DDD

PROGRAM PLANNING KIT

PROGRAM PLANNING KIT

Here is your DDD Planning Kit. Use it to develop your DDD program – and use it to help you maximize your return on your investment. It contains –

T-2128 DDD PROGRAM GUIDE

This guide is designed to help you develop your DDD program. Follow the suggestions offered – use all of them or just those which fit your planned program best. The growth data and the revenue potentialities discussed in the DDD Program Guide may indicate to you that your toll traffic deserves a lot more attention that it may be getting.

ED-18 STROMBERG-CARLSON SCAMA

This technical brochure describes the Stromberg-Carlson Automatic Message Accounting System. It is a new and flexible toll ticketing system which provides the features required to perform the complete switching, routing, timing, operator assistance, recording, and ticket producing functions required in a modern toll ticketing system.

T-259 AUTOMATIC NUMBER IDENTIFICATION

This technical brochure describes Stromberg-Carlson's Automatic Number Identification System. ANI Systems provide a reliable and accurate means of automatically determining the telephone station from which a toll call is being originated.

ED-21 SUBSCRIBER EDUCATION SUGGESTIONS

This brochure is a "public relations" guide to help you promote toll service. It contains suggested news releases, speech suggestions, and question and answer ideas for a radio or television program.

USITA-BELL SETTLEMENT INFORMATION

This reprint contains the best reasons for appraising your toll program.

YOUR DDD PROGRAM GUIDE

to

maximize your toll revenue

SOME FACTS ABOUT YOUR GROWTH

There are over 100,000,000 telephones in service in the United States. It took 77 years to reach 50,000,000 telephones, but only 14 years to add the second 50,000,000 telephones. Can you predict how long it will take to add another 50,000,000 telephones – 5, 10, or 15 years? We're not really sure, but we are certain of the problems that can be created in trying to keep up with the growth and in trying to make sure that we plan today to be ready for tomorrow's toll traffic.

AND DID YOU KNOW THAT

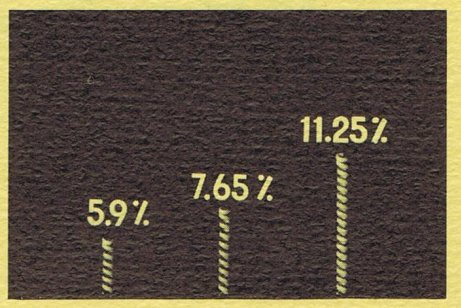
The average growth rate for the Gross National Product for the past 10 years has been 5.9%

Bell System revenues have grown at an average rate of 7.65%.

Independent revenues have grown at an average rate of 11.25% – almost double the increase of the Gross National Product.

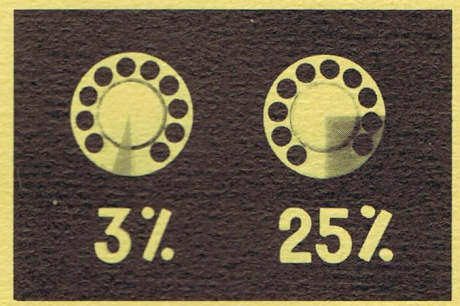
And toll calls which represent, on an average, only 5% of the total traffic, also represent almost 50% of the total revenue. And even more significant, just 25 years ago, toll traffic represented 3% of the total traffic to produce 25% of the total revenue.

That is growth, the kind of growth *you* are looking for.



LOOK AT SOME OTHER FACTS

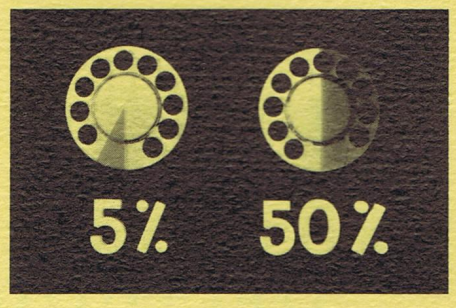
Almost 60% of all toll messages in the Bell System are direct distance dialed, compated with only 13% just ten years ago. Why? There are many reasons: our nation's bustling economy, the relative price of toll calls, service promotion, equipment improvement, improved service, etc. During the last ten years, the number of DDD messages completed on an average business day has increased by almost 10 times with no end in sight. And one more fact – your share of Toll Settlements has been going up. Included in your DDD Planning Kit is a folder containing USITA–BELL Toll Settlement information.



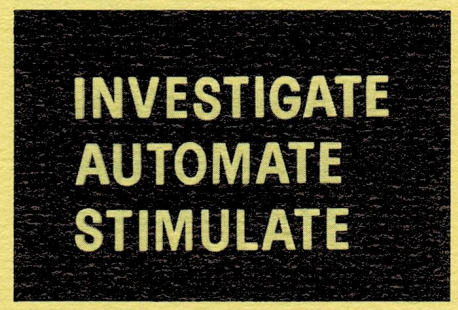
THEIR IS NO DOUBT ABOUT IT

The magnitude and importance of developing toll business deserves a lot more attention than it gets. Why don't you make a realistic appraisal of your present toll program as it relates to your toll opportunities? See if you are doing all you can to increase your toll revenue.

This is what we want to help you do, and this is the purpose of this planning guide.



THREE STEPS TO INCREASED TOLL REVENUE



1. INVESTIGATE YOUR PRESENT TOLL TRAFFIC

The latest data indicates that for the industry, toll calls are about 5 percent of the traffic. And this *small* percentage produces *almost half* of our revenue.

If you're not showing this type of growth, find out if your growth pattern is realistic. How? Investigate. Research comparable area toll growth figures; contact USITA; call your Stromberg-Carlson Toll Expert. A carefully planned market survey could go a long way in helping you determine whether you have maximized your revenue from your present toll facilities.

2. AUTOMATE TO KEEP PACE WITH YOUR GROWTH

FOR EXAMPLE ANI –

Automatic Number Identification makes toll calling easier for subscribers. Stromberg-Carlson Automatic Number Identification Systems are easier to install and maintain. Over 83% of the ANI Systems in service are Stromberg-Carlson ANI Systems. Of course, with toll calls as easy to make as "operator-free" local calls, it naturally follows that ANI stimulates increased subscriber dialed toll calls and you get an increased return on your total investment.

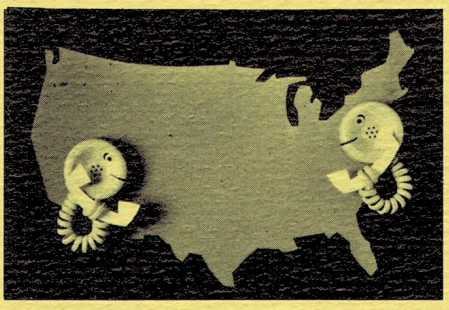
AND THERE'S SCAMA

Stromberg-Carlson Automatic Message Accounting is a system for automatically recording and accounting for customer-dialed telephone calls. The SCAMA System provides the features required to perform the switching, routing, timing, recording, and ticket producing functions required in a modern toll ticketing system. The automatic billing records provided by SCAMA makes sure that your subscribers are billed for every toll call.

3. STIMULATE TOLL TRAFFIC

Do everything possible to *stimulate* toll traffic. Explain how easy DDD is to use and how your subscribers will benefit. Included in your DDD Planning Kit is a "public relations" guide to help you promote toll service... it includes suggested news releases, a script for a talk to the community leaders, and a question and answer idea for use as a radio or television program.

Methods of developing contact with customers vary among operating companies. Customer instruction programs, bill stuffers, and demonstration centers are some of the ways to stimulate telephone use. The job is to show them what DDD is, how to use it, and how a subscriber will benefit from your service.



TO SUMMARIZE

Toll traffic should be the fastest growing part of your business. Only 5 percent of your volume of traffic could generate almost half of your revenue. If this is not true for you:

First, thoroughly investigate your toll program to evaluate revenue opportunities.

Second, be certain your equipment can handle the calls smoothly and efficiently so that your return is maximized.

Third, make sure you're not missing a promotional trick in stimulating toll business.

Why not discuss this plan with Stromberg-Carlson personnel at the nearest branch office. There is a toll expert waiting for your call.

Stromberg-Carlson
A SUBSIDIARY OF GENERAL DYNAMICS CORPORATION

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SCAMA

Automatic Message Accounting

System Description

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SECTION I

INTRODUCTION

GENERAL

SCAMA, the Stromberg-Carlson Automatic Message Accounting System, is a new and flexible toll ticketing system for use with step-by-step and common control switching offices, especially small and medium size offices. The SCAMA System provides the features required to perform the complete switching, routing, timing, operator assistance, recording, and ticket producing functions required in a modern toll ticketing system.

The SCAMA System incorporates several circuits (such as the register-sender and identifier) and associated hardware, which have proven highly reliable in the Stromberg-Carlson Type 45 Toll Ticketing System. The SCAMA System uses a highly reliable and efficient magnetic tape mechanism as a storage medium for call data.

All services, as provided by SCAMA, comply with Bell System Practices as specified in AT&TCo "Notes on Distance Dialing" 1961 edition, and they also comply with Rural Electrification Authority requirements for customer toll dialing.

CALLING-NUMBER IDENTIFICATION

On all types of calls, the calling number is determined after the last digit of the called number has been dialed, and the register-sender does not advance the call until the calling number has been identified. With this arrangement, toll circuits are not tied up needlessly when the calling line cannot be identified.

Outpulsing from the tributary office ANI equipment conforms with the Bell multifrequency 2-out-of-6 ANI scheme. The delay in call advancement that is caused by sending the calling number is minimized by using multifrequency pulses instead of dial pulses to send the calling number. When operator number identification is required, the operator obtains the calling number verbally and keys it into the equipment by means of the keyset provided on the keyshelf at her position.

RECORDING TRUNK

All DDD traffic from local and tributary offices flows through the recording trunk, which is the main coordinating element of the system.

After the register-sender has completed the advancement of the call, the recording trunk switches through the transmission path automatically and without bridging loss. On receipt of pad switching instructions, the recording trunk cuts a balanced 2-dB pad into the transmission path. The pad is switched in on calls that originate or terminate at telephones served by the end office co-located with the SCAMA System.

TRUNK CONCENTRATION

Concentration of both local and tributary toll trunk groups is provided by motorswitch preselectors having 110 outlets. This concentrator achieves higher occupancy of recording trunks than has been possible by using graded, ten-contacts-per-level selectors. Preselectors afford greater system simplicity and higher usage efficiency in systems that employ the universal single-digit toll access codes, particularly in cases involving step-by-step tributary offices where insufficient directing digits are dialed to control step-by-step selectors.

FULL AVAILABILITY OF TRUNK GROUPS

Expansion of recording trunk traffic into outgoing trunk groups is available, through optional use of the motorswitch preselectors as secondary trunk selectors which follows step-by-step routing selectors. The preselector provides very rapid divergence of step-by-step routing selector outlets into large trunk groups at full availability trunk occupancy. Level hunting routing selectors are also available for this purpose.

REGISTER-SENDERS

Both the electromechanical Type 45 register-senders and the electronic register-senders (ERS) and their translators are used in the SCAMA System. Because both of these units have given excellent performance in service over a number of years, their continued application in this system is a sound practice. Use of the ERS offers the benefits of providing a universal common control unit in a step-by-step office, serving primary (dial tone) trunks, operator keysender positions, incoming trunks, and toll ticketing register-senders.

DATA REGISTER

The data register provides the required digit storage capacity for the called and calling numbers. The calling number can be sent to the data register as a result

of automatic identification, or it can be keyed in by the operator. The data register also associates the multifrequency (MF) receivers required for tributary office automatic number identification and for senderized step-by-step and common control MF sending switching systems.

The data register provides for modular expandability to keep the cost of non-operator service systems as low as possible while retaining the capability of economical addition of any of the many features available in the system.

MF RECEIVING

MF 2/6 receiving of called numbers from common control and senderized step-by-step tributary and local offices is a capability of the system. Delay dialing supervision is furnished to senders. Receivers are associated with data registers on demand through a high-speed relay type coupler. Receiving rate is 7 digits per second.

RECORDERS

Magnetic tape recorders of improved design have access to a common group of readout equipment which produces a hard-copy record at the end of every ticketable call. Each recording trunk is associated with a recorder having a tape capacity sufficient for one call of four hours or longer of conversation time. The recorder offers greatly improved, long-period reliability and accuracy with reduced maintenance. The conversation timer and the MARK-SPACE relays are of completely new design, both having extremely long, low-maintenance life.

MAGNETIC RECORDING

The magnetic recording technique was chosen by Stromberg-Carlson as the basic data storage medium when the design of the first system was undertaken in the early nineteen fifties. A tape recorder with single-call capacity has been developed for the SCAMA System; the recorder has been designed to provide maximum performance with minimum maintenance. The recording process is electrically simple and is illustrated in figures 1 through 4.

The recording tape has a mylar base that is coated with iron oxide, which is, in turn, covered with a thin protective layer of mylar. The tape passes against an erase head and against a read/write head (fig. 1). Each head is an electromagnet that has a small gap between its pole pieces at the erase or recording surface. As the tape passes against the erase head, the active iron oxide coating is "erased" to magnetic saturation in the negative direction. In the erased state, the coating appears as a series of minute permanent magnets poled as shown in figure 2. Because the tape passes against the erase head before it passes against the read/write head, only erased regions of the tape reach the read/write head. If a pulse

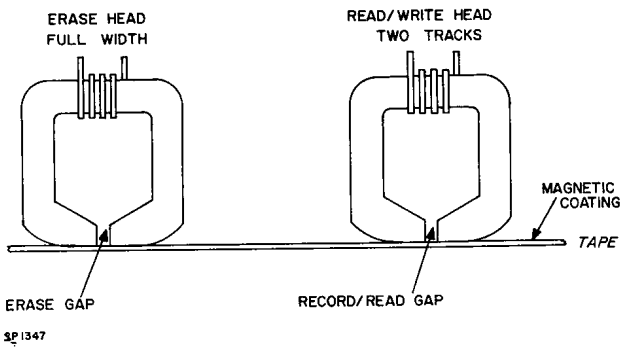

Figure 1. Recorder Head Configuration.

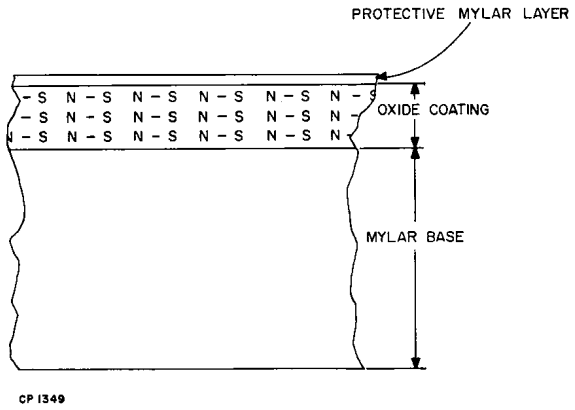

Figure 2. Tape "Erased" to Negatively Poled Saturation.

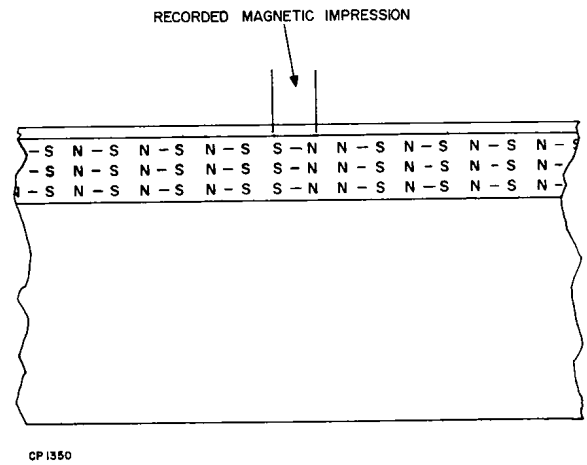

Figure 3. Tape "Written" to Positively Poled Magnetic Saturation (One Pulse).

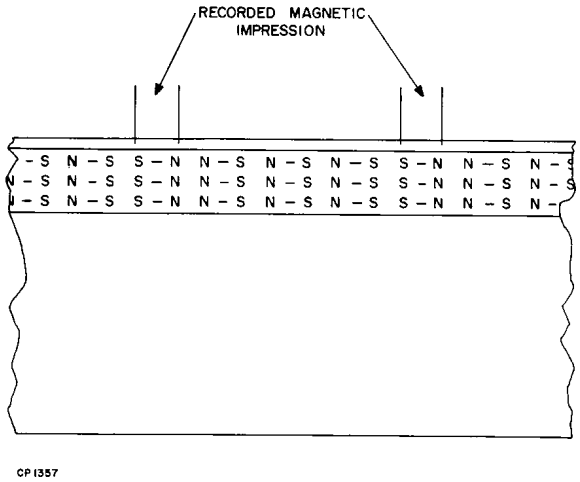

Figure 4. Tape With Two Recorded Impressions.

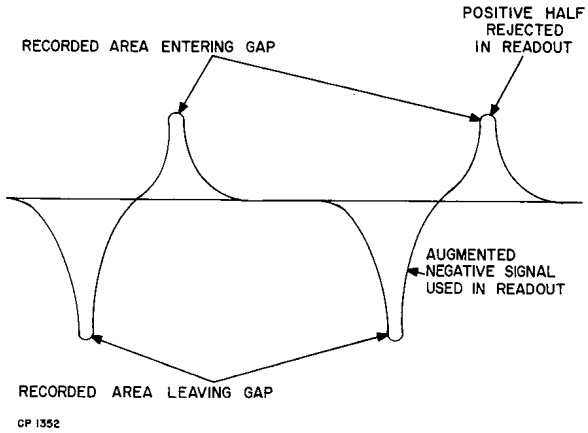

Figure 5. Voltage Pulses Generated During Readout.

of direct current is passed through the winding of the read/write head in the proper direction, a magnetic impression is made on the area of tape lying directly beneath the head gap. This impression appears as an area of tape on which the small permanent magnets are poled in the opposite direction to those on the erased region. (See fig. 3.) If the tape is advanced after an impression is made and another impression made at a new location, the tape will appear as shown in figure 4. When a tape on which one or more impressions have been recorded is moved past a read/write head that is in the reading mode (No external current passing through the winding), a voltage pulse (fig. 5) is induced in the head winding each time a magnetic impression passes the head gap.

In the Stromberg-Carlson magnetic toll ticketing systems, the process described above is used to record billing data applicable to toll calls. In practice, two recording channels are used; the upper, or mark, channel contains a series of recorded impressions corresponding with recorded digits while the lower, or space, channel contains impressions marking the separation between digits recorded on the upper channel. Figure 6 illustrates a section of tape on which the data for one completed call has been recorded. Actual recorded tapes may be readily viewed with a magnetic tape viewer such as the Minnesota Mining and Manufacturing Company's "Scotch Viewer."

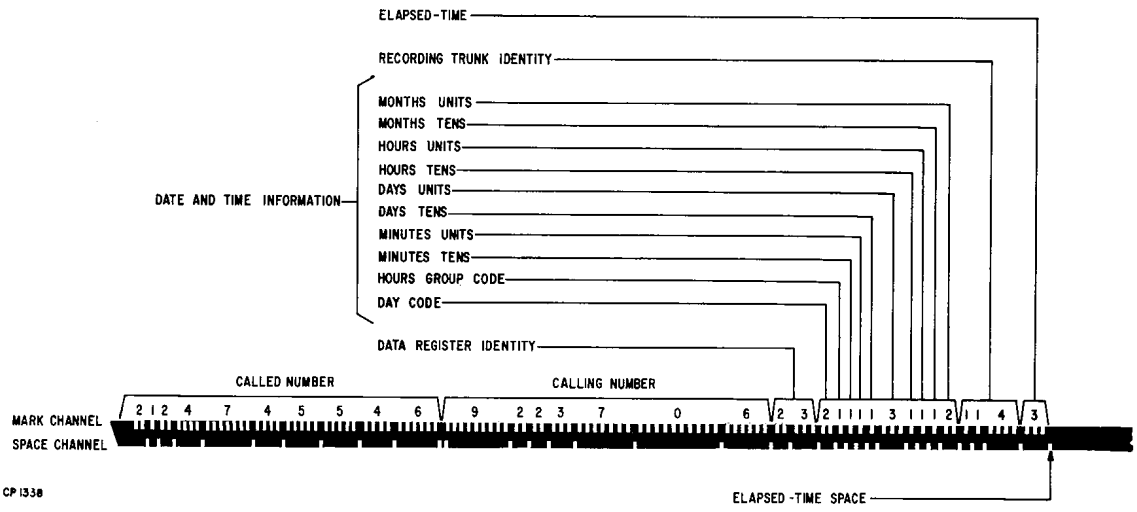

Figure 6. Recorded Data for One Completed Call.

READOUT

The gas-tube electronic readout is arranged to add flexibility in the format of the hard copy. This flexibility permits telephone companies to align (and to change when necessary) the arrangement of the data on hard-copy forms, to conform with accounting demands.

A minimum of two readouts are always equipped for reliability (more than two, if ticket volume requires it). Full availability access is provided between each readout (up to five) and all recording trunks. Standard output is 5-channel perforated paper tape; one perforator is equipped with each readout.

SYSTEM FEATURES

Compatibility with the latest changes in the DDD numbering plan is provided, including critical timing for reconciling conflicting area codes and central-office prefixes.

The standard Type 45 features including outpulsing in dial pulse and multifrequency modes, 3- and 6-digit translation, automatic routing, multi-alternate routing, digit skipping, digit adding, intercept routing, EAS call blocking by class of service, and sender time-out are features of the SCAMA System.

REGISTER-SENDER AND TRANSLATOR FEATURES

a. Register-Sender.

The principal features required and provided in the register-senders used in SCAMA are as follows:

(1) Receiving 7- and 10-digit called numbers.

(2) Receiving up to 10 digits of a called number from data register in parallel coded decimal form.

(3) Outpulsing in either 10-pulses-per-second dial pulse form with 600-millisecond interdigital timing, or in multifrequency 2-out-of-6 form at a rate of 7 digits per second. Outpulsing mode is selected by translation. On multifrequency calls, the routing digits within the recording office are in 10 pulses-per-second dial pulse form.

(4) Outpulsing from 3 to 10 address digits.

(5) Responding to "STOP-GO" delay dialing supervision, with no delay if "STOP" is not required (such as on calls to SxS tributary and local offices).

(6) Gaining access to an associated translator, which can translate either three or six digits and instruct the register-sender on the basis of either or both digit examination and class-of-service marking. The instructions are as follows:

(a) Expect a 7- or 10-digit called number; ERS can also expect a 3- or 6-digit called number.

(b) Skip 0, 1, 2, 3, 4, 5, or 6 of the earliest digits.

(c) Add from 1 to 6 routing digits of stipulated values.

(d) Outpulse in DP mode.

(e) Outpulse in MF 2/6 mode after sending the routing digit or digits in DP mode.

(f) Route the call to an intercept destination by using routing digits only and omitting the spilling of any of the digits of the dialed number. This may be the result of either translation or time-out in the sender (available in ERS only).

(g) Respond to wink-start delay.

(h) Respond to dc selector overflow signals (instantaneous response available with ERS).

(i) Release the calling subscriber line into lockout condition in case of time-out resulting from seizure without dialing.

(j) Release forward, check removal of sleeve ground, then reseize selector and direct call over an alternate route.

b. Translator.

The principal features of the translator not already covered above are listed as follows:

(1) Providing negligible delay in accessing and delivering instructions.

(2) Translating on either three or six digits. Six-digit translation can be provided for up to six foreign areas.

(3) Providing multiple alternate routing capability for up to three alternate routes (in addition to the regular first choice route).

(4) Providing an associated class-of-service circuit. Electromechanical register-sender can provide for up to 12 classes of service; ERS can provide for up to 225 classes of service.

(5) Providing capacity of 25 routes (class-relay control) with provision for expansion to 50.

(6) Referring the call to a WATS assistance operator (available in ERS only).

(7) Accommodating up to 18 WATTS classes (available in ERS only).

(8) Accommodating up to six interstate and three intrastate WATS bands (available in ERS only).

(9) Providing for blocking DDD calls made to either local or distant free service offices in the home area. Blocked calls can be routed to an operator, to a recorded announcement, or to a busy tone.

(10) Providing for blocking calls containing an area code followed by a toll terminal code, an inward operator code, or a special service code.

SECTION II

SYSTEM DESCRIPTION

LOCAL STATION-TO-STATION ANI CALL

a. Seizure and Kind-of-Call Check.

Dialing the access code, usually the digit 1, causes seizure of an idle recording trunk, and it initiates a start signal to the access coupler (fig. 7). The access coupler, which is associated with the recording trunk, connects the recording trunk to an idle data register. When the data register is seized, it causes the identifier to make a kind-of-call check. When the identifier is attached, it determines the kind of call being made, in this case a local-station sent-paid call, and it sends the kind-of-call indication to the data register where it is stored. The kind-of-call check does not delay the call because digits of the called number can be received while the check is being made.

b. Receiving the Called Number and Identifying the Calling Number.

As digits of the called number are received, they are stored in the data register and in the register-sender. When the last digit of the called number is received, the data register initiates a second request for the identifier. The identifier simultaneously detects and sends the calling number (in 2-out-of-5 coded form) to the data register, where it is stored. At the end of identification, the register-sender outpulses any required routing digits followed by digits of the called number, thereby building up the forward connection. After the last digit has been outpulsed, the register-sender is released from the data register. The data register sends the ticket data to the recorder and then releases itself.

c. Recording Time and Date, Equipment Identity, and Elapsed Time.

When the called party answers, off-hook supervision is returned to the recording trunk, and the reception of off-hook supervision starts the timer. The recording trunk initiates a request to the clock calendar for time and date information, and the information is recorded.

If the call is not completed (no answer or busy), the clock calendar will not be called in, and the recorder will be homed, without requesting readout, when the calling party hangs up. Provision is made to read out records of incomplete calls when required.

The clock calendar furnishes the following information: day code, hours group code, month, day, hour, and minutes. Following this, the clock calendar furnishes the equipment number of the recording trunk. All the information is pulsed into the magnetic tape recorder. During the time of conversation, the timer in the recording trunk generates elapsed-time pulses at the rate of one pulse per minute and, as each pulse is generated, it is recorded on the tape.

d. Call Disconnect and Readout.

When the calling party disconnects from the call, the recording trunk sends a pulse to the recorder control circuit, and the pulse, which is known as the elapsed-time space, is recorded on the space channel of the recording tape. The recording trunk also indicates to the recorder control circuit that the call is over and the information on the tape should be read out.

Note. If the called party disconnects and the calling party does not, the recording trunk will time out within 12 to 18 seconds. When the recording trunk times, out, it sends the elapsed-time space and the indication that readout is required to the recorder control circuit.

After the elapsed-time space has been recorded, the recorder control circuit begins to home the tape, and it initiates a request for readout. When the tape has been homed and the readout circuit is attached, the recorder control circuit restarts the tape and, as the tape moves, the recorded information is read into the readout circuit. As the tape continues toward the home position, the information on the leading edge of the tape is erased in preparation for recording the next call. When the tape once again reaches the home position, the busy condition is removed from the recording trunk. The readout circuit continues processing the information until the call data is recorded on hard copy.

CALLS FROM TRIBUTARY OFFICES

A call from a tributary office proceeds in the same manner as a local station-to-station ANI call with the following additional functions being performed.

The identifier sends the calling number from the tributary office to the recording office in 2-out-of-6 multifrequency tones that are received, detected, and stored in the data register.

The trunk circuit at the tributary office and the data register at the recording office are equipped with time-out circuits. The time-out circuit of the tributary trunk is actuated when the identification request is

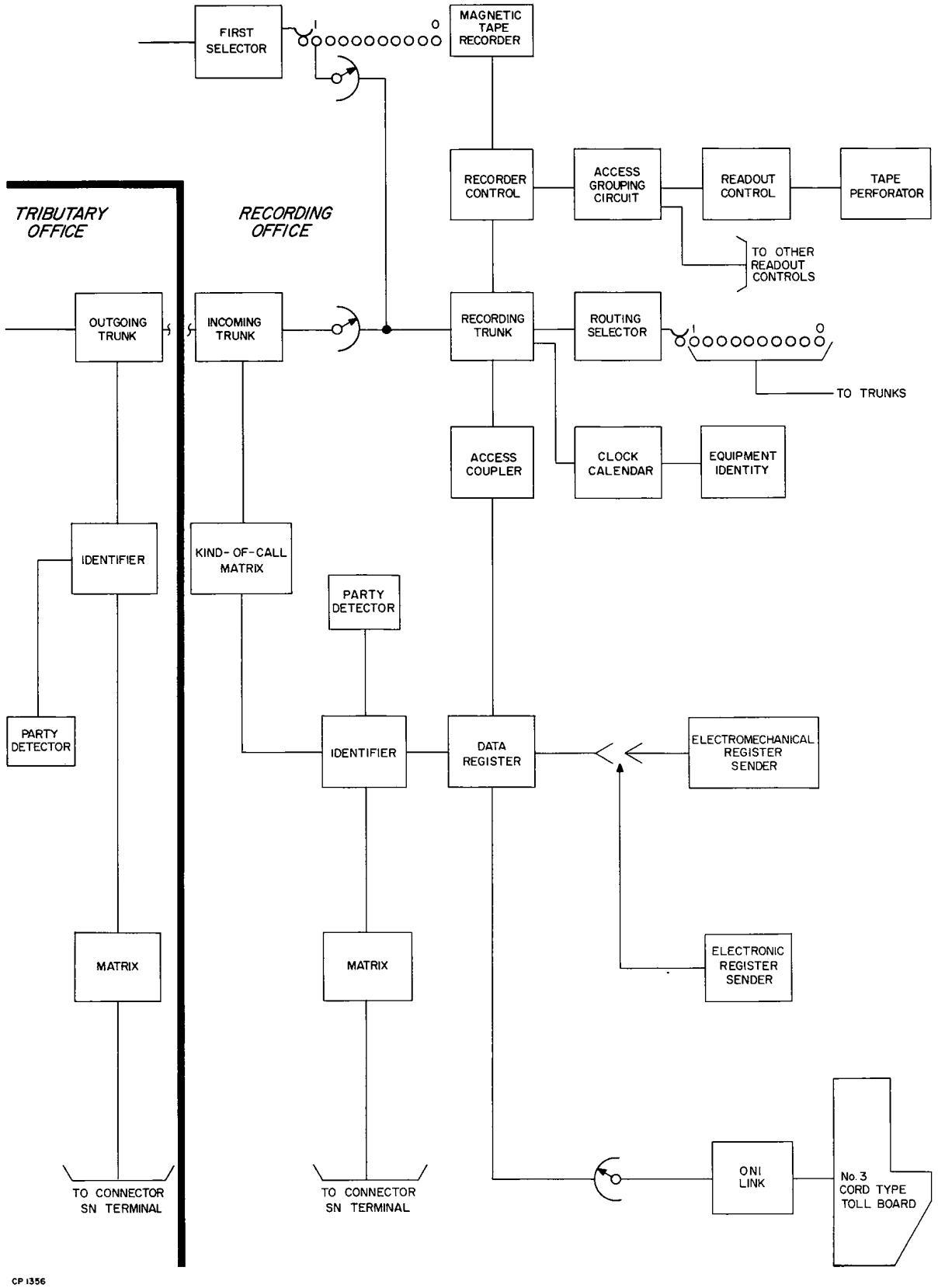

Figure 7. Trunking Diagram of SCAMA System Arranged for 1+ANI/ONI Operation.

made, and the time-out circuit of the data register is actuated when the data register is seized. If the identifier is not associated within approximately 5 seconds, time-out of the tributary trunk cancels the identification request, and the data register continues timing until its time-out cycle of approximately 10 seconds is complete. Time-out of the data register signals an operator, who asks for the calling number and then keys the number into the data register.

OPERATOR NUMBER IDENTIFICATION (ONI)

Three types of calls require assistance of the operator to complete the call:

a. Calls from lines not marked to be automatically identified. For example, multiparty lines in an office equipped for 2-party automatic number identification.

b. Calls from offices not equipped with an identifier.

c. Calls encountering trouble conditions that prevent the line from being automatically identified.

Trunk groups from offices not equipped with an identifier are marked so that the kind-of-call check can detect that the incoming call is an ONI call. When the call is originated in an office equipped with an identifier, the type of call is indicated by an information digit sent by the identifier. Information digit 1 indicates that the calling line is marked for ONI, and information digit 2 indicates that ONI is required because of an identification failure. (A third information digit, information digit 0, indicates that the line can be identified automatically.)

At the end of dialing the called number, a request is made by the data register for an ONI link, and an idle ONI link searches for the data register requesting service. When the ONI link finds the data register requesting service, the call is cut through to the operator's position. and both the operator and the calling party hear a spurt of tone. The operator requests the calling party's number and keys it into the data register. When the last digit of the calling number is keyed by the operator, the position is automatically released, and the call proceeds as previously described.

ONI OVERLAP

An operator, who is handling a call on a cord, can momentarily leave the call to serve an ONI call. Because of the very short time involved in handling an ONI call, an operator can elect to serve an ONI call while waiting to perform another function on the cord call. The operator accepts the waiting ONI call by operating the ONI call waiting key, and, after keying the seven digits, she is automatically reconnected to the call she was handling.

SECTION III

CIRCUIT FUNCTIONS

TRUNK CIRCUIT, 1-WAY OUTGOING FROM TRIBUTARY OFFICE, E & M SIGNALING

The outgoing trunk circuit provides for the following:

a. Accepting and repeating subscriber dialed digits.

b. Gaining access to the parallel identifier on request and switching through tip and ring path for multifrequency sending of calling number.

c. Permitting, by option, access by battery searching selectors.

d. Disconnecting idle-line termination when seized.

e. Removing calling bridge and cutting loop through to detect circuit during 2-party ANI check.

f. Cancelling request for identifier. If identifier is not associated within 4 to 6 seconds, call is then routed to an operator.

TRUNK CIRCUIT, 1-WAY INCOMING TO TOLL CENTER, E & M SIGNALING

The incoming trunk provides for the following:

a. Accepting and repeating incoming signals. Converts incoming E & M signaling to outgoing loop pulsing.

b. Switching through to succeeding circuit on seizure.

c. Grounding forward sleeve on seizure, thereby seizing preselector.

d. Sending stop-go signal through optional figure, when calls are received from common control offices. DC marking from trunk indicates that trunk is in a group that services a common control office.

e. Disconnecting idle-line termination when seized.

f. Extending marks to class-of-service and kind-of-call matrices. Permits grouping of trunks according to class of service and kind of call.

PRESELECTOR

The preselector provides for the following:

a. Controlling the motorswitch.

b. Controlling hunting on a staggered basis. A staggering control is provided so that several motorswitches that are hunting for an idle terminal will not all land on the first idle terminal, but will stagger themselves to succeeding idle terminals.

c. Preventing the motorswitch from hunting when all recording trunks are busy.

d. Searching for battery on the sleeve lead. Battery on a sleeve lead indicates an idle recording trunk.

RECORDING TRUNK

The recording trunk provides for the following:

a. Initiating, on seizure, a request to access coupler, which causes access coupler to connect recording trunk to a data register.

b. Repeating attempts to seize an idle data register in case of simultaneous attempts.

c. Returning busy tone to subscriber and stopping request for data register, if subscriber dials before a data register is attached.

d. Switching transmission pads under control of the data register.

e. Controlling the recorder control by requesting readout or by requesting erasure and homing of tape without requesting readout.

f. Controlling request for clock calendar.

g. Initiating timed disconnect in 12 to 18 seconds, if called party disconnects and calling party does not. Connection is released, and line circuit is returned to lockout.

h. Permitting access by transfer trunk circuit on notify calls and on calls transferred to cord positions.

ACCESS COUPLER

The access coupler provides for the following:

a. Coupling between recording trunk and data register. Each recording trunk has access to five data registers, and access is gained in sequential order.

b. Returning busy signal to the recording trunk, if all data registers are busy.

DATA REGISTER

The data register provides for the following:

a. Controlling the kind-of-call check, the identification request, the outpulsing to the line, the outpulsing to the tape, and the request for the operator link position.

b. Storing the called and calling numbers.

c. Permitting access by a multifrequency receiver for receiving multifrequency signals from local DPA or tributary offices.

d. Identifying the data register used on a call. Each data register is identified by a 2-digit code (11 to 00). Specific code is arranged for by strapping on data register.

IDENTIFIER, PARALLEL

The parallel identifier provides for the following:

a. Identifying the calling number by transmitting a +150 volt dc pulse over the back sleeve lead to the connector SN terminal, through a neon diode matrix array, to a detector circuit in the identifier.

b. Transmitting the calling number, as it is identified, to the data register. In the local office, the calling number is transmitted in 2-out-of-5 dc coded form; in tributary offices, it is transmitted in 2-out-of-6 multifrequency form.

c. Transmitting an information code to provide information as listed below:

0 = ANI	– line automatically identified
1 = ONI	– line to be operator identified
2 = ANIF	– line capable of automatic identification, but because of equipment trouble was not identified.

d. Making a party check before the identification process starts when a party detector circuit is equipped.

e. Monitoring the double chain for an open condition within the data register or tributary trunks.

f. Operating alternately when dual identifiers are provided. If one identifier goes into an alarm condition, the other identifier serves all requests. If both identifiers go into an alarm condition, they override the alarm and revert back to serving traffic alternately; the alarms remain registered and must be reset manually.

MATRIX REDUCTION CIRCUIT

A matrix reduction circuit is provided for each matrix that is provided. This circuit switches the thousands, hundreds, tens, and units busses. Strapping fields are provided to mark either TPL or TPS service and to mark the particular office in that matrix.

MATRIX CIRCUIT

The matrix circuit is arranged to serve terminal-per-line or terminal-per-station offices or a combination of both.

The terminal-per-line matrix consists of a cluster of three neon diodes and a resistor per terminal number: one neon diode for each of the thousands, hundreds, and tens digits of the terminal number; the units digit is the party identifying digit dialed by the subscriber.

The terminal-per-station matrix consists of a cluster of four neon diodes, a resistor, and a silicon diode per directory number: one neon diode for each of the thousands, hundreds, tens, and units digits. The silicon diode is used for gating purposes. The party-identifying digit which is either dialed or detected automatically by the party detector circuit determines which silicon diode shall be gated and, hence, which group of neon diodes can conduct.

ONI LINK CIRCUIT

The ONI link circuit controls routing of ONI calls in sequential order to operator positions. Calls enter available staffed positions automatically and, as a call enters, a spurt of zip tone is audible to both subscriber and operator. The operator can cancel the call without keying-in the calling number. When a call is canceled, dial tone is returned to the subscriber, and the operator is released from the connection.

An overlap feature is provided to allow an operator, who is handling another call, to handle one waiting ONI call. When finished with the one call, the operator is automatically returned to the call she was previously handling. She may perform this overlap operation as many times as she desires, but always on a one-at-a-time basis.

CLOCK-CALENDAR SCANNER, CLOCK CALENDAR, AND EQUIPMENT-IDENTITY SCANNER

a. Clock-Calendar Scanner.

The clock-calendar scanner controls the outpulsing of the date and time information. Sequential scanning of the output busses of the clock calendar causes the following information to be sent to the recorder control: day code, hours code, month, day, hour, minute, equipment identity, and an indication of the first minute of elapsed time. Simultaneous requests for service of the clock-calendar scanner are served at the same time.

b. Clock Calendar.

The clock calendar is a time and date storage and recording device that follows 1-minute pulses to advance the date and time information. Means are provided to set and monitor the information registered in the clock calendar. A rotary tap switch, which is used to set the month, must be advanced manually at the beginning of each month.

c. Equipment-Identity Scanner.

The equipment-identity scanner is used to identify the recording trunk by a specific 3-digit number (111 through 888 excluding any combination containing a 9 or a 0). Associating the recording trunk with a 3-digit code facilitates identification of the particular equipment through which a specific call has been made.

RECORDER CONTROL

The recorder control provides for the following:

a. Controlling pulsing information on to the tape.

b. Controlling request for readout access coupler.

c. Controlling homing of recorder and erasure of information on the magnetic tape.

d. Initiating readout of incomplete calls when readout incomplete key is operated.

READOUT ACCESS COUPLER

The readout access coupler provides for the following:

a. Connecting recorder control circuit to readout control circuit. A maximum of ten recorder control circuits are served by an access grouping circuit.

b. Initiating a new seize signal when simultaneous seizures occur.

c. Permitting, by option, completion of non-ticketed traffic, if all recorder controls in a group go into an alarm condition. An emergency alarm is recorded.

READOUT CONTROL CIRCUIT

The readout control circuit provides for the following:

a. Monitoring for correct function of output device.

b. Switching from steering-in to steering-out mode.

c. Resetting readout equipment before starting read-in function.

d. Monitoring for double recordings.

e. Recognizing readiness of output device to accept each digit.

f. Generating +65 and +72 bias and clipping voltages.

g. Actuating playback test circuit.

READOUT CIRCUIT

The readout circuit provides for the following:

a. Counting each digit of data pertinent to toll calls. Counting is accomplished by driving circuit and gas-tube counting chain.

b. Transferring each digit counted into register circuits under control of translation circuitry.

c. Steering each digit, as received, into the proper register. Steering is accomplished by driving circuit and gas-tube steering chain. This circuitry is reused, during steering out, for transferring data from each register into the output device in selected data sequence.

d. Adding home-numbering area code or other indication to distinguish between 7- and 10-digit calls.

e. Differentiating between intrastate and interstate calls, and using day of week and time of day date to determine whether day, evening, or night rate is applicable to a call.

f. Monitoring circuit operation and actuating alarms.

g. Rearranging sequence of readout data to output device.

TAPE PERFORATOR

The tape perforator produces a continuous punched paper tape using a standard Baudot 5-channel code.

NOTES

NOTES

ED-18 Issue-P2 SCAMA

Stromberg-Carlson

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ROCHESTER, NEW YORK 14603

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T-259
ISSUE 3

STROMBERG-CARLSON CALLING-NUMBER IDENTIFIER

Description

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Description

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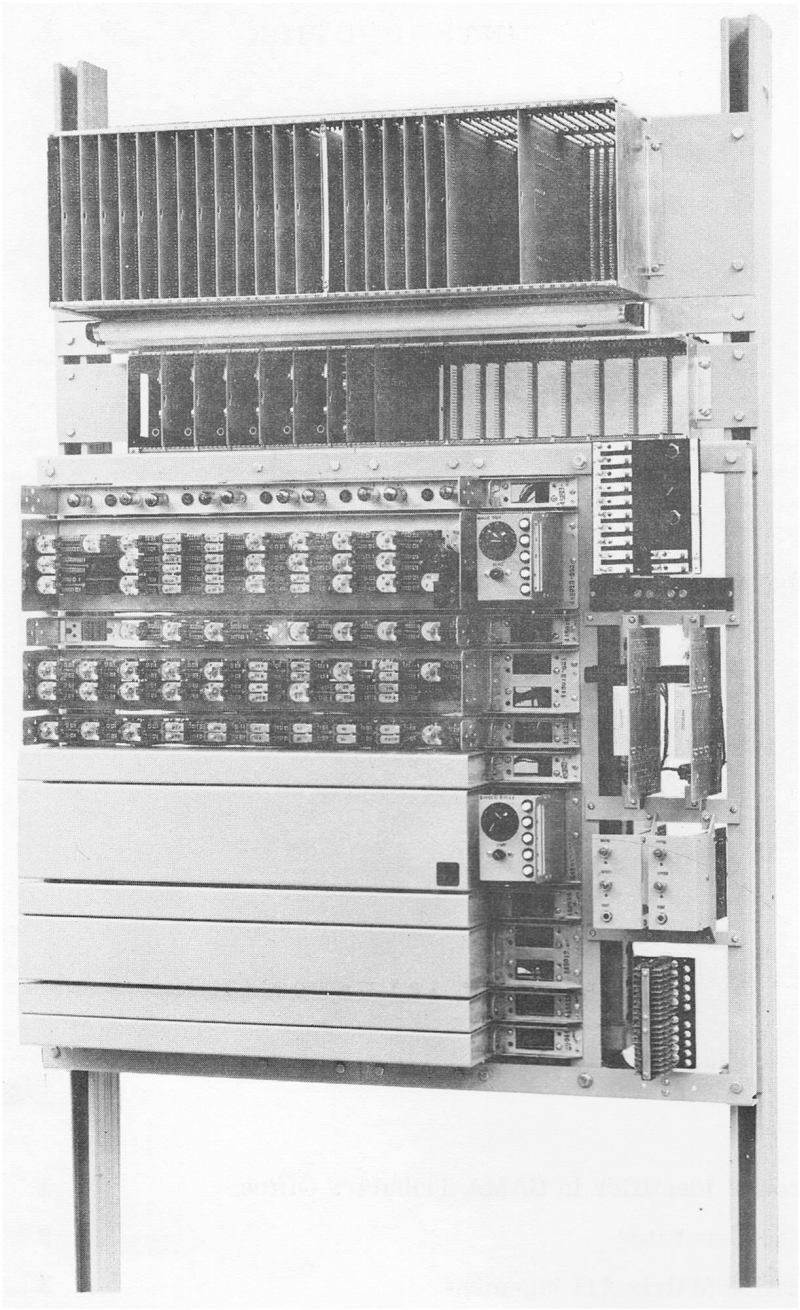

Automatic Calling-Number Identifier

INTRODUCTION

GENERAL

The Stromberg-Carlson Calling-Number Identifier provides a reliable and accurate means of automatically determining the telephone station from which a toll call is being originated. Automatic identification of the calling station provides for fast toll service because there is no waiting time for an operator to intercept and request the calling number. This fast, uninterrupted completion of toll calls is a definite convenience to the telephone user, and this type of service is also beneficial to the telephone company. Operator identification systems, while relatively low in equipment costs, are vulnerable to subscriber and operator error.

Experience has shown that automatic identification stimulates the use of toll services. The average user finds it annoying to have a direct-dialed call intercepted by an operator. On the other hand, fast accurate uninterrupted service encourages repeated use of toll service. This results in real monetary benefits to the telephone company.

APPLICATION

The identifier is a compact, economical system, which provides automatic calling-number identification for telephone exchanges that provide direct distance dialing (DDD) to their subscribers. The equipment can be arranged to provide fully automatic identification (ANI) of stations on 1- and 2-party lines with manual identification of stations on lines that serve more than two parties. If desired, the equipment can be arranged to provide automatic identification of all parties on party lines; with this arrangement, the user must dial a party-identifying digit following the dialing of the access code.

The identifier works in conjunction with a matrix circuit by applying a series of pulses to the third wire or sleeve lead of the originating switch train. These pulses are routed through the matrix and are detected by the identifier to determine the calling line number.

The identifier uses multifrequency outpulsing to forward the calling number to the DDD recording office.

The entire identification system, including the identifier, matrix, multifrequency current supply, and trunks, operates on 48-volt office battery.

OPERATION

A calling number identification in a CAMA system is requested after receipt of the called number dialed by the subscriber. This causes the identifier to begin the identification process by generating high-voltage pulses from the office battery supply and applying them, via connecting circuits, to the sleeve lead of the line circuit at which the call was originated. The pulses also appear at the sleeve lead of the associated connector terminal, from which point they are taken via cable to a cluster of neon diodes in the matrix. These pulses are shaped to avoid noise induction in other circuits.

Each connector terminal is furnished with its own diode cluster. In TPS groups the diode cluster consists of four diodes, the outputs of which are connected to common leads (busses) corresponding to the numerical value of the connector-terminal digits being identified. There are 40 common busses in all, a group of 10 for each digit.

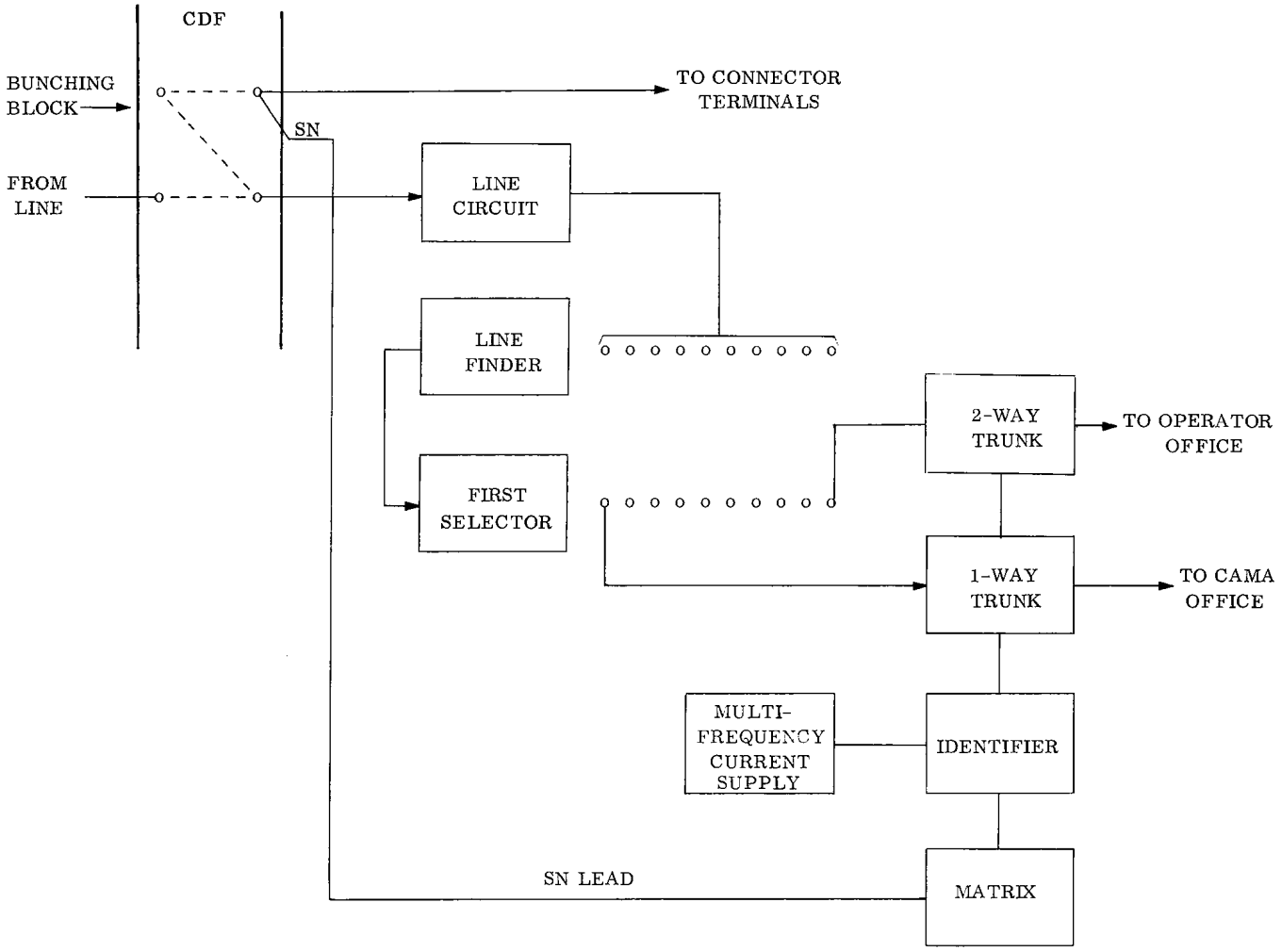

Figure 1. Typical Application of Identifier in CAMA Tributary Office.

The pulses that were applied to the sleeve lead appear on the four common busses representing the number to be identified. For example, if the connector terminal 4532 is originating the call, pulses appear on thousands bus 4, on hundreds bus 5, on tens bus 3, and on units bus 2.

Five detectors representing the numerical values 1 to 0 in 2-out-of-5 coded form are furnished in the identifier, and as the identifier scans each group of busses, the pulses that have been applied energize the appropriate detectors. Relays, activated by the detector, connect the proper multifrequency pulses for transmission of the identified digits through the trunk circuit to the CAMA office. In actual practice, the identifier first sends (in multifrequency form) a start signal, then an information digit, a 3-digit office code, a 4-digit station number, and finally a stop signal.

CAPACITY

The identifier is capable of handling 700 busy-hour attempts. It can provide calling number identification of four office codes in any one unit, and as many as six office codes spread over the four 10,000-station units. Normally the identifier segregates office codes by the thousands digit. Where mixtures occur, special auxiliary matrix equipment can be provided.

Standard matrix equipment is furnished for terminal-per-station (TPS) or terminal-per-line (TPL) groups, or a combination of both.

SIZE

The multifrequency current supply; the identifier shelf; the matrix, serving up to 4000 stations; and a trunk shelf, accommodating up to 10 trunks can be mounted on one bay 9 feet high and 3 feet wide. The trunk shelf is mounted on the rear of the bay. A bay 11-1/2 feet high and 3 feet wide can mount the same equipment with an additional matrix for 2000 stations, making a total of 6000 stations. Because this arrangement is very flexible, other arrangements can be used, which makes possible the mounting of a second trunk shelf if the number of stations is less than that indicated above. If required, additional matrices or additional trunks can be mounted in an adjacent bay.

The units of the multifrequency current supply are card units designed to fit into a standard 30-inch cell that is 5-1/4 inches high and 10-1/16 inches deep. The multifrequency current supply can be furnished as a single supply or as a dual supply in the same cell, with a transfer circuit.

The factory-wired identifier shelf takes 2 feet 7 inches of bay space. It is capable of mounting two identifiers, each of which consists of five plug-in circuit plates and two printed wiring board assemblies. If only one identifier is provided initially, a second unit, to effect reliability redundancy, can be added at any time. The shelf also includes a supervisory circuit plate, which serves both identifiers.

Matrix equipment for each TPS connector terminal consists of a cluster of four neon diodes, a 1/2-watt resistor, and a silicon diode. Twenty of these clusters are mounted on a printed wiring board (matrix card) that plugs into a cell arranged to accept 50 such cards. Thus, 1000 TPS connector terminals can be accommodated in one cell. Each cell is 8-3/4 inches high. Wiring raceways 2 inches high are located between the cells, and above and below the top and bottom cells.

Terminal-per-line clusters require only three neon diodes, allowing 30 such clusters to be mounted on one printed wiring board. TPL cells are the same size, and accept the same number of matrix cards as the TPS cells. Four TPL matrix cards are required for each hundreds group.

MAINTENANCE

The design of the identifier and its associated matrix has been geared to economy and simplicity, so that operation of the equipment is reliable with a minimum of maintenance.

The system can easily be maintained by personnel with a knowledge of conventional electromechanical switching circuits. Relay techniques are used throughout the identifier circuits, and the progress of an identification within the electronic portions of the identifier and matrix circuits can be traced visually because of the use of neon diodes and gas tubes. (See page 11.)

GENERAL

The identification process involves the application of an identification signal to the third wire or sleeve lead of the originating switch train, the detection of this signal in a form having digital significance with respect to the originating terminal number, and the transmission of the digital information to a recording medium. Identification is based upon a neon diode matrix. Pulses of positive potential are applied via the originating switch train sleeve to the originating line circuit and connector terminal and thence to an associated cluster of neon diodes in a matrix. The diodes transfer the pulses to appropriate digital busses, which are connected through a matrix reduction circuit to the identifier under control of a relay program and counting circuit. The busses are interrogated by a gas-tube detector under control of the relay program and counting circuit.

The identification equipment, then, consists of five basic functional blocks: a high-voltage pulse generator, a neon diode matrix, a gas-tube detector, a relay program and counting circuit, and a matrix reduction circuit.

HIGH-VOLTAGE PULSE GENERATOR

The high-voltage pulse generator provides the anode potential for the detector and it provides the identification signal that is sent over the sleeve lead. The pulse generator consists of a pulsing relay, a polarity switching relay, a voltage tripler, and a gating relay. (Refer to fig. 2, which is a simplified schematic diagram of the pulse generator.)

Pulsing relay PG is a mercury-wetted-contact relay that is bi-stable and polarized. The relay is arranged in a self-interrupting capacitor-timed configuration, which is actuated by the application of a positive potential to point A. As the relay pulses, it generates positive pulses at a rate of 10 pulses per second and with a percent make of 38.

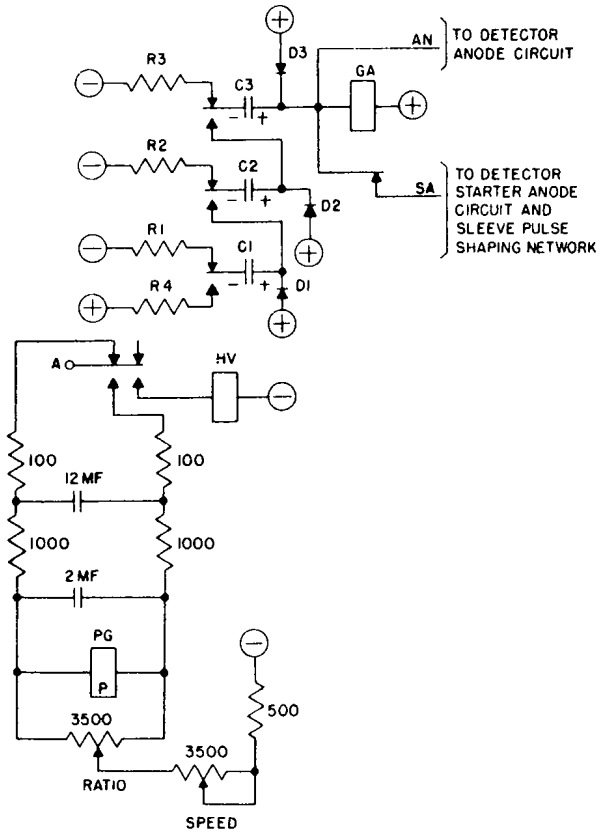

Figure 2. High-Voltage Pulse Generator

Polarity switching relay HV is a mercury-wetted-contact relay, which follows pulses generated by relay PG and, in doing so, it provides polarity switching for the voltage tripler.

The voltage tripler consists of capacitors C1, C2, and C3; resistors R1, R2, R3, and R4; and solid-state diodes D1, D2, and D3. With relay HV nonoperated, the capacitors charge to office battery potential. When relay HV operates, the three charged capacitors are connected in series, thereby tripling the battery voltage. The output of the voltage tripler is applied (1) to the main anode of the detector tube, (2) to contacts of gating relay GA, and (3) to the winding of relay GA.

The potential at the contacts of relay GA is applied, as bias voltage, to the starter anode of the detector and, as high-voltage pulses, to the sleeve pulse shaping network. The potential at the winding of relay GA causes it to operate. In operating, relay GA disconnects the potential from the starter anode and from the sleeve pulse shaping network, thus limiting the duration of the pulse. The operation of relay GA also results in the synchronization of the bias voltage and the high-voltage pulses. To minimize crosstalk, the sleeve pulse shaping network rounds off the steep leading edge of the pulses before they are sent over the sleeve lead.

Relays PG and HV are mercury-wetted-contact relays because this type of relay has inherent reliability and bounce-free characteristics both necessary to the application described.

MATRIX

The matrix permits transfer of the identification signal from the sleeve lead of a connector terminal to busses that have digital significance with respect to the connector terminal. The matrix uses neon diodes as a gating element because neon diode matrices eliminate the marginal signals that characteristically appear on matrix busses when resistor matrices are used. Consequently, signal detection becomes a nonmarginal or go, no-go process readily accomplished by simple detection circuitry.

One matrix is required for each connector terminal, and the type of matrix used depends on whether the connector terminal is in a terminal-per-station group or in a terminal-per-line group. A third matrix is available for use in offices that provide only individual line service.

Terminal-Per-Station Matrix.

Figure 3 is a schematic diagram of a terminal-per-station matrix arrangement. The arrangement contains 20 terminal-per-station matrices, and each matrix consists of a cluster of 4 neon diodes, a resistor, and a solid-state diode. The neon diodes are used in identifying the digits of the calling number, and the solid-state diode provides for party gating when the connector terminal is assigned to a multiparty line. Each neon diode is used in identifying one digit of the calling number -- that is: one neon diode is used in identifying the thousands digit,

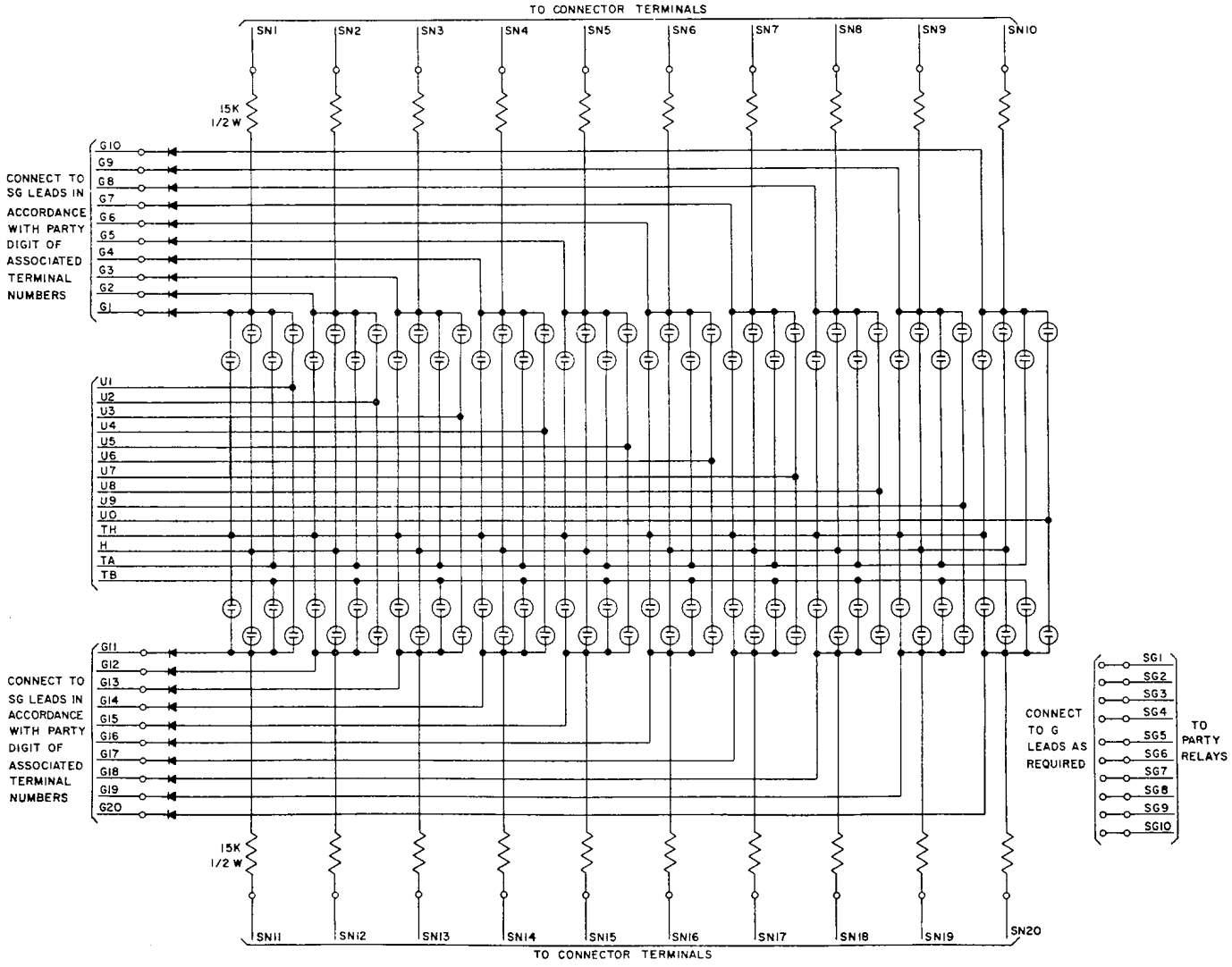

Figure 3. Terminal-Per-Station Matrix Arrangement

another is used in identifying the hundreds digit, etc. The anodes of the four neon diodes are connected in parallel through the resistor to the sleeve lead of the associated connector terminal. Thus, an identification signal applied to the sleeve lead appears on the anode of each neon diode. The cathode of each neon diode is wired to 1 bus within a group of 10 busses. There are four groups of busses, and each group of busses is used in identifying one digit of the calling number - that is: one group is used in identifying the thousands digit, another is used in identifying the hundreds digit, etc. The specific bus to which the cathode is wired depends on the value of the digit. For example: if the thousands digit of a calling number is 5, the cathode of the neon diode that is used to identify the thousands digit would be wired to thousands bus 5.

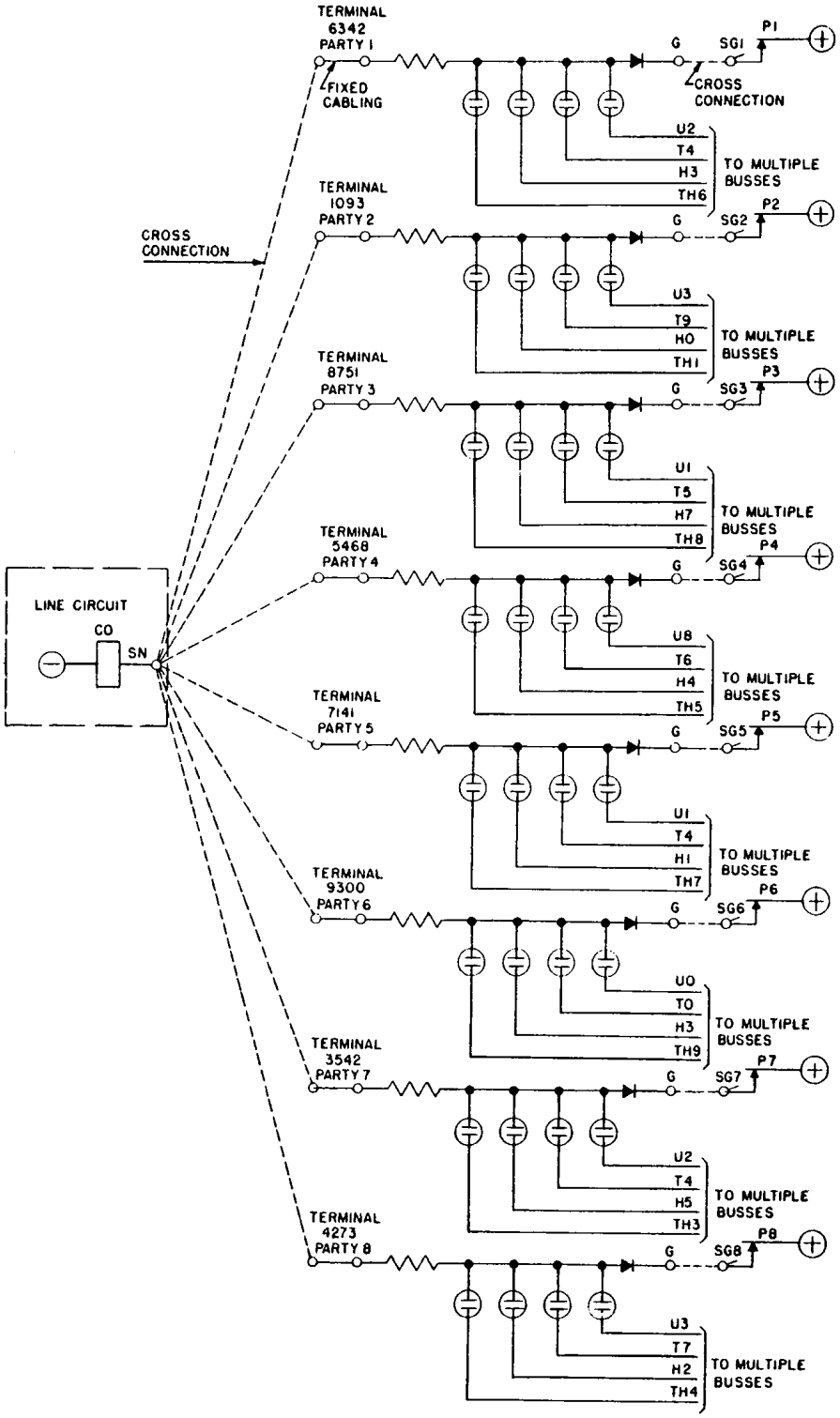

Figure 4. Terminal-Per-Station Gating Arrangement

Any of the neon diodes that is properly terminated will fire. To identify a digit, the identifier simultaneously scans a group of busses by terminating the busses. The terminated neon diode will fire, and with the neon diode fired, the identification signal appears on the bus to which the diode is connected. The signal on the bus activates a detector in the identifier.

Party gating is required on multiparty lines of terminal-per-station groups. As many as 10 different connector terminals, each having its own matrix, may be grouped to form a party line, and party gating is used to determine the calling party. When connector terminals are grouped, an identification signal that is applied to the sleeve lead of any connector in the group will be applied to the current limiting resistor of each matrix associated with the party line (fig. 4). Because the identification signal appears at the input of each matrix, a means of blocking the signal at all matrices except the matrix associated with the calling line must be provided. With party gating, all matrices associated with the party line are inhibited by the identifier transfer circuit. All matrices remain inhibited until the identifier transfer circuit receives the party-identifying digit from the recording trunk. When the party-identifying digit is received, the identifier transfer circuit enables one matrix, as determined by the party-identifying digit.

To inhibit the matrices, the identifier transfer circuit connects ground through normal contacts of relays assigned to each party to the cathode of the solid-state diodes of the matrices. With the solid-state diodes grounded, the identification signal will be shunted to ground. When the party digit relay operates, ground is removed from the solid-state diode of the matrix associated with the party; thus, that matrix is enabled while all others remain inhibited.

The matrix also serves to determine the class of multiparty service and to determine the office code should more than one code be assigned within one ten-thousand terminal group. Each of these functions is accomplished by grouping thousands busses in accordance with terminal-per-line and terminal-per-station groupings and in accordance with office code assignments.

Terminal-Per-Line Matrix.

The terminal-per-line matrix is similar to the terminal-per-station matrix except that party gating is not required. In terminal-per-line groups, each station of a multiparty line is distinguished only by the units digit of its number; it shares common thousands, hundreds, and tens digits with the other parties on the line. Consequently, matrix clusters are assigned on a per-line basis to determine only the first three digits of the number. The units digit is determined from the party number or party-identifying digit dialed by the calling subscriber. The units digit is transmitted directly to the recording equipment.

Individual Line Matrix.

The individual line matrix is similar to the terminal-per-station matrix. The difference is that the solid-state diode is not required for party gating.

DETECTOR

It is the function of the detector to respond to an identification signal on a matrix bus. The detector (fig. 5) consists of two cold-cathode gas-filled triodes (detector tubes), a relay, and a zener-diode biasing network. The detector responds to the identification signal by firing one of the detector tubes, which results in the operation of the relay.

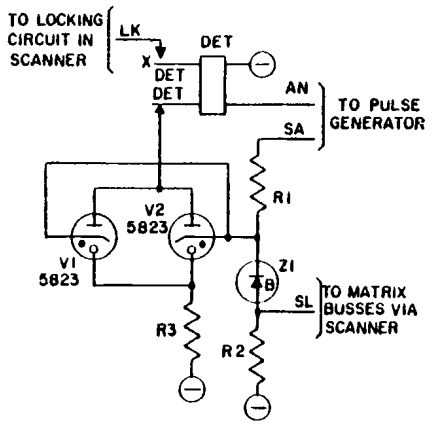

Figure 5. Detector

Two detector tubes are used to enhance the over-all reliability of the detector. The tubes are connected in parallel, and the first tube that fires instantly starves out the other; therefore, during any given detection, one tube fires, and one tube serves as standby.

The high-voltage generator supplies voltage to the main anode of the tube and to the zener-diode biasing network. The bias voltage applied to the starter anode of the tube is necessary because the identification signal appearing on a matrix bus may at times be of insufficient amplitude to fire the tube. To guard against false firing of the tube due to spurious signals, the bias voltage is applied in step with the high-voltage pulses sent over the sleeve lead. The synchronization of the bias voltage and the high-voltage pulses is accomplished at the high-voltage pulse generator.

When the starter anode circuit is connected to a matrix bus that is carrying an identification signal, the signal voltage on the bus is added to the bias voltage. The resulting voltage, which appears across the starter anode and the cathode of the tube, causes the tube to fire -- that is, the tube conducts and current flows from the cathode to the main anode. When the identification signal and the bias voltage are removed, the tube continues to conduct and will do so until the main anode voltage is disconnected.

One winding of the relay is in series with the main anode circuit of the detector tubes. When one of the tubes fires, the current flowing in the main anode circuit operates the relay. The relay, in operating, disconnects the main anode voltage and the tube cuts off.

The relay locks over a second winding and it remains operated until the relay program and counting circuit advances to identify the next digit.

RELAY PROGRAM AND COUNTING CIRCUIT

The relay program and counting circuit, which consists of a counting chain and a program chain, controls the scanning and pulsing action on which the identification process depends. The counting chain performs the scanning function, and the program chain controls the sequence of the identification process. That is, it controls the steps necessary to (1) determine the type of service, (2) determine the originating office, (3) determine and transmit each digit of the office code, (4) determine and transmit each digit of the calling number.

MATRIX REDUCTION CIRCUIT

The matrix reduction circuit connects each group of matrix busses to the mark leads of the identifier. Only one group of busses is connected at a time, and the connections are under control of the program chain of the relay program and counting circuit. The detector interrogates the busses over the mark leads, and, when the detector responds to the identification signal, the program chain is advanced. As the program chain advances, it disconnects the group of busses from the mark leads, and it connects the next group of busses to the mark leads.

During identification, the thousands busses are interrogated three times. (Refer to fig. 6.) First, the thousands busses are connected to the mark leads through type-of-service strapping provided at the matrix reduction circuit. The thousands busses are then interrogated to determine the type of service, TPS or TPL. Second, the thousands busses are connected to the mark leads through office strapping provided at the matrix reduction circuit. The thousands busses are then interrogated to determine the originating office. Third, the thousands busses are connected directly to the mark leads, and the busses are scanned to determine the thousands digit. After the thousands digit has been determined, the remaining digits are determined in a similar manner.

MAINTENANCE

Minimal maintenance requirements and operational simplicity were two objectives of the design of the identifier. The nature of the service for which the identifier is intended precluded reliance on daily routine testing because the identifier will often be installed in unattended offices which are visited at less than weekly intervals. Every effort consistent with economy and simplicity has been made to ensure reliable operation. All marginal relay operations have been avoided, and relay spring loads have been held below the usual levels to minimize wear. Because the basic principle of the identifier is dependent on voltage sensitive devices, the design voltage range was set at 40 to 60 volts, although the normal operational range is specified at 44 to 55 volts.

Maintenance is simplified by use of a built-in test set, which checks the output of the identifier matrix. A neon test lamp is also recommended for maintaining the equipment. The use of this test equipment and visual troubleshooting techniques brings the maintenance requirements of the identifier within the grasp of personnel having some knowledge of electromechanical switching functions. Because there is a visual indication of the firing of neon diodes and detector tubes, the progress of an identification may be readily followed in the process of fault location.

Notes for Figure 6.

101. In TPL offices, leads TC1 through TC0 are strapped together and connected to lead TPL. In TPS offices, leads TC1 through TC0 are strapped together and connected to lead TPS. In mixed TPL/TPS offices, leads TC1 to TC0 are grouped in accordance with the thousands digits of each category; the TPL groups are connected to lead TPL, and TPS groups are connected to lead TPS.

102. If only a single office code is used, leads OC1 through OC0 are strapped together and connected to lead OF1.

103. If office codes are segregated by thousands digits only, leads OC1 to OC0 are strapped in groups corresponding with the grouping of thousands digits assigned to each office code. Each group of OC leads is strapped to lead OF1, OF2, OF3, or OF4 in accordance with the number of office codes used.

104. If multiple office codes are not segregated by thousands digits or are partially segregated by thousands digits, an auxiliary matrix is required, and leads OC1 through OC0 are connected as follows:
   a. If no relationship exists between office codes and the thousand digits, leads OC1 to OC0 are grouped together and connected to lead OF2, OF3, or OF4 depending upon whether 2, 3, or 4 office codes are used.
   b. If office codes are partially segregated by the thousands digit, leads OC1 through OC0 corresponding with the thousands digits of those groups in which office code bears no relationship to terminal number are not connected. Leads OC1 through OC0 corresponding with the thousands digits of those groups assigned to a particular office code are grouped and connected to leads OF2, OF3, or OF4 in accordance with office code assignments.

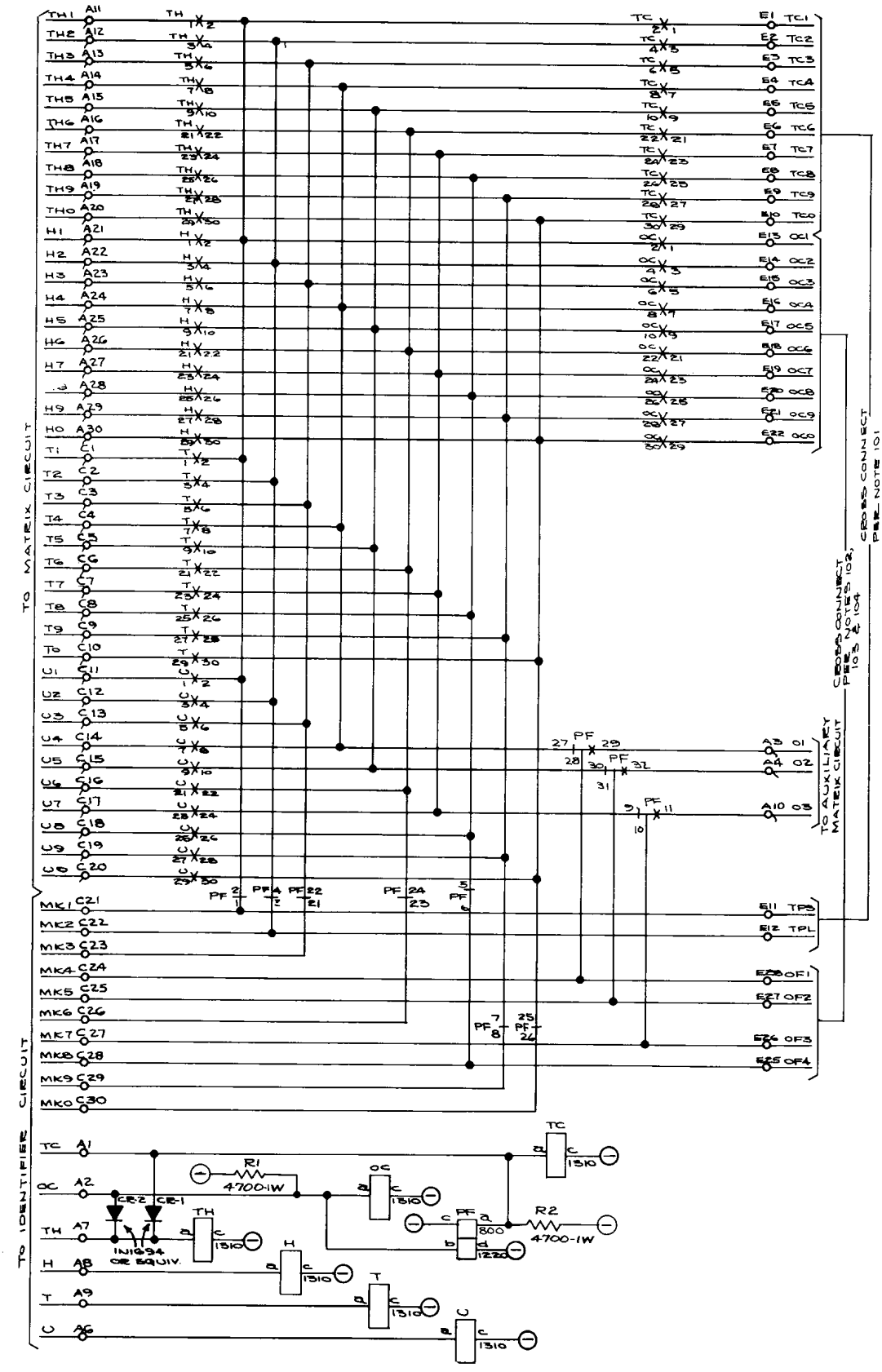

Figure 6. Matrix Reduction Circuit.

NOTES

T-259 ISSUE 3 CALLING-NUMBER IDENTIFIER

Stromberg-Carlson

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ISSUE 2

STROMBERG-CARLSON
SUBSCRIBER EDUCATION SUGGESTIONS
FOR DIRECT DISTANCE DIALING

ED-21

ISSUE 2

STROMBERG-CARLSON
SUBSCRIBER EDUCATION SUGGESTIONS
FOR DIRECT DISTANCE DIALING

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FOR DIRECT DISTANCE DIALING

These "Public Relations" suggestions will help you carry out a subscriber information and education program about Direct Distance Dialing within your operating area, prior to cutover.

You will find the following materials, to be selected and edited to fit your needs:

1. A suggested news release announcing your plans to introduce Direct Distance Dialing.
2. A suggested presentation (speech) to community leaders (at a Chamber of Commerce meeting, the Rotary or Lion's Club, for example) giving them advanced information about your plans and how DDD will benefit the community.
3. A news release which may be coordinated with this presentation.
4. A general news release which may be published some time before your new equipment officially goes into operation.
5. A suggested sequence of questions and answers for a tape-recorded (or live) interview sponsored as a public service by your local radio or TV station.

Each section has been prepared to make it easier for you to put together a Subscriber Education Program; these ideas and plans have been carried out successfully by operating companies that have already introduced DDD.

The material included here should be reviewed carefully before release. Some alternate information has been prepared; therefore, select those sections which refer to the type system to be used and to the extent of the DDD service available to your customers.

Further information as to the use of this material can be obtained from your Stromberg-Carlson Sales Representative or the Stromberg-Carlson Branch Office in your area.

SECTION 1

Initial news release.

Telephone subscribers living in (area covered by this installation) will soon be able to dial their long-distance calls "direct" without operator assistance, according to an announcement made today by Mr. _____, president of the _____ Telephone Company.

Mr. _____ said that this time-saving method, called Direct Distance Dialing, is made possible by modern equipment recently ordered from Stromberg-Carlson of Rochester, New York.

"This service," states Mr. _____, "brings to every telephone user the most modern telephone facilities available. This modernization program (which will cost approximately _____dollars) is another step in bringing the best in telephone service to our subscribers."

This announcement initiates an information program planned by the _____ Telephone Company, designed to fully inform everyone as to how Direct Distance Dialing is used, and when the new service will become available. Watch this paper for further announcements of progress.

SECTION 2

A Talk With Key People in the Community

I want you to be among the first in ___(city)_____ and the area to know that the _____ Telephone Company is about to introduce the modern way to make long-distance telephone calls. This method, called Direct Distance Dialing, is an advance in telephone techniques, part of the growing network of similar systems now being installed across the country. You are men who hold responsible positions in this community; your ideas and opinions are respected. Now, your telephone company needs your understanding and support to make Direct Distance Dialing a success here in ___(city)_____.

Your acquaintance with Direct Distance Dialing may be somewhat limited. You may not realize the benefits that this improvement in service can bring to our community, to your organization and - let's be frank - to the telephone company. In every community where Direct Distance Dialing has been established, home subscribers have found the service more convenient and flexible; businessmen have found it a time-saver as well as a money-saver; and the telephone company has seen a more efficient use of manpower and machines - a healthy basis for holding expenses in line, in these days of rising costs.

Like many of your own businesses, we're going automatic! (At this very moment) (In the near future) the most modern telephone equipment (is being) (is to be) installed in our central office. This equipment will allow every telephone subscriber in this community to dial directly - without the aid of an operator - every dialable point in the United States and Canada . . . more than 85 million telephones!

Let me explain in more detail what Direct Distance Dialing is and how it works for you.

The secret lies in just three spins of your dial -- three particular digits. Once these digits are dialed, your call is automatically directed to the section of the country you want. Some years ago the United States and Canada were divided into more than 100 areas, each identified by its own three digit code, known as an area code. This is the key that makes Direct Distance Dialing the quickest, most economical way to make long-distance telephone calls. The DDD equipment uses these three digits to find the direct route to the distant city. If all normal routes are busy, it automatically finds an alternate route -- all in a fraction of a second without your knowing it. This alone can save valuable time during peak traffic loads.

Then, to make the final connection, you dial the number for the telephone you want just as you would here in ____(city)_____, and the telephone in the distant city starts to ring immediately.

Once our new equipment is completely installed and operating, every city, town, and village with dial service capable of receiving these calls will be only a "finger-tip" away. You'll be able to dial "direct" any one of the 85 million telephones from one end of the country to the other. You may miss chatting with the operator, but your call will go through much faster!

You may have noticed that I've emphasized "without operator assistance" in my explanation. Let me assure you that our Direct Distance Dialing system does not mean that you can't have operator assistance when you need it. Whenever you need help to place a call or to report that you cannot reach your party, a friendly operator will be at your service.

Maybe some of you remember when local dial telephone service was first being introduced. Many wondered how they could get along without the operator. But as time passed, more and more people realized the convenience of dialing their own calls, and the number of calls increased noticeably. If it were not for this improvement in service -- dial operation -- there wouldn't be enough women in the United States to personally handle every local call that is now handled automatically.

Today we are seeing the return of a situation, similar to the one I have just described. However, now it is increased demand for fast, convenient long-distance service. Telephone companies just wouldn't be able to find enough operators to manually handle the increase in the number of long-distance calls. Direct Distance Dialing is the answer today, just as dial service was the answer not too many years ago. Changes in techniques and methods take place every day, and these changes involve your telephone company.

With DDD, we'll get better use of manpower and equipment, while you get better service. Your calls will go through faster because the operator won't have to write numbers, keep track of time, or have to call another operator to find the best path for your long-distance call. Instead, amazingly fast, accurate, modern equipment will do all of these operations -- yes, even compute charges and print your bill.

Meanwhile, our operators will be required to perform only those services which require personal assistance and judgment. The mechanical operations will be performed by electro-mechanical equipment which performs accurately and instantaneously.

ALTERNATE # 1. Omit if you will offer PPCS as well as Station-to-Station.

Many businessmen and professional men like yourselves have found Direct Distance Dialing - calling station-to-station - just as effective as calling person-to-person. You economize in two ways by calling station-to-station. First by using Direct Distance Dialing you will get your number faster, so you save time. Second, by calling station-to-station, you also save money.

We want every telephone user to get his money's worth. Some organizations, continually calling long-distance, in their every-day operations, are doing just that. These organizations use a directory of people they want to talk with, in the order of rank, or preference, for each company they call. If the person they initially wanted to speak with is not in, or is busy, then another person can be requested. This saves invaluable time, eliminates wasted calls, and completes the business intended.

ALTERNATE # 2. Use only if you will offer Person-to-Person, Collect and Special (PPCS) Services in addition to regular Station-to-Station service.

You'll like the increased speed of DDD calling, especially if your firm makes many calls daily. The time you save can really accumulate. Our new equipment can handle person-to-person and collect calls as well as station-to-station calls -- and all with about the same speed. On person-to-person calls, after you've dialed, the operator comes in only long enough to ask whom you are trying to reach and to verify that you have been connected with the person you requested. On collect calls, after you've dialed, she asks your name and verifies acceptance of charges by the called party. The operator then disconnects from the call and the call, which began without waiting for her assistance, continues on a fully automatic basis.

Our big investment is bringing to _____(city)_____ the finest telephone equipment of its kind. The equipment now being installed is similar to that being used by many independent telephone companies throughout the United States. It is manufactured in Rochester, New York, by Stromberg-Carlson, a leader in the communications industry since 1894. (This company, as you may know, manufactured the dial equipment we are now using for local service.)

This complex equipment positively and automatically:

1) identifies the origin of the call (the telephone number of the calling telephone).
2) finds the best, or alternate route to be followed.
3) correctly times the call (and adjusts for lower rates at night and on Sunday).
4) stores all this information on special magnetic tape-recording machines until such a time as the information is transferred to the accounting record.

Although a definite date has not been set for placing this equipment in service, we do expect to have it ready during the month of _____. In the meantime, we'll be spending the next few months in presenting, to the telephone users in _____(city)_____ and the area, all the information and instructions necessary for making the transition to DDD a simple step and one benefiting every user.

One way to make this transition easier is to anticipate and answer the questions most often asked by the average user. I'd like to do that now . . . to ask and answer some typical questions that will help you to understand the new method of Direct Distance Dialing, so that you will feel free to discuss it with others in the community. After the completion of these typical questions and answers, please feel free to ask questions of your own.

Question: 1. How do I dial a long-distance number?

Answer: I am sure you recall my mentioning the three digit area code -- the key to Direct Distance Dialing. Let's start from there. To dial a long-distance call you will require the correct area code for the city you are calling. Let's say you're calling Chicago, which has the area code number 312. With the system we will have in operation, you . . . .

ALTERNATE # 1. For manually identified system only.

. . . dial _____ to gain access to the long-distance equipment, then the three digit area code (312 for Chicago) and finally the seven digit number of the telephone you want in Chicago. After you have dialed your call: (you will hear two short beep tone signals indicating that the operator is on the line.) (the operator will ask for your telephone number.) You tell her the number of the telephone you are using. Your call is completed automatically; the operator is there only to identify the calling station.

ALTERNATE # 2. For automatically identified system only.

. . . dial the access code shown on your number plate to gain access to the Direct Distance Dialing equipment, the three digit area code (312 for Chicago) and finally the seven digit number of the telephone you want in Chicago.

Question: 2. Do I use this same procedure to call nearby communities?

Answer:

(a) For nearby cities and towns, such as (city), (city), and (city), you dial as you would right here in the city. These are free service calls, not toll calls.

(b) To dial communities farther away, where there is a toll charge, but still within our code area, you dial your access number and then the seven digit number for the telephone you want to call. You do not dial the three digit area code. (Check local situation as to home area codes.)

Question: 3. How do I find the number in another city, if I don't already know it?

Answer: There are three situations, each with a simple procedure, and of course there is no charge for this information service.

(a) If you cannot find the number for a person residing in one of the towns included in our directory, dial Information, ( ) and ask for the number. Write it down; then hang up and dial the number yourself.

(b) If you need a number in a nearby town not included in our directory, but shown as within our Area Code ( ), such as (city), (city), (city), dial the access code, then dial 555-1212 and you will be connected to an Area Information Center. Request the number, write it down, and dial as usual.

(c) If you need the number for out-of-state or different area code telephone, dial the access code, then the desired area code, then 555-1212, and you'll have the Information Center in that part of the country you are trying to reach. Ask for the number, write it down and dial as usual.

This only takes a moment or two; just part of DDD service to assist you in reaching your party.

Question: 4. What if I make a mistake while dialing?

Answer: If you know you made a mistake before you finish dialing the complete number, hang up. No charge is made. Then make sure you have the correct number, and dial again.

Question: 5. What do I do when I reach a wrong number?

Answer: Ask the person who answers what his telephone number is and what city you have reached. Then, to avoid being billed for the call, dial "Operator" immediately and tell her what happened. She will see that no charge is made. Check again to see that you have the correct area code and number before re-dialing the out-of-town party you want.

Question: 6. Am I charged if the called line is busy or if the call is not completed?

Answer: You will not be charged if the telephone you dialed is busy or is unanswered. Likewise, you will not be charged if you hang up the telephone before you dial the complete number.

Question: 7. Can I make person-to-person calls by dialing "direct"?

ALTERNATE # 1. Omit if you offer PPCS service.

Answer: No. Only station-to-station calls can be dialed "direct." Person-to-person calls, collect calls, pay station calls, credit card calls, and calls on which time and charge reports are requested, are placed through the Long Distance Operator in the usual manner. Here again the need for skilled operators is emphasized - to provide that all-important personal service.

ALTERNATE # 2. Use only if you offer PPCS service.

Answer: Yes. Person-to-person and collect calls can be dialed "direct" to locations which have DDD service. The major difference between these calls and station-to-station calls is that the operator enters the connection momentarily to ensure that you reach the correct party and, for collect calls, to verify that the person you are calling will accept the charges.

Question: 8. How does the equipment know that a call is being made from my telephone?

ALTERNATE # 1. Automatic Identification.

Answer: The equipment automatically identifies the number of the telephone you use and, before allowing the call to go through, passes this number to the recording equipment.

ALTERNATE # 2. Manual Identification.

Answer: After you've dialed your call, the operator will enter the line and will ask what your number is. She records your number and immediately disconnects from the line. Automatic equipment does the rest.

Question: 9. How does the equipment time each call and how does it know if I call at night or during the day - or on Sunday?

Answer: An ingenious electronic clock is connected to each recorder. When the called number answers, the clock-calendar records the exact time of day, and the date. The duration of the call is recorded when you hang up.

Question: 10. Does this new system change the way I make local calls?

Answer: No, there will be no change in the local dialing procedure once Direct Distance Dialing comes to _____(city)_____.

In conclusion, I would like to point out that today Direct Distance Dialing is serving a large number of communities across the country; soon it will be universal. Direct Distance Dialing is vital to our community, but its scope is broader; it is nationwide. Your telephone company has accepted the challenge of providing its customers with the finest service available in order to keep your communication needs up-to-date. You community leaders can be of tremendous assistance in helping to explain the advantages of this new system to your friends and co-workers in _____(city)_____.

Now I'm ready for your questions.

SECTION 3

News release coordinated with address to key members of the community

Mr. _____, President of the _____ Telephone Company announced today, in an address to the _____ Club, that his company has taken a leading step towards supplying _____(city)_____ with the newest way to make long-distance calls. This new method, called Direct Distance Dialing, will enable all customers to dial long-distance calls "direct" without operator assistance. He stated that this is a part of a nationwide program that, when completed, will bring all towns and cities in the United States and Canada within direct dialing range.

This equipment, according to Mr. _____, will be placed in service some time during the month of _____. A complete information program has been planned to fully inform all subscribers about this new system well in advance of its use.

SECTION 4

General news release for use prior to cutover

As of _____(date)_____ Direct Distance Dialing service becomes a reality for _____(city)_____, according to Mr. _____, manager of the _____ Telephone Company. Direct Distance Dialing (DDD) is the revolutionary, do-it-yourself development that will enable all telephone customers living in _____(city)_____ to dial long-distance calls direct without operator assistance. At the present time, a few towns cannot be reached by direct dialing. The first time a call is made, it is necessary to check if a town can receive such a call.

"The trend, however, is towards a rapid expansion of these facilities,"states Mr. _____, "which means that in the not-too-distant future everyone will be able to dial "direct" throughout the country."

The DDD equipment now being installed is a product of Stromberg-Carlson of Rochester, New York. This company has been a leading manufacturer of telephone equipment since 1894. The decision to purchase this Stromberg-Carlson equipment was made after exhaustive studies indicated that it would afford maximum accuracy, speed and reliability. Revolutionary communication developments are not new to Stromberg-Carlson. The company's engineers have developed many new and amazing communications improvements and inventions.

ALTERNATE # 1. Omit if you offer PPCS service.

At this present time, only station-to-station calls can be made to DDD areas. These calls, however, are the fastest and lowest costing; more and more people are realizing the advantages of this method of long-distance calling. Person-to-person, collect, credit card, and pay station calls still require operator supervision.

ALTERNATE # 2. Use only if you offer PPCS service.

Person-to-person, and collect calls, as well as station-to-station calls can be dialed directly from _____(city)_____ to DDD areas. On person-to-person calls, the operator will assist by verifying that the caller has reached the desired person and, on collect calls, she will check to see that the person you are calling will accept the charges.

Complete customer instructions and new number plates for telephones (have been/will be) given to all subscribers. The new number plates bear the telephone number listed for your phone including the access code to be dialed first on all DDD calls. The procedure for making a DDD call is as follows:

ALTERNATE # 1. For Automatic Identification Systems.

1. Lift the handset and listen for dial tone.
2. Dial the access number shown on your telephone. This connects you with the long-distance equipment.
3. Dial the appropriate DDD area code for a city when that city is outside of your own DDD area. This will route your call directly to the part of the country you want to reach. The DDD area you are in, the DDD area for the part of the country you are calling, as well as the other DDD areas you may call (will be/are) listed in your telephone directory.
4. Dial the desired telephone number.

ALTERNATE # 2. For Manual Identification Systems.

1. Lift the handset and listen for dial tone.
2. Dial the access number shown on your telephone. This connects you with the long-distance equipment.
3. Dial the appropriate DDD area code for a city when that city is outside of your own DDD area. This will route your call directly to the part of the country you want to reach. The DDD area you are in, the DDD area for the part of the country you are calling, as well as the other DDD areas you may call (will be/are) listed in your telephone directory.
4. Dial the desired telephone number.
5. An operator will be signaled and connected to your line. The operator will ask what your number is. After you give the operator your number

she will disconnect from your line and your call will be automatically completed.

As an example, to dial ____(city)_____, (telephone number), from local telephone numbers simply dial:

Access Code (No.)	Area Code (No.)	Telephone Number (No.)

An operator will be signaled and connected to your line. The operator will ask what your number is. After you give the operator your number she will disconnect from your line and your call will be automatically completed.

As soon as the called party answers, automatic timing equipment takes over and an electromechanical device is connected to the trunk signaling circuit. This machine times the duration of your conversation and records on magnetic tape the exact time of day your call was made, and the date. The conversation is not recorded - in fact, it is impossible for the equipment to do so because it is connected to the signaling circuit only, and not to the circuits carrying conversation.

The information recorded on the tape is then transferred from the tape to an accounting record. Each record will represent a long-distance call and each one will contain all the information necessary for allocating the charges to you.

Mr. _____ states, "This is just another step in our company's plan to provide the most modern equipment available for its customers."

SECTION 5

Suggested sequence of questions and answers for use as Radio-TV interview

As a community service, Radio Station _____, in cooperation with your telephone company, brings you a five minute (taped) interview with Mr. _____, president (manager) of the _____ Telephone Company, who will answer some of the questions you may have regarding the new direct dial service for long-distance calls that will go into effect in ____(city)_____ on _____(date)_____.

Question: What is Direct Distance Dialing?

Answer: Direct Distance Dialing, or as it is sometimes called, DDD, is a new service that will enable our subscribers to dial their own long-distance calls without operator assistance.

Question: Does this service apply only to station-to-station calls?

ALTERNATE # 1. Omit if you offer PPCS service.

Answer: At the present time, yes. But remember, a station-to-station call is still the fastest and the "lowest cost" call to make. Person-to-person, credit card, pay station, or collect calls will still require operator assistance through the normal procedure.

ALTERNATE # 2. Use only if you offer PPCS service.

Answer: No. Person-to-person and collect calls can also be dialed directly. On these calls the operator will assist by entering the connection and verifying that you have reached the desired party. On collect calls, she will also confirm that the person who is being called will accept the charges.

Question: If there are no operators supervising station-to-station calls, how are the calls timed?

Answer: Timing is electronic. When the called party answers, automatic toll recording is in effect. An electromechanical device will record the exact time and date the call

was made, the length of time the call lasted, the called number, and the calling party identification. This information is then automatically transferred to an accounting record from which the charges are computed.

Question: We understand that we will be able to dial directly to most nearby and distant cities now. Will this service be extended to all localties?

Answer: Definitely. DDD is a nationwide program that will, when completed, enable our customers to dial directly to any telephone in the country. You see, the country is divided into areas and each area has been assigned a code number. This code number is a part of our national dialing system, thus allowing us to dial directly to any of these areas. As an example, Cleveland is located in Code Area 216. San Francisco is located in Code Area 415, etc. When these area codes are dialed as a prefix to the called party's telephone number, there is only one such number in the entire country; therefore his telephone and only his, will ring.

Question: This brings us to the point of subscriber education. How are the customers going to be informed about this dialing system, and how to use it?

Answer: A full scale information program is underway. Complete information concerning the cities that can be dialed "direct" and the method of placing calls (will be/is being) mailed to all our customers. Remember that operators will still be available when necessary to assist anyone in making his call. If there are any questions about your call, do not hesitate to dial the operator for assistance.

Question: What would happen if an error is made while dialing a number, or a wrong number is reached?

Answer: If a wrong number is dialed and you realize this before the called party answers, simply hang up, check the number and start over. If you should reach a wrong party, ask the answering person to give you the telephone number and the city you have reached in error. Then dial the operator and let her know what area and what telephone number you reached. The operator will make proper notations so that no charge will be made for the erroneous call.

Question: How is your telephone identified so that proper charges can be made?

ALTERNATE # 1. For Automatic Identification.

Answer: This is done automatically. When a call is made, the equipment will automatically identify that number and record it so that proper charges can be made.

ALTERNATE # 2. For Manual Identification.

Answer: When you have completed dialing your call, an operator will momentarily break into the call and will request your telephone number. You will give your number, just as you have always done; the operator records this and immediately disconnects from the circuit - the automatic equipment does all the rest.

Question: What if you want to charge your call to some other line or would like to know the toll charge immediately after a call is completed?

Answer: Calls such as you described or any other type of call requiring operator assistance will be made in the same manner as a person-to-person or a collect call. I cannot stress too strongly that an operator will always be there to assist you in making your calls whenever this is needed.

Question: How has this service been accepted elsewhere?

Answer: In hundreds of communities, including many small towns and most of our largest cities, all users of DDD have been enthusiastic about this service. We know that this tried and tested method makes for the best of service.

Thank you, Mr. _____. I know I am speaking for everyone when I say that we congratulate you and your company for taking the leading step in making this modern communication development available to ____(community or city)_____.

USITA-BELL TOLL SETTLEMENT INFORMATION

FOR YOUR INFORMATION AND USE

We are providing reprints of Joint Reports by USITA Settlements and Separation Committee and BELL System Representatives, also Illustrative Agreements issued through March 1968.

JOINT REPORT
BY
USITA SETTLEMENTS AND SEPARATIONS COMMITTEE
AND
BELL SYSTEM REPRESENTATIVES
DECEMBER, 1965

Recommending an increase in B-I message toll settlements
to reflect changes due to revised separations procedures
effective November 1, 1965

Industry representatives have concluded their review of the exchange plant separations changes announced by the NARUC-FCC effective November 1, 1965. Agreement has been reached by USITA and Bell representatives to recommend to the Industry that an adjustment be made in settlements between the Bell and Independent companies for B-I interchanged business. It is estimated this adjustment will produce an over-all increase in settlements to the Independent companies of approximately $22 million. This estimate is based on 1964 traffic volumes and assumes all companies are using the average schedules.

Average Schedule Settlements

The attached new average schedules have been established to reflect the estimated effect of the new separations procedures for interstate business and related interim procedures for intrastate business pending further studies. These schedules are recommended for use where settlements are made under nationwide average schedules for B-I interchanged message toll business.

Individual Study Companies

For those companies remaining on an individual company study basis, it is recommended that:

1. The Independent company and the Bell company develop new settlement schedules based on individual company studies employing the following methods for allocating exchange plant:

   A. Interstate Traffic

      (1) Subscriber Line and Station Equipment costs will be determined by application of the subscriber line use/user factor developed on the basis of the new separations procedures.

(2) Local Dial Switching Equipment - Category 6 costs will be determined by an allocation factor which gives a weighting of 1.5 to toll minutes of use, pending further studies to develop a more precise weighting.

(3) Interoffice Trunks, Toll Connecting Trunks and EAS Trunks will be apportioned or directly assigned to the appropriate operations.

B. Intrastate Traffic

(1) Definitive separations procedures for the intrastate plant have not yet been formulated. It is recognized that various characteristics of intrastate messages should be studied before a subsequent joint recommendation can be made to the industry covering cost determination for this interchanged B-I business. It is recommended for this interim period that study procedures previously used for the allocation of exchange plant be continued.

or 2. The Independent company continues to make cost studies under existing separations procedures for both interstate and intrastate business.

Companies on Other Bases of Settlement

For those few cases where settlement arrangements are other than the current average schedules or an individual study basis, it is recommended that consideration be given locally to (1) changing to new average schedules, (2) changing to an individual study basis or (3) continuing status quo under the present settlement contract.

Summary

It is recommended that the increase in settlements covered by the new schedules be effective with settlement statements issued in December covering interchanged business for the first full month billing of message toll tickets representing calls made November 1 or later. It is also recommended that increased settlements for individual study companies will follow the same pattern, provided agreement is reached between the Bell and Independent company within 60 days of the offer as outlined above under "Individual Study Companies."

No reduction in settlements for any individual company will result from the changes recommended herein.

No change has been recommended in the small exchange factor weighting. This schedule will be utilized on the same basis as in the past for those companies on average schedules and where the number of messages for an exchange is less than 3,000. Also, no change is recommended in the average schedules for line haul settlements.

It is recognized by USITA and Bell representatives that new nationwide sample studies need to be made on the basis of the new separations concept and that such studies should be completed and available for review by USITA and Bell representatives within the year of 1966. Accordingly, the Committee has agreed to proceed promptly with the development of revised procedures and selection of the new study exchanges necessary to produce appropriate data for use in determining the adequacy and propriety of the settlement schedules.

Automatic Ticketing

On the basis of current review of completed cost studies of automatic ticketing equipment as well as a careful analysis of the present "B" schedules, some changes in the "B" schedules appear desirable at this same time. Also, it seems clear that an average schedule for number identification should be established. Accordingly, a revised "B-2" schedule and a new "B-5" schedule covering number identification are attached.

The new "B-2" schedule eliminates the two-part schedule (ARPM and messages) and substitutes settlements related to traffic volume for the recording function only. The "B-5" schedule is designed to provide appropriate settlements for the number identification operation performed by a company either in conjunction with the automatic ticketing function (toll center operation) or under CDO installations where only number identification is furnished. Settlement for full ticketers (identification and recording) is computed by combining "B-2" and "B-5."

These schedules are recommended for use by average schedule settlement companies.

JOINT REPORT

BY

USITA SETTLEMENTS AND SEPARATIONS COMMITTEE

AND

BELL SYSTEM REPRESENTATIVES

October 1, 1966

Recommending a settlement plan for Independent company participation in jointly provided inward Wide Area Telephone Service.

Inward Wide Area Telephone Service is an offering that permits a customer to receive long distance calls from the general public within specified areas and to pay for these calls at bulk rates.

Industry representatives have reached agreement to recommend the attached settlement plan for use where an Independent company participates in furnishing inward WATS under the tariffs of the Bell Company.

This plan would apply to participating Independent companies settling for Message Toll Telephone Service on the basis of nationwide average schedules. It is recommended that this service be incorporated into the agreement covering interchanged Message Toll Telephone Service and WATS.

Calls from a regular telephone customer to an inward WATS customer are considered as if they were regular sent-collect Message Toll calls, and calls received at an inward WATS customer location are considered as comparable to received-collect Message Toll calls in deriving the inward WATS settlement formula. Similar comparisons could be made, where appropriate, in connection with inward WATS service provided by Independent companies settling on the basis of an individual cost study.

Inward Wide Area Telephone Service Settlement Plan

General

Inward Wide Area Telephone Service is an offering that permits a subscriber to receive unlimited calls, normally dialed, from the general public within specified areas at bulk rates. The service is provided on a flat and/or hourly measured rate basis by means of inward WATS "access" lines connecting the customer's premises with the telephone company central office arranged to handle such traffic.

Participation by Independent Companies

Independent companies may participate in this service in two ways. First, their regular customers may originate calls to inward WATS customers located in Bell exchanges or other Independent company exchanges; and second, the Independent companies may offer inward WATS service to their customers. Independent companies will handle promotional activities, bill, collect and assume uncollectibles for inward WATS customers located in their exchanges.

Settlement Arrangements

It is recommended that Independent companies settling for Message Toll service under Average Schedules and providing inward WATS jointly with the Bell Company under a common tariff offering receive settlements under the following arrangements.

Customer Located in Independent Territory

Because of special switching requirements, inward WATS traffic will generally be entirely B-I traffic regardless of points of origin and termination. Should there be unusual cases where the traffic is classified as I-I, special studies of a representative period (e.g., ten days) may be required to determine the percentage relationship of I-I minutes of use to total minutes of use.

"A" Functions - Commercial, accounting, promotion and use of local facilities, including the local access and timing facilities.

Note: Should there be a special situation where an inward WATS customer is served by means of local facilities provided in part by another telephone company, that company shall be reimbursed for the facilities it furnishes by the Independent company in whose territory the customer is located.

The Independent company's share of the B-I inward WATS revenue (total less I-I, if any) shall be determined under the following formula:

$$\text{Inward WATS settlements} = \frac{\frac{1}{2}\text{"A" stlmt per msg}}{\text{"A" ARPM}} \times \text{inward WATS B-I revenue}$$

NOTE: The "A" settlement and "A" ARPM are those for the total exchange and which are used in computing the "A" Message Toll Settlement.

"B" Function - Toll operating

The Independent company will not operate this traffic.

Interexchange Plant

Terminating inward WATS traffic will use facilities in common with and should be included with Message Toll traffic in determining the line haul settlement, if appropriate. Dedicated inward WATS circuits shall be included in computing the size of the circuit group for Message Toll line haul settlements.

Customer Located in Bell Territory

1. Independent Company Toll Center

"A" Functions - Commercial, accounting, promotion and use of local facilities.

For each B-I call originated to a Bell inward WATS customer, the inward WATS "A" settlement shall be determined along with Message Toll "A" settlements as follows:

"A" settlements = "A" stlmt per msg x (SP ∕ ½ (RC ∕ SC ∕ inward WATS)) msgs

"B" Functions - Toll operating

For each B-I call originated to a Bell inward WATS customer which is automatically ticketed, settlement will be the amounts per message in the Message Toll schedules B-2 and B-5 based upon the total volume of B-I messages recorded and identified by the Independent company at the automatic ticketing location.

For each B-I call originated to a Bell inward WATS customer which is manually ticketed, settlement shall be the amount per message in the appropriate Message Toll Manual "B" schedule for the ticketing location.

Interexchange Plant

Inward WATS traffic will use facilities in common with and should be included with Message Toll traffic in determining the line haul settlement, if appropriate. Dedicated circuits should be included in computing the size of circuit groups for Message Toll line haul settlements.

2. Bell Company Toll Center

Settlements covering the "A" functions and interexchange plans would be the same as in 1. above. B-5 settlements would be applicable where the Independent company provides ANI equipment.

SUPPLEMENT

Effective

This supplement amends the Traffic Agreement which became effective as of between (Independent Company) and (Bell Company) as follows:

An Exhibit (Exhibits) to the identified agreement provide(s) the basis of settlement for Wide Area Telephone Service (WATS). WATS permits the subscriber to originate, within the contract time limit, an unrestricted number of calls, normally dialed, terminating within the WATS Calling Area associated with the WATS access line. Such service where referred to in the identified Exhibit(s) is hereby construed to mean outward Wide Area Telephone Service.

Inward Wide Area Telephone Service, which is essentially outward WATS in reverse, permits the subscriber to receive, within the contract time limit, an unrestricted number of calls, normally dialed, originating within the inward WATS Calling Area associated with the inward WATS access line.

The identified agreement is amended to provide:

A. Basis of Settlement for interchanged inward WATS messages originating at points on the system of the Independent company -

1. Schedule "A" Settlement:

Each such inward WATS message will be considered as sent collect in determining the "A" number of messages under the formula:

SP ∕ 1/2(SC ∕ RC) = "A" number of messages.

a. Inward WATS messages will not be used in developing the average revenue per message used in determining the Schedule "A" amount per message.

2. Schedule "B" Settlement:

a. Each inward WATS message on which the outward toll operating is manually performed by the Independent Company will be considered as sent collect in determining the "B" number of messages under the formula:

SP ∕ SC = "B" number of messages.

1. Since inward messages are not rated, they will not be used in developing the average revenue per message used in determining the Schedule "B" amount per message.

b. Inward WATS messages on which the outward toll operating is automatically performed will be included with automatically ticketed sent paid toll messages originating at the exchange at which the Inward WATS messages originate.

3. Line Haul Settlement

Inward WATS traffic uses circuits in common with message toll traffic and, therefore, will be included with message toll traffic in determining line haul settlements.

B. Basis of Settlement for revenue from inward WATS service provided customers of the Independent Company -

Where both B-I inward WATS and I-I inward WATS are involved, the I-I portion of the inward WATS revenue to be assigned directly to the Independent Company will be determined by a study to develop the percentage relationship of I-I minutes of use to total minutes of use.

1. Schedule "A" Settlement (including local access and measured timing facilities):

a. For the exchange in which the inward WATS customer is located, divide one-half of the current month's "A" settlement amount per message by the "A" message average revenue per message.

b. Apply the percentage obtained in "a" to the B-I inward WATS revenue to determine the amount due the Independent Company. The remainder of the inward WATS revenue will be due the Bell Company.

c. Where a portion of the local facilities are provided by another company (Bell or Independent), that company will be reimbursed by the Independent Company for these facilities.

2. Line Haul Settlements

a. Where inward WATS traffic uses circuits in common with message toll traffic, such use shall be included with message toll traffic in determining line haul settlements.

b. Where inward WATS traffic uses dedicated circuits, such circuits shall be included with other circuits dedicated to the exclusive use of WATS, TWX and line switched teletypewriter service traffic in determining message toll line haul settlements.

This supplement modifies the identified Traffic Agreement only as above stated, and, when executed by both parties, will be attached to and made a part thereof.

Executed this day of

Witness:

(Independent Company)

_____ By_____

(Title)

Witness:

(Bell Company)

_____ By_____

(Title)

JOINT REPORT
BY
USITA SETTLEMENTS AND SEPARATIONS COMMITTEE
AND
BELL SYSTEM REPRESENTATIVES

March 16, 1968

Interim Settlement Arrangements for B-I Interstate Message Toll Telephone Settlements to Reflect Interim Changes in Interstate Separations Procedures

General

Industry representatives have agreed to an interim settlement arrangement applicable to the Independent industry which, to the extent practicable, extends the application of the interim procedures for Exchange Plant proposed by the Bell System and in effect among the Bell Associated Companies pursuant to a letter from the FCC dated December 13, 1967. For the 48 conterminous states in the United States, plus the District of Columbia, the Bell System is using for such interim purposes: the procedures prescribed in the FCC decision dated July 5, 1967, in 21 states; the Bell System's most recently proposed separation procedures in 13 states; and the so called "FCC staff suggestion" procedures in four states. In 11 states, the Denver Plan separation procedures made effective in 1965 continue to be used.

Acceptance of the interim settlement arrangement covered herein will effectively serve to withdraw any letter of intent to terminate a Traffic Agreement, and for those companies whose Traffic Agreements are reinstated in this manner, this reinstated Agreement will continue in force for a period of one month from the date of execution and thereafter until terminated by thirty (30) days prior notice in writing from either company to the other.

Average Schedule Company Adjustments

The Settlements and Separations Committee and Bell System representatives have agreed that the nationwide average settlement schedules should be adjusted for increased annual settlements on interstate interchanged messages of approximately $9,000,000 based on the 1966 level of business.

The attached new "Interstate A Schedule" has been developed for application to interstate interchanged messages where settlements are made under nationwide average schedules. After monthly settlements have been computed in the present manner, an ARPM for interstate messages will be determined

for each exchange; the appropriate settlement amount obtained from this new schedule; and a calculation made of the additive settlement related to the number of interstate settlement messages. The small exchange factor will not be used with this new schedule.

Any Independent company presently using average settlement schedules may study its costs and establish settlements on an individual study company basis.

Individual Study Company Adjustments

For individual study companies, recommended interim settlement arrangements have been developed, which the Bell System representatives (using data furnished by Independent company representatives) estimate will produce additional annual settlement amounts of approximately $23,000,000 based on the 1966 level of business. These recommended interim arrangements are as follows:

1. The Independent company will first determine its exchange plant interstate revenue requirements, reflecting as current data as practicable, by application of the interstate separations procedures used in its latest separation study which was the basis for its most recent negotiated settlement.

2. The Independent company, utilizing the same basic data as (1) above, will next determine its exchange plant interstate revenue requirements by using the same separations procedures on exchange plant as those used by the Associated Bell Company in the same state for interstate division of revenues purposes.

3. For computations under (1) and (2) above, components of the rate base will be the same as those used by the Bell System company for interstate division of revenues purposes, i.e., Accounts 100.1, 100.2, 100.3, 100.4 and 122 less reserves in Accounts 171 and 172. The rate of return applied will be 7-1/2%. Where applicable in studies under (2) above, the nationwide average book cost per annual holding time minute-of-use is 2.2¢. The nationwide SLU factor to be applied in studies under (2) above will be 4.13%.

4. The difference between the amounts determined in (1) and (2) above represents the increased interstate settlement amount due the Independent company to reflect interim changes in interstate separations procedures.

Companies on Other Bases of Settlement

For those few cases where settlement arrangements are other than the current average schedules or an individual study basis, it is suggested that local consideration be given to (1) changing to current average schedules, including the new "Interstate A Schedule"; (2) changing to an individual study basis; or (3) continuing under present settlement arrangements.

Effective Date

It is recommended that the increase in settlements covered by the new "Interstate A Schedule" be effective with message toll tickets representing calls made January 1, 1968 or later, provided there is acceptance by the Independent company within 30 days of the offer to it of the new schedule by the Bell Company.

It is also recommended that increased settlements for individual study companies be effective with message toll tickets representing calls made January 1, 1968 or later, provided agreement is reached between the Bell and Independent company within 30 days of the offer to the Independent Company as outlined above under "Individual Study Companies," that:

(a) the Independent Company wishes to recast its study, and

(b) the Independent Company will complete the recast within a mutually agreed upon interval.

In no event will an individual study company incur a reduction in existing settlement amounts under this interim settlement arrangement.

Other Considerations

It is contemplated that the interim settlement arrangements described above are to cover the period until a decision is rendered by the FCC in Docket No. 17975 and/or further agreements are reached by industry representatives. The effect of future agreements could result in adjustments upward or downward from the settlement levels of these interim arrangements.

March, 1968

INTERSTATE A SCHEDULE

ARPM		Settlement Amount per Message
Over	Not Over	
$ .100	$ .125	$ .038
.125	.150	.039
.150	.185	.040
.185	.210	.041
.210	.245	.042
.245	.272	.043
.272	.301	.044
.301	.340	.045
.340	.375	.046
.375	.420	.047
.420	.465	.048
.465	.513	.049
.513	.551	.050
.551	.608	.051
.608	.646	.052
.646	.704	.053
.704	.742	.054
.742	.800	.055
.800	.838	.056
.838	.876	.057
.876	.952	.058
.952	.971	.059
.971	1.019	.060
1.019	1.067	.061
1.067	1.115	.062

ARPM		Settlement Amount per Message
Over	Not Over	
$ 1.115	$1.163	$ .063
1.163	1.211	.064
1.211	1.259	.065
1.259	1.307	.066
1.307	1.355	.067
1.355	1.403	.068
1.403	1.451	.069
1.451	1.497	.070
1.497	1.543	.071
1.543	1.589	.072
1.589	1.635	.073
1.635	1.682	.074
1.682	1.729	.075
1.729	1.776	.076
1.776	1.868	.077
1.868	1.913	.078
1.913	2.003	.079
2.003	2.091	.080
2.091	2.179	.082
2.179	2.268	.083
2.268	2.357	.084
2.357	2.557	.085
2.557	2.757	.086
2.757	2.957	.087

Each additional $.20 or portion add .001

October 8, 1962

(Illustrative)

TRAFFIC AGREEMENT

Traffic Agreement between , a corporation organized and operating under the laws of the State of , herein called the Independent Company and , a Corporation organized and operating under the laws of the State of , herein called the Bell Company.

Message Toll Telephone Traffic and Wide Area Telephone Service Traffic carried by both the system operated by the Independent Company and the system operated by the Bell Company will be handled upon the terms and conditions stated below. For the purpose of this agreement the system operated by the Independent Company shall include systems of Companies other than the Bell Company with which the Independent Company connects, as shown on the attached "Exhibit A" made a part hereof, and the system operated by the Bell Company shall include systems of Companies, other than the Independent Company, with which the Bell Company connects.

1. Independent Company Exchanges.

The exchanges of the Independent Company system covered by this Agreement are shown in "Exhibit A."

2. Physical Connection.

The Bell Company and the Independent Company will connect their respective systems at the point or points shown in "Exhibit A."

The Independent Company will not, without the written consent of the Bell Company, connect the toll lines of the Bell Company with any toll lines other than those indicated in "Exhibit A."

3. Routing of Traffic.

The traffic interchanged under this Agreement will be routed as indicated in "Exhibit A."

4. Operating.

The operating required hereunder will be performed by the company designated in "Exhibit B" hereto attached and made a part hereof.

5. Methods and Practices.

With respect to all matters covered by this Agreement, each company will adopt and comply with standard operating methods and practices comparable to those of the Bell System and will observe the rules and regulations of the lawfully established tariffs.

Each company will, upon request, furnish to the other such information relating to the interchanged business covered herein as may reasonably be required.

6. Switchboard and Other Connections.

Each company will make the proper switchboard and other connections for prompt telephone communication between its customers and the customers of the other.

7. Exchange and Toll Facilities.

Each company will construct, equip, maintain and operate its system so that good service will be furnished to the public at all times, and each will furnish adequate facilities therefor.

8. Protection.

Each company will take reasonable precautions in the location, construction and maintenance of its lines for protection against hazard and interference from foreign wire lines.

9. Monthly Settlements.

Each company will collect all charges payable by its customers for telephone communications originating or terminating on its system, and will account and be responsible to the other for the latter's portion thereof. Each company will keep adequate records of its transactions hereunder, and such records will be subject to inspection by the other at all reasonable times. Each company will furnish to the other such information as may be required for monthly settlement purposes.

Settlement statements hereunder will be rendered monthly by the Bell Company to the Independent Company and remittance in full will be made by the debtor company within thirty (30) days thereafter.

10. Basis of Settlement.

The amounts to be received monthly by the respective companies for facilities furnished and services rendered hereunder will be determined in accordance with the Basis of Settlement shown in "Exhibit C" hereto attached and made a part hereof.

11. Defaults or Violations.

If either company defaults in the payment of any amounts due hereunder, or violates any other provision of this Agreement, and if such default or violation shall continue for thirty (30) days after written notice thereof, the other company may terminate this Agreement forthwith by written notice, provided, however, that if either Company connects the toll lines of the other Company other than as specifically provided herein, this agreement may be terminated forthwith by written notice.

The failure of either company to enforce any of the provisions of this Agreement or the waiver thereof in any instance shall not be construed as a general waiver or relinquishment on its part of any such provision, but the same shall, nevertheless, be and remain in full force and effect.

12. Cancellation of Previous Agreements.

Except as to any amounts due thereunder, this Agreement cancels all previous Agreements between the companies or their respective predecessors covering interchange of Message Toll Telephone Traffic and Wide Area Telephone Service Traffic.

13. Term of Agreement.

Unless sooner terminated as herein provided, this Agreement will continue in force for a period of one year from the date of execution hereof and thereafter until terminated by sixty (60) days prior notice in writing from either company to the other.

IN WITNESS WHEREOF, the said companies have caused this agreement to be executed in their behalf this day of 19 .

Witness: (Name of Independent Company)

_____ By _____
(Title)

Witness: (Name of Associated Company)

_____ By _____
(Title)

EXHIBIT A

Effective as of , 19 .

Attached to and made a part of

TRAFFIC AGREEMENT

Executed , 19 .

Between (Name of Independent Company)
and (Name of Associated Company)

(It is suggested that this exhibit include:

1. A schematic diagram showing the Independent Company's exchanges, toll lines, and the point or points of connection between the systems of the respective Companies.

2. A table showing the routing of interchanged message toll and Wide Area Telephone Service traffic.

3. An alphabetical list of the Independent Company's exchanges covered by this agreement with notations as to the type of central office involved as well as the "B" settlement schedules applicable, if any.)

Identified and Approved this day of , 19 .

Witness: (Name of Independent Company)

_____ By _____

(Title)

Witness: (Name of Associated Company)

_____ By _____

(Title)

EXHIBIT "B", OPERATING

Effective as of , 19 .

Attached to and made a part of

TRAFFIC AGREEMENT

Executed on , 19 .

Between (Name of Independent Company)
and (Name of Associated Company)

From the effective date hereof, the Bell Company will perform or cause to be performed the operating required for telephone communications interchanged under said traffic agreement, except that the Independent company will perform the operating as required for inward telephone communications to its system and the outward operating required for the telephone communications between the points listed below:

Between

A	B

Identified and Approved this day of , 19 .

Witness: (Name of Independent Company)

By _____
(Title)

Witness: (Name of Associated Company)

By _____
(Title)

Revised
December, 1965

EXHIBIT C

Basis of Settlement

Attached to and made a part of Traffic Agreement

date.....19....

Between (Name of Independent Company)
and (Name of Associated Company)

This exhibit shall be effective as of , 19 . It shall be the basis of settlement for all traffic covered by the above Agreement (except traffic which is rendered at other than uniform rates).

I. For the purpose of settlement under this Agreement:

AN EXCHANGE is a specified area established for the furnishing of local telephone service under a distinct or separate local tariff. It usually embraces a city, town, village or unincorporated community and environs thereto and consists of one or more central offices, together with the associated plant used in furnishing service within that area.

A dial exchange is an exchange at which more than 50% of the company-owned telephone stations are connected to a dial central office or offices. All other exchanges are considered to be manual exchanges.

A dial terminal-per-station exchange is one in which more than 50% of the company-owned telephone stations are served by dial terminal-per-station equipment. All other dial exchanges are considered to be dial terminal-per-line exchanges.

A toll complex is a toll recording location and all exchanges for which it records DDD toll messages.

A MESSAGE is a toll (long distance telephone) call which has been completed. Any references to messages herein shall mean only those using the facilities of both the Bell Company and the Independent Company unless otherwise agreed upon. Such messages are also referred to herein as B-I (Bell-Independent) messages.

A SENT-PAID (SP) MESSAGE is a toll (long distance telephone) message originating at a telephone of the Independent Company where the charge is to be billed to the originating telephone.

A SENT-COLLECT (SC) MESSAGE is a toll (long distance telephone) message originating at a telephone of the Independent Company where the charge is to be billed to the terminating telephone.

A RECEIVED-COLLECT (RC) MESSAGE is a toll (long distance telephone) message terminating at a telephone of the Independent Company where the charge is to be billed to the terminating telephone.

A TOLL CREDIT CARD MESSAGE, or a toll (long distance telephone) message to be billed to a third telephone, will be treated as "sent-collect" at the telephone where it originates and "received-collect" at the telephone where it is billed, except that if the charges are to be billed to another telephone in the same exchange in which the message originates, such message shall be treated as "sent-paid."

II. Each company will reimburse the other for all monies expended at the request of the other company for messenger charges and the amount of such charges will be included in the monthly settlements. Each company is responsible for uncollectible revenues billed by it, any commissions paid hotels, motels or other similar establishments for originating messages and commissions paid on messages originating at public telephones.

III. The amount of the Independent Company settlement for its participation in originating and terminating Bell-Independent toll messages and in terminating inward Wide Area Telephone Service traffic will be determined each month as follows:

A. Schedule A (Settlement for all participation other than toll operating and line haul).

1. Determine the number of B-I messages at each of the exchanges of the Independent Company and at each of the exchanges of companies not directly connected to the Bell Company but connected to the Independent Company, as shown on Exhibit A, by adding:

   a. The number of sent-paid messages.
   b. One-half of the sent-collect messages.
   c. One-half of the received-collect messages.

2. Compute for each exchange the average revenue per B-I message by dividing the total charges (including report charges) for the total number of sent-paid plus received-collect messages by the total number of such messages.

3. Determine from the appropriate "A" Schedules, i.e., Manual, Dial Terminal-per-Line or Dial Terminal-per-Station, set forth in Attachment to this Exhibit, the settlement amounts per message corresponding to each of the average revenue per message amounts determined in (A.2.) above. The dial terminal-per-station schedule shall apply to dial terminal-per-line exchanges which have seven digit numbering and facilities for intercepting calls adequate to meet the requirements of direct distance dialing where (a) the exchange has 3,000 or less B-I messages per month, as determined in (A.1.) above, or (b) the exchange has over 3,000 messages per month and the dial terminal-per-line equipment was ordered on or before May 15, 1956, and was placed in service on or before December 31, 1957.

For each exchange having 3,000 or less messages per month, multiply the total of the settlement amounts per message so determined by the appropriate factor from the table, "Small Exchange Factors", set forth in Attachment.

4. Multiply the total of the settlement amounts per message for each exchange, determined in (A.3.) above, by the number of messages for that exchange as determined in (A.1.) above.

5. Where the Independent Company exchange is served by automatic ticketing equipment at a toll center of the Bell Company, a settlement amount will apply for the additional trunk equipment provided by the Independent Company as set forth in Attachment.

6. The total amount of the Independent Company settlement for all participation other than operating and line haul is the total of the amounts separately determined for each exchange as described above.

B. Schedule B (Applicable to toll operating - including operator ticketing and timing, automatic message recording, operator number identification and automatic number identification).

1. For messages handled by operators for exchanges which have little or no automatically ticketed traffic -

a. Determine for each Independent Company by exchange or by toll office (if the latter serves more than one exchange) as shown on Exhibit A the number of sent-paid plus sent-collect B-I messages on which the outward toll operating is performed by the Independent Company.

b. Compute for such messages as determined in (1a) above the average revenue per message by dividing the total charges (including report charges) by the total number of such messages.

c. Determine from Schedule B-1 in Attachment to this Exhibit the settlement amount per message corresponding to each of the average revenue per message amounts determined in (1b) above.

d. Multiply the settlement amount per message determined in (1c) by the number of messages determined in (1a) above.

2. For messages which are automatically recorded, including messages where identification is made by the operator (excepting messages described in (3) below) -

a. Determine for each Independent Company automatic ticketing installation as shown in Exhibit A the number of B-I messages automatically recorded by the Independent Company.

b. Determine from Schedule B-2 in Attachment to this Exhibit the settlement amount per message corresponding to the number of messages as determined in (2a) above.

c. Multiply the settlement amount per message determined in (2b) by the number of messages determined in (2a) above to determine the settlement for the messages automatically recorded.

3. For automatically recorded person-to-person, collect and coin telephone messages, a settlement amount per message as mutually agreed upon. (See Temporary B-4.)

4. For messages handled by operators for exchanges which have automatically recorded traffic as covered in (2) and (3) above -

a. Determine for each Independent Company by exchange or by toll office (if the latter serves more than one exchange) as shown on Exhibit A the number of sent-paid plus sent-collect B-I messages on which the outward toll operating is manually performed by the Independent Company.

b. Compute for such messages as determined in (4a) above the average revenue per message by dividing the total charges (including report charges) by the total number of such messages.

c. Determine from Schedule B-3 in Attachment to this Exhibit the settlement amount per message corresponding to each of the average revenue per message amounts determined in (4b) above.

d. Multiply the settlement amount per message determined in (4c) by the number of messages determined in (4a) above.

5. DDD B-I messages for which the calling number is identified either automatically or by an operator -

a. Each Independent Company exchange should be classified as ANI (Automatic Number Identification) or ONI (Operator Number Identification) on the following basis:

(1) ANI - Exchanges in which all terminals (TPS) or lines (TPL) have been equipped with ANI or exchanges in which at least all 1 and 2 party terminals (or lines) have been equipped to provide ANI.

(2) ONI - Exchanges for which all DDD messages are operator identified or those exchanges with some ANI equipment, but which do not qualify for classification as an ANI exchange in accordance with B.5.a.(1) above.

b. For each Independent Company exchange classified as ANI, determine the number of DDD B-I and I-I messages identified either automatically or by an operator.

c. If the number of B-I messages determined in (5b) above is 3,000 or less, determine the number of terminals (or lines) equipped for automatic number identification.

d. From Schedule B-5, Part 1 of Attachment to this Exhibit, determine the basic settlement amount plus the additive amount per terminal equipped.

e. Multiply the additive settlement amount per terminal determined in (5d) above by the number of terminals determined in (5c) above in excess of the basic number of terminals. Add this amount to the basic amount in (5d) to determine total amount for identification.

f. Using the numbers of DDD B-I and I-I messages determined in (5b) above, determine the ratio of B-I messages to total messages (B-I and I-I).

g. Multiply the total amount for identification determined in (5e) above by the B-I ratio determined in (5f) above to develop the B-I settlement amount for identification.

h. If the number of B-I messages determined in (5b) above is more than 3,000, use Schedule B-5, Part II of Attachment of this Exhibit to determine the settlement amount per message corresponding to the number of B-I messages determined in (5b) above.

i. Multiply the settlement amount per message obtained in (5h) above by the number of B-I messages determined in (5b) above to develop the settlement amount for identification.

j. For each Independent Company location which performs operator identification for exchanges classified as ONI determine the total number of DDD B-I messages operator identified for that toll complex.

k. Use Schedule B-5, Part II of Attachment of this Exhibit to determine the settlement amount per message corresponding to the number of messages determined in (5j) above.

l. Multiply the settlement amount per message obtained in (5k) above by the number of messages determined in (5j) above to develop the settlement amount for the operator identification.

6. The total amount of the Independent Company settlement for toll operating, automatic message recording, operator number identification, and automatic number identification for each toll complex is the total of the amounts separately determined in (1d), (2c), 3, (4d), (5g), (5i), and (5l).

C. Schedule C (Settlement for Line Haul).

1. Determine the total amount of Independent Company's monthly settlement for Line Haul participation by use of the computation summary set forth in Attachment hereto. The number of circuits required for the handling of B-I business, upon which settlements will be based, will be determined by joint studies following mutually acceptable engineering standards and procedures.

Recomputation of the monthly settlement amount shall be made at the request of either company, when deemed necessary by substantial changes in the per cent of B-I use of circuits having combined usage (B-I, I-I, EAS) or by changes in routing or size of circuit groups. Unless otherwise agreed by the parties hereto, the monthly settlement amount developed from such recomputation shall become effective for the settlement month in which the recomputation is completed; provided, however, that if a recomputation is made necessary by physical change in the circuit groups or by a change in toll routing, the monthly settlement amount so determined will become effective, from and after the date of said change.

IV. With respect to revenues from originating Wide Area Telephone Service provided to its subscribers by the Independent Company, for other than Line Haul participation which is as covered above, the amount of the Independent Company settlement will be determined each month as follows:

(A) Determine for each access line the portion of the revenue from the Independent Company's Wide Area Telephone Service customer which is to be assigned directly to the Independent Company as applicable to the I-I portion of the service.

To determine the portion of the Wide Area Telephone Service revenue applicable to the I-I portion of the service, study the relationship of the revenue from the Independent Company's customer's messages to I-I points, using message toll rates otherwise applicable to such I-I business, as compared to the revenue from messages to all other points within the area selected by the customer, using message toll rates otherwise applicable to such B-I business. The proportion of full time or measured time Wide Area Telephone Service revenue which is to be assigned directly to the Independent Company will be the ratio of the computed I-I message toll revenue to the total of such I-I plus such B-I computed message toll revenues. A separate study for each Wide Area Telephone Service will be made initially and a restudy made at any time either company feels there has been a material change in the customer's calling practice. Such studies shall be for a full calendar month or for a shorter period, such as 10 business days, if it is agreed that this will provide sufficiently representative information.

Where the Independent Company has no such I-I toll business, the total Wide Area Telephone Service revenue will be B-I business and included in the revenues subject to division through the settlement arrangements set forth in (B) and (C) below.

(B) "A" Functions - Commercial, Accounting, promotion and use of local facilities, including the local access and measured rate timing facilities.

Divide the current month's message toll "A" settlement amount per message by the current month's average revenue per message for the exchange in which the Wide Area Telephone Service customer is located. Apply this ratio to the appropriate Wide Area Telephone Service revenue (total less I-I if any) to determine the monthly "A" settlement amount.

(C) "B" Functions - Operating work performed.

Where the Independent Company performs the operating work required for all originating Wide Area Telephone Service traffic, divide the current month's message toll "B" settlement amount per message (including B-2 and B-5 in case of DDD) by the current month's average revenue per message for the exchange or toll office handling this Wide Area Telephone Service traffic. Apply this ratio to the appropriate Wide Area Telephone Service revenue (total less I-I if any) to determine the monthly "B" settlement amount.

Where the Independent Company performs only part of the operating work required (such as at partial tributaries) for Wide Area Telephone Service traffic, an appropriate adjustment shall be made. Settlement in such cases shall be determined as follows:

1. Determine the ratio of a typical month's revenue for the Independent Company's Wide Area Telephone Service customer's messages ticketed for the Wide Area Telephone Service area selected, to the total originating revenue for all messages of this customer to this Wide Area Telephone Service area. Apply the ratio obtained to the appropriate Wide Area Telephone Service revenue (total less I-I if any) to determine the portion of the revenue to which the "B" settlement is applicable.

2. Divide the current month's message toll "B" settlement amount per message by the current month's average revenue per message for the Independent Company exchange or toll office handling this Wide Area Telephone Service traffic, and apply this ratio to the product obtained in (1) to determine the monthly "B" settlement amount.

V. After determining the amounts due the Independent Company under II, III and IV above and offsetting such portion against the total revenues from the interchanged traffic, the remainder of such revenues will be due the Bell Company.

Approved and executed this day of , 19

Witness: (Name of Independent Company)

_____ By _____
(Title)

Witness: (Name of Associated Company)

_____ By _____
(Title)

SCHEDULE A-1

Applicable to terminal per station dial exchanges
(TPS exchanges and TPL exchanges having 7 digit numbering,
adequate intercept and available for direct inward dialing)

ARPM			ARPM			ARPM		
Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message
$ .100	$ .105	$ .250	$ .320	$ .325	$ .298	$ .684	$ .704	$ .353
.105	.110	.251	.325	.330	.299	.704	.723	.355
.110	.115	.252	.330	.335	.299	.723	.742	.358
.115	.120	.253	.335	.340	.300	.742	.761	.360
.120	.125	.254	.340	.345	.301	.761	.780	.363
.125	.130	.255	.345	.350	.302	.780	.800	.366
.130	.135	.256	.350	.355	.302	.800	.819	.369
.135	.140	.257	.355	.360	.303	.819	.838	.371
.140	.145	.258	.360	.365	.304	.838	.857	.374
.145	.150	.259	.365	.370	.305	.857	.876	.377
.150	.155	.261	.370	.375	.305	.876	.895	.380
.155	.160	.262	.375	.380	.307	.895	.914	.382
.160	.165	.263	.380	.385	.308	.914	.933	.384
.165	.170	.264	.385	.390	.309	.933	.952	.386
.170	.175	.265	.390	.395	.309	.952	.971	.389
.175	.180	.266	.395	.400	.310	.971	1.019	.393
.180	.185	.267	.400	.405	.311	1.019	1.067	.400
.185	.190	.268	.405	.410	.312	1.067	1.115	.406
.190	.195	.269	.410	.415	.312	1.115	1.163	.413
.195	.200	.270	.415	.420	.313	1.163	1.211	.420
.200	.205	.272	.420	.425	.314	1.211	1.259	.427
.205	.210	.273	.425	.430	.314	1.259	1.307	.434
.210	.215	.274	.430	.435	.315	1.307	1.355	.440
.215	.220	.275	.435	.440	.316	1.355	1.403	.447
.220	.225	.276	.440	.445	.316	1.403	1.451	.453
.225	.230	.277	.445	.450	.317	1.451	1.497	.461
.230	.235	.278	.450	.455	.319	1.497	1.543	.467
.235	.240	.279	.455	.460	.319	1.543	1.589	.474
.240	.245	.280	.460	.465	.320	1.589	1.635	.481
.245	.250	.281	.465	.470	.321	1.635	1.682	.487
.250	.254	.282	.470	.475	.321	1.682	1.729	.495
.254	.258	.284	.475	.480	.322	1.729	1.776	.501
.258	.262	.285	.480	.485	.323	1.776	1.823	.507
.262	.267	.286	.485	.490	.323	1.823	1.868	.511
.267	.272	.287	.490	.495	.324	1.868	1.913	.516
.272	.277	.288	.495	.513	.326	1.913	2.003	.521
.277	.282	.289	.513	.532	.328	2.003	2.091	.530
.282	.287	.290	.532	.551	.332	2.091	2.179	.539
.287	.292	.291	.551	.570	.334	2.179	2.268	.546
.292	.297	.292	.570	.589	.336	2.268	2.357	.553
.297	.301	.293	.589	.608	.339	2.357	2.457	.558
.301	.305	.295	.608	.627	.342	2.457	2.557	.564
.305	.310	.296	.627	.646	.345	2.557	2.657	.567
.310	.315	.296	.646	.665	.347	2.657	2.757	.570
.315	.320	.297	.665	.684	.349	2.757	2.857	.573

Each additional $.10 or portion add .002

December, 1965

SCHEDULE A-2

Applicable to terminal per line dial exchanges (Dial exchanges that do not meet the requirements for direct inward dialing).

ARPM			ARPM			ARPM		
Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message
$ .100	$ .105	$ .231	$ .320	$ .325	$ .284	$ .684	$ .704	$ .345
.105	.110	.232	.325	.330	.285	.704	.723	.348
.110	.115	.233	.330	.335	.286	.723	.742	.350
.115	.120	.234	.335	.340	.287	.742	.761	.354
.120	.125	.235	.340	.345	.288	.761	.780	.356
.125	.130	.238	.345	.350	.289	.780	.800	.358
.130	.135	.239	.350	.355	.290	.800	.819	.361
.135	.140	.240	.355	.360	.291	.819	.838	.363
.140	.145	.241	.360	.365	.292	.838	.857	.367
.145	.150	.242	.365	.370	.292	.857	.876	.369
.150	.155	.243	.370	.375	.293	.876	.895	.372
.155	.160	.244	.375	.380	.295	.895	.914	.374
.160	.165	.245	.380	.385	.295	.914	.933	.378
.165	.170	.247	.385	.390	.296	.933	.952	.380
.170	.175	.249	.390	.395	.297	.952	.971	.383
.175	.180	.250	.395	.400	.298	.971	1.019	.385
.180	.185	.251	.400	.405	.299	1.019	1.067	.392
.185	.190	.253	.405	.410	.300	1.067	1.115	.399
.190	.195	.254	.410	.415	.300	1.115	1.163	.405
.195	.200	.255	.415	.420	.301	1.163	1.211	.412
.200	.205	.256	.420	.425	.302	1.211	1.259	.418
.205	.210	.257	.425	.430	.303	1.259	1.307	.426
.210	.215	.258	.430	.435	.303	1.307	1.355	.432
.215	.220	.259	.435	.440	.304	1.355	1.403	.439
.220	.225	.261	.440	.445	.305	1.403	1.451	.446
.225	.230	.263	.445	.450	.307	1.451	1.497	.452
.230	.235	.264	.450	.455	.308	1.497	1.543	.459
.235	.240	.265	.455	.460	.309	1.543	1.589	.465
.240	.245	.266	.460	.465	.309	1.589	1.635	.472
.245	.250	.267	.465	.470	.310	1.635	1.682	.480
.250	.254	.268	.470	.475	.311	1.682	1.729	.486
.254	.258	.269	.475	.480	.312	1.729	1.776	.493
.258	.262	.270	.480	.485	.312	1.776	1.823	.498
.262	.267	.272	.485	.490	.313	1.823	1.868	.504
.267	.272	.273	.490	.495	.314	1.868	1.913	.509
.272	.277	.274	.495	.513	.315	1.913	2.003	.515
.277	.282	.275	.513	.532	.319	2.003	2.091	.524
.282	.287	.276	.532	.551	.322	2.091	2.179	.534
.287	.292	.277	.551	.570	.325	2.179	2.268	.542
.292	.297	.278	.570	.589	.328	2.268	2.357	.550
.297	.301	.279	.589	.608	.332	2.357	2.457	.554
.301	.305	.280	.608	.627	.334	2.457	2.557	.557
.305	.310	.281	.627	.646	.337	2.557	2.657	.561
.310	.315	.282	.646	.665	.339	2.657	2.757	.565
.315	.320	.284	.665	.684	.343	2.757	2.857	.569

Each additional $.10 or portion add .002

December, 1965

SCHEDULE A-3

Applicable to manual exchanges
(common battery or magneto)

ARPM			ARPM			ARPM		
Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message	Over	Not Over	Settlement Amount per Message
$ .100	$ .105	$ .134	$ .325	$ .330	$ .204	$ .700	$ .720	$ .308
.105	.110	.134	.330	.335	.206	.720	.740	.311
.110	.115	.134	.335	.340	.207	.740	.760	.314
.115	.120	.134	.340	.345	.209	.760	.780	.317
.120	.125	.134	.345	.350	.211	.780	.800	.320
.125	.130	.134	.350	.355	.213	.800	.820	.322
.130	.135	.134	.355	.360	.215	.820	.840	.325
.135	.140	.134	.360	.365	.217	.840	.860	.328
.140	.145	.134	.365	.370	.218	.860	.880	.332
.145	.150	.134	.370	.375	.220	.880	.900	.334
.150	.155	.134	.375	.380	.222	.900	.920	.336
.155	.160	.135	.380	.385	.224	.920	.940	.339
.160	.165	.137	.385	.390	.227	.940	.960	.343
.165	.170	.139	.390	.395	.228	.960	.980	.346
.170	.175	.140	.395	.400	.229	.980	1.000	.349
.175	.180	.141	.400	.405	.231	1.000	1.050	.354
.180	.185	.143	.405	.410	.232	1.050	1.100	.359
.185	.190	.145	.410	.415	.233	1.100	1.150	.365
.190	.195	.146	.415	.420	.234	1.150	1.200	.370
.195	.200	.147	.420	.425	.236	1.200	1.250	.377
.200	.205	.148	.425	.430	.239	1.250	1.300	.383
.205	.210	.150	.430	.435	.241	1.300	1.350	.390
.210	.215	.152	.435	.440	.243	1.350	1.400	.395
.215	.220	.155	.440	.445	.244	1.400	1.450	.401
.220	.225	.159	.445	.450	.245	1.450	1.500	.406
.225	.230	.161	.450	.455	.247	1.500	1.550	.411
.230	.235	.164	.455	.460	.250	1.550	1.600	.415
.235	.240	.166	.460	.465	.251	1.600	1.650	.419
.240	.245	.169	.465	.470	.252	1.650	1.700	.423
.245	.250	.171	.470	.475	.253	1.700	1.750	.426
.250	.255	.173	.475	.480	.255	1.750	1.800	.428
.255	.260	.175	.480	.485	.257	1.800	1.850	.429
.260	.265	.177	.485	.490	.258	1.850	1.900	.430
.265	.270	.180	.490	.495	.261	1.900	1.950	.431
.270	.275	.181	.495	.500	.263	1.950	2.000	.432
.275	.280	.183	.500	.520	.266	2.000	2.100	.434
.280	.285	.185	.520	.540	.270	2.100	2.200	.435
.285	.290	.187	.540	.560	.275	2.200	2.300	.436
.290	.295	.189	.560	.580	.279	2.300	2.400	.437
.295	.300	.192	.580	.600	.284	2.400	2.500	.438
.300	.305	.194	.600	.620	.288	2.500	2.600	.439
.305	.310	.195	.620	.640	.292	2.600	2.700	.440
.310	.315	.197	.640	.660	.297	2.700	2.800	.441
.315	.320	.199	.660	.680	.301	2.800	2.900	.442
.320	.325	.201	.680	.700	.304	2.900	3.000	.443

Each additional $.10 or portion add .001

Exhibit C
Attachment 2

"A" SCHEDULE - Small Exchange Factors

No. of Messages	Factor Manual	Factor Dial
1- 500	1.10	1.47
501-1000	1.08	1.44
1001-1100	1.08	1.41
1101-1200	1.08	1.38
1201-1300	1.08	1.35
1301-1400	1.08	1.33
1401-1500	1.08	1.31
1501-1600	1.08	1.29
1601-1700	1.06	1.27
1701-1800	1.06	1.25
1801-1900	1.06	1.23
1901-2000	1.06	1.21
2001-2100	1.06	1.19
2101-2200	1.06	1.17
2201-2300	1.06	1.15
2301-2400	1.04	1.13
2401-2500	1.04	1.11
2501-2600	1.04	1.09
2601-2700	1.04	1.07
2701-2800	1.04	1.05
2801-2900	1.02	1.03
2901-3000	1.02	1.01
Over 3000	1.00	1.00

Exhibit C
Attachment 3

SCHEDULE A-4

For the additional trunk equipment provided in connection with inter-exchange trunks handling B-I message toll traffic into a Bell automatic ticketing installation -	$5.00 per month per trunk equipped.

September 1962

Exhibit C
Attachment 4

SCHEDULE B-1

ARPM Over	ARPM Not Over	Settlement Amount per Message
$ .100	$ .105	.133
.105	.110	.134
.110	.115	.136
.115	.120	.138
.120	.125	.139
.125	.130	.141
.130	.135	.143
.135	.140	.145
.140	.145	.146
.145	.150	.147
.150	.155	.149
.155	.160	.150
.160	.165	.152
.165	.170	.153
.170	.175	.155
.175	.180	.157
.180	.185	.159
.185	.190	.160
.190	.195	.162
.195	.200	.163
.200	.205	.165
.205	.210	.167
.210	.215	.168
.215	.220	.170
.220	.225	.171
.225	.230	.173
.230	.235	.174
.235	.240	.176
.240	.245	.177
.245	.250	.179
.250	.255	.180
.255	.260	.182
.260	.265	.183
.265	.270	.185
.270	.275	.186
.275	.280	.187
.280	.285	.189
.285	.290	.191
.290	.295	.192
.295	.300	.193
.300	.305	.194
.305	.310	.196
.310	.315	.198
.315	.320	.199
.320	.325	.201
$ .325	$ .330	.203
.330	.335	.204
.335	.340	.206
.340	.345	.207
.345	.350	.209
.350	.355	.210
.355	.360	.211
.360	.365	.213
.365	.370	.214
.370	.375	.215
.375	.380	.216
.380	.385	.218
.385	.390	.219
.390	.395	.221
.395	.400	.222
.400	.405	.224
.405	.410	.225
.410	.415	.227
.415	.420	.228
.420	.425	.230
.425	.430	.231
.430	.435	.233
.435	.440	.234
.440	.445	.235
.445	.450	.236
.450	.455	.238
.455	.460	.239
.460	.465	.241
.465	.470	.242
.470	.475	.244
.475	.480	.245
.480	.485	.247
.485	.490	.248
.490	.495	.249
.495	.500	.251
.500	.520	.254
.520	.540	.259
.540	.560	.264
.560	.580	.270
.580	.600	.275
.600	.620	.281
.620	.640	.286
.640	.660	.291
.660	.680	.296
.680	.700	.301
$ .700	$ .720	.306
.720	.740	.311
.740	.760	.316
.760	.780	.321
.780	.800	.325
.800	.820	.330
.820	.840	.334
.840	.860	.339
.860	.880	.344
.880	.900	.349
.900	.920	.353
.920	.940	.357
.940	.960	.361
.960	.980	.366
.980	1.000	.371
1.000	1.050	.378
1.050	1.100	.388
1.100	1.150	.398
1.150	1.200	.408
1.200	1.250	.418
1.250	1.300	.427
1.300	1.350	.435
1.350	1.400	.444
1.400	1.450	.452
1.450	1.500	.460
1.500	1.550	.468
1.550	1.600	.475
1.600	1.650	.482
1.650	1.700	.489
1.700	1.750	.495
1.750	1.800	.501
1.800	1.850	.507
1.850	1.900	.512
1.900	1.950	.518
1.950	2.000	.522
2.000	2.100	.529
2.100	2.200	.537
2.200	2.300	.544
2.300	2.400	.549
2.400	2.500	.553
2.500	2.600	.556
2.600	2.700	.558
2.700	2.800	.559
2.800	2.900	.560
2.900	3.000	.561
Each Additional $.10 or Portion		.001

September 1962

SCHEDULE B-2

Applicable to B-I Messages
Automatically Recorded for DDD Service

Number Of Messages	Settlement Amount Per Message
0 - 21800	.1200
21801 - 22000	.1199
22001 - 22200	.1198
22201 - 22400	.1197
22401 - 22600	.1196
22601 - 22800	.1195
22801 - 23000	.1194
23001 - 23200	.1193
23201 - 23400	.1192
23401 - 23600	.1191
23601 - 23800	.1190
23801 - 24000	.1189
24001 - 24200	.1188
24201 - 24400	.1187
24401 - 24600	.1186
24601 - 24800	.1185
24801 - 25000	.1184
25001 - 25200	.1183
25201 - 25400	.1182
25401 - 25600	.1181
25601 - 25800	.1180
25801 - 26000	.1179
26001 - 26250	.1178
26251 - 26500	.1177
26501 - 26750	.1176
26751 - 27000	.1175
27001 - 27250	.1174
27251 - 27500	.1173
27501 - 27750	.1172
27751 - 28000	.1171
28001 - 29000	.1170
29001 - 30000	.1169
30001 - 31000	.1168
31001 - 32000	.1167
32001 - 33000	.1165
33001 - 34000	.1163
34001 - 35000	.1161
35001 - 36000	.1159
36001 - 37000	.1157
37001 - 38000	.1155
38001 - 39000	.1153
39001 - 40000	.1152
40001 - 41000	.1150
41001 - 42000	.1149
42001 - 43000	.1147
43001 - 44000	.1145
44001 - 45000	.1143
45001 - 46000	.1141
46001 - 47000	.1139
47001 - 48000	.1137
48001 - 49000	.1136
49001 - 50000	.1134
50001 - 51000	.1132
51001 - 52000	.1130
52001 - 53000	.1128
53001 - 54000	.1126
54001 - 55000	.1125
55001 - 56000	.1123
56001 - 57000	.1121
57001 - 58000	.1120
58001 - 59000	.1118
59001 - 60000	.1116
60001 - 61000	.1114
61001 - 62000	.1113
62001 - 63000	.1111
63001 - 64000	.1109
64001 - 65000	.1108
65001 - 66000	.1107
66001 - 67000	.1105
67001 - 68000	.1103
68001 - 69000	.1101
69001 - 70000	.1099
70001 - 71000	.1097
71001 - 72000	.1095
72001 - 73000	.1093
73001 - 74000	.1092
74001 - 75000	.1091
75001 - 76000	.1089
76001 - 77000	.1087
77001 - 78000	.1085
78001 - 79000	.1083
79001 - 80000	.1081
80001 - 81000	.1080
81001 - 82000	.1079
82001 - 83000	.1077
83001 - 84000	.1075
84001 - 85000	.1073
85001 - 86000	.1071
86001 - 87000	.1070
87001 -109600	.1069
109601 -132200	.1059
132201 -154800	.1049
154801 -177400	.1039
177401 -200000	.1029
200001 and over	.1019

Exhibit C
Attachment 6

SCHEDULE B-3

ARPM Over	ARPM Not Over	Settlement Amount per Message
$ .100	$ .105	$ .162
.105	.110	.164
.110	.115	.166
.115	.120	.168
.120	.125	.170
.125	.130	.172
.130	.135	.174
.135	.140	.176
.140	.145	.178
.145	.150	.179
.150	.155	.181
.155	.160	.183
.160	.165	.185
.165	.170	.187
.170	.175	.189
.175	.180	.191
.180	.185	.193
.185	.190	.195
.190	.195	.197
.195	.200	.199
.200	.205	.201
.205	.210	.203
.210	.215	.204
.215	.220	.206
.220	.225	.208
.225	.230	.210
.230	.235	.212
.235	.240	.214
.240	.245	.215
.245	.250	.217
.250	.255	.219
.255	.260	.221
.260	.265	.222
.265	.270	.224
.270	.275	.226
.275	.280	.228
.280	.285	.230
.285	.290	.232
.290	.295	.233
.295	.300	.234
.300	.305	.236
.305	.310	.238
.310	.315	.240
.315	.320	.242
.320	.325	.244
$ .325	$ .330	$ .246
.330	.335	.247
.335	.340	.249
.340	.345	.251
.345	.350	.253
.350	.355	.254
.355	.360	.256
.360	.365	.258
.365	.370	.259
.370	.375	.260
.375	.380	.262
.380	.385	.264
.385	.390	.266
.390	.395	.268
.395	.400	.269
.400	.405	.271
.405	.410	.273
.410	.415	.275
.415	.420	.276
.420	.425	.278
.425	.430	.280
.430	.435	.282
.435	.440	.283
.440	.445	.284
.445	.450	.286
.450	.455	.288
.455	.460	.290
.460	.465	.292
.465	.470	.293
.470	.475	.295
.475	.480	.297
.480	.485	.299
.485	.490	.300
.490	.495	.302
.495	.500	.304
.500	.520	.307
.520	.540	.313
.540	.560	.319
.560	.580	.326
.580	.600	.333
.600	.620	.340
.620	.640	.346
.640	.660	.352
.660	.680	.358
.680	.700	.364
$ .700	$ .720	$ .370
.720	.740	.376
.740	.760	.382
.760	.780	.388
.780	.800	.393
.800	.820	.398
.820	.840	.403
.840	.860	.409
.860	.880	.415
.880	.900	.421
.900	.920	.426
.920	.940	.431
.940	.960	.436
.960	.980	.442
.980	1.000	.448
1.000	1.050	.456
1.050	1.100	.468
1.100	1.150	.480
1.150	1.200	.492
1.200	1.250	.503
1.250	1.300	.514
1.300	1.350	.524
1.350	1.400	.535
1.400	1.450	.545
1.450	1.500	.554
1.500	1.550	.563
1.550	1.600	.572
1.600	1.650	.581
1.650	1.700	.589
1.700	1.750	.596
1.750	1.800	.604
1.800	1.850	.611
1.850	1.900	.617
1.900	1.950	.624
1.950	2.000	.629
2.000	2.100	.637
2.100	2.200	.647
2.200	2.300	.655
2.300	2.400	.661
2.400	2.500	.666
2.500	2.600	.670
2.600	2.700	.672
2.700	2.800	.673
2.800	2.900	.674
2.900	3.000	.675
Each Additional $.10 or Portion		.001

September 1962

REA TE & CM-225
Appendix 1 Exhibit C

TEMPORARY SCHEDULE B-4

ARPM Over	ARPM Not Over	Settlement Amount per Message
$ .100	$ .105	.140
.105	.110	.141
.110	.115	.143
.115	.120	.145
.120	.125	.146
.125	.130	.148
.130	.135	.150
.135	.140	.151
.140	.145	.153
.145	.150	.154
.150	.155	.156
.155	.160	.157
.160	.165	.159
.165	.170	.161
.170	.175	.162
.175	.180	.164
.180	.185	.166
.185	.190	.167
.190	.195	.169
.195	.200	.170
.200	.205	.172
.205	.210	.173
.210	.215	.175
.215	.220	.177
.220	.225	.178
.225	.230	.180
.230	.235	.182
.235	.240	.183
.240	.245	.185
.245	.250	.187
.250	.255	.189
.255	.260	.190
.260	.265	.192
.265	.270	.194
.270	.275	.195
.275	.280	.197
.280	.285	.199
.285	.290	.200
.290	.295	.202
.295	.300	.203
.300	.305	.205
.305	.310	.206
.310	.315	.208
.315	.320	.210
.320	.325	.211
$ .325	$ .330	.213
.330	.335	.214
.335	.340	.216
.340	.345	.217
.345	.350	.219
.350	.355	.220
.355	.360	.222
.360	.365	.223
.365	.370	.225
.370	.375	.226
.375	.380	.228
.380	.385	.229
.385	.390	.231
.390	.395	.232
.395	.400	.234
.400	.405	.235
.405	.410	.237
.410	.415	.238
.415	.420	.240
.420	.425	.241
.425	.430	.243
.430	.435	.244
.435	.440	.246
.440	.445	.247
.445	.450	.249
.450	.455	.250
.455	.460	.252
.460	.465	.253
.465	.470	.255
.470	.475	.256
.475	.480	.258
.480	.485	.259
.485	.490	.261
.490	.495	.262
.495	.500	.264
.500	.520	.267
.520	.540	.272
.540	.560	.277
.560	.580	.283
.580	.600	.288
.600	.620	.293
.620	.640	.298
.640	.660	.304
.660	.680	.309
.680	.700	.314
$ .700	$ .720	.320
.720	.740	.325
.740	.760	.330
.760	.780	.336
.780	.800	.341
.800	.820	.346
.820	.840	.351
.840	.860	.356
.860	.880	.361
.880	.900	.366
.900	.920	.371
.920	.940	.375
.940	.960	.380
.960	.980	.385
.980	1.000	.390
1.000	1.050	.397
1.050	1.100	.407
1.100	1.150	.417
1.150	1.200	.427
1.200	1.250	.437
1.250	1.300	.446
1.300	1.350	.455
1.350	1.400	.464
1.400	1.450	.473
1.450	1.500	.481
1.500	1.550	.489
1.550	1.600	.497
1.600	1.650	.504
1.650	1.700	.511
1.700	1.750	.518
1.750	1.800	.524
1.800	1.850	.530
1.850	1.900	.536
1.900	1.950	.542
1.950	2.000	.548
2.000	2.100	.555
2.100	2.200	.564
2.200	2.300	.571
2.300	2.400	.576
2.400	2.500	.581
2.500	2.600	.584
2.600	2.700	.586
2.700	2.800	.587
2.800	2.900	.588
2.900	3.000	.589
Each Additional $.10 or Portion		.001

December, 1965

SCHEDULE B-5

Applicable to number identification
in connection with B-I DDD messages

Part I -- For ANI exchanges with
3,000 or less (B-I) messages per month

Number of Terminals Equipped *	Settlement Amount
0 - 100	$1.25/Terminal
101 - 300	$125 + $.30/Terminal in excess of 100 Terminals
301 - 500	$185 + $.15/Terminal in excess of 300 Terminals
501 -1000	$215 + $.13/Terminal in excess of 500 Terminals
1001 and over	$280 + $.12/Terminal in excess of 1000 Terminals

* Terminals equipped in TPS offices
or lines equipped in TPL offices.

SCHEDULE B-5

Applicable to number identification
in connection with B-I DDD messages

Part II -- For ONI locations and for ANI exchanges
with more than 3,000 messages per month *

Monthly Messages	Settlement Amount Per Message	Monthly Messages	Settlement Amount Per Message	Monthly Message	Settlement Amount Per Message
0 - 3000	.0740	3976 - 4000	.0700	4976 - 5000	.0660
3001 - 3025	.0739	4001 - 4025	.0699	5001 - 5025	.0659
3026 - 3050	.0738	4026 - 4050	.0698	5026 - 5050	.0658
3051 - 3075	.0737	4051 - 4075	.0697	5051 - 5075	.0657
3076 - 3100	.0736	4076 - 4100	.0696	5076 - 5100	.0656
3101 - 3125	.0735	4101 - 4125	.0695	5101 - 5125	.0655
3126 - 3150	.0734	4126 - 4150	.0694	5126 - 5150	.0654
3151 - 3175	.0733	4151 - 4175	.0693	5151 - 5175	.0653
3176 - 3200	.0732	4176 - 4200	.0692	5176 - 5200	.0652
3201 - 3225	.0731	4201 - 4225	.0691	5201 - 5225	.0651
3226 - 3250	.0730	4226 - 4250	.0690	5226 - 5250	.0650
3251 - 3275	.0729	4251 - 4275	.0689	5251 - 5275	.0649
3276 - 3300	.0728	4276 - 4300	.0688	5276 - 5300	.0648
3301 - 3325	.0727	4301 - 4325	.0687	5301 - 5325	.0647
3326 - 3350	.0726	4326 - 4350	.0686	5326 - 5350	.0646
3351 - 3375	.0725	4351 - 4375	.0685	5351 - 5375	.0645
3376 - 3400	.0724	4376 - 4400	.0684	5376 - 5400	.0644
3401 - 3425	.0723	4401 - 4425	.0683	5401 - 5425	.0643
3426 - 3450	.0722	4426 - 4450	.0682	5426 - 5450	.0642
3451 - 3475	.0721	4451 - 4475	.0681	5451 - 5475	.0641
3476 - 3500	.0720	4476 - 4500	.0680	5476 - 5500	.0640
3501 - 3525	.0719	4501 - 4525	.0679	5501 - 5525	.0639
3526 - 3550	.0718	4526 - 4550	.0678	5526 - 5550	.0638
3551 - 3575	.0717	4551 - 4575	.0677	5551 - 5575	.0637
3576 - 3600	.0716	4576 - 4600	.0676	5576 - 5600	.0636
3601 - 3625	.0715	4601 - 4625	.0675	5601 - 5625	.0635
3626 - 3650	.0714	4626 - 4650	.0674	5626 - 5650	.0634
3651 - 3675	.0713	4651 - 4675	.0673	5651 - 5675	.0633
3676 - 3700	.0712	4676 - 4700	.0672	5676 - 5700	.0632
3701 - 3725	.0711	4701 - 4725	.0671	5701 - 5725	.0631
3726 - 3750	.0710	4726 - 4750	.0670	5726 - 5750	.0630
3751 - 3775	.0709	4751 - 4775	.0669	5751 - 5775	.0629
3776 - 3800	.0708	4776 - 4800	.0668	5776 - 5800	.0628
3801 - 3825	.0707	4801 - 4825	.0667	5801 - 5825	.0627
3826 - 3850	.0706	4826 - 4850	.0666	5826 - 5850	.0626
3851 - 3875	.0705	4851 - 4875	.0665	5851 - 5875	.0625
3876 - 3900	.0704	4876 - 4900	.0664	5876 - 5900	.0624
3901 - 3925	.0703	4901 - 4925	.0663	5901 - 5925	.0623
3926 - 3950	.0702	4926 - 4950	.0662	5926 - 5950	.0622
3951 - 3975	.0701	4951 - 4975	.0661	5951 - 5975	.0621

* Use Schedule B-5, Part I for ANI exchanges which originate 3,000 or less (B-I) messages per month.

SCHEDULE B-5

Monthly Messages	Settlement Amount Per Message	Monthly Messages	Settlement Amount Per Message	Monthly Messages	Settlement Amount Per Message
5976 - 6000	.0620	7226 - 7250	.0570	8476 - 8500	.0520
6001 - 6025	.0619	7251 - 7275	.0569	8501 - 8525	.0519
6026 - 6050	.0618	7276 - 7300	.0568	8526 - 8550	.0518
6051 - 6075	.0617	7301 - 7325	.0567	8551 - 8575	.0517
6076 - 6100	.0616	7326 - 7350	.0566	8576 - 8600	.0516
6101 - 6125	.0615	7351 - 7375	.0565	8601 - 8625	.0515
6126 - 6150	.0614	7376 - 7400	.0564	8626 - 8650	.0514
6151 - 6175	.0613	7401 - 7425	.0563	8651 - 8675	.0513
6176 - 6200	.0612	7426 - 7450	.0562	8676 - 8700	.0512
6201 - 6225	.0611	7451 - 7475	.0561	8701 - 8725	.0511
6226 - 6250	.0610	7476 - 7500	.0560	8726 - 8750	.0510
6251 - 6275	.0609	7501 - 7525	.0559	8751 - 8775	.0509
6276 - 6300	.0608	7526 - 7550	.0558	8776 - 8800	.0508
6301 - 6325	.0607	7551 - 7575	.0557	8801 - 8825	.0507
6326 - 6350	.0606	7576 - 7600	.0556	8826 - 8850	.0506
6351 - 6375	.0605	7601 - 7625	.0555	8851 - 8875	.0505
6376 - 6400	.0604	7626 - 7650	.0554	8876 - 8900	.0504
6401 - 6425	.0603	7651 - 7675	.0553	8901 - 8925	.0503
6426 - 6450	.0602	7676 - 7700	.0552	8926 - 8950	.0502
6451 - 6475	.0601	7701 - 7725	.0551	8951 - 8975	.0501
6476 - 6500	.0600	7726 - 7750	.0550	8976 - 9000	.0500
6501 - 6525	.0599	7751 - 7775	.0549	9001 - 9025	.0499
6526 - 6550	.0598	7776 - 7800	.0548	9026 - 9050	.0498
6551 - 6575	.0597	7801 - 7825	.0547	9051 - 9075	.0497
6576 - 6600	.0596	7826 - 7850	.0546	9076 - 9100	.0496
6601 - 6625	.0595	7851 - 7875	.0545	9101 - 9125	.0495
6626 - 6650	.0594	7876 - 7900	.0544	9126 - 9150	.0494
6651 - 6675	.0593	7901 - 7925	.0543	9151 - 9175	.0493
6676 - 6700	.0592	7926 - 7950	.0542	9176 - 9200	.0492
6701 - 6725	.0591	7951 - 7975	.0541	9201 - 9225	.0491
6726 - 6750	.0590	7976 - 8000	.0540	9226 - 9250	.0490
6751 - 6775	.0589	8001 - 8025	.0539	9251 - 9275	.0489
6776 - 6800	.0588	8026 - 8050	.0538	9276 - 9300	.0488
6801 - 6825	.0587	8051 - 8075	.0537	9301 - 9325	.0487
6826 - 6850	.0586	8076 - 8100	.0536	9326 - 9350	.0486
6851 - 6875	.0585	8101 - 8125	.0535	9351 - 9375	.0485
6876 - 6900	.0584	8126 - 8150	.0534	9376 - 9400	.0484
6901 - 6925	.0583	8151 - 8175	.0533	9401 - 9425	.0483
6926 - 6950	.0582	8176 - 8200	.0532	9426 - 9450	.0482
6951 - 6975	.0581	8201 - 8225	.0531	9451 - 9475	.0481
6976 - 7000	.0580	8226 - 8250	.0530	9476 - 9500	.0480
7001 - 7025	.0579	8251 - 8275	.0529	9501 - 9525	.0479
7026 - 7050	.0578	8276 - 8300	.0528	9526 - 9550	.0478
7051 - 7075	.0577	8301 - 8325	.0527	9551 - 9575	.0477
7076 - 7100	.0576	8326 - 8350	.0526	9576 - 9600	.0476
7101 - 7125	.0575	8351 - 8375	.0525	9601 - 9625	.0475
7126 - 7150	.0574	8376 - 8400	.0524	9626 - 9650	.0474
7151 - 7175	.0573	8401 - 8425	.0523	9651 - 9675	.0473
7176 - 7200	.0572	8426 - 8450	.0522	9676 - 9700	.0472
7201 - 7225	.0571	8451 - 8475	.0521	9701 - 9725	.0471

SCHEDULE B-5

Monthly Message	Settlement Amount Per Message
9726 - 9750	.0470
9751 - 9775	.0469
9776 - 9800	.0468
9801 - 9825	.0467
9826 - 9850	.0466
9851 - 9875	.0465
9876 - 9900	.0464
9901 - 9925	.0463
9926 - 9950	.0462
9951 - 9975	.0461
9976 -10000	.0460
10001 -10050	.0459
10051 -10100	.0458
10101 -10150	.0457
10151 -10200	.0456
10201 -10250	.0455
10251 -10300	.0454
10301 -10350	.0453
10351 -10400	.0452
10401 -10450	.0451
10451 -10500	.0450
10501 -10550	.0449
10551 -10600	.0448
10601 -10650	.0447
10651 -10700	.0446
10701 -10750	.0445
10751 -10800	.0444
10801 -10850	.0443
10851 -10900	.0442
10901 -10950	.0441
10951 -11000	.0440
11001 -11050	.0439
11051 -11100	.0438
11101 -11150	.0437
11151 -11200	.0436
11201 -11250	.0435
11251 -11300	.0434
11301 -11350	.0433
11351 -11400	.0432
11401 -11450	.0431
11451 -11500	.0430
11501 -11550	.0429
11551 -11600	.0428
11601 -11650	.0427
11651 -11700	.0426
11701 -11750	.0425
11751 -11800	.0424
11801 -11850	.0423
11851 -11900	.0422
11901 -11950	.0421
11951 -12000	.0420
12001 -12050	.0419
12051 -12100	.0418
12101 -12150	.0417
12151 -12200	.0416
12201 -12250	.0415
12251 -12300	.0414
12301 -12350	.0413
12351 -12400	.0412
12401 -12450	.0411
12451 -12500	.0410
12501 -12550	.0409
12551 -12600	.0408
12601 -12650	.0407
12651 -12700	.0406
12701 -12750	.0405
12751 -12800	.0404
12801 -12900	.0403
12901 -13000	.0402
13001 -13100	.0401
13101 -13200	.0400
13201 -13300	.0399
13301 -13400	.0398
13401 -13500	.0397
13501 -13600	.0396
13601 -13700	.0395
13701 -13800	.0394
13801 -13900	.0393
13901 -14000	.0392
14001 -14125	.0391
14126 -14250	.0390
14251 -14375	.0389
14376 -14500	.0388
14501 -14625	.0387
14626 -14750	.0386
14751 -14875	.0385
14876 -15000	.0384
15001 -15175	.0383
15176 -15350	.0382
15351 -15525	.0381
15526 -15700	.0380
15701 -15875	.0379
15876 -16150	.0378
16151 -16325	.0377
16326 -16500	.0376
16501 -16700	.0375
16701 -16900	.0374
16901 -17100	.0373
17101 -17300	.0372
17301 -17500	.0371
17501 -17700	.0370
17701 -17900	.0369
17901 -18100	.0368
18101 -18300	.0367
18301 -18500	.0366
18501 -18700	.0365
18701 -18900	.0364
18901 -19100	.0363
19101 -19300	.0362
19301 -19500	.0361
19501 -19700	.0360
19701 -19900	.0359
19901 -20100	.0358
20101 -20300	.0357
20301 -20500	.0356
20501 -20700	.0355
20701 -20900	.0354
20901 -21100	.0353
21101 -21300	.0352
21301 -21500	.0351
21501 -87000	.0350
87001-115250	.0340
115251-143500	.0330
143501-171750	.0320
171751-200000	.0310
200001 and over	.0300

LINE HAUL SETTLEMENT

SUMMARY OF COMPUTATION

	- Circuit Group -		
	No.1	No.2	etc.
Between			
1. Circuit Group Designation and			
2. No. of circuits required for B-I and I-I use*			
3. Percent use of 2 for B-I Traffic**			
4. No. of circuits dedicated to exclusive use for WATS, TWX, etc.			
5. Percent use of 4 for B-I Traffic**			
6. Group size for settlement purposes (Line 2 + Line 4)***			
7. Applicable cost factor per route mile (Page 2)			
8. Route miles in Independent Company section			
9. Total Line Haul amount (Line 7 X Line 8)			
10. Percent use of Line 6 for B-I traffic#			
11. Monthly line haul amount due Independent Co. (Line 9 X Line 10)			
12. Total of Line 11 for all circuit groups			

* The total number of circuits required or provided (other than dedicated circuits) to handle B-I and/or I-I message toll traffic, inward WATS, DLSTTS and TWX traffic is entered on this line.

** Based on mutually acceptable usage studies.

\# Compute the composite percent use of total group for B-I traffic using the following:

$$\text{Line 10} = \frac{(\text{Line 2} \times \text{Line 3}) \text{ plus } (\text{Line 4} \times \text{Line 5})}{(\text{Line 2 plus Line 4})}$$

*** A Circuit Group consists of the number of circuits required to handle traffic between terminals located in two toll centers or in a toll center and a tributary.

SCHEDULE C

No. of Circuits In Use In Group	Average Cost Factor Per Route Mile Per Month
1	$ 4.00*
2	8.00
3	12.00
4	15.80
5	19.40
6	22.80
7	26.00
8	29.00
9	31.80
10	34.35
11	36.65
12	38.85
13	40.90
14	42.90
15	44.80
16	46.70
17	48.50
18	50.30
19	52.10
20	53.90
21	55.70
22	57.50
23	59.30
24	61.10
25	62.85
26	64.60
27	66.35
28	68.10
29	69.85
30	71.60
31	73.35
32	75.10
33	76.85
34	78.60
35	80.35
36	82.10
37	83.85
38	85.60
39	87.35
40	89.10
Over 40: For Each Ckt. Add.	$1.70 Per Route Mile

*Single circuit serving toll station exclusively - $5.00 per route mile

September 1962

Stromberg-Carlson
A SUBSIDIARY OF GENERAL DYNAMICS CORPORATION

ROCHESTER, NEW YORK 14603

BRANCH SALES OFFICES: ROCHESTER, N.Y. ATLANTA, GA.
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