

Expert Report of Larry Thompson

Prepared for

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

EXHIBIT 3

Phantom Traffic Study Process

1.0 Introduction

In performing phantom traffic studies, a matching process is performed between Automated Message Accounting (AMA) data recorded by the Local Exchange Carrier (LEC) switch and the Exchange Message Interface (EMI) received from outside sources such as the Regional Bell Operating Company (RBOC) for billing purposes. If a LEC does not have the capability to record AMA data, the matching process is completed between Signaling System 7 (SS7) data received from the LEC's Signal Transfer Points (STPs) and the EMI data. In some cases, all three sources of data are utilized in the matching process. The diagram below, Figure 1.0, summarizes the call recording process of a SS7/AMA network.

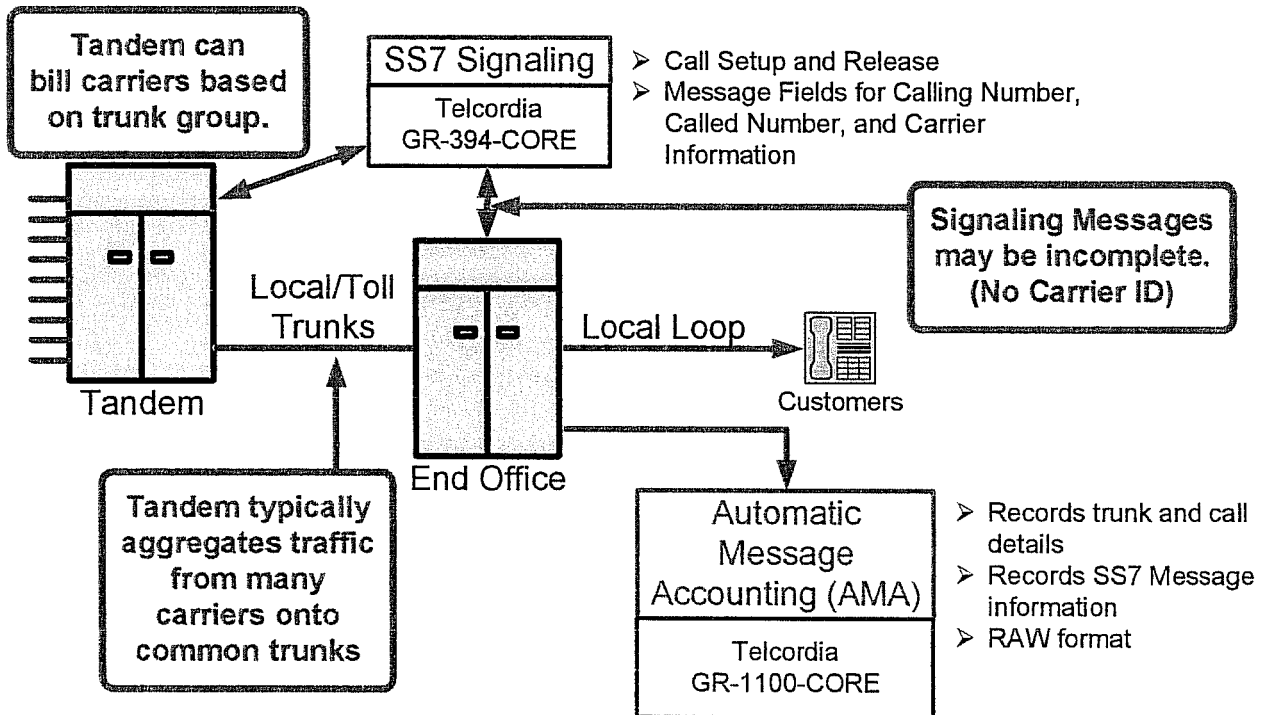


Figure 1.0 Call Recording Process

Throughout this report, we have attempted to use industry standard terminology. For clarification, we define the following terms:

Automated Message Accounting (AMA) – The automatic collection, recording, and processing of information relating to calls typically used for billing purposes. In this report, AMA is referred to as the recording of the LEC's switch traffic.

Exchange Message Interface (EMI) – The standard format used for exchange of telecommunications message information among LECs for billable, non-billable, sample, settlement and study data. In this report, EMI is referred to as the information the connecting RBOC, supplies the LEC for billing purposes.

Extended Area Service (EAS) – A toll free calling area which is the replacement for long distance toll service allowing telephone customers in one local calling area (exchange) to call one or more nearby exchanges without incurring long distance charges.

Feature Group B (FGB) – The plan that allows an Equal Access End Office (EAEO) or a non-EAEO to provide subscribers with access to FGB carriers. To use this plan, the subscriber dials 950-XXXX instead of a local telephone number, followed by the long-distance number.

Feature Group C (FGC) – A plan for Equal Access that implements the Equal Access Plan with the following exceptions: it uses Feature Group C signaling, that is, pre-divestiture signaling; and it uses additional trunk group types.

Feature Group D (FGD) – A plan for Equal Access that supports the Equal Access Plan for operating companies to provide access service to an interLATA carrier with a Point of Presence (POP) in the LATA.

FromNumber – The originating phone number in a call record.

Jurisdiction Information Parameter (JIP) – A six-digit populated field in the SS7 Initial Address Message (IAM) for each call in order to determine the geographical location of the originating call.

Local Access and Transport Area (LATA) -- A term that refers to a geographic region assigned to one or more telephone companies for providing communication services. A connection between two telephone companies within the same region is referred to as intraLATA. A connection between two local exchange carriers in different regions is called interLATA, which is the same as long-distance service. Provisions guiding the use of LATAs are outlined in the Telecommunications Act of 1996.

Local Traffic – For the study purposes, the AMA local traffic is considered to be traffic originating from local NPA-NXXs and EAS NPA-NXXs terminating to the LEC exchanges.

Mobile Services Switching Center (MSC) – The interface between the radio system and the public switched telephone network in an automatic cellular mobile system. This performs all necessary signaling functions that establish calls to and from mobile stations.

Operating Company Number (OCN) – A four character code assigned in order to identify an NPA-NXX code-holder, switching entity company, non-facility-based service providers such as resellers, billing service providers, etc.

Signaling System 7 (SS7) – The SS7 signaling system is a packet-switched data network that forms the backbone of the international telecommunications network. The SS7 network allows call control and transaction messages from the integrated voice and data network to be transferred on communications paths that are separate from the voice and data connections. It delivers out-of-band signaling that provides fast call setup by means of high-speed, circuit-switched connections and transaction capabilities which deal with remote database interactions. The SS7 protocol consists of four basic sub-protocols:

- Message Transfer Protocol (MTP) - Provides functions for basic routing of signaling messages between signaling points.
- Signaling Connection Control Part (SCCP) - Provides additional routing and management functions for transfer of messages other than call setup between signaling points.
- Integrated Services Digital Network User Part (ISUP) - Provides for transfer of call setup signaling information between signaling points.
- Transaction Capabilities Application Part (TCAP) - Provides for transfer of non-circuit related information between signaling points.

ToNumber – The terminating phone number in a call record.

Toll – A long distance call to any location outside the local service area.

The goal of the phantom traffic analysis is to identify the various types of traffic that are present on the EMI, AMA, and SS7 recordings and to identify the traffic types on the EAS and toll routes between the connecting carriers and the LEC exchanges. Once the traffic types are identified, the results are compared to the wireless terminating records that the LEC receives from the RBOC and/or the wireless carriers.

2.0 Testing Methodology – Process Summary

As mentioned previously, the AMA records from the LEC's switch (and/or the SS7 records) and the EMI records from the RBOC are analyzed and run through a matching process in order to identify any unmatched, or phantom, traffic. For studies we performed in which Qwest Communications (Qwest) was the RBOC, we have also needed to request and analyze Qwest's TUTs records for the LEC. The additional report was needed because we had found that the line numbers from the originating phone number ("FromNumber") and the terminating phone number ("ToNumber") had been stripped in the Qwest EMI records for calls from Qwest exchanges terminating to other LEC exchanges, leaving 0000 as the last four digits (for example, FromNumber appears as 605-996-0000 and ToNumber appears as 605-778-0000). Because of this, we would be unable to complete a true match solely between the AMA/SS7 and EMI. Therefore, the TUTs records are also utilized in order to determine the FromNumbers and ToNumbers, and to assist in revealing true record matches for this type of traffic. The TUTs is a system Qwest uses to verify the billing from the LECs and CLECs, but the TUTs records are not sent to the companies on a regular basis. This file only contains the

Qwest traffic terminating to the LEC/CLEC and the complete ToNumbers and FromNumbers are included.

3.0 Testing Methodology - Matched and Unmatched Records

Multiple methods are used to analyze the traffic records. VPS has utilized a specialized software program for completion of the matching process in order to compare AMA/SS7 records to the EMI and TUT records. The matching criteria are based on the call date, FromNumber and ToNumber, call start and end time variances, conversation duration variance, and trunk duration variance. A call record is considered a match when the call date time falls within a determined number of seconds and the conversation time/trunk duration falls within a determined number of tenths of a second.

The record matching process has been made difficult due to the inconsistent data received from Qwest by the LECs we have studied. Not only are some of the line numbers zeroed out on certain EMI records, as we mentioned previously, but the Conversation Duration was not reported for these records as well. However, when we compared the EMI Trunk Duration to the AMA Conversation Duration, they appeared to be very close. Therefore, it appears that Qwest populates the trunk duration with the conversation duration on this type of call.

To overcome these issues, we have been forced to run another data file process which utilizes the Qwest TUTs records, as mentioned earlier. The TUTs file reports the complete ToNumber and FromNumber along with the Conversation Duration, so we are able to continue drilling down on the AMA files for matches with the Qwest traffic.

For the wireless traffic terminating over the Qwest trunks, the ToNumber and FromNumber fields in the EMI are populated, so an automated matching process is much easier to perform. The trunk and conversation durations on these records are populated with the same value, which would be expected on a terminating call and, for the most part, were very similar to the AMA conversation duration times.

4.0 Testing Methodology - Unmatched Records Summary

After the matching process is complete, a summary of the unmatched AMA traffic is prepared. This summary categorizes the unmatched calls based on the various types of traffic remaining, i.e., whether the call's responsible carrier and jurisdiction can be identified to allow for proper billing and if so, which carrier and which jurisdiction.

Many of the unmatched records have blank or zeroed out FromNumbers, which do not allow for proper identification of the responsible carrier or the jurisdiction and therefore, can not be properly billed by the LEC. Even if the FromNumber has been passed through to the LEC, it is difficult for the LEC to identify the responsible carrier. Attempts to identify the responsible carrier of these calls are made by assigning an Operating

Company Number (OCN) to each record based on a NPA-NXX look-up in the Terminating Point Master (TPM) database. However, due to factors, such as Local Number Portability (LNP) and Type 1 interconnections, NPA-NXXs are not associated with a specific carrier. Therefore, the default population of the OCN based on NPA-NXX may not correctly identify the correct responsible carrier.

In Figure 4.0 below, we summarize the process of determining the Originating OCN based on AMA records.

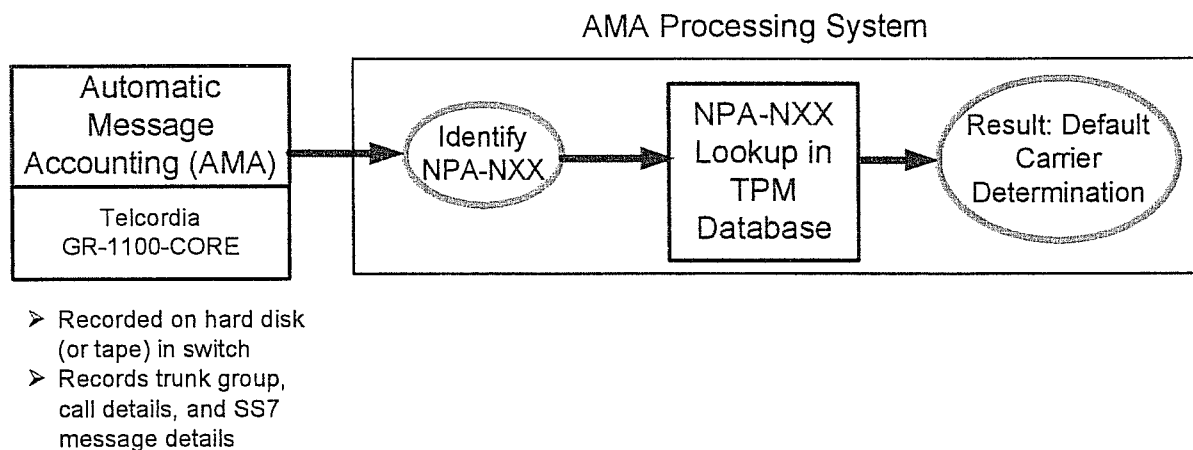


Figure 4.0 Carrier Determination Based on AMA Records

5.0 Trunk Analysis

In addition to the matching process described above, VPS also performs analyses on the types of traffic traversing EAS trunks to ensure that only appropriate traffic is routed on these trunks. For example, the trunk analysis identifies any toll traffic that is inappropriately routed on EAS trunks.