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Witness: Wesley Pool
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Sponsoring Party: Southwestern Bell Telephone, L.P., d/b/a/ SBC Missouri
Case No: TO-2005-0336

SOUTHWESTERN BELL TELEPHONE, L.P.,
d/b/a SBC MISSOURI

CASE NO. TO-2005-0336

DIRECT TESTIMONY

OF

WESLEY POOL

Dallas, Texas
May 9, 2005

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Southwestern Bell Telephone, L.P., d/b/a SBC Missouri's Petition for Compulsory Arbitration of Unresolved Issues for a Successor Agreement to the Missouri 271 Agreement ("M2A")	))))	Case No. TO-2005-0336

AFFIDAVIT OF WESLEY POOL

STATE OF TEXAS)

COUNTY OF DALLAS)

I, Wesley Pool, of lawful age, being duly sworn, depose and state:

1. My name is Wesley Pool. I am presently Area Manager-Collocation for SBC Operations, Inc.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Wesley Pool

Subscribed and sworn to before me this 4 day of May, 2005.

Notary Public

My Commission Expires: 5-31-09

ILYA L. GOLDEN
Notary Public, State of Texas
My Commission Expires 05-31-09

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND YOUR BUSINESS ADDRESS.

A. My name is Wesley Pool. I am employed by SBC Operations, Inc. My business address is 308 S. Akard St., Dallas, TX 75202.

Q. HAVE YOU PREPARED A SCHEDULE SUMMARIZING YOUR EDUCATION, WORK EXPERIENCE AND CURRENT JOB RESPONSIBILITIES?

A. Yes. Pool Schedule WP-1 summarizes my education, work experience, and current job responsibilities.

II. EXECUTIVE SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to address the following DPL issues regarding Physical and Virtual Collocation: AT&T Collocation Issue 1, CLEC Coalition Physical and Virtual Collocation Issues 1, 3-5, MCIm Physical and Virtual Collocation Issue 2, Sprint Physical Collocation 7-8 and Virtual Collocation Issue 1-3, and WilTel Physical Collocation Issues 5, 8-9.

Q. IN SUMMARY, WHAT DETERMINATIONS SHOULD THE COMMMISSION MAKE REGARDING THE ISSUES YOU DISCUSS?

Power Metering

AT&T, the CLEC Coalition, and MCIm all propose the implementation of Power Metering in SBC Missouri's Central Offices for purposes of measuring the amount of DC power that is being consumed. In my testimony I clearly identify multiple reasons why the Commission should rule in SBC Missouri's favor, thus confirming that the current per amp method is the best method for billing DC power.

Collocation DPL Issues

The CLEC Coalition, Sprint, and WilTel seek the Commission's ruling in CLEC Coalition Physical and Virtual Issue 1, Sprint Physical Collocation Issue 7, Sprint Virtual Issues 1-2, and WilTel Issue 9, as to what types of equipment can be collocated in SBC Missouri's central offices. In my testimony I have outlined the specific requirements set forth by the FCC stating that

> **"…***equipment is "necessary" for interconnection or access to unbundled network elements within the meaning of section 251(c)(6) if an inability to deploy that equipment would, as a practical, economic, or operational matter, preclude the requesting carrier from obtaining interconnection or access to unbundled network elements."*[1]

SBC Missouri recommends that the Commission rule in its favor to allow SBC Missouri to maintain the security and integrity of its network.

In CLEC Coalition Issue 4, the CLEC Coalition seeks the Commission's ruling as to whether or not a CLEC should be billed for DC power based on the total rated ampere capacity of the equipment in a collocation arrangement. For this issue it is the recommendation of SBC Missouri that the Commission rule in its favor, as SBC Missouri has clearly outlined the reasons of why this method of power billing is not efficient or accurate.

In Sprint Physical Collocation Issue 8 and Virtual Issue 3, Sprint proposes the placement of potentially dangerous equipment in SBC Missouri's Central Offices while the equipment goes through the dispute resolution process. SBC Missouri requests that the Commission rule in its favor in order to allow SBC Missouri to maintain a safe and secure network.

[1] Para. 21, Collocation Remand Order, FCC 01-204.

In WilTel Physical Collocation Issue 5, Wiltel proposes language that places the responsibility of supplying, pulling and installing, at Collocator's request, the connection cabling from Collocator's Dedicated Space to the POT Frame/Cabinet. Additionally, WilTel proposes language, as identified in WilTel Physical Collocation Issue 8, placing the responsibility of pulling entrance facility cabling from the SBC Missouri designated manhole to the Dedicated Space or POT Frame/Cabinet. SBC Missouri's position is that certain practices should be the sole responsibility of the collocator. In my testimony I outline the responsibilities of the collocator and recommend that the Commission rule in SBC Missouri's favor.

III. COLLOCATION – POWER METERING ISSUES

AT&T Collocation Issue 1

Issue Statement: *Should AT&T, at its option, be allowed to implement power metering in its collocation space in SBC Missouri's locations?*

CLEC Coalition Physical and Virtual Collocation Issue 3

Issue Statement: *Should CC, at its option, be allowed to implement power metering in its collocation space residing in SBC Missouri's locations for the sole purpose of utilizing such equipment as a tool for SBC to bill the CLEC for power consumption?*

MCIm Physical and Virtual Collocation Issue 2

Issue Statement: *Should MCIm be charged on a metered basis for power in Collocation spaces?*]

Q. WHAT IS POWER METERING?

A. Power metering is an as yet undefined term in that it could refer to various forms of monitoring, measuring, estimating, and spot-checking the power consumption in a collocation arrangement. Power metering methods can be categorized in two groups. The first group of methods attempts to measure the current used by a

CLEC by monitoring the current flow across a point in the DC power secondary distribution system. The second group of methods involves taking a measurement during a single point in time and assuming that the measurement accurately reflects the power used by the network elements on that circuit. For the purposes of my testimony, I will define the first scheme as "power metering" and the second as "power auditing."

Q. DOES SBC MISSOURI CURRENTLY BILL ANY CLEC FOR DC POWER ON A METERED BASIS?

A. No. Today SBC Missouri bills for DC power on a "per amp" basis, which means the CLEC orders a fixed amount of power based on what it needs to support its individual business plan. The CLEC may or may not use all the power that it orders; but SBC Missouri will have already incurred the predominantly fixed expense on behalf of the CLEC for making the requested amount of power available to it regardless of how much DC power the CLEC actually uses.

Q. WHAT DOES AT&T, THE CLEC COALITION, AND MCIm PROPOSE FOR BILLING THEM FOR THE POWER THEY ORDER FOR THEIR COLLOCATION ARRANGEMENTS?

A. AT&T, the CLEC Coalition, and MCIm propose a patchwork of approaches made up of power metering, power auditing, and per amp methods. AT&T and the CLEC Coalition propose also to self-report usage, while it remains unclear exactly what method MCIm would utilize since it does not identify a specific method.

Q. WHY DOES SBC MISSOURI NOT AGREE WITH THE PROPOSALS OF AT&T, THE CLEC COALITION, AND MCIm?

A. AT&T, the CLEC Coalition, and MCIm's hybrid proposals are flawed in multiple respects. I will comment on the specific problems raised by their proposed

language by looking at each proposed method of DC power consumption billing. My conclusion is that the current method used today makes sense based on economics, safety, network reliability and simplicity. Most importantly, the current method best takes into account the manner in which DC power is actually provided in SBC's central offices. Additionally, the current "per amp" method more accurately reflects the true costs incurred by SBC Missouri as a result of the request for power from the CLEC.

Q. BEFORE DISCUSSING THE CLECS' SPECIFC PROPOSALS, PLEASE BEGIN WITH EXPLAINING WHY POWER METERING DOES NOT MAKE SENSE EITHER FOR SBC MISSOURI OR FOR AT&T AND OTHER CLECS?

A. Power metering is expensive to both CLECs and SBC Missouri to implement, requiring much additional equipment and expensive labor to change the current method of delivering DC power. Additional problems include its inefficient use of the central office DC power infrastructure, potential congestion of cable racking, potential for network reliability problems, and finally, the maintenance of the new metering equipment that is susceptible to failure.

In addition, the experience of SBC Missouri's affiliate, SBC Illinois, has shown that a Power Metering Unit ("PMU") can sometimes fail and thus not capture power usage while the unit is out of service.

Q. PLEASE EXPLAIN EACH DRAWBACK TO POWER METERING IN MORE DETAIL BEGINNING WITH THE ADDITIONAL EQUIPMENT THAT MUST BE INSTALLED IN THE CENTRAL OFFICE.

A. As previously discussed, the additional cost of power metering is caused by the additional equipment that must be added to the DC power infrastructure and the cost of the labor to install it. In order to meter power consumption, a measuring

point must be established somewhere in the power distribution circuit. This point is called a "shunt," which is a calibrated conductor connected to a Power Metering Unit ("PMU") that records the amount of power that passes over that point in the circuit. The PMU is connected to a server, which collects the CLEC's power consumption data for use in billing the CLEC.

Q. DOES IT MATTER WHERE THE SHUNT IS PLACED TO MEASURE THE POWER CONSUMPTION OF THE CLEC?

A. Yes, it matters greatly. The shunt can be placed between the Battery Distribution Fuse Bay ("BDFB") and the CLEC's equipment, which is known as the "supply side" of the power circuit. Alternatively, it can be placed between the CLEC's equipment and the BDFB on the return path, which is known as the "return side" of the power circuit. In either case, placement of the shunt greatly impacts the amount of equipment needed to measure a CLEC's DC power consumption. In a "supply side" shunt scenario, the supply side of each circuit from the BDFB to the CLEC's equipment must have its own shunt. If, however, the shunt is placed on the "return side," then the same shunt can be used for up to ten return feeds from the same CLEC collocation arrangement. Placing the shunt on the supply side of the DC circuit drives greater demand of PMU shelves and server ports which, in turn, greatly increases the capital investment in power metering equipment and maintenance of that equipment when compared to placing the shunt on the return side.

Q. SINCE PLACING THE SHUNT IN A CIRCUIT ON THE RETURN SIDE WOULD REQUIRE LESS EQUIPMENT, WOULD IT BE WISE TO PLACE THE SHUNT ON THE RETURN SIDE?

A. No. In fact, the worse of the two placement decisions depicted above is to place the shunt in the return side of the DC power circuit. On its face, it would seem

that using less equipment to accomplish the same result might be a prudent and reasonable engineering decision. However, the experience of SBC Illinois has shown that placing the shunt on the return side does not accurately measure the CLEC's consumption of power.

Q. PLEASE EXPLAIN.

A. Much of the equipment produced today is designed to have significant power flow on to the equipment ground, which flows over the CO grounding system. When the shunt is placed on the return side it does not capture the portion of the DC power consumed by the CLEC's equipment that is flowing over to the CO grounding system. This is particularly important because the portion flowing to the CO grounding system can be quite significant relative to the overall amount of power that is actually being consumed by the CLEC. SBC Illinois found this to be the case in its central offices where it was ordered to change its DC power architecture to allow for return side power metering.

Q. DO YOU HAVE ANY THIRD PARTY VALIDATION OF SBC ILLINOIS' EXPERIENCE THAT RETURN SIDE POWER METERING IS NOT ACCURATE?

A. Yes. In 2002, Telcordia conducted a study of SBC Illinois' return side power metering, and its findings were significant. The study reported that, "…it is not possible to obtain accurate power metering on the return side of the DC distribution."[2] Not only did the Telcordia report note that return side power metering was not accurate, but it also indicated that the magnitude of the inaccuracies was significant. The study states, "It seems the error in metering

[2] "Frame Ground Currents at SBC Collocated Equipment," Telcordia Technologies, November 2002, p. 27.

could be about 30%-50% of the measured values."[3] What this means is SBC Illinois did not recover 30%-50% of the DC power consumed by the CLECs.

Q. WHAT ARE THE DRAWBACKS TO SUPPLY SIDE POWER METERING?

A. There are several. First, as I previously stated, supply side power metering requires that each DC power circuit from the BDFB to the CLEC have an individual shunt. This requirement does not allow multiple DC power circuits going to the same CLEC collocation arrangement to share the same shunt and thereby save on equipment costs. Furthermore, there are other drawbacks of supply side power metering, which I discuss later. These include risks to network reliability, potential danger to central office personnel, and poor utilization of central office space.

Q. ARE THERE ANY OTHER COSTS INVOLVED THAT WOULD APPLY TO METERING, WHETHER ON THE SUPPLY SIDE OR THE RETURN SIDE, THAT WARRANT THIS COMMISSION'S CONSIDERATION?

A. Yes. One significant cost experienced by SBC Illinois is that two full time clerks are required to translate the data gathered by the multiple PMU servers into bills that are sent to CLECs for DC power consumption. Remember that SBC Illinois has the flawed return side power metering architecture so that many fewer readings are taken in order to capture readings on all shunts. In a supply side power metering architecture many more readings will be gathered to bill a similar number of CLECs which would most likely result in even more manual intervention to convert meter data into billing for CLECs. In either case, these administrative costs are quite significant.

[3] *Ibid.*

Q. ARE THERE ANY RISKS TO NETWORK RELIABILITY WITH POWER METERING?

A. Yes. Power metering requires that powered DC circuits be broken in order to install the shunt to measure the DC consumption of the CLEC. This step is unnecessary and puts both other CLECs and ILEC equipment at risk of network outages due to work on powered equipment. Even after the DC architecture has been changed, there remains an on-going risk of shorting DC power circuits of different potential amperage due to vendor activity in the cable-racking environment. Supply side power monitoring would increase this risk to network reliability by exposing workers in the racking environment to these multiple places where a DC circuit can be shorted.

Q. WHAT DANGER DOES AN ELECTRICAL SHORT POSE TO CENTRAL OFFICE PERSONNEL AND EQUIPMENT?

A. An electrical short would likely cause CLEC equipment powered by the shorted circuits to lose power. Additionally, the equipment of other CLECs and SBC Missouri could experience service disruptions as well. When an electrical direct short occurs, the conductor that causes the short usually melts or disintegrates, resulting in sparking, heat, and an extreme white flash. This could burn, shock, or temporarily blind anyone working in the area. Another risk to personnel is that if a short occurred it would probably happen when personnel are working in the cable rack area. The cable rack area is more than ten feet above the concrete floor of the central office. The resulting fall of a shocked, disoriented, and/or blinded person from that height could result in greater injury than what might initially occur from the actual electrical short. Although an electrical short is not

guaranteed to occur due to power metering, the likelihood of an electrical short increases with this DC power open architecture.

Q. DOES POWER METERING EFFICIENTLY USE CENTRAL OFFICE EQUIPMENT SPACE?

A. No, it does not. The equipment required to place shunts in the DC circuits between a BDFB and a CLEC's fuse panel is placed in the overhead racking. In a supply side power monitoring architecture, the amount of equipment that would be placed in the overhead racking would consume even more space than the space that was consumed by the power metering equipment placed in SBC Illinois' offices.

Q. NOW THAT YOU HAVE EXPLAINED THE SEVERAL DRAWBACKS OF BOTH SUPPLY SIDE AND RETURN SIDE POWER METERING, PLEASE EXPLAIN WHAT ARCHITECTURE AT&T, THE CLEC COALITION, AND MCIm PROPOSE FOR POWER METERING IN SBC MISSOURI.

A. None of the proposals of AT&T, the CLEC Coalition, and MCIm clearly state whether or not that proposal is a supply side or return side power metering architecture. AT&T and the CLEC Coalition do state that the PMUs would be placed on the BDFBs in its collocation space.

Q. IS IT CLEAR HOW AT&T, THE CLEC COALITION, AND MCIm PLAN TO REPORT THEIR POWER USAGE?

A. No. In Paragraph 19.2.3.2 of AT&T's and the CLEC Coalition's proposed language, it is stated that the CLEC will note the measurement of "actual power usage" once each quarter at each of its collocation arrangements. AT&T and the CLEC Coalition proposes that it would self-report this usage, somehow communicate this to SBC Missouri, and that this data should be used to bill for

DC power over the next quarter. MCIm does not propose a method for reporting its DC power usage.

Q. DOES SBC MISSOURI AGREE WITH THIS BILLING ARRANGEMENT?

A. No. As I have already shown, both supply side and return side metering are seriously flawed for multiple reasons having to do with safety and network reliability considerations, even apart from the fact that the usage reported is far understated. Additionally, SBC Missouri thinks that self-reporting power consumption is not a good business practice, and is ripe for abuse, intentional or otherwise. In addition, the ICAs of AT&T, CLEC Coalition, and MCIm would be available for 'MFN'ing by any other CLEC. This would exacerbate the risks inherent in the flawed architecture of power metering, presenting an even greater risk to network reliability, personnel safety, and the unnecessary use of central office space.

Q. DO YOU AGREE WITH AT&T'S AND THE CLEC COALITION'S SAFEGUARD FOR ADDRESSING THE INSTALLATION OF ADDITIONAL NETWORK ELEMENTS AFTER A QUARTERLY POWER METER READING WAS DONE IN SECTION 19.2.3.3?

A. No. There are many circumstances where the DC power consumed by the network elements in a collocation arrangement could increase without installing any additional bays of equipment. The most common is when bays are placed without turning the equipment up for service. Another is when a network element, like a pair gain system, is initially turned up for customer service, and additional customers are added at a later date. These additional customers will be handled by additional circuit cards that will plug into the already turned up network element and draw additional power. One last example would be later

revision levels of network elements replacing older versions that had consumed less power.

Q. EXPLAIN AT&T'S AND THE CLEC COALITION'S PROPOSED PROCESS FOR EITHER PARTY TO VERIFY THE ACCURACY OF THE POWER METERING RESULTS PROVIDED BY AT&T AND THE CLEC COALITION.

A. At this point, a "power auditing" method for measuring DC power consumption is introduced. This method contemplates measuring a rate of usage at a single point in time. It assumes that the usage identified in that single snap shot remains uniform over a period of time (minute, hour, day, week, month, year). AT&T and the CLEC Coalition propose a joint investigation, but comparing a power audit reading at a single point in time to power metering data is flawed. In fact, it's like comparing apples to oranges.

Q. CAN YOU GIVE AN ANALOGY THAT WILL HELP ILLUSTRATE THE DILEMMA BETWEEN COMPARING POWER METERING DATA TO A POWER AUDIT READING?

A. A good analogy for how electricity flows in a circuit is how water flows down a creek. The speed of the water represents the voltage of an electrical circuit and the volume of water represents the amperage of an electrical circuit. Power of the flowing water is equal to the speed of the water multiplied by the amount flowing by. The same is true with electrical power as it is computed by the voltage multiplied by the amperage. With power metering data, the value is the amount of power that the water (speed multiplied by the volume) exerts over the period of time that the measurements were taken. In a power auditing reading, the measurement is how much power the water in a stream exerts at a moment in time. The problems with using a power audit to check data obtained by power metering are apparent, as you have to assume that you are observing the average

of power consumption over the period of time that was included in the power metering data.

Another example of how power auditing methodology is flawed is considering what your gas mileage would be if it was tied to a specific gas mileage at a particular point in time. If your gas mileage were determined by when your car was coasting downhill, then your gas mileage would be wonderful. In contrast, if your gas mileage were measured while running the air conditioner in rush hour traffic, then your gas mileage would be horrendous. One last logical error in AT&T's and the CLEC Coalition's proposed language is that if the power audit reveals an error, then both "parties will cooperate to calculate the amount" due. I do not understand how SBC Missouri or any CLEC could ever use a point in time reading (power audit) to determine how much power was used and not billed (or over-billed). It is not a well thought out way to bill for power.

Q. EXPLAIN SOME OF THE CHARACTERISTICS OF SBC MISSOURI'S DC POWER INFRASTRUCTURE AND HOW IT IS AUGMENTED.

A. SBC Missouri prides itself on providing dependable DC power in order to serve our retail and wholesale customers under almost every condition. The hallmarks of our excellent DC power infrastructure are the battery plants and AC emergency generators. Both of these are vital to providing power when commercial power fails. It is important to note that both are tremendously expensive, and both require significant time to engineer and install. More importantly, both battery standby time and generator capacity are augmented (i.e., "added" or "increased") in large chunks at a time.

For instance, when SBC California completed its engine replacement job in the San Bruno central office this past summer it increased the AC generator's capacity from 750kW to 1818kW in a job that took 34 months to do. There is no economical way to grow a generator incrementally at 100 kW a month. Likewise, batteries are purchased in groups of 24 batteries at a time, also known as a "string" of batteries, with a goal of keeping all essential network elements, including collocation arrangements, powered without commercial AC for up to four hours.

Augments to a central office's battery capacity do not typically take as long as a generator replacement, but a central office power equipment engineer typically will not just place one string of batteries at a time due to the inefficiencies of paying a vendor to come in to the central office multiple times in quick succession to place individual strings of batteries. Another reason for installing multiple strings of batteries at a time is the complexity involved acquiring permits from local and state municipalities.

The main points to remember with SBC Missouri's DC power infrastructure is that it is expensive, its capacity is finite, it requires much time to augment its capacity, and it is augmented in large chunks of capacity at a time. There is no such thing as "just in time" engineering when it comes to augmenting the central office DC infrastructure.

Q. EXPLAIN HOW THE CLECS' RESPONSIBILITY TO EFFICIENTLY USE CENTRAL OFFICE DC POWER CAPACITY WOULD INAPPROPRIATELY SHIFT FROM AT&T, THE CLEC COALITION, AND MCIm TO SBC MISSOURI IF POWER METERING OR POWER AUDITING WERE ORDERED TO BE INCLUDED IN THE ICA BY THIS COMMISSION.

A. SBC Missouri's experience is that if a CLEC can order 100 amps of power, but only be charged for the 6 amps it is using, the CLEC will likely order the higher amount because there is no economic advantage in ordering only 6 and no economic disadvantage in ordering 100. The problem with this scenario is that SBC Missouri would remain responsible for providing the entire 100 amps when it is demanded by the CLEC any time after the initial 100 amp order is turned over to the CLEC.

Q. HOW DOES THE CURRENT METHOD OF PER AMP BILLING HELP AT&T, THE CLEC COALITION, MCIm, AND SBC MISSOURI SHARE THE RESPONSIBILITY TO EFFICIENTLY USE THE CENTRAL OFFICE DC POWER DISTRIBUTION CAPACITY?

A. By charging a CLEC for the power it orders, a CLEC would be incented to order only the amount it needs for its current needs, plus a reasonable period of growth based on its own business plan. As I've described above, DC power is augmented in chunks at a time and it makes no sense under a power metering or power-auditing scheme to allow a CLEC to order a block of DC power capacity, but only pay for the small fraction it chooses to utilize. This places the entire burden for planning for future DC power consumption on SBC Missouri. It also places all the burden of paying for what a CLEC orders but doesn't use on SBC Missouri.

Q. WHAT DOES THE FCC HAVE TO SAY ABOUT HOW DC POWER SHOULD BE BILLED?

A. In his testimony, SBC Missouri witness Roman Smith cites the FCC's Second Report and Order (FCC 97-208, adopted 6/9/97) where the FCC explicitly stated that ILECs need not provide power on a measured basis:

> We will not require LECs to provide power on a measured, actual use basis because we are not persuaded that such a rate structure would reflect the way costs are incurred better than power offered

> in increments. LECs rely primarily on batteries for the DC power in their central offices, and it is not clear that the costs they incur for these batteries vary based on the specific amounts of power drawn, as opposed to the overall capacity that they are designed to support.[4]

Q. WHAT STEPS CAN AT&T, THE CLEC COALITION, OR MCIm TAKE TO REMEDY SITUATIONS WHERE THEY HAVE ORDERED MORE POWER THAN THEY CURRENTLY NEED?

A. As discussed by SBC Missouri witness Roman Smith, SBC Missouri's product, Power Reduction, allows a CLEC to convert a higher amperage DC power circuit to a lower amperage DC power circuit and save the difference between the two charges. Mr. Smith's testimony provides more details on this product, and observes that other CLECs have taken advantage of the benefits afforded them by this product.

IV. Collocation DPL Issues

CLEC Coalition Physical and Virtual Collocation Issue 1

Issue Statement: *Should a CLEC be allowed, at its option, to place its own mini-BDFB in its physical collocation space?*

Q. IS THE PLACEMENT OF BDFBs AND/OR MINI-BDFBs IN COLLOCATION SPACE NECESSARY FOR CLECS TO OBTAIN DC POWER IN SBC MISSOURI CENTRAL OFFICES?

A. No, however, the CLEC Coalition has raised this as Physical and Virtual Collocation Issue 1.

Q. WHAT IS A BATTERY DISTRIBUTION FUSE BAY ("BDFB")?

A. A BDFB is a portion of the comprehensive power distribution system in the central office that is engineered for -48 Volt power distribution. The BDFB

[4] In the Matter of Local Exchange Carriers' Rates, Terms and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport, CC Docket No. 93-162, Second Report and Order, 12 FCC Rcd 18730 (1997), para. 59.

allows for initial and future cabling requirements while gaining efficiencies in providing for a number of distinct and separate power arrangements. A BDFB is typically defined as filling a 7' full bay with at least 2 separate loads providing a minimum of 96 positions.

Q. WHAT IS A "MINI-BDFB"?

A. A "Mini-BDFB" is typically defined as half (1/2) the physical size of a full size BDFB with approximately 48 fuse positions.

Q. DOESN'T SBC MISSOURI PLACE BDFBs IN ITS SPACE TO SERVE ALL CLEC COLLOCATION ARRANGEMENTS?

A. Yes. Moreover, this allows efficiencies to be gained by SBC Missouri's having engineered and placed a BDFB to be shared by multiple collocators in a collocation area.

Q. WHAT DO CLECs USE TODAY TO DISTRIBUTE DC POWER TO COLLOCATED EQUIPMENT?

A. CLECs install power distribution panels to distribute the bulk DC power received from SBC Missouri.

Q. WHAT IS A POWER DISTRIBUTION PANEL?

A. A power distribution panel is typically supplied with redundant power loads and can support up to a 50 amp fuse and up to 20 individual fuse positions.

Q. IS A POWER DISTRIBUTION PANEL SUFFICIENT FOR CLEC'S NEEDS?

A. Yes. A fuse panel is sufficient for what a CLEC needs in a typical 100 square feet of caged collocation space. A typical fuse panel can distribute power to eight standard bays of equipment, which is more than can be installed in 100 sq. ft. of space.

Q. HAS THE FCC PLACED ANY LIMITATIONS ON WHAT EQUIPMENT CLECs CAN INSTALL IN THEIR COLLOCATION ARRANGEMENTS?

A. Yes. The FCC stated that a piece of equipment must be deemed "necessary" in order to be eligible for installation in a collocation arrangement. The FCC explained that

> **"…***equipment is "necessary" for interconnection or access to unbundled network elements within the meaning of section 251(c)(6) if an inability to deploy that equipment would, as a practical, economic, or operational matter, preclude the requesting carrier from obtaining interconnection or access to unbundled network elements."*[5]

Q. IS IT NECESSARY, AS DEFINED BY THE FCC ABOVE, FOR A CLEC TO INSTALL A MINI-BDFB IN ITS COLLOCATION ARRANGEMENT?

A. No. It is not necessary for a CLEC to install a mini-BDFB in its physical collocation space, because all the functionality that a CLEC might gain from the mini-BDFB is already present in the BDFB provided by SBC Missouri. In other words, declining to allow a CLEC to install a mini-BDFB would not at all hinder the CLEC's ability to continue to obtain interconnection or access to unbundled network elements.

Q. PLEASE SUMMARIZE YOUR POSITION ON WHY A CLEC SHOULD NOT BE ALLOWED TO INSTALL A MINI BDFB IN ITS PHYSICAL COLLOCATION SPACE.

A. SBC Missouri engineers, designs and provisions SBC Missouri's power infrastructures placing BDFBs in the collocation areas. The CLEC Coalition's desire to add a mini-BDFB to CLEC arrangements would simply replicate what is already provided by SBC Missouri today. Space in central offices is a vital and finite resource. Allowing collocators to place equipment that is not necessary for interconnection or access to UNEs, such as mini-BDFB collocation arrangements,

[5] Para. 21, Collocation Remand Order, FCC 01-204.

uses up space unnecessarily. Currently, CLECs are distributing power (i.e., providing separate feeds to their equipment) through the use of Power Distribution Panels ("PDP"). A PDP already serves the function that these particular CLECs are requesting and a PDP is less burdensome than a mini-BDFB. The Commission should reject the CLEC Coalition's proposed language requiring SBC Missouri to allow the installation of mini-BDFBs because the mini-BDFB is not necessary, duplicates what SBC Missouri and CLECs already provide today and wastes collocation space.

CLEC Coalition Physical and Virtual Collocation Issue 4

Issue Statement: *Should a CLEC be permitted the option of having DC power charges based on the total rated ampere capacity of the equipment in the collo cage?*

Q. CAN YOU SUMMARIZE WHAT THE CLEC COALITION IS PROPOSING WITH DC POWER CHARGES TO BE BASED ON THE TOTAL RATED AMPERE CAPACITY OF THE EQUIPMENT IN THE COLLOCATION SPACE?

A. The CLEC Coalition is attempting to find another method of obtaining the same redundant, reliable DC power that SBC Missouri provides CLECs today for a much lower price by only paying for power calculated by the sum of the power drawn by each network element installed in a CLEC's collocation arrangement.

Q. WHY DOES SBC MISSOURI DISAGREE WITH THE CLEC COALITION'S PROPOSAL TO BILL CLECS FOR POWER IN THIS MANNER?

A. SBC Missouri does not want to police the number of amps that each network element requires to ensure that the CLEC is following the rules proposed by the CLEC Coalition. This system is ripe for abuse and would require additional administrative steps to determine what a CLEC should be billed initially, and

would also require processing the changes in the CLEC's demand for power over time.

Q. WHY CAN SBC MISSOURI NOT AGREE TO HAVE THE CLEC STATE ON THE COLLOCATION APPLICATION HOW MANY AMPS THE CLEC'S EQUIPMENT WILL USE IN ORDER FOR SBC MISSOURI TO COMPUTE THE CLEC'S POWER CONSUMPTION BILL?

A. It may seem easy enough for SBC Missouri to take the CLEC at its word that a particular piece of equipment will only use a specific amount of power, but an individual network element can consume a varying amount of power.

Q. CAN YOU EXPLAIN WHY AN INDIVIDUAL NETWORK ELEMENT CAN CONSUME A VARYING AMOUNT OF POWER?

A. The power consumption of a network element is based on both the number and type of "cards" that are used within the network element. A card is a circuit card that is slotted, usually vertically, into the network element to perform particular functions. There are two types of cards, which are "common cards" and "line cards." "Common cards" are standard for each particular network element type (e.g. a Fujitsu FLM-150 multiplexer will always have power card and timing cards). "Line cards" are customizable for the customer base or business plan that the network element is serving (e.g. a Fujitsu FLM-150 multiplexer can DS1, DS3, or OC3 cards).

Q. CAN YOU GIVE AN EXAMPLE OF HOW LINE CARDS CAN CONSUME A VARYING AMOUNT OF POWER?

A. An OC3 line card includes a laser. When a manager designs the circuit that will use the OC3 line card, the manager must decide whether to use a line card with a high powered laser or a normal laser based on the distance the optical signal must travel between network elements. Besides costing much more, a line card with a high power laser will consume more power than a normal OC3 line card. This is

just one example of countless scenarios of how the type of line cards selected by a CLEC impacts how much power is required.

Q. IS IT EASY FOR SBC MISSOURI TO SPOT CHECK WHAT KIND OF CARDS A CLEC INSTALLS IN ITS NETWORK ELEMENTS TO MAKE SURE THE CLEC HAS ACCURATELY REPORTED THE NUMBER AND TYPE OF CARDS?

A. No. It is impossible to determine the type of line card or the amount of line cards without first removing the cover of the equipment into which the card is inserted. SBC Missouri does not have access to this equipment and does not want to police CLECs to ensure that each one accurately reports the initial deployment of common and line cards that it has deployed with each network element in a collocation arrangement. Furthermore, each network element can have tens of cards, further complicating the unnecessary process that the CLEC Coalition has proposed.

CLEC Coalition Physical and Virtual Collocation Issue 5

Issue Statement: *Should the ICA delineate specific requirements for partial collocation space decommissioning and removal of unneeded cables and equipment?*

Q. WHAT IS YOUR UNDERSTANDING OF THIS ISSUE?

A. The CLEC Coalition proposes language stating that it will pay for decommissioning only after such tasks are performed. SBC Missouri maintains that such payment should be made before the work is started.

Q. WHEN SHOULD A CLEC PAY FOR THE DECOMMISSIONING OF SPACE?

A. A CLEC should pay for decommissioning of space when it issues an order to discontinue collocation with SBC Missouri in a central office.

Q. WHY SHOULD A CLEC PAY FOR THE DECOMMISSIONING OF SPACE WHEN THE CLEC DISCONTINUES ITS COLLOCATION ARRANGEMENT?

A. In an attempt to minimize decommissioning costs, SBC Missouri decommissions space in the most efficient way possible. This process may include completing several decommissions at the same time, and may require SBC Missouri's putting off a decommissioning job until it is not only most cost effective, but also feasible to do.

A CLEC exiting the business could remove all of its equipment, and discontinue its contractual agreement with SBC Missouri. If this were to occur, SBC Missouri and the CLEC would no longer have a contractual relationship. These circumstances would make it more difficult for SBC Missouri to recover any amounts due from the CLEC. Also, a CLEC could possibly discontinue a collocation arrangement and by the time the decommissioning is complete, that CLEC could be insolvent or out of business.

Q. WHAT IS INVOLVED WITH THE DECOMMISSIONING OF COLLOCATION SPACE?

A. SBC Missouri understands that CLECs may occasionally order too much collocation space and then need to decommission space as their business plans change. Accordingly, SBC Missouri is willing to allow CLECs to decommission space under mutually acceptable terms and conditions (such as those proposed in SBC Missouri's ICA language).

Q. WHY IS IT IMPORTANT FOR A CLEC TO RETURN A DECOMMISSIONED COLLOCATION SPACE BACK TO SBC MISSOURI IN THE SAME CONDITION IN WHICH SBC MISSOURI INITIALLY PREPARED THE SPACE FOR THE CLEC?

A. It is reasonable to expect the CLEC to restore the decommissioned space back to its original condition because SBC Missouri may need to quickly release this space to another CLEC. Another reason for the CLEC to restore its space to its original condition is that SBC Missouri should not have to incur any expense for reconditioning the CLEC space.

Q. CAN YOU EXPLAIN WHAT ARE SOME OF THE EXPENSES SBC MISSOURI WOULD INCUR ON BEHALF OF A CLEC IF IT DID NOT RESTORE ITS SPACE AS PROPOSED BY SBC MISSOURI'S PROPOSED LANGUAGE?

A. In order to restore a CLEC's collocation space to its original condition SBC Missouri has to perform numerous tasks that are both expensive and time consuming. First, the interconnection cabling connecting the CLEC to SBC Missouri's network has to be removed. This consists of copper wires, coaxial cabling, and possibly fiber cables. Next, any entrance facilities belonging to the CLEC must be removed; as well as any timing leads, which are individual copper wires that SBC Missouri uses to provide synchronization to the CLEC.

Finally, any power arrangement and grounding cables must be removed, which can be extremely difficult to do. Due to the risk to network reliability, all of these cables must be removed in the SBC Missouri's "maintenance window," which is from 12-6 AM. Another significant aspect of removing these cables is that some of these cables are installed between floors, which involves the costly and time consuming process of opening and closing cable holes. Cable holes allow the installation of cabling between floors while securing the portion of the hole that is empty with a fire retardant material to contain damage in the event of a fire.

Q. ARE THERE ANY OTHER EXPENSES SBC MISSOURI WOULD INCUR ON BEHALF OF A CLEC BESIDES CABLE REMOVAL?

A. After removal of a CLEC's equipment, which the CLEC Coalition states that it agrees to do, and removal of the cabling I just detailed, the tasks of removing the cages, removal of electrical fixtures, and hole and wall restoration still remain. These tasks can involve hiring electricians and other skilled craftsmen, which SBC Missouri should not be responsible for.

Q. HOW IMPORTANT IS IT FOR A CLEC TO RETURN A DECOMMISSIONED COLLOCATION SPACE BACK TO SBC MISSOURI IN THE SAME CONDITION IN WHICH IT WAS ORIGINALLY PROVIDED?

A. It is very important, for several reasons. We need to be assured that when a CLEC requests decommissioning, the vacated space can be immediately ready for another CLEC. SBC Missouri is subject to strict timelines for preparing space for CLEC collocation requests and could risk not meeting these deadlines if it is forced to restore a CLEC's space to original condition before configuring the space for another CLEC. Also, it is critical that fuse positions on the BDFB and timing leads at SBC Missouri's synchronization network element be vacated when a CLEC decommissions its space so that SBC Missouri does not needlessly have to deploy additional equipment wastefully. Finally, it is important for safety and security reasons to ensure that all holes in walls and floors caused by a CLEC occupying a collocation arrangement be repaired in order to protect personnel and equipment.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should support SBC Missouri in its request that decommissioning costs be paid by a CLEC when the CLEC submits a

decommissioning order. Having exiting CLECs pay for decommissioning then is the only way that SBC Missouri can ensure that it receives payment for decommissioning costs and expenses incurred.

Sprint Virtual Collocation Issue 1

Issue Statement: *Is SBC Missouri required to allow any or all multifunctional equipment by Sprint?*

Q. WHAT IS YOUR UNDERSTANDING OF THIS COLLOCATION ISSUE?

A. Sprint is seeking to force SBC Missouri to allow collocation of any and all multifunctional equipment.

Q. WHAT TYPE OF EQUIPMENT DOES SBC MISSOURI ALLOW TO BE COLLOCATED?

A. In accordance with section 251(c)(6) of the Act, the Collocator may collocate equipment for Physical Collocation if such equipment is necessary for interconnection to SBC Missouri under 47.U.S.C. § 251(c) (2) or accessing SBC Missouri's Lawful UNEs under 47.U.S.C. § 251(c) (3). Equipment that may be collocated solely for these purposes includes: (1) transmission equipment including, but not limited to, optical terminating equipment and multiplexers; and (2) equipment being collocated to terminate basic transmission facilities pursuant to sections 64.1401 and 64.1402 of 47 C.F.R. (Expanded Interconnection) as of August 1, 1996.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should reject Sprint's proposed language.

Sprint Physical Collocation Issue 7, Virtual Collocation Issue 2

Issue Statements: *Can SBC Missouri exclude collocation of switching equipment?*

Q. WHAT IS YOUR UNDERSTANDING OF THIS COLLOCATION ISSUE?

A. Sprint Physical Collocation Issue 7 and Virtual Collocation Issue 2 imply that SBC Missouri does not allow collocation of switching equipment.

Q. DOES SBC MISSOURI ALLOW COLLOCATION OF SWITHING EQUIPMENT?

A. Yes, SBC Missouri allows collocation of Remote Switch Modules ("RSMs") solely under the following conditions: (1) the RSM may not be used as a stand-alone switch; it must report back to and be controlled by a Collocator identified host switch and direct trunking to the RSM will not be permitted; (2) the RSM must be used only for the purpose of interconnection with SBC Missouri's network for the transmission and routing of telephone exchange service or exchange access or for access to SBC Missouri's Lawful UNEs for the provision of a telecommunications service. SBC Missouri voluntarily will allow Collocators to collocate, on a non-discriminatory basis, other Multifunctional Equipment only if SBC Missouri and the Collocator mutually agree to such collocation.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should reject Sprint's position.

Sprint Physical Collocation Issue 8, Virtual Collocation Issue 3

Issue Statement: *Should Sprint be allowed to collocate equipment in SBC Missouri's premise while this equipment goes through the dispute resolution process?*

Q. WHAT IS YOUR UNDERSTANDING OF THIS COLLOCATION ISSUE?

A. Sprint's proposed language would allow Sprint to place potentially dangerous equipment in SBC Missouri's central offices prior to the equipment being reviewed for safety and functionality. The process of review points out potentially dangerous features of equipment that may harm SBC Missouri's or

other CLEC's networks. The equipment review process can unveil issues such as abnormal heat dissipation, abnormal size and weight requirements, as well as equipment not being necessary for interconnection or access to UNEs as defined by the Act. It is critical that this review take place in order to maintain the safety and security of SBC Missouri's network.

Q. DOES SBC MISSOURI HAVE STANDARDS IN PLACE TO PROTECT SBC MISSOURI'S AND CLECS' NETWORKS WHEN DETERMINING WHAT EQUIPMENT CAN BE COLLOCATED IN SBC MISSOURI'S CENTRAL OFFICES?

A. Yes. In order for equipment to be collocated in SBC Missouri's Central Offices, the equipment must meet the following standards: (1) Collocator's equipment must meet Telcordia Level 1 safety requirements as set forth in Telcordia documents SR-3580 and GR-63-CORE, Network Equipment Building Systems (NEBS); or, (2) Collocator must demonstrate that its equipment has a history of safe operation defined by installation in an ILEC (including SBC MISSOURI) prior to January 1, 1998 with no known history of safety problems.

Q. DOES SBC MISSOURI APPLY THE SAME MINIMUM SAFETY STANDARDS TO THE EQUIPMENT THAT SBC MISSOURI PLACES IN ITS CENTRAL OFFICES?

A. Yes. SBC Missouri follows the same minimum safety standards when placing equipment in its Central offices.

Q. ARE THERE ANY OTHER CONCERNS WITH SPRINT'S PROPOSED LANGUAGE?

A. Sprint has proposed collocation of equipment that SBC Missouri has deemed not necessary for interconnection or access to UNEs or has denied collocation of the equipment citing minimum safety standards that jeopardizes the network of SBC Missouri and other CLECs. Sprint does not provide a definitive course of action

for the removal of that equipment once collocated. Sprint's proposed language places the responsibility for remedy on the collocator (Sprint), but only states that the remedy "may include equipment removal within 20 days."

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should reject Sprint's proposals.

WilTel Physical Collocation Issue 5

Issue Statement: *Should SBC be required to supply, pull and install connection cabling at the Collocator's request?*

Q. WHAT IS YOUR UNDERSTANDING OF THIS ISSUE?

A. WilTel would like SBC Missouri to pull connection cables from the Dedicated Space to the POT Frame/Cabinet located in the Common Area.

Q. WHAT CONCERNS DOES SBC MISSOURI HAVE WITH THIS PROPOSED PRACTICE?

A. SBC Missouri believes that certain practices should be the sole responsibility of the collocator. Specifically, the Collocator should be solely responsible for the design, engineering, testing, performance and maintenance of the telecommunications equipment and facilities used in the Dedicated Space. The Collocator should be responsible for servicing, supplying, repairing, installing and maintaining the following within the Dedicated Space or optional Point of Termination ("POT") frame located in the common area. This would include the CLEC connection cable and associated equipment which may be required within the Dedicated Space(s) or in the optional POT Frame/Cabinet located in the Common Area to the point(s) of termination. SBC Missouri should not be responsible for the pulling of connection cabling for the CLEC as these practices are directly related to the management of the CLEC's (including WilTel's)

network, and they have been given the ability to hire an approved vendor to complete the work on its behalf.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should support the argument presented by SBC Missouri, that WilTel should have the responsibility of maintaining and updating its own network. A CLEC should take on certain reasonable responsibilities in collocating within an SBC Missouri Central Office, and the pulling of connection cabling is a practice that should be the responsibility of WilTel, and can be easily completed by an approved vendor working on behalf of WilTel.

WilTel Physical Collocation Issue 8

Issue Statement: *Should SBC be required to pull the Interconnection Arrangement(s) cables from the entrance manhole(s) to the Collocator at its equipment in the Dedicated Space or POT Frame?*

Q. WHAT IS YOUR UNDERSTANDING OF WILTEL PHYSICAL COLLOCATION ISSUE 8?

A. WilTel's proposed language is not clearly understood. It appears that WilTel has confused two separate types (Interconnection & Entrance Facility) of cabling.

Q. WHAT ARE THE RESPONSIBILITIES OF SBC MISSOURI WHEN A COLLOCATOR REQUEST ENTRANCE FACILITIES.

A. Subsequent to the Collocator's pulling its entrance cable into the SBC Missouri designated manhole with sufficient length in the cable, SBC Missouri will fully extend the Collocator-provided facilities through the cable vault to the Dedicated Space.

Q. WHAT OPTIONS ARE AVAILABLE TO WILTEL FOR INSTALLING ENTRANCE FACILITY CABLING?

A. The proposed agreement gives WilTel full control of the design and engineering of its network. The agreement gives WilTel the option either of having SBC Missouri install its entrance cables, or WilTel has the option to hire an SBC Tier 1 Installation Vendor to install entrance cables.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should reject WilTel's proposed language.

WilTel Physical Collocation Issue 9

Issue Statement: *Should equipment that is to be collocated serve other purposes than what is listed in this appendix?*

Q. WHAT IS YOUR UNDERSTANDING OF WILTEL PHYSICAL COLLOCATION ISSUE 9?

A. WilTel's proposed language attempts to by-pass this agreement which clearly defines the types of equipment that can be placed in SBC Missouri's Central Offices for the purpose of collocation.

Q. WHAT TYPE OF EQUIPMENT DOES SBC ALLOW TO BE COLLOCATED?

A. As previously stated in Sprint Virtual collocation issue 1: In accordance with section 251(c)(6) of the Act, the Collocator may collocate equipment for Physical Collocation if such equipment is necessary for interconnection to SBC Missouri under 47.U.S.C. § 251(c) (2) or accessing SBC Missouri's Lawful UNEs under 47.U.S.C. § 251(c) (3) of the Act. Equipment that may be collocated solely for these purposes includes: (1) transmission equipment including, but not limited to, optical terminating equipment and multiplexers; and (2) equipment being collocated to terminate basic transmission facilities pursuant to sections 64.1401 and 64.1402 of 47 C.F.R. (Expanded Interconnection) as of August 1, 1996. SBC

Missouri is not required nor shall it permit the collocation of stand-alone switches or enhanced services equipment.

Q. HOW SHOULD THE COMMISSION RULE ON THIS ISSUE?

A. The Commission should reject WilTel's proposed language.

IV. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. This concludes my testimony at this time. I do however reserve the right to supplement this testimony at a later date.