BEFORE THE ILLINOIS COMMERCE COMMISSION

Docket No. 02-0864

Surrebuttal Testimony of Randall S. White
On Behalf of SBC Illinois

SBC Illinois Exhibit 8.2

PUBLIC VERSION

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SURREBUTTAL TESTIMONY OF RANDALL S. WHITE

ON BEHALF OF SBC ILLINOIS

PUBLIC VERSION

I. INTRODUCTION AND SUMMARY

Q. Please state your name.

A. Randall S. White.

Q. Are you the same Randall S. White who previously submitted Direct and Rebuttal Testimony in this proceeding?

A. Yes.

Q. What is the purpose of your Surrebuttal testimony?

A. I will respond from a network engineering and operational perspective to portions of the rebuttal testimony submitted by intervenor and Staff witnesses on February 20, 2004 on the issues of fill, installation costs and certain other issues regarding inputs to SBC Illinois' loop recurring cost study. Specifically, I will respond to the rebuttal testimony presented in these area by the following witnesses: Staff witnesses Green, Liu, and Koch; AT&T witnesses Pitkin and Turner ("Pitkin/Turner"); Joint CLEC witnesses Starkey and Fischer ("Starkey/Fischer'); Illinois Attorney General witness Dunkel; Citizens Utility Board witness Baldwin; and Department of Defense witness Gildea.

II. FILL FACTORS

Q. The Commission Staff is recommending use of actual fill factors, adjusted to remove possible inefficiencies resulting from the fact that the future cannot be known with certainty. (Liu, pp. 25-27). Please comment.

A. From an engineering perspective, Ms. Liu is correct that decisions on sizing outside plant necessarily have to be based on judgments about the future. As I explained in my rebuttal testimony, and as Ms. Liu recognizes, these decisions are made by SBC Illinois' engineers in good faith, based on the best information available to them. It is always possible, however, that customer demand or demographics will change in ways that cannot be predicted.

Although other witnesses will discuss this issue from a more theoretical perspective, I would point out that all networks would be subject to these uncertainties, both actual networks built over a 20-year period and theoretical networks. Although Ms. Liu's network would not have what she refers to as "inefficient capacity" on the day it was built, it will develop "inefficient capacity" over time. To the extent that the TELRIC standard takes real world conditions into account, this is one that cannot be assumed away.

Q. Ms. Liu takes issue with your statement that demand growth and capacity additions would likely offset one another (p. 20). Please comment.

A. I continue to believe that, in an actual network, these factors would offset one another. That is part of the reason why fill factors tend to be relatively stable over long periods of

time. Ms. Liu, moreover, makes a distinction between an actual network and the FCC-prescribed hypothetical network, where she contends utilization would increase more rapidly. In my view, both an actual network and a hypothetical network should be viewed as dynamic with respect to demand *and* capacity. If one assumes increased future demand on the hypothetical network, that demand has to come from somewhere. It may represent additional demand from customers served by existing facilities or it may come from new customers in geographic areas that are not served by the network "built *once* and built *today*" at an earlier point in time (e.g., a farm converted to a housing development). To serve the latter demand, even a hypothetical network would have to be augmented with new facilities, which add capacity. In other words, no network is *ever* "built once" if the future is taken into consideration.

Q. Ms. Liu recommends a 15% adjustment to distribution facilities and a 7.5% adjustment to feeder plant and DLC capacity (pp. 28-29). Please comment.

A. Other witnesses will discuss whether such an adjustment is appropriate under TELRIC standards. I will offer an engineer's perspective. From a real world perspective, the adjustments appear high to me. Although I have not conducted any study (nor do I know how I would conduct such a study), based on my outside plant experience, I do not believe that 15% of the Company's distribution facilities or 7.5% of its feeder and DLC capacity reflect "mistakes." Although there are areas where demand has fallen off because of demographic or business changes, I do not believe it is nearly as significant or widespread as these factors would suggest.

Q. Do you generally agree with Ms. Liu's rank ordering of distribution and feeder/DLC capacity in terms of the likelihood of such "mistakes"?

A. Yes.

Q. Ms. Liu adjusts both the facility and the installation components of feeder and distribution. Is this appropriate?

A. Installation and facility costs are quite different. Installation costs for feeder and distribution facilities primarily reflect the labor required to lay cable (e.g., trenching buried cable, stringing aerial cable or installing new innerduct and facilities in conduit). SBC Illinois' cost to perform the physical placement of a cable in a specific location is about the same whether the cable is 3600 pairs or the next smaller size. In other words, if SBC Illinois had overshot its ultimate demand requirements along a given route by 15%, the costs associated with installing the appropriately sized cable would not be 15% less.

Furthermore, given the fact that cables come in fixed sizes, a demand forecast that was off by 15% could have had no impact on the size cable that was installed. Assume that SBC Illinois had forecasted demand for 800 pairs along a given distribution route and had installed a 900 pair cable (the appropriate size for 800 pairs). If it turns out that that forecast had been overstated by 15%, SBC Illinois would only have needed 680 pairs (800 less 15%). In this scenario, however, SBC Illinois would still have installed a 900-pair cable, because the next lower breakpoint is a 600-pair cable, which would have been be too small.

Q. Mr. Green contends that you misunderstood his testimony regarding use of target fills (pp. 8-9). Please comment.

A. I apologize if I misstated his testimony. However, his clarification is still puzzling. As I testified before, I agree that SBC Illinois' *actual* network fills today are not likely to be substantially different that the *actual* network fills in 1998 (when the last UNE case was litigated). I do not see how that fact "logically supports" Mr. Green's initial recommendation to use the *target* fills adopted in the UNE case, which did *not* reflect actual fill. However, since Staff is now recommending a modified actual fill approach, this issue no longer appears to have any relevance to the proceeding.

Q. Starkey/Fischer contend that SBC Illinois' actual fills do not, in fact, reflect "actual" data (pp. 93-95). Please respond.

A. I will respond to two of the issues raised by Starkey/Fischer: (1) the fact that defective pairs are used in the fill calculations, including what have been designated "Universally Bad Pairs;" and (2) the accuracy of the LEIS/LEAD database.

Q. What are defective pairs?

A. Defective pairs are those pairs that have developed an anomaly that prevents the pair from meeting transmission criteria. Therefore, they must be repaired before they can be placed back into service.

Q. Starkey/Fischer assert that not all defective pairs should be included in the available pair count (pp. 112-113). Do you agree?

A. No. In fact, the vast majority of SBC Illinois' defective pairs are usable. As I stated in my direct testimony, these pairs can be, and often are, repaired and, therefore, should be included in the available capacity base. Even Messrs. Starkey and Fischer recognize that pairs are repairable.

Q. Starkey/Fischer contend, however, that SBC Illinois' actual percentage of defective pairs is "too high" (p. 112). Do you agree?

A. No.

Q. Are defective pairs a function of the age of SBC Illinois' plants and/or result from a network overlay of more advanced technology, as Starkey/Fischer suggest (p.113)?

A. Although the age of the plant is one factor, there are many other factors that affect the number of defective pairs. For example, cable comes from the vendor with defects. Therefore, it is not unusual to have defective pairs on newly installed plant. Just as with everyday items such as automobiles, stereos or TVs, some develop defects within a few months of use. In addition, cables are subject to the elements of nature. Copper has characteristics that, when combined with electrical current and moisture, cause corrosion at various points in the cable. SBC Illinois makes every attempt to keep moisture out of cables, but with rain and melting snow it is inevitable that some amount of cable pairs becomes defective. A forward-looking network would also have vendor defects in its cable and would continue to have rain and moisture to deal with.

Q. Starkey/Fischer contend that SBC Illinois' outside plant guidelines make recovering defective pairs a "low priority" (p. 121-23). Please comment.

A. I do not agree with Starkey-Fischer's characterization of SBC Illinois' guidelines. In slow growth areas, defective pair recovery is an effective tool for providing capacity relief. These guidelines appropriately direct the engineer to recover defective pairs as economics dictate. However, at no point do these guidelines direct the engineer to cease recovery of defective pairs.

Q. Starkey/Fischer point out that certain defective pairs are classified as "Universal Bad Pairs" (pp. 119-21). What are Universal Bad Pairs?

A. Universal Bad Pairs are those conductors that are totally unrepairable or uneconomical to repair. This may be due to manufacturer's defect, defects in the underground facility between manholes or defects at an otherwise unreachable location. Because every reasonable effort is made to repair defective pairs, the number of Universal Bad Pairs is small.

Q. How many pairs in SBC Illinois' network are classified as Universal Bad Pairs?

A. The number of Universal Bad Pairs ("UBP") in Illinois is approximately 12,540. This represents less than 0.03% of the total available pairs. The number of UBP feeder pairs is 10,180 or .07% and the number of distribution pairs is 2,360 or .01%. Therefore, SBC Illinois' fill factors are not impacted by Universal Bad Pairs.

Q. Starkey-Fischer suggest that the LEIS database may be unreliable because it is not the subject of a regular audit process (pp. 100-101). Please comment.

A. Although LEIS is not subject to formal audit processes, it is, in fact, reliable. LEIS is a combination of hardware and software modules that are used by SBC Illinois' engineers in their day-to-day jobs. These modules assist engineers in determining how to size and time their jobs, help choose the right technology for the job and other functions. The accuracy of the data is "tested" on a daily basis in the service order and assignment systems.

One of the modules and databases in LEIS is Loop Engineering Assignment Data (LEAD"), which is where the fill data is stored. The LEAD database is built from information extracted from the Loop Facility Assignment and Control System ("LFACS"). LFACS is used to control and match the assignment of loop facilities to service order requirements on a daily basis. The loop data in LFACS is originated by the engineer.

Q. You mentioned the data is "tested" daily. What do you mean by that?

A. As I discussed previously, the source data for LEAD is LFACS. LFACS is used in the daily assignment of customer service orders. If the error rate in LFACS were excessive, SBC Illinois would spend an inordinate amount of time searching for cable and pairs when installing service. Moreover, the productivity of technicians would decline as their ability to install service orders would drop. Neither of these is the case in SBC Illinois.

While the data in LEAD may not be "perfect," its accuracy is high enough to allow SBC Illinois' service order activity to flow through at a very high rate.

Q. Starkey/Fischer point to excerpts from various manuals that, they contend, suggest that there could be errors in LEIS (pp. 101-02). Please comment.

A. These excerpts address very limited situations that would not have a material impact on fill calculations at the level presented by SBC Illinois in this proceeding. Moreover, the reference to the *LEAD/FACS/PVI User Guide and Methods and Procedures* simply reflects the fact that engineers can eliminate feeder facilities from the feeder count that should not be included (e.g. house cable within a central office). When SBC Illinois pulled its fill data for use in this case, this exclusion improved the accuracy of the data. Similarly, the database feature that allows special treatment of certain DLC systems was used when the data was pulled, so as to exclude pairs that are unavailable for the reasons cited by Starkey/Fischer (e.g. pairs made unavailable for use because of special service plug-ins in adjacent spots). Thus, these features improved the accuracy of SBC Illinois' fill data, not diminished it.

Q. Starkey/Fischer point to a reduction in capacity at one central office (CHCGILMO) in support of an argument that SBC Illinois has redundant capacity that it is systematically eliminating (pp. 109-110). Do you agree?

A. No. The situation at CHCGILMO was a unique situation and had nothing to do with redundant capacity. These were intracampus cable pairs associated with the University of Illinois/Chicago Circle campus, that had originally been inventoried (incorrectly) as

distribution facilities. Unassociated with the UNE cost study and as part of the engineer's normal job of maintaining job records, the facilities were reclassified. In response to this situation, in 2002-03 SBC Illinois' engineers spot checked, as part of their routine processes, other campus environments similar to this to verify that this was a unique occurrence and not a widespread problem. No other occurrences were discovered.

Q. Starkey/Fischer suggest that SBC Illinois' fill factors presented in this proceeding have been distorted as a result of either the SBC/Ameritech Merger Order, the Project Pronto initiative or both (pp. 108-09, 128-29). Is this accurate?

A. No. First, the FCC's SBC/Ameritech Merger Order temporarily required SBC to maintain 95% of the copper mainframe terminated plant in service as of September of 2000 for three years. This requirement did not impact fill. It is rare for SBC Illinois to retire copper cables terminated on a mainframe, because the plant can be used to serve other areas close to the central office. SBC Illinois would not likely have retired any appreciable amount of this plant during this period, with or without the Merger Order condition.

SBC Illinois' fiber feeder fill factors were not impacted by Project Pronto either. Although SBC generally began implementing Project Pronto in 2000, deployment was delayed in *Illinois* until April of 2002 because of regulatory uncertainties. Since SBC Illinois pulled the fill data used in its cost studies in this proceeding in January of 2002, they would not have reflected any Project Pronto deployment.

Q. Mr. Dunkel suggests that SBC Illinois' fill factors may be inflated because of spare capacity installed to provide end users with Centrex service, when in fact PBX service requires use of many fewer lines (pp. 8-10). Do you agree?

A. No. Competition between PBX and Centrex service has been around for many years. The majority of business customers use PBXs as their premises system. Contrary to Mr. Dunkel's apparent assumption, SBC Illinois takes this marketplace fact-of-life into account when sizing outside plant facilities that serve business locations. First, the local engineers determine the type of customers that will be moving into a particular building through discussions with the building owner/property manager and other criteria for commercial development in the area. SBC Illinois' engineers then rely on guidelines entitled "Consolidated Loop References" ("CLRs"). Distribution cables are sized for the "ultimate" demand, equivalent to maximum potential demand at a given building location. The CLRs are also updated when appropriate to reflect current trends (e.g., increasing customer demand for data products). In other words, SBC Illinois does not blindly install enough capacity to serve every business customer with Centrex service, but instead tries to anticipate the actual needs of customers in those locations.

Q. Mr. Dunkel and Ms. Baldwin suggest that SBC Illinois' 2.25 lines-per-household planning guideline is out-of-date, given the growth in DSL lines and/or cellular usage which, they argue, will reduce the demand for second lines (Dunkel, pp. 10-11; Baldwin, p. 8). Do you agree?

A. No. SBC Illinois has been using the 2.25 lines per household for a long time, well before the Internet became popular. It did not increase that guideline in the 1990s based on an

assumption that more customers would demand second lines for Internet use, so it does not need to reduce it now in recognition of DSL (which eliminates the need for a second line for data). Although more customers admittedly now have cellular phones, the impact of aggregate wireless growth on the demand for wireline connections along specific distribution or feeder routes is unpredictable at best. Unless and until market trends become more established and can be related to specific geographic areas *and* this Commission's service expectations are adjusted accordingly, SBC Illinois will continue to deploy outside plant in a manner that allows it to meet the Commission's installation and repair standards.

III. CABLE AND DLC INSTALLATION FACTORS

Q. At page 20 of their rebuttal testimony, Pitkin/Turner assert that your rebuttal testimony supports their arguments regarding the inappropriateness of the linear loading factors. Do you have any comments in response to this testimony ?

A. Yes. As the basis for their assertion, Pitkin/Turner provide a partial quote of a sentence contained at page 14 of my rebuttal testimony. The full sentence, with the portion of the sentence omitted by Pitkin/Turner italicized, states as follows: "*Therefore, in this example*, a linear loading factor is most appropriate because each drop installation requires its own full loading to reflect normal practice, *which would not change in a forward-looking network*." In this portion of my rebuttal testimony, I was discussing Pitkin/Turner's assertion that SBC Illinois should assume that it would place all of the drop wires on a street at one time as part of a single project. For the reasons that I discussed in my rebuttal testimony, such a suggestion is plainly unrealistic, even in a

"forward looking network," because it erroneously assumes that a network could be built with customers requesting drops at the same time at the same terminal location. In fact, customers will continue to move and change their service requirements in a non-geographically coordinated manner. For Pitkin/Turner's assumption to be valid, SBC Illinois would have to know exactly where each customer will be located, exactly how many pairs each customer will require, ensure that every customer coordinates their service requests with each other in order to enable SBC Illinois to make installations at neighboring residences on a single dispatch, and make sure that customers never move or change their minds. There is no basis for assuming that these conditions will occur, even in a forward looking network environment.

Q. Pitkin/Turner (p. 20) also assert that your rebuttal testimony confirms that SBC Illinois' "normal practice" consists of "augmenting facilities increment by increment and does not reflect the scorched node environment required by TELRIC." Do you have any comments in response to Pitkin/Turner's testimony in this regard?

A. Yes. As I have previously indicated, the purpose of my testimony is to offer an engineering perspective on network issues. Mr. Smallwood will address Pitkin/Turner's interpretation of the TELRIC standard. For the reasons that I discussed in my rebuttal testimony, Pitkin/Turner's assumption that there will never be a need to reinforce or augment network plant facilities in an efficient, forward-looking environment is wrong. In the real world, the Company cannot forecast with absolute certainty the level of future demand in every area of the network. Accordingly, even in an efficient network, such as

SBC Illinois', which includes a reasonable amount of spare capacity, there will always be a need to augment and reinforce the facilities on a forward looking basis. Without significantly oversizing every lateral cable in the distribution, there is no way to avoid some amount of augmentations in the distribution network. Pitkin/Turner do not even attempt to refute my testimony in this regard.

Q. Pitkin/Turner (p. 91) continue to argue that the Job Administration Management ("JAM") system is the most appropriate tool for estimating SBC Illinois' forward looking cable installation costs. Do you agree with Pitkin/Turner?

A. No. For the reasons I discussed at length in my rebuttal testimony, JAM is not an appropriate tool for capturing the total costs. Pitkin/Turner (pp. 91-97) assert that JAM is the "tool SBC actually uses" to estimate the cost of construction project. As I explained in my rebuttal testimony, however, JAM is *not* used by SBC Illinois to estimate the total cost of a construction project. To the contrary, I listed numerous examples of conditions that give rise to costs that are not captured by JAM, and that are not intended to be captured by JAM. In essence, Pitkin/Turner have a fundamental misconception regarding the purpose of JAM. While JAM is used to develop cost estimates for certain portions of a project, it is not used to estimate the total costs and it is not used to track actual costs incurred. The primary purpose of JAM is to track job progress, construction productivity, material ordering and disbursements, and inventory control. In short, it is a job management tool and not a financial system.

Q. Pitkin/Turner (p. 93) state that SBC Illinois "uses a system known as ACE in California, Broad Gauge in Texas, and JAM in Indiana and Michigan" and that, in each of these states, "SBC engineers essential rely on the information contained in these systems to plan real jobs." Do you have any comments in response to Pitkin/Turner's assertion in this regard?

A. Yes. I am very familiar with the JAM system which is used in every SBC Midwest state, including Illinois, Indiana, and Michigan. Pitkin/Turner are correct that "SBC engineers actually rely on the information contained in those systems to plan real jobs." That fact, however, does not in any way contradict my testimony that JAM is not used, and cannot be used, to develop an estimate of the actual total cost of a project.

Q. Can you given an example of how information in JAM is actually relied on by SBC Illinois engineers to "plan real jobs"?

A. Yes. JAM is not used until the scope of the project is determined and a rough plan completed. When authorization is received, the design is completed and the work print detailed with all the requirements, it is at that point that JAM is used. As stated in the JAM Overview Document,

> "When the work prints have been finalized and approved by the Engineer, an Engineering Assistant opens JAM and pulls the undertaking number down from AUTH through the AUTH/JAM interface."

The engineer uses the JAM system to identify material requirements and create a vehicle for material ordering during construction. JAM also provides the engineer the forecasted hours needed to complete certain work steps on the job, however, it does not provide all

the costs/hours that may be associated with the job. Then JAM is used by the Construction group to schedule work, track the job progress and material management.

Q. Please describe your experience with JAM.

A. I have a very good understanding of the JAM systems functions, capabilities and limitations, based on my history and working experience. I have been in the Engineering and Construction organization of Ameritech, now SBC Midwest, for approximately 17 years. During that time, there has always been a job management system in place to perform project scheduling, manage inventory and monitor construction productivity. The JAM system replaced the previous operations support system around 1995. I was on the construction team and participated in several focus groups that developed the framework for JAM. In addition, several of my peers and some of my direct reports assisted in the detailed development of the system itself.

When JAM was first implemented, I was in the Construction organization and we used JAM on a daily basis. I personally used JAM on countless projects to produce reports to look at construction productivity, overtime ("OT") information and Job progress reports. The direct reports that I supervised used the system on a daily basis for time reporting of their technicians and overall job management. My direct reports are expert users of JAM. The Construction Management Center ("CMC") used the system on a daily basis for material ordering and disbursement.

More recently, I had responsibility for both the Construction and Engineering departments in Illinois. The Engineering group I supervised used JAM in their day-to-day jobs to build and manage project. JAM is also used by the engineering and construction groups under my supervision to track job progress. This is the main job management tool for the Construction and Engineering organizations.

Q. At page 93 of their rebuttal testimony, Pitkin/Turner assert that "information from the JAM system actually controls how much vendors are allowed to bill for projects." Are Pitkin/Turner correct?

A. Not exactly. JAM is a job management tool and does not dictate what a vendor can "bill" for work performed on behalf of SBC Illinois. JAM data is used to set contract limits in PICS/DCPR according to material and/or service prices selected in JAM. The contract limits stop the automatic authorization of payments on an invoice that exceeds the dollar amount. For example, if the limits set by JAM and passed to PICS/DCPR is $50,000, when the invoice is submitted, PICS/DCPR, it is compared to the limits set from JAM. If the bill is greater than $50,000, the PICS/DCPR system will prevent automatic payment which allows a review of the bill by someone in PICS/DCPR. This acts as a checks and balance system which allows a review of the bill.

Q. Does the fact that JAM interfaces with PICS/DCPR change your stance on JAM's ability to estimate total cost?

A. Absolutely not. JAM's ability to create a check and balance system to review contract billing on a subset of jobs in no way enhances the system's ability to function as a

financial system. In other words, this ability still does not provide JAM with the ability to capture total actual cost of jobs.

Q. At page 94 of their rebuttal testimony, Pitkin/Turner assert that "SBC has provided no evidence that our replication of the JAM system cost of jobs and associated hours were wrong in any." Do you agree with that assertion?

A. No. At pages 20 to 34 of my rebuttal testimony, I discussed a number of errors made by Pitkin/Turner in their attempt to use JAM to develop labor hours and costs. Specifically, I demonstrated that Pitkin/Turner (i) made improper adjustments to the initial set-up times in JAM and, as a result, used set-up times that cannot be accomplished in the real world; (ii) failed to account for all necessary work steps required to physically place cable and to complete a working loop through the cable; and (iii) failed to account for the fact that there are additional time requirements and costs for which JAM does not make provision that may be encountered in the field.

Q. Do Pitkin/Turner address all of the problems with their application of JAM which you summarized above and discussed in your rebuttal testimony?

A. No. For example, I discussed at pages 24 through 34 of my rebuttal testimony, and Schedules RSW-R1, R-2 and R-3, the many steps necessary to install aerial, buried and underground cable that Pitkin/Turner missed in their attempt to replicate JAM. I demonstrated that, as a result, Pitkin/Turner grossly underestimated the level of installation costs that would be estimated for such projects through a proper application of JAM. Pitkin/Turner do not make any attempt to respond to that portion of my

testimony. Rather, Pitkin/Turner (p. 93) simply assert that they use the "JAM system estimator reports and associated labor and engineering time tables provided by SBC in response to discovery." In response to AT&T data request BFP 215, SBC Illinois provided AT&T with a table identifying functional time of increments ("FTI") in JAM for the steps used to install various types of outside plant equipment, including aerial, buried and underground cable. The response included all of the FTIs for various steps (such as strand placement, down guy and anchor placement and removal and tree trimming in the case of aerial cable, and directional boring and pedestal placement in the case of buried cable), which Pitkin/Turner omitted from their JAM "replications." Their failure to include these and other missing steps which I discussed in my testimony is unexplained.

Q. In response to your testimony that Pitkin/Turner "misused" the JAM system, they assert that they made "forward looking adjustments" to the JAM data . . . based on the fact that SBC's JAM system does not reflect the same economics of scale that would be experienced in a large-scale build-out envisioned by TELRIC" (pp. 93-94). Do you have any comments in response to Pitkin/Turner's testimony in this regard?

A. Yes. Although Pitkin/Turner's testimony does not clearly identify the "forward looking adjustments" to which they refer, I assume they mean the unrealistic assumptions they made to reduce set-up times, which I discussed at pages 21 through 24 of my rebuttal testimony. For the reasons I discussed, Pitkin/Turner's assumptions are completely unrealistic and unsupported, even for a "large-scale build-out" on a going forward basis. For example, as I discussed at page 22, Pitkin/Turner assume that four block terminals

could be placed, spliced, and tested with a simple set-up. As I explained, such an assumption is unrealistic even if the four terminals were placed within a few hundred feet of each other there would still be a need for separate set up times at these locations.

Q. In response to your testimony regarding the costs of installing drops and NIDs, Pitkin/Turner (p. 94) criticize your observation that "customers do not coordinate and sequence their orders to make everything as possible for SBC Illinois." Is Pitkin/Turner's criticism justified?

A. No. My observation was made in the context of explaining why Pitkin/Turner's assumption that trenching machines can be used to simultaneously bury multiple drops is unrealistic and inefficient. As I explained, one of the problems with Pitkin/Turner's assumption in this regard is that, even in a forward looking network, customers would not be coordinating their service requests to allow placements of all drops along any given street at the same time. In any event, Pitkin/Turner's adjustments to the NID and drop installation costs are inappropriate for a number of additional reasons which I discussed at pages 35 through 37, and which Pitkin/Turner make no attempt to address.

Q. Pitkin/Turner (p. 96) suggest that the costs associated with the "unforeseeable issues" which you refer to at page 18 of your rebuttal testimony are accounted for in the estimates produced by JAM. Is that correct?

A. No. In support of their suggestion, Pitkin/Turner (p. 96) quote my testimony out of context and jump to the erroneous conclusion that JAM system data reflects the "average costs across a wide range of projects within each zone." This statement reflects a basic

misunderstanding of how the functional time increments ("FTIs") in JAM are developed and used.

Q. Please explain in more detail the purpose of FTIs.

A. FTIs are standard time unit values used to estimate the work time it takes to complete certain tasks normally required for individual projects. The project time is comprised of such items as site setup, incidental times and actual work functions. The total of all the FTIs sum to the construction work hours estimated for the project. Using reports that sum the FTIs across the various entities allow management to balance the workload and schedule jobs among the technician/crews.

Q. How are the estimated hours developed for FTIs?

A. The forecasted hours were developed based on SME estimates and field observations for the individual tasks. The estimates assume normal working conditions and the average technician performance using standard tools. The FTIs are updated or changed when there is a technology change that affects the time increment. Additionally, if a new FTI is implemented, a review is made after some time period to ensure that under "normal" conditions the time increments are appropriate.

Q. Do the FTIs account for all time that may be spent on a particular job?

A. No. As I have discussed, the estimates assume normal working conditions and the average technician performance using standard tools. The FTIs are not calculated based on the average amount of time actually spent to complete tasks on actual projects. Thus,

the FTIs in JAM do *not* reflect additional hours that can, and almost always do, result from the types of field conditions that I described at pages 26 to 27, 29 to 30 and 32 of my rebuttal testimony, including, in the case of buried cable, for example:

- traffic conditions, including congestion causing delays getting to and from the work location and cars parked in the work area.
- inclement weather, including heavy snow requiring removal before starting to work and rain/lightening while working around joint trench and pedestals with power.
- municipal rules, such as restricted hours of operation, limited hours of working during rush hour commuting, and noise ordinances..
- equipment breakdown, such as damaged directional boring heads, snapped boring rods, trenching chain breaks and other mechanical breakdowns
- material defect, such as factory defects with cable
- accessibility issues, including fences, garages, customers blocking access to the work area
- trenching/boring obstructions such as rock, frost, unknown utilities, underground abandoned structures
- EPA issues, such as contaminated soil.

Q. Can you explain what items are included in the FTIs for site set-up?

A. Yes. The site setup time consists of work area protection, manhole opening, communications with property owners for accessibility , environmental testing (i.e. air quality, etc), purging and ventilation and loading and unloading work tools. The time

allocated for the site setup is based on normal conditions and does not include the abnormal conditions such as handling contaminated soil, as I noted at page 29 of my rebuttal testimony. The time needed due to abnormal traffic conditions also would not be captured in the FTIs for site setup times.

Q. Can you define incidental times?

A. Yes. The incidental times would include opening the cable sheath, placing the grounding bond clamps, marking core groups, placing grease boxes, placing pea gravel, installing, fastening and supporting the cable and closure. Again, the times are based on normal conditions. Incidental times would not account for, and they do not include, the time needed, for example, to replace damaged or defective material, as I discussed at page 29 of my rebuttal testimony.

Q. Can you define actual work function?

A. Yes. The actual work function is defined as hours per work units, e.g., hours per 100 pairs joined, hours per 100 feet of cable placed or hours per 100 feet of cable trenched. The time increment is the time for the average technician to do the work utilizing the standard equipment in a normal work environment. As stated in my rebuttal testimony at 29, this would not account for additional time arising due to equipment breakdowns, trenching/boring obstructions, and inclement weather.

Q. Are the types of "unforeseeable" circumstances which you have described above and in your rebuttal testimony unusual?

A. No. On almost every job, one can expect to encounter one or more of the circumstances that I have described, which add to hours and costs resulting from the estimates developed through JAM.

Q. Of what value is JAM as a tool for estimating construction costs if it does not account for the time and costs associated with the circumstances you have described?

A. As I previously stated, JAM is not the system used to monitor overall costs. JAM is an excellent tool for tracking job progress, construction productivity, material ordering and disbursement and inventory tracking.

Q. At page 65 of their rebuttal testimony, Pitkin/Turner assert that your rebuttal testimony "is trying to make excuses" for what a witness for SBC may have said regarding DLC installation costs in California. Do you have any response to Pitkin/Turner's assertion?

A. Yes. My rebuttal testimony does not "make excuses" for any witness. To the contrary, I was pointing out how Pitkin/Turner misused statements made by those witnesses. For example, Pitkin/Turner cited a statement of Mr. Trott regarding an estimate of the total cost of a 2016 cabinet. I did not make any "excuses" for Mr. Trott's statement. I did, however, criticize Pitkin/Turner's improper attempt to adjust Mr. Trott's estimate downward, thereby understating the cost of an RT. As I also discussed, Pitkin/Turner misconstrued a statement made by Ms. Bash during a deposition in a California proceeding. As I also pointed out, subsequent to the deposition, Ms. Bash presented

evidence in the form of an exhibit (PHE 109C), which Pitkin/Turner continue to ignore, that demonstrates that the installed cost of a DLC-RT generally exceeds the cost estimates used by Pitkin/Turner in their study. A copy of Ms. Bash's exhibit is attached to my testimony as Schedule RSW-SR1 (Confidential).

Q. Pitkin/Turner (p. 66) assert that when you discussed the additional costs necessary to install a DLC you "fail[] to understand that those costs are already accounted for through additional factors that LoopCAT applies." Do you have any comments to make in response to Pitkin/Turner's assertion?

A. Yes. Pitkin/Turner are referring to costs for land, building, power and rights of way. At pages 39 through 43 of my rebuttal testimony, I identify a list of over 20 steps necessary to install a DLC which do *not* involve land, building, power and rights of way and which are not reflected in Pitkin/Turner's DLC installation cost estimate of *****BEGIN CONFIDENTIAL************END CONFIDENTIAL***** for each of the RT and COT. Schedule RSW-SR2 identifies and describes each of those steps. Schedule RSW-SR2 also demonstrates that these steps were not accounted for in the JAM estimator report that Pitkin/Turner relied upon, in part, as support for their cost estimate.

IV. OTHER DLC COST ISSUES

A. ALLOCATION OF COSTS BETWEEN VOICE AND DSL

Q. Pitkin/Turner (p. 76) and Staff witness Koch (pp. 16-17) continue to argue that the cost of the DLC should be reduced by 25% due to the ability of Litespan to carry DSL. Do you have any comments in response to their testimony?

A. Yes. As I discussed in my rebuttal testimony, additional DSL-compatible electronics would be required to support the DSL service. As Pitkin/Turner suggest, it is true that some channel banks can be used for either DSL or voice grade or both. However, the cost to upgrade a channel bank common from voice grade to DSL-capable is *****BEGIN CONFIDENTIAL*********END CONFIDENTIAL***** times the cost of a regular POTS channel bank.

The remote terminal investment developed in the SBC Illinois LoopCAT Model is based on the provision of voice grade services. It is not appropriate or reasonable to discount that investment when the higher prices for the DSL-capable channel bank commons and DSL-capable quad cards were not included in the loop cost study. Moreover, as I discussed in my rebuttal testimony (p. 49), only *****BEGIN CONFIDENTIAL**********END CONFIDENTIAL***** of the total number of DLCs in SBC Illinois' service territory are DSL enabled.

B. IDLC vs. UDLC

Q. In response to your testimony regarding integrated DLC facilities ("IDLC") and universal DLC facilities ("UDLC"), Pitkin/Turner (p. 67) argue that you are "continuing to battle the guidelines that are currently in place." Do you have any comments in response to that argument?

A. Yes. Far from "battling" these "guidelines," my rebuttal testimony demonstrates that it is clearly *not* more efficient to use IDLC facilities in all cases, as Pitkin/Turner assume. To the contrary, because of the numerous economic and practical constraints on the

deployment of IDLC which I discuss, the relative weighting of UDLC and IDLC reflected in the Company's loop cost study does, in fact, reflect the most efficient deployment of the available technology. Pitkin/Turner do not respond to any of the points that I made in my rebuttal testimony. In fact, Pitkin/Turner's client, AT&T, is on record as agreeing with many of those points in an Ex Parte letter to the FCC dated December 4, 2002, a copy of which is attached as RSW-SR3. For example, as stated in the Ex Parte letter, AT&T agrees with me that GR-303 DLCs (the type of IDLC at issue here) (1) limit the number of accessing LECs; and (2) reduce trunking efficiency because it requires that each CLEC gain a "critical mass" of end users.

Q. Pitkin/Turner (p. 68) quote language from the Verizon Arbitration Order for the proposition that "the FCC's Wireline Competition Bureau finds no technical problems (essentially refuting Mr. White's entire commentary on this matter)." Do you have any comments in response to this testimony?

A. Yes. Obviously, the FCC Wireline Competition Bureau reached its findings on this issue based on the record in that case and did not have the benefit of my testimony. Pitkin/Turner have not presented any support for the assertion that the FCC "refut[ed] my entire commentary." Apparently, the Bureau did find that Verizon failed to prove that the unbundling of IDLC GR303 systems is "not technically feasible." In this case, however, I have presented extensive testimony on this issue which demonstrates that, while it may be "technically feasible" in a controlled lab environment, it is *not* a practical or appropriate forward-looking solution and should not be implemented in SBC Illinois' network. Pitkin/Turner have failed to share the complete picture of the issues and the

physical limitations associated with this technology option. The only way to unbundle is at the DS1 rate and not at the DSO level. In my rebuttal testimony, I attached confidential exhibit RSW-4R from Alcatel explaining why the Litespan will not support standalone UNE loop arrangements. Moreover, there are also technical issues with unbundling at the DS1 or Virtual Interface Group ("VIG") level. To understand these issues, it is first necessary to understand what an interface group is.

Q. What is an interface group?

A. An Interface Group (IG) is a set of DS1's used to transport digital voice signals from a DLC system to a local digital switch. As previously discussed, SBC Illinois' forward-looking technology for interface group deployment is GR303 (Telcordia publication *General Requirements 0000000303*). The GR303 IG, also known as a Virtual Interface Group (VIG), uses Time Slot Interchange (TSI) technology at both ends of the group of DS1s to dynamically connect customers to the switch when they ask for dial tone (lift a receiver or press the "on" button) or receive a call. This allows SBC Illinois to concentrate customers over the IG. It is similar to a trunk group used between switches.

Q. Please explain the relationship between a Virtual Interface Group ("VIG") and the Intergrated Digital Terminal ("IDT").

A. The VIG is the set of DS1s terminated on a device at one end leading to the switch and a device at the other end leading toward the customer. The IDT is the device at the switch end, and the DLC is the device at the customer end. These two devices must deploy the exact same set of software rules to allow the DS1s to function as VIGs.

Q. What are the limitations to setting up different Virtual Interface Groups?

A. Confidential Exhibit RSW-SR 4 **i**s Alcatel's technical documentation that states the Alcatel equipment has a physical limitation of four virtual interface groups per remote terminal. Each of the virtual interface groups and all of the DS1s within an IG must terminate on the same IDT. In a non-blocking switch environment, this limits the IDT to 20 DS1s. In addition, there are unresolved developmental issues associated with multiple SBC Illinois Operation Support Systems ("OSS") that would be required to support such a multi-user environment. The testing, monitoring and provisioning issues have never been developed or fully tested on multiple terminations to different CLECs and ILECs. There are numerous compatibility issues with automatic testing, automatic failure recovery, maintenance and circuit testing, and alarm monitoring.

Q. What are the issues associated with a limit of four Virtual Interface Groups and OSS development?

A. This is a critical issue for the cost-efficient deployment of IDLC and IDT equipment in the network. When SBC Illinois places a GR303 IDLC system, it expects to use all four VIGs (in increments of 4 DS1's per VIG) to serve its customers. This VIG usage is spread over time to accommodate future growth and to avoid reserving IDT equipment when a system is initially deployed in the network. As a result, IDT equipment can terminate VIGs from multiple IDLC systems and more efficiently utilize the IDT capacity. Therefore, a reduction in the VIGs available to SBC Illinois would increase the

need for additional IDT equipment and reduce the likelihood of IDLC deployments in Illinois.

With a physical limit of 4 VIGs per RT, only a very limited number of CLECs in Illinois could have access to this capability from any RT, a fact recognized in the AT&T Ex Parte letter which I previously discussed. Since there are approximately 56 CLECs currently providing service in Illinois, this type of directive from the Commission would mean that only 2-5% of the CLECs would have access to these DS1 links. The remaining 95-98% of the CLECs would continue to interface to SBC Illinois at a DS0 level. This would not allow equal access to all RTs for all CLECs. It would only provide for a first-come, first-served concept to those few CLECs that get their request in early.

The CLECs will have to provide their own GR303 terminating equipment, which must be compatible with SBC Illinois' OSS. I do not know of any application where multiple providers manage common OSS.

As a result of these constraints, it is my opinion that the GR303 multiple VIG technical capability is currently not operationally feasible, and therefore not an appropriate forward-looking technology in Illinois.

C. NUMBER OF RTS PER COT

Q. At page 69 of their rebuttal testimony, Pitkin/Turner continue to argue that the loop cost study should model four remote terminals on a single COT. Do you have any comments in response to this testimony?

A. Yes. In essence, Pitkin/Turner argue that it is technically feasible to place four RTs on a COT. It is not, however, a practical or economical way to administer the network. In general, CSAs ("Carrier Serving Area") have between two to six distribution areas {"DAs") with each DA designed to have between 200 to 600 living units. In addition, these RTs need to support a variety of services such as sub-rate, DS1, ISDN, COIN or non-switched service to name a few. Increasing the ratio of RTs to COTs creates a compounding effect on bandwidth requirements. Increasing the number of RTs will ultimately cause an increase in bandwidth above capacity. This situation will lead to the need for significant rework and rerouting of the existing Fiber network, causing increasing cost, customer down time and a potential increase in customer outages.

V. COPPER/FIBER CROSSOVER POINT

Q. At page 10 of his rebuttal testimony, Staff witness Koch continues to assert that 18kft, rather than 12kft, is the appropriate crossover point between copper and fiber, even though he agrees that the 18kft option "is not capable of supporting all advanced services". Does Mr. Koch's position make sense?

A No. In support of his position, Mr. Koch suggests that the only types of advanced services that SBC Illinois plans to offer are those that can be supported by an 18kft crossover point. Mr. Koch further asserts that, in fact, SBC Illinois has "specifically stated that it

will refrain from doing so." These assertions, for which Mr. Koch provides no support, are incorrect. For standard xDSL service, with speeds of 200kbps or higher, the technical breakpoint is actually approximately 17.5Kft, because at 18Kft and beyond load coils must be added to maintain adequate transmission requirements. Moreover, SBC Illinois' network is engineered to handle speeds much greater than 384kbps. Contrary to Mr. Koch's assertions, SBC not only plans to offer such higher speed advanced services, it already does. In fact, the design objective originally developed under Project Pronto was to provide speeds of 1.5Mbps. To support speeds of 1.5Mbps or greater, the crossover point cannot be greater than 12kft. Today, SBC is selling advanced services with speeds of up to 6Mbps.

Q. Why would Mr. Koch assert that SBC Illinois stated that is will "refrain" from providing the types of advanced services that would need to be supported by a 12kft crossover point?

A. Mr. Koch does not explain the basis for this assertion , but my guess is that he has in mind the decision in 2001 to put the deployment of Project Pronto in Illinois on hold as a result of regulatory uncertainty. As I indicated previously, however, this delay in the deployment of Project Pronto ended in April of 2002.

Q. Does this conclude your surrebuttal testimony?

A. Yes.