thought it was analyzing. As noted above, xDSL loops, particularly those provided over all-copper facilities, are exactly like basic loops. Therefore, as I will explain below, the connection of an xDSL loop should involve no more than the few basic tasks that are required in order to connect a copper loop to a collocation facility in the central office. Instead of studying those activities, BST has presented a maze of irrelevant tasks. Moreover, even if they were somehow relevant, BST's study includes activities that even a moderately efficient ILEC would have mechanized and task times that are entirely unreasonable.

Q. What activities does BST include that are entirely irrelevant to the provision of xDSL-capable loops?

A. Most of the activities presented by BST are simply irrelevant. Ms. Murray's testimony identifies several general areas that BST inappropriately includes in its analysis including loop "conditioning" costs, field work costs and costs to "design" the loop. BST likewise includes inappropriate tasks within the activities reported for individual work groups such as time for coordinating the unbundled loop order with any disconnect of prior BST service, which should have been included as a cost of BST's retail service.

Q. What tasks does the BST analysis include that an efficient ILEC would not require?

A. As an example, the BST ADSL nonrecurring cost study is rife with inefficiency. Consider the reported activities for the "UNEC" work group: BST includes manual work time to "pull" the order, to "assign to work force," to "ensure accuracy of design," to "ensure dispatch." ILECs with forward-looking OSS have automated all of these activities and should not require any standard manual intervention. BST also seems to have mechanized at least some of these tasks but, amazingly, then has built in a 100% manual backup to make sure, for example, that the automated dispatch that should have been scheduled automatically was actually scheduled. I can only assume that BST is deliberately causing fallout (*i.e.*, a need for manual intervention and additional labor costs) for those

activities merely because a competitor for xDSL service will use the ordered loop. Likewise, BST includes both time to manually contact customer and to manually "complete order," two tasks that should accomplish the same objective. BST's analysis is replete with such duplicative and unnecessary manual activities, which even a moderately efficient ILEC, and likely BST in its own retail operations, has fully automated.

Q. Please provide examples of unreasonable task times in the BST nonrecurring cost analysis.

A. Again, BST's analysis contains numerous examples of unreasonable task times, including several within the ADSL nonrecurring cost study and the "UNEC" work group. The most extreme is that BST's study appears to assume that this workgroup will spend *27 minutes testing for "continuity" on each of two separate occasions* — a total of 54 minutes to test continuity. A continuity test is one of the most routine, simple and rapid activities in central office operations. If required at all, it is typically done at the same time a connection is made and involves little more than clipping standard test apparatus onto the newly completed connection. This task should take substantially less than one minute and should only be done once at most. BST's reported task time is more than 54 times too high. Indeed, even the BST person responsible for the UNEC group inputs admits that the testing time should not have been duplicated in the

study. [See Deposition of James Franklin Ennis, BST, July 20, 2000 at Tr. 56-59.]

Numerous other tasks are likewise substantially overstated. For example, BST reports that the "pull info" task requires 8 minutes. This task should not require any manual time at all, as information required for work on an assigned order is typically either printed or loaded into a queue in a work terminal automatically in a mechanized OSS environment. Even if, for some odd reason, a manual lookup were required, it should not take anything near 8 minutes merely to retrieve the information needed to process an order. Again, these ready-to-hand examples are not exceptions but are instead representative of the reported BST cost study result.

Q. If the Commission agrees with BST's approach of designing each individual xDSL loop, based on its (inappropriate) definitions of those loops, could the Commission rely on the BST reported costs without substantial adjustment?

A. No. As I have noted above, even if the Commission agrees with BST that it must hand design and test each xDSL unbundled loop (using unnecessary manual processes at each step), BST has vastly overstated the cost of each step. Because BST has not identified the basis for many of its study assumptions, I cannot identify each and every instance of where BST's nonrecurring cost study shows unnecessary, unsupported or inflated task times. The examples based on BST's "ADSL Loop" study set forth

below clearly illustrate that BST's nonrecurring cost analysis is substantially flawed.

Analysis of BST Reported Tasks and Task Times to Install an "ADSL Loop"

Task Group 1: Service Inquiry

BST assumes that, on 52% of orders, four different groups will do 2.48 hours of "Service Inquiry" work to manually determine if an ADSL-qualified loop is available. A forward-looking analysis should instead assume that the ALEC has access to the data needed to qualify its own loops. Therefore, these tasks are unnecessary. Moreover, as Ms. Murray discusses further, the service inquiry function is also a separate element that can be requested separately by carriers if so desired. Therefore, including that function in the loop installation cost will necessarily result in forcing some carriers to pay to have the same inquiry done twice. For these reasons these costs should be entirely removed.

If for some reason they are not simply eliminated, however, the Commission will need to substantially adjust these costs. BST has not yet supplied sufficient detail concerning the basis for its reported "CRSG" and "LCSC" functions. The process described for these groups is, however, patently absurd.

The CRSG, for which BST reports more than an hour of labor (61.8 minutes) "receives firm order SI from ALEC and screens documents; CRSG prepares/sends transmittals to OSPE for verification of

facility availability. Upon completion of job, CRSG informs ALEC facilities are available." This effort appears to consist entirely of reviewing the ALEC request and translating it into a different format that another work group uses and, ultimately, sending notice back to the ALEC when the Service Inquiry is done. Those are functions that a mechanized OSS does automatically. There is no reason whatsoever to have a forward-looking cost analysis assume the equivalent of a room full of monks transcribing the ALEC manuscripts by hand. (Moreover, based on BST's response to Rhythms' Request for Production of Documents 3, Attachment 1, BST appears to have erroneously used a 61.8 minute estimate for an "incremental work effort for order complications" instead of the 45 minute estimate it had developed for basic Service Inquiry processing.)

The next process step is that the LCSC "receives SI from CRSG, validates for accuracy and processes order." BST reports that this requires another 45 minutes. I have been unable to find any workpaper supplied by BST that even basically identifies specifically how the 45-minute estimate was developed. However, the last page of BST's response to Rhythms' Request for Production of Documents 3, Attachment 1, states "Manual worktimes for the LCSC ... 1st install ... 30 (15 min to screen & 15 min to process order)." Based on that discovery, it appears that BST began by overstating its input by 50%. More importantly, this step appears to be entirely busy-work created by BSTs own manual transcription of the

ALEC's request. In other words, it is for a second room full of monks that do nothing but check the transcriptions of the first group – all before the request gets to a group that is close to the actual work effort.

Fortunately, we have some additional detail regarding the two remaining work groups becausethe subject matter expert, Michael K. Zitzmann, who supplied the task times for the Outside Plant Engineering and "SAC" group portions of the "Service Inquiry" was deposed by parties on July 20, 2000. Mr. Zitzmann revealed that his 180-minute estimated task time for those groups consists of 30 minutes for clerical processing and updating of BST's plant records, plus 150 minutes for a BST engineer to look up the facility records for the requested loop route. At 2.5 hours per loop, this means that Mr. Zitzmann has assumed that a BST engineer, working with plant records for a central office with which he is familiar, with full access to all of BST's mechanized plant records for that office and with the paper records for that office at hand, can trace *three loops per day*. Based on my experience, that estimate is substantially off base. Because he was not able to provide a detailed breakdown of how he arrived at his estimates, it is not possible to analyze exactly how Mr. Zitzmann went wrong. His deposition does, however, provide some clues. For example, Mr. Zitzmann is only marginally familiar with BST's mechanized plant databases such as LFACS because he acknowledges that 13 years ago "... when I was an engineer, LFACS was brand new." [Tr. at 100.] In fact, Mr. Zitzmann seems to have

exaggerated the time required for even the most basic uses of mechanized systems. For example, Mr. Zitzmann first asserted that "[i]t takes longer than five minutes ..." just to log into LFACS. [Tr. at 44.] He later seemed to admit that the log-in process involves only two screens and a few key strokes. [Tr. at 101-104.]

Contrary to Mr. Zitzmann's exaggerated estimate, when BST has complete records, a qualified engineer or even an experienced clerical assistant would never need to leave his terminal to qualify loop facilities and might complete the job in the matter of a few minutes. In those cases in which the BST engineer must consult paper records, the process should still take an hour in a worst case scenario. As an overall average, I believe an efficient BST operation could look up the required information and forward it to a ALEC within 30 minutes.

BST's notion that this lookup will need to be done 52% of the time is also a substantial overstatement of the likelihood that an ALEC will require BST to look up a record manually. Such an effort should only be required when mechanized qualification fails, which should be no more than 10 percent of the time.

Task Group 2: Engineering

The second cluster of tasks in the BST analysis is for "engineering." The first engineering task is for the "CPG" work group, which "processes request; designs circuit and generates DLR & WORD document for CLEC and Field." This task appears to consist of two

distinct time estimates for correcting fallout in the automated engineering process at two different points, which take 15 and 18 minutes respectively. BST assumes that each type of fallout will occur on 15% of all orders. [*See* BST's response to Rhythms' Request for Production of Documents 3, Attachment No. 2.] The limited supporting documentation provided to support the BST study inputs for this group suggests that the task times came from a time and motion study, which was not provided. BST's workpapers provide no clue as to how the fallout percentages in its study were developed. Hence, because BST failed to provide the source documents for either portion of its cost calculation formula, no detailed analysis is possible.

In addition to the "CPG" work, but also without support, BST assumes that the "AFIG" work group will spend 8 minutes to "assign loop facilities" as needed to correct fallout in the assignment process for an additional 30% of "ADSL loops." Overall, BST is assuming that its automated processes will fail an astounding 60% of the time on a cumulative basis.

As I have shown above, this entire engineering process is unnecessary. If, however, the Commission wishes to include it, an assumed breakdown rate of 60% (in this single, minor portion of the order process) is totally out of line with any reasonable forward-looking OSS process. I recommend that the Commission should allow no more than a few percentage fallout occurrence across the entire "engineering" activity

(*e.g.*, 1 percent each for the BST's three types of fallout would be conservative). (In part, I am relying on this adjustment to the occurrence factor for "engineering" tasks to compensate for any overstatement in task times, which BST failed to explain or support.)

Task Group 3: Connect & Turn-up Test

Under the label "Connect & Turn-up Test" in its cost study BST includes work by a number of disparate groups, each of which I will address separately below.

UNE Center Group

BST reports 85.2 minutes for work by the "UNE Center." BST describes this function as "UNEC pulls info, assigns to work forces; verifies & ensures accuracy of design; creates cut sheets to verify reuse of facilities; ensures dispatch, performs frame continuity and due date coordination and testing; performs manual order coordination (RCF, disconnect and UL order) when service is converted on existing facilities, and contacts customer and completes order." Based on the July 20, 2000 deposition of Mr. James Franklin Ennis, the BST expert who provided the UNE Center inputs, it appears that the basic role of the UNE Center is to coordinate and perform remote testing on design loops such as BST "ADSL Loop." [Tr. at 11-14.] As noted above, I do not believe that it is necessary or appropriate for an xDSL-capable loop to be designed and specially wired to allow the ILEC remote test access. (Indeed, neither GTE nor Sprint is proposing to provide such designed loops for xDSL.)

Without such design steps and extra wiring, no remote testing would even be possible, and the UNE Center work would be eliminated.

Even if the Commission were improperly to adopt a designed "ADSL Loop" assumption for BST, the UNE Center cost for testing those loops would be overstated. As an example, the UNE Center time includes functions such as "ensures dispatch" meaning that a UNE Center employee literally checks to make sure that BST's automated systems did not fail to schedule the dispatch of a field technician to coordinate the testing process with the UNE Center. [Tr. at 21.] Such obvious redundancy should be removed from a forward-looking analysis.

The BST reported result also includes basic errors. For example, BST appears to include the time for two distinct 27-minute remote tests. Not ony is it implausible that a remote test would take 27 minutes, Mr. Ennis indicated BST's process actually performs only one test. [Tr. at 56-59.] That single error overstates BST's task times substantially. Given such loose coordination between the cost study group and the experts who supposedly validated the study inputs, there is no telling how many other such errors may have entered into BST's analysis.

The inputs that BST did accurately capture also appear to be generally overstated. For example, Mr. Ennis attempted to justify the task times that BST relied on for the "first install" of a loop by explaining that those times consider that BST may actually have to process multiple loops on the same order. [Tr. at 68-69.] Mr. Ennis seemed unaware that the

BST study is not stated on a per order basis, but adds additional time and cost for any additional loops on an order. Therefore, if the initial loop time does included bundled time for multiple loops as BST's expert asserted, the BST study times are generally and significantly overstated.

Fundamentally, a far more efficient approach would be for BST to simply have the technician test the loop manually at the time it is installed. That effort would require considerably less than the 27 minutes the UNE Center allegedly requires for each individual test. Being conservative, I would therefore allocate an additional five minutes work activity for an efficient equivalent of the UNE Center testing process.

It is not surprising that BST's estimates are so far off. Although Mr. Ennis was the subject matter expert on which BST relied to support the UNE Center cost estimates, he did not actually develop those estimates. Instead, he merely agreed to accept the cost estimates provided to him by the cost group. He had no idea from where the estimates used actually came or how they were developed. [Tr. at 50-52.]

"WMC" Work Group

BST reports 15 minutes for the "WMC" group to "coordinate dispatched technicians." BST failed to provide a word of explanation regarding how this time was developed or what exactly is supposed to take place for the reported 15 minutes. [*See* BST's Response to Rhythms' Request for Production of Documents 3, Attachment 3. The supporting work papers provided therein for the "WMC" show that someone signed

off on the input estimates but nothing more.) BST's alleged need for yet another layer of manual coordination is contrary to efficient engineering practices using forward-looking OSS. The Commission should not allow any recovery for this group and activity until BST provides compelling justification concerning why it is necessary.

CO I&M

BST includes 20 minutes for 85% of loops for the CO I&M group to "wire circuit at collocation site." Based on the July 20, 2000 deposition of Mr. Daniel Eric Stinson, it appears that this is based on an assumed ten minutes to review the order and walk to the frame location, and five minutes to run each of two frame jumpers one on the main distribution frame and another to connect a BST remote test head (thereby making the loop "designed"). [Tr. at 29-30.] Other than the assumption that a second jumper is required to include a designed test point, I agree that the basic functions for this work group are required. I do not agree with the BST time estimates and present my own recommended alternative times for those functions later in this section of my testimony. If and only if the Commission approves BST's recommendation to design in a test point, I recommend that this task should take a total of 11 minutes.

The 85% assumption appears to be based on a BST note that the study "... assume[s] 15% of total are carried in other transport elements." This is not explained and does not make any obvious sense. Indeed, Mr. Stinson seemed unclear at to where or how the remaining 15% of the CO

I&M costs might be captured. [Tr. 24.] Therefore, I recommend increasing the occurrence of this work from 85% to 100% when applying the occurrence to my more reasonable time estimates.

Outside Plant or Field Work

Finally, BST assumes 115.2 minutes of outside plant or field work plus 20 minutes of travel time for *every* ADSL loop order. Ms. Murray's testimony explains that this work should not be included in a forward-looking analysis of nonrecurring costs because it is already captured in the recurring cost analysis.

Not only is this cost entirely double counted, BST's analysis again overstates task times. xDSL loops will not require a dispatch in 100% of cases under any reasonable set of assumptions. As a forward-looking assumption, the Commission should not assume that an xDSL loop will require a dispatch of outside plant technicians any more often than is required for a basic loop, which BST assumes will be required for only 20% of basic unbundled loops.

BST also appears to have substantially inflated the times for a dispatch. To begin, BST appears to have double-counted travel time by including it both in the aggregate 115.2 total minutes and again as a separate line item in the study. Therefore, I recommend that the Commission eliminate the additional separate time for travel.

BST's remaining task time estimates include:

***** BST PROPRIETARY**

[redacted]

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All of the preceding detail comes from BST's Response to Rhythms' Request for Production of Documents 3, Attachment 9.

Each of these estimates greatly exaggerates the time required, on average, for a qualified technician to perform the required task. Some of the individual tasks, in the sequence from items 1 through 4 above, such as

item 1, can be accomplished in a minute or less. Considering the entire series of tasks in sequence (including setup time), I estimate that it might take an average of 25 minutes in total.

Likewise, the cumulative *** **BST PROPRIETARY** [redacted] **END PROPRIETARY** *** presumed error rate reflected in items 5 and 6 is completely inconsistent with the performance level I would expect. Even being extremely conservative and retaining BST's task times, I recommend allowing BST to include only a maximum of a 5% occurrence for each type of error.

Q. Please summarize the findings you have just presented.

A. The following table compares the BST reported times by function with the times I believe are appropriate for either a forward-looking cost study of a basic loop, including an xDSL loop, or a realistic study of a designed loop process.

Group / Function	BST Reported Time	Realistic Time Assuming a Forward-Looking Process with No Design	Realistic Time Assuming BST's Engineered/ Designed Loop Process

Group 1: Service Inquiry	286.8 minutes on 52% of orders	0 minutes (Should be mechanized and is part of another element.)	30 minutes on 10% of orders.
Group 2: Engineering	15 minutes on 15% of orders 18 minutes on 15% of orders 8 minutes on 30% of orders	0 (ADSL loops should not be designed)	15 minutes on 1% of orders 18 minutes on 1% of orders 8 minutes on 1% of orders.
Group 3: UNEC	85.2 minutes for multiple tasks at various occurrences	0 (remote testing is not required or possible on a non designed loop)	5 minutes additional time for a test at the frame in central office at installation.

Group 3: WMC	15 minutes per loop	0 (not required for a basic loop)	0 (BST has not provide even a basic explanation of what this element is for)
Group 3: CO I&M	20 minutes on 85% of loops	8 minutes for 100% of loops	11 minutes for 100% of loops
Group 3: SSI&M (Outside plant)	90 minutes for multiple tasks at various occurrences	0 (this activity is a recurring cost in a forward-looking analysis)	50 minutes total time for 20% of loops (including 5% additional error correction time)
Total Cost	$ 281.61	~~$ 4.67~~ 5.33	$ 20.52

Q. Are the tasks you just discussed and your comments about those tasks relevent to other BST proposed nonrecurring costs?

A. Yes. The problems with BST's nonrecurring analysis for installing an "ADSL loop" generally apply to all of the varieties of xDSL-related unbundled loop that BST reports and to the disconnect times associated with those elements as well.

Also, my criticism of the "Service Inquiry" functions should be applied to BST's costs for a manual Service Inquiry as a standalone element because BST uses the same work groups and tasks for that analysis. Therefore, a reasonable estimate of the time required for a manual service inquiry (*i.e.*, a request for loop makeup information) would be ***** BST PROPRIETARY** [redacted] **END PROPRIETARY *****

Q. If the Commission rejects BST's unnecessary "designed loop" assumptions for xDSL, what activities and task times should be included in a nonrecurring cost analysis?

A. Costs for access to loop makeup information and/or "conditioning," which may or may not be required for any given loop, if determined to be appropriate at all by the Commission, should be recovered as part of a charge specific to those activities. Therefore, the only activities relevant to processing an order to connect an individual loop are: 1) processing and reviewing the ALEC service order; 2) placing the required jumper to connect the loop appearance in the central office to the (prewired) collocation cross-connection; and 3) reporting back to the OSS that the work is completed. These are the same steps required for a basic unbundled loop; there is no reason whatsoever that the nonrecurring work

times or costs for all-copper xDSL loops should be different than for a basic, non-designed loop. However, the Commission should not apply the work times that BST has reported for a basic loop, at least not without making significant adjustments to these times, because BST has also overstated the work efforts and times required to connect basic unbundled loops.

Q. Typically how long should it take to process and review the ALEC service order?

A. Jumper work is typically done in batches at specific times of the day. Normally, a technician does not go to a terminal to pull each individual order. Instead, a printout of all of the assigned orders for the day is generated automatically for the technician and is waiting at the designated time. In the worst case, an efficient technician will go to a terminal and pull records for a number of orders at once. The analysis required for each order is likewise negligible. An order that requires running a jumper is the most common task for a central office frame technician. Moreover, a technician who has been assigned to a given office for more than a few weeks knows with significant precision where the "from" and "to" points for an order are located on the frame with little more than a glance at the order. Therefore, on average, I estimate that it would take no more than 2.5 minutes to pull and analyze a work order to connect an xDSL-capable loop.

Q. How long should it take to actually place the jumper connection?

A. Placing a jumper to connect the loop appearance to the appearance of a cross connection to collocation should take no more than a few minutes, even allowing for walking time. Again, a technician will know the frame well and the process of attaching a jumper to the frame is so routine as to be almost automatic. In some percentage of cases, however, the technician will need to travel to an office location that is normally "unstaffed" to perform the specific jumper work. Therefore, some travel time may also be required in order to complete this task. If the ILEC is operating efficiently, however, even that travel time will be minimal on a per-line basis. Travel time as a function of lines should be small, both because most lines will be located in staffed offices and because, when work in a non-staffed office is required, it can typically be coordinated to occur in batches. Based on the assumption that 80% of loops are in staffed locations and four loops are grouped into a batch (on average) before a technician is dispatched, travel time would only be assigned to each loop with a 5% occurrence. Based on the further assumption that a non-staffed office is typically 20 minutes from a dispatch location, then each loop would only be assigned one minute of travel time. Based on my personal experiences, I believe these are reasonable assumptions.

Q. How long should it take to close an order?

A. Closing an order should take less time than it took to originally "pull" and analyze because no analysis is required. Instead, the technician is merely

checking off into the automated system that the requested work has been completed. Again, an efficient technician will do this activity in a batch mode once numerous assigned jumpers have been placed. I estimate that, on average, it should take about 1.5 minutes to report work complete for each line on an order.

Q. Wouldn't processing the order itself also involve some additional cost?

A. Only in very limited cases. Typically, ILECs' OSS are fully capable of managing the flow of a basic order, which should include the cross connection of a loop regardless of the intended use for that loop, in a fully automated mode. Therefore, the only manual task time required to process an order for an unbundled loop would be to manually sort out problems for the small percentage of cases in which the automated OSS cannot identify facilities and assign the work correctly. Given that the ILEC in question should have decent up-front order edits in place and have maintained reasonably accurate database records, the percentage of such fallout should be very low. I estimate that it should be around 2% in an analysis of efficient, forward-looking costs. It might take about 15 minutes, on average, to review, analyze and resolve such problems. Given this assumption the correction of errors in the ordering process would legitimately take an additional 0.3 minutes on a per-line basis.

Q. Is the activity required to eventually disconnect an xDSL-capable (or other basic) loop roughly the same as the time you just reviewed for connecting the loop?

A. Yes. The only difference is that the actual jumper or connection work would take somewhat less time because it is faster to pull a jumper off of a frame connection than to make a new connection.

Q. Please summarize the steps and times that should be included in the nonrecurring cost to connect an ordered basic or xDSL-capable loop.

A. The following tables provide a sound estimate of the tasks and work times required to provision a basic copper loop (for use to provide basic exchange analog service or an xDSL service).

Tasks, Times and Costs Required to Efficiently Connect an Unbundled Loop			
Task	Minutes	Occurrence	Minutes per Line
Obtain and Review Order	2.5	100%	2.5
Travel to Remote Office	20	5%	1
Place Jumper	3	100%	3
Report Work Complete	1.5	100%	1.5
Total Minutes Per Line			8
Estimated (Proxy) Labor Rate			$ 40.00
Total Cost			$ 5.33

As the preceding table indicates, if one assumes for the sake of illustration that the Commission adopts a forward-looking average labor rate of about $40 for the related work groups for any given ILEC, then the total cost to connect an unbundled xDSL loop should be about $5.33. The price should be about $5.33 plus any adopted common cost markup. As shown in the following table, the costs and rates for a disconnect would be very similar.

Tasks, Times and Costs Required to Efficiently Disconnect an Unbundled Loop			
Task	Minutes	Occurrence	Minutes per Line
Obtain and Review Order	2.5	100%	2.5
Travel to Remote Office	20	5%	1
Remove Jumper	2	100%	2
Report Work Complete	1.5	100%	1.5
Total Minutes Per Line			7
Estimated (Proxy) Labor Rate			$ 40.00
Total Cost			$ 4.67

Significantly, the process of connecting jumpers in a frame within a central office is a highly consistent task across ILECs. Therefore, aside from minor variations caused by differences in labor rates, I would not expect the result presented in the preceding tables to vary across ILECs.

Q. Is BST's analysis of the time and tasks required to install an unbundled ISDN loop more reliable?

A. No. Again, BST seems to have studied the wrong element. For all-copper loops, an ISDN loop is identical to any other copper loop and BST merely needs to place the jumper from the cable appearance on the central office Main Distribution Frame (from the end user) to the hardwired cable appearance to the ALEC's collocation space (that is located on a terminal block on the Main Distribution Frame).

For loops provisioned on fiber-fed DLC systems, an ISDN loop must be connected to an appropriate line card in the DLC. For the first line in a RT, this process would entail placing an ISDN line card at the RT that would establish the feeder portion of the circuit and subsequently, placing a cross-connect jumper at the adjacent FDI from the appearance of this feeder pair to the distribution copper cable pair that serves the end user. Because the ISDN line card can accommodate 4 ISDN lines, the subsequent 3 lines of ISDN service would merely require the placement of a cross-connect jumper at the FDI for subsequent orders.

Using the estimated $40 labor rate and GTE's 45.5% of fiber-fed loops the following tables provide a reasonable estimate of the cost to install an unbundled ISDN-capable loop. The first table develops the cost for installing those ISDN-capable loops that are provisioned over all copper facilities.

Tasks, Times and Costs Required to Efficiently Connect an All-

Copper Unbundled ISDN-Capable Loop			
Task	Minutes	Occurrence	Minutes per Line
Obtain and Review Order	2.5	100%	2.5
Travel to Remote Office	20.0	5%	1.0
Place Jumper	3.0	100%	3.0
Report Work Complete	1.5	100%	1.5
Total Minutes Per Line			8.0
Estimated Labor Rate			$40.00
Subtotal			$5.33
% All Copper Loops			54.5%
Weighted Cost of All-Copper Loops			$ 2.90

The second table provides the costs for provisioning a fiber-fed ISDN-capable unbundled loop.

Tasks, Times and Costs Required to Efficiently Connect a Fiber-Fed ISDN-Capable Unbundled Loop			
Tasks	Minutes	Occurrence	Minutes Per Line
Obtain and Review Order	2.5	100%	2.50
Travel to RT/FDI	20.0	100%	20.00

Set Up Work Area	5.0	50%	2.50
Place Line Card @ RT	3.0	25%	.75
Place Jumper @ FDI	3.0	100%	3.00
Tear Down Setup	5.0	50%	2.50
Report Work Complete	1.5	100%	1.50
Total Minutes Per Line			32.75
Estimated Labor Rate			$40.00
Subtotal			$21.83
% Fiber-Fed Loops			45.5%
Weighted Cost of All-Copper Loops			$ 9.93

The total cost is $12.83 ($2.90 + $9.93). To develop ILEC-specific costs for any ILEC one can modify the tables to include the ILEC-specific labor rate, the ILEC-specific forward-looking percentage of fiber-fed loops and any Commission-approved common cost markup.

Q. Is the cost to disconnect the same?

A. No. Because the ILEC will not need to remove the line card each time an unbundled ISDN-capable loop is disconnected, the cost to disconnect is less. The following table provides the costs to disconnect a ISDN-capable unbundled loop.

Tasks, Times and Costs Required to Efficiently Disconnect an All-Copper Unbundled ISDN-Capable Loop

Task	Minutes	Occurrence	Minutes per Line
Obtain and Review Order	2.5	100%	2.5
Travel to Remote Office	20.0	5%	1.0
Remove Jumper	2.0	100%	2.0
Report Work Complete	1.5	100%	1.5
Total Minutes Per Line			7.0
Estimated Labor Rate			$40.00
Subtotal			$ 4.67
% All Copper Loops			54.5%
Weighted Cost of All-Copper Loops			$ 2.55

The second table provides the costs for disconnecting a fiber-fed ISDN-capable unbundled loop.

Tasks, Times and Costs Required to Efficiently Disconnect a Fiber-Fed ISDN-Capable Unbundled Loop			
Tasks	Minutes	Occurrence	Minutes Per Line
Obtain and Review Order	2.5	100%	2.50
Travel to RT/FDI	20.0	12.5%	2.50
Remove Line Card	3.0	25%	.75

Report Work Complete	1.5	100%	1.50
Total Minutes Per Line			7.25
Estimated Labor Rate			$40.00
Subtotal			$4.83
% Fiber-Fed Loops			45.5%
Weighted Cost of All-Copper Loops			$ 2.20

The travel time for disconnection considers that the card will only need to be removed when all ISDN lines at the RT have been disconnected, roughly 25% of the time. It further assumes that the ILEC will only trigger the dispatch to remove the card when at least one other job is planned at the RT. Hence, the overall occurrence of the cost is 12.5% or 25% of 50%. The total cost to disconnect an unbundled ISDN-capable loop is approximately $4.75 ($2.55 + $2.20). Again, to develop ILEC-specific costs for any ILEC one can modify the tables to include the ILEC-specific labor rate, the ILEC-specific forward-looking percentage of fiber-fed loops and any Commission-approved common cost markup.

IV. THE COMMISSION SHOULD REQUIRE THE ILECS TO PROVIDE COMPETITORS WITH ACCESS TO LOOP MAKEUP INFORMATION AT A PRICE THAT REFLECTS THE COST THE ILECS WOULD INCUR IF THAT INFORMATION WERE AVAILABLE, IN ALL CASES, THROUGH THE ILECS' MECHANIZED SYSTEMS.

Q. In the previous section of your testimony, you provided a restated estimate of the cost for an ILEC to manually provide information to a ALEC regarding the loop makeup, so that ALECs can qualify loops for their xDSL services. Did you intend to suggest that ILECs should be authorized to charge ALECs for that manual activity?

A. No. In the preceding section I restated the cost of BST's manual "Service Inquiry" assuming reasonable processes and task times. As I hope was clear, however, I did not intend to endorse BST's approach. This section of my testimony will address the proper approach to developing costs for loop data in a forward-looking analysis.

Q. What information does a competitor require to determine the suitability of a loop for provisioning xDSL-based services?

A. To determine the qualification of a loop for xDSL-based services, it is necessary to determine the type of facility (*i.e.*, copper end-to-end or an amalgam of fiber/copper/electronics). Additionally, the ALEC must know the characteristics of the facility, including the length, gauge and

capacitance and the presence or absence of any impediments (*e.g.*, load coils, amount of bridged tap, repeaters) and interferers (*e.g.*, AMI T-1). The determination of suitability of a loop for provisioning DSL-based services based on this "loop makeup" information is very specific to the DSL technology and equipment that a particular carrier deploys.

Q. Where do the ILECs keep an inventory of this loop characteristic information?

A. The ILECs keep the inventory of the aforementioned loop makeup information in mechanized database systems. For example, BST keeps such information in the Loop Facilities Assignment and Control System ("LFACS") database, as well as the MapViewer system, which provides a mechanized version of older paper plant record, and possibly other databases. [BST's Response to Rhythms' Interrogatory 34.] GTE apparently stores loop information in several databases, including the Integrated Computer Graphics System ("ICGS") and the Assignment Activation Information System ("AAIS"). [GTE's Response to Rhythms Interrogatories 8-10.]

Q. How should competitors obtain the necessary loop makeup information from the ILECs?

A. The most straightforward solution would be direct limited electronic access to these databases.

Q. Should the information that competitors require be ubiquitously available in the ILECs' mechanized systems?

A. Yes, with rare exceptions. It should be possible to access data regarding the majority of loops from existing legacy systems such as LFACS; there should be no need to develop new loop makeup databases or update existing databases. In some cases, a subset of the data required to enable a ALEC to do its own loop qualification may not be present.

The ILECs installed loop inventory management databases such as LFACS, in different forms, over 20 years ago. Since these databases are used by the ILECs for loop assignment purposes, they contain some loop makeup information on each and every loop. Although the ILECs did not fully populate these databases with all the categories of loop makeup data at their inception, it has long been standard within the industry that all plant changes should be input to the databases on a going forward basis. The loop makeup of all existing plant was to be entered into the database any time the plant was altered. Given the frequency of plant additions, changes, rearrangements, and removals over the past 20+ years, I would have expected that the necessary loop makeup data for virtually all of the ILECs' plant would now reside in the relevant databases. Of course, this would have required the ILECs to consistently follow their own guidelines that require these databases to be updated with each plant addition, change, rearrangement or removal.

To the extent that information needed for loop qualification resides only in an ILEC's "plats" (which are paper plant records), rather than in electronic databases, it reflects the ILEC's internal failure to populate its databases as it should have given the upgrades that Florida ratepayers have been funding for years. Moreover, many, if not all, incumbents have been developing electronic access to the formerly paper-only plat records such as BST's MapViewer system, which BST has already deployed in Florida. [*See* Deposition of Michael K. Zitzmann, July 20, 2000 Tr. at 26.] GTE, too, states that "[n]o data used for loop qualification is regularly stored on paper records." [GTE's Response to Rhythms' Interrogatory 8.]

Q. Does the loop makeup information missing from these mechanized systems exist elsewhere?

A. Yes. The information required for loop qualification also resides in the outside plant location records and work prints. BST, for example, proposes to charge competitors for manual loop qualification whenever BST must resort to these outside plant location records and work prints to obtain the loop makeup information that would otherwise be available through databases such as LFACS.

Q. What are your recommendations concerning access to loop makeup information?

A. I urge the Commission to find that ALECs should have electronic access to the relevant databases for the purpose of qualifying loops for xDSL-based services. Ms. Murray explains that such a ruling would be consistent with FCC requirements that ALECs have access to back office operation support systems ("OSS") that ILECs have. Direct access to the databases is the efficient means to allow competitors to qualify loops and it is also the only means to ensure that competitors and the ILEC have parity in terms of their ability to assess which advanced services they can offer to end user customers. Moreover, the ILEC should provide any loop makeup data not found in those databases based on research of its outside plant location records. In those cases where the cable plant found in the OSP location records was installed/rearranged after the inception of LFACS or other relevant databases, the ILECs should provide the loop makeup information to the ALEC at the same price as that provided via the mechanized system. To do otherwise would penalize ALECs and reward the ILECs for failing to follow their own established record-keeping guidelines.

Q. Is it practical for the ILECs to provide access to their databases with loop makeup information?

A. Yes. It is entirely feasible for the ILECs to provide a direct read-only access to LFACS and similar databases. ILEC field operations personnel have been able to obtain such access for years. Moreover, while I am not a lawyer, providing competitors with such access would appear to fall

within the FCC's non-discrimination requirements because the ILECs' own technicians have such access. Thus, a forward-looking cost study for ALEC access to loop makeup information should assume that the competitor has such nondiscriminatory access to databases providing information relevant to loop makeup. Given that access, there is no activity associated with loop qualification that a competitor's own personnel could not perform on its own behalf to qualify loops for xDSL services. An analysis that assumes BST will impose additional costs on competitors to "qualify" loops on the competitors' behalf therefore assumes that the ILEC will not comply with FCC requirements and will not provide nondiscriminatory access to its OSS and related databases. [47 C.F.R. § 51.313(c).]

Moreover, I understand that GTE already provides some type of electronic access to loop makeup information and that BST is currently developing an interface to provide such access. (In her testimony, Ms. Murray discusses the appropriateness of the charges that BST proposes to collect for this service.)

Q. Does the mechanized access to loop make-up information provided by GTE and proposed by BST allow competitors sufficient access to relevant information?

A. Possibly. For example, if BST's representations regarding its long-awaited system for electronic access to loop makeup information are accurate, then it appears likely that it will provide sufficient information.

[*See, e.g.*, BST's Response to GPSC Workshop Requests 10; this Response is attached hereto as Exhibit ____ (JPR-2).] To the extent, however, that the incumbents' interfaces interpret, exclude or restrict access to available data, they will not constitute acceptable access to the appropriate access to loop qualification data. Competitors' engineers need to have access to the detailed information available in LFACs and other relevant databases.

Q. In case electronic access to existing data in the ILEC's database is not sufficient, how should a forward-looking analysis cost out the effort for the ILEC to manually look up the missing information?

A. Even if a manual lookup is needed, the cost should be based on a forward-looking charge for an electronic "dip" into the ILEC's database. An incumbent's failure to keep its databases up-to-date or automate other records is not the fault of a competitor ordering a DSL-capable loop. Nor should the competitor be held responsible for an incumbent's cost to update its databases. More important, Florida consumers should not be charged twice for the system: once over the years in basic rates for telephone service and now, again, when those Florida consumers seek advanced services relying on the data embedded in those legacy systems. Therefore, to the extent that a competitor requires loop makeup information that would normally reside within a database such as LFACS, but that an incumbent has failed to enter into that database, the Commission should require the incumbent to provide the information

through whatever means necessary including review of the company's and paper loop plant records ("plats"). The efficient means of providing the same information would be a database "dip" into the relevant database. Therefore, the price to the competitor for this function should not exceed the incremental cost of the processor time associated with such a dip.

V. THE ILECS HAVE INCORRECTLY MODELED ISDN LOOP COSTS.

Q. What is Integrated Services Digital Network ("ISDN")?

A. The standard ISDN – Basic Rate Interface provides up to 144 Kb/s of throughput in each direction for two "B" channels of 64 Kb/s each and one "D" channel of 16 Kb/s. The "B" channels contain the message information (voice and data).

Q. What are the copper cable characteristics that support ISDN service?

A. ISDN can be provisioned on "clean" copper loops up to 18,000 feet without enhancing equipment. This technology is not tolerant of load coils, but may operate with some bridged tap dependent upon amount and location. The loss limit is generally 42DB @ 40 KHz. Thus, from a loop perspective, ISDN uses a basic two-wire non-loaded analog loop. In other words, an "ISDN loop" is, for all-copper loops under 18,000 feet, entirely indistinguishable from a "basic" loop and should have the identical cost.

Q. Can ISDN technology operate on fiber-fed digital loop carrier systems?

A. Yes. ISDN has been available over DLC systems for many years. In a forward-looking cost analysis, therefore, all ISDN loops longer than 18,000 are modeled with fiber feeder and DLC electronics. For these longer loops the cost to provide ISDN is not identical to the cost of a "basic" or voice grade loop. On DLC systems, ISDN loops must be equipped with a suitable plug-in channel card (either a BRIU or BRIU2) at the remote terminal. Because the plug-in required for ISDN is more expensive than the plug-in required to support basic voice grade service, longer ISDN loops cost somewhat more than comparable basic voice service loops.

Q. When provisioned over longer loops on current DLC systems, does ISDN cause any other incremental cost relative to basic voice grade service other than the differential in the cost of the respective line cards?

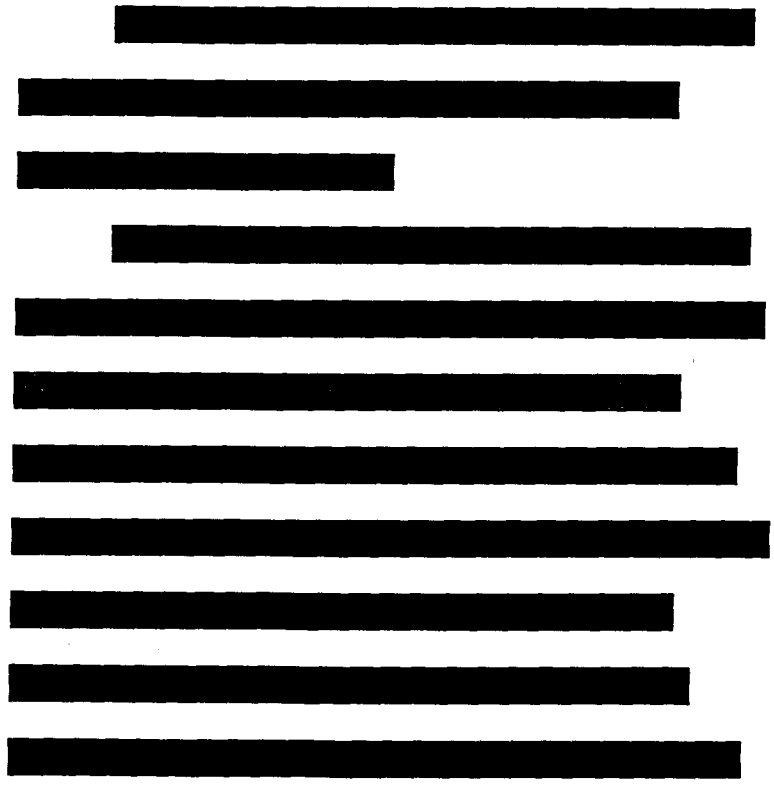
A. No. ISDN does not use a fatter light pulse than POTS service and, therefore, does not require bigger (or more) fiber cable, take up more conduit space, *etc.* Moreover, ISDN channels may be concentrated similar to POTS lines. Given the array of DLC sizes and types assumed in the ILECs' studies, they would not incur any additional cost for electronics in the remote terminal or at the central office, other than for the incremental cost difference between the ISDN and POTS plug in cards at the remote

terminal. This is true over any reasonable projection of average demand for ISDN service. To the extent that ILECs further inflate ISDN costs based on the presumption that they will somehow incur additional central office costs (such as line cards at the central office) to provide ISDN/IDSL-capable loops, that presumption has no basis in fact.

Q. Do BST's loop directives support your statement that the only cost differential between ISDN/IDSL and POTS lines is the cost of the channel cards when provisioned over fiber/DLC?

A. Yes. BST "Loop Technology Deployment Directives" [RL: 98-09-019BT, December 8, 1998] clearly indicate that ISDN is not so different from POTS:

***** BST PROPRIETARY**



[redacted]

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Q. How should the ILECs calculate recurring charges for ISDN/IDSL loops?

A. I agree with Ms. Murray that recurring charges for ISDN/IDSL loops should be set at the recurring charge for basic loops, plus an increment to account for the higher cost of an ISDN card at the RT as compared to a POTS card, weighted by the percentage of fiber feeder in the forward-looking network.

Q. Is it necessary for an ISDN-capable loop to be "designed" or engineered?

A. No. As I explained above, ISDN can be provided over standard loop facilities. ILECs have provisioned ISDN as a standard, non-designed and non-engineered service for years.

VI. ISSUE 3B: THERE IS NO VALID ENGINEERING BASIS FOR A COST STUDY FOR XDSL-CAPABLE LOOPS TO MAKE

DISTINCTIONS BASED ON LOOP LENGTH AND/OR THE PARTICULAR DSL TECHNOLOGY TO BE DEPLOYED.

Q. Have the incumbents in this proceeding proposed any limitations on loops used to provide xDSL services?

A. Yes. All three incumbents have indicated that they will provide an xDSL-capable loop over a "clean copper loop" (that is, an all-copper loop that is free of load coils, excessive bridged tap and other potential DSL inhibitors). In addition, BST has proposed a number of distinctions based on service type and loop length.

Q. Must xDSL-based services be provided over all-copper loops?

A. No. The predominant method for provisioning DSL-based services today is to use a "clean copper loop." However, as I explained above, forward-looking DLC equipment allows carriers to provide DSL-based services over fiber/DLC loops in the same manner as ISDN is provided over those facilities. With a suitable array of line cards, these DLCs can accommodate voice, ISDN, and a wide variety of DSL-based services such as ADSL, HDSL and SDSL. Such DLCs are currently being deployed across the country. Indeed, at least one major ILEC, SBC, has determined that it can actually reduce its costs by substantially accelerating the actual deployment of forward-looking DLC specifically in a manner that supports xDSL-based services. SBC has announced that its "Project Pronto" initiative, which is designed to extend the reach of xDSL

services and other broadband services to the substantial majority of SBC end users using currently available DLC technology, will produce that benefit by delivering "annual cost structure improvements ... targeted to reach $1.5 billion by 2004 ... with network improvements paying for themselves on an NPV basis." [*See* SBC Investor Briefing No. 211, SBC Announces Sweeping Broadband Initiative, October 18, 1999, at 10, attached as Exhibit _____ (TLM-3) to Ms. Murray's testimony.]

Q. Do the Florida ILECs intend to provide their own broadband services and unbundled loops over fiber/DLC systems?

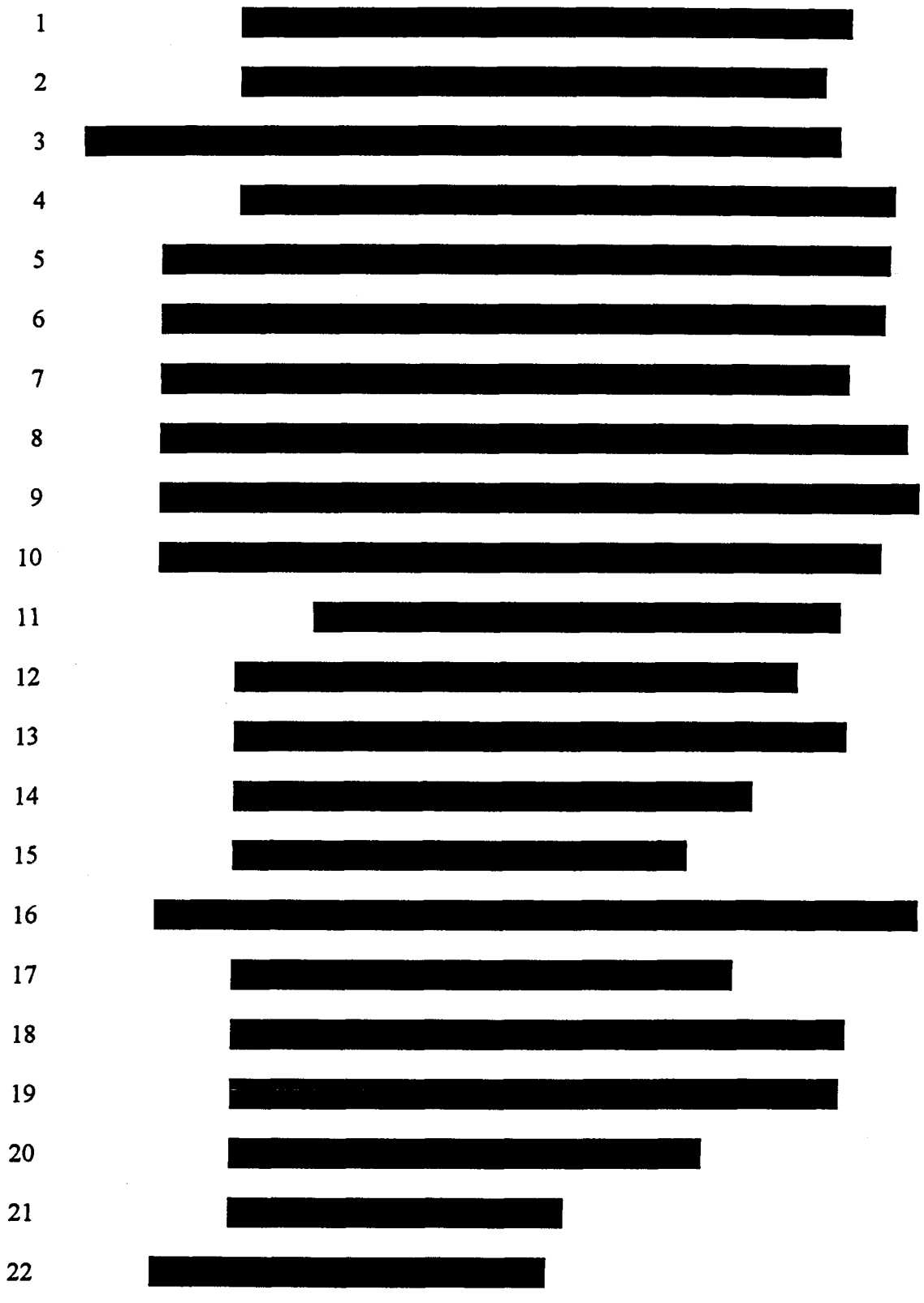
A. Yes. Sprint witness Mr. McMahon, for example, notes at page 17 of his direct testimony, when discussing xDSL, that "[i]n the near future, this technology will also be available via NGDLCs in Sprint's local networks." BST admits that it is currently testing DLC systems for this purpose and that they will be available in the near future. [BST's Response to Rhythms' Interrogatories 78-81.] BST's "Loop Technology Deployment Directives" [RL: 98-09-019BT, December 8, 1998] provide a great deal of evidence that BST has in fact steadily been moving in this direction since at least 1998, if not longer. Indeed, in its loop directives, BellSouth stated:

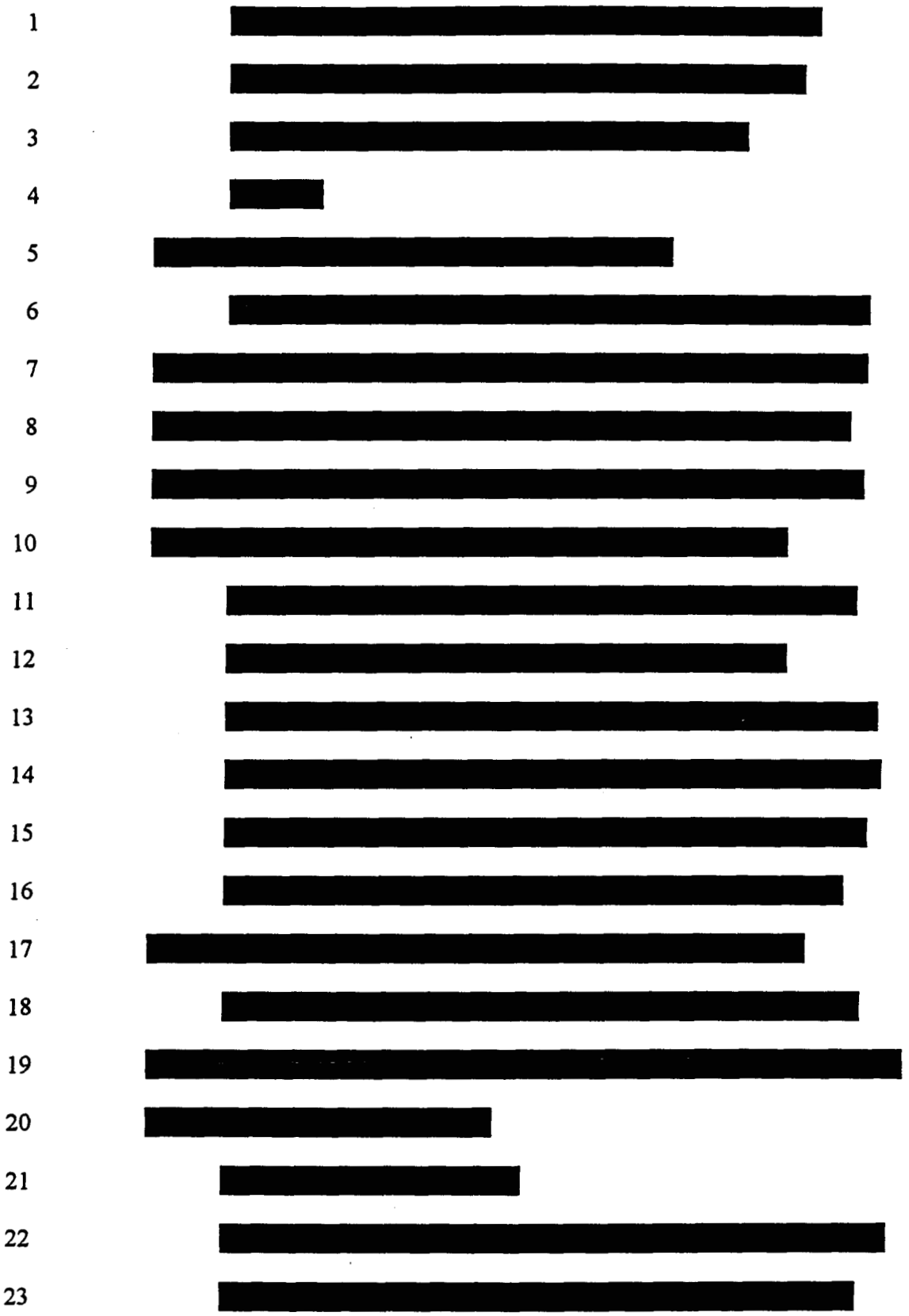
*****BEGIN BST PROPRIETARY** [redacted]

[redacted]

[redacted]

[redacted]





[redacted] **END PROPRIETARY***** Any other determination will inevitably harm the competitive market for xDSL services.

Q. Using two-wire loop options as an illustration, please describe the distinctions that BST's cost study makes among xDSL-capable loops based on loop length and/or the particular DSL technology to be deployed.

A. BST has proposed separate prices for the following DSL elements (in addition to ISDN), all of which it asserts will be provisioned only over "dry" copper:

- ADSL Compatible Loop (Element A.6.1) – up to 18,000 feet (inclusive of bridged tap);
- 2-wire HDSL Compatible Loop (Element A.7.1) – up to 12,000 feet;
- Unbundled Copper Loop - Short (Element A.13.1) – up to 18,000 feet (exclusive of bridged tap); and
- Unbundled Copper Loop - Long (Element A.13.2) – greater than 18,000 feet.

Q. Are the distinctions that BST is attempting to impose on loops used for xDSL-based services appropriate?

A. No. As Ms. Murray will discuss from an economic perspective, the first problem with BST's approach is that it misleads BST into modeling different networks for different services. For example, BST apparently seeks to convince this Commission that it should set rates for voice-grade loops based on an entirely separate network architecture than it uses to set rates for DSL-capable loops. Such a presumption cannot be true in any

rational analysis — be it the existing, historical network or a forward-looking cost analysis. That approach simply fails to reflect realistic, efficient engineering practices and, as I have discussed above, is entirely unnecessary.

Moreover, if there was ever a legitimate reason for segregating xDSL loop costs into the many categories that BST proposes, it would have been the minor process differences in the manner in which BST qualified each loop. Those differences were, however, merely an artifact of BST's monopoly control of the data needed to qualify loops. As soon as BST makes loop makeup data available directly to ALECs, any such distinction is irrelevant because ALECs can determine if they wish to take a given facility as is or to order "conditioning" (discussed below) and then take the "conditioned" loop as is. The array of BST definitions thereby becomes nothing other than a means by which BST can control who can market what types of advanced services over its unbundled loops. For example, BST's proposed ADSL- and HDSL-specific loop elements effectively impose artificial limits on the services that carriers can provide over specific facilities to specific customers. These artificial limits appear likely to constrain other carriers from offering advanced service options that BST is itself not yet prepared to market. Yet, an all-copper loop is the same whether it is used for ADSL, HDSL or any other (2-wire) xDSL-type, or a voice service for that matter.

Q. Does the all-copper network BST models for xDSL-capable loops make sense?

A. No. It does not represent BST's actual network, in which 42.4% of the loops are provisioned with fiber/DLC. [BST's Response to Rhythms' Interrogatory 83.] Nor would anyone build such a network today, a fact that not even BST would dispute. [*See* Loop Technology Deployment Directives; ADSL Planning Directives.] Therefore, it does not resemble any network BST plans to build in the future. The most economic network design available for some time involves the use of fiber/DLC for fiber-based loops. For example, Mr. Milner explains that BST's cost study used fiber feeder facilities rather than copper for loops longer than 12,000, because it is "the most economic architecture." [BST, Milner Direct, at 22.] He goes on to explain that:

> in actual network design, voice grade services are mixed with demand for other types of service such as DS-1 and higher bandwidth services. In selecting the infrastructure design for a network to meet all of these demands, new copper cable is rarely the facility of choice for the feeder network. Instead, fiber cable with fiber optic multiplexers and NGDLC are used to meet the combined demand on the cable route.

[BST, Milner Direct, at 23.] Further, as I showed above, BST's own internal loop deployment guidelines require the use of fiber NGDLC in

current and future network design. [*See* Loop Technology Deployment Directives; ADSL Planning Directives.]

BST has no plans to deploy an all-copper network today. Rather, BST has created an imaginary, hypothetical, network scenario that would not be useful for the very broadband services that it is attempting to study and does not reflect its own practices.

Q. BST also develops DSL-capable (and ISDN-capable) loop costs as if those services requires a "designed" loop. Should an xDSL-capable loop be treated as a designed service?

A. No. BST should have modeled xDSL- and ISDN-capable loops in the same manner that it modeled basic analog loops (*i.e.*, Service Level or "SL" 1). xDSL- and ISDN-capable loops do not need to be designed and do not require special test points, *etc.* Any claim to the contrary is merely an excuse to overbuild and/or inflate costs. Each unnecessary step in the provisioning process, such as bringing an engineer into the process to "design" the circuit in some manner, disrupts the automated, practically $0 cost flow-through capability of mechanized OSS and inserts rapidly mounting labor costs. As shown above and in Ms. Murray's testimony, the difference in costs between voice-grade and xDSL-capable loops that BST achieves by artificially breaking the flow-through OSS process in this manner is astounding.

Q. Why is it unnecessary for xDSL- or ISDN-capable loops to be "designed"?

A. First, DSL providers want, and the FCC has given them the right, to access loop makeup information that allows them to pick loops that will support their services. Where all-copper loops are deployed in a forward-looking network, they extend from the ILEC central office to the customer network interface device ("NID") and should not be treated any differently based on the service provisioned over those loops. Both analog and digital service providers can use the same copper loop. Any additional steps that BST takes to "design" a loop for xDSL-based services would do nothing other than unnecessarily drive up the cost to xDSL or ISDN competitors. Regardless of how the loop will be used once it gets to a collocator's space, the physical work that the ILEC should do remains the same, *i.e.*, connect the cable pair in the central office to the appropriate appearance at the ALEC collocation arrangement. Ordering and provisioning processes should also be similar for analog and xDSL-capable loops when loops are provisioned via fiber feeder and DLC systems. Indeed, if the cost of installing the appropriate plug-in card is included in the recurring cost calculation, where DLC systems are deployed, the cost to provision analog and digital unbundled service loops would not differ substantially. When the ILECs allow xDSL provisioning over DLC facilities, the maximum nonrecurring cost differential would be the relatively minimal cost of a dispatch to the remote terminal (by either the ILEC or ALEC). In either

case, unbundled digital loops required for the provisioning of xDSL services have no need to be "designed" circuits as the forward-looking network topology is already designed to provide ubiquitous basic or advanced services. In other words, basic service and, for example, xDSL services can be provisioned using the same basic flow-through processes that support mass service volumes without the need for expensive one-of-a-kind or one-at-a time design costs.

Q. Why is important that the Florida Commission exclude unnecessary and artificial "design" tasks from the cost studies?

A. It is clear that the demand for DSL services in Florida is huge. Even if all competitors including the ILECs somehow absorbed these costs equally, the more unnecessary tasks (and the resulting costs) that ILECs squeeze into the provisioning process, the harder it will be for Florida consumers to obtain competitively priced DSL services.

VII. ISSUE 11: XDSL "CONDITIONING" IS UNNECESSARY IN A FORWARD-LOOKING TELECOMMUNICATIONS NETWORK; MOREOVER, THE INCUMBENTS' "CONDITIONING" COST STUDIES REFLECT EXCESSIVE WORK TIMES AND UNNECESSARY TASKS, EVEN FOR THE "CONDITIONING" OF OUTDATED, EMBEDDED PLANT.

A. The Commission Should Prohibit the ILECs from Charging Competitors for Loop "Conditioning."

Q. What is loop "conditioning"?

A. As I mentioned above, older plant designs (or transitional expedients to increase capacity, such as a DAML) can include elements that impede broadband services. In the context of this proceeding, "conditioning" refers to modifications to embedded loop plant facilities needed to remove equipment or plant arrangements that would impede the transmission of DSL-based services. The notion that ILECs must "condition" lines for DSL-based services is therefore potentially misleading. The term conditioning has traditionally been used in telecommunications to refer to situations in which equipment must be *added* to a circuit to enable that circuit to perform to tighter engineering parameters. In contrast, to make certain loops in its embedded plant DSL-capable, an ILEC must *remove* unnecessary equipment from the circuit, such as load coils or excessive bridged taps. In other words, the ILEC must *decondition* these loops by

eliminating equipment that may have been required in 20- to 30-year-old plant designs to support analog/voice services but that is no longer required under current network standards. Thus, the "conditioning" that the ILECs seek to include as a cost of xDSL loops in this proceeding, removing obsolete loop attachments and transitioning older plant to a more current design standard, is traditionally a part of ongoing plant maintenance and rearrangement. As a standard business practice, the cost for such activities would typically be captured as a recurring and on going business expense.

The ILECs in this proceeding have primarily used the term "conditioning" to refer specifically to the removal of load coils and excessive bridged tap.

Q. What are load coils?

A. Load coils were used on copper POTS lines longer than 18,000 feet to counteract the effect of capacitance that builds up as the length of the loop increases. Although load coils mitigate the effect of capacitance, they severely attenuate frequencies above 3000 Hz, which is detrimental to both DSL loops and analog data modems. Load coils are completely unnecessary on any loop less than 18,000 feet in length.

Q. What is bridged tap?

A. Bridged tap exists where one single dial tone can appear at more than one cable pair location. Bridged tap occurs when a cable pair has a three-way

splice (from the central office to location #1 to location #2), such that dial tone can appear in two or more different cable pair locations. Visually, you can think of bridged tap occurring at a fork in the loop. One fork continues necessarily to the customer premise to complete the circuit. The second fork extends some distance into the field, but never terminates at a customer premises.

This approach to outside plant design became obsolete when party-line service became largely obsolete. [*See Bellcore Notes on the Networks*, December 1997, p. 12-3: "Multiple plant design [use of bridged tapped pairs] was largely replaced by dedicated plant design because of the labor intensity of adding to or changing existing plant and customer demands to convert from multiple-party line to single-party line service."] Common in the days of party line service, bridged taps should have been engineered out of the network since 1972. The high frequency, digital nature of DSL services (like ISDN services) prevent them from operating with more than 2,500 feet of bridged tap.

Q. Have the ILECs proposed loop "conditioning" charges in this proceeding?

A. Yes. To varying degrees and in various permutations, each of the ILECs has developed costs and proposed charges for removal of these xDSL interferers.

Q. Would "conditioning" be necessary given the networks that the ILECs have modeled for their voice-grade services?

A. No. Indeed, it is my understanding that none of the three ILECs have included load coils or bridged tap in its recurring cost analysis. For example, GTE witness Ms. Casey notes: "GTE's MRC [monthly recurring charge] study is based on a forward-looking network that does not include devices such as bridged taps or load coils." [GTE, Casey Direct, at 7.] Furthermore, existing ILEC networks that are correctly designed and engineered to reasonably current standards would already be free of load coils and excessive bridged taps and therefore should not require loop "conditioning."

Q. Why should existing ILEC networks not require loop "conditioning"?

A. As noted in Exhibit ___ (JPR-3), A Brief History of Outside Plant Design, decades-old industry engineering standards have called for the removal of the very types of impediments that the ILECs' proposed xDSL loop "conditioning" costs address. As Exhibit _____ (JPR-3) explains in more detail, with current loop standards such as the Carrier Service Area ("CSA") guidelines that carriers began to implement in the early 1980s, outside plant engineering evolved in a manner that makes bridged tap and load coils obsolete and undesirable. At Bell Atlantic, now part of the same corporate entity as GTE, where I worked at that time, this standard was followed in building all new facilities.

In particular, the CSA concept was initiated in the early 1980s across the local exchange industry to migrate the outside plant cable network to arrangements over which incumbents could better support a wide range of services. This concept, based in part on the even earlier Serving Area Concept ("SAC"), outlined a strategy that divided the central office geography into discrete service areas for plant deployment. Under CSA design, the incumbent places a remote terminal RT containing electronics in each entity. The RT location is chosen to ensure that the incumbent can serve any customer in that entity via a non-loaded copper cable having minimal bridged tap.

All new plant placed since the early 1980s should meet these engineering guidelines. Furthermore, the ILECs should have begun "conditioning" their existing plant as a part of ongoing maintenance since that time.

Q. Why should "conditioning" have been performed as a part of routine maintenance?

A. Local exchange carriers have performed, and continue to perform, "conditioning" activities such as deloading loops routinely as part of maintaining their loop plant. For example, the ILECs are reinforcing routes and doing other work in the outside plant on a daily basis. Whenever a technician had to work on any plant, that technician should have also been assigned to bring that plant into compliance with engineering current standards to the extent possible. ILECs typically

reengineer older plant to eliminate DSL inhibitors such as load coils and bridged tap when growth requires an upgrade to the existing plant in any specific area.

Furthermore, the ILECs have had to perform "conditioning" for their own services. For example, loops that incumbents use to provide ISDN service typically require the same type of "conditioning" as DSL-capable loops, and even loops that incumbents use to provide basic POTS service cannot operate with T-1 repeaters on them. As Sprint itself points out: "Sprint and other LECs are implementing plans to proactively make their networks capable of supporting xDSL services.... An efficient forward-looking network service provider will implement such binder group management plans in a proactive manner, and not on a service order-by service order basis." [Sprint, McMahon Direct, at 18.] Therefore, the ILECs' cost to "condition" their networks would already been included in the ongoing expenses that the incumbents have incurred and charged to ratepayers for maintaining/improving the network for many years.

Moreover, both BST and GTE have indicated that the expenses in the recurring costs they presented in this proceeding include the costs of ongoing plant rearrangement and grooming as a recurring cost:

> BellSouth follows the general principle that all rearrangements and changes of existing Outside Plant Facilities not retired are charged to the appropriate expense

accounts for the type plant involved. This would include the rearrangement of pairs to facilitate repairs, freeing up pairs required to accommodate service order activity, and general routine maintenance and grooming of existing cable facilities. Rearrangement activities of an expense nature would also include work to completely rehabilitate a cable in connection with placement of new metallic or fiber cable.

[BST's Response to Rhythms' Interrogatory 53.]

Likewise, GTE admits:

> Operating expenses associated with rearrangement activities (if any) are reflected in GTEFL's financial statements in accordance with the FCC's Part 32 chart of accounts... Any operating expenses associated with rearrangement activities would be recorded to its respective plant account. For example, any rearrangement costs related to Buried Cable are recorded in the Buried Cable Expenses Account 6423.

[GTE's Response to Rhythms' Interrogatory 30.]

Therefore, as should be reflected in the ILEC's standard practice, conditioning appears already to be included in the recurring unbundled loop costs reported by these two ILECs.

Q. Are any of the ILECs providing conditioning as part of their federally tariffed DSL offerings without charging their customers for such conditioning?

A. Yes. BellSouth performs conditioning as part of its offering and appears not to charge for the conditioning.

***** BEGIN BST PROPRIETARY** [redacted]

[redacted]

END PROPRIETARY*** [Outside Plant Engineering Methods and Procedures for BellSouth® ADSL Service, 915-800-019PR, at 7, Sept. 30,

1999, BST's Response to AT&T Request to for Production of Documents 62.]

While BellSouth clearly performs loop conditioning for its federally tariffed DSL offering, my review of BST's tariffed offering failed to locate any charges for, or even mention of, loop conditioning.

Q. Have the ILECs agreed that load coils should not exist on copper loops that are less than 18,000 feet in length?

A. Both Sprint and BST admit that load coils are not required for such loops. For example:

> Copper pairs that are less than 18,000 feet long do not have to be loaded in order to provide voice grade services.

[Sprint, McMahon Direct, at 21.]

> Loops of this length [18,000 feet or less] do not normally need the load coils to provide voice support and once they are unloaded, the loops can support some forms of advanced services.

[BST's Response to Rhythms' Interrogatory 44.]

> [F]or loops less than 18,000 feet the impact of this procedure [removing load coils] on voice grade service will be minimal since load coils neither enhance nor impair the quality of voice transmission for loops of that length."

[BST, Caldwell Direct, at 58.]

As I discuss below, although BST is certainly correct that the removal of load coils will not impair service, its carefully worded statement that coils do not harm "voice transmission" is not true for basic exchange service quality as a whole. For example, load coils can impede modem speeds.

Q. Do the ILECs in this proceeding seek to recover the cost for load coil removal on loops of less than 18,000 feet?

A. Yes. Each of the ILECs has proposed charges for removing load coils from loops less than 18,000 feet, although at vastly different cost levels.

Q. Would it be appropriate for the ILECs to recover the cost for load coil removal on loops of less than 18,000 feet?

A. No. That would be like having to pay extra to get a new car without a cracked windshield. A new car should come equipped with a new windshield and you should not have to pay more to get a windshield without a crack on your new car. Similarly, competitors should not have to pay more to get an xDSL-capable loop under 18,000 feet that is free of load coils. "Conditioning" is part and parcel of delivering a loop built to current standards that is under 18,000 feet.

Q. Have other ILECS agreed not to charge for load coil removal on loops of less than 18,000 feet?

A. Yes. For instance, GTE's merger partner, Bell Atlantic, does not intend to charge for load coil removal from loops of less than 18,000 feet, because

copper loops of that length should not have load coils. It would instead remove such obsolete equipment at its own expense. For example, Bell Atlantic – New York ("BA-NY") states:

> BA-NY will not impose the Load Coil Removal charge if load coils must be removed from loops less than 18,000 feet long, since load coils are generally not required for such loops under the current or past design criteria applied by BA-NY.

[Panel Testimony of Bell Atlantic - New York on Costs and Rates for Loop Conditioning and Line Sharing for DSL-Compatible Loops in New York Case 98-C-1357, February 22, 2000, at 11.]

This is appropriate treatment for such loops.

Q. Has it been long enough to expect that ILEC outside plant should conform to CSA guidelines that you mentioned above, which eliminate a need for load coils?

A. Yes. It has been 20 years since the industry adopted those guidelines for non-loaded outside plant. Twenty years exceeds the service lives established by most commissions for outside plant categories of aerial, buried, and underground copper cables. Load coils on copper pairs should therefore be treated as a problem condition, and the ILECs should remove those load coils without charging ALECs.

Q. Do ILECs such as BST actually use the CSA guidelines?

A. Yes. According to discovery responses, BST is currently using CSA and has been since 1982:

> New outside plant loop facilities placed today are based primarily on digital loop carrier platforms and associated fiber and/or copper distribution facilities using Fiber/Carrier Serving Area (FSA/CSA) design concepts to provide both voice grade and digital services.

[BST's Response to Rhythms' Interrogatory 62.] BST has also stated that:

> Since the introduction of CSA design in 1982, BellSouth (formerly Southern Bell/South Central Bell) has used CSA design guidelines for new cable facilities where digital loop carrier is used for feeder facilities, although BellSouth does not employ these guidelines in every instance.

[BST's Response to Rhythms Interrogatory 67.]

BST has also assumed CSA design in its recurring unbundled loop cost study. [*See* BST, Milner Direct at 23, and BST's Response to Rhythms First Set of Interrogatory No. 84.]

Q. Other than adopting the CSA guidelines 18 years ago, has BST given any indication of its plans to modernize its network in such a way as to eliminate load coils?

A. Yes. As I discussed in Section VI. above, ***** BEGIN BST PROPRIETARY** [redacted]

[redacted] END PROPRIETARY ***

Such systems are free of load coils.

Q. What type of outside plant design does GTE use?

A. According to discovery responses, GTEFL has used its Electronic Serving Area ("ESA") and Customer Access Facilities ("CAF") guidelines in the design of outside plant for approximately 10 years. (I do not know what GTE used before that time.) [GTE's Response to Rhythms' Interrogatory 44.]

Q. What load coil guidelines are dictated under GTE's guidelines?

A. GTE's guidelines appear to be *** **GTE PROPRIETARY** [redacted] [redacted] **END PROPRIETARY** *** Moreover, GTE's

merger partner, Bell Atlantic, has been using CSA standards for as long as BST.

Q. Why is it undesirable to have bridged tap even in a POTS loop?

A. There are several reasons why bridged tap is undesirable in a POTS loop. First, bridged tap results in dial tone appearing on a pair in two different locations. Whereas normally, any cable damage in the second location should have no effect on an end user's line at the first location, the mere existence of bridged tap puts the line at risk of service outage should damage occur at location number two.

Second, having a bridged pair condition adds detrimental capacitance to the line, which adversely impacts high frequencies, makes one cable pair appear to be longer than it needs to be, and adversely affects analog dial-up modems.

Third, having a bridged tap hangs an antenna-like device on a pair, which may allow increased hum and noise on the line.

Fourth, bridged tap causes additional circuit loss so it reduces the strength of the voice signal which may erode the quality of service.

Q. Should bridged tap ever appear in copper feeder plant?

A. No. Bridged tap should not appear in copper feeder plant. The Serving Area Concept ("SAC") guidelines, introduced in 1972, designated that wire center areas were to be divided into discrete geographic serving areas. The SAC specified that the distribution network contained in a

serving area should be connected to the feeder network at a *single* interconnection point, (known as the Serving Area Interface). Bridged tap in copper feeder plant would exist only if the same cable pair appeared as a feeder resource in *two different* Serving Area Interfaces, making it inconsistent with SAC guidelines. [See Exhibit _____ (JPR-3) for a more detailed explanation of the SAC guidelines.]

Q. Should bridged tap be used in distribution plant?

A. Although a distribution cable may contain many cable pairs, once distribution spans out into smaller side legs (*e.g.*, the cable assigned to run down a specific block), the same cable pair should never appear in two different side legs. You can think of side legs as forks in the road. With bridged tap, one leg leads to the an customer premises and the other dead ends at some other location. Distribution cable should always be engineered in 25-pair binder groups, such that no pairs in a particular 25-pair binder group should ever appear in more than one side leg. This ensures no bridged tap conditions between separate distribution side legs.

Q. What bridged tap guidelines are dictated under the CSA guidelines?

A. CSA guidelines state that "[t]he maximum allowable bridged-tap is 2.5 kft, with no single bridged-tap longer than 2.0 kft." [Bellcore, *Bellcore Notes on the Networks*, December 1997, at 12-5.] Both BST and GTE agree that, with the CSA design concept, bridged tap would be limited to these levels. [*See* BST, Milner Direct, at 3 and 23, BST's Response to

Rhythms' Interrogatory 69, and GTE's Response to Rhythms' Interrogatory 46.]

Q. When is bridged tap removal required to provide xDSL-based services for loops designed under reasonably current engineering guidelines?

A. CSA guidelines permit bridged tap use, but only up to a level that generally does not interfere with xDSL (*i.e.*, the 2,500 feet per total and 2,000 feet per individual bridged tap limits). As I have explained, the ILECs would not need to remove bridged tap from plant designed to meet CSA guidelines because the CSA design limits bridged tap to a level that would not interfere with xDSL. Therefore, bridged tap removal is not required for loops that comply with the CSA standards regarding bridged tap. As I explained earlier, BST has followed the CSA guidelines since 1982 and GTE has followed similar standards for at least 10 years. All of the ILECs' plant should now conform with these twenty-year-old industry standards for outside plant construction and maintenance. Excessive bridged tap exists on a loop only if ILECs in Florida ignored industry standards and neglected outside plant maintenance. In those instances, ILECs should bear the entire cost of removing such bridged tap. Nonetheless, each of the three ILECs proposes to charge for bridged tap removal in all instances.

B. The ILECs Substantially Inflate Loop "Conditioning" Costs by Failing to Incorporate Efficient Engineering Practices in Their Cost Studies.

Q. Do the ILECs' "conditioning" studies reflect efficient current practices?

A. No. As I have already explained in detail, current engineering practices dictate that ILECs should have been removing load coils and excessive bridged tap from their systems over the last 20-30 years. In addition, the ILECs inflate "conditioning" costs by substantially overstating work times and, even more significantly, by understating the number of loops that they should "condition" whenever a technician is dispatched to do that type of work.

Q. Should the ILECs "condition" more than one pair at a time?

A. Yes. If the Commission allows any recognition of "conditioning" as a nonrecurring cost, it is most important to the issue of determining a reliable unit cost to recognize that "conditioning" old plant should always be done for multiple lines at once. Even if one assumes that costs should be based on backward-looking, outdated plant designs, it is always efficient to "condition" multiple loops at the same time. Therefore, the cost for such refurbishing of older plant should be spread across all of the loops that benefit from that work. Indeed, in the ILEC's typical operation,

such maintenance, upgrade and/or rearrangement work was booked into a general expense account and not treated as a nonrecurring event.

In the cost studies presented in this proceeding each of the ILECs has proposed a discriminatory separate treatment of "conditioning" costs as nonrecurring when a competitor initiates the request. Sprint and BST are, however, partially on the right track, at least as regards to load coil removal, in recognizing that it is efficient to condition multiple loops at once. But, they are still nowhere near a performance level that would win even a bronze for efficiency. GTE, in contending that each load coil or bridged tap removal would have to be performed pursuant to a specific request, is not even in the stadium. It is a standard efficient engineering practice to deload and unbridge more than one loop at a time. Indeed, the standard practice in the industry is to prevent multiple re-entries into outside plant splices because multiple re-entries can cause serious deterioration in the wire insulation that will cause telephone wires to short out. Consequently, engineers have been instructed to engineer copper plant in terms of binder groups of either 25 pairs or groups of 50 pairs. (A "binder group" is designated as such because, inside a copper cable sheath, groups of pairs are segregated into manageable groups of pairs by binding such a group of either 25 pairs or 50 pairs with a thin color-coded ribbon wound around that group of pairs.) Standard engineering practice is to attempt to maintain "binder group integrity," that is, to splice and otherwise treat all of the pair in a given binder group as a unit. (For

example, Sprint indicates that efficient providers "will implement binder group management plans in a proactive manner." [Sprint, McMahon Direct, at 18.] Single pair splicing, *i.e.*, splicing only one or a few of the pair in a given binder group for some purpose, has been avoided for decades.

Moreover, it is simply more efficient to work with facilities a group at a time. If pairs are not "conditioned" in multiples of 25 or 50 pairs, or more, at a time, then a splice will soon degrade. Loading cases are designed to readily "condition" an entire binder group. Attempting to isolate individual line results in a tangled "bunch of grapes" look that is more difficult to work with. Therefore, to simplify both current and future operations, it is more efficient to treat the entire group rather than to create and have to deal with a tangled mass of individual splices.

Q. What would be a reasonable number of pairs to "condition" at one time?

A. For numerous reasons, I recommend that the Commission recognize that "conditioning" will, on average, be done 50 pairs at a time. In addition to the practical reasons that I provided above, such as that "conditioning" entire binder groups will limit maintenance problems associated with multiple splice reentry, "conditioning" an average of 50 lines at a time is a practical actual average.

Considering load coils first, for loops under 18,000 feet in length, it makes no sense whatever from an engineering perspective to dispatch a

technician to remove load coils and to remove anything less than all of the coils currently deployed. Load coils are not useful and are harmful to loops under 18,000 feet. They should be removed at the first opportunity. The total number of loops under 18,000 to be deloaded at once would therefore range from a minimum of the 25 pairs on the binder group with the target xDSL loop to potentially *hundreds* of pairs that happen to be loaded in multiple binder groups at the same location (as loading is done at regular intervals, the load coils for various binder groups would be collocated). For loops over 18,000 feet, it still makes no sense from an engineering perspective to "condition" one line at a time — particularly given the substantial predicted demand for xDSL services over the next few years. An efficiently managed outside plant operation will always maintain some level of available spare. An ILEC should "pre-condition" a reasonable projection of total spare plant to meet anticipated demand for xDSL-based services every time it dispatches a technician and splices are being opened. Therefore, on average, a 25-pair binder group should be unloaded even for loops longer than 18,000 feet. Combining the over- and under-18,000 feet estimates, 50 pairs per load coil removal dispatch across all loop lengths is a reasonable average.

Q. Are there times when only one pair can be "conditioned"?

A. Occasionally. However, as I just explained, there are also cases where many hundreds of pairs at a time can be "conditioned" at once. I propose an approach that will be reasonable for the vast majority of cases. For

example, if a load coil must be removed from a 25-pair splice with other working lines that are longer than 18,000 feet of copper, then it would not be proper to deload the entire 25-pair group of pairs. However, there are other cases involving a 2,400-pair cable working at 75% utilization (1,800 working pairs, and 600 spare pairs). With 600 spare pairs, it may make sense to deload several hundred pairs in anticipation of rapid growth for DSL services.

The number of pairs that an ILEC should "condition" will vary based on local conditions, but assuming that the ILEC will "condition" 50 pairs at a time is a reasonable middle ground.

Q. Does it make sense to remove bridged tap for one loop at a time?

A. No. As with load coils, "conditioning" 50-pairs at a time is a reasonable average. Loops under 18,000 feet that contain bridged tap are, by definition, relatively short. As a result, the cables over which these loops are provisioned would generally be larger-size cables. It is therefore reasonable to unbridge a *minimum* of 50 "working" loops in each cable at a branch splice, in each direction.

The benefits of unbridging multiple working pairs that have unnecessary bridged tap are manifold.

First, the requested "conditioning" for the service order is accomplished.

Second, 100 pairs at this branch splice location are unbridged (a procedure that improves the existing service without disrupting it), and

transitions the network towards present-day engineering standards. (The ILECs should have been unbridging their pairs since the introduction of the Serving Area Concept in 1972.)

Third, transmission of voice-grade service on these working circuits is improved because the insertion loss, caused by the bridged tap, is removed.

Fourth, the unbridged working circuits provide a base of preconditioned pairs that could be utilized for future services that are incompatible with excessive bridged tap; the ILECs could provision loops for those services via a line and station transfer to one of the unbridged working circuits in lieu of opening cable splices to unbridge an individual pair at the time of the future service request. The ILECs should provide these line and station transfers at no cost, should the ILECs decide not to unbridge spare pairs. Indeed, as I showed above, ***** BEGIN BST PROPRIETARY** [redacted] **END PROPRIETARY ***** [*See* ADSL Deployment Directives at 7.]

Fifth, the unbridged working services now have less exposure to maintenance problems, which will result in reduced customer trouble reports.

Sixth, "conditioning" working service precludes the need to re-enter a working splice on numerous occasions to "condition" one pair at a time, which potentially causes customer outages.

Seventh, unbridging working service does not require the amount of engineering study that would be involved if every spare pair were studied, grouped, and allocated to a specific branch cable (this is an expedited method that I have used in the past to effectuate the unbridging of pairs as called for in SAC design). Because the actual "wire work" is a relatively minor portion of the cost of the job, this methodology is cost efficient.

Moreover, unbridging multiple pairs at a time substantially reduces the "conditioning" cost on a "per unit" basis. The benefit to the ILECs is that the ALEC order would trigger an unbridging opportunity to clean up its outside plant — something that it should have been doing proactively since SAC design in 1972, but perhaps had no opportunity to do so because the particular bridged tap splice involved had no activity in the last 28 years.

For longer, bridge tapped loops, a cost analysis based on older plant design must recognize that, as cable sheaths traverse the route from the central office, the cable size tends to diminish. Because engineering guidelines do not permit bridged tap between load coil sections, bridged taps should only be located in the customer end section of cable plant, *i.e.*, within 3 to 12 Kft of the customer location. Even for these longer, loaded loops, the ILECs could still achieve benefits similar to those described for non-loaded loops by unbridging multiple pairs; however, the number of working lines to be unbridged at a branch splice location would likely be

smaller, *e.g.*, 25 working pairs per cable (a total of 50 pairs), to account for the diminished size of the cables.

Q. Do the ILEC studies reflect the guidelines you suggest?

A. No. As noted above, BST and Sprint have both (correctly) assumed that they will remove load coils from multiple pairs at a time, for loops less than 18,000 feet in length. Unfortunately, they both still understate the number of pairs that would be efficient to condition at once. BST proposes removing load coils from ten pairs at a time for these shorter loops. Sprint presents the more reasonable position, proposing to remove load coils from 25 pairs at a time, but still does not capture the costs of an efficient practice. GTE has absurdly maintained that it will remove load coils from only one pair at a time.

For loops of greater than 18,000 feet in length, all three ILECs have proposed removing load coils on one pair at a time.

Q. Do the ILECs' proposals regarding removal of load coils make sense?

A. No. Even Sprint's proposal for loops under 18,000 feet in length is not the most efficient approach. For copper facilities under 18,000 feet in length, load coils are not needed to provide basic voice or any other common service. The presence of load coils on such facilities generally indicates either that the plant in question was once used to serve customers further from the central office and has been rearranged or that the facilities in question are very old and were designed to engineering standards that

have not been used in decades. Because the continued presence of load coils does nothing other than inhibit data services on those facilities, the load coils in question should have been removed as a part of regular maintenance. If the incumbent did not take advantage of related dispatches to remove those coils in the past it makes no sense at all not to remove *all* of the load coils present once a technician is dispatched to remove any coils. Removing all the coils present makes sense because it requires almost no incremental effort to remove multiple coils. Indeed, it is often efficient to remove all of the coils on a cable than to attempt to remove some small subset thereof.

Given that it is efficient to remove all of the coils in a route for facilities under 18,000 feet, it is probable that the total number of loops that an efficient carrier would deload at one time would include multiple 25-pair binder groups and, therefore, would be substantially more than 50 per dispatch.

And, as I have already explained, for copper facilities over 18,000 feet in length it makes sense to "condition" a portion of the available spare that corresponds to the demand for advanced services that is likely to evolve over the long run on that route.

As Sprint witness McMahon explains:

> The actual work time involved in making the connection is not more than a minute or two, but set-up time can be significant, particularly when working in

manholes. This is why an efficient ILEC will unload multiple pairs at one time when working on loops under 18,000 feet in length, instead of unloading only the pair required for the current order.

[Sprint, McMahon Direct, at 22.] But Sprint fails to provide any explanation as to why the same consideration does not apply for removal of load coils on loops of over 18,000 feet (or removal of excessive bridged tap). This is especially surprising in light of Mr. McMahon's earlier statement that Sprint and others are "proactively" conditioning their networks for advanced services. [*See* Sprint, McMahon Direct, at 18.]

Q. What are the ILECs' positions regarding the appropriate number of pairs from which bridged tap should be removed at one time?

A. None of the three ILECs has proposed removing bridged tap from multiple lines at once. As I explained in detail above, it makes no sense not to remove bridged tap from multiple loops once a technician has been dispatched.

Q. How should "conditioning" 50 pairs at once affect a cost calculation for "conditioning"?

A. Because the ILECs should condition an average of 50 pairs per "conditioning" dispatch, the cost per pair would be $1/50^{th}$ of the cost per "conditioning" dispatch.

C. If the Commission, Inappropriately, Adopts Any Nonrecurring Cost for "Conditioning," Such Charges Should Reflect Efficient Methods, Procedures and Tools.

Q. If the Commission were to award the ILECs the right to charge for "conditioning," could it rely on the ILEC proposals?

A. No. For all the reasons I have detailed in the foregoing sections, the ILEC "conditioning" studies are too flawed to rely upon. The range of proposals by the ILECs makes that apparent. For example, the ILEC proposals for removing load coils range form a low of $5.74 for Sprint to remove an aerial coil to a high of $ 1,448.22 for GTE to remove any coils generically.

Q. If the Commission were to award ILECs the right to charge for load coil removal , what tasks and task time assumptions would be appropriate?

A. If the Commission elects to permit the ILECs to impose such charges — which it should not — then such charges should be based on engineering practices generally employed in the telecommunications industry and on reasonably efficient task time estimates.

Load coils were deployed, starting only when a copper loop reaches 18,000 feet in length, at 6,000-foot intervals, starting with three locations (at 3,000 feet, 9,000 feet, and at 15,000 feet). Also, because feeder cable is normally placed in conduit when close to the central office, I assume that the first two load coil locations involve underground cable at

manhole locations. The third location is most likely in aerial or buried locations. Therefore, I have assumed that 50 percent of the time for deloading of the third load coil location will be at an aerial location, and 50 percent of the time, deloading of the third load coil location will be at a buried location. Instead of the wide array of divergent proposals by the ILECs, the Commission can use the following work steps and conservative time estimates to estimate the costs involved in removing load coils from these three locations:

Underground Cable Load Coil Removal in a Manhole		
Step	Description	Task (min.)
1	Travel time to underground splice location.	20
2	Set up work area protection and underground work site.	5
3	Pump and ventilate manhole.	15
4	Buffer cable / Rerack cable / set up splice.	5
5	Open splice case.	5
6	Identify pairs to be deloaded for 1st 25-pair binder group.	5
7	Bridge 25-pair binder group for service continuity (if necessary).	5
8	Remove / sever connection from main cable to load 'in' & 'out taps.	3
9	Rejoin / splice 25-pair binder group through main cable.	5
10	Remove bridging modules from Step 7.	2
11	Identify pairs to be deloaded for 2nd 25-pair binder group.	5
12	Bridge 25-pair binder group for service continuity (if necessary).	5
13	Remove / sever connection from main cable to load 'in' & 'out' taps.	3
14	Rejoin / splice 25-pair binder group through main cable.	5
15	Remove bridging modules from Step 12.	2
16	Clean, reseal, and close splice case.	10
17	Rack cables, pressure test cables in manhole.	10
18	Close down manhole, stow tools, break down work area protection.	10
	Total Minutes	120
	Total Hours	2.00
	No. Technicians	2
	Total Timesheet Hours	4.00
	No. Locations	2
	Total Hours	8
	Pairs deloaded	50
	Minutes per pair	9.6 min.

Aerial Cable Load Coil Removal at a Pole (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location from underground splice location.	10
2	Set up work area protection.	5
3	Set up ladder or bucket truck.	10
4	Open splice case.	5
5	Identify PIC pairs to be deloaded for 1st 25-pair binder group.	2
6	Bridge 25-pair binder group for service continuity (if necessary).	5
7	Remove / sever connection from main cable to load 'in' & 'out taps.	3
8	Rejoin / splice 25-pair binder group through main cable.	5
9	Remove bridging modules from Step 6.	2
10	Identify pairs to be deloaded for 2nd 25-pair binder group.	2
11	Bridge 25-pair binder group for service continuity (if necessary).	5
12	Remove / sever connection from main cable to load 'in' & 'out taps.	3
13	Rejoin / splice 25-pair binder group through main cable.	5
14	Remove bridging modules from Step 11.	2
15	Clean, reseal, and close splice case.	10
16	Secure splice case to strand and clean up work area.	10
17	Close down aerial site, stow tools, break down work area protection.	10
	Total Minutes	94
	Total Hours	1.57
	No. Technicians	1
	Total Timesheet Hours	1.57
	No. Locations	0.5
	Total Hours	0.78
	Pairs deloaded	50
	Minutes per pair	0.94 min.

Buried Cable Load Coil Removal at a Pedestal (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location from underground splice location.	10
2	Set up traffic cone at rear bumper of truck.	1
3	Walk to site & open splice pedestal.	2
5	Identify PIC pairs to be deloaded for 1st 25-pair binder group.	2
6	Bridge 25-pair binder group for service continuity (if necessary).	5
7	Remove / sever connection from main cable to load 'in' & 'out taps.	3
8	Rejoin / splice 25-pair binder group through main cable.	5
9	Remove bridging modules from Step 6.	2
10	Identify pairs to be deloaded for 2nd 25-pair binder group.	2
11	Bridge 25-pair binder group for service continuity (if necessary).	5
12	Remove / sever connection from main cable to load 'in' & 'out taps.	3
13	Rejoin / splice 25-pair binder group through main cable.	5
14	Remove bridging modules from Step 11.	2
16	Secure splice within buried pedestal and clean up work area.	3
17	Close down buried site, stow tools and traffic cone.	5
	Total Minutes	55
	Total Hours	0.92
	No. Technicians	1
	Total Timesheet Hours	0.92
	No. Locations	0.5
	Total Hours	0.46
	Pairs deloaded	50
	Minutes per pair	0.55 min.

Q. If the Commission were to award ILECs the right to charge for load coil removal, what charges would be appropriate?

A. The Commission should use work steps and time estimates I have listed, along with the labor rates it adopts for each ILEC, to estimate the costs involved in removing load coils. I have estimated that the total average time for removing all load coils from a loop is just over 11 minutes per pair. For example, at a labor rate of $45, a load coil removal charge of $8.32 per pair would apply.

Q. If the Commission were to award ILECs the right to charge for bridged tap removal, what tasks and task time assumptions would be appropriate?

A. Again, if the Commission elects to permit the ILECs to impose such charges — which it should not — then such charges should be based on reasonably efficient practices generally employed in the telecommunications industry.

As I explained previously, the ILECs should have eliminated bridged taps almost 30 years ago, except for limited end-section bridged taps that could be removed in the service terminal at time of an installation visit. In addition, bridged tap should not exist in underground feeder cable close to the central office. Therefore, I would assume that a single case of bridged tap, if it occurs, would occur 50 percent of the time at an aerial location, and 50 percent of the time at a buried location. Accordingly, the Commission can use the following work steps and conservative time estimates to estimate the costs involved:

Aerial Cable Bridged Tap Removal at a Pole (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location.	20
2	Set up work area protection.	5
3	Set up ladder or bucket truck.	10
4	Open splice case.	5
5	Identify PIC pairs for bridged tap removal for 1st 25-pair binder group.	2
6	Remove bridging modules or cut & clear pairs for 1st 25-pair group.	2
7	Identify PIC pairs for bridged tap removal for 2nd 25-pair binder group.	2
8	Remove bridging modules or cut & clear pairs for 2nd 25-pair group.	2
9	Clean, reseal, and close splice case.	10
10	Secure splice case to strand and clean up work area.	10
11	Close down aerial site, stow tools, break down work area protection.	10
	Total Minutes	78
	Total Hours	1.30
	No. Technicians	1
	Total Timesheet Hours	1.30
	No. Locations	0.5
	Total Hours	0.65
	Pairs Unbridged	50
	Minutes per pair	0.78 min

Buried Cable Bridged Tap Removal at a Pedestal (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location	20
2	Set up traffic cone at rear bumper of truck	1
3	Walk to site & open splice pedestal	2
4	Identify PIC pairs for bridged tap removal for 1st 25-pair binder group	2
5	Remove bridging modules or cut & clear pairs for 1st 25-pair group	2
6	Identify PIC pairs for bridged tap removal for 2nd 25-pair binder group	2
7	Remove bridging modules or cut & clear pairs for 2nd 25-pair group	2
8	Secure splice within buried pedestal and clean up work area	3
9	Close down buried site, stow tools and traffic cone	5
	Total Minutes	39
	Total Hours	0.65
	No. Technicians	1
	Total Timesheet Hours	0.65
	No. Locations	0.5
	Total Hours	0.33
	Pairs Unbridged	50
	Minutes per pair	0.40 min.

Q. If the Commission were to award ILECs the right to charge for bridged tap removal, what charges would be appropriate?

A. Again, the Commission should use work steps and time estimates I have listed, along with the labor rates it adopts for each ILEC, to estimate the costs involved in removing bridged tap. I have estimated that the total average time for removing a bridged tap from a loop is under two minutes per pair. For example, at a labor rate of $45, a load coil removal charge of $0.89 would apply.

VIII. THE COMMISSION SHOULD DISREGARD BST'S COST STUDY FOR SPLITTERS.

Q. Do you have any further comment regarding BST's cost studies?

A. Yes. BST has presented proposed prices for line-sharing splitters (element J.4). Because all parties to this proceeding had previously stipulated that line-sharing issues would not be considered in this proceeding [Joint Stipulation of Certain Issues and Schedule of Events, FPSC Docket No. 990649-TP, filed December 7, 1999, at ¶ 5.], I have not scrutinized BST's proposal.

Q. Should the Commission consider BST's proposed rates for line-sharing splitters in this proceeding?

A. No, not at this time. The sole function of "splitters" is to "split" the loop into high- and low-frequency bandwidths. This function has no relevance outside the context of line sharing.

Q. Does this conclude your testimony?

A. Yes, it does.

I. INTRODUCTION AND SUMMARY

Q. Please state your name, title and business address.

A. My name is Joseph P. Riolo. I am an independent telecommunications consultant. My business address is 102 Roosevelt Drive, East Norwich, New York 11732.

Q. Have you previously filed testimony in this proceeding?

A. Yes. I filed testimony on July 31, 2000 in the current phase of this proceeding. Exhibit _____(JPR-1) attached to my July 31st testimony describes my qualifications and relevant experience.

Q. What is the purpose of your supplemental rebuttal testimony?

A. BlueStar Networks, Inc. ("BlueStar"), DIECA Communications, Inc. d/b/a Covad Communications Company ("Covad") and Rhythms Links Inc. ("Rhythms") have asked me to address the revised direct testimony and cost study presentations made by BellSouth Telecommunications, Inc. ("BST") and to provide technical support for cost witness Terry L. Murray.

Q. Please summarize the conclusions in your testimony.

A. After reviewing BST's revised cost studies, I conclude that they still do not reflect efficient engineering practices. The criticisms that I presented in my July 31st testimony continue to apply. In addition, BST's revised studies present several new faulty assumptions.

First, BST's increased dispatch rate assumption for Service Level 1 ("SL-1") voice grade loops is unreasonably high and entirely unsupported. Second, as I explained at length in my July 31st testimony, nonrecurring "conditioning" charges for DSL-capable loops are inconsistent with current engineering practices. Even if the Commission allows BST to impose such charges, BST's proposed costs for its two new distribution sub-loop "conditioning" elements are vastly overstated relative to the cost it would actually incur using efficient outside plant management practices. Finally, BST has incorrectly modeled the costs of Universal Digital Channels, as it did for ISDN-capable loops.

II. BST'S REVISED NONRECURRING COST STUDY CONTINUES TO ASSUME INEFFICIENT ENGINEERING PRACTICES.

A. The Commission Should Reject BST's Revised Dispatch Rate Assumption for Voice-Grade Loops.

Q. In its revised nonrecurring cost filing, BST has increased its dispatch rate assumption for SL-1 voice-grade loops from 20% to 38%. Is this increase appropriate?

A. No. As Ms. Murray explains in her testimony, it is not appropriate to include any level of fieldwork costs in the nonrecurring charge for a SL-1 loop. However, even if the Commission were to accept the idea that some

fieldwork costs should be included in the nonrecurring charge, it should reject BST's assumed dispatch rate increase.

Q. Why should the Commission reject BST's dispatch rate assumption?

A. A dispatch rate of 38% is simply too high. Local exchange companies have long understood that dispatch is costly and to be avoided to the greatest extent possible. They have designed their plant under "Cut-Through" design to avoid the need for field dispatches to lay in a simple cross connection at the Serving Area Interface ("SAI"), and have pre-connected more than one pair of drop wire conductors at the Drop Terminal and the Network Interface Device ("NID"). Internally, local exchange carriers typically measure their success in avoiding field dispatches via a performance measure referred to as the "NPV" rate (*i.e.*, "No Premises Visit"). In my experience, successful operations normally operate at an NPV rate between 85% and 90% (which corresponds to a dispatch rate of 10% to 15%.). Improvements in outside plant engineering design and operating practices have been steadily lowering the need for the actual dispatch of a technician. Even BST's original rate of 20% was high. Therefore, instead of increasing that rate, BST's forward-looking analysis should show decreasing dispatch rates.

Unfortunately, BST has filed no evidence or supporting material that would allow me to analyze how it arrived at its dubious 38% conclusion. Indeed, BST has not even supported its original dispatch rate assumption of 20%. Mr. James R. McCracken, one of BST's subject

matter experts for the Installation & Maintenance ("I&M") and Special Services Installation & Maintenance ("SSI&M") work groups, admitted that he doesn't know the source of the dispatch percentages and further that he doesn't have any experience with SL-1 loop installation. [*See* Deposition of James R. McCracken, July 28, 2000, Tr. at 81-83.]

For all of these reasons, if the Commission decides to allow any nonrecurring dispatch charge, BST's original estimate of a 20% dispatch rate is a much more reasonable, and even a generous, proxy for field visits than its revised, unsupported estimate of 38%.

B. BST Continues to Inflate Loop "Conditioning" Costs.

Q. In its revised cost study filing, BST has proposed two additional "conditioning" elements: "2W/4W Copper Distribution Load Coil/Equipment Removal" and "2W/4W Copper Distribution Bridged Tap Removal." Do the nonrecurring charges that BST has proposed for these elements reflect efficient engineering practices?

A. No. As Ms. Murray and I have both testified, it is inappropriate to apply any nonrecurring charges for loop "conditioning" because the outmoded design that has created such a situation was made obsolete 20 to 30 years ago. [*See* Riolo Direct and Rebuttal, at 65-80.] *Bellcore Notes on the Networks*, December 1997, page 12-5 states, "All CSA loops must be unloaded and should consist of no more than two gauges of [copper] cable."

In addition, distribution plant, frequently referred to as "the last mile," is not likely to contain load coils. In fact, transmission design standards require that no load coils may exist in the last 3,000 feet closest to the customer's location, and that there may be between 3,000 feet and 12,000 feet of a copper loop between the last load coil and the customer's location. [*See* Bellcore Telecommunications Transmission Engineering, Volume 3, Networks and Services, 1990, at 106.] This situation exists, of course, unless an engineering design error has occurred.

Furthermore, BST has inflated the costs for removing these elements by assuming that distribution "conditioning" jobs would be performed on only one pair at a time. As I explained in my July 31st testimony [at 81-90], it is a standard efficient engineering practice to deload and unbridge more than one loop at a time. Indeed, it is important to prevent multiple re-entries into outside plant splices because multiple re-entries can cause serious deterioration in the wire insulation that will cause telephone wires to break or short out. It is standard engineering practice to attempt to maintain "binder group integrity," that is, to splice and otherwise treat all of the pairs in a given binder group as a unit. Single pair splicing, *i.e.*, splicing only one or a few of the pairs in a given binder group for some purpose, has been avoided for decades.

Q. What would be a reasonable number of distribution pairs to "condition" at one time?

A. As I explained in my July 31st testimony [at 83-84], for cables serving customers less than 18,000 feet from the central office, it would always be appropriate to remove all load coils when a dispatch occurs. Even if embedded plant might have one or more load coils on a loop, they should not be there for POTS lines either. It is entirely irrelevant if those coils are on feeder or distribution plant — load coils do not belong on POTS lines of less than 18,000 feet, and the existence of such load coils degrades the speed of plain old analog modems. The ubiquitous removal of all load coils on loops containing less than 18,000 feet of copper would be appropriate, even if it involved only a single 25-pair binder group designated to provide POTS service.

Copper cables closer to the central office normally consist of larger cable sizes. Those cables closer to the central office are typically administered, and should be deloaded, in groups of 300 pairs, because all copper cables of 600 pair and larger are manufactured in 300-pair increments (such as 600-pair, 900-pair, and 1200-pair cables).

Distribution cable is, however, normally farther from the central office. Whereas 100 to 300 pairs, or even more, would easily be conditioned at one time on a cable close to the central office, it might not be possible to condition that many pairs on smaller distribution cables farther from the central office. Hence, when the conditioning effort is limited to distribution, the total number of lines that could efficiently be conditioned at one time would be smaller than for loops looked at in total

(*i.e.*, considering feeder and distribution). That does not, however, change the fact that it is clearly inefficient to condition only one pair at a time. An engineer would endeavor to maintain binder group integrity wherever possible, thereby supporting my opinion that costs should be based on no more than $1/25^{th}$ of the cost of the dispatch and work to condition loops at one site.

Q. Is it logical to adjust the number of loops conditioned at one time to account for very small cables?

A. No. BST has gone on record in Florida as stating that it does not utilize cables smaller than 25 pairs. [*See* for example, BST's copper cable material prices in Florida Order No. PSC 99-0068-FOF-TP.] In addition, transmission design dictates that load coils must be pushed back a minimum of 3,000 feet from the customer's location. The smallest cables in the loop will be adjacent to the customer premises; the cables closer to the central office will typically be larger size (fatter) cables. Load coils would not be found on the smallest cables, rather they will be found closer to the central office on those fatter cables. (Remember that as much as 12,000 feet of end section between the last load coil and the customer's location is appropriate transmission design. [*See* Bellcore Telecommunications Transmission Engineering, Volume 3, Networks and Services, 1990, at 106.])

Q. Do the task and task time assumptions underlying BST's proposed costs for these new distribution "conditoning" elements reflect efficient practices?

A. No. BST's proposed costs for these two new elements reflect the same inefficient tasks and work times that BST used in its other "conditioning" elements.

Q. If the Commission were to award BST the right to charge for load coil removal from a distribution sub-loop, what task and task time assumptions would be appropriate?

A. If the Commission elects to permit the BST to impose such charges — which it should not — then such charges should be based on practices generally employed in the telecommunications industry and on reasonably efficient task time estimates.

As I explained in my previous testimony, usually only three load coils would appear on a loop at 6,000-foot intervals (for example, at 3,000 feet, 9,000 feet, and at 15,000 feet). Two of these would typically be in the underground portion of the loop. Typically that would leave one load coil in the aerial or buried portion of the loop. Even if the last load coil were to appear in the "last mile" distribution portion of the loop, BST has unaccountably assumed that on average 1.2 load coils will appear in that distribution portion. This is particularly odd given BST's assumption that a loop will contain 2.1 load coils on average. Thus, BST appears to be saying that more than half of the load coils on a loop occur in the

distribution portion, which is clearly suspect. I have assumed that where loaded distribution cable is involved, only one load coil would appear in that distribution portion of a loaded loop, on average.

It is likely that very little, if any, of the distribution portion will be underground. (Total actual sheath kilometers of cable as reported in the FCC's ARMIS database indicates only 11.5% underground for both feeder and distribution plant — available at *http://gullfoss.fcc.gov:8080/cgi-bin/websql/prod/ccb/armis1/forms/43-08/frame1a.hts.*) However, I have conservatively used BST's assumption that 10% of the distribution load coils would actually appear in underground facilities. I have also conservatively assumed that 45% of the time the load coils would be at an aerial location and 45% of the time the load coil would be at a buried location. The Commission can use the following work steps and conservative time estimates to develop the costs involved in removing an interfering load coil from a distribution sub-loop:

Underground Cable Load Coil Removal from Distribution in a Manhole (10% occurrence)		
Step	Description	Task (min.)
1	Travel time to underground splice location	20
2	Set up work area protection and underground work site	5
3	Pump and ventilate manhole	15
4	Buffer cable / Rerack cable / set up splice	5
5	Open splice case	5
6	Identify pairs to be deloaded	5
7	Bridge binder group for service continuity (if necessary)	5
8	Remove / sever connection from main cable to load "in" & "out" taps	3
9	Rejoin / splice pairs through main cable	5
10	Remove bridging modules from Step 7	2
11	Clean, reseal, and close splice case	10
12	Rack cables, pressure test cables in manhole	10
13	Close down manhole, stow tools, break down work area protection	10
	Total Minutes	100
	Total Hours	1.67
	No. Technicians	2
	Total Timesheet Hours	3.33
	No. Locations	0.10
	Total Hours	0.33
	Pairs deloaded	25
	Weighted Average Minutes per pair	0.80 min.

Aerial Cable Load Coil Removal from Distribution at a Pole (45% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location from underground splice location	10
2	Set up work area protection	5
3	Set up ladder or bucket truck	10
4	Open splice case	5
5	Identify PIC pairs to be deloaded	2
6	Bridge binder group for service continuity (if necessary)	5
7	Remove / sever connection from main cable to load "in" & "out" taps	3
8	Rejoin / splice pairs through main cable	5
9	Remove bridging modules from Step 6	2
10	Clean, reseal, and close splice case	10
11	Secure splice case to strand and clean up work area	10
12	Close down aerial site, stow tools, break down work area protection	10
	Total Minutes	77
	Total Hours	1.28
	No. Technicians	1
	Total Timesheet Hours	1.28
	No. Locations	0.45
	Total Hours	0.58
	Pairs deloaded	25
	Weighted Average Minutes per pair	1.39 min.

Buried Cable Load Coil Removal from Distribution at a Pedestal (45% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location from underground splice location	10
2	Set up traffic cone at rear bumper of truck	1
3	Walk to site & open splice pedestal	2
5	Identify PIC pairs to be deloaded	2
6	Bridge binder group for service continuity (if necessary)	5
7	Remove / sever connection from main cable to load 'in' & 'out taps	3
8	Rejoin / splice pairs through main cable	5
9	Remove bridging modules from Step 6	2
10	Secure splice within buried pedestal and clean up work area	3
11	Close down buried site, stow tools and traffic cone	5
	Total Minutes	38
	Total Hours	0.63
	No. Technicians	1
	Total Timesheet Hours	0.63
	No. Locations	0.45
	Total Hours	0.29
	Pairs deloaded	25
	Weighted Average Minutes per pair	0.68 min.

Q. If the Commission were to award BST the right to charge for load coil removal from a distribution sub-loop, what charges would be appropriate?

A. The Commission should use work steps and time estimates I have listed, along with the labor rates it adopts for BST, to estimate the costs involved in removing load coils. I have estimated that the total average time for removing the load coil from a distribution sub-loop as just under 3 minutes per average pair. For example, at a labor rate of $45 per hour, a load coil removal charge of $2.15 per pair would apply.

Q. If the Commission were to award BST the right to charge for bridged tap removal from a distribution sub-loop, what task and task time assumptions would be appropriate?

A. Again, if the Commission elects to permit BST to impose such charges — which it should not — then such charges should be based on reasonably efficient practices generally employed in the telecommunications industry.

Using the same criteria as stated earlier, I would conservatively assume that a single case of bridged tap, if it occurs, would occur 50% of the time at an aerial location and 50% of the time at a buried location. Accordingly, the Commission can use the following work steps and conservative time estimates to estimate the costs involved in removing bridged tap from a distribution sub-loop:

Aerial Cable Bridged Tap Removal from Distribution at a Pole (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location	20
2	Set up work area protection	5
3	Set up ladder or bucket truck	10
4	Open splice case	5
5	Identify PIC pairs for bridged tap removal	2
6	Remove bridging modules or cut & clear pairs	2
7	Clean, reseal, and close splice case	10
8	Secure splice case to strand and clean up work area	10
9	Close down aerial site, stow tools, break down work area protection	10
	Total Minutes	74
	Total Hours	1.23
	No. Technicians	1
	Total Timesheet Hours	1.23
	No. Locations	0.5
	Total Hours	0.62
	Pairs Unbridged	25
	Weighted Average Minutes per pair	1.48 min

Buried Cable Bridged Tap Removal from Distribution at a Pedestal (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location	20
2	Set up traffic cone at rear bumper of truck	1
3	Walk to site & open splice pedestal	2
4	Identify PIC pairs for bridged tap removal	2
5	Remove bridging modules or cut & clear pairs	2
6	Secure splice within buried pedestal and clean up work area	3
7	Close down buried site, stow tools and traffic cone	5
	Total Minutes	35
	Total Hours	0.58
	No. Technicians	1
	Total Timesheet Hours	0.58
	No. Locations	0.5
	Total Hours	0.29
	Pairs Unbridged	25
	Weighted Average Minutes per pair	0.70 min.

Q. If the Commission were to award BST the right to charge for bridged tap removal from a distribution sub-loop, what charges would be appropriate?

A. Again, the Commission should use the work steps and time estimates I have listed, along with the labor rates it adopts for BST, to estimate the costs involved in removing bridged tap. I have estimated that the total average time for removing a bridged tap from a distribution sub-loop is just under one and a half minutes per pair. For example, at a labor rate of $45 per hour, a bridged tap removal charge of $1.63 would apply.

III. BST HAS INCORRECTLY MODELED UDC COSTS.

Q. In its revised cost study filing, BST has proposed an additional loop element, the "Universal Digital Channel." Do you have any comments on this element?

A. As Ms. Murray explains in her testimony, it is difficult to comment on BST's so-called "Universal Digital Channel" ("UDC") because BST has not provided a definition of this element and nor explained how BST imagines it would differ from an ISDN-capable loop, if at all. However, it is my understanding that a UDC has the same exact technical specifications as an ISDN loop.

Q. Since a UDC apparently has the technical specifications of an ISDN loop, is it necessary for a UDC to be "designed" or engineered?

A. No. As I explained in my July 31st testimony [at 53 and 62-64], ISDN can be provided over standard loop facilities. This holds also for a UDC. In fact, Mr. James R. McCracken, one of BST's subject matter experts for the

Special Services Installation & Maintenance ("SSI&M") work group, admitted that BST does not "design" ISDN loops in Georgia. [Deposition of James R. McCracken, July 28, 2000, Tr. at 31.]

Q. How do the costs of UDC differ from voice-grade loops?

A. UDCs use the same facilities as ISDN-capable loops. Therefore, my July 31st comments regarding the incremental costs of ISDN-capable loops versus voice-grade loops apply to UDCs as well. [*See* Riolo Direct and Rebuttal, at 50-53.] Over copper loops, there is no difference. Because the plug-in card required for ISDN provided over fiber/Digital Loop Carrier is more expensive than the plug-in card required to support basic voice grade service, longer ISDN loops cost somewhat more than comparable basic voice service loops. I agree with Ms. Murray that recurring charges for ISDN/UDC loops should be set at the recurring charge for basic loops, plus an increment to account for the higher cost of an ISDN card at the remote terminal as compared to a POTS card, weighted by the percentage of fiber feeder in the forward-looking network.

Q. Does this conclude your testimony?

A. Yes, it does.

BY MR. MELSON:

Q Mr. Riolo, could you briefly summarize your testimony.

A Yes, I will. Good afternoon, Commissioners. My testimony focuses on engineering and technical issues that are important to data ALECs as the Commission sets prices for xDSL capable loops. In doing this, I describe from a technical perspective the type of xDSL capable loops that data ALECs want to purchase from BellSouth. I describe what would be a forward-looking network design for providing both voice and broad band services. And based on that forward-looking network, I recommend the appropriate tasks and task times using efficient practices that should be used as inputs into the nonrecurring cost studies for xDSL capable loops.

My testimony and recommendations are based on over 30 years of experience in the telecommunications industry. During my career with AT&T, Bell Laboratories, New York Telephone, and the NYNEX Corporation, I had experience in the areas of outside plant engineering, construction, maintenance, loop assignment, procurement, and mechanization, as well as the development of outside plant methods and procedures. At Bell Laboratories I designed cable and apparatus for outside plant. I have had hands-on experience both at the supervisory level and

physically doing it myself with working in placing and splicing both copper and fiber cables as well as working on remote terminal electronics and digital loop carrier. During my time at AT&T, I was also responsible for performing audits and reviews of the engineering and construction and maintenance practices of what was the Bell system operating companies, which included BellSouth.

Issue Number 3 in this case is what the proper definition of an xDSL capable loop is. My answer is that from an engineering perspective, xDSL services use the same loop that BellSouth has used and will use in the future to provide voice grade services. That plant can consist either of copper loops or of loops provided over next generation digital loop carrier with the appropriate channel units or line cards.

While some copper loops in BellSouth's network today may contain load coils or excessive bridged tap which we would need to remove to make the loop xDSL capable, BellSouth does not deploy load coils on loops under 18,000 feet today and should not have been deploying them in the past under network design guidelines that have been in effect for over two decades.

In any event, so long as an ALEC can get electronic access to accurate loop makeup information, it can identify which loops with or without conditioning are

capable of supporting the variety of DSL services it wants to order. There is no need to obtain any test points or other extras that come with what BellSouth calls a design loop. Just the need to be able to order a specific identified loop and to be given assurance that that service will not be rolled over to some other facility in the future.

I am troubled by the testimony that I have heard from BellSouth over the past two days that while they are testing a system to give ALECs access to loop makeup information, we cannot use that information to reserve and order an SL-1 loop, since that is exactly the type of facility that we need to provide our services.

My testimony also describes the various tasks and task times that BellSouth uses as inputs to its nonrecurring cost studies for one of its loop offerings, an ADSL capable loop. Many of these tasks are unnecessary or else involve inflated task times that are not based on efficient practices.

Based on my review, I provide an alternative set of tasks and task times which should be used as inputs into a nonrecurring cost study for preordering, ordering, and provisioning of xDSL capable loops. In addition, while loop conditioning should never be required in a forward-looking network, I also present a set of realistic

task times to use in the event the Commission were to award BellSouth the right to charge for removing load coils and bridged tap.

I would now like to perform a brief demonstration of the process of removing load coils from 50 pairs in a typical 300 pair cable. I just want to assure you that everything you will see me do is something that I have had hands-on experience both doing and supervising during the course of my career.

As I do the demonstration I will be happy to answer any questions about what I am doing and how it compares to the activities that you saw yesterday on BellSouth's videotape. Thank you.

MR. MELSON: Can Mr. Riolo now perform his demonstration?

CHAIRMAN DEASON: Yes.

THE WITNESS: This mock-up represents a typical cable splice that one might find in the field. I have labelled each end of this appropriately so that the cable that enters the top of this particular side of the splice case is labelled load coils. This would be a cable that would eventually go to a container that physically holds the coil.

MR. MELSON: Mr. Riolo, could you move the microphone a little higher up on your necktie. I think

the court reporter is having trouble.

THE WITNESS: The cable below it represents the copper cable that would go towards the end user or the customer. On this side of the splice this top cable would represent a cable that is bridged. We talked about bridging pairs, this is a cable that would be bridged to some of the pairs that would be going out toward the customer and the end user.

The cable on the bottom is the cable that comes from the central office. This particular cable is a 300-pair cable that is comprised of 25-pair binder groups. These binder groups when the cable is opened are color coded such that one is able to pick out an individual binder group that would represent specific cable pairs.

Each of the cable pairs are, indeed, also color-coded so that it is possible just by looking at the color to identify which specific cable pair that you would like to perhaps work on. So in this case there are 300 cable pairs. And I could, for example, pick out cable pair number one by its color code, which would be in the blue/white binder and it would be the blue/white pair. So of the 25 pairs that are here, one would pick out the blue/white pair. The second pair would be orange/white, and then green/white, brown/white, slate/white. So there are a series of colors that are used that will allow one

to identify by color any pair in that cable.

Moreover, there is logic that says as the cables get larger in size, the color code is extended in the same manner using the same colors, and then there are groups that are joined together in hundred pair bunches where you take four of the 25-pair groups, use the same color coding, and you can construct cables of any size and still identify every cable pair by color irrespective of the size of the cable.

With that sort of background, I will now go through a demonstration of deloading 50 cable pairs. The color coding that is used in this binder group splices typically fine wires of that color and wrap it around the binder groups so that when splicing if this plastic were to get cut and lost off the bundle, you would always know what the binder group was by color and hence the pair identification.

So when they open up a splice and they go to splice the wires, they put that wire wrap on there of the specific color of the binder group so that you can always see the binder groups inside the splice itself and make the identification.

What I will do now is open up the splice case. This is a mechanical splice case. It is bolted together. The splice is now open, the case has been taken off.

Immediately below the case there is usually some wrap around the wires which helps prevent some damage to the wires when you are putting the case on. If any of these wires were sticking up they might get pinched inside the splice case, so there is a wrap put on it merely to protect it in that regard. This is what you would find inside of a cable splice of this fashion.

The cable that was bridged to certain counts that were going out to the customer one way and going out to another location another way. The cable from the central office and some of those cables would be spliced to the load coils. The engineer would typically give the instruction to the technician that certain specific pairs needed to be deloaded. In this case he would have given them a count that would have indicated that the blue/black binder group, the group that had the blue/black wrap on it, and the group that had the orange/black were about to be deloaded.

So the craftsman would have to go through the cable coming from the office to find the blue/black, and in this case there is the wire wrap indicating blue/black, so this is the binder coming from the central office. And if he were to follow it, it goes into the cable that is going to the load coil. The load coil is put in series with the circuit, so it goes into the load coil, it comes

out of the load coil, and then would continue into the cable going toward the customer. The blue/black binder from the central office is spliced to the blue/black binder going to the customer.

So, again, in the customer's cable, which says the local loop, again, you should find the blue/black binder. So this particular splice and this particular splice module will have to be opened to take the coils off and then the pairs from the central office and the pairs from the customer location will then be sliced together and joined.

To do that there is a simple device. It has teeth on it. Those teeth get inserted and then clipped, and that joining process has now taken the pairs from the office off of the pairs that go into the load coil.

Similarly, the one that goes from the customer into the load coil case is removed. Now it is necessary to join the pairs that go from the office to the pairs that go to the customer. The modules are keyed so that they only fit on in one direction. That is because I picked up the wrong one, see. So there.

There is another tool that slides over the module and generally it is crimped in the center and on each end. And you have now just deloaded and respliced 25 pairs.

The second binder group we said was the orange/black. These would be the second 25-pair group. Those have been crimped. The splice will then be put back together again. The 50 pairs have been deloaded and respliced just as you have watched it. If there are times, and I probably didn't bring one here, I have one in the box. There is a plastic strip that I could put over this to protect these particular wires. It just clips right on like this one. It just zips on there and you press it down. But in this case these load coils won't be used again, so it probably wouldn't matter. The splice case would be put back on. That completes the task of putting 50 pairs and deloading them.

CHAIRMAN DEASON: What about the waterproof adhesive?

THE WITNESS: In this particular case it is not a requirement. Those used in aerial splices don't typically have that adhesive. But there are channels inside there that would deflect water normally. There is sealant in the end plates to preclude any water getting in from the sides.

COMMISSIONER JACOBS: So for the manhole you would have to do that; and the air, too, you would have to pump the air back in there?

THE WITNESS: In manhole environments they do

typically have air pressure so that in the event there is a leak in the cable or in the splice case, the air coming out would force the water from getting in.

COMMISSIONER JACOBS: Okay.

THE WITNESS: By the way, I think yesterday we talked about some tone, as well. Toning is no more than putting a device onto a given wire pair. As you get closer to it you would hear it louder and louder until you hit the pair and you know which one you were on. So if you wanted to identify a bunch, you could put it on a wire in a bunch, and as you go through it, start to move them out of the way, you will hit the one bunch that gets loud and you will know you are on the right one.

I will wrap this up.

MR. MELSON: Now turn your walk-around mike off so you don't get horrible feedback.

And, Chairman Deason, I believe the Commission staff was videotaping that demonstration for us. I would like to ask that the videotape be identified as the next numbered exhibit.

CHAIRMAN DEASON: That will be Exhibit 147.

(Exhibit Number 147 marked for identification.)

MR. MELSON: And Mr. Riolo is available for cross.

CHAIRMAN DEASON: BellSouth.

CROSS EXAMINATION

BY MR. EDENFIELD:

Q Good afternoon, Mr. Riolo.

A Good afternoon.

Q We will see. It is a quarter after 5:00, I don't know. The opinions that are in your testimony concerning task times, would you agree that they are based on your personal experiences as opposed to any type of time and motion study or similar study?

A That would be correct.

Q Now, this morning a reference was made to your involvement in the Hatfield model. What exactly was your involvement in that if, in fact, that was accurate?

A I did hear some reference to my name as one of the engineering types that was involved in the Hatfield model. My specific role was to develop inputs for the Hatfield model and to validate some of those inputs.

Q Did you have any involvement with the modeling itself as opposed to the inputs, in other words, the model assumptions?

A Some of the assumptions I might have been involved in, but I didn't actually create the model.

Q And by now I assume you are aware and will agree that this Commission rejected the Hatfield model?

A Yes, sir, I am aware.

Q Now, just real quickly on your background. As I understand it, you retired from NYNEX in 1992 and since that time you have been consulting?

A That's correct.

Q And, again, as I recall from your deposition, you have not had any hands-on experience with BellSouth's network?

A I have not had any hands-on experience with BellSouth's network since 1992. But in my CV you will notice that I spent time at AT&T, where I was involved in operational reviews and audits of each of the operating companies, and those included BellSouth. So I did indeed have my hands in the plant of BellSouth to some extent.

Q And that was back -- my recollection is that you retired from AT&T in 1980?

A I left AT&T in 1980 and returned to New York Telephone.

Q Okay. And I may have been confused about what you said a second ago. You have not had any experience in BellSouth's network since 1980?

A I have not had experience in BellSouth's network since my tour at AT&T, yes.

Q Now, in your employment with NYNEX you were a managerial employee?

A Yes, I was.

Q Would it be fair to say that the last time you did a load coil removal would have been during a work stoppage at NYNEX?

A Yes. The history of the New York company relative to its labor relations has been relatively checkered. We have had extensive labor difficulties, and some of them lasted as much as seven months. So I have actually had quite a bit of hands-on field types even though I was a manager.

Q I know you retired in 1992. Can you recall the last time that you performed a load coil removal on a live network?

A I seem to recollect we had a four-month liaison around 1989, and certainly I would have done it at that point in time.

Q Okay. And in your testimony you have a number of opinions concerning BellSouth's operations support systems, but as I recall from your deposition you were not holding yourself out as an expert in BellSouth's OSS?

A That is correct. I am not an OSS expert, but I am certainly familiar with a great deal of the legacy systems.

Q When is the last time you had involvement with BellSouth's legacy systems?

A BellSouth specifically, or a legacy system that

BellSouth uses?

Q Well, why don't we do both.

A Okay. I obviously have not had my hands into BellSouth's legacy system. But I have had hands-on experience with systems that BellSouth utilizes prior to my retirement in '92.

Q Let's talk about your demonstration for a moment. Will you agree with me that this demonstration you just performed is about as good as it is going to get for environment?

A Well, I probably would have been more comfortable if I wasn't in a suit, so I was handicapped in that regard. But certainly it is on a desktop, and it would represent a better environment than some, although I have been in cases that probably have simulated something like this.

Q Do you think it would ever get -- that the conditions in what I call the real world will ever get better than what you had here today?

A Insofar as there are a number of splice cases that are utilized in the field that are much easier to enter, you know, they call them ready-access type of terminals. So in that regard, you know, I'm sure I could find cases in the field that would be easier to access and work on.

Q Okay. When did you get the load coil that you are using in this demonstration?

A This particular mock-up is probably about six months old.

Q Do know when it was manufactured?

A When the mock-up was manufactured?

Q Sure.

A Six months ago. Within six months.

Q Will you agree with me that the last time the ILECs, at least according to your testimony, were installing load coils in their network it was somewhere in the '70s or '80s?

A That they were installing, yes. This is a mock-up. This is not an actual piece of cable and load coil that was cut and removed from the field somewhere.

Q Oh, so this is not something that we would actually find down in a manhole, or on an aerial line, or even in buried?

A This is a simulation of what you would find. It is cables that have been spliced together in a fashion that you would find in the field.

Q I guess what I'm asking you is could you take this, hook the wires up and it work?

A If you were of the opinion that you wanted to splice the ends of this, it certainly would work.

Q Okay. And this would be the generation splice case that is somewhere between 15 to 25 years past what was being installed when the ILECs were installing these in their networks?

A Well, I guess if you notice the one that was in your videotape, it was a waffle case design very similar to that. And, in fact, that waffle case I worked on at Bell Laboratories in Norcross, Georgia.

Q You worked on the one that was in the manhole?

A That particular one you saw in your manhole was a splice case that I worked on the design of.

Q One similar to that?

A It was the waffle case, yes.

Q And that was back when you were with AT&T?

A That was when I was at Bell Laboratories.

Q Was that even before 1980?

A That one was before 1980, as a matter of fact.

Q Okay. So, again, the load coil that was in the video looked like it was one that would have been installed somewhere probably before 1980?

A It would be my perception it was before 1980, yes.

Q And what we are looking at here is the year 2000 version?

A Well, this is a piece of cable that really

hasn't changed in its design since its inception. So this cable plant is something that has been designed this way since probably 1980. This splice case, while it is six months old off the shelf, is a design that has been around since probably 1980.

Q I mean, you would agree that cars has been around since 1900, but they are a little bit better today than they were then, right?

A Well, you know, you do what you can and it suits the needs and you stay with it. There aren't many newer cases out there in design. You know, they are cheaper perhaps. But, you know, again, I worked on a particular waffle case that you had in your manhole, and this is a newer version, but it is still basically the same design.

You will see the corrugations around the plastic, those are for strength, because the original one used to distort when you put it under air. So that is why those features were put on it. Additionally, the seams used to open up when they were under extreme air pressure, the case you had in the manhole. And that is why that metallic feature around the seams was put in, similar to the one you had in your manhole.

Q Okay. Now, you indicated you worked on one in a manhole, but I thought you told Commissioner Jacobs that this was one you would find more likely in aerial cable?

A This particular one because it is a PIC cable, would typically be in an aerial location, because this particular cable is not the type of PIC cable that is used traditionally in the underground. Not to say it couldn't be, but as an engineer I generally would not put that in the underground.

Q Now, if I recollect from your testimony, you have indicated that at least the first two load coils on a loop will be found in the underground, is that correct?

A Generally, in an urban environment you have conduit that extends from the central office out towards the customer location, and because of the characteristics of an urban environment, we generally have these cables under the ground in conduit and manhole situations. But that is not to say in a rural environment the cable would leave the central office and might immediately go into the aerial or into the buried. So, again, it is dependent upon your environment.

Q Will you agree that for purposes of xDSL technology deployment that that is at least today more prevalent in the larger metropolitan areas than it is in the rural areas?

A It probably would be more prevalent would be my opinion in the urban environment than in the rural environment. But I would think that there would be a

tremendous demand in the suburban environment.

Q Do you consider -- are you familiar with Atlanta?

A Yes, I am.

Q Would you consider some of the outlying cities like Roswell or cities like that to be part of the urban or --

A What I am talking about are communities that are immediately outside of urban environments. Typically the bedroom communities where there is a large demand for DSL service.

Q Do you consider suburban to be something in between rural or urban, or would that be more closely aligned to urban?

A It certainly is a more densely populated area than rural, but not as densely populated as urban.

Q So I think we can agree at least in the urban areas, at least the first two load coils you are going to find on a loop to the extent they exist are going to generally be in the underground, such as a manhole like we saw in the video from BellSouth?

A Again, if you have an underground environment, which typically is found in an urban environment, you certainly would have opportunity to have underground cable. Whether or not you have load coils is totally

another subject.

Q I understand that. I'm just talking about to the extent they exist. In fact, why don't we do it this way. Will you agree with me that there are some instances where there will be as many as three load coils on a loop?

A It is conceivable you could have three load coils on a loop.

Q And if you have three load coils on a loop, it would be your testimony that generally in urban areas the first two would be found in underground and then the last one, the third one, you have at least for purposes of your testimony assumed that it will half the time be underground and half the time will either be buried or aerial. Is that a correct summary of your testimony on that?

A Yes, that is.

Q So what is the percentage between buried and aerial in those instances where on a third load coil you have that?

A Again, it would be dependent upon the area being served. Certain of the suburban areas, I will call them, the town fathers, so to speak, have required that they have out-of-sight plant. So in those instances you would find a predominance of buried plant in that particular case. Whereas, typically you find a great deal of poles,

and the poles supporting the cable, so those would be an aerial environment.

So, again, it would be dependent upon the area being served. But for the purposes of estimating, I estimated that half the times it would be in the aerial and half the times it would be in the buried.

Q And that is for the one-half of the third load coil?

A That's correct.

Q Okay. Will you agree with me that in what I will call the real world there are factors that will increase the task times that you have demonstrated here today?

A There certainly will be factors that would increase the time, just as there would be factors that would decrease the time.

Q What kind of factor do you think there would be that would make it quicker than what you demonstrated here today?

A Well, certainly there are people that are a lot more dexterous than I am, for one. But, again, I have worked on a number of occasions where the access was just as good, if not better than this. So this is not atypical.

Q Would you consider this to be the situation

where you have easy access to be the more typical case? And, again, let's talk about underground. In an underground setting would you consider that to be the more typical case or the less typical case?

A I would say generally there are more steps involved in an underground situation insofar as the setup. In terms of doing the actual job, they wouldn't differ substantially from what I have shown here.

Q You had mentioned a term when you were doing your demonstration called PIC cable. What is PIC cable?

A PIC, P-I-C, stands for polyethylene insulated cable. That is the insulation that is used on the wires generally.

Q What it pulp cable?

A Pulp cable is the term used to speak to the issue of how the wire is insulated. Pulp cable would have wood pulp as its insulation rather than plastic.

Q Which is the more -- I'm going to use a terrible word here -- which is the more recent phenomenon, pulp cable or PIC cable?

A Well, certainly pulp has preceded PIC.

Q Do you have any idea as you sit here today whether PIC cable or pulp cable is more prevalent is BellSouth's network?

A As I sit here today, I would assume that PIC

cable sheath feet is probably more prevalent. I guess I will should clarify a little bit that how you measure the cable gives you different results, perhaps.

Q I mean, all I'm trying to figure out is when a splice case is opened to remove a load coil, can you tell me in BellSouth's network whether you are more likely to find pulp cable, or PIC cable, or do you just not know?

A Again, in the cables coming from the central office in dense urban environments in the past pulp cable generally was the cable of choice. It came in much larger sizes, and cables typically when they leave the central office are larger at the central office and taper as they go out towards the customer end. So, in general, the cables a long time ago were pulp in makeup. The laboratories realized that there are frailties associated with pulp cable.

Q That was my next question. Go ahead.

A And as a result there was a design of something called duct PIC. Duct PIC is an underground type of polyethylene insulated cable that certainly was developed after pulp. So dependent upon how old your plant is -- but, again, if it is that old it is certainly well beyond its useful economic life, so to speak.

Q Sure. Did you have a chance to review the film that BellSouth put together and presented here?

A I did see it.

Q Forgetting the task times for a moment, you understand that BellSouth was not putting that movie in as any kind of representation of actual task times, but look at the tasks themselves. Was there any task performed on that film that was unnecessary, in your opinion?

A Certainly what comes to mind were not things that were not necessary as much as there were things that perhaps were not efficient.

Q Again, was there anything on there that you deemed to be -- in other words, was there anything that happened on that film that you would go, "That was not necessary to remove the load coil in a safe and efficient manner"?

A Well, you know, there certainly were a number of things that were not the practice, I will say that.

Q Some of the problems that were incurred by the crew that was doing the load coil removal, would you agree that the problems that they ran into, again, not from a timing standpoint, but just from an occurrence standpoint can happen in the real world?

A Can they happen?

Q Yes.

A Which problems are you speaking of?

Q Having a manhole that is completely filled up

with water?

A Certainly you can have manholes filled up with water.

Q Going into a manhole where there is a leak?

A Certainly there is ample opportunity to have leaks.

Q Did you have any problem with the crew fixing the leak before they opened up that 2700 pair splice case?

A I think what disturbed me most about fixing the leak was him probing at it with a screwdriver. If he worked for me I would be real excited about that.

Q Maybe he is just like me, he fixes everything with a hammer.

A And, again, I appreciate his motive. And certainly I will say that he did -- they both did you proud in terms of their work ethic. But as most people who have done that for a long time, they develop bad habits, not the least of which some of the things were completely unsafe. But irrespective of not following practice, they did a relatively fine job.

Q And I guess the question is more along the lines of will you agree that they should not have been opening that splice case with a leak such as was happening in the film?

A Well, to answer that properly I have to go back

a couple of steps. What probably disturbed me most, and appreciate that I was an auditor for AT&T probably when that thing was built.

Q We remember you guys.

A Okay. So what was wrong was the way the cables were spliced in that manhole to begin with. There is a conduit window where all the conduits enter the manhole. Each of those conduits when a cable is placed should reside in a certain place in the manhole. The top conduit should rightfully be -- a cable coming from the top conduit should rightfully be placed in the top racking position, and the second row of conduit should rack in the next position below it, and so on, so that the middle conduit comes straight across, the lower conduits would sweep down and rack on the bottom positions.

Whoever pulled the cable through that manhole pulled everything right through the most convenient place they could do it and it was all right in the center. So they didn't make utilization of the racking positions, number one.

The next thing that disturbed me to no end was the fact that in the manhole there are vertical metallic features that you might have noticed that have support structures to hold the cables. They are steps that come out off the wall and the cables lie on those steps. Each

of those racking positions and the vertical spaces represent the panels. You should never splice in the very first panel on either side of the manhole. The cable they were working on was spliced in the very first panel. So if you notice that cable was locked right into the wall. There was no way of setting that cable or moving it. It should never have been there to begin with. There was ample splicing positions in the center of the hole for the splices to occur.

Moreover, you shouldn't have splices on the same level both spliced in the same splicing position. I mean, the same panel, I should say. They should alternate. So that you have a splice in this panel and a splice in this panel, so that you have cable that runs past the splice here, and on this side you have a cable behind the splice here. In that manhole you will notice you had splice in front of splices. That shouldn't occur.

The way his particular cable was locked into the wall because someone spliced it in the very first panel, it was probably a good idea to do something about that leaking water.

So it may have been a long-winded way of answering your question, but I had to get that out because it normally wouldn't be a situation that you would have to tend to. I certainly have worked in manholes that had

leaks in them, and I just did my job while I was there.

Q And I don't want to belabor this, but those guys whatever problems you just identified were probably done long before those men stepped in that manhole.

A And, again, I don't fault the men for their work ethic. They did a fine job. But, again, having been at it a long time, they weren't following practice and they did some unsafe things.

Q Will you agree with me that they did the job as they found the facilities?

A They certainly did what they were instructed to do, but I would like to believe like any operating company, even the one I came from, you know, our paramount concern is worker safety.

Q But you're not bitter?

A I'm not there any longer.

Q And just to put a point on this, while you might not necessarily have agreed with the manner in which they performed the task, you will agree that there was no unnecessary task performed?

A Again, I might have done it a different way, but that would be my approach.

Q Okay. Now, because this is -- and, again, don't let me make a bad assumption, but because this is generally found in an aerial type situation, would you

expect to find some type of sealant on this particular splice case that you are using for your example if it was going to go in an underground setting?

A In an underground setting you would have to have a cable that probably had sealant on it, yes.

Q And that was one thing you did not have to do in your example was take the sealant off and replace the sealant before you closed the case back up?

A Generally, when a splicer opens up a splice case that is mechanical and has sealant on it, that is the job of the helper. The second banana on the job gets the job of cleaning up. So he would take the halves of the splice case -- and, by the way, he would take both halves, which is something they didn't do. But he would take both halves and would clean it up while the one tending to the wire work was doing the function. So that when the wire work was completed, the second man on the job would have already cleaned up the splice case and it would be ready to be reinstalled.

Q Now, in this particular film when they took the splice case apart all the sealant was on the lower half that was up against the wall, wasn't it? You are not suggesting that he have pried that bottom half off of the thing and taken it out?

A Well, let me tell you the practice, and that is

why I say the splice should never have been in that panel to begin with. But the practice is to take the whole case off and replace the sealant on the whole case. There are seals -- and the seal, by the way, is a tape, it is a butyl rubber.

Q Kind of like what you find around your windshield?

A It's something like that. And it is flat and it comes in a roll with paper on one side so you can peel the paper off. And to put the sealant on is no more than just putting it something across the space that you need to seal, and it is tacky so it stays in place. So you put it around the collars and you put it around where the seams are on both halves of the case. And then you bolt through it. And as you do tighten down on it, it squeezes in there real tight and seals it. That's all it is.

Q And the splice cases are generally pressurized to some extent when they are in underground facilities?

A Generally, if you have a pulp cable environment, it is good practice to have air pressure on the cables.

Q And I also notice in your example, and I assume again because this is not a pressurized splice case that you did not put any soap around it to make sure there was no pressure lost?

A That's correct. But that is not to say that it

wasn't in my task times. You know, recognize my task types include an awful lot more than what this demonstration showed.

Q Now, another time that you didn't do, and I don't know whether it was just because -- I'm trying to figure out whether you deem it unnecessary or just because you are not dealing with live wires here, is you didn't tone the pairs before you put them back together?

A No. Again, this is PIC cable. And one of the benefits of PIC cable is that it is spliced by color code. So in splicing it by color code you can identify it by color.

Q Let's talk about that for a second. Looking at your demonstrative splice case here, if it was in a real world environment it would have cables coming out of both sides, right?

A Indeed, this does have cables out of both sides. It may be hidden behind those signs, but there are four cables there.

Q The cables on one side of that would go back to the central office presumably?

A Yes, that is the one labelled CO.

Q The cables on the other side would then go to an end user's premises?

A It is called the local loops.

Q Now, what happens on the other end of those cables in the central office side? Are they attached to like a main distribution frame or something like that?

A Well, certainly as the cable makes it way back to the office it would terminate on a main distribution frame.

Q Now, when it terminates on the main distribution frame, are they punched down in 25 pairs there, as well, or are they put on individually?

A Typically, in the main frame there is a preconnectorized terminal, so the terminal mounts with screws on the iron work of the frame and there generally are preterminated cable tails that are PIC in nature, also. So there is a color code associated with it. So typically you would splice the color code of the preterminated tail to the cable coming into the office that was PIC and hence make the connection by the color code.

Q In an underground setting, the load coil would generally be found in what is called the feeder portion of the cable?

A That's correct.

Q And at the end of what is designated as the feeder portion of the cable there is like a feeder interface?

A A feeder distribution interface, yes.

Q And are the loops that would be coming out of the local loop side of the splice case, would they then be attached to that feeder distribution interface and then picked up on the other side of that to go to the individual end users?

A They would be cross-connected on the other side, yes.

Q Will you agree with me that it is not an uncommon occurrence for the colors to get mixed up between the main distribution frame and the feeder distribution interface in the network in the normal course?

A Again, you know, it is certainly your prerogative to splice cables at random. But the beauty of PIC cable is that you can identify it by color to save you the trouble of having to tone each pair every time you want to do something with it. So, yes, you can randomly put them together, but it would be to your disadvantage so to speak.

Q Do you think it is unprudent to take a toner and verify what you are about to hook together?

A Certainly, again, it is your prerogative to do that. I wouldn't say you can't do it or you shouldn't do it. But, again, it is not always necessary, I guess, is my point.

Q Will you agree that there are instances where you want to unload less than 25 pairs of cable at a time?

A I certainly can foresee an instance where you might want to unload less than 25 at a time.

Q Okay. And, in fact, I think in your testimony, though you certainly defined it as uncommon, there might be instances where you just want to unload one pair at a time?

A In an extreme case you could unload one pair just as in an extreme case you could unload 900 pairs.

Q So on the PIC cable as you start unloading less than 25 at a time, will you agree with me that it is possible for the colors not to match up on either end?

A Again, if the cable is spliced up by color, I would be pretty harsh on someone that messed the colors up after that. There is no reason to mess the colors up, even if you are taking load coils off of it. You should still splice them back. You notice I joined the cable from the central office to the cable back to the customer after I deloaded it, and those were put back together by color.

Q So would it be your testimony that you do not need to have someone back at the central office when you are doing a load coil removal to make sure that the circuit is complete?

A Oh, you certainly don't need someone at a central office. That is a whole another question. If you are talking about putting tone on cable, you can put tone on cable anywhere you have access to it, not necessarily the main frame. You could put tone, for example, at the FDI. The cable numbers are labelled there, you could hook your test set up there and it is usually closer to you than the central office. But, you know, again, that is your prerogative.

On the other hand, there may be somebody in the central office that is available to put tone on it. In the environment I came from, the craftsmen in the field could use his CAT set, that was a computed assisted terminal, it looked like a big telephone with a screen on it. And he could clip on the pairs and ask the central office switch to send them tone. So he could do it by himself. He didn't even have to send anyone.

So there are a number of circumstances wherein you could put tone on pairs, you don't necessarily need people to do it other than the person that is working on the splice.

Q Now, this demonstration works nice with PIC cable, does pulp cable have the same color coding and plastic binders that you just hook together like a PIC cable does?

A No, it does not. But pulp cable has a certain logic to it, as well. Not that you can identify each pair, but you can identify each 100-pair group. So you can tell which 100-pair group you are supposed to be working in.

Q In the film you looked at that BellSouth presented in this proceeding, would you agree that that was pulp cable that they were dealing with?

A Yes, they were.

Q And some of the -- I will just call them unique challenges of load coil removal with pulp cable are different than the challenges with PIC cable, would you agree with that?

A I guess you would have to define for me what the challenges are.

Q Well, since you don't have color coordination, it is not as easy to just take 25 and stick them with the other 25 to ensure they are going to work?

A Again, if you are talking about a deloading situation, it is conceivable that -- I will back off that. It probably would be more difficult.

Q And the nice tool you had here that was able to pop off the 25 at a time, would that same tool be used with pulp cable?

A In certain instance it could very well be. I

mean, that is a standard tool. That comes right off the shelf.

Q I guess what I'm getting at is on the video that BellSouth presented it appeared to me that they were taking them one at a time, and they unloaded 25 pair just like you did here, but they took them one at a time and toned them, put them together, twisted them. Is that an uncommon way to remove a load coil when you are dealing with a 2700 pair pulp cable?

A Again, it is dependent on what you are attempting to do. They certainly were well within their prerogative to tone the 25 pairs. What they were doing -- what you saw that motion of them spinning wire on there, they were tagging them. That wire was going up into a linen board that had numbers on it and they were stuffing it in there so that they knew this was pair number one and this was pair number two, so to speak. That was their way of keeping the identification.

But by the same token, where they were fishing around trying to find the right bunch to work in, so to speak, the right bundle, if you paid attention you would have seen that there were labels on the individual bundles, which is a normal function that a splicer would perform who is working on pulp cable. Additionally, the modules themselves, those plastic modules that you see

here in a splice that they used, also had numbers written on them. So, you saw, for example, bunch number 15. This was module number 15 of bunch 15. So you, again, had some idea of where you were in that 2700 pair cable.

Q Will you agree with me that there are special services or circuits, and what I mean by that is there are some services that go over copper cable that are providing services that are configured to account for a load coil, or bridged tap for that matter?

A Again, that would be a matter of who designed it. You could, indeed, design something to account for the load coil. That is not to say that that particular design needs a load coil. You could have also designed it without the load coil in many cases.

Q If there was a load coil present on the particular loop, would it have been more cost-effective -- and, again, this is kind of in the hypothetical -- but would it be more cost-effective just to design it to account for the load coil rather than have to make a trip, open up your splice box, and do all of that work and put your facilities at risk, would it just have been easier just to account for it?

A I guess that's why I am so perplexed that under the guise that we might have sold some PBX trunks, analog PBX trunks at some finite point in time, I am led to

believe by the testimony I have heard here that BellSouth elected to load all of its cable plant for the off chance that they might have a request for some number of pairs for a service. It just doesn't seem right to me. And certainly I went around auditing the engineering practices. And I wasn't here, and I had -- I hadn't seen that. Had I seen that I would probably have stopped it.

Q Well, I mean, weren't you the one who was looking at it? And wouldn't you have been in a position to have seen it if they were doing something that wasn't supposed to be done?

A That was against practice. No one in BellSouth ever fessed up to that practice while I was around.

Q Well, I mean, weren't you the one who went down in the manhole? You weren't just relying on people to tell you what was going on, were you? Didn't you actually get out and investigate to see if people were actually following practices?

A Well, I certainly did go around looking to see if people were following practices. And that's what perplexes me. Because I didn't see that as a matter of course. In probability, if you had one or two of these around, you know, I might have missed them. But if you were doing this wholesale, it would strike me that I would have caught you.

CHAIRMAN DEASON: Let me ask a question. What would have been the motivation to have installed load coils if they were not needed?

THE WITNESS: I'm sorry, I didn't hear you.

CHAIRMAN DEASON: What would have been the motivation for BellSouth to have installed load coils if they were not needed?

THE WITNESS: I guess that is the part that perplexes me. The standard engineering practices of every operating company, BellSouth included, says that you don't load coil -- you don't load cables under 18 kilofeet unless it is for a very specific reason. And in that case, you know, to load a 2700 pair cable, you know, there are very rare instances, in fact, I can't think of one that would require 2700 pair cables to be loaded that were short. You know, there is just no need for that. The loss is not that excessive on an 18 kilofoot loop.

So, you know, if you had a particular service request then you might elect to go in and put a loaded complement in, some finite number of load coils. In fact, they make a load coil that fits right inside the splice just for those rare instances where you want to load the one or two circuits that someone wants.

But you wouldn't go forward and load a whole cable just because your off chance that you might get a

service that would require a load coil. You know, you have to live with all the added cost and the added headaches forever more. I was going to say, you can equalize the circuit at the ends. You know, there are devices, equipment, and that is what you wind up having to monkey with if you take the load coil off one that has been designed to compensate for it.

BY MR. EDENFIELD:

Q All right. Let me see if I understand what you are suggesting. Are you suggesting that back in the '70s and '80s that BellSouth was going around spending money to put on load coils, spending man hours to put on load coils when they didn't need it and were sneaking around doing it so its AT&T auditor wouldn't find out? Are you seriously suggesting that?

A Well, it's either that or you didn't do it.

Q Okay. I'm not sure I understand the philosophy of someone sneaking around to spend money it didn't need to spend, but --

A And by the same token I can't believe that you have that much of it in-plant.

Q Okay. Now, back to the question I had asked originally, and that is will you agree with me that there are circuits that are designed to account for a load coil to properly work?

A Well, certainly if you have a load coil on a pair --

Q Mr. Riolo, do me a favor, if you will answer my question yes or no, and then explain, it would probably help us out a little bit.

A Yes. If you have a load coil on the pair and you have designed it because it has that load coil, the compensating devices you may have at each end would be wired, so to speak, or strapped so that it accounts for the fact that it has a load coil on there.

Q Okay. And what happens to that service if happens to be one of the 25 that you just clipped as part of a big group?

A In that particular case what you would typically do is redesign the circuit. You would have to reoption the equipment at the ends.

Q All right. So there is going to be some work involved in -- assuming you even caught it in advance, there is going to be some work involved on the other end to ensure that that circuit is still going to work?

A Yes.

Q And that is best case. Worst case, would you agree that you don't catch it, and now you have just put somebody out of service?

A Certainly the potential is there for that. But,

again, you don't go ahead and work on cable without accessing your records to see what is in the cable.

Q And if, in fact -- well, let me ask you this. Is it also possible that there could be a loop over 18 kilofeet mixed up in the 25 binder pair that you are trying to remove the load coil from?

A By engineering guidelines it shouldn't be.

Q Is it possible that it could happen in the course of --

A Anything is possible. You know, if that is your hypothetical, you know, on a hypothetical basis I might agree with it, but --

Q Have you ever seen it happen?

A Personally, no.

Q Have you ever heard of it happening?

A That one pair in a bundle was over 18 kilofeet and the rest were less than?

Q Or some number of them were over 18 kilofeet, that somehow at the feeder distribution device someone had added or somehow taken one of the 25 that may have been set for less than 18 kilofeet service and has added something to make it over 18 kilofeet. It doesn't have to be one of 25, but any number of 25?

A Certainly nothing that has been designed in recent times.

Q I'm not saying designed for it, I'm just saying does it happen? At least in your experience?

A SAC guidelines go back to 1970. And it stopped it then. So, I mean, it would have to be something prior to that.

Q I'm not talking guidelines. All I'm asking you is in your experience have you ever run across it?

A I haven't run into that situation.

Q But you will agree it is possible?

A Just as anything is possible.

Q Okay. Now, in that instance what would have happened to the service when you clipped the 25 binder pair and took the load coil off?

A Well, first, are you presupposing that --

Q There is actually service on it.

A -- the engineer is telling you to go and deload that 25-pair group?

Q What I'm getting at is the engineer is looking to see -- he needs to remove some portion of the 25 binder pair, or he wants to remove it all. He is looking at his records and see, uh-oh, one of those is serving a customer that is greater than 18 kilofeet, which I think you would agree would actually need a load coil to have voice service in that instance.

A Okay.

Q Is that a situation where he is then not going to be able to unload them all in one big chunk, that he is going to have to go through and unload the 24 that are not over 18 kilofeet?

A That certainly is an option. Another option might be he transfers that service off and then pops the module.

Q In either scenario it is going to result in additional work having to be performed by the incumbent?

A Well, recognizing that it is a hypothetical case, and it's kind of an oddball.

Q Can you give me some examples of an instance where it is beneficial to unload less than 50 pairs at a time? I assume you are still assuming for your purposes here that BellSouth should unload 50 at a time?

A I am advocating on average BellSouth should unload 50 pair at a time.

Q Give me an example of when it might be to the benefit to unload less than that many?

A You have a 25-pair cable.

Q Any other?

A You have a 50-pair cable that is extensively long.

Q Any other?

A Unless it is a situation where you had a real

special arrangement. But then I would wonder why you would be deloading it to begin with.

Q By advocating 50 at a time, is it safe to assume that you are taking into account instances where you will unload more than 50 and in some instances less than 50?

A Yes, sir. You, for example, had a 2700-pair cable. If that 2700-pair cable was loaded, and it was at its maximum fill before the engineer starts looking at it to relieve it, let's say it was at its 85 percent fill rate, so you had 15 percent spare. So you would have 400 spare pairs in that cable. If that was a cable that was less than 18 kilofeet, it would seem easy to me to unload several hundred pairs.

Q Okay. So you would be advocating -- in that instance would you be advocating taking off all 400 in a single job?

A Well, again, if the situation presented itself that it was less than 18 kilofeet and there was no need for the load coil, why not take them all off.

COMMISSIONER JACOBS: Let me ask a question real quick. You indicated that it would be abnormal to have in a 2700 case that many loaded. Can you tell us what would be a normal scenario in that big of a box than in perhaps in a smaller box like this?

THE WITNESS: Okay.

COMMISSIONER JACOBS: In your estimation, again, not to get into the dispute of whether or not it is normal to do 27, but in your experience.

THE WITNESS: The loading of cable is dictated by how long the loops are that it is going to serve. So if it is less than 18 kilofeet there is no need to load it.

COMMISSIONER JACOBS: So in that instance you would expect to find very few load coils anyway.

THE WITNESS: Very few or none. On the other hand, if for some reason it was serving a community that was 25 kilofeet out from the office, it typically wouldn't be a 2700-pair cable because of the gauge requirement, but you would have a large size cable. In that case the whole cable would be loaded because it would be dedicated to that particular environment that it was serving which required load coils.

COMMISSIONER JACOBS: And so you couldn't go in and deload or unload a large number of those because all of them need the loading, is that correct?

THE WITNESS: In the case of a 25 kilofoot loop, you would have to only deload what was necessary for your immediate need plus any spares that you might want to reserve for future use on nonloaded facilities.

COMMISSIONER JACOBS: So would there be a

process by which you could go in and identify certain numbers plus spares that you would unload?

THE WITNESS: Absolutely. The cable records in LFACS, as an example, let you know which specific pairs are working, which are spare, and which are defective. So you could take some group of the spares, some or all of them and remove the load coils from those particular cable pairs because they are spare and they would not be affecting anyone's service in a lengthy loop.

COMMISSIONER JACOBS: And once you do that then the spares would then be available for DSL?

THE WITNESS: Absolutely.

COMMISSIONER JACOBS: Okay.

BY MR. EDENFIELD:

Q So if I understand your testimony, Mr. Riolo, you are advocating in the scenario we were just talking about taking off all 400, unloading all 400 pairs?

A If they are not necessary, yes.

Q Will you agree with me that the more pairs you unload on a given trip, the longer it is going to take to complete the job?

A There is an incremental amount of time to do the wire work. As you saw even in your own tape it is not a very lengthy process to take the load coils off. The bulk of your time was spent pumping the manhole and fixing the

water leak. But the wire work itself is a relatively minor task of the job.

Q So the answer to my question is yes?

A Yes, I would take the load coils off.

Q No, the question I asked was that you seem to have forgotten in the answer was will you agree with me that it takes longer to remove 400 load coils than it does to remove ten load dials?

A Yes.

Q And it is your position that BellSouth is better served by spending more manhours in the manhole removing load coils than getting finished with the job and moving on to the next customer who needs help?

A Again, yes. BellSouth ought to be taking off the load coils that shouldn't be there to begin with. It is a design defect as far as I am concerned. It doesn't meet your own standards, your own practices.

Q Were you aware that BellSouth was putting any load coils at all on loops less than 18 kilofeet when you were an auditor with AT&T?

A No, I was not.

Q Not a single one?

A No, I was not.

Q Did you actually ever visit Florida when you were an auditor for AT&T?

A Actually I visited Georgia and I visited South Carolina.

Q Was Florida one of your states you were responsible for?

A I did not visit Florida.

Q Was it a state you were responsible for?

A I was responsible for auditing all the operating companies. At that time it was BellSouth that I audited.

Q Well, how many states were in BellSouth back then?

A At that time probably seven, I don't know. But I was charged with visiting South Carolina and Georgia.

Q I guess we are crossing in the question. Was it your responsibility to visit all seven states?

A No, it was not.

Q Now, this additional cost that you want BellSouth to incur to unload all 400 pairs, are your clients willing to pay for that additional time?

A I can't speak on behalf of my clients and their policy.

Q Well, I mean, aren't they paying you to come speak on their behalf today?

A In so far as addressing BellSouth's cost study in this proceeding.

Q Well, as part of this proceeding aren't you

advocating that BellSouth remove in the example we gave 400 -- not remove, but unload 400 pairs as opposed to the ten that we are advocating?

A Yes, I am.

Q And you are not prepared as you sit here today to say whether your client is willing to pay for that extra time that is going to be incurred to do that?

A I can't speak on behalf of my client's policies in that regard.

Q Does it seem reasonable to you that they would pay for the additional time involved in unloading the 400 pairs as opposed to 10 or 50?

A No, it does not. It would seem to me that BellSouth's failure to follow their own practices, the burden of that should be borne by BellSouth. And the CLEC community should not be penalized for your failure to follow your own practices.

Q Is BellSouth the only RBHC that has load coils on loops less than 18 kilofeet?

A No, they are not.

Q So everybody -- well, let me ask you this. How many don't? Of the RBHCs, how many do not have load coils on loops less than 18 kilofeet?

A I don't frankly know how many. I do know in my going around on various proceedings that it does exist,

but it exists for other reasons.

Q Let me ask you this. If every RBHC was violating the rule, are we sure the rule is what you think it is?

A I know the rules are what I know they are. Now, what I will further go on with here is the fact that some of the ILECs, for example, Bell Atlantic, in installing digital loop carrier for more lengthy loops have elected to reuse the copper cable that used to serve those areas. In reusing that cable, since it was already loaded, they cut it back close either to the office to reuse it closer to the office. And hence the reason why there are load coils on those particular copper cables. However, Bell Atlantic is willing to deload any of those pairs on behalf of the CLECs at no cost because they recognize that it is a design defect and does not follow practice.

Q Is that in New York?

A That is Bell Atlantic.

Q Everywhere?

A Bell Atlantic everywhere.

Q How about Verizon, is that their policy?

A I don't know about Verizon. I haven't had an opportunity to look at GTE.

Q Will you agree with me that there will be instances where one of your clients wants a loop to

provision xDSL service to a particular customer and the only loop available to that customer is a loaded copper loop?

A Yes, that is certainly possible.

Q And in that instance will BellSouth in order to provision your order be required to remove the load coil to effectuate service?

A They might be.

Q If they are going to have service running over that line if you are going to be providing an xDSL service and there is a load coil on it, they are going to have to remove it, right?

A Well, if that loop is suitable for the xDSL service, then certainly it would have to be deloaded.

Q Well, could if be that there is a copper loop that does not have a load coil, or bridged tap, or repeater that is not suitable to run an xDSL technology?

A Would you say that again?

Q Yes. I mean, I got the impression from what you just said is that we could take the load coil off, and I assume by that we are talking bridged tap, repeaters, anything that would impede the transmission of xDSL technology, but the xDSL technology still might not work on that particular loop?

A That is certainly in the realm of possibility.

But you were saying that you were going to take a load coil off it, and there are other impediments and hence my hesitation.

Q Okay, I'm sorry. So your hesitation was that there may be bridged tap, or a repeater, or something?

A There could be a number of things.

Q And in that instance BellSouth would be required to remove all of those in order to effectuate your order?

A That is correct, if we choose to ask that for that pair.

Q But what if it is the only pair and you still want to have service there?

A If it is the only pair and that is where I want service then it would have to be conditioned.

Q And in that instance is it still your position that you should not pay BellSouth for that work?

A If those were not designed, were not built, I should say, according to your own engineering guidelines, then, yes. Why should the CLEC be penalized for your failure to follow your own practice?

Q Will xDSL technology work on copper loops longer than 18 kilofeet?

A There are some technologies that will.

Q Give me an example of one.

A MVL.

Q MVL.

A Yes.

Q Will MVL work with a load coil?

A No, it will not.

Q Okay. So let's assume we have a loop that is 19 kilofeet, and your client calls BellSouth and submits an order for -- it is M as in Mary, or N as in Nancy? MVL?

A MVL, a multiple virtual line.

Q I'm trying to make sure I was not saying N. It is M. They order MVL service and there is a load coil on that loop, but the loop is 19 kilofeet. Would you agree with me in that instance that load coil is properly on that loop?

A Yes, I would.

Q Now, in that instance you will also agree with me that if that is the only facility running to that subscriber, that in order to provision your MVL service that BellSouth is going to have to take that load coil off that loop?

A Yes, they would.

Q In that instance is your client willing to pay BellSouth for the work they have done?

A Again, I would suspect they would. You know, I can't speak on behalf of my clients, but it could seem to me appropriate.

Q It would seem to be reasonable to pay BellSouth in that instance?

A Yes, it would.

Q Is the only reason that you are taking the position that it is not reasonable to pay BellSouth to remove load coils on loops less than 18 kilofeet is because you believe it was contrary to some policy, or code, or guide?

A It is contrary to your own policy. Read your own engineering guidelines.

Q The question is is that the only reason that you are finding it to be unreasonable to pay for the removal of those load coils?

A Well, it is a design defect as far as I am concerned. You constructed the cable improperly.

Q Is that a yes; is that the only reason?

A That is a yes.

Q Okay. You would agree with me then that if there were some overriding policy of which you are not aware or either you are just misreading the policy and that it was okay to have load coils on loops less than 18 kilofeet that it would be reasonable for your client to pay BellSouth in that instance?

A Again, I can't subscribe to that hypothetical from the point of view that I know it to be different.

Q Okay. I mean, how many people have been killed with guns they knew weren't loaded. I mean, if, in fact, you are wrong, ever how unlikely you may believe that to be, if, in fact, you are wrong about the policy, will you agree with me in that instance that it is reasonable for your client to pay BellSouth for unloading loops?

A Again, as a hypothetical --

Q Again, yes or no and then an explanation.

A As a hypothetical, I would say yes, if the loop had to be conditioned and it was not contrary to policy. And when I say policy, standard engineering guidelines that are in the industry, not just someone in BellSouth's back room that wrote a memo.

Q Can you tell me exactly what policy you are referring to?

A Engineering guidelines.

Q Do you have a specific -- I mean, how many engineering guidelines are there?

A There are a number of engineering guidelines that are violated by it.

Q No, no. What I want to know is how many engineering guidelines are there in total?

A I'm sorry?

Q How many engineering guidelines are there, period. Like numerous, impossible to number, massive

numbers?

A Again, there are engineering guidelines for a number of things. Those pertaining to load design there are a minimal number I would suspect.

Q All I'm trying to do is get you to tell me which policies you are talking about. Which engineering guidelines specifically that you are saying were violated, do you have a number?

A Resistance design, revised resistance design.

Q Maybe I can short-circuit this. I'm sorry to interrupt you. Would that be the Late-filed Exhibit Number 3 to your deposition?

A I don't believe they were all included in that. I think the original ones were at the deposition. That was an addendum to it.

Q Do you have a copy of Late-filed Depo Exhibit Number 3 in front of you? I just want to make sure that I'm not assuming something that is not correct. Take a look at it and then I will give you the question.

A These will probably be sufficient to cover the point of loops less than 18 kilofeet should not be loaded.

Q Okay.

A There are others in addition to this, however.

Q What are they?

A Again, I had mentioned a couple in deposition

that don't come to mind. These were in addition to what I mentioned during my deposition.

Q Okay. I just don't want to find us in a situation where there is some disagreement about where they were and who they were.

A Collectively in your own engineering guidelines that were submitted, I would like to say Production of Documents 32.

Q I'm not trying to narrow you down quite that steady. All I'm saying is the ones that you mentioned in your deposition and the ones on this list, that's it, those are the ones. Is there anything else?

A There were others probably included in your own engineering guidelines. The questions in deposition, as I recollect, were addressing those that were in effect for decades. And these are the older ones.

Q Will you agree with me that the different DSL technologies have different technical specifications to be able to work?

A Yes.

Q And by that I mean a loop that is capable of supporting, for instance, ADSL may not be capable of supporting a different DSL technology?

A My natural propensity is to say yes. But if you could get more specific than that I can tell you probably

more specifically.

Q Well, I'm not asking you from a standpoint that you be familiar with the technical specifications of any particular DSL service. Mine is more of a general premise that just because one particular DSL service or technology may work on a particular loop does not mean that every DSL technology will work on that same loop?

A That is a fair statement.

Q Are you familiar with BellSouth's SL-1 loop offering?

A To some extent, yes.

Q Would you agree with me that that is the most basic from a technological and technical requirement loop that BellSouth offers?

A My understanding is that an SL-1 is a plain old vanilla copper loop.

Q Basically, a loop that meets the minimum specifications for voice grade transmission?

A It probably also meets the specifications for many other things, as well. If I understood your own expert, when you assign it for your own services, advanced or otherwise, you use the same loop that you are calling an SL-1 and in your system you don't label it.

Q I'm sorry, I didn't follow all that. Say that again.

A Your expert had testified that when you assign a pair with your legacy systems, like LFACS, you select a loop that goes to a location that has a qualification next to it, and indeed it could be an SL-1 loop itself. You have put these artificial typesets next to it for the purposes of your offering to us.

Q Are you suggesting that every loop in BellSouth's network has the same technical specifications?

A Not its qualification. You have put together some technical specification for our purposes, but not for your own.

Q I guess what I'm asking you is are there loops in BellSouth's network that are capable of handling and successfully handling every type of xDSL technology, no matter what it is? That those loops exist in our network.

A No, from the point of view that most of these xDSL technologies have length restrictions, so the physical copper loop, that particular pair would work with a certain technology at a certain length. You could physically use that same wire pair and cut it back and use it at a location closer to the central office, so to speak, and it would work for a different technology, as well. Generally, the higher the speed, the shorter the loop.

Q I'm sorry, Mr. Riolo, you keep pausing and I

think you are done. I'm sorry, I don't mean to interrupt you. I really apologize. Were you done?

A Yes, I'm done.

Q I'm sorry. And I think I see where I was asking the question poorly. I guess what I'm talking about are -- let's talk about loops less than 18 kilofeet. Are there some loops that are less than 18 kilofeet in BellSouth's network that are capable of running every type of xDSL service and some loops in BellSouth's network less than 18 kilofeet that are only capable of running certain types of xDSL services?

A Yes.

Q Would you agree with me that some SL-1 loops are capable of running all xDSL services and some SL-1 loops are capable of only running certain xDSL services, and, again, these are under 18 kilofeet?

A I believe it is the same question. My answer would be yes.

Q And as I understand what COVAD and BlueStar and Rhythms are wanting to do is they are wanting to purchase that most basic SL-1 loop and put their xDSL service over that loop?

A Yes, provided it meets their needs.

Q Are your clients willing to pay extra to ensure that they are getting an SL-1 loop that will support the

xDSL service that they are wanting to provide to a particular end user?

A I guess I don't understand what you mean by extra and guarantees.

Q A basic SL-1 loop has a certain price associated with it.

A Okay.

Q Do you agree with that?

A Yes, I do.

Q And that is the price that your clients want to pay?

A Yes, they do.

Q Are your clients still willing to pay that price for an SL-1 loop, one of those that doesn't meet the specifications that will enable them to provide the service to an end user?

A I guess I didn't understand the second part of your question.

Q All right. Let me back up one step further. I'm sorry, I'm not making myself clear. You have said that there are some SL-1 loops that will handle all types of xDSL service and some that won't handle all types of xDSL service, but they are still all SL-1 loops?

A Yes. And as I said, they are length dependent. So if you go out a longer distance you would operate a

different type of DSL service at the lengthier loop. For example, very short loops used for video purposes would not work -- you know, VDSL would not work at 18 kilofeet. ADSL would work at 18 kilofeet. ADSL would also work on the shorter loop. So some technologies will work on loops up to 18 kilofeet, some will work on loops beyond 18 kilofeet. Some will work on relatively short distances, but those are very high speed lines.

Q Okay. And maybe I just wasn't following what you were saying. Is it your position that length of the loop is the only factor that would cause an SL-1 loop to be able to carry some xDSL services and not others? Is there any other factor on an SL-1 loop under 18 kilofeet that would cause an xDSL service not to work?

A Well, certainly impediments. But given the fact that it is clean copper, you know, and meets standard industry parameters, there is no reason why if you put the equipment at both ends it shouldn't work.

Q If your client were to purchase an SL-1 loop to provide xDSL service, are they willing to take the risks that that loop will not work?

A I think I have heard testimony to the effect that if they make their own loop qualification and obviously the information they retrieve from your database has to be accurate, but given that caveat, their own

engineers are capable of making the decision, just as BellSouth's engineers are capable of making the decision of the type of service that will work on that loop.

Q Is that contingent upon them being able to reserve a particular loop?

A Well, obviously if they look at the parameters of a particular loop and that satisfies the service, then that is obviously the loop they want to reserve. Otherwise, you know, they are buying something that they haven't even looked at.

CHAIRMAN DEASON: How much more, Mr. Edenfield?

MR. EDENFIELD: That's what I was just trying to figure out. I hate to say it, but probably at least another 20 to 30 minutes.

CHAIRMAN DEASON: Well, why don't we just recess for the evening and we can begin again tomorrow.

MR. EDENFIELD: I think tomorrow will move much quicker once I get through with Mr. Riolo. There are two witnesses left, and depending on how Mr. McPeak goes, I will have maybe just less than ten questions for Mr. Stacy.

CHAIRMAN DEASON: I guess we can start tomorrow morning early. We will start at 8:30 tomorrow morning. It's Friday.

Anything else before we adjourn for the evening?

We will adjourn for the evening and reconvene at 8:30 tomorrow morning.

(The hearing adjourned at 6:30 p.m.)

(Transcript continues in sequence in Volume 18.)

STATE OF FLORIDA)

: CERTIFICATE OF REPORTER

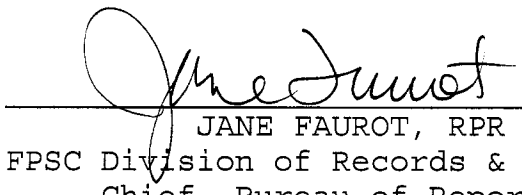
COUNTY OF LEON)

I, JANE FAUROT, RPR, Chief, FPSC Bureau of Reporting Official Commission Reporter, do hereby certify that the Hearing in Docket No. 990649-TP was heard by the Florida Public Service Commission at the time and place herein stated.

It is further certified that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript, consisting of 229 pages, Volume 17 constitutes a true transcription of my notes of said proceedings and the insertion of the prescribed prefiled testimony of the witness(s).

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorneys or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 25th DAY OF SEPTEMBER, 2000.



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