

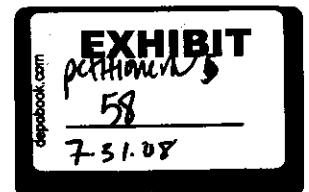
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STATE OF SOUTH DAKOTA
PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE PETITION OF)	
MCCOOK COOPERATIVE TELEPHONE)	Docket No. TC07-112
COMPANY. FOR ARBITRATION)	
PURSUANT TO THE)	DIRECT TESTIMONY
TELECOMMUNICATIONS ACT OF 1996)	
TO RESOLVE ISSUES RELATED TO)	OF
THE INTERCONNECTION)	
AGREEMENT WITH ALLTEL, INC.)	LARRY D. THOMPSON
)	
)	

**DIRECT TESTIMONY OF LARRY THOMPSON
ON BEHALF OF
MCCOOK COOPERATIVE TELEPHONE COMPANY**

- 1 **Q1. Please state your name, employer, business address and telephone number.**
- 2
- 3 A1. My name is Larry Thompson. I am the Chief Executive Officer of Vantage Point
- 4 Solutions, Inc. ("Vantage Point"). My business address is 2211 North Minnesota
- 5 Street, Mitchell, South Dakota, 57301.
- 6 **Q2. On whose behalf are you testifying?**
- 7
- 8 A2. I am testifying on behalf of McCook Cooperative Telephone Company
- 9 ("McCook"). Based on my experience working with McCook for over 10 years, I
- 10 know that McCook provides local telephone exchange service and exchange
- 11 access services in South Dakota and is engaged in the provision of general
- 12 telecommunications services in the State of South Dakota subject to the
- 13 jurisdiction of the South Dakota Public Utilities Commission ("Commission").



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1 **Q3. Generally, what types of services does Vantage Point perform?**

2

3 A3. Vantage Point is a telecommunications engineering and consulting company
4 whose services include long range communication plans and feasibility studies,
5 emerging technology analysis and migration studies, telecommunications
6 electronic equipment engineering, outside plant engineering, field services
7 engineering and regulatory consulting.

8 **Q4. What are your duties and responsibilities at Vantage Point?**

9

10 A4. I am responsible for providing consulting and engineering services to clients in a
11 wide array of technical and regulatory areas associated with telecommunications.
12 Our client base consists of small Independent Telephone Companies such as
13 McCook. We have more than 80 fulltime employees on staff. I am also
14 responsible for the normal duties you would expect from the chief executive
15 officer for a company of our size.

16 **Q5. What is your educational background?**

17

18 A5. I have a Bachelor of Arts in Physics from William Jewell College in Liberty,
19 Missouri, and both Bachelors and Masters degrees in Electrical and Computer
20 Engineering from the University of Kansas in Lawrence, Kansas.

21 **Q6. Do you hold any professional engineering licenses?**

22 A6. Yes. I am a licensed professional engineer in Colorado, Georgia, Iowa, Idaho,
23 Indiana, Michigan, Minnesota, Missouri, Nebraska, New York, Ohio, South
24 Dakota, Utah, Washington, Wisconsin and Wyoming. I am also a member of the
25 National Council of Examiners for Engineering and Surveying (NCEES).

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1 **Q7. Do you have a resume of your experience?**

2 A7. Yes, it is attached to my testimony as Exhibit LT-D-1.

3 **Q8. What is the purpose of your direct testimony?**

4

5 A8. The purpose of my direct testimony is to provide technical and regulatory facts
6 relating to the Arbitration¹ between McCook and Alltel Communications, Inc.
7 (Alltel). Specifically, I will provide information relating to Issue 2 identified in
8 the Petition for Arbitration for McCook (referred to herein as the "Petition").
9 This issue was presented in the Petitions as follows: "What is the appropriate
10 Percent InterMTA Use Factor to be applied to non-IntraMTA traffic exchanged
11 between the parties?"

12 **Q9. Why is it necessary to establish an InterMTA Use Factor in conjunction with**
13 **an interconnection agreement between an incumbent local exchange carrier**
14 **("ILEC") such as McCook and a commercial mobile radio service ("CMRS")**
15 **provider such as Alltel?**

16

17 A9. Alltel terminates different types of traffic to McCook intermingled together on the
18 same facilities. The number of Minutes of Use ("MOU") for each of two basic
19 types of traffic must be determined in order to calculate the correct compensation
20 due McCook. The two basic types of mobile-to-land traffic that Alltel terminates
21 to McCook are: (a) intraMTA or local MOUs which are subject to reciprocal
22 compensation pursuant to 47 U.S.C. § 251(b)(5) and 47 C.F.R. § 51.701; and (b)
23 interMTA or non-local MOUs which are subject to switched access charges
24 pursuant to 47 U.S.C. § 251(g). The interMTA MOUs or non-local MOUs that
25 are both intrastate MOU and interstate MOU, therefore should be further divided

¹ In The Matter of the Petition Of McCook Cooperative Telephone Company. for Arbitration Pursuant to the Telecommunications Act Of 1996 To Resolve Issues Related to The Interconnection Agreement With Alltel, Inc. (referred to herein as the "Petition").

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1 between intrastate interMTA MOUs that are subject to intrastate switched access
2 tariff rates and interstate interMTA MOUs that are subject to the interstate
3 switched access tariff rates.

4 **Q10. Before we proceed with further detailed discussion of the traffic types that**
5 **you just described, by way of background, could you provide a definition of**
6 **an MTA and the relation of such term to the State of South Dakota?**

7
8 A10. Yes. Major trading area or “MTA” is a term originally developed by Rand
9 McNally to describe geographic areas that appeared in the 1992 Rand McNally
10 Commercial Atlas and Marketing Guide. Except for some minor modifications,
11 the Federal Communications Commission (“FCC”) adopted the Rand McNally
12 MTAs to define the geographic areas for some of the wireless licenses in the
13 United States. The resulting 51 MTAs used by the FCC are shown on Exhibit
14 LT-D-2. The MTAs in South Dakota and the surrounding states are highlighted
15 in Exhibit LT-D-2 for emphasis.

16 Exhibit LT-D-3, shows the state of South Dakota along with the applicable MTAs
17 boundaries. MTA-12, consisting generally of the eastern two-thirds of the State,
18 is the Minneapolis MTA. MTA-22, consisting generally of the western one-third
19 of the State, is the Denver MTA. MTA-32, consisting of the southeastern corner
20 of the State, is the Des Moines MTA.

21 **Q11. What MTA are the McCook exchanges located in?**

22 A11. All of McCook’s exchanges are in the Minneapolis MTA-12. This can also be
23 seen in Exhibit LT-D3.

1 **Q12. Why are MTAs significant when considering CMRS traffic terminating to an**
2 **ILEC?**

3 A12. A CMRS call that originates and terminates in the same MTA is referred to as an
4 intraMTA call. Likewise, a CMRS call that originates in one MTA and
5 terminates in a different MTA is referred to as an interMTA call. The FCC rules
6 state that interMTA calls are access calls (toll calls) and intraMTA calls are local
7 calls. The compensation due the ILEC from the CMRS carrier is different for an
8 access call than it is for a local call.

9 **Q13. Using Exhibit LT-D-3, can you give examples of an intraMTA and an**
10 **interMTA call?**

11
12 A13. Absolutely. However, before providing examples, I believe it would be helpful to
13 provide the FCC's guideline for establishing the location of the mobile phone
14 customer. In its *First Report and Order*, FCC 96-325 (Interconnection between
15 Local Exchange Carriers and Commercial Mobile Radio Service Providers),
16 paragraph 1044, the FCC stated: "For administrative convenience, the location of
17 the initial cell site when a call begins shall be used as the determinant of the
18 geographic location of the mobile customer." Thus, if a CMRS customer
19 originates a mobile call from an initial cell site located in Aberdeen, South Dakota
20 (Minneapolis MTA-12) to a McCook landline customer located in the Salem,
21 South Dakota local exchange area (also located in the Minneapolis MTA-12), this
22 call would be considered an intraMTA call, since both the calling CMRS
23 customer (at the start of the call) and the called McCook customer are located in
24 the Minneapolis MTA-12. Likewise, if a CMRS customer originates a mobile
25 call from an initial cell site located in Minneapolis, Minnesota (Minneapolis

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1 MTA-12) to a McCook landline customer located in the Salem, South Dakota
2 local exchange area (also located in the Minneapolis MTA-12), this call would
3 also be considered to be an intraMTA call, since it also originates (based on the
4 initial cell site location) and terminates within the same MTA.

5 However, if a CMRS customer originates a mobile call from an initial cell
6 site located in Rapid City, South Dakota (which is within Denver MTA-22)
7 making a call to a McCook customer located in the Salem, South Dakota local
8 exchange area (which is within the Minneapolis MTA-12), this call would be
9 considered an interMTA call since the CMRS call originated (at the start of the
10 call) in one MTA (Denver MTA-22) and terminated in a different MTA
11 (Minneapolis MTA-12). Additionally, the call in this example both originates and
12 terminates inside South Dakota, so it is considered an *intrastate* interMTA call. If
13 a CMRS customer originates a call from an initial cell site located in Denver,
14 Colorado (which is within Denver MTA-22) to a McCook customer located in the
15 Salem, South Dakota local exchange area (which is within the Minneapolis MTA-
16 12), this call would be considered an *interstate* interMTA call since the call not
17 only crosses an MTA boundary (Denver MTA-22 to Minneapolis MTA-12), but it
18 also originates and terminates in different states (Colorado originated and South
19 Dakota terminated).

20 **Q14. Have you reviewed the terms of the interconnection agreement attached to**
21 **the Petitions filed in these proceedings as Exhibit A, and if so, do you agree**
22 **that the definition of “interMTA Traffic” that appears on page 3 thereof is**
23 **clear and accurate?**

24
25 A14. Yes, I have reviewed the interconnection agreement in Exhibit A, and more
26 specifically the definition to which you refer. The interconnection agreement

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1 defines interMTA traffic as wireless to wireline calls that originate in one MTA
2 and terminate in another MTA, based on the location of the initial cell site serving
3 the wireless end user at the beginning of the call and the location of the end office
4 serving the wireline end user. This definition is consistent with my understanding
5 of the requirements of FCC orders on this subject and is the generally accepted
6 definition of interMTA traffic exchanged between customers of wireless and
7 wireline carriers.

8 **Q15. Why is it necessary for a CMRS provider such as Alltel and an ILEC such as**
9 **McCook to establish an interMTA Use Factor in their reciprocal**
10 **compensation agreement?**

11
12 A15. As discussed previously, the ILEC is compensated differently for interMTA and
13 intraMTA traffic. CMRS providers such as Alltel often choose to deliver
14 interMTA traffic intermingled with intraMTA traffic to the ILEC over the same
15 facilities rather than sending this traffic through an interexchange carrier (IXC).
16 Unfortunately, it is not possible for the ILEC to determine the location for the
17 CMRS caller based on the signaling information delivered by the CMRS provider.
18 Since the ILEC cannot determine the CMRS caller location, it is not possible for
19 the ILEC to determine the appropriate compensation applicable to each individual
20 call. Because of this, CMRS providers and ILECs often agree upon an InterMTA
21 Use Factor that can be applied to the total MOUs that are terminated by the
22 CMRS provider to the ILEC. An accurate InterMTA Use Factor ensures that the
23 ILEC is properly compensated for the CMRS originated traffic that is terminated
24 to the ILEC's landline customers. It is also important that the ILEC be able to
25 accurately divide the interMTA traffic into interstate and intrastate jurisdiction so

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1 the ILEC can be properly compensated for the interstate and intrastate switched
2 access portions of the interMTA traffic, since the tariff rates applicable to each
3 traffic type (jurisdiction) are different for McCook.

4 **Q16. Since the exact location of the wireless caller cannot be determined for each**
5 **individual call from the SS7 signaling, how is the InterMTA Use Factor**
6 **determined?**

7
8 A16. Since the originating carrier (the CMRS carrier) does not provide signaling
9 information to the terminating carrier (the ILEC) that is adequate to determine
10 whether the call in question is an interMTA or intraMTA call, it is often necessary
11 to perform a traffic study to determine the InterMTA Use Factor. Performing
12 such a study is consistent with the FCC rules. Again referring to paragraph 1044
13 of the FCC's *First Report and Order* (Interconnection between Local Exchange
14 Carriers and Commercial Mobile Radio Service Providers), the FCC stated: "We
15 conclude, however, that it is not necessary for incumbent LECs and CMRS
16 providers to be able to ascertain geographic locations when determining the rating
17 for any particular call at the moment the call is connected. *We conclude that*
18 *parties may calculate overall compensation amounts by extrapolating from traffic*
19 *studies and samples.*" (emphasis added)

20 **Q17. Is there more than one methodology that can be used to establish an**
21 **InterMTA Use Factor?**

22
23 A17. Yes, there are three methods I am familiar with that can be used to determine an
24 InterMTA Use Factor. They are (1) the Signaling System 7 or "SS7" method, (2)
25 the Call Detail Record or "CDR" method and (3) the Point of Interconnection or
26 "POI" method. I will discuss each briefly below.

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1 (1) The SS7 method relies on the information that is available in the SS7
2 protocol. SS7 is the industry standard signaling protocol for inter-carrier
3 communications. SS7 network equipment can be used to monitor and record the
4 SS7 messages exchanged between the CMRS and ILEC networks. These
5 messages can be recorded by SS7 network equipment and be post-processed to
6 estimate the number of interMTA and intraMTA MOU. Unfortunately, carriers
7 are not required to populate the SS7 message with any information that would
8 allow the ILEC to determine the location (initial cell site) of the CMRS customer
9 (calling party). Therefore, the SS7 analysis technique uses the CMRS customer's
10 NPA-NXX to estimate the location of the CMRS customer. Assuming the CMRS
11 carrier is populating the SS7 message properly, this method does not require the
12 cooperation of the CMRS carrier as the NPA-NXX of the calling and called party
13 should always be passed in the SS7 record.

14 (2) The CDR method uses signaling information that is available internal to
15 the CMRS's switching network. The CDR data includes the location of the
16 wireless caller at the initiation of the call (or the location of the initial cell site), so
17 the interMTA calls can be more accurately identified. For example, the Lucent
18 Technologies 5ESS wireless switch can identify the cell site number as part of the
19 Automatic Message Accounting ("AMA") setup internal to the switching system
20 per Lucent Table 2003 – Radio/Channel/Cell Information.² Similarly, the Nortel
21 Network MTX wireless switch identifies the originating trunk group from a
22 specific cell site location as a field in the AMA recording called the First

² Lucent Technologies Document 401-610-133 Issue 28 - Flexnet®/Autoplex® Wireless Networks Executive Cellular Processor (ECP) Release 24 pp 4-125 to 4-127.

1 Originating Trunk Common Language Location Identifier (“CLLI”) field.³
2 Because the location of the CMRS customer originating the call is needed to
3 accurately determine if the call is interMTA in nature and the fact that this is not
4 passed along to the landline carrier in the SS7 signaling, gathering the CDR data
5 requires cooperation of the CMRS carrier to collect this information.

6 (3) Finally, the POI method is described in paragraph 1044 of the *First Report*
7 *and Order*, where the FCC states: “As an alternative, LECs and CMRS providers
8 can use the point of interconnection between the two carriers at the beginning of
9 the call to determine the location of the mobile caller or called party.”

10 **Q18. In your expert opinion, does one of these methods more accurately measure**
11 **the InterMTA Use Factor and, if so, why?**

12
13 A18. Yes, the CDR method is the most accurate. The goal of any InterMTA Use
14 Factor study is to estimate the amount of interMTA traffic as accurately as
15 possible or practical. In my opinion, the CDR method is the most accurate
16 method as the CDR method uses actual data from the CMRS switching network
17 to determine the location of the CMRS caller’s cell site at the start of the call and
18 thus is entirely consistent with the definition of “InterMTA Traffic” as provided
19 in the interconnection agreement attached to the Petition as Exhibit A. Also, the
20 location of the central office serving the ILEC customer who is being called by
21 the CMRS caller is easily determined by the NPA-NXX of the ILEC customer.

³ Nortel Networks Document 411-2131-204 – MTX 12 (February 2004) – DMS-MTX CDMA/TDMA Billing Management Manual Standard Issue 11.11 p 6-147.

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1 **Q19. Do you believe that the SS7 method can result in an accurate estimate of the**
2 **interMTA traffic being terminated to McCook by Alltel?**
3

4 A19. Yes. The SS7 method uses the telephone number or NPA-NXX of the CMRS
5 customer and the ILEC customer to arrive at an estimate of the InterMTA Use
6 Factor. This method is often referred to as the “telephone numbers” method.
7 This method is not as accurate as the CDR method, since the SS7 method does not
8 properly account for ported numbers and the actual customer location cannot be
9 properly identified. However, it has been my experience that the SS7 method
10 provides a reasonable estimation of the InterMTA Use Factor in the absence of
11 CDR information from the CMRS carrier.

12 **Q20. Do you believe that using the POI method would result in an accurate**
13 **estimate of the interMTA traffic being terminated to McCook by Alltel?**
14

15 A20. No. There are very limited circumstances where a POI methodology would yield
16 accurate results. As discussed previously, to arrive at an accurate interMTA Use
17 Factor, it is important to determine the location of the CMRS customer at the start
18 of the call. At a minimum, the MTA and the state in which the call originated
19 must be known for the CMRS caller so that the traffic type (intraMTA or
20 interMTA and interstate or intrastate) can be accurately determined. In densely
21 populated areas, it is possible that there could be a large number of POIs and the
22 POI could be a reasonable representation of the location of the CMRS customer.
23 In rural areas like South Dakota, the CMRS provider may deliver calls originating
24 in various states or in various MTAs to a single POI. Therefore, the POI method
25 will not yield accurate interMTA results when considering the Alltel and the
26 McCook network.

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1 **Q21. Have you developed the InterMTA Use Factor for traffic terminated by**
2 **Alltel on the network of McCook by use of the CDR method?**

3

4 A21. No. Alltel has been unwilling to provide the CDR data for this analysis.

5 **Q22. Can you explain how you used the SS7 method to determine the InterMTA**
6 **factor for the Alltel traffic being terminated to the McCook network?**

7

8 A22. Certainly. The SS7 data was gathered via Tekno SCCS-288B/7, a device
9 commonly known as the Tekno Box, which is located at the South Dakota
10 Network (SDN) facilities in Sioux Falls, South Dakota and was programmed to
11 monitor the SS7 signaling for the traffic Alltel terminates to McCook. Vantage
12 Point used the SS7 signaling records captured during the October 1-15, 2004 time
13 period. Vantage Point extracted the SS7 records and imported the data into
14 Microsoft SQL Server 2000 database (SQL). Using SQL, Vantage Point sorted
15 all of the calls that originated with an Alltel NPA-NXX and terminated to a
16 McCook NPA-NXX into two groups – those that originated and terminated in the
17 same MTA and those that originated and terminated in different MTAs. The
18 MTA of the NPA-NXX was determined by the location of the central office to
19 which each of the NPA-NXXs were assigned. The calls that originated and
20 terminated in different MTAs were further divided into those that originated
21 inside South Dakota and those that originated outside of South Dakota.

22 Vantage Point then determined the total call duration of the intraMTA calls and
23 the interstate interMTA calls and the intrastate interMTA calls. The InterMTA
24 Use Factor was determined by taking the ratio of the call duration for the
25 interMTA calls to the call duration for the total Alltel calls terminated to McCook.
26 The interMTA calls were further refined to determine the amount of interMTA

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1 traffic that was intrastate interMTA in nature and those that were interstate
2 interMTA in nature based upon the originating and terminating NPA-NXX.

3 **Q23. What was the result of the interMTA analysis that was performed by**
4 **Vantage Point using the SS7 method?**

5
6 A23. The result of this analysis can be seen in Exhibit LT-D-4. This exhibit shows the
7 results of the InterMTA analysis for McCook, which yielded an InterMTA Use
8 Factor of 5.2%. This means that 5.2% of the traffic being terminated by Alltel to
9 McCook over their common trunks is interMTA in nature. Of the total
10 terminating interMTA minutes, 92.9% of the traffic was determined to be
11 intrastate in nature and 7.1% was determined to be interstate in nature.

12 **Q24. What are the proper rates per MOU that would be applied to intrastate**
13 **interMTA and interstate interMTA traffic?**

14
15 A24. McCook is required to charge Alltel their current switched access rates for these
16 traffic types as reflected in their currently filed tariffs just as McCook does with
17 regard to all carriers that terminate intrastate and interstate switched access traffic
18 to their networks. For the intrastate interMTA traffic, the currently approved
19 intrastate switched access tariff rate (approved by the South Dakota Public
20 Utilities Commission) is applied, which currently is the Local Exchange Carriers
21 Association (LECA) rates.

22 In the case of interstate interMTA traffic, McCook uses their FCC filed and
23 approved interstate switched access tariff rates. McCook has its interstate tariff
24 approved and on file with the FCC under Consortia Consulting Tariff FCC NO. 1.
25 The intrastate interMTA and interstate interMTA rates charged by McCook to
26 Alltel should be adjusted each time a tariff rate revision is approved by the

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1 applicable Commission, as is done for the switched access MOU for all other
2 carriers terminating switched access traffic to the McCook customers.

3 **Q25. How can the interMTA results of this analysis be applied to the traffic being**
4 **terminated by Alltel to McCook and provide an estimate of the compensation**
5 **due McCook from Alltel based on their current switched access rates?**
6

7 A25. I will describe how the results of the interMTA traffic study can be applied to the
8 Alltel traffic being terminated to McCook by way of an example. First, we will
9 assume that 1,550,000 total MOU of annual traffic originating from Alltel CMRS
10 customers terminates to McCook customers. First, the total applicable interMTA
11 traffic can be determined by taking total MOU for Alltel times the InterMTA Use
12 Factor ($1,550,000 \times 5.2\%$), which would give you 80,600 total interMTA MOU.
13 Of these interMTA MOU, 92.9% was determined to be subject to McCook's
14 current intrastate switched access rates (presently the rate is \$0.1250 per MOU for
15 all exchanges). By taking the total interMTA MOU times the intrastate interMTA
16 percentage ($80,600 \times 92.9\%$), you would have 74,875 MOU subject to the
17 intrastate switched access rate ($74,875 \times \$0.1250$), which would be approximately
18 \$9,400. Then, if the total interMTA MOU is multiplied by the applicable
19 interstate interMTA factor of 7.1% ($80,600 \times 7.1\%$), it is found that 5,723 MOU
20 are subject to the interstate interMTA switched access rate ($5,723 \times \$0.180576$).
21 Since the interstate switched access rate varies by exchange depending on the
22 applicable rate elements and mileage of each exchange, we estimated the average
23 interstate switched access rate to be \$0.180576 per interstate MOU for McCook.
24 The total estimated annual interstate interMTA revenue would be approximately

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1 \$1,000. Therefore the total estimated annual revenue for McCook would be
2 around \$10,400 based on these MOU and the factors listed in LT-D-4.

3 **Q26. Does that conclude your testimony?**

4 A26. Yes. However, I wish to reserve the opportunity to supplement this testimony in
5 the future, if necessary.

McCook Exchanges by Major Trading Areas

