

# **Exploding The Phone**

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# THE INVESTIGATION AND PROSECUTION OF Electronic toll fraud cases

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# ELECTRONIC TOLL FRAUD CASES

Prepared by the Legal and Security Departments of Southern Bell Telephone and Telegraph Company, Atlanta, Georgia

January, 1975

### GLOSSARY OF TERMS AND ABBREVIATIONS

# USED IN DOCUMENTATION OF ELECTRONIC TOLL FRAUD

- AMA Automatic Message Accounting The equipment used to record on continuous tapes the details of customer-dialed calls required for billing purposes. AMA and CAMA and LAMA refer to the same general type of equipment.
- ANI Automatic Number Identification Equipment located in a local central office to automatically identify the calling subscriber's number.
- Auxiliary Tape Recorder The magnetic tape recorder which is utilized with and controlled by the Dialed Number Recorder.
- Black Box The black box is named for the color of the first one found. It varies in size and usually has one or two switches or buttons. Attached to a telephone line, it provides free toll calling to that line. The black box user tells individuals to place toll calls to him, then operates the switch or button, causing a non-charge condition to be recorded on the telephone company's billing equipment.
- Blue Box The blue box, named for the color of the first such device found, varies in size and has either 12 or 13 buttons or switches on its face. The blue box can be directly attached to a telephone line or acoustically coupled by placing it directly against the receiver.

A blue box user usually calls a toll-free long distance number to gain access to the switching network. Disconnecting the first call with a 2600 Hz tone from the blue box, the user feeds in the number he wants in multi-frequency tones. Telephone Company billing records show only the free toll call and not the subsequent call made by the blue box user.

- Central Office (CO) The switching equipment in a building that provides exchange telephone service for a given geographical area.
- Cheese Box An electronic toll fraud (ETF) device which inter-connects two telephone lines, each having different numbers but terminating at the same location. There is a "No-charge" condition on the calls placed to the cheese box, if used in conjunction with a black box.

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- Customer Toll Dialing The dialing of toll telephone calls by the subscriber. It is generally referred to as Direct Distance Dialing (DDD).
- Digit Usually one of the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and sometimes letters.
- DDD Direct Distance Dialing Toll service that permits customer to dial their own long distance calls.

- DNR Dialed Number Recorder The Dialed Number Recorder is attached to the suspect blue box user's line to document blue box activity. Documentation exists in the form of recording on paper tape the application of 2600 Hz tones and the digits dialed in Multi-Frequency Signaling Tones along with any digits dialed by the suspect's telephone. Upon the application of 2600 Hz tone, the Dialed Number Recorder turns on an auxiliary tape recorder to record on magnetic tape the blue box tones and to establish completion of the call.
- ETF Electronic Toll Fraud The fraudulent obtaining of "free" telecommunications service by use of either a Blue Box, a Black Box, a Red Box, a Cheese Box or other types of electronic devices.
- Hz Hertz International standard unit of frequency. Replaces and is identical to, the older unit of "cycle per-second."
- Intercept Calls made to an unassigned or nonworking telephone number which are directed to a recorded announcement and/or an operator.
- "800" IN-WATS Inward Wide Area Telephone Service is one which is used to provide "Toll Free" calling to the IN-WATS subscriber.
- MF MULTI-Frequency Tones Used to signal a called number on the toll network. Each digit is represented by combinations of 2 of 6 possible different frequencies.
- NNX Code or NXX Code The first three digits of the telephone number.
- Numbering Plan Areas (NPA) Geographical areas in the United States, Canada, and the Caribbean each of which is assigned a distinctive three-digit number called an area code. NNX or NXX codes are not duplicated within an area, making it possible for each subscriber to be assigned an individual ten-digit number unlike any other in any area. IN-WATS listings are indicated by the NPA of 800.
- Off-Hook The condition that indicates the active (busy) state of a subscriber's line.
- On-Hook The condition that indicates the idle state of a subscriber's line.
- ONI Operator Number Identification Identification by an operator of a calling subscriber's number.
- Operator Code A code that normally is dialed only by an operator to reach the various toll operators, such as 121 for inward, 131 for information, etc.
- Probable Cause Device A device attached to the suspect blue box user's line to register every time a fraudulent call is placed.
- Red Box An electronic toll fraud device which is coupled acoustically to the transmitter on a single slot coin telephone to permit imitation of the tones representing coin deposits in the coinbox, thus achieving "no charge" on toll calls.

- Reorder A low interrupted tone that indicates all switching paths are busy, all toll trunks are busy, equipment blockages, unassigned code dialed, or incomplete registration of digits.
- SF Single Frequency of 2600 Hz tone.

- Signalling A Method used to convey on the toll network the status of a call (off-hook, on-hook, ring, reorder, answer, etc.) or to convey the called number (by use of tones corresponding to digits).
- Subscriber's Line A term used to denote the pair of wires connecting the subscriber's telephone with the central office.
- Tariff The published rates, charges, rules, and regulations governing the provision of communications services.
- Toll Call or Message A completed call to a point outside the local service area, generally referred to as a "long distance" call.

Operator Completed — A toll message placed through an operator and ticketed and timed by her.

Customer Dialed — A toll message dialed by the customer and recorded by automatic equipment.

Customer Dialed — Operator Serviced — A toll message dialed by the customer and serviced by an operator.

Trunk — A communications link between local or toll central offices.

Universal Directory Assistance — NPA-555-1212 — A service furnished by the Telephone Company to provide long distance customers with assistance in finding subscriber listings of telephone numbers.

#### INTRODUCTION

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This booklet has been prepared for use by prosecuting authorities in the territory served by Southern Bell (Florida, Georgia, North Carolina, and South Carolina) in cases involving alleged electronic toll fraud ("ETF").

In any ETF case in Southern Bell's territory where unusual evidentiary problems or technical questions arise, the Legal Department and Security Department of Southern Bell will be pleased to cooperate fully to resolve such problems or to answer such questions. Upon request, the Legal Department will provide to prosecutors appropriate citations, memoranda of law, and arguments dealing with the questions presented.

This booklet is designed to identify various kinds of ETF devices and to describe their operation. The investigative methods used by Southern Bell's Security Department are also described. Finally, a resume of applicable law is presented with emphasis on federal statutes.

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## ELECTRONIC TOLL FRAUD DEVICES

There are several different types of electronic equipment which may be generally classified as ETF devices. The most significant is the "blue box". The characteristics of each type of device are discussed below.

#### Blue Box

The "blue box" was so named because of the color of the first one found. The design and hardware used in the blue box is fairly sophisticated, and its size varies from a large piece of apparatus to a miniaturized unit that is approximately the size of a "king-size" package of cigarettes.

The blue box contains 12 or 13 buttons or switches that emit multi-frequency tones characteristic of the tones used in the normal operation of the telephone toll (long-distance) switching network. The blue box enables its user to originate fraudulent ("free") toll calls by circumventing toll billing equipment. The blue box may be directly connected to a telephone line, or it may be acoustically coupled to a telephone handset by placing the blue box's speaker next to the transmitter of the telephone handset. The operation of a blue box will be discussed in more detail below.

To understand the nature of a fraudulent blue box call, it is necessary to understand the basic operation of the Direct Distance Dialing (DDD) telephone network. When a DDD call is properly originated, the calling number is identified as an integral part of establishing the connection. This may be done either automatically or, in some cases, by an operator asking the calling party for his telephone number. This information is entered on a tape in the Automatic Message Accounting (AMA) office. This tape also



contains the number assigned to the trunk line over which the call is to be sent. The assigned trunk number provides a continuity of information contained on the tape. Other information relating to the call contained on the tape includes: called number identification, time of origination of call, and information that the called number answered the call. The time of disconnect at the end of the call is also recorded.

Although the tape contains information with respect to many different calls, the various data entries with respect to a single call are eventually correlated to provide billing information for use by Southern Bell's accounting department.

The typical blue box user usually dials a number that will route the call into the telephone network without charge. For example, the user will very often call a well-known

INWATS (toll-free) customer's number. The blue box user, after gaining this access to the network and, in effect, "seizing" control and complete dominion over the line, operates a key on the blue box which emits a 2600 Hertz (cycles per second, abbreviated hereafter as "Hz") tone. This tone causes the switching equipment to release the connection to the INWATS customer's line. Normally, the 2600 Hz tone is a signal that the calling party has hung up. The blue box simulates this condition. However, in fact the local trunk on the calling party's end is still connected to the toll network. The blue box user now operates the "KP" (key pulse) key on the blue box to notify the toll switching equipment that switching signals are about to be emitted. The user then pushes the "number" buttons on the blue box corresponding to the telephone number being called. After doing so, he operates the "ST" (start) key to indicate to the switching equipment that signalling is complete. If the call is completed, only the portion of the original call prior to the emission of 2600 Hz tone is recorded on the AMA tape. The tones emitted by the blue box are not recorded on the AMA tape. The tones is rendered in connection with the call.

Although the above is a description of a typical blue box operation using a common method of entry into the network, the operation of a blue box may vary in any one or all of the following respects:

(a) The blue box may include a rotary dial to apply the 2600 Hz tone and the switching signals. This type of blue box is called a "dial pulser" or "rotary SF" blue box.

(b) Entrance into the DDD toll network may be effected by a pretext call to any other toll-free number such as Universal Directory Assistance (555-1212) or any number in the INWATS network, either inter-state or intra-state, working or non-working.

(c) Entrance into the DDD toll network may also be in the form of "short haul" calling. A "short haul" call is a call to any number which will result in a lesser amount of toll charges than the charges for the call to be completed by the blue box. For example, a call to Birmingham from Atlanta may cost \$.80 for the first three minutes while a call from Atlanta to Los Angeles is \$1.85 for three minutes. Thus, a short



haul, three-minute call to Birmingham from Atlanta, switched by use of a blue box to Los Angeles, would result in a net fraud of \$1.05 for a three-minute call.

(d) A blue box may be wired into the telephone line or acoustically coupled by placing the speaker of the blue box near the transmitter of the telephone handset. The blue box may even be built inside a regular Touch-Tone<sup>®</sup> telephone, using the telephone's pushbuttons for the blue box's signalling tones.

(e) A magnetic tape recording may be used to record the blue box tones representative of specific telephone numbers. Such tape recording could be used in lieu of a blue box to fraudulently place calls to the telephone numbers recorded on the magnetic tape.

All blue boxes, except "dial pulser" or "rotary SF" blue boxes, must have the following four common operating capabilities:

(a) It must have signalling capability in the form of a 2600 Hz tone. This tone is used by the toll network to indicate, either by its presence or its absence, an "on-hook" (idle) or "off-hook" (busy) condition of the trunk.

(b) The blue box must have a "KP" key or button. "KP" is an abbreviation for a "Key Pulse" tone that unlocks or readies the multi-frequency receiver at the called end to receive the tones corresponding to the called telephone number.

(c) The typical blue box must be able to emit multi-frequency tones which are used to transmit telephone numbers over the toll network. Each digit of a telephone number is represented by a combination of two tones. For example, the digit 2 is transmitted by a combination of 700 Hz and 1100 Hz tones.

(d) The blue box must have an "ST" key. "ST" is an abbreviation for a "start" signal which consists of a combination of two tones that tell the equipment at the called end that all digits have been sent and that the equipment should start switching the call to the called number.

The "dial pulser" or "rotary SF" blue box requires only a dial with a signalling capability to produce a 2600 Hz tone.





This ETF device is so-named because of the color of the first one found. It varies in size and usually has one or two switches or buttons.





Attached to the telephone line of a called party, the black box provides toll-free calling to that party's line. A black box user informs other persons beforehand that they will not be charged for any call placed to him. (For example, bettors calling from a coin telephone will get their coin back.) The user then operates the device causing a "non-charge" condition ("no answer" or "disconnect") to be recorded on the telephone company's billing equipment. A black box is relatively simple to construct and is much less sophisticated than a blue box.

#### **Cheese Box**

This device is so-named for the container in which the first one was found. Its design may be crude or very sophisticated. Its size varies; one was found the size of a half-dollar.



A cheese box is used most often by bookmakers or bettors to place wagers without detection from a remote location. The device inter-connects two telephone lines, each having different numbers but each terminating at the same location. In effect, there are two telephones at the same location which are linked together through a cheese box. It is usually found in an unoccupied apartment connected to a telephone jack or connecting block. The bookmaker, at some remote location, dials one of the numbers and stays on the line. Various bettors dial the other number but are automatically connected with the bookmaker by means of the cheese box interconnection. If, in addition to a cheese box, a black box is included in the arrangement, the combined equipment would permit toll-free calling on either line to the other line. If a police raid were conducted at the terminating point of the conversations — the location of the cheese box — there would be no evidence of gambling activity. This device is sometimes difficult to identify. Law enforcement officials have been advised that when unusual devices are found associated with telephone connections the telephone company security representatives should be contacted to assist in identification.

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This device is coupled acoustically to the handset transmitter of a single-slot coin telephone. The device emits signals identical to those tones emitted when coins are deposited. Thus, local or toll calls may be placed without the actual deposit of coins.



#### INVESTIGATIVE PROCEDURES

This section reviews the investigative procedures used by the Security Department of Southern Bell. It should be noted that, to a great extent, these procedures reflect those used by other Bell System companies and many independent telephone companies.

Most of the discussion will concern blue box investigations because of the frequency of the blue box cases referred to law enforcement officials for prosecution.

The Security Department may initially discover evidence of ETF activity. This may result from an analysis of calling patterns to particular numbers. Such analyses may reveal abnormal calling patterns which possibly are the result of ETF activity. Moreover, cases of suspected ETF are referred to the Security Department from the various operating departments of Southern Bell, from other telephone companies, or from law enforcement officials as a result of their investigation of gambling or other criminal activities. In some instances, detection and identification of a calling station originating suspected blue box tones can be provided by use of a special non-monitoring test equipment.

If initial indications are that there is a substantial possibility that a blue box is being used on a particular line, the Security Department determines certain information about the line. The name of the subscriber to that line is identified, and an inventory is made of the line and station equipment being provided to him. A discreet background investigation (record) is conducted to establish the subscriber's identity. After this preliminary data is gathered, ETF detection units are installed on the suspected line to establish "probable-cause" for further investigation. If the "probable cause" equipment indicates repeated ETF activity on the line, other equipment is then installed to document such activity.

The "probable cause" equipment ascertains the existence or non-existence of ETF activity on the line by indicating the presence of multi-frequency tones on the subscriber's end of the line which would not be present in normal usage. The "probable cause" device now being used by Southern Bell registers each time a blue box call is placed. It is associated with a built-in peg-count meter to register each and every application of 2600 Hz tones in single-frequency (SF) signalling and/or 2600 Hz tone followed by KP tones used in multi-frequency (MF) signalling. As previously stated, such tones should not normally be present on the line.

If "probable cause" is established, other detection, identification and documentation equipment is installed. The primary equipment now being used by Southern Bell is the dialed number recorder (DNR), coupled with an auxiliary tape recorder. The DNR is activated when the suspect subscriber's telephone goes "off-hook" and prints on paper tape the following information concerning the call: the date and time of the call and the digits dialed over the suspect subscriber's line. Moreover, the DNR records on the paper tape an indicator of the presence of 2600 Hz tones on the line and the presence of multifrequency signalling tones on the subscriber's line. The auxiliary tape recorder is activated only after the presence of 2600 Hz tone on the line is detected by the DNR (indicating the use of a blue box). Once the tape recorder is activated, it records the tones being emitted by the blue box, other signalling tones, and the ringing cycle on the called end. It also records a minimum amount of ensuing conversation for the purpose of (1) establishing that the fraudulent call was consummated and (2) establishing the identity of the fraudulent caller. The timing duration of the tape recorder is pre-set. A time of one-minute (including pulsing, ringing and conversation) is the standard setting; however, if the blue box user

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is suspected of making overseas calls, the timing may be set for two minutes because of the greater time required by the blue box user to complete the call. Upon termination of the call, the DNR automatically prints the time of termination and the date. It should be pointed out that the presence of 2600 Hz tones <u>plus</u> multi-frequency signalling tones on a subscriber's line positively establishes that a blue box is being used to place a fraudulent call because such tones are not normally originated from a subscriber's line.

Once the raw data described above is gathered, the Security Department collects and formulates the data into legally admissible evidence of criminal activity. Such evidence will establish: (1) that a fraudulent call was placed by means of an ETF device, (2) that conversation ensued, (3) that the fraudulent call was placed by an identified individual, and (4) that such call was not billed to the subscriber number from which the blue box call originated. The evidence which is then available consists of documents and also of expert witness testimony by telephone company personnel concerning the contents of those documents, the operation of the blue box, and the operation of the detection equipment.

(Note: Similar techniques are used in the investigation of other forms of ETF.)

## PRESENTATION OF EVIDENCE TO PROSECUTORS

The evidence accumulated by the Security Department is carefully reviewed by the Legal Department for the purpose of determining whether sufficient evidence exists to warrant the presentation of the evidence to law enforcement officials. If the evidence does warrant such action, it is presented under appropriate circumstances to the proper law enforcement officials. In all cases where prosecution is recommended, a professionally investigated and documented summary of the case will be prepared and presented by the Security Department to the prosecutor's office. Each case recommended for prosecution will be prepared as completely as possible, usually necessitating little or no pre-trial investigation for the prosecutor. The summary of the case will include the following:

(a) A background of the case with details of the defendant's activities and a summary of all pertinent investigative steps and interviews conducted in the course of the investigation.

(b) Identification of witnesses.

(c) Synopsis of pertinent points to which each witness can testify.

(d) Description of all documents and items of evidence and the suggested order of proof showing the chronology of events. The physical evidence presented will normally consist of one or more of the following: magnetic tapes from the auxiliary tape recorder, paper tapes from the DNR, worksheets and notes prepared in connection with the analysis of each fraudulent call, the suspect's toll billing records covering the period during which the fraudulent activity occurred, computer printouts which established probable cause or a statement of the source of the "probable cause", and telephone company records of equipment being provided to the suspect.

(e) Upon request, the law applicable to the case.

Other pertinent Company records will be furnished under subpoena or demand of lawful authority. If an arrest or search warrant is sought, the Security representatives will cooperate fully and furnish affidavits required to support the application for the issuance of such warrants. Although the Security representatives cannot execute such warrants, nevertheless, upon request, such representatives will accompany the executing officers to assist in the identification of any suspected ETF equipment found. The Security representative will also be available to suggest pertinent areas for interrogation of the persons suspected of engaging in the fraudulent activity.