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September 1, 2005

Philip R. Schenkenberg
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2200 IDS Center
80 South Eighth Street
Minneapolis, MN 55402

RECEIVED
SEP 12 2005
SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

Re: Verizon Wireless vs. PUC
Civil Number 04-3014
Our File Number 04-181

Dear Phil:

Enclosed is the Expert Report prepared by Larry Thompson of Vantage Point Solutions. He has attached the documents that are ready at this time pursuant to FRCP 26(a)(2)(B).

We will supplement this Expert Report and other documents as necessary pursuant to FRCP 26(e)(1).

Mark Shlanta will not be testifying as an expert in this case.

Sincerely yours,



Margo D. Northrup
Attorney at Law

MDN/ph

Enclosures

CC: Rolayne Ailts Wiest (with enclosure)
Gene Lebrun (with enclosure)
Rich Coit (with enclosure)
Randy Houdek (with enclosure)
Larry Thompson (with enclosure)

Expert Report

RECEIVED
SEP 27 2005
SOUTH DAKOTA PUBLIC
UTILITIES COMMISSION

Prepared for

*Civil No. 04-3014, U.S. District Court,
District of South Dakota, Central Division*

Prepared by

Larry D. Thompson



Vantage Point

Customer Focused. Technology Driven.

September 1, 2005

**Vantage Point Solutions
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Expert Report of Larry Thompson

I am a Professional Engineer and Chief Executive Officer of Vantage Point Solutions (VPS). VPS is a telecommunications engineering and consulting company providing a full range of services including Professional Engineering, Outside Plant Engineering, strategic planning, technology evaluations, network architecture design, regulatory expertise, and feasibility studies. VPS is headquartered in Mitchell, South Dakota and employs approximately 65 fulltime staff.

I have been an active participant in the telecommunications industry since 1985. I received a Bachelors of Arts in Physics (1983) from William Jewell College, a Bachelors of Science in Electrical Engineering (1985) from the University of Kansas, and a Masters of Science in Electrical and Computer Engineering (1986) from the University of Kansas. Prior to Vantage Point Solutions, I was General Manager for the Telecom Consulting and Engineering (TCE) Business Unit of Martin Group and previous to this, was a consultant for CyberLink Corporation (Boulder, Colorado) and a satellite systems engineer for TRW (Redondo Beach, California).

I have not testified as an expert at trial or by deposition. I have testified before state regulatory commissions, but not within the last four years. I have been published in United States Telecom Association's "USTA Telecom Executive"¹ magazine and National Telecom Cooperative Association's "NTCA Rural Telecommunications

¹ "Look Who's Talking Now – Do Video and Voice Mix?", USTA Telecom Executive, September/October 2004, pg. 30-32.

Magazine.”² I have also had my whitepapers included in various regulatory filings. I am being compensated for my work on an hourly basis at my regular billing rate of \$115 per hour.

VPS provides engineering services to our clients for both their wireless and wireline networks. I have been involved in the design and implementation of many voice, data, video, and wireless networks. VPS provides engineering services for many of the rural local exchange carriers (RLECs) in South Dakota and I am familiar with their switching networks and capabilities.

I am familiar with South Dakota bill SB144 as well as South Dakota Codified Laws 49-31-109 through 49-31-115. On February 3, 2004, I provided testimony before the South Dakota State Senate committee regarding SB144. My handouts for this testimony have been attached as Exhibit 1. On February 17, 2004, I provided testimony before the South Dakota State House of Representative committee regarding SB144. My handouts have been attached as Exhibit 2.

I have assisted clients in identifying and quantifying telecommunications traffic into their company. I have done this by analyzing the System Signaling 7 (SS7) messages from the signaling network and the Automatic Message Accounting (AMA) records and Exchange Message Interface (EMI) records from various switching networks. I have assisted in identifying “phantom” traffic, so that our clients could properly bill the proper other carriers for use of their network.

I have performed numerous wireless InterMTA studies. These studies consist of processing thousands of records to determine the amount of InterMTA traffic that is

² “A Technology for the Next Generation”, NTCA Rural Telecommunications Magazine, November/December 2003, pg. 23-26.

being delivered to my landline clients. These studies have used the NPA-NXX in the SS7 messages to provide an estimate of the InterMTA as well as using Call Detail Records (CDRs) from the wireless networks that include the caller tower location for a more accurate determination of the InterMTA factor. The goal of these studies has been to determine the amount of InterMTA. As described in the FCC First Report and Order,³ wireless calls originating in one Major Trading Area (MTA) and terminating in the same MTA are subject to reciprocal compensation. Wireless calls that originate in one MTA and terminate in another MTA are subject to access charges. To properly bill for wireless traffic, it is necessary to also determine the amount of the InterMTA traffic that is Interstate and Intrastate in nature.

I have reviewed the claims of Verizon Wireless in its proposed Stipulation of Facts. Verizon Wireless delivers both local and access traffic over both direct and indirect trunks. The indirect trunks between RLEC and Verizon Wireless are often common trunks and the Verizon Wireless traffic is intermixed with other carrier traffic. The South Dakota statutes require carriers to "transmit signaling information in accordance with commonly accepted industry standards."⁴

The Ordering and Billing Forum (OBF) has been working to expand the SS7 signaling format to better identify telecommunications traffic so the terminating carrier can more accurately bill for the traffic. Many involved with the OBF would like to see the Jurisdictional Information Parameter (JIP) field in the SS7 used to identify the wireless caller's connecting tower at the start of the call. Earlier this year, the JIP was

³ *In the Matter of Implementation of the Local Competition Provisions of the Telecommunication Act of 1996*, CC Docket No. 96-98, 11 F.C.C.R. 15499, FCC 96-325 First Report and Order (released Aug. 8, 1996) ("*First Report & Order*").

⁴ South Dakota Codified Laws SDCL 49-31-110 and SDCL 49-31-111.

expanded to include information regarding the originating wireless switch.⁵ This was certainly a step in the correct direction. I would expect that the use of the JIP will continue to be enhanced to provide more detailed information regarding the location of the originating wireless caller.

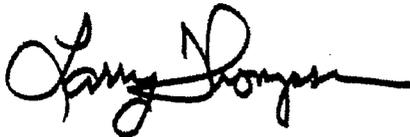
Because the commonly accepted industry standards for signaling continue to evolve and are not yet adequate to quantify nonlocal traffic, the South Dakota Codified Laws allow the originating carrier to “separately provide the terminating carrier with accurate information including verifiable percentage measurements that enables the terminating carrier to appropriately classify nonlocal telecommunications traffic as being either interstate or intrastate, and to assess the appropriate applicable access charges.⁶ The form and substance of the accurate information required in this statute is not defined, except that it be adequate for the terminating carrier to appropriately classify the traffic and assess the applicable charges.

Because the commonly accepted industry standards for signaling may not today be adequate to determine the precise location of a wireless caller, wireless carriers often establish their delivered local and toll (interstate and intrastate) traffic ratios in an agreed upon contract. Normally the contract ratios are based on historical experience or using a special study. Since wireless carriers have the ability to determine the connecting tower of their wireless customer, a special study can accurately determine the local and toll (interstate and intrastate) mix for a given test period.

⁵ Alliance for Telecommunications Industry Solutions, ATIS-0300011, Network Interconnection Interoperability (NIIF) Reference Document, Part III, Installation and Maintenance Responsibilities for SS7 Links and Trunks.

⁶ South Dakota Codified Law SDCL 49-31-110.

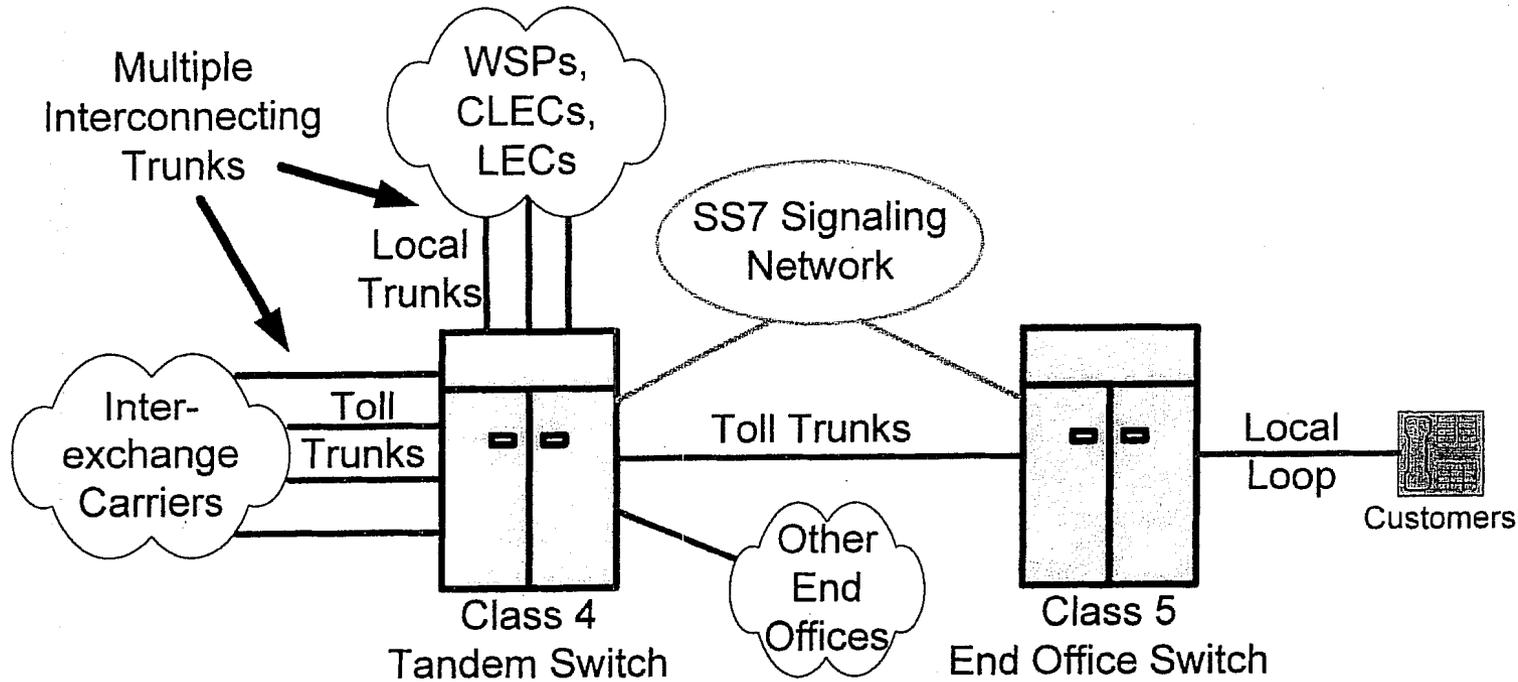
Proper classification of wireless traffic is especially important for carriers operating in South Dakota, since South Dakota has three different MTAs (Minneapolis, Denver, and Des Moines). This can be seen in Exhibit 3. In addition, much of the southern part of South Dakota borders the Omaha MTA. Because of this, South Dakota has a higher InterMTA factor than most other states. It is important for South Dakota carriers to be able to accurately classify the terminating traffic to be properly compensated for the use of their network.

A handwritten signature in black ink, appearing to read "Larry Thompson". The signature is stylized and cursive, with a long horizontal line extending from the end.

Larry Thompson, P.E.
Chief Executive Officer
Vantage Point Solutions, Inc.

September 1, 2005
Date

Switching Network



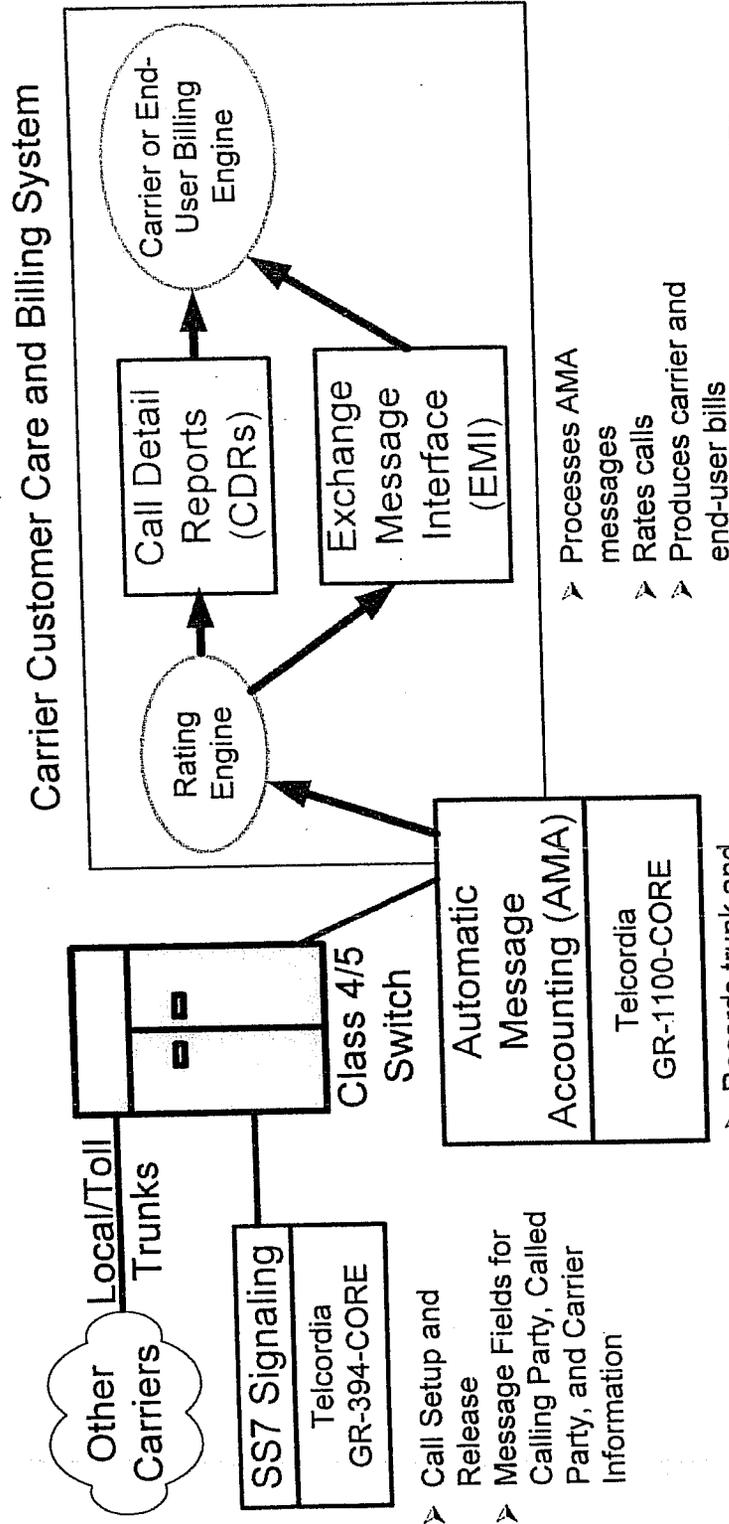
Switches Can Record Call Information Based on SS7, Trunk, and Switch Parameters



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Carrier Call Information Processing



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SS7 Signaling Overview

- Signaling protocol used between switches in the PSTN
- Sets up and releases call paths
- Call setup messages has fields for
 - Calling party number
 - Called party number
 - Local Routing Number
 - Carrier Identification Number
 - Many other fields . . .



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AMA Record Overview

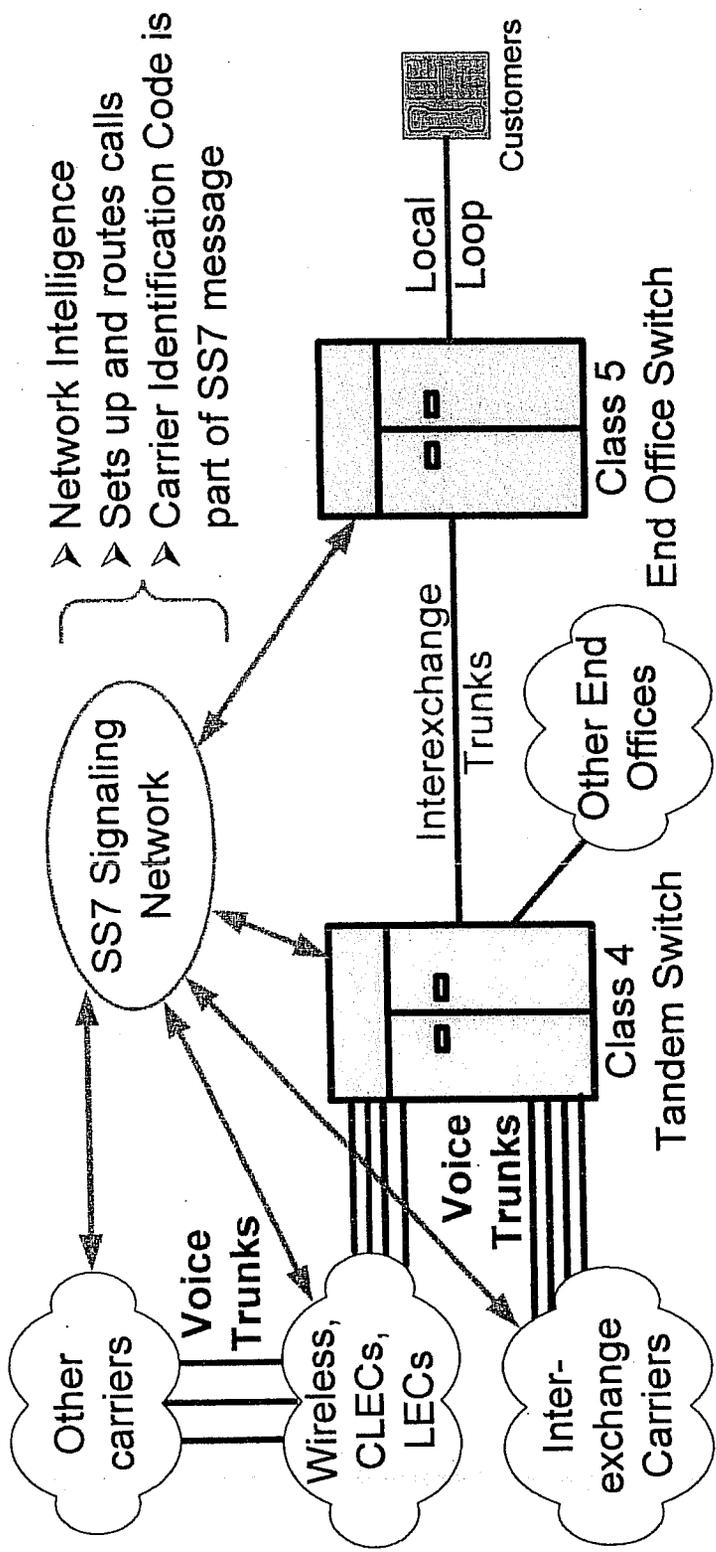
- Records detailed information about each call
- SS7 Parameters
 - Calling and Called Number
 - Disconnect method
 - Jurisdiction Information, etc.
- Switch information
 - Trunk, etc.
- Call parameters
 - Duration
 - Time of day, etc.



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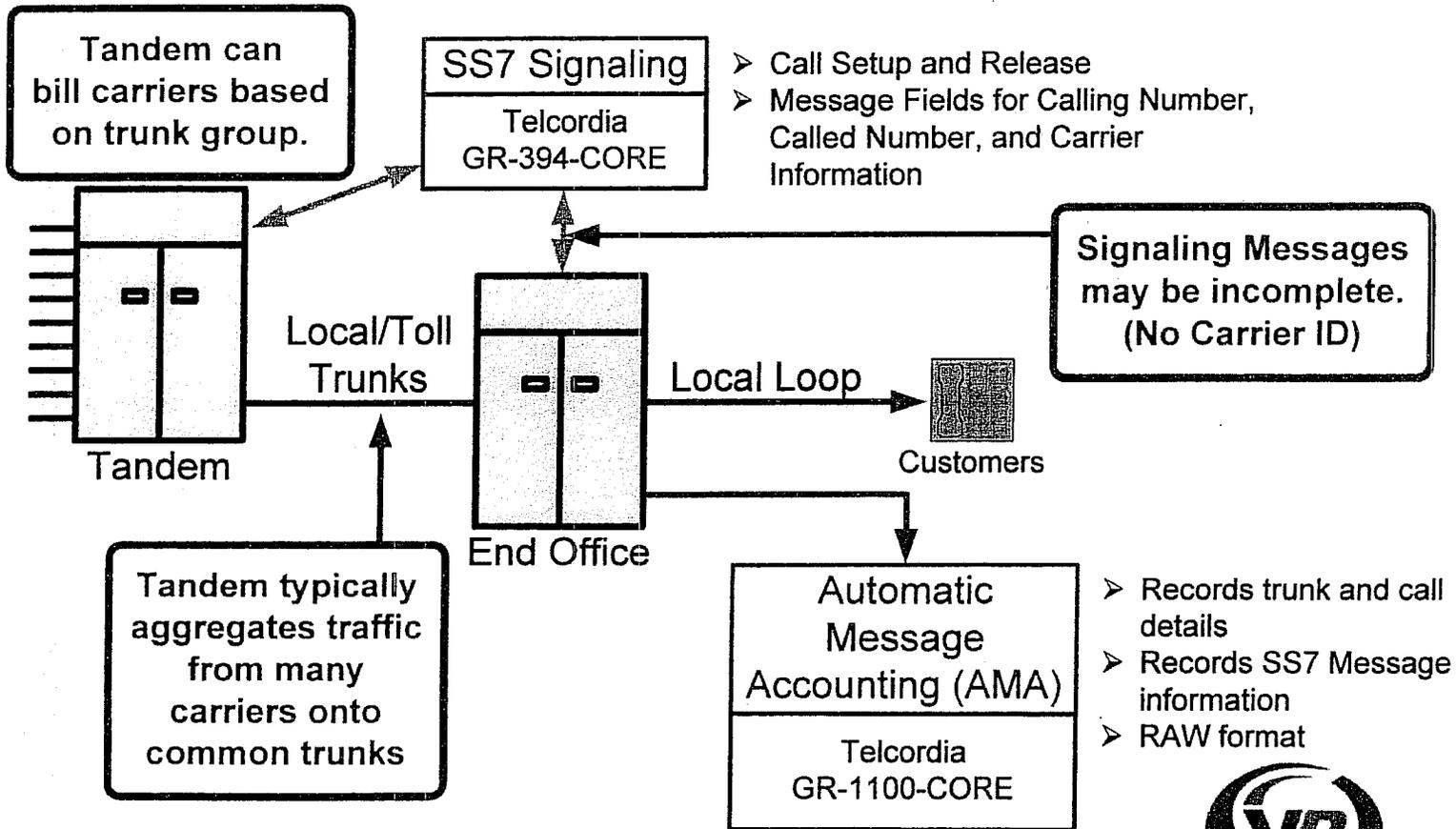
Switching Network



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Call Recording

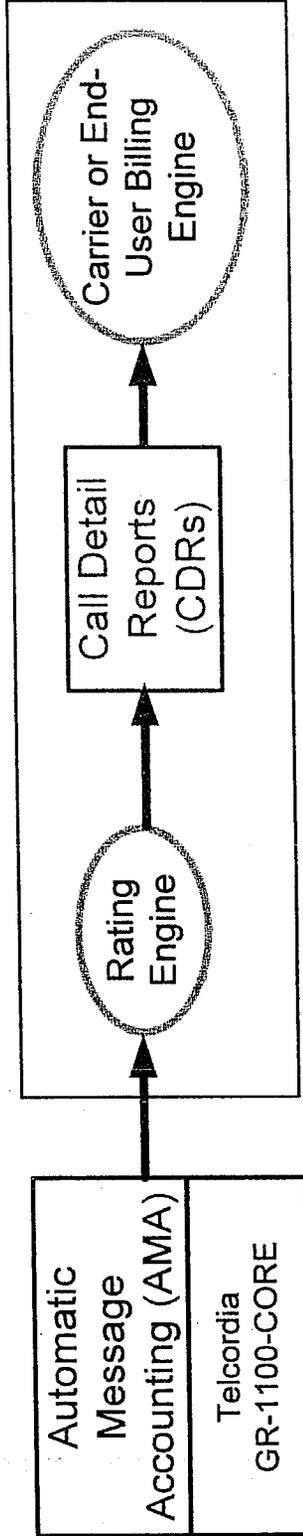


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Call Processing and Billing

Carrier Customer Care and Billing System



- > Recorded on hard disk (or tape) in switch
- > Records trunk group, call details, and SS7 message details

Determines WHO to bill based on:

- > Carrier ID (preferred)
- > Incoming trunk (not possible on common/shared trunks)
- > Calling party number (difficult and not accurate)
- > Records from transiting carrier (often incomplete)

Determines WHAT to bill based on:

- > Type (Local or Toll)
- > Jurisdiction (state or interstate)
- > Specific carrier contracts
- > Time of day
- > Call duration



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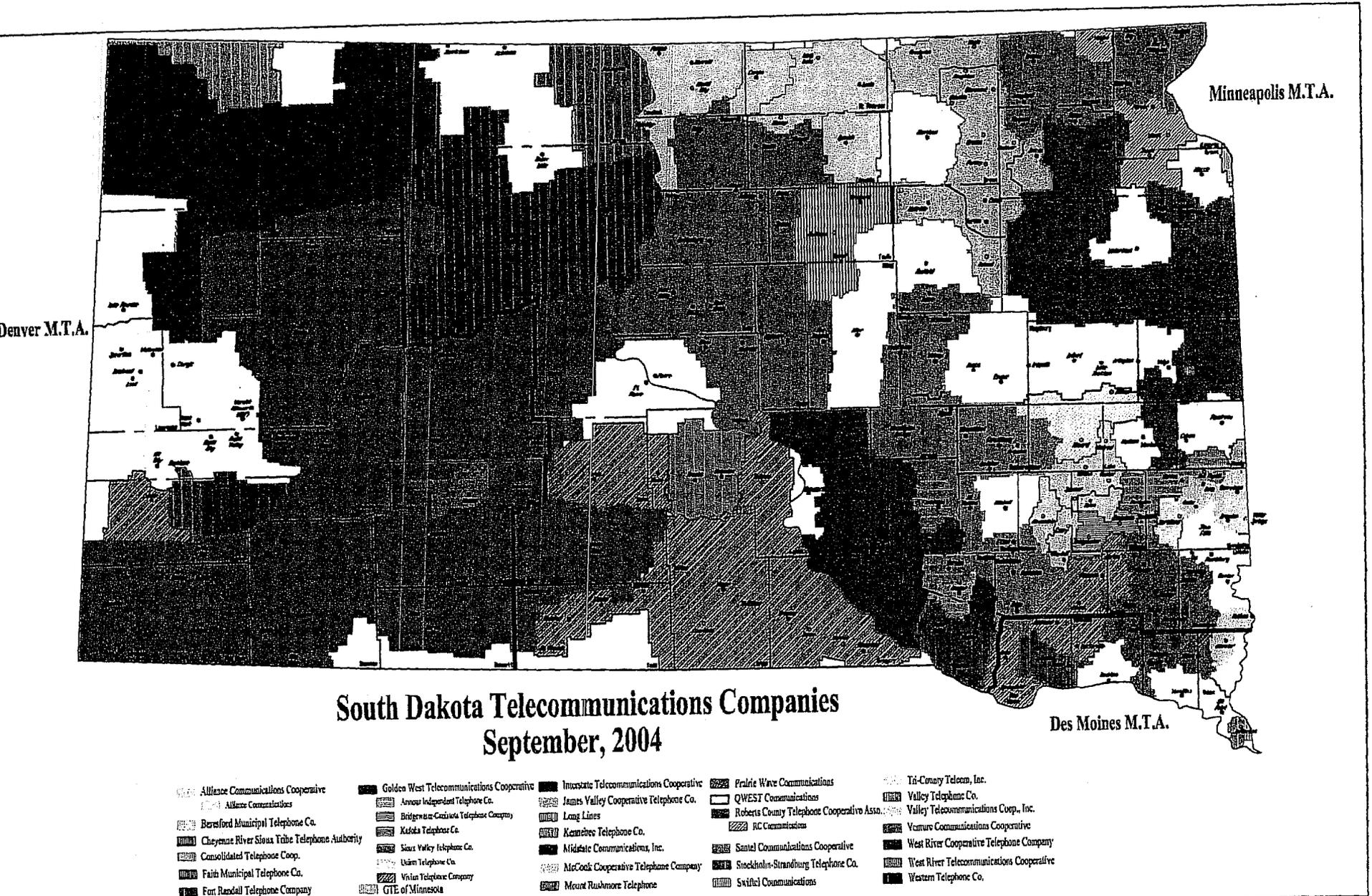
Issue Summary

- Telephone company cannot properly bill for traffic on their networks
 - Common trunks: Cannot bill based on incoming trunk group
 - Carrier ID: Often missing in SS7 signaling message
- Tandem records may also be incomplete
- Solution: Carriers should be required to use industry standard methods of identifying their traffic so it can be measured and billed properly.



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UNITED STATES DISTRICT COURT
DISTRICT OF SOUTH DAKOTA
CENTRAL DIVISION

Verizon Wireless (VAW) LLC,
CommNet Cellular License Holding, LLC,
Missouri Valley Cellular, Inc.,
Sanborn Cellular, Inc., and
Eastern South Dakota Cellular, Inc.,
d/b/a VERIZON WIRELESS,

Plaintiff,

Vs.

Bob Sahr, Gary Hanson, and Dustin Johnson,
in their official capacities as the
Commissioners of the South Dakota Public
Utilities Commission;

Defendant,

South Dakota Telecommunications Ass'n
and Venture Communications Cooperative,

Intervenors.

Civil Number 04-3014

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the INTERVENORS' AND DEFENDANT'S EXPERT REPORT, prepared by Larry Thompson, Vantage Point, was served via the method(s) indicated below, on the first day of September, 2005, addressed to:

Rolayne Ailts Wiest, General Counsel
South Dakota Public Utilities Commission
500 East Capitol Avenue
Pierre, South Dakota 57501

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() E-Mail

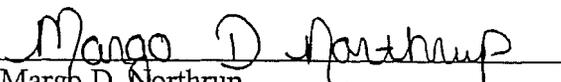
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Steven J. Oberg
Lynn, Jackson, Shultz & Lebrun
P. O. Box 8250
Rapid City, South Dakota 57709

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(X) First Class Mail
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() Overnight Delivery
() E-Mail

Dated this first day of September, 2005.


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