

NO. 1 AND 1B ANNOUNCEMENT SYSTEMS TIME OF DAY SERVICE DESCRIPTION

1. GENERAL

1.01 This section describes the time announcement equipment which has been designed for multi-office areas for furnishing "Time of Day" service.

1.02 The announcement equipment consists of a central time announcing bureau connected by suitable trunking arrangements to each office in the area and arranged so that one operator can make time announcements simultaneously for all calls that may be connected for "Time of Day" service. A call waiting signal (white striped lamp) in the turret on the announcement desk, indicates a call is connected for "Time of Day" service. The time operator will make time announcements every quarter minute (15 seconds) during the period in which the signal indicates a call waiting condition. The announcements are carried over cable conductors to each central office building for the exchange area to be served and then to

the incoming distributing circuit and thus to a manual, step-by-step or panel office announcement trunk. In small outlying offices where traffic for "Time of Day" service is light, calls can be handled through a group of trunks on a tandem board multiple or similar trunking centers. This entire arrangement is referred to as a time announcement system and a simplified schematic is shown in Fig. 1.

1.03 The time announcement system consists of the following:

TIME BUREAU, where the Announcement Desk No. 1, transmitting amplifier and associated outgoing distributing equipments are located.

INTERMEDIATE OFFICE, where the incoming distributing and alarm equipment with intermediate amplifier and associated outgoing distributing equipment are located.

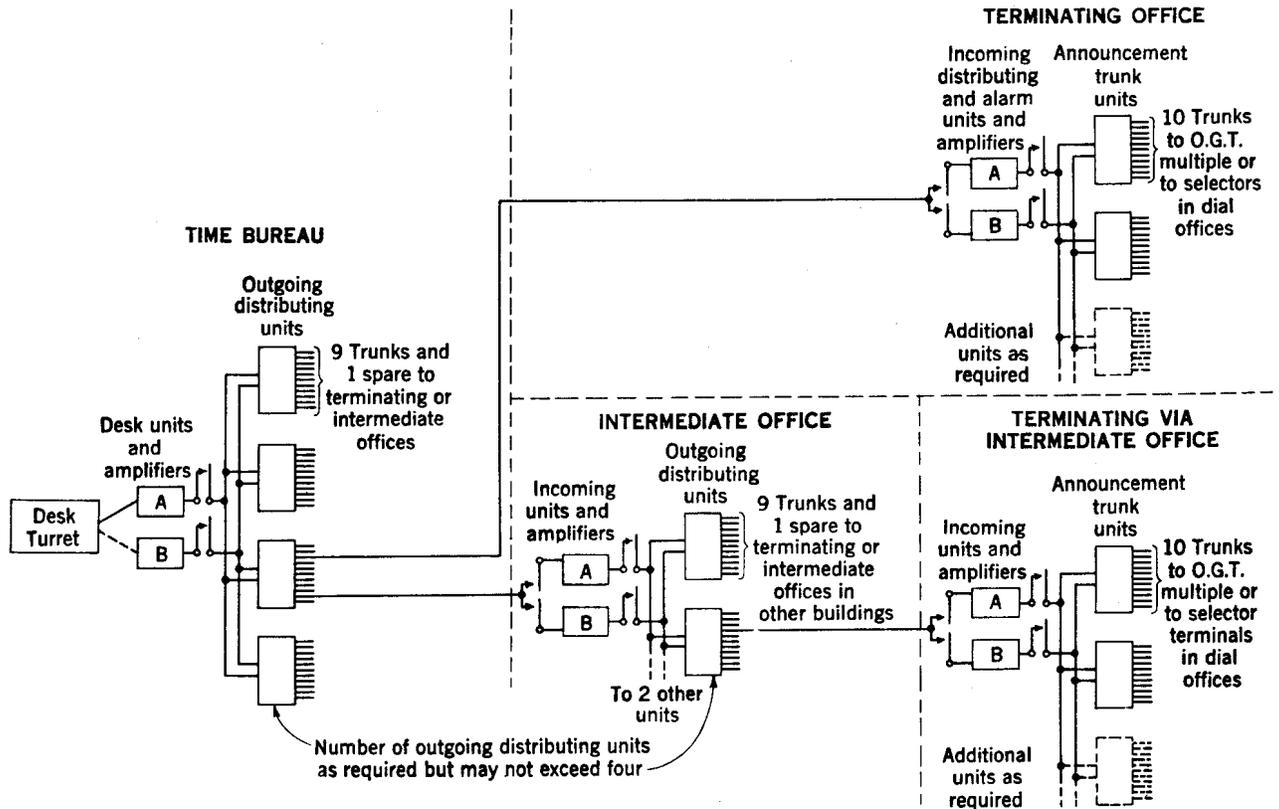


Fig. 1 - Simplified Schematic for the Time Announcement Supply System.

TERMINATING OFFICE, where the incoming distributing and alarm equipment with terminating amplifier and associated announcement trunks are located.

1.04 Intermediate office equipment is provided in relatively large areas as subcenters, where more trunks are required than the maximum number which can be connected to the time bureau or to reduce the cable requirements. Terminating office equipment may also be provided at the intermediate office.

1.05 The following is a summary of the time announcement equipment features:

- (a) Provides a centralized time announcing bureau connected by suitable trunks to any central office in an area which may be manual, panel or step-by-step or any combination of these.
- (b) Time announcements by a single operator are made simultaneously to all subscribers who may be connected for "Time of Day" service.
- (c) Time announcements every quarter minute (15 seconds) followed by a short interval of tone to mark the exact time.
- (d) Other features to insure efficiency are audible and visible alarm signals (which notify Traffic or Plant forces in case of failure) and convenient switches and keys to transfer from one circuit to another.

2. EQUIPMENT FEATURES

Operating Room Equipment Desk (Time Bureau)

2.01 The general appearance of the Announcement Desk No. 1 is shown in Fig. 2. The desk is a flat-top, single-sided desk of the chief operator's type, upon which is located the time announcement transmitter, and a small turret containing duplicate sets of equipment referred to as desk circuits A and B, which may be used interchangeably, by the time announcement operator. The desk circuit shown on the left is designated A and the circuit on the right B by means of number plates located in the lower portion of the turret just above the transmitter jacks.

2.02 In the turret are mounted the electric position clock and associated key, call waiting, announcement and out-of-service lamps, transmitter jack, volume control key and volume indicator meter for each desk circuit. The supervisor and trouble keys are also mounted in the turret. The master clock associated with each desk circuit is mounted on the wall in line of vision of the time announcement operator. The general appearance of the time turret is shown in Fig. 3.



Fig. 2 - General View - Announcement Desk No. 1.

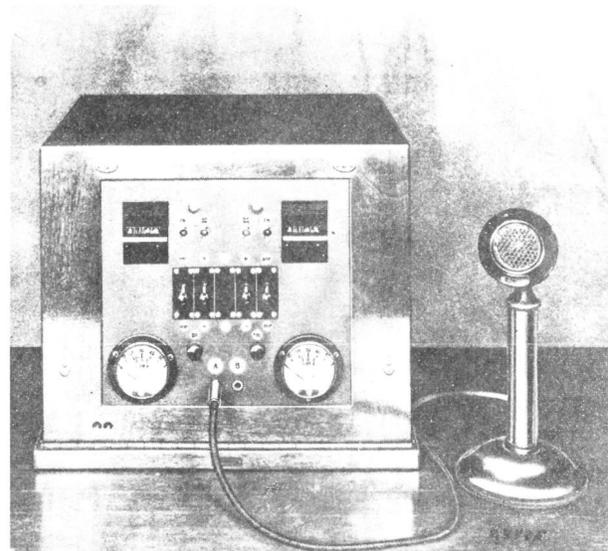


Fig. 3 - Front View of Time Turret.

Wall Clock

2.03 Associated with each desk circuit and mounted on the wall in the line of vision of the operator is a mahogany-finished self-winding central office operating room clock of the wall type. The second hand dial has eight subdivisions of seven and one-half seconds each. The first, third, fifth and seventh subdivisions are

white and the second, fourth, sixth and eighth subdivisions are green.

2.04 This clock is supplied for hourly correction from a master clock, which furnishes the synchronizing pulse on the hour, or at 15 minutes past the hour respectively. The general appearance of the wall clock is shown on Fig. 4.

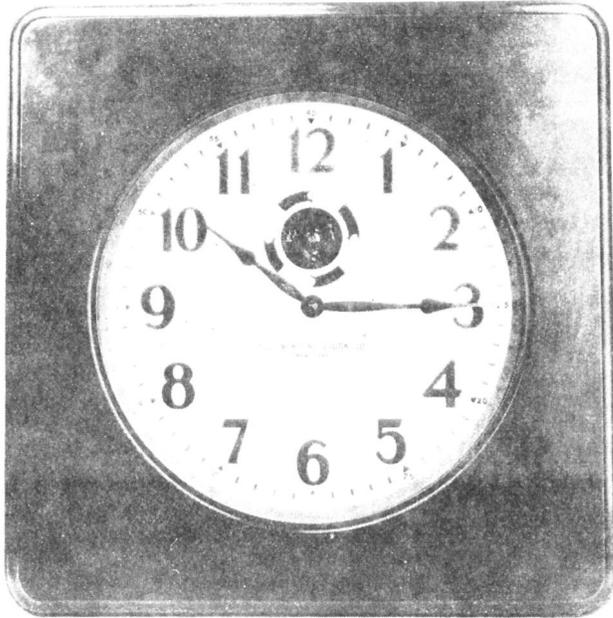


Fig. 4 - Front View of Master Clock
KS-6777 or KS-6778.

Position Clock

2.05 An electric position clock for each desk circuit is mounted in the turret. The clock in each circuit is similar to the No. 1-A clock, but has the tenth of a minute index wheel replaced by an index wheel with an eight-tooth ratchet and marked in quarter minute indications. The even positions of this wheel are "0", "1/4", "1/2" and "3/4". These markings are in white lettering on a black field. The odd positions are unmarked and painted white. Each clock is regularly set so that it displays the correct quarter minute indication seven and one-half seconds before its associated wall clock has reached this quarter minute. This indicates to the operator the time, when the time announcement is required.

2.06 A key per desk circuit is mounted in the turret for advancing or stopping the position clock to synchronize it with its associated wall clock. Operating the key upward (locking) stops the advancement of the position clock and operation of the key downward (non-locking) momentarily gives the position clock an

additional pulse to advance its position one-eighth minute.

2.07 In addition to permitting the correct setting of the position clock, this key in the "stop" position opens the operating path of the relays which control the lighting of the announcement lamp and the transmission of the tone signal. This key is released only when the second hand of the master clock reaches the white segments, or the first half of any quarter of a minute as read on the second hand of its associated master clock.

Call Waiting Lamp

2.08 A lamp with white striped lamp cap is mounted in the turret for each desk circuit. The lamp of the desk circuit in operation should be lighted whenever a call waiting condition exists. Connection of an "A" cord, or a panel or step-by-step selector to a time announcement trunk will establish the call waiting condition.

Announcement Lamp

2.09 An announcement lamp with a green jeweled lamp cap is provided for each desk circuit and is located in the turret. The announcement lamp of the desk circuit in operation is lighted during the time in which the operator is expected to make the announcement. It is lighted at a predetermined time, seven and one-half seconds just previous to the exact quarter minute, provided, however, a call is waiting. If a call waiting condition originates during the last seven and one-half seconds of the quarter minute period the announcement lamp will not light until the next succeeding announcement period. This prevents the lighting of the announcement lamp for a shorter period than seven and one-half seconds, in order to insure sufficient time for making the time announcement.

Transmitter Jack

2.10 A jack per desk circuit is located in the turret for the plug of the time announcement transmitter. The insertion of the transmitter plug in the transmitter jack of either desk circuit puts the associated circuit in operation and causes it to be connected with the time announcement system. The choice of the transmitter jack determines which of the two desk circuits is in operation. The operator may transfer the operation from one desk circuit to the other desk circuit by transferring the transmitter plug from one jack to the other and making the corresponding transfer with the operator's telephone set.

Telephone Circuit Jacks

2.11 A pair of jacks per desk circuit is located in the knee-well of the desk. Insertion of an operator's telephone set

plug into the jacks of a working circuit in which the transmitter plug is inserted, connects the operator's headset to the associated time tone signal circuit to enable her to hear the tone which is transmitted to mark the exact time. The transmitter of her headset if provided, is made ineffective when so connected. Through the receiver the operator can hear only the tone signal.

Volume Control Key

2.12 A key per desk circuit is located in the turret to make adjustments of level to take care of the normal variations between different operators' voices. The key should, for the average operator, be in the normal position. For a weak voice, the key should be operated to the + position which will permit the operator to easily announce at the proper volume as indicated by the volume indicator meter. For a strong voice the key should be operated to the - position.

Out-Of-Service Lamp

2.13 A lamp with a red jeweled lamp cap per desk circuit is located in the turret and lights when a particular desk circuit has been removed from service. A multiple out-of-service lamp with a red jeweled lamp cap is also located on the relay rack with the other desk circuit equipment. In case of an alarm condition for the amplifier associated with a desk circuit its out-of-service lamps should be lighted. When the out-of-service lamps of one of the desk circuits are lighted, this circuit cannot be used by the announcement operator. Under certain test conditions described in 4.08 the out-of-service lamps may flash when the spare transmitter is plugged into the transmitter jack of the desk circuit not in operation. Under these conditions the transmitter plug should be removed from the jack of this desk circuit in order to restore it to a service condition.

Time Announcement Transmitter

2.14 The transmitter is a high quality transmitter mounted on a desk stand without a mouthpiece or switchhook. It is equipped with a cord and plug to insert in the transmitter jack of either desk circuit. A filter is provided to prevent packing of the carbon granules of the transmitter because of radio-frequency surges caused by the interruption of this circuit on insertion or removal of the plug. The time announcement operator may usually speak at a distance of eight to twelve inches from the transmitter to easily announce at the proper volume as indicated by the volume indicator meter.

Supervisor Key

2.15 A key for calling a supervisor is located in the face of the turret. This key when operated causes a lamp to light in a supervisor's division at a switchboard lineup convenient to the time bureau and will cause an audible alarm (buzzer) to be sounded in this division.

Trouble Key

2.16 A trouble key is mounted in the face of the turret. When operated, it will cause a visual and audible alarm in the switchroom or terminal room and must be released in order to restore the alarm.

Terminal Room Equipment for Desk Circuits - Time Bureau

Outgoing Distributing Unit

2.17 The outgoing supply unit is to provide announcements outgoing from either an announcement desk or an intermediate office and is mounted on a 10 circuit completely shop wired unit. The unit is arranged so that any one of the 10 circuits on a unit can be assigned as a spare circuit which can be patched for maintenance purposes.

Transmitting Amplifier Unit

2.18 An amplifier is associated with each of the two desk circuits and is very closely equivalent to one-half of a 44-A-1 repeater. The amplifier unit consists essentially of a one-way, two-stage amplifier and is provided for adjusting transmission gains, as measured at 600 ohms, up to approximately 30 db and to within approximately 1/2 db of the desired gain. Jacks are provided for use in testing and for monitoring purposes. The filament circuit may be controlled manually by the operation of the F key. A FIL ALM lamp is provided to indicate failure in the filament or plate battery supply.

Oscillator

2.19 This oscillator consists essentially of a push-pull vacuum tube oscillation generator assembled on a metal panel. The filament circuit may be controlled manually by means of a key on the front of the panel. The oscillator furnishes the 800 cycle tone signal to mark the exact time.

Volume Indicator Meter

2.20 A panel is located on the relay rack per desk circuit and a multiple volume indicator galvanometer is located in the turret. The galvanometer indicates the volume of the transmission output of the time announcement bureau. The indication

of the galvanometer is used as a guide to determine whether the volume transmission which a particular operator is furnishing, is within satisfactory limits.

Intermediate Office

Incoming Distributing and Alarm Unit

2.21 The incoming distributing and alarm equipment is mounted on a single circuit unit completely shop wired. This unit also includes an intermediate amplifier similar to the transmitting amplifier and is permanently associated with each one of the incoming supply circuits.

Outgoing Distributing Unit

2.22 The outgoing distributing units are of the same type as those located at the time bureau.

Terminating Office

Incoming Distributing and Alarm Unit

2.23 The incoming distributing and alarm units are similar to those located in the intermediate office and includes the terminating amplifier.

Announcement Trunk Units

Manual Office (For Nos. 1, 1D, 10 and 11 Switchboards)

2.24 The time announcement trunks are mounted on a completely shop wired 10 circuit unit and are usually connected to the outgoing trunk multiple.

Panel Office

2.25 These trunks are mounted on a completely shop wired 10 circuit unit and are connected to the multiple of the district or 3 wire office selectors.

Step-by-Step Office

2.26 These trunks are also mounted on a completely shop wired 10 circuit unit and are arranged to absorb a varying number of digits, depending upon the position where they are connected on the local selector levels of step-by-step offices.

Miscellaneous Equipment

Traffic Registers for Time Announcement Trunks

2.27 The traffic registers of which the following may be required are mounted in the register rack or cabinet furnished for regular telephone traffic.

(a) Manual Offices

1. All-trunks-busy registers. These registers are the same as the usual all-trunks-busy registers provided for telephone traffic.

2. Peg-count registers. One per trunk is furnished when specified. This is a peg-count register without relay.

(b) Panel Offices

1. Overflow registers. One per group or subgroup is furnished when specified.

2. Peg-count registers. One per group or subgroup is furnished when specified.

Note: For these purposes the register circuit ordinarily required for district or office multiple overflow, or for group peg count, can be used.

(c) Step-by-Step Offices

1. Last trunk-busy registers or all-trunks-busy registers. These registers are furnished in accordance with the present practices for such registers.

2. Peg-count registers. One per trunk is furnished when specified. This is a peg-count register without relay.

Battery Supply

2.28 In all buildings where amplifiers are located the following battery supply connections are required:

(a) 125-135 volts-plate battery.

(b) 24 volts-talking battery for filaments.

2.29 For operating the circuits other than the amplifiers the battery supply requirements are as follows:

(a) Announcement trunks operate on the usual battery and machine ringing employed for central offices in which they are installed.

(b) All other circuits operate on 24 volts. The desk and supply circuits will require both talking and signaling battery.

(c) The out-of-service lamps in the time bureau require a busy-back interrupter connection.

3. CIRCUIT FEATURESDesk Circuit

3.01 The time bureau is connected to the intermediate or terminating offices to be served by means of a pair of conductors per office served. Fig. 1 shows a schematic of the variations in the supply network of the time bureau and of a terminating or intermediate office and associated amplifiers with as many outgoing distributing circuits as required.

3.02 The amplifier used with the desk circuit will permit multiple connections of outgoing distributing circuits up to a total of 76 (4 units), provided that the transmission equivalent of each outgoing distributing circuit is not in excess of 14 db. By changing the connections of the windings of the repeating coil associated with a particular outgoing distributing circuit, the permissible transmission equivalent of this circuit is raised to 20 db. Each circuit so connected, however, is equivalent to four normal circuits in determining the load on the amplifier.

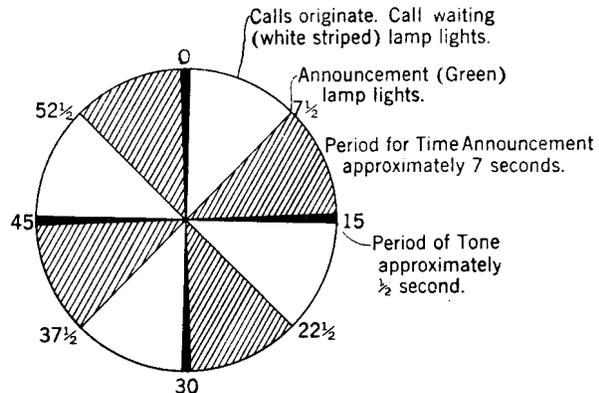
3.03 The time service for an exchange area is furnished over time announcement supply circuits. Subscribers' calls are connected to the system by time announcement trunks located in the "A" board outgoing trunk multiple of local manual offices, on the subscriber district multiple or local office multiple of panel offices and on one of the local selector levels of step-by-step offices. Where the time service is furnished from small outlying offices and the traffic is light, the time calls can be handled on a tandem basis to a group of trunks on a tandem board multiple. The arrangement will not permit the subscriber to talk to the time announcement operator. A call waiting signal at the operator's position (announcement desk) indicates when a subscriber is connected to the system, and the operator will make time announcements every quarter minute (15 seconds) during the periods in which the signal indicates a call waiting condition.

Clock CircuitWall Clock

3.04 This clock circuit gives a control pulse every seven and one-half seconds to the position clock which is mounted in the turret. This pulse operates and releases certain relays in the desk circuit which control the announcement lamp and tone signal so that they follow each other with regulated precision at the rate of four repetitions per minute.

Position Clock

3.05 This clock circuit displays the quarter minute indication seven and one-half seconds before the associated wall clock has reached this quarter minute so that the announcement lamp lights for the last half of a 15 second period instead of the first half. This indicates to the operator the time to be announced provided the call waiting signal indicates a connection for time service. The cycle of one minute is shown in Fig. 5.



NOTES

- (1) Circle represents one minute in time divided into eights of $7\frac{1}{2}$ seconds each.
- (2) 2nd, 3rd and 4th quarter minute periods are the same as shown for first quarter minute.
- (3) Calls not originating during first $7\frac{1}{2}$ seconds of each quarter minute are held over for the succeeding announcement period.

Fig.5 - One Minute Cycle - Time Announcement.

Transmitting or Intermediate Amplifier Circuit

3.06 This circuit is very closely equivalent to one-half of a 44-A-1 repeater consisting of a one-way, two stage amplifier. A new equipment arrangement is provided and the output coils of the amplifier have been selected to provide satisfactory transmission for the multiple connections. When furnished as a transmitting amplifier one is permanently associated with each of the two desk circuits. When furnished as an intermediate amplifier, one is permanently associated with each of the incoming supply circuits. Taps on the secondary side of the input transformer (T1) permit gain adjustments in steps of 4.7 db each, while each step of the switch on the input transformer (T2) gives gain adjustment of 0.95 db.

Terminating Amplifier Circuit

3.07 This is similar to the transmitting and intermediate amplifier but the output coil employed has an a-c. impedance in the neighborhood of 3.7 ohms.

Tone Circuit

3.08 A tone circuit which is controlled by the associated wall clock provides a short interval of tone, (.5 second) of approximately 800 cycles every 15 seconds. This tone is superimposed on the transmission system and is sent out at the end of each announcement period exactly on the quarter minute.

Unoccupied Position Alarm Circuit

3.09 When specified, an unoccupied position alarm circuit will be provided. This alarm operates whenever a call waiting condition exists and the transmitter and telephone set plugs are not inserted in their associated jacks of the same desk circuit.

Outgoing Distributing Circuit

3.10 The outgoing distributing circuit furnishes battery and ground through a double wound supervisory relay, and the incoming distributing and alarm circuit contains relays which are bridged across the conductors when a call waiting condition is established. A synchronizing signal, consisting of a reversal of the battery from the outgoing distributing circuit, is sent out from the time bureau just ahead of the announcement period. This signal is relayed throughout the whole supply system and serves to permit the time announcement trunks in the local offices to cut-in the subscriber only at the beginning of the announcement period. The outgoing distributing circuit supervisory relay at the end nearer the time bureau recognizes the bridged condition applied at the far end of the circuit as a call waiting condition, and repeats it towards the time bureau.

Incoming Distributing and Alarm Circuit

3.11 This circuit receives an indication of a call waiting condition. Such a condition causes it to test the conductors for an O.K. condition. If battery supply is not present on the pair, an automatic alarm circuit is operated which will prevent answering supervision from being established on subsequent calls to the time announcement trunks served through this incoming supply circuit.

Announcement TrunksGeneral

3.12 In each central office furnishing time of day service, incoming dis-

tributing and alarm circuits with associated terminating amplifiers is connected to the time announcement trunks.

3.13 The transmission circuit connections of the time announcement trunks permit multiple connections without appreciably changing the transmission level, and to prevent one subscriber so connected from interfering with the other subscribers who may be listening to the announcement by attempting to talk to the time announcement operator. The arrangement permits a large number of simultaneous connections with satisfactory transmission level to each subscriber. The circuits are for the termination of connections from subscribers served by a central office in the same building only.

3.14 To permit termination of calls from subscribers served by central offices outside of the building in which the terminating amplifiers are located, a group of trunks may be provided on a tandem board multiple or similar trunking centers for time announcement service for small outlying offices.

3.15 Time announcement trunk circuits as required by the traffic are connected in the outgoing trunk multiple of manual "A" boards, on the district or office multiple of panel offices and on one of the local selector levels of step-by-step offices, usually the first or second or special third selector. The differences between the several types of trunk circuits required are entirely due to the differences in the signaling and other equipment or circuit features for these three types of equipment. The subscriber will be cut through to the supply network only during the silent interval between the tone and next announcement. An audible ringing signal is provided to the subscriber between the establishment of the connection to the trunk and the cut-in period. If this interval is sufficiently short, this audible ringing signal may not be heard. Charge supervision is given to the subscriber on time of day calls. Some of the small manual offices may not be equipped with machine ringing features; for these it is necessary to provide a special connection to a nearby building containing machine ringing features in order to furnish such a signal. Therefore, for such offices this feature may be omitted unless otherwise specified.

Manual Office

(For Nos. 1, 1D, 10 and 11 Switchboards)

3.16 These trunks are connected to the outgoing trunk multiple of an "A" board, and are not arranged to trip ringing. The front supervisory lamp of a manual "A" cord is retired when the subscriber is cut-in and remains retired until the connection is pulled down. These connections must be

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pulled down on a "one-lamp disconnect" basis.

Panel Office

3.17 These trunks satisfy trunk guard test for the sender and require that the sender be set in a local panel call indicator class. In areas arranged for the transmission of the heavy final positive pulse on panel call indicator class this pulse can conveniently be used for controlling the time announcement trunk operation. Two types of trunk circuits are available.

- (a) Trunks arranged to operate on the heavy final positive pulse.
- (b) Trunks arranged for offices not equipped with the heavy final positive pulse.

3.18 The trunk circuits per (a) in 3.17 have some equipment advantages, and whether the panel offices involved are arranged to transmit the final heavy positive pulse are furnished. The subscriber district circuit is advanced to the talking position as soon as pulsing is completed, and when the next succeeding announcement period begins, the audible ringing signal is cut off and the subscriber is cut in.

Step-by-Step Office

3.19 In order to provide flexibility in the location of these trunks in the switch train, a digit absorbing feature is provided. A 204-type selector is used to count digits and determines when the entire number has been dialed. The circuit is so arranged that no digit absorbing will take place if so desired.

4. CENTRAL OFFICE ALARMS AND MAINTENANCE EQUIPMENT

Alarms

4.01 Since the time announcement equipment is located in a building with central office equipment, the alarms are arranged for connection into the regular central office alarm system, which may be connected to alarm circuits for a manual, panel, or step-by-step office.

4.02 Fuse alarms of the usual type are provided for the various circuits, and in addition other alarm circuits are provided as covered in the subsequent paragraphs.

Amplifier Alarm

4.03 A repeater alarm of the usual type is provided for each amplifier to indicate troubles such as interruption of filament or plate battery supply. This alarm circuit operates audible and visual

signals. In the case of the transmitting amplifier the alarm circuit causes the out-of-service lamps of the associated desk circuit to light.

Incoming Time Announcement Supply Circuit Alarm

4.04 An alarm is provided to indicate when an incoming supply circuit has failed to receive properly the supervisory signals from the preceding office, due either to trouble in this circuit or in the preceding circuits. Associated with this alarm is a key, an alarm lamp, and a guard lamp.

4.05 On the operation of the alarm which is indicated by an audible signal and the lighting of the alarm lamp, the maintenance man may test the circuit for battery and ground time announcement or tone with a receiver. If battery and ground are found it is an indication of trouble in the office where the alarm occurred. If battery and ground are not found, an open, short or grounded conductor loop is indicated. If the trouble is found to be local, the service may be transferred to the other incoming supply circuit by operating the transfer switch of the circuit in trouble and restoring to normal the transfer switch of the other circuit.

4.06 The LINE ALARM key is principally for use in connection with trouble outside the office. The operation of the key restores the audible alarm, extinguishes the alarm lamp and lights the guard lamp. When the trouble has been cleared as indicated by the proper operation of the incoming supply circuit relays, the alarm lamp again lights, the guard lamp is extinguished and the alarm bell again operates. The recurrence of the alarm with the LINE ALARM key operated indicates that the trouble has been corrected and that the incoming supply circuit has been automatically restored to service. By restoring the key the alarm lamp is extinguished and the audible alarm signal is restored.

Maintenance Features

General

4.07 The maintenance facilities for the time announcement system consist principally of means for isolating the various circuits, so that work may be done upon them without interfering with service. Alarms are provided for indicating fuse and circuit failures. No testing equipment other than that normally required for maintaining the various standard pieces of apparatus used in the system is required. Provision is made in the amplifier circuits so that standard portable transmission testing equipment can be used to check the amplifiers in case such testing is found desirable.

Means for Isolating Circuits

Desk Circuits

4.08 Two desk circuits are provided, only one circuit to be in service at a time. The circuit in service is determined by the insertion of the transmitter in the proper jack. An out-of-service key must be operated before any work is done on the circuit and is located on the relay rack for each desk circuit. This key opens the tip and ring conductors toward the outgoing distributing circuits and connects the output of a desk circuit to a pair of test terminals. It also lights the associated out-of-service lamp at the desk and a corresponding out-of-service lamp in the switch-room or terminal room. Tests can then be made of any part of the desk circuit. In order to make a listening test on the test terminals the extra transmitter furnished with the desk should be connected to the transmitter jack of the desk circuit, and a test receiver connected to the test terminals. By placing this transmitter near the transmitter used by the time announcement operator, the test man can listen for the regular time announcements. If the out-of-service key is restored without removing the extra transmitter, the desk circuit is automatically held out of service until the extra transmitter plug is removed from the jack. Under this condition the out-of-service lamp will flash, indicating to the time operator that the transmitter used for the test should be disconnected.

Time Announcement Supply Circuits-Outgoing

4.09 There are certain relays in the outgoing distributing circuits which are definitely associated with each of the two desk or incoming distributing and alarm circuits provided. In order to permit maintenance work on these relays and associated wiring without interfering with service, a circuit control key per desk circuit or per incoming distributing and alarm circuit is provided, which when operated will isolate all such outgoing distributing circuit relays associated with one desk circuit or incoming distributing and alarm circuit. The operation of one of these keys at the time bureau lights the out-of-service lamps of the associated desk circuit. The operation of either key is ineffective unless the corresponding desk or incoming supply circuit has been taken out of service.

4.10 Each outgoing distributing circuit is equipped with a cutoff key on the end toward the time bureau and with two jacks on the other end, one arranged to cut off the outside conductors and the other bridged across the outgoing supply circuit tip and

ring. By making use of these jacks and patching cord any working conductor pair can be transferred to a spare outgoing supply circuit. By operating the cutoff key of the outgoing distributing circuit from which the conductor pair has been disconnected, this circuit will be isolated from the time announcement system.

Time Announcement Supply Circuits-Incoming

4.11 The incoming distributing and alarm circuits are provided in pairs, only one being used at one time. A transfer switch, which is equipped with a dust cover is provided for each incoming distributing and alarm circuit. When the switch is in the operated position the associated circuit is isolated from the time announcement system.

5. CIRCUIT DESCRIPTIONS

5.01 Table 1 lists the circuit drawings pertaining to the time announcement equipment. Detailed circuit descriptions will be found in the associated CD sheets.

TABLE 1

<u>Title</u>	<u>Drawing</u>
Desk Circuit	SD-90253-01
Clock Circuit	SD-90254-01
Transmitting and Intermediate Amplifier Circuit	SD-90400-01
Transmitting Repeater Alarm Circuit	SD-90255-01
Outgoing Distributing Circuit	SD-90257-01
Intermediate Incoming Distributing and Alarm Circuit	SD-90256-01
Terminating Incoming Distributing and Alarm Circuit	SD-90260-01
Terminating Amplifier Circuit	SD-90400-02
Oscillator Circuit	SD-60289-01
Volume Indicator	SD-90417-01
Announcement Trunk Circuit - Manual Nos. 1, 1D, 10 and 11 Switchboards	SD-12846-01
Announcement Trunk Circuit - Panel Office	SD-21452-01
Announcement Trunk Circuit - Step-by-Step Office	SD-31362-01
Power Supply Circuit	SD-80082-011

(This section consists of excerpts from D & R Preliminary Notes on Time Announcement Equipment)