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Issues:	Network
Witness:	John Lube
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Sponsoring Party:	Southwestern Bell Telephone Company
Case No:	TO-2000-322

SOUTHWESTERN BELL TELEPHONE COMPANY

CASE NO. TO-2000-322

Rebuttal Testimony

of

John Lube

January 2000

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Petition of DIECA Communications, Inc D/B/A Covad Communications Company for Arbitration of Interconnection Rates, Terms, Conditions and Related Arrangements with Southwestern Bell Telephone Company	)))))))	TO-2000-322

AFFIDAVIT OF JOHN P. LUBE

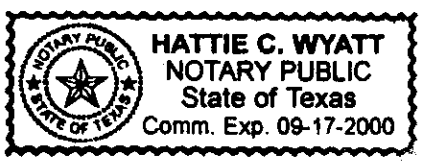
STATE OF TEXAS)
) SS
CITY OF DALLAS)

I, John P. Lube, of lawful age, being duly sworn, depose and state:

1. My name is John P. Lube. I am presently General Manager - Network Services for SBC Operations Inc.

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



John P. Lube

Subscribed and sworn to before me on this 24th day of January 2000.

Notary Public

Q. WOULD YOU STATE YOUR NAME, PLEASE?

A. My name is John P. Lube.

Q. ARE YOU THE SAME JOHN P. LUBE THAT FILED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to certain positions expressed by Covad's witnesses Terry L. Murray, John C. Donovan and Bernard Chao. The areas I will address include (1) SWBT's loop qualification process, (2) SWBT's loop conditioning related to load coils, bridged tap and repeaters, (3) unbundled ISDN loops, (4) SWBT's activities associated with cross-connects, and (5) SWBT's position on technical publications.

1. SWBT'S LOOP QUALIFICATION PROCESS

Q. WHAT ISSUES CONCERNING LOOP QUALIFICATION WILL YOU ADDRESS?

A. I will address SWBT's mechanization of the loop qualification process, including the manual loop qualification still required with this mechanization; SWBT's work activities associated with loop qualification; and other criticisms made by Covad's witnesses with respect to loop length.

A. Mechanized and Manual Loop Qualification

Q. MS. MURRAY CONTENDS THAT SWBT WILL IMPLEMENT A MORE MECHANIZED SYSTEM THAN IS REFLECTED IN THE COST STUDY DESCRIBED BY SWBT WITNESS JAMES SMALLWOOD. DO YOU AGREE WITH THIS POSITION?

A. No. To the contrary, even with the mechanization we will implement, the loop qualification process will likely require a manual look-up of some loop qualification information to take place more frequently than assumed in the study. This would actually result in a higher cost than is reflected in the cost study.

Q. PLEASE REVIEW THE TYPES OF INFORMATION INVOLVED IN LOOP QUALIFICATION.

A. Loop qualification information includes (1) the make-up of the requested loop, and (2) an inventory of "disturbers" (i.e., other digital and advanced services) operating in proximity to the requested loop. The loop make-up includes information such as the total length of the loop; the length of each wire gauge making up the loop; the presence, quantity and location of load coils on the loop; the presence, quantity and location of bridged tap on the loop; and the presence, quantity and location of repeaters on the loop. The inventory of disturbers is provided for the binder group containing the requested loop, as well as adjacent binder groups.

Q. WHAT DEGREE OF MECHANIZATION IS ASSUMED BY THE COST STUDY?

A. The cost study assumes that loop qualification information will be available on a mechanized basis an estimated 80% of the time.

Q. WHY WILL SWBT'S PROCESS LIKELY REQUIRE MORE MANUAL EFFORT THAN IS REFLECTED IN THE COST STUDY?

A. More manual effort will be required because most of SWBT's loop qualification information is not inventoried in a mechanized database. As explained in my direct testimony, SWBT filed with the FCC an operational support systems ("OSS") Plan of Record related to advanced services. This document was made available to Covad and the other CLECs in December 1999 via Accessible Letter CLEC99-183. Part of this Plan of Record is a detailed analysis of the degree to which loop qualification information is inventoried in SWBT's mechanized databases. This analysis shows the following:

Loop Qualification Item	Current % Of Item in Mechanized Inventory
Designed loop length[1]	100%
Designed length by gauge	100%
Actual loop length	20%
Actual length by gauge	20%
Presence of load coils	20%
Presence of bridged tap	20%
Presence of repeaters	0%

[1] Designed loop length is essentially the longest loop in the distribution area that serves the requested customer address.

Quantity of load coils	20%
Quantity of bridged tap	20%
Quantity of repeaters	0%
Location of load coils	0%
Location of bridged tap	0%
Location of repeaters	0%
Disturbers in same/adjacent binder groups	100%

As this analysis shows, some information is available from a mechanized inventory only 20% of the time, or not at all. In contrast, the cost study, and hence, SWBT's proposed rate for loop qualification, liberally assumes all information is available from a mechanized inventory 80% of the time.

Q. COULD COVAD RELY ON DESIGNED LOOP LENGTH AND DESIGNED LENGTH BY GAUGE, AND THEREFORE ACHIEVE ELECTRONIC ACCESS TO MECHANIZED INFORMATION ON MORE THAN 20% OF ALL LOOPS?

A. While Covad could rely on these designed lengths in lieu of actual lengths, the information related to load coils, bridged tap and repeaters would still involve SWBT's manual effort most of the time. That same manual effort will provide actual lengths to Covad at the same time.

Q. MS. MURRAY CONTENDS THAT THE ENTIRE PROCESS WILL BE MECHANIZED PURSUANT TO FCC ORDERS. IS THIS ASSERTION CORRECT?

A. No. I believe that Ms. Murray misunderstands the requirements of the FCC UNE Remand Order. As explained in my direct testimony, under that order, we are required

to give electronic access to loop qualification information existing in SWBT's databases.[2] We intend to do that and will meet our obligation. This FCC order, however, explicitly does not require SWBT to populate databases so that 100% of the loop qualification information can be accessed electronically (i.e., without any manual intervention).[3] Instead, the FCC has made clear that SWBT must provide electronic access to mechanized data only to the extent that such mechanized data is available for itself.[4] Again, there is no obligation for SWBT to undertake the work necessary to place all information on all loops in a database that can be accessed electronically.

Q. MR. DONOVAN ASSERTS THAT SWBT SHOULD SIMPLY PROVIDE CLECS WITH READ-ONLY, DIRECT ACCESS TO LFACS AND TIRKS FOR LOOP QUALIFICATION INFORMATION. IS THIS APPROPRIATE?

A. Not at all. LFACS and TIRKS contain proprietary and/or competitively-sensitive information about customers, carriers, and SWBT's network. Any information in these two systems relevant to xDSL provisioning will be made available to CLECs via the electronic access described above, not via inappropriate direct access to these systems.

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[2] FCC 99-238, Third Report and Order and Fourth Further Notice of Proposed Rulemaking in CC Docket No. 96-98 ("In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996"), released November 5, 1999 ("UNE Remand Order"), paragraph 429.

[3] Id.

Q. WILL SWBT POPULATE LOOP QUALIFICATION INFORMATION IN A MECHANIZED INVENTORY FOR ANY ADDITIONAL LOOPS SO THAT THIS ADDITIONAL INFORMATION CAN BE ACCESSED ELECTRONICALLY?

A. Yes. As SWBT performs manual loop qualification of a loop for its retail affiliate or a CLEC, that loop information will be placed into the mechanized database. Any future qualification of that loop will then be able to be done via electronic access.

Q. WILL SWBT ALSO POPULATE THIS MECHANIZED INVENTORY OF LOOP QUALIFICATION INFORMATION FOR NEW OR RE-ENGINEERED LOOP PLANT?

A. An electronic interface does not exist between SWBT's engineering process and the mechanized inventory of actual loop qualification information. Therefore, as new loops are engineered, or existing loops are re-engineered, the actual loop qualification information for these loops will not be available via electronic access. As described above, SWBT is not obligated to create a process to obtain a mechanized inventory of such additional loop information. However, as loop qualification for xDSL-based services is performed on those new or re-engineered loops, that information also will be added to SWBT's mechanized inventory.

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[4] Id.

Q. MS. MURRAY CLAIMS SWBT'S COST STUDY IS INCONSISTENT WITH TELRIC BECAUSE IT DOES NOT ASSUME 100% MECHANIZATION IN THE LONG RUN. DO YOU AGREE WITH HER CONTENTION?

A. No. In my opinion, SWBT's cost study goes far beyond the "forward-looking" nature of TELRIC. Even if SWBT were to create a process to mechanize the inventory of loop qualification information for new and re-engineered loops, it is also my opinion that such a process would not achieve in the foreseeable future a mechanized inventory of all loop qualification information for 80% of all loops (as assumed in SWBT's cost study), much less, for 100% of all loops (as assumed by Covad).

Q. WILL COVAD AND OTHER CLECS BE TREATED IN A NON-DISCRIMINATORY FASHION WITH REGARD TO ELECTRONIC ACCESS TO LOOP QUALIFICATION DATA?

A. Yes, in all cases, CLECs and SBC Advanced Solutions, Inc. ("ASI"), SWBT's retail affiliate providing xDSL-based services, will have comparable electronic access to SWBT's mechanized inventory of loop qualification information. Because all of the information on all of the loops in SWBT's network will not be in a mechanized inventory, some percent of loop requests will require manual effort for both SWBT's retail affiliate and CLECs like Covad.

Q. WHEN WILL THE ELECTRONIC ACCESS TO MECHANIZED LOOP QUALIFICATION INFORMATION BE AVAILABLE?

A. As described in my direct testimony, electronic access to mechanized loop qualification information based upon a designed model will be available not later than July, 2000. Electronic access to actual information, where such information exists in a mechanized inventory, will be available by the end of 2000; for those loops where actual information is not available on a mechanized basis, information from the designed model will be supplied.

B. SWBT Work Activities

Q. AS PART OF LOOP QUALIFICATION, WILL SWBT'S ENGINEERS PERFORM AN ANALYSIS AND DETERMINATION OF WHETHER A CLEC'S XDSL-BASED SERVICE WILL WORK, OR THE TYPE OF XDSL TECHNOLOGY THE CLEC SHOULD DEPLOY?

A. No. Those analyses and decisions are for the CLEC to make based upon the information that SWBT is required to provide through the loop qualification process.

Q. SPECIFICALLY, WILL SWBT PERFORM SPECTRUM MANAGEMENT AS PART OF LOOP QUALIFICATION?

A. Yes. SWBT is obligated to provide disturber information to the CLECs; this activity is a part of spectrum management. However, as I stated above, the analysis of disturber

information and loop make-up information to determine the type of xDSL technology to deploy and service to offer will be performed by the CLEC, not SWBT.

Q. WHAT WORK IS INVOLVED IN THE MANUAL PROCESS OF OBTAINING LOOP QUALIFICATION INFORMATION?

A. SWBT must gather and provide the information required by the FCC when manual loop qualification is performed. SWBT witness Dave Borders addresses this work in greater detail in his rebuttal testimony.

C. Criticisms Related to Loop Length

Q. MR. DONOVAN CRITICIZES SWBT'S CLASSIFICATION OF LOOPS AS "RED," "YELLOW" AND "GREEN," AND MS. MURRAY CONTENDS THAT SWBT IMPROPERLY DISQUALIFIES SOME LOOPS AS A RESULT OF THIS CLASSIFICATION. ARE THOSE CRITICISMS VALID?

A. No. It appears that Covad continues to misunderstand the distinction between loop pre-qualification and loop qualification. Pre-qualification is an entirely optional process that a CLEC can use at no charge to obtain preliminary information about the likelihood a loop will support its xDSL-based services. If Covad does not want to use this information, it is not required to do so. If any loops are "erroneously" listed as "red" in SWBT's pre-qualification process, that does not affect Covad's ability to use that loop for xDSL-based services.

Q. WHY DOES SWBT USE 17,500 FEET OF COOPER CABLE TO DISTINGUISH BETWEEN THE "YELLOW" CLASSIFICATION AND THE "RED" CLASSIFICATION?

A. SWBT had set this technical limit of 17,500 feet of cooper cable for its retail ADSL product based upon the specific equipment used by SWBT to provision this service. Mr. Donovan asserts that this limit has no technical basis; he identifies his evidence for this assertion as page 13 of SWBT's response to Covad's Data Request ("DR") No. 80. Contrary to Mr. Donovan's assertion, this limit is indeed based upon the technical limits of the equipment used for SWBT's retail ADSL product. This fact is clearly shown in the very next paragraph of the DR response relied upon by Mr. Donovan. In addition, this technical limit is documented in SWBT's Transport Engineering and Construction Policy, Tab 11, page 4, which was provided to Covad in SWBT's response to DR No. 9. Most importantly, though, this 17,500-foot limit for cooper cable has no impact whatsoever on Covad's ability to offer xDSL-based services to its retail customers. Covad can offer its xDSL-based services over any loop length at Covad's discretion.

Q. DOES THIS 17,500-FOOT LENGTH HAVE ANYTHING TO DO WITH THE PLACEMENT OF LOAD COILS?

A. Contrary to Mr. Donovan's suggestion, this 17,500-foot length does not alter (and, in fact, has nothing whatsoever to do with) SWBT's engineering break point of 18,000 feet for the placement of load coils on copper loops. Also contrary to Mr. Donovan's suggestion, SWBT does not presume that copper loops between 17,500 feet and 18,000

feet have load coils 100% of the time. As my direct testimony explains, loops less than 18,000 feet have load coils only if these loops required loading in the past for some other reason.

2. LOOP CONDITIONING

Q. WHAT ISSUES CONCERNING LOOP CONDITIONING WILL YOU ADDRESS?

A. I will address Covad's alleged double recovery of loop conditioning costs, bulk conditioning of loops, the frequency of occurrence of loop conditioning, Covad's allegations of subsidization of modernization, SWBT's engineering guidelines, and bridged tap restoral. Mr. Borders addresses SWBT's work times related to loop conditioning in his rebuttal testimony.

A. Alleged Double Recovery of Loop Conditioning Costs

Q. IN HER TESTIMONY, MS. MURRAY ASSERTS THAT SWBT'S PROPOSED CHARGES RESULT IN A "DOUBLE RECOVERY" FOR PROVIDING XDSL-CAPABLE "CONDITIONED" LOOPS. WHY DOES SHE MAKE THIS CLAIM?

A. Ms. Murray claims that SWBT's recurring charge for an 8 dB unbundled loop already includes the cost of conditioning because that recurring charge is based upon the use of fiber and digital loop carrier ("DLC") for longer loops, in lieu of copper. The kernel of

her double recovery argument is her assumption that the fiber/DLC loop design[5] is more costly than an all-copper loop design. In other words, she assumes the more costly fiber/DLC in the fictitious TELRIC network is sufficient extra payment to avoid inhibiting devices (such as load coils) on a copper loop; hence, she questions why Covad should pay again, through a separate charge, to remove these inhibiting devices from the real network.

Q. IS HER ASSUMPTION ABOUT THE RELATIVE COST OF THE FIBER/DLC LOOP DESIGN CORRECT? THAT IS, IS COVAD ALREADY PAYING EXTRA FOR FIBER/DLC TO AVOID INHIBITING DEVICES?

A. No. In fact, as required by TELRIC principles, SWBT's 8 dB unbundled loop study is based upon the least-cost loop design at any given loop length. In other words, the 8 dB unbundled loop study uses an all-copper loop design for all loop lengths where copper is less costly than fiber/DLC (i.e., the shorter loops), and it uses the fiber/DLC loop design for all loop lengths where fiber/DLC is less costly than copper (i.e., the longer loops). Engineers generally call the distance (i.e., loop length) at which a design, such as fiber/DLC, changes from being more costly to being less costly an economic cross-over point. Ms. Murray's assumption that SWBT has used fiber/DLC where copper would have been less costly is simply incorrect. Covad has not paid extra in the recurring charge for the 8 dB unbundled loop to avoid inhibiting devices on a copper loop.

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[5] The fiber/DLC design is actually fiber from the central office to the DLC remote terminal

Q. WHAT IS YOUR UNDERSTANDING WITH REGARD TO THIS COMMISSION'S DECISION CONCERNING WHEN FIBER SHOULD BE UTILIZED IN A FORWARD-LOOKING TELRIC LOOP STUDY?

A. Mr. Smallwood addresses these studies in more detail in his rebuttal testimony. However, it is my understanding that the Commission has chosen study inputs which reflect the use of same fiber/DLC cross-over point as used by SWBT in its 8 dB unbundled loop study.

B. Bulk Conditioning of Loops

Q. MS. MURRAY AND MR. DONOVAN CONTEND THAT SWBT SHOULD CONDITION ALL OF THE LOOPS IN A BINDER GROUP WHEN A CLEC REQUESTS CONDITIONING ON ANY PAIR. IS SUCH BULK CONDITIONING APPROPRIATE?

A. Even though there may be circumstances where it is physically possible to unload a full binder group rather than just an individual pair(s), SWBT will unload only the individual pair(s) requested by a CLEC, not the entire binder group containing that pair(s). This is because SWBT cannot be certain whether the full binder group will ever be needed for xDSL growth, or if it will have to be extended or reconnected to

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location, and a copper pair from the remote terminal to the customer's premises.

serve voice services beyond 18,000 feet in the future. It is also not certain whether the majority of future xDSL growth will even be provisioned over copper facilities.

Q. IS BULK CONDITIONING INAPPROPRIATE FOR ANY OTHER REASONS?

A. Yes. In some cases, it may not be physically possible to condition an entire binder group. For example, assume a pair needed today for xDSL has been used in the past for a DS1 service that required a T1 repeater. The repeater housing will still be connected to that pair. If there are any other T1 repeaters working on other DS1 services in that binder group, all 25 pairs in the binder group can not be conditioned (i.e., the repeater housings can not be disconnected) because the other repeaters are still required and working. Even disconnecting load coils from other pairs less than 18,000 feet could result in a perceived reduction in the quality of service being experienced by "plain old telephone service" ("POTS") customers working on other pairs in that binder group today.

Q. MR. DONOVAN ALSO COMPARES BULK CONDITIONING TO REPAIRING A CASE OF TROUBLE THAT AFFECTS NUMEROUS PAIRS. IS HIS ANALOGY APPROPRIATE?

A. No. In his analogy, he describes a situation where a case of trouble for a working customer turns out to be caused by water in a splice. Clearly, it would be appropriate to remove the water from the entire splice to clear or prevent similar troubles on every other pair in that splice. However, the same is simply not true of disconnecting load coils, bridged tap or repeaters from every pair in a binder group. First, unlike water in a

splice, these devices are not impairing working services on any other pairs in that binder group. Second, disconnecting all bridged tap or repeaters in that binder group might literally take other customers out of service.

Q. IF SWBT DID CONDITION AN ENTIRE BINDER GROUP WHEN THE FIRST PAIR IN THAT BINDER GROUP IS REQUESTED FOR XDSL, AS SUGGESTED BY COVAD, HOW WOULD SWBT BE REIMBURSED FOR THAT CONDITIONING WORK?

A. Covad does not explain how SWBT would be reimbursed for the total cost to perform bulk conditioning. For example, Covad suggests that SWBT would condition, on average, 50 pairs at one time. If Covad requests the first pair within such a group of 50 pairs, it seeks to pay only $1/50^{th}$ of the total cost of the bulk conditioning. The flaw in Covad's logic is that SWBT is left with no reasonable means to recover the remaining $49/50^{th}$s of SWBT's cost actually incurred for such conditioning. That is, when another CLEC requests the second pair in that group of 50 pairs, SWBT would not be able to charge that CLEC for conditioning that is no longer required. Furthermore, Covad does not explain who would reimburse SWBT for the remainder of the conditioning cost if the demand for xDSL does not result in full xDSL utilization of all 50 pairs. These same problems obviously exist with any amount of bulk conditioning (i.e., 25 pairs, etc.).

Q. MS. MURRAY AND MR. DONOVAN ALSO CONTEND THAT SWBT DOES CONDITION 50 OR MORE LINES AT ONE TIME FOR ITS RETAIL ADSL SERVICE. IS THIS ALLEGATION TRUE?

A. No. SWBT does not pre-condition any amount of pairs for retail ADSL service. SWBT only conditions the lines that are required to provide the service that is ordered, whether ordered by ASI, SWBT's retail affiliate providing xDSL-based services, or by a CLEC.

Q. WHAT IS THE BASIS FOR COVAD'S CONCLUSION THAT SWBT CONDITIONS PAIRS IN BULK FOR ITS RETAIL ADSL SERVICE?

A. According to Ms. Murray's and Mr. Donovan's testimony, Covad bases this conclusion on SWBT's response to a DR in Texas,[6] which reads, in full:

> In wire centers that SWBT has identified to deploy retail ADSL service, SWBT is currently identifying 50 pair binder groups (minimum) for ADSL deployment. SBC will groom (if needed) those 50 pair binder groups by removing Bridge Tap or loads if necessary. These binder groups will carry not only SWBT's ADSL service, but also CLEC ADSL service.
>
> SWBT has offered to identify and condition binder groups in other central offices where identified by CLECs.

This SWBT DR response was provided in Texas on February 4, 1999, based upon assumptions as to how SWBT would perform loop conditioning for its retail ADSL product. However, the testimony of SWBT's witness William C. Deere in that

[6] ACI's Third Request, No. 22, in Texas Docket 20226.

proceeding on June 4, 1999 clearly explained that SWBT's preliminary plan regarding bulk conditioning was not implemented. The transcript of his testimony reads, in part:

> As this [DR response] was written in February, at that time, there was some dicussion about pregrooming, but it was decided not to do that because of the costs.[7]

Despite Mr. Deere's testimony and the fact that Covad was a party in this Texas proceeding, Covad continues to claim incorrectly that SWBT performs bulk conditioning or pre-conditioning.

C. Frequency of Occurrence of Loop Conditioning

Q. MR. DONOVAN ASSERTS THAT CORRECTLY DESIGNED PLANT SHOULD PRESENT LITTLE PROBLEM IN DEPLOYING XDSL-BASED SERVICES. DO YOU HAVE ANY COMMENTS ABOUT THIS STATEMENT?

A. Yes. It is my opinion that the overwhelming majority of SWBT's copper loops shorter than 18,000 feet will present little problem for the deployment of xDSL-based services (i.e., conditioning will not be required).

Q. WHAT PERCENTAGE OF LOOPS IN SWBT'S MISSOURI NETWORK ARE LOADED?

[7] Transcript, June 4, 1999, page 1382, lines 14-17 (Texas Docket No. 20226).

A. Of the total number of copper loops in SWBT's Missouri network, SWBT estimates that 17.28% are loaded. Of just the copper loops less than 18,000 feet in Missouri, SWBT estimates that only about 4.2% are loaded.

Q. ARE THERE OTHER FACTORS THAT WILL MINIMIZE THE AMOUNT OF CONDITIONING THAT WILL BE REQUIRED ON LOOPS LESS THAN 18,000 FEET?

A. Yes. When possible, SWBT will take other measures to provide a xDSL-capable unbundled loop to a CLEC. For example, if the only spare pair in the terminal serving the requested address is loaded, but a POTS customer in that same terminal is working on a non-loaded pair, SWBT will perform a line and station transfer ("LST") to free the non-loaded pair for the CLEC's xDSL request, at no charge to the CLEC. Doing so would be more cost effective for SWBT than conditioning the loaded pair for the CLEC. And, again, it is not certain whether the majority of future xDSL growth will even be provisioned over copper loops.

D. Alleged Subsidization of Modernization

Q. MR. DONOVAN CLAIMS THAT SWBT IS USING LOOP CONDITIONING CHARGES TO SUBSIDIZE THE MODERNIZATION OF ITS NETWORK. IS THIS CLAIM ACCURATE?

A. Of course not. SWBT would not even need to make these changes to its network absent a CLEC's specific request for conditioning a loop for xDSL. As stated in my

direct testimony, the FCC's Interconnection Order acknowledges that loop conditioning must be performed in some instances on "existing loop facilities to enable requesting carriers to provide services not currently provided over such facilities." And, the FCC goes on to say that the requesting carrier would bear the cost of such conditioning.[8]

E. Engineering Guidelines

Q. MR. DONOVAN CONTENDS THAT SWBT'S OWN ENGINEERING GUIDELINES SHOULD HAVE PREVENTED THE EXISTENCE OF LOAD COILS ON LOOPS LESS THAN 18,000 FEET, AND EXCESSIVE BRIDGED TAP ON ALL LOOPS IN THE NETWORK. IS THIS STATEMENT CORRECT?

A. No. While SWBT's guidelines call for minimizing these devices in the loop network, these guidelines are literally just guidelines. The engineers who have made outside plant decisions over the years have been required to deal with real world circumstances that have not always permitted them to follow guidelines such as minimizing loading or bridged tap. For example, eliminating bridged tap in some instances can advance the need to place new cables, which may be undesirable if capital dollars are limited. Based upon these circumstances, the choices made by SWBT's engineers were appropriate at the time and would likewise be appropriate if the same circumstances

[8] FCC 96-325, First Report and Order in CC Docket No. 96-98 ("In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996"), released August 8, 1996 ("Interconnection Order"), paragraph 382.

were presented today. It certainly cannot be said that SWBT's decisions were designed to increase costs for CLECs and xDSL-based services, neither of which existed until relatively recently.

Q. MR. DONOVAN SUGGESTS THAT SWBT SHOULD HAVE SATISFIED THESE ENGINEERING GUIDELINES THROUGHOUT THE ENTIRE LOOP NETWORK WITHIN A SPECIFIC PERIOD OF TIME. IS THIS APPROPRIATE OR REALISTIC?

A. No. In an ideal world, with unlimited capital budgets, absolute certainty about the amount and location of customer demand, and absolute stability in the capabilities and costs of technology, it would have been possible for SWBT to achieve a retrofit of its entire loop network within a specific period of time. However, these ideal conditions certainly have not existed and still do not exist in the real world. As a consequence, these guidelines cannot be expected to achieve such a wholesale retrofit of SWBT's existing network. In fact, it would be irresponsible for SWBT to incur the costs associated with such a retrofit, especially when such a retrofit would have very little effect on the voice-grade services used by most customers today.

Q. MR. DONOVAN'S DIRECT TESTIMONY DESCRIBES THE EVOLUTION OF OUTSIDE PLANT DESIGNS, WITH SPECIAL FOCUS ON BRIDGED TAP. DO YOU HAVE ANY COMMENTS ABOUT THIS DISCUSSION?

A. Yes. This entire evolution of outside plant designs demonstrates an industry's desire to balance network attributes such as flexibility, ease of maintenance, and cost

effectiveness. In the final analysis, prudent use of bridged tap in the loop network provides this balance. For example, prudent use of bridged tap on the feeder side of the feeder-distribution interface ("FDI") can provide needed flexibility to serve unexpected demand in multiple distribution areas and defer the cost of feeder relief. Similarly, prudent use of bridged tap on the distribution side of the FDI can provide needed flexibility and cost containment within the distribution area.

Q. MR. DONOVAN ACKNOWLEDGES THAT COPPER LOOPS SHORTER THAN 18,000 FEET COULD BE LOADED IF THESE LOOPS HAD BEEN ORIGINALLY DESIGNED TO SERVE CUSTOMERS BEYOND 18,000 FEET. HOWEVER, HE CONTENDS THAT THESE LOAD COILS SHOULD HAVE BEEN DISCONNECTED WHEN THESE LOOPS WERE CUT SHORTER THAN 18,000 FEET. IS THIS CONTENTION CORRECT?

A. No. SWBT's engineering practices did not in the past and do not now call for removal of load coils in these circumstances. It was not and is not necessary to remove the load coils on these loops to provide POTS service to customers; therefore, there was not and is not any reason to incur that expense. Again, decisions like these were not made to increase costs for CLECs or others desiring to offer xDSL-based services, as both CLECs and commercially-available xDSL technology are relatively new in the telecommunications industry. Besides, the future demand for xDSL-based services over copper facilities is uncertain. The fact is, to the extent that copper loops are used for xDSL, and to the limited extent that CLECs will request such conditioning from

SWBT, SWBT will incur costs to condition those loops and should be compensated for those costs.

Q. MR. DONOVAN ASSERTS THAT THE EXISTENCE OF LOAD COILS OR BRIDGED TAP ON LOOPS LESS THAN 12,000 FEET IS A DESIGN ERROR. DO YOU AGREE?

A. No. While we expect the existence of load coils and excessive bridged tap to be rare on loops less than 12,000 feet, it is not a design error. Load coils are placed at 3,000 feet, and at 6,000-foot intervals thereafter when loops greater than 18,000 feet are designed. If it were necessary to use loops originally designed to serve customers beyond 18,000 feet to now serve customers within 12,000 feet, load coils could exist at 3,000 feet and 9,000 feet. Therefore, no design error occurred. Also, as with loops similarly cut back to serve customers within 18,000 feet (described above in my testimony), SWBT has no guidelines or need to disconnect such load coils on loops now serving customers within 12,000 feet.

Q. IS THE ELIMINATION OF END SECTION FROM A CABLE PAIR AS SIMPLE AS MR. DONOVAN STATES?

A. No. Mr. Donovan's simple illustration of the removal of end section (i.e., bridged tap beyond the customer) is not appropriate for several reasons. First, he incorrectly states that an engineering work order is not necessary. SWBT requires an engineering work order to update its outside plant records. Second, cutting off this end section would result in the inability to use that cable pair beyond the serving terminal, and more

importantly, would leave no capability to restore (i.e., reconnect) the pair if it is needed to serve another customer beyond that serving terminal in the future. Third, the technician may not be able to access the cable to remove the end tap as easily as suggested by Mr. Donovan. Even in the pedestal described in Mr. Donovan's illustration, the splice where the stub cable from the serving terminal connects to the distribution cable would be enclosed in a protective "bag" to prevent exposure to environmental conditions (e.g., moisture and heat); the removal and refitting of this bag involves additional work effort. Moreover, the splice between the serving terminal stub and the distribution cable could be buried, which requires the additional effort of digging up, opening, closing, and re-burying the splice.

F. Restoration of Bridged Tap

Q. MS. MURRAY CONTENDS THAT SWBT SHOULD NOT RECOVER THE RESTORAL OF BRIDGED TAP. WILL SWBT ACTUALLY RESTORE BRIDGED TAP AS REFLECTED IN THE STUDY?

A. Yes. SWBT will often have to restore bridged tap previously removed to provide an xDSL-capable unbundled loop to Covad. SWBT's cost study for loop conditioning reflects the restoral of bridged tap 34% of the time because this is the percentage of SWBT's plant that is currently non-interfaced. By "non-interfaced," I mean there is no feeder-distribution interface ("FDI"), which is where the feeder cable can be flexibly interconnected to the distribution cables. In my opinion, that estimate is very conservative, and the actual bridged tap restoral may be in excess of that. When bridge

tap is disconnected from a loop, that loop can no longer be used to provide service at other locations in the future. If service demands require the reassignment of that loop to another location, the bridge tap would have to be reconnected. This restoral of the bridged tap would be the most economical and responsive way to meet the customer's service request. The 34% estimate is conservative because it does not take into consideration the prudent use of bridged tap on both the feeder side and the distribution side of interfaced plant, which was described previously in this section of my rebuttal testimony.

Q. WHO IS THE COST CAUSER FOR THE RESTORAL OF BRIDGED TAP?

A. In my view, if Covad requests loop conditioning that requires bridged tap to be disconnected, Covad is the cost causer for the restoral of that same bridged tap because the restoral never would have been necessary except to meet Covad's xDSL needs.

3. UNBUNDLED ISDN LOOPS

Q. MS. MURRAY AND MR. DONOVAN BOTH CONTEND THAT SWBT'S ISDN LOOP COSTS ARE EXCESSIVE BECAUSE THEY ARE BASED UPON THE USE OF OBSOLETE TECHNOLOGY. DO YOU AGREE WITH THEIR POSITION?

A. No. SWBT chooses today, and will continue to choose in the future, the technology that most economically serves the mix of services it provides to customers. POTS is still used by the overwhelming majority of SWBT's customers; far fewer of these

customers use ISDN. Therefore, SWBT's choice of digital loop carrier ("DLC") technology must reflect this preponderance of POTS. Mr. Donovan asserts that SWBT's DLC technology is obsolete, and that SWBT should be deploying next generation DLC ("NGDLC") for all customers' service needs. In fact, SWBT continues to deploy the same DLC technology reflected in its TELRIC study in its actual network in Missouri. To do as Mr. Donovan suggests would simply not be the economic choice for the overwhelming majority of the customer demand, either in SWBT's real network or in a forward-looking TELRIC cost study.

4. CROSS-CONNECTS

Q. DO YOU HAVE ANY GENERAL COMMENTS ABOUT MS. MURRAY'S AND MR. DONOVAN'S TESTIMONY REGARDING CROSS-CONNECTS?

A. Yes. First, Covad appears to regard a "cross-connect" as merely the "jumper" from one side of a distributing frame to the other side of that distributing frame. To clarify SWBT's use of this term, my direct testimony illustrated the individual network components that make up SWBT's cross-connect-related costs. As explained in that testimony, the term "cross-connect" in the context of an xDSL unbundled loop consists of both the "jumpers" and the associated tie cable between SWBT's main distributing frame and intermediate distributing frame. Second, it is apparent that Ms. Murray and Mr. Donovan do not understand which activities and network components, used to achieve the overall connection from the unbundled loop to the collocation cage, are included in which SWBT cost study or charge. Mr. Smallwood's rebuttal testimony

explains the association of individual activities and components to the different cost studies involved in this overall connection. In addition, the direct testimony of Mr. Latham addresses the issue of cross-connect charges in this arbitration. Third, Covad is not required to use shielded cross-connects for xDSL unbundled loops.

Q. MS. MURRAY AND MR. DONOVAN BOTH CONTEND THAT SWBT'S NON-RECURRING COSTS FOR A CROSS-CONNECT ARE EXCESSIVE. DO YOU HAVE ANY COMMENTS REGARDING THEIR CONTENTIONS?

A. Yes. SWBT's work steps and work times associated with cross-connects have been provided by and reviewed by SWBT's personnel responsible for central office cross-connect activity, and accurately portray the effort required to provide cross-connects for unbundled loops.

5. TECHNICAL PUBLICATIONS

Q. MR. CHAO DESCRIBED SWBT'S PREVIOUS SPECTRAL MANAGEMENT PROCESS AS A SUBSTANTIVE CHANGE TO SWBT'S TECHNICAL PUBLICATIONS THAT SHOULD NOT HAVE BEEN BINDING ON COVAD. DO YOU HAVE ANY COMMENTS ABOUT MR. CHAO'S POSITION?

A. Yes. As described in my direct testimony, SWBT generally updates its Technical Publications ("Tech Pubs") in response to changes in industry standards and government regulations. In other instances, the updates simply provide clarifications to SWBT's methods and procedures, in response to CLECs' questions. In the case of

SWBT's spectral management process, SWBT believed its process to be compliant with the spectral management obligations placed upon SWBT and other incumbent LECs by the FCC's Advanced Services Order.[9] For example, SWBT's laboratory and field tests showed strong interference between ADSL and the other forms of xDSL. This interference was also confirmed by other industry sources such as the International Engineering Consortium ("IEC").[10] An on-line tutorial sponsored by the IEC states "[t]he best case for deployment of [frequency division multiplexed] ADSL services is to fill the cable completely with ADSL and eliminate all [near end crosstalk]"[11] that exists between ADSL and the other forms of xDSL. As a consequence, SWBT's process assigned all carriers' ADSL in separate binder groups from those used for the other forms of xDSL. As Covad is well aware, SWBT is no longer able to utilize that process. However, the point is that this "substantive" process was triggered by regulatory requirements.

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[9] FCC 99-48, First Report and Order and Further Notice of Proposed Rulemaking in CC Docket No. 98-147 ("In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability"), released March 31, 1999 ("Advanced Services Order"), paragraphs 61, 63, 72, and 76

[10] The IEC was founded in 1944 as a nonprofit organization sponsored by universities and engineering societies. Its stated mission is maintaining a partnership between academia and industry by providing continuing education, research, publications, and service programs for the international information industry.

[11] This Internet tutorial is copyrighted material and has not been attached to my testimony; however, it may be accessed by clicking on the "Web ProForums On-Line Tutorials" button on the web site of the International Engineering Consortium at www.iec.org.

Q. HAS COVAD AGREED ON A DEFINITION OF THE TERM "SUBSTANTIVE" AS IT RELATES TO TECH PUBS?

A. It is my understanding that SWBT has requested Covad to help define "substantive"; however, Covad has declined.

Q. DOES MR. CHAO'S TESTIMONY SHED ANY LIGHT ON WHAT COVAD WOULD CONSIDER "SUBSTANTIVE"?

A. Yes. He confirms that updates that affect prices or intervals would clearly be substantive. However, it is my understanding that state commissions set prices when there is no agreement between the parties, so I cannot understand why that would be an issue related to Tech Pub updates. Also, as I understand it, intervals are negotiated between the two companies; as such, this too should not be a Tech Pub issue.

Q. WILL SWBT HAVE TO MAKE FUTURE SUBSTANTIVE CHANGES TO ITS TECH PUBS?

A. While there is still uncertainty as to the meaning of "substantive," it is entirely possible future FCC orders could include major changes that affect all CLECs and incumbent LECs. In those instances, SWBT would have no choice but to implement the changes in its affected Tech Pubs, and in its relationships with CLECs.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.