October 15, 2007

DOCKET NO. 33323

PETITION OF UTEX COMMUNICATIONS CORPORATION FOR POST-INTERCONNECTION DISPUTE RESOLUTION WITH AT&T TEXAS AND PETITION OF AT&T TEXAS FOR POST-INTERCONNECTION DISPUTE RESOLUTION WITH UTEX COMMUNICATIONS CORPORATION	§	**PUBLIC UTILITY COMMISSION OF TEXAS**

DIRECT PREFILED TESTIMONY OF SOREN TELFER ON BEHALF OF UTEX COMMUNICATIONS CORPORATION

Q: PLEASE STATE YOUR NAME, YOUR JOB TITLE AND YOUR RESPONSIBILITIES.

A: My name is Soren Telfer. I serve as Chief Technology Officer for UTEX. My responsibilities include: (i) technical oversight of the UTEX network; (ii) technical compliance of the UTEX network with the UTEX Tariff and all applicable rules and standards; (iii) development of new technological solutions to enable non-legacy telephony applications and services and (iv) interoperability of those applications with the Public Switched Telephony Network ("PSTN").

Q: PLEASE PROVIDE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A: I received a Bachelor of Science in Physics from UCLA in 1997. I was in the physics PhD program at UCLA for two years, with a focus in mathematical physics and high-performance computational physics. I left the program in 1999 to take a full time position as Research Scientist in the UCLA Department of Physics. My specialization was experimental physics of electron beam accelerators. I left UCLA in 2003 and took employment in the

University of Michigan Department of Physics providing computing support in the areas of high-performance computing and networking and computational physics. In the fall of 2004, I began working for UTEX on a contract basis. My first assignment was the development of a call detail record (CDR) processing program. I joined UTEX full time in February 2005 as a Senior Network Engineer. My responsibilities included: oversight and management of the UTEX IP network; development of CDR processing software; and telephony application development primarily using Session Initiation Protocol (SIP). I worked directly for Mr. Gary Nekula who was then the CTO. In February 2006, I became CTO when Mr. Nekula moved into semi-retirement and took a lesser role of VP of Technology. At that point, I took over oversight of both the UTEX IP and telephony networks, in addition to the other responsibilities as noted previously.

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: I will address questions regarding the nature of UTEX traffic, provide technical background pertaining to the Calling Party Number ("CPN") parameter, provide testimony of my analysis of the CDR data we received from AT&T Texas in support of their CPN/InterLATA bills, provide testimony that characterizes UTEX switch data, address SS7 B-links, ISDN interconnection and Signaling Layer Translation Service. This testimony at times addresses multiple DPL Issue Categories, and also addresses CPN in two different locations. This was necessary to provide a logical progression of the underlying facts and the opinions I draw from them

Nature of UTEX Traffic

DPL Issues:23, 24, 46-69, 71-88, 94-95, 97-100.

Q: CONCERNING THE NATURE OF UTEX TRAFFIC, ON WHAT PERCENTAGE OF CALLS PASSED TO AT&T TEXAS DOES UTEX POPULATE THE SS7 CPN PARAMETER EXACTLY AS IT IS RECEIVED FROM THE UTEX CUSTOMER?

A: 100%. UTEX, without exception, populates the CPN parameter with the exact same information that UTEX receives from its customer. We do not alter, change, delete or supplement this information in any way.

Q: HOW DO YOU KNOW THIS?

A: UTEX explicitly and purposefully designed its platform so that it does not perform any translations or make any changes to the information destined for the SS7 ISUP IAM CPN parameter. We felt this was necessary to avoid the accusation of manipulating CPN for a nefarious purpose. AT&T Texas and Verizon have filed claims in various forums against CLECs (such as Focal) and ESPs (such as DataVon) saying that the CLEC and/or ESP were fraudulently "manipulating CPN." Our policy, therefore, was to not touch the information other than to pass it on, unchanged. We have tried to develop an agreed technical solution, and we are actively pursuing this solution within the industry. AT&T Texas, however, totally refuses to even discuss or consider joint development of a CPN "policy" and the technical means to implement that policy.

Q: DO LECs EVER TAKE DISCRETE STEPS TO CHANGE THE CPN THEY RECEIVE FROM THEIR CUSTOMERS AND POPULATE DIFFERENT INFORMATION IN THE SS7 ISUP IAM CPN PARAMETER?

A: Yes. it is not unusual for a subscriber-connected switch to manipulate the CPN under certain trunking configurations. For instance, an ISDN-PRI Personal Branch Exchange ("PBX") might for some reason be configured to pass a 4-digit calling party identification to the network.

To pass these calls to the PSTN, the switch operator would provision the switch to add the NPA and NXX information to create a 10-digit CPN and populate the entire 10 digits within the CPN parameter.

Q: PLEASE FIRST EXPLAIN WHERE CPN COMES FROM WHEN AN LEC PROVIDES BASIC ANALOG SERVICE TO A SINGLE OR MULTIPLE LINE, NON-PBX CUSTOMER.

A: A regular analog basic customer does not send CPN to the LEC. The LEC switch detects the user going off hook and initiating the dialing sequence. The LEC knows from the line termination identifier on the distribution frame what the line is and pulls the phone number associated with that line from its system. Then, that number is populated in the parameters for the Automatic Number Identification/Charge Number ("ANI" or "CN") and the "Calling Party Number" ("CPN") as part of the Initial Address Message ("IAM") within the SS7 "ISDN User Part" ("ISUP"). The Automatic Number Identification ("ANI") is a generic parameter which is not directly transmitted across the network, and which is usually derived from the CN at switching points.

Q: SO WITH BASIC ANALOG SERVICE THE LEC ITSELF GENERATES THE NUMBER THAT IS POPULATED IN THE CPN PARAMETER?

A: Yes. But things are different with old-style PBXs and even more different with an ISDN-PRI. And, each of those is different from what happens when the user is connected via an IP-based system.

Q: PLEASE START WITH AN OLD-STYLE PBX.

A: Old-style PBXs use what are called "PBX trunks." They also typically secure Direct Inward Dial ("DID") numbers, and the PBX operator will assign those DIDs to stations behind

the PBX. When a PBX user dials "9" (or whatever is done to seize outside dial tone), the central office detects the line seizure attempt. Part of the seizure process involves the PBX sending in-band signaling to a LEC central office ("CO"), and this signaling includes, among other things the ANI. This is not an out of band SS7 connection and the PBX does not send "CPN" as that term is used in SS7. The CO will take the ANI and if necessary add the NPA and then the LEC system will populate the 10 digit number in the SS7 IAM CPN.

Q: WHAT HAPPENS WITH AN ISDN-PRI?

A: ISDN-PRI does use a form of out of band signaling, but it is not SS7, rather a variant of ITU-T Q.931. The PBX or other edge device passes messages to the CO via a 64kpbs "D" channel. ISDN "D" channel messages used to signal call control are composed of information elements and follow the format specified in ITU-T Q.931. Part of the "set up request" signal will include the addressing information the user can program the PBX or edge device to send. Technically speaking, ISDN-PRI does not even "need" a telephone number or E.164 address to initiate a call and even if the user has a number, it does not have to be signaled. The user can specify that no number be sent in the information element ("IE") (analogous to the "parameters" in SS7) designed to indicate the caller's address. The user can populate the IE with any number or no number. Q.931 specifies that the digits part of the CPN IE is a variable length collection of IA5 (ISO 646) encoded fields. IA5 is very close to American Standard Code for Information Interchange ("ASCII").

Q: DOES UTEX PROVIDE ANY ANALOG SERVICE TO ANY CUSTOMER?

A: No.

Q: DOES UTEX PROVIDE ANY OLD-STYLE PBX TRUNK SERVICE TO OR ISDN PRI TO ANY PBX CUSTOMER?

A: No.

Q: DOES UTEX OFFER AND PROVIDE ANY OTHER KINDS OF INTERFACES FOR USE BY ITS ESP CUSTOMERS?

A: Yes. Our users can choose between several different kinds of physical layer (e.g., copper, coaxial, fiber) connections, and several different types of interface at the link layer. For example, we offer Ethernet and IP over TDM connectivity (*e.g.*, "DS1," "DS3", 100Base-TX and1000Base-TX Ethernet, *et cetera*). At the network layer, however, the tariff specifies and requires that the customer select an Internet Protocol ("IP") interface regardless of the physical and link layer method that is selected. Thus, all traffic, both physically and from a signaling layer, is required to be IP before it goes through the IGI POP.

Q: WHAT IS SESSION INITIATION PROTOCOL OR "SIP"?

A: SIP is an application layer protocol for establishing, terminating and modifying multimedia sessions. SIP messages are typically carried over Internet Protocol ("IP") networks. SIP can be used to negotiate a variety of multimedia sessions. When only audio media exchanged, the session is considered to be voice-based. SIP is a developing standard which follows the guidelines set out in the IETF RFC 2543 and 3261. It has also been standardized with modifications by many of the large standardizing bodies such as the 3rd Generation Partnership Project ("3GPP").

Q: DO YOU SUPPORT AND PROVIDE SIP INTERCOMMUNICATION?

A: Yes.

Q: IS SIP THE ONLY IP TELEPHONY PROTOCOL SUPPORTED BY UTEX?

A: No. UTEX also supports Media Gateway Control Protocol ("MGCP"), ITU H.248 ("MEGACO"), ITU H.323 and ISDN User Adaptation Layer ("IUA").

Q: DOES SIP INCLUDE A CONTROL PROTOCOL FOR ESTABLISHING INTERNET-BASED VOICE CALLS AND THEN TEARING THEM DOWN?

A: That is what SIP was created to do. It facilitates the initiation of "multimedia sessions" and, when appropriate, the termination of those sessions.

In the SIP world, we speak of "sessions" rather than "calls" and that is due to technical reasons as well as the way that the IP world looks at communications, in contrast to the worldview of those in "the legacy TDM world." The legacy TDM world looks at "circuits" and "calls" and "voice" with a focus on "minutes" as a billing opportunity. The IP world looks at sessions where information is exchanged in some form, whether it be text, sound or pictures or all three, where charging occurs typically on an "all you can eat" basis measured by capacity, demand, or throughput.

Nonetheless, yes, SIP has call control, and part of it includes a parameter which identifies the party requesting that the session be initiated for addressing purposes. It also, of course, has a parameter for the addressee information. Each of the participants will have some form of address. Per IETF RFC 3261, each participant is identified by a Uniform Resource Identifier ("URI") as specified in IETF RFC 2396. These identifiers are by definition not required to be in the form of an E.164 number, such as those assigned by NANPA. Even if the SIP user has configured the SIP client to populate a telephone like number for call-back purposes from the PSTN (as opposed to the SIP address or other address used to support routing of the packets to the IP end-point device) it could be any number, including the user's landline number, cell-phone number, unified messaging number or some form of non-geographic number. For this reason, the SIP URI or even a traditional telephone that is also provided by the SIP client does not provide any reliable indication of the user's "actual physical location" in relation to traditional local

calling areas. AT&T appears to agree. One of AT&T's own marketing brochures talks about the fading geographic relevance of telephone numbers:

> One of the ways that VoIP calls are unique is that the notion of geography begins to fade away. A phone number doesn't necessarily need to be linked to a specific geographic location. VoIP allows you to have telephone numbers that do not belong to the geographic area where the phone is physically located.[1]

Q: WHAT IS MEGACO?

A: The Gateway Control Protocol or Megaco/H.248 is a control protocol, used between a Media Gateway and a Media Gateway Controller in a IP enabled telephony network. It defines the necessary control mechanism to allow a Media Gateway Controller to control gateways in order to support voice/FAX calls between PSTN-IP or IP-IP networks. The protocol was the result of joint work of IETF and ITU. It is both defined by IETF's RFC 3525 (which obsoleted RFC 3015) and by ITU-T H.248-1. It acts as one implementation of and serves the same purposes as the Media Gateway Control Protocol, or "MGCP."

Q: WHAT IS MGCP?

A: MGCP is a protocol that that has a similar purpose to MEGACO. MGCP was a predecessor to MEGACO. MGCP is defined in RFC 3435.

Q: WHAT IS H.323?

A: H.323 is an umbrella recommendation from the ITU T that defines the protocols to provide audio-visual communication sessions on any packet network. It is a part of the H.32x series of protocols which also address communications over ISDN, PSTN or SS7. H.323 is commonly used to support VoIP and IP-based videoconferencing. Its purpose is thus similar to that of SIP.

[1] See http://www.business.att.com/content/productbrochures/OV-VTN_13283_V02_11-30.pdf.

H.323 was originally created to provide a mechanism for transporting multimedia applications over LANs but it has evolved to address the growing needs of VoIP networks. H.323 was a relatively early set of standards. It defined the basic call model as well as supplementary services needed to address business communication expectations. H.323 was the first VoIP standard to adopt IETF RFC 3550 Real-time Transport Protocol ("RTP") as a means of transporting audio and video over IP networks.

H.323 is based on the ITU-T Recommendation Q.931 protocol used with ISDN PRI and is suited for inter-working scenarios between IP and ISDN, respectively between IP and QSIG. A call model, similar to the ISDN call model, eases the introduction of IP Telephony into existing networks of ISDN based PBX systems. This allows for an easier migration towards IP based PBX systems at the enterprise level. Within the context of H.323, an IP based PBX functions like an H.323 Gatekeeper and provides supplementary services.

Q: WHAT IS IUA?

A: IUA is an IETF SIGTRAN specification for the encapsulation and transport of Q.921 messages across an IP network. It allows IP enabled switching stations to signal using Q.931 ISDN PRI without the need for underlying TDM facilities.

Q: ARE THERE OTHER VOIP-RELATED APPLICATIONS IN ADDITION TO THOSE YOU ADDRESS ABOVE?

A: SIP, MEGACO, MGCP, H.323, and IUA have generally accepted structures and are consensus or standards-based. But there are many other VoIP applications that are proprietary in nature. Skype is a good example. Skype is really more of an instant-messaging client than a conventional "VoIP application" because it provides the ability to mix voice with text and video and has whiteboard and file sharing capabilities. One of the optional features called Skype Out

provides the ability for the user to initiate a session with and end point on the PSTN, but it does not involve assignment or use of a NANPA number. There is a Skype address (Skype Name). As with all CPN, UTEX passes this information to AT&T Texas in exactly the form in which it is received from the customer, inter-working methods permitting.

There are many instant-messaging applications and clients that also do, or soon will, have the ability to initiate sessions with a PSTN end point. Since they do not have regular telephone numbers, they often cannot receive calls. One of the things we are trying to develop at UTEX is a function that will make non E.164 addresses accessible to PSTN end points. We also very much want to support call back capability using CPN-based services. There is absolutely no technical reason why the "CPN" must be a LERG-active geographic NANPA 10 digit number. Imposing such a requirement in fact creates interoperation issues and contributes to E.164 number exhaust.

Q: DOES UTEX POPULATE THE SS7 ISUP IAM CPN PARAMETER WITH A VoIP USER'S ADDRESSING INFORMATION?

A: The SS7 ISUP IAM CPN parameter is far more limited in its ability to carry addressing information than the SIP URI, or any URI for that matter. The ISUP CPN parameter can only convey up to 16 numeric digits of information. Because of our policy of not manipulating CPN in any form on transmission of a SIP originated call to AT&T Texas as a matter of principle, considerable loss of information will occur. Of course, AT&T Texas is claiming that much of this information is not "valid CPN." A more accurate way to characterize the CPN issues is that a proper inter-working solution has not been adopted by both parties. UTEX has proactively adopted a unilateral CPN policy per our tariff to serve until a proper technical solution has bi-lateral adoption. However, while UTEX has consistently and repeatedly attempted to engage AT&T Texas on the development and adoption of such a solution for years, AT&T Texas has

made no effort towards such a solution and is in fact actively obstructing any solution. Because of AT&T Texas' longstanding unwillingness to cooperate with UTEX, UTEX has developed a solution without the participation of AT&T Texas, and UTEX is pursuing that solution with the rest of the telecom and Internet industries, under acknowledgement of the FCC. Furthermore, it is possible to pass URI-like information in the Calling Party Number IE of Q.931. UTEX has also attempted on numerous occasions to initiate ISDN interconnection with AT&T Texas, pursuant to the ICA. PRI interconnection would have provided in principle a technically feasible method for passing Internet addressing to AT&T Texas.

Q: HOW DOES UTEX PROMOTE INTERNETWORKING AND NETWORK INTEROPERABILITY WITH ITS CPN POLICY?

A: UTEX informs all of its customers that per the tariff it does not manipulate caller identification information and particularly CPN. It also tells its customers that the customer should make every effort to promote network interoperability of CLASS CPN services (*e.g.* call back, call return, call block, caller ID) by providing a subscriber-identifying CPN parameter which would facilitate these network functions.[2] UTEX also understands that due to the nature of new technology, specifically Internet-based telephony endpoints, it is not possible or necessary to assign a 10-digit identifier for every originating terminal for which UTEX facilitates connectivity to the PSTN.

DPL ISSUES 46-49, 70, 71-83, 84-88, 94-100.

[2] This would occur in many instances where a user has both IP based services and some type of PSTN connection or representation. Examples include: 1) user quits any PSTN connection but ports a number to a VOIP gateway; 2) user has both PSTN and IP connection physically into the same device and when launching an IP based session represents the PSTN number on the call; 3) user has a PSTN connection and IP connection which use different media and different systems (i.e. a cell phone and an VOIP gateway) and when using the VOIP gateway the user populates the PSTN number of the cell phone on the call session. In each instance "identification and caller ID" serve the intended purpose.

Q: WHAT PERCENTAGE OF THE TRAFFIC ON YOUR NETWORK IS INTERLATA?

A: Zero. It is impossible to route inter-LATA traffic on our network. That and non-manipulation of CPN is one of the fundamental design requirements of the UTEX network. All of our customers meet us in the LATA in which the PSTN end point involved in a call session is "located" for routing purposes. We do not route any call to any LEC where the LEC will have to transport the call out of the LATA. Our end user ESP customer has a presence in the same LATA as the PSTN user involved in the call session. All of the traffic we hand off to AT&T Texas is therefore "intra-LATA." As Mr. Feldman also explains, all of the traffic was designated as ESP traffic, thus while our users may have interstate applications, our responsibility as a Carrier is to treat the ESP customer as and "End User" and to treat their traffic as "Local" for rating and routing purposes. This is also why we have consistently filled out our trunk orders with a 100% local usage or a 100 PLU.

DPL ISSUES 94-95.

Analysis of AT&T Data in Support of Billings

Q: PLEASE DESCRIBE THE CDR DATA FILES THAT YOU HAVE RECEIVED FROM AT&T TEXAS.

A: UTEX has received three distinct datasets as part of three different data transfers. In the first data transfer, UTEX received summarized AMA Call Code 720 records in the physical form of magnetic tapes in early 2006. The second data transfer occurred on or about February 19, 2007 and included data of two types: SS7 ISUP call tracing data and AMA call records. Both the first and second data transfers involved specific periods, and not the entire period involved in the disputed billings in this case. UTEX received a third collection of AMA and SS7 data from

AT&T Texas in September 2007. This third collection, while still incomplete by date, included a superset of the AMA and SS7 information contained in the second transfer.

Q: WAS THE DATA COMPLETE PER YOUR UNDERSTANDING OF WHAT WOULD BE TRANSFERRED?

A: For the tape data there was no prior expectation of the content. For the second data transfer, the expectation was set pursuant to an understanding between UTEX's counsel and AT&T Texas' counsel as expressed in the contents of an email from AT&T Texas counsel dated January 19, 2007. The actual delivery was considerably delayed. But even then UTEX did not receive all the ISUP data that we expected. In particular we did not receive data for October 23-31, 2006; November 1, 2006, December 2-31, 2006 or January 1-18, 2007. With the third data transfer, UTEX still has not received AMA from November 2006 to February 2007.

Q: WHAT STATISTICAL CONCLUSIONS ARE YOU PRESENTING IN YOUR ANALYSIS OF THE AT&T DATA?

A: None. I am presenting direct measurements of the data.

Q: AT&T IS INTENT ON SAMPLING THEIR OWN DATA, WHILE UTEX HAS PERFORMED DIRECT MEASUREMENTS. DOES UTEX POSSESS COMPUTING FACILITIES THAT ARE UNAVAILABLE TO AT&T?

A: UTEX can parse, process and classify one month of AT&T AMA in approximately seven minutes on a desktop computer. Given more slightly sophisticated commodity server hardware, that time could be likely be brought down a factor of 4.

Q: DID YOU PROVIDE UTEX SWITCH DATA TO MR. LEWIS?

A: Yes. I provided him information generated by our switch in association with the delivery of traffic to AT&T Texas for termination.

Q: IS THIS INFORMATION GENERATED IN THE ORDINARY COURSE OF BUSINESS?

A: Yes.

Q: ARE THE SYSTEMS THAT GENERATE AND STORE THIS INFORMATION RELIABLE?

A: Yes.

Q: ARE THESE RECORDS MAINTAINED IN A SECURE LOCATION?

A: They are maintained under my control, and access to the original of the information is strictly limited. I can make a copy, and if the information is needed that is what I do. The original information is not changed or moved.

Q: DID YOU PULL THE RAW ORIGINAL DATA FROM THESE SYSTEMS AND SUPPLY THE RAW DATA TO MR. LEWIS?

A: I pulled the raw data and performed some simple summations to aggregate individual call session information to a month. That is the kind of operation I routinely perform as part of my job duties. I then supplied the summaries to Mr. Lewis.

Q: IS THE INFORMATION YOU SUPPLIED TO MR. LEWIS RELIABLE AND INDEPENDENTLY VERIFIABLE?

A: Most certainly. The raw data still resides in storage, and the arithmetic operations that I applied can be performed with a simple spreadsheet program. The more sophisticated data manipulation was performed using computer programs that I wrote. We would make those programs available to anyone who wished to reproduce our results.

Analysis of AT&T AMA Data

Q: CONCERNING THE AMA TAPE DATA FROM 2006, WHAT SPECIFICALLY WERE YOU LOOKING FOR IN THE DATA?

A: AT&T Texas had made a claim that (for at least some period) 20% of UTEX's traffic contained "6-zero CPN." We knew from our own measurements that this was not true.

Q: WHAT DID YOU FIND?

A: It appears that at least two of AT&T Texas' reporting systems were on every call independently removing the SS7 information we were populating and inserting six zeros in the field in the AMA recordings they use to represent CPN for every call. Their systems were causing the problem. This of course invalidated any claim of a particular percentage of six-zero CPN traffic.

Q: SO ARE YOU SAYING THAT AT&T TEXAS' "NO CPN" CLAIMS WERE INITIALLY CAUSED BY A MALFUNCTION OF THEIR OWN SYSTEM, AND WAS NOT DUE TO ANY FAILURE BY UTEX TO POPULATE THE CPN PARAMETER?

A: Yes.

Q: IS THERE ANYTHING ABOUT AMA FORMAT WHICH IMPEDES AUDITING AND MEASUREMENT OF CPN "VALIDITY" USING AMA RECORDINGS?

A: Per GR-1100-CORE. Billing AMA Format ("BAF") records capture ISUP CPN in a 15-digit fixed-width field with left zero-padding. This means that in call sessions where the information we receive and then populate in the CPN parameter has a leading zero that information is represented in AT&T Texas' billing systems as information that is "shorter" than the information that was actually conveyed in the signaling (SS7). AT&T Texas then ignores all the zeros it has just inserted for purposes of its "validity test," and claims that the information we send is "invalid". In other words, AT&T Texas is assuming that all leading zeros were inserted

by its system and were not passed to AT&T Texas by UTEX in SS7 signaling. We see a significant amount of Internet originated traffic that possesses a calling party identifier but has a leading zero.

Analysis of AT&T SS7 Data

Q: CONCERNING THE ISUP DATA PRODUCED BY AT&T IN FEBRUARY 2007 WHAT, SPECIFICALLY WERE YOU LOOKING FOR DURING YOUR ANALYSIS?

A: I looked for consistency with our own data, in terms of total attempts, minutes, and statistical consistency.

Q: WHAT DID YOU FIND?

A: The only two months which contained a sufficient number of records for analysis were July 2006 and November 2006. The data for those months have different consistency issues.

Q: WHAT WERE THE PROBLEMS WITH THE JULY 2006 ISUP FROM THE FEBRUARY 2007 DATA TRANSFER?

A: The July 2006 data had two issues. First, the statistical analysis showed an abnormal number of calls in the 12 to 18 hour range. The statistical distribution does not match with either AT&T Texas AMA data or the data that we have for that period.

Q: WHAT WERE THE PROBLEMS WITH THE NOVEMBER 2006 ISUP DATA FROM THE FEBRUARY 2007 DATA TRANSFER?

A: In contrast to the July 2006 data, the statistical distribution of the AT&T ISUP data showed good correlation with the UTEX data. However, there was a significant disparity in the overall number of minutes. The ISUP data overall minutes exceeded that measure by UTEX. On further examination, it appears that calls which are shown to be incomplete (*i.e.* a length of zero) in the UTEX data appear to contribute between greater than zero and less than or equal to 100

seconds in the AT&T ISUP data. It is possible to conclude that AT&T Texas systems are somehow either purposefully or inadvertently assessing a significant number of minutes on calls that were not in fact completed, and had zero minutes but were nonetheless billed using the inflated minute count. This is clearly erroneous. Subsequent analysis on the data exchanged in September 2007 points to another possible mechanism for this disparity.

Q: HAVE YOU SEEN THE AT&T TEXAS DOCUMENT WHERE AT&T TEXAS HAS ADMITTED AN ERROR IN ITS BILLING SYSTEMS THAT USED "CARRIER ELAPSED TIME" RATHER THAN "CONVERSATION TIME" WHICH LED TO OVERBILLING OF FACILITIES-BASED CLECs?

A: Yes.

Q: IS THIS A POSSIBLY THE SAME ERROR YOU ADDRESS ABOVE?

A: It is the same kind of error, but I do not think is it is the same error. The AT&T Texas document mentions "call code 720 terminating records" as the source of the error they admit. That is AMA. The error I observed relates to SS7, not AMA. AT&T Texas may well be doubly overcharging minutes. There are definitely problems with the billing system that go beyond the initial SS7 and AMA recording process. The rest of the process where the initial AMA record is mediated, processed, converted to other formats and billing engine routines are run on the processed data has significant issues as well.

We have requested that the Arbitrators order AT&T Texas to provide all of its data as well as all of its documentation and systems logic but we have not seen all the documentation or all of the call data. Only when I can look into all of the black boxes can I determine how many problems there are in AT&T Texas' systems. I know there are at least two processing issues. I

strongly suspect there are quite a few more. That is more than likely why AT&T did not produce all of its billing system logic and documentation.

Q: WERE THESE THE ONLY PROBLEMS WITH THE ISUP DATA FROM THE SEPTEMBER 2007 DATA EXCHANGE?

A: No, far from it. As I said, in fact, we found a much more egregious problem when we attempted to match the AT&T SS7 data to the AT&T AMA on a call-by call basis.

Q: DID UTEX ATTEMPT TO MATCH AT&T AMA TO AT&T SS7 DATA ON A CALL-BY-CALL BASIS?

A: Yes. UTEX attempted to match calls presented in the SS7 data to calls in the AMA data on a call by call basis. UTEX was particularly interested in the result because of statements made by Mr. Peter Andrews under oath that this exercise could be accomplished within millisecond accuracy. However, UTEX found that this task was nearly impossible within a *thirty second* accuracy. To perform the search, UTEX used a search tuple of (Calling Party Number, Called Party Number, Call Duration), which had the property of being invariant and insensitive to relative timing differences between the networks. First, UTEX determined the relative timing difference between the datasets. This value, which takes into account time zone differences as well as basic synchronization mismatch, was used as a starting point for searching. When UTEX attempted to match call durations within one millisecond, and the call start time within the fixed offset plus or minus five minutes, UTEX was only able to match 1% of calls. When call duration tolerance of thirty seconds was used instead, UTEX was still only able to match on average roughly 50% of calls.

On further investigation, UTEX discovered that a significant number of calls in the SS7 dataset contain negative call durations, i.e. the timestamp for call termination precedes the

timestamp for call initiation. Because of this finding, UTEX concluded that grave discrepancies existed between the SS7 and AMA datasets, and further analysis was not conducted.

Analysis of AT&T AMA Data

Q: WHAT OTHER ANALYSIS DID UTEX PERFORM ON THE DATA RECEIVED IN THE SEPTEMBER 2007 DATA EXCHANGE?

A: UTEX performed a series of tests to establish once and for all a set of facts to which both parties could agree in regards to the content of the data. Some of these tests involved an effort by UTEX to "recreate" the AT&T TEXAS billing system using documents available from discovery, so that we could hopefully finally make sense of the AT&T Texas data and particularly the AT&T Texas billings to UTEX. These tests were as follows:

Test	Description	Datasets Analyzed	Results
1	Total call seconds in dataset	UTEX & AMA	Table 1
2	Total completed calls in dataset	UTEX & AMA	Table 1
3	Total completed calls with CPN content length between 1 and 5 digits, inclusive and thus treated by AT&T Texas as "Invalid" CPN content and rated as IntraLATA Toll by AT&T Texas	UTEX & AMA	Table 2
4	Total completed calls with CPN content length between 6 and 10 digits, inclusive, which AT&T Texas utilizes to "jurisdictionalize" the call for rating purposes	UTEX & AMA	Table 2
5	Total completed calls with CPN content length greater than 10 digits and thus treated by AT&T Texas as "Invalid" CPN content and rated as IntraLATA Toll by AT&T Texas	UTEX & AMA	Table 2
6	Total completed calls with no CPN content ("Empty") presented and thus treated by AT&T Texas as "Invalid" CPN content and rated as IntraLATA Toll by AT&T Texas	UTEX & AMA	Table 2
7	Total call seconds with "Empty" CPN content information presented thus rated by AT&T Texas as "Invalid" per AT&T Texas billing specification	UTEX & AMA	Table 3

Test	Description	Datasets Analyzed	Results
4a	Total call seconds (subset of Test 4 above) rated by CPN representation as Intrastate InterLATA per AT&T Texas billing specification	UTEX & AMA	Table 3
4b	Total call seconds (subset of Test 4 above) rated by CPN representation as Interstate InterLATA per AT&T Texas billing specification	UTEX & AMA	Table 3
4c	Total call seconds (subset of Test 4 above) rated by CPN representation as inside the same LATA and treated as "Bill and Keep" per AT&T Texas billing specification	UTEX & AMA	Table 3
8	Total call seconds not fitting inside of 4a thru 4c above, which creates a result of "Unknown" jurisdiction and thus rated by AT&T Texas as "Invalid" per AT&T Texas billing specification	UTEX & AMA	Table 3
9	Call by call record matching of AT&T SS7 with AT&T AMA within millisecond resolution	AMA & SS7	No data presented

Each of these tables are attached as Appendix Telfer 1 to my testimony.

Q: CAN YOU DESCRIBE THE PROCESS BY WHICH YOU ATTEMPTED TO RE-CREATE THE AT&T TEXAS BILLING PROCESS?

A: Yes. UTEX attempted to re-create the AT&T billing process which generated the bills to UTEX. We do not agree that the billing system correctly implements the ICA, but we wanted to try to apply the rules AT&T says it applied, in the way it says it applied them. This was done using materials available in discovery. UTEX followed as accurately as possible the billing methods described in (RFP-1-9-18, RFP-1-9-67 ff) for the tests that involved the "Jurisdictionalization" of CPN. This process involved the creation of a number of computer programs to do fast lookups of calling and called party information in a lookup table populated with information from the Local Exchange Routing Guide Table 6 ("LERG6"). As such, the following rules were used for call categorization:

1) If the call passed no CPN information then it was labeled as "Empty" per Test 7. For UTEX data, the CPN content information was taken directly from the switch recording. For the AT&T Texas AMA data, the absence of a BAF Module 164 record or Table 55 (Significant Digits in Next Field) equal to zero indicate "Empty." Otherwise,

2) If the CPN parameter contained less than six digits, or more than ten digits, the call was labeled as "Invalid" per Test 8. Otherwise

3) A table lookup was performed on the available digits of the CPN parameter to determine the originating LATA of the CPN. This data was populated from the Local Exchange Routing Guide Table 6 ("LERG6"). If the lookup did not return a result, i.e. the available digits did not represent a NPA-NXX or NPA-NXX-X present in LERG6, then the call was labeled as "Invalid" per Test 8. Otherwise,

4) If the CPN lookup returned a result, then a table lookup was performed on the Called Party Number. If the LATA of the Called Party Number and the LATA of the CPN were identical, the call was labeled "Bill and Keep", per Test 4c. Otherwise,

5) If the LATA of the Calling Party Number and the LATA of the CPN were different, and the respective LATA States were identical, the call was labeled "Intra State InterLATA" per Test 4a. Otherwise,

6) The call was labeled "Inter State InterLATA" per Test 4b.

Q: WHAT CONCLUSIONS CAN YOU DRAW ABOUT THE COMPLETENESS OF THE AMA DATA?

A: AT&T did not present data for the periods of 12/2006 to 2/2007, and the data from 11/2006 is incomplete. In the months in which they did present data, only the months of 3/2007, 4/2007 and 6/2007 show good agreement in terms of call volume. In the other months, there is a discrepancy in total volume. This is illustrated in Table 1.

Q: WHAT CONCLUSIONS CAN YOU DRAW ABOUT THE ACCURACY OF THE AMA DATA?

A: There is a particularly troubling trend in the data for the periods of 3/2007 onward. In that period, the AT&T Texas AMA show a greater number of "Empty CPN" call seconds than

the UTEX switch recordings. As stated previously, there was decent to good agreement in overall call volume in that period.

Q: WHAT CAN YOU CONCLUDE?

A: As stated above, UTEX measured "Empty CPN" by looking for the presence of a Module 164 record in the AMA data, or a significant digit length greater than zero in the Module 164 record. Since the volume of the AMA exceeds the volume of the UTEX switch recordings, it is my conclusion that Module 164 records are either being stripped or are not being recorded in the AT&T Texas AMA. This obviously has a tremendous impact both on the 90% CPN calculation and on the magnitude of AT&T's No CPN billings.

Q: IN YOUR OPINION CAN THE AMA AND ISUP DATA YOU HAVE SEEN SO FAR FORM THE BASIS FOR RELIABLE OR REPRESENTATIVE BILLINGS FOR EITHER "NO CPN" OR "INTERLATA ACCESS"?

A: No. The AT&T AMA data shows troubling inconsistency with the UTEX switch recording, and in my opinion, the AT&T SS7 data is completely unreliable. The data does not support the billings UTEX has received with regard to the "no CPN" charges because it does not allow the independent development of a "no CPN" percent to which Attachment 12 § 7.5 can be applied (if it is to be applied). This data most certainly cannot validate AT&T Texas' percent for any of the months. Separately and in addition, if the AT&T Texas data I was provided was used to generate a bill based on usage, the bill was much too high, and completely incorrect because the minutes are far overstated in relation to the minutes our records show we sent.

Analysis of Claims Made By Bill Code In Regards to Empty CPN Percentage in UTEX Traffic

Q: IN AN ATTACHMENT "UTEXINWARDNOCPN.XLS" FROM JANUARY 2007, MR. COLE PRESENTED SAMPLED DATA TO SUPPORT CONCLUSIONS ABOUT

CPN DELIVERY. IN PARTICULAR, MR. COLE ADVANCES THE ARGUMENT THAT OVER 10% OF UTEX CPN IS "EMPTY", AND THEREFORE THE 90% CPN CRITERION IS TRIVIALLY SURPASSED. DID YOU PERFORM ANALYSIS TO VERIFY THAT RESULT?

A: Yes.

Q: WHAT WERE THE RESULTS?

A: We were only able to cross check this data against UTEX switch recordings, since AT&T had not produced AMA data for that period at the time of the test (10/10/2007). We found the following

	4 Digit CPN	7 Digit CPN	10 Digit CPN	Empty CPN	Other CPN	Total
UTEX	4094	2004	638873	25350	60740	731061
ATT	4068	1246	554706	83105	0	643125
ATT % of UTEX	99%	62%	87%	328%	0%	88%

Q: WHAT CAN YOU CONCLUDE?

A: Mr. Cole is misusing the term "Empty". UTEX defines empty CPN as CPN which contains no digits of information. The analogue for AT&T AMA is either the absence of a Module 164 record, or a value of zero in the number of significant digits field (Table 55). These convey the correct meaning of "Empty" which is that no information was passed. Mr. Cole is using the term to represent something else altogether. RFP 1-9-192 specifically states that in the determination of CPN/ANI for manipulation within the AT&T billing system, the following procedure is to be used:

"CPN/ANI (position 243) – use Module 164, table 76 (number identity table). If no Module 164 is available or Originating number is not 10 digits, then zero fill. If 2 Module 164s are available, use hierarchy assigned in PMT 220437".[RFP-1-9-192]

Furthermore, AT&T states numerous times in production that AT&T discards CPN information if it is less than six digits or more than eleven digits. Therefore, when processed by AT&T, the 60,740 calls that UTEX identifies as Other CPN, the AT&T billing system either explicitly zeroes out the actual CPN that was presented in the signaling, or ignores the digits altogether. In fact, if you add the UTEX Empty CPN and the Other CPN, the total volume is 86,090, which is much closer to Mr. Cole's figure of 83,105. Mr. Cole is attempting to convince people that UTEX is passing less signaling information that is actually being presented.

DPL ITEMS 6, 8, 10, 13, 34, 40, 42, 46-69, 71-88, 89-91, 93, 94-100.

Q: IN THE ABSENCE OF COOPERATION FROM AT&T, HAS UTEX TAKEN STEPS TOWARD DEVELOPING A MUTUAL BENEFICIAL CPN POLICY?

A: UTEX has taken primarily three steps toward a new CPN policy. The first of these steps was taken near the time of the AT&T - UTEX joint CPN testing in 08/2005. After the test procedure and subsequent analysis, AT&T appeared to be satisfied with the CPN that was being sent by the UTEX network. In particular, they commented on a noticeable different in CPN content subsequent to one of UTEX's customers no longer delivering traffic from its largest customer, Vartec Telecom. However we were unsatisfied with the situation given that AT&T still refused to engage us in discussions about CPN policy on a going-forward basis. As a result, UTEX decided to amend our tariff to include a new CPN policy which stipulated that: (1) We would not under any circumstances manipulate the CPN that was received from our customers; (2) We would do everything possible to promote network interoperability by advocating CPN representation that did not conflict with existing PSTN numbering, where traditional 10-digit NANPA numbering was not available or desired for a given IP originating endpoint; and (3) We would advocate the passage of as much data is possible, even if that data looked unconventional in a standard PSTN billing or routing context, as long as it served to somehow identify the

originating endpoint. UTEX took these steps in an attempt to create a business and operational certainty that was lacking due to the bad faith or non-negotiations of AT&T. Little did we know that ironically, our new policies would exacerbate our CPN issues with AT&T, and expose us to additional risk vis a vis AT&T's nacient Access Over Local Program.

In a second step, UTEX developed a technical solution to the Phantom Traffic Problem that is alleged by AT&T and other Missoula Plan supporters. This solution proposes the creation of a new kind of tele-traffic peering network for the sole purpose of directly connecting end users. This solution is called the Universal Tele-traffic Exchange ("UTEx"), and has been submitted for consideration by the FCC in the Missoula proceeding.

The third step taken by UTEX is the creation of a new service offering for the sole use of Enhanced Service Providers. This product provides NANPA numbers to responsible ESPs for use in the originating information messages, particularly for the use of the number in the CPN field in SS7 signaling. We came up with this solution in addition of the UTEx because while the UTEx provides an elegant and powerful solution to the problem, it in principle can place technological requirements on certain incumbents, who historically are reticent to invest and adopt new technology. Our 500 number service requires no technical modifications to the network, only that the operators load the routing as they would load any other 10-digit NANP number.

Q: HAVE YOU OBTAINED THESE 500 NUMBERS, OR IS THIS SOMETHING YOU HAVE PLANNED TO DO?

A: We have already obtained them. In fact, we have already notified AT&T multiple times of the NANPA allocation, and requested that they be entered into routing. Unfortunately, AT&T has refused without much justification.