

**MODIFICATION REQUIREMENTS
FOR OVERTIME COIN COLLECTION
EQUIPMENT DESIGN REQUIREMENTS
PANEL SYSTEMS**

1. GENERAL

Scope

1.01 This specification together with the supplementary specifications, key sheets, drawings, equipment explanations and circuit descriptions listed herein covers the equipment design requirements for the modification of existing panel offices for overtime collection on local calls from coin box stations. New frames required in the modification are not covered herein but by separate specifications.

1.02 This specification is reissued to incorporate previous appendix changes and to change the rating from "AT&TCo Standard" to "A&M Only."

Capacity

1.03 The capacity of the various frames in the existing offices is not affected by the modification. The only additional equipment covered by this specification is the applique relay rack units associated with the coin districts. These units have a capacity of ten circuits. Six units can be located on a relay rack bay.

Description

1.04 This development provides facilities for the collection of overtime on local calls from coin box stations. The conversation is automatically timed by pulses received from the master clock by the district timing frame. This frame converts these pulses into different pulse trains, each of which provides interrupted pulses at 30-second intervals to the coin district selectors for advancing the timing switch. The timing switch (206 type selector) and other equipment required in modifying the coin districts for overtime collection is located on the relay

rack. Associated with each district is a lamp and two jacks which are located in the face equipment of the DSA switchboard.

1.05 When a call originates from a coin box station arranged for overtime collection the operation of the central office equipment is practically the same as without overtime collection except for the following features. At the end of approximately four and one-half minutes of conversation the coin is automatically collected. The collection of the coin during conversation is audible to both parties and should serve as an indication that the initial interval of conversation is about to end. At the end of five minutes the lamp associated with the district and located in the "A" switchboard operates and the timing of the call is suspended. The "A" operator plugs an answering cord into the overtime monitoring jack and requests a deposit for an additional five minutes. If the calling subscriber deposits the coin the "A" operator disconnects her cord and the timing is automatically resumed. Further overtime collects are made in the same manner. If the calling party does not deposit a coin the operator may split the connection between the calling and called parties by inserting another cord in the line splitting jack. This enables the operator to retain connection with the calling subscriber over the monitoring jack and with the called party over the line splitting jack. By removing both cords the conversation can be continued and the timing resumed.

1.06 Since the introduction of the panel system numerous improvements have been made in its operation and equipment. These improvements have resulted in various types of offices which differ from each other in equipment and in method of completing calls. These types of offices may be divided into the following general classes: Line Switch, Sender Selector, Rotary

Link, and Panel Link (ground and battery on the (CO) relay) offices. The following paragraphs outline in general the frames to be modified and the equipment to be added in applying overtime coin collection in the various classes of panel offices.

Line Switch Office

1.07 The line switch office derives its name from the fact that each line is equipped with a rotary type line switch which has a capacity of 20 district selectors. A number of switches are multiplied together, depending on traffic conditions.

1.08 The coin district frame is modified by the addition of applique relay rack units. These units are cabled on a ten circuit basis to the district frame where they are formed directly to their associated ten districts. In connection with the relay rack units, interrupters are required for timing the collection of the coin and resistance lamps used in the 110 volt supply lead are required for controlling the collection of the coin. The interrupters are to be located on the existing district frame or on an interrupter frame while the additional lamps are mounted on the miscellaneous fuse board. Cables are also provided from the relay rack units to the coil rack on which is located the repeating coils associated with the districts and to the coil rack fuse board on which are located the 24 volt fuses for supplying talking battery to the districts. However, on these frames the existing equipment can be reused.

1.09 The jacks and lamps associated with each coin district are located in the face equipment of the dial system "A" switchboard. Additional auxiliary signal equipment is also required which will in general be located in the rear of the switchboard.

1.10 In order to test the overtime coin collection feature of the modified districts it is necessary to change the district test frame. Modification of this frame is made by the installer. The additional equipment required can be located on the existing frame.

1.11 A new frame known as the "District Timing Frame" is also required which receives pulses from the master clock equipment modified to incorporate this feature. The

frame converts these interruptions into pulse trains which provide interrupted ground to the districts for timing subscribers calls. Associated with this frame are interrupters located on the district or miscellaneous interrupter frame, alarm equipment located on the floor alarm board, and 24 volt fuses located on the miscellaneous fuse board.

Sender Selector Offices

1.12 The next stage in the development of the system was a replacement of the rotary line switch by a panel type line finder on which the lines terminate on a multiple bank. In this office and also in the line switch office a rotary type switch is permanently attached to each district selector for selecting an idle sender. This type of office is commonly called "sender selector" rather than "line finder" to distinguish it from later developments which use the panel line finder but not the sender selector switch.

1.13 In this office the line finder district circuit equipment is located both on the line finder and district frames. The repeating coils are located on the coil rack when a 300 point line finder is used and on the district frame or coil rack when a 400 point line finder is provided.

1.14 The line finder and district frames are modified by the addition of applique relay rack units common to both frames. Cables are provided on a ten circuit basis from these relay rack units to the line finder frame where they terminate on the line finder equipment. The necessary changes in wiring on the line finder including the installation of the switchboard cable from the units to the line finder equipment, are made by the installer.

1.15 Switchboard cables are also provided between the relay rack units and the district frames. These cables when connected to a district frame having its repeating coils mounted on the coil rack have a capacity of ten circuits and are formed directly to their associated ten coin districts. However, where the district frame mounts the repeating coils, cables are run on a five circuit basis directly to the associated five districts. In connection with the relay rack units, interrupters are required for timing the collection of the coin and a resistance lamp is required in the 110 volt supply. The interrupters

are located on an interrupter frame or the existing district frame while the resistance lamps and associated fuses are mounted on a miscellaneous fuse board. Where the district repeating coils are located on the coil rack frame cables are provided from the associated unit to the coil rack on which are mounted the repeating coils associated with the districts and to the coil rack fuse board on which are located the 24 volt fuses for supplying talking battery to the district. However, on these frames existing equipment can be reused.

1.16 The jacks and lamps associated with each coin district are located in the face equipment of the dial system "A" switchboard. Additional auxiliary signal equipment is also required which will in general be located in the rear of the switchboard.

1.17 In connection with the testing of the overtime collection feature of the district, it is necessary to modify the district test frame. The modification of this frame is made by the installer. The additional equipment required can be located on the existing frames.

1.18 A new frame known as the "District Timing Frame" is also required, which receives pulses from the master clock equipment modified to incorporate this feature. This frame converts these interruptions into pulse trains which provide interrupted ground to the districts for timing subscribers calls. Associated with this frame are interrupters mounted on the district or miscellaneous interrupter frame, alarm equipment located on the floor alarm board and fuses located on the miscellaneous fuse board.

Rotary Link Office

1.19 The sender selector used in the previous two types of offices for selecting an idle sender was replaced by a rotary link. This link consists of rotary type power-driven switches, the function of which is to find the line finder district associated with the calling subscribers' line and attach an idle sender.

1.20 With the introduction of rotary link the line finder district circuit relay equipment and also the repeating coil was located entirely on the district frame. In this type office no modification of line finder frame is required.

1.21 The district frames, however, are modified by the addition of applique relay rack units. These units are cabled on a five circuit basis to the district frame where they are formed directly to the associated five districts. Cables are also provided from the unit to an existing interrupter on the district frame.

1.22 The jacks and lamp associated with each coin district are located in the face equipment of the dial system "A" switchboard. Additional auxiliary signal equipment is also required which will in general be located in the rear of the switchboard.

1.23 In connection with the testing of the overtime collection feature of the coin districts it is necessary to modify the existing district test frame. The modification of this frame is made by the installer. The additional equipment required can be located on the existing frame.

1.24 A new frame known as the "District Timing Frame" is required which receives pulses from the master clock equipment which is modified to incorporate this feature. This frame converts these interruptions into pulse trains which provide interrupted ground to the districts for timing subscribers calls. Associated with this frame are interrupters located on the miscellaneous or district interrupter frame, alarm equipment located on the floor alarm board and fuses located in the miscellaneous fuse board.

Panel Link Office

1.25 The panel link office uses the same fundamental principles of operation as the rotary link. In place of the rotary type switches for selecting an idle sender and finding the line finder district associated with the calling subscriber a link frame was substituted which consisted of panel multiple banks and selectors which gave access to a greater number of senders. This type of office is known as "panel link."

1.26 No modification of the line finder frame is required. The district frames, however, are modified by the addition of applique relay rack units. These units are cabled on a five circuit basis to the district frame where they

are formed directly to the associated five districts. A cable is also provided from the unit to an existing interrupter on the district frame.

1.27 The jacks and lamp associated with each coin district are located in the face equipment of the dial system "A" switchboard. Additional auxiliary signal equipment is also required which will in general be located in the rear of the switchboard.

1.28 In connection with the testing of the overtime collection feature of the coin districts it is necessary to modify the existing district test frame. The modification of this frame is made by the installer. The additional equipment required can be located on the existing frame.

1.29 A new frame known as the "District Timing Frame" is required, which receives pulses from the master clock equipment which is modified to incorporate this feature. This frame converts these interruptions into pulse trains which provide interrupted ground to the districts for timing subscribers calls. Associated with this frame are interrupters located on the miscellaneous or district interrupter frame, alarm equipment located in the floor alarm board and fuses located in the miscellaneous fuse board.

Subdivisions of Equipment

J29203A (A&M Only) — Overtime Coin Collection Unit — Line Switch and Sender Selector Type Offices

J29203C (A&M Only) — Overtime Coin Collection Unit — Panel Link Type Office

2. SUPPLEMENTARY INFORMATION

815-000-000 — Panel Systems Index

AA128.006 — List of General Equipment Requirements

X-61200 — List of Engineering Requirement Specifications Required in Offices having Ground on the Cut-off Relays.

X-61400 — List of Engineering Requirement Specifications Required in Offices having Battery on the Cut-Off Relays.

3. DRAWINGS

Framework

ED-20581-01 — District Test Frame — Panel Link Office
 ES-373701 — District Test Frame — Panel Link Office
 ES-299185 — District Test Frame — Rotary Link Office — High Speed Drive
 ES-373531 — District Test Frame — Rotary Link — Slow Speed Drive
 ES-225322 — District Test Frame — Sender Selector Office
 ED-90395-02 — Unit Assembly

Panel System Keysheets

ES-262532 — Sender Selector Equipment — 3 Digit Areas
 ES-262647 — Sender Selector Equipment — 2 and 2-3 Digit Areas
 ES-262829 — "Rotary" Link Equipment — 3 Digit Areas
 ES-262849 — "Rotary" Link Equipment — 2 and 2-3 Digit Areas
 SD-21300-01 — Battery on the Cut-Off Relay
 SD-21680-01 — Panel Link — Ground on the CO Relay

Equipment

ED-20359-01 — District Test Frame — Frame Equipment — Panel Link Office
 ED-20583-01 — District Test Frame — Frame Equipment — Panel Link Office
 ES-373694 — District Test Frame — Frame Equipment — Panel Link Office
 ES-299187 — District Test Frame — Frame Equipment — Rotary Link Office — High Speed Drive
 ES-373525 — District Test Frame — Frame Equipment — Rotary Link Office — Low Speed Drive
 ES-225329 — District Test Frame — Frame Equipment — Sender Selector Office
 ED-20356-01 — District Test Frame — Mtg. Pl. — Panel Link Office
 ED-20579-01 — District Test Frame — Mtg. Pl. — Panel Link Office
 ES-373695 — District Test Frame — Mtg. Pl. — Panel Link Office
 ES-299189 — District Test Frame — Mtg. Pl. — Rotary Link Office

- ES-225878 — District Test Frame — Mtg. Pl.
— Sender Selector Office
- ED-20461-02 — District Unit Equipment
- ED-90146-01 — Clock Ckt. Relay Rack Equip-
ment

Wiring and Cabling

- ED-20358-01 — Dist. Test Frame — Local Cable
— Panel Link Office
- ED-20582-01 — Dist. Test Fr. — Local Cable —
Panel Link Office
- ES-373696 — Dist. Test Frame — Local Cable
— Panel Link Office
- ES-299190 — Dist. Test Frame — Local Cable
— Rotary Link Office — High
Speed Drive
- ES-373535 — Dist. Test Frame — Local Cable
— Rotary Link Office — Slow
Speed Drive
- ED-20730-01 — Unit Local Cable
- ED-20726-01 — Combined Local and Swbd. Cable
— Panel and Rotary Link Offices
- ED-20726-02 — Combined Local and Swbd.
Cable — Line Switch and Sender
Selector Offices
- ED-20655-01 — Combined Local and Swbd.
Cable — Sender Selector Offices
- ED-20729-01 — Schematic of overtime coin col-
lection modification

4. EQUIPMENT

***J29203A (A&M Only) — Overtime Coin Collec-
tion Unit — Line Switch and Sender
Selector Type Panel Offices***

List 1 — Covers and assembly, wiring and equipment of one unit modifying, for overtime collection on local calls, coin district circuit ES-207707 in line switch offices and ES-226378 and ES-240075 in sender selector offices.

Unit Equipment per ED-20461-02, Figure 1
Local Cable per ED-20730-01, Figure 2

	WIRE	EQUIP	SEE NOTES
Unit Assembly per ED-90395-02		1	
Coin District Circuit SD-21427-01 or Coin Line Finder District Circuit		As	A,B
SD-21428-01 or SD-21429-01	10	Spec.	& C

Notes

- A. The following switchboard cables shall be run from this unit when used in modifying the coin districts in line switch type panel offices — one 6234 cable per ten circuits (1 per unit) to the district frame; one 6050 cable per 30 circuits (3 units) to the (CC) interrupter located either on an interrupter frame or on the existing district frame; one 6016 cable per 60 circuits (6 units) to the district timing frame; one 1453 cable per unit to the coil rack fuse board containing the 24 volt talking battery and ground leads (2 leads per circuit); one 1453 cable per two units to the miscellaneous fuse board; one 6060 cable per unit to the DSA switchboard and one 6024 cable per unit to the coil rack.
- B. The following switchboard cables shall be run from this unit when used in modifying the coin districts in sender selector type offices having the district repeating coils mounted on the coil rack; one 6097 cable per ten circuits (1 per unit) to the district frame; one 6050 cable per 30 circuits (3 units) to the (CC) interrupter located either on an interrupter frame or the existing district frame; one 6016 cable per 60 circuits (6 units) to the district timing frame; one 6024 cable per unit to the coil rack; one 1453 cable per 20 circuits (2 units) to the miscellaneous fuse board; one 6079 cable per unit to the line finder frame; one 1453 cable per unit to the coil rack fuse board for the 24 volt battery and ground leads (2 leads per circuit); one 6060 cable per unit to the DSA switchboard.
- C. The following switchboard cables shall be run from this unit when used in modifying the coin districts in sender selector type offices which have the district repeating coils located on the district frame; one 6106 cable per 5 circuits (2 per unit) to the district frame; one 6050 cable per 30 circuits (3 units) to the (CC) interrupter located either on an interrupter frame or the existing district frame; one 6016 cable per 60 circuits (6 units) to the district timing frame; one 1453 cable per 20 circuits (2 units) to the miscellaneous fuse board; one 6079 cable per unit to the line finder frame;

one 6060 cable per unit to the DSA switchboard.

J29203C (A&M Only) — Overtime Coin Collection Unit — Panel Link Type Offices

List 1 — Covers the assembly, wiring and equipment of one unit modifying for overtime collection on local calls, coin line finder — district circuits ES-21031-01 for panel link ground on (CO) relay type office and ES-21078-01 for panel link battery on (CO) relay type office.

Unit equipment per ED-20461-02, Figure 2

Local Cable per ED-20730-01, Figure 2

	WIRE	EQUIP	SEE NOTES
Unit assembly per ED-90395-02		1	
Coin district selector circuit SD-21031-02	10	Spec.	A
Coin district selector circuit SD-21078-02 or SD-21628-02	10	Spec.	B

Notes

- A. The following switchboard cables shall be run from this unit when used in modifying the coin districts in panel link ground on (CO) relay type offices — one 6097 cable per 5 circuits (2 per unit) to the district frame; one 6050 cable per 30 circuits (3 units) to the (CHG) interrupter on the district frame; one 6016 cable per 60 circuits (6 units) to the district timing frame; one 6060 cable per unit to the DSA switchboard.
- B. The following switchboard cables shall be run from this unit when used in modifying coin districts in panel link battery on the (CO) relay type offices — one 6233 cable per 5 circuits (2 per unit) to the district frame; one 6050 cable per 30 circuits (3 units) to the CHG interrupter on the district frame; one 6016 cable per 60 circuits (6 units) to the district timing frame; one 6060 cable per unit to the DSA switchboard.

5. GENERAL NOTES

RELAY RACK EQUIPMENT

Overtime Coin Collection Unit

5.01 The relay rack units for modifying the coin district circuits shall be mounted on standard 23-1/2" (I) beam relay racks. These

racks shall be located as near as possible to the district frame with which they are associated. In general, each bay of relay rack shall mount the units associated with one district frame. However, in case a district frame is only partially equipped with coin district selectors, it will be satisfactory to equip the relay rack bays with units serving several frames.

5.02 In general, the relay rack shall be equipped from bottom up, the odd numbered districts shall appear on the bottom half of the bay and the even numbered on the upper half.

5.03 The connecting blocks and telephone and test jacks shall be located on the jack mounting as shown on Figure 3, of ED-20461-02. This equipment shall be located approximately six feet above the floor on every third bay of relay rack beginning with the second bay from the originating end of each lineup. Wiring to and from this equipment shall be run in switchboard cable as required.

5.04 The overtime coin collector unit, J29203A List 1, is for use in line switch and sender selector type panel offices. The wiring and equipment of this unit is the same irrespective of whether it is to modify the coin districts in line switch offices or either of the coin line finder-district selector circuits in sender selector type offices.

5.05 The overtime coin collection unit J29203C for panel link type offices is wired universally for use in panel link ground on the (CO) relay and panel link battery on the (CO) relay type offices. The equipment and wiring of the unit is identical for either type offices with the exception of one additional lead per circuit being required in battery on the (CO) type offices which is not required in ground on the (CO) relay type offices.

Clock Circuit Equipment

5.06 In view of the fact that the District Timing Circuit connects to the Master Clock Circuit it is necessary to modify the existing clock circuits. The master clock circuit shall be modified to conform with either SD-91018-01 or SD-91019-01, the position and secondary clock circuit with SD-90409-01. In general this change will mean only the addition of a "CO" key, and

associated wiring. The location of additional equipment shall conform to the layout shown on ED-90146-01.

5.07 In addition the transfer keys which are located in the "A" switchboard Cable Turning Section shall be located on a mounting board on the relay rack. Formerly these keys were used primarily for stopping the switchboard position clocks. The introduction of the overtime coin collection feature with its district timing circuit makes it necessary to have these keys located in the switchroom where they can be operated by the maintenance force upon failure of the District Timing Circuit.

LINE FINDER FRAME

5.08 In sender selector type offices the portion of the line finder district circuits directly associated with the line finder equipment is located on a supplementary bay of the line finder bay.

5.09 In modifying the existing coin line finder circuits to agree with either SD-21428-01 or SD-21429-01 a switchboard cable containing two leads per circuit shall be run from the applique relay rack units to the line finder frame. This cable shall be terminated directly on the E relays of the associated line finder. The only change in the equipment of the line finder frame involves the removal of the "C" resistance, a 59 type, which is not required when overtime coin collection is installed. In addition to the equipment change and to the switchboard cable to the applique units a modification of the existing line finder local cable is necessary. The leads in the line finder local cable which are required to be disconnected to incorporate overtime coin collection shall not be removed from the local form. The additional leads including the switchboard cable shall be sewed to the existing form as required. The modification of this frame shall be made by the installer.

5.10 When there is inconsistency between existing circuits and the modification circuits in the designation of equipment, the designation of the existing equipment shall be changed by the installer to conform with the modification circuit.

DISTRICT FRAME

5.11 In designing the modification circuits for overtime coin collection every effort has been made to reuse existing equipment. Although the modification circuits are in general based on the latest issue of the circuit to be modified, the equipment used on previous issues is shown and reused wherever possible. The existing district frames are modified for overtime coin collection by the addition of applique relay rack units. The number of leads in switchboard cable between these units and the district frame is identical for a particular circuit irrespective of the issue of the circuit that is installed. In addition to these leads the local cable of the existing district frame is also modified. The number and termination of these additional leads for a particular modification circuit vary somewhat with the issue of the circuit that is to be modified. The following paragraphs note the differences in wiring between the latest and preceding issues of the circuit to be modified which shall be included by the shop in the formed portion of the switchboard cable.

5.12 The modification of the coin district frames is based on the assumption that a minimum of five districts per group may be put out of service at one time. By keeping this minimum it is expected that existing equipment will be able to handle the traffic without shifting the coin box lines. The requirements as to the amount of equipment that may be taken out of service and to the order in which it shall be removed from service will be determined by the Telephone Company.

Line Switch Office

Coin District Circuit — SD-21427-01

5.13 In line switch offices and in sender-selector offices where the district repeating coils are mounted on the coil rack, the district frames are equipped with local cables of the same general type. Although there is a slight difference in the local cables the same method of modifying the equipment for overtime coin collection can be applied.

5.14 When a coin district frame of this type is to be modified for overtime coin collection, the switchboard cables from the applique

units shall be run on a 10-circuit basis directly to the associated 10 districts. The cables shall run down the center upright of the frame between the bank multiple cables and the local cable arm of the sequence switches and relays.

5.15 In installing the switchboard cables along the center upright they shall be supported on either side of the existing cable bracket associated with the bank multiple cables.

5.16 Each cable shall be butted at the top district of the associated 10 districts. These cables shall be made in the Shop to conform in design to ED-20726-02 and shall be shipped to the job with sufficient length of cable to satisfy the job conditions. The formed portion of these switchboard cables shall contain all additional leads required for the modification of the associated 10 districts except where these additional leads connect to equipment which is located outside the 10-circuit equipment.

5.17 Where the additional leads for the modification of the districts connect to equipment such as commutators, interrupters, clutches and jacks which are located on the district frame but outside the 10 districts, these leads shall be run by the installer.

5.18 Due to the fact that the existing local cables have been in service for a considerable time and will in general be in a poor condition the existing local cable shall not be opened to remove the disconnected leads. The only leads in the existing form that shall be re-used are those that can be reconnected from the same stitch.

5.19 In modifying the existing coin district to conform with SD-21427-01 an interrupter (CC) per side of frame (30 circuits) is required. This interrupter shall be located on the associated existing district frame where space is available and the frame is drilled. A switchboard cable shall be provided per interrupter to punching 31 of the terminal strips of the associated applique units. If no spare interrupter position is available on the existing district frame the additional interrupters shall be located on an interrupter frame as covered in paragraphs 5.58 and 5.59. No other change in equipment located on the existing district frame is required. The

wiring changes are the same irrespective of what issue of ES-207707, the existing district circuit, is to be modified.

Sender Selector Office

Coin District Circuit SD-21428-01

5.20 On coin district frames modified in accordance with SD-21428-01 the same method of modifying the district frame equipment shall be followed as outlined in paragraphs 5.13 through 5.19. This circuit is a modification of ES-226378 which was used only in sender selector office having the district repeating coils mounted on the coil rack.

5.21 In modifying the existing coin districts to conform with SD-21428-01, an interrupter (CC) per side of frame (30 circuits) is required. This interrupter shall be located on the associated existing district frame when space is available and the frame is drilled. A switchboard cable per interrupter shall be run to punching 31 of the applique unit terminal strips. In case no spare interrupter space is available on the district frame, the additional interrupters shall be located on an interrupter frame as covered in paragraphs 5.58 and 5.59. No other change in equipment located on the existing district frame is required.

5.22 The wiring changes involved in the modification of the existing districts to conform with SD-21428-01, differs slightly depending on what issue of ES-226378, the existing district circuit, is to be modified. In offices having an issue of coin district circuit ES-226378 prior to issue 16, it is necessary to disconnect the lead from inner brush of the H cam to the "FR" arc. This lead is not provided on issue 16 and subsequent issues of ES-226378. There is also a difference in the wiring of the (MB) jack on issues prior to 17 than in subsequent issues. As the modification circuit makes a further change the difference in modification for the various issues should be slight. In offices having an issue prior to 20, the "TS" (district test circuit) lead should connect to the O commutator segment instead of the S commutator segment. In all other respects the modification of any issue of ES-226378 to agree with SD-21428-01 is similar to the last issue of ES-226378.

5.23 Where an addition to an office of this type has been installed having district frames equipped with local cables of the "tree" type, the method of modifying these frames for overtime coin collection shall in general follow the procedure set up in paragraphs 5.30 through 5.37.

Coin District Circuit SD-21429-01

5.24 In sender selector type offices where the district repeating coils are located on the coil rack the local cable of the associated district frame is of the "Ladder" type as shown on ES-225351. When district frames having this type cable are modified in accordance with SD-21429-01 the same method of modification shall be followed as outlined in paragraphs 5.13 through 5.19.

5.25 Where an addition to an office of this type has been installed having district frames equipped with local cables of the "tree" type, the method of modifying these frames for overtime coin collection shall in general follow the procedure set up in paragraphs 5.30 through 5.37.

5.26 Where the repeating coils are located on the district frame, the design of the local cable differs from that of the district frame not arranged to mount these coils, and is shown on ES-299580. When a district frame of this type is to be modified, the method of modification shall in general follow the procedure which is outlined in paragraphs 5.30 through 5.37.

5.27 In modifying the existing coin districts to conform with SD-21429-01, an interrupter (CC) per side of frame (30 circuits) is required. This interrupter shall be located on the associated existing district frame where space is available and the frame is drilled. A switchboard cable per interrupter shall be run to punching 31 of the applique unit terminal strips. In case no spare interrupter space is available on the district frame, the additional interrupters shall be located on an interrupter frame as covered in paragraphs 5.58 and 5.59. No other change in equipment located on the existing district frame is required.

5.28 The wiring changes involved in the modification of the existing districts to conform with SD-21429-01, differs slightly depending on the issue of ES-240075 that is to be modified. In offices engineered prior to October, 1922,

it is necessary to remove the lead between the inner brush of the H cam and the "FR" arc. There is also a difference in the wiring of the (MB) jack on issues prior to 10 than in subsequent issues. As the modification drawing makes further changes in the (MB) jack, the difference in the modification for the various issues should be slight. In offices having an issue prior to 15, the "TS" (district test) lead should connect to the "O" commutator segment instead of the "S" commutator segment. In all other respects the modification of any issue of ES-240075 to agree with SD-21429-01 is similar to the last issue of ES-240075.

5.29 If orders are received for the modification of an office engineered prior to July 1922 where the "F" relay is an E908 and the CI-1 relay is an E555, the Bell Telephone Laboratories shall be notified. Circuit requirements will be added at that time for these relays.

Rotary Link Office

Coin District Circuit SD-20252-02

5.30 In this type office, in a sender selector office where the district repeating coils are located on the district frame and in panel link type offices, the district frame is equipped with a local cable of the same general type. It is true that there is a slight variation in the cable for the various types of offices due to the difference in sequence switch spacing and other minor developments in apparatus and design of the frame but in general the same method of modifying the equipment for overtime coin collection can be applied.

5.31 When a coin district of this type is to be modified for overtime coin collection, the switchboard cables from the applique unit shall be run on a 5-circuit basis directly to the associated 5 districts. This cable shall be formed in the Shop and shall contain, in addition to the switchboard cable leads, the additional leads required for the modification of the associated 5 districts except where these leads connect to equipment which is located outside of the 5-circuit equipment. These cables shall be arranged to run along the cable bracket on the outside of the frame. There is difference in the location of the butting position of the cable and in the design of the form in Sender Selector and in Link Type Offices. This is due to the fact that in

Rotary and Panel Link Offices the Coin District Frame has an additional bay for mounting the coin control equipment while in Sender Selector Offices this function is performed in the Sender. The design of these combined switchboard and local cables in Sender Selector Offices where the district repeating coils are located on the district frame, shall conform to ED-20655-01 and in Rotary and Panel Link to ED-20726-01.

5.32 Where the additional leads for the modification of the districts connect to equipment such as commutators, interrupters, clutches and jacks which are located on the district frame, but outside the five districts, these leads shall be run by the installer. In order to reduce the number of additional leads, the existing wiring of District frames in Rotary and Panel Link type offices shall be reused wherever possible. Splicing of leads, however, is not recommended. In Sender Selector type office the only leads that shall be reused are those that can be reconnected from the same stitch.

5.33 In Rotary and Panel Link Offices the leads in existing local cable arms to the relays and sequence switches which are not required after the conversion of the equipment to overtime coin collection shall be cut back to the main vertical arm. The leads remaining in these cable arms shall be sewed to the supplementary cable. The removal of these unused leads will reduce the size of the arms to the relays and sequence switches thereby facilitating maintenance of this equipment.

5.34 In sender selector offices due to the poor condition of the existing cable the cable should not be opened. Where the five arms of the supplementary local cable to the sequence switches cross the main vertical arm of the existing cable, the distance from the outside of these arms to the face of the channel must not exceed 2-7/8". This dimension must be maintained so that the multiple banks may be removed without first removing the selector rods. By flattening the supplementary local cable arms, this dimension can be maintained without the removal of unused leads from the existing main vertical arm.

5.35 In modifying the existing districts to conform with SD-20252-02 the "D" relay shall be changed from an E6404 to a D-92603.

5.36 The wiring changes are the same irrespective of what issue of ES-20252-01, the existing district circuit, is to be modified.

5.37 In addition a switchboard cable per side of frame shall be run to the associated units. This cable, which contains leads to the "CHG" interrupter located at the top of the district frame, shall be run from the interrupter to punchings 25 on the unit terminal strips.

Panel Link Office

Coin District Circuit SD-21031-02 (Grd. on C.O. Relay)

5.38 In modifying district frames to agree with this circuit the switchboard cables from the relay rack units shall be terminated directly on the associated district equipment. The method of forming the switchboard cable and the general scheme of modification of the frame shall follow the practice outlined in paragraphs 5.30 through 5.37. In addition a switchboard cable per side of the frame shall be run to the associated units. This cable which contains leads to the "CHG" interrupter located at the top of the district frame shall run from the interrupter to punchings 25 on the unit terminal strips.

5.39 In modifying the existing districts to conform with SD-21031-02 the "D" relay shall be changed from R-890 to R-1710. The wiring changes involved in the modification of the existing district local cable differ slightly depending on what issue of ES-21031-01 is to be modified. In offices equipped with an issue of ES-21031-01 prior to Issue 3, "A" wiring was used. It is necessary to change the local cable to include "B" wiring. In other respects the wiring changes are identical irrespective of the issue of ES-21031-01 that is to be modified.

Coin District Circuit SD-21078-02 or SD-21628-02 (Bat. on C.O. Relay)

5.40 In modifying district frames to agree with this circuit the switchboard cables from the relay rack units shall be terminated directly on the associated district equipment. The method of forming the switchboard cable and the general scheme of modification of the frame shall follow the practice outlined in paragraphs 5.30 through 5.37. In addition a switchboard cable per side of frame shall be run to

the associated units. This cable which contains leads to the "CHG" interrupter located at the top of the district frame shall run from the interrupter to punchings 25 of the unit terminal strips.

5.41 In modifying the existing districts to conform with SD-21078-02 or SD-21628-02 the "D" relay shall be replaced. The wiring changes of the district frame are the same irrespective of what issue of the original circuit was used.

"A" SWITCHBOARD

5.42 An overtime monitoring jack, a line splitting jack and an overtime collection lamp are required per district. These jacks and lamps shall be located in a position of a dialing "A" switchboard equipped with intercepting cords. The additional equipment shall be located with the answering jack equipment.

5.43 The lamp (OC) shall be equipped in 43-A lamp sockets in a 265 lamp socket mounting. Above this lamp mounting shall be located the overtime monitoring jacks and below, the line splitting jacks. These jacks shall be 92 type equipped in 113 jack mounting. The jacks shall be numbered 0-19, 20-39, etc. in each panel. Growth shall be from bottom up. A 12-AR jack space shall be placed between the metal lamp socket mounting and the jack mountings. A 6-F designation strip shall be furnished at the top of the overtime coin control jacks and lamps on each panel.

5.44 The even numbered jacks and lamps shall be associated with districts located on the rear of the frame and the odd numbered with districts located on the front of the frame. Switchboard cable from this equipment serving 10 circuits shall be run to the terminal strip on the associated district applique unit. The installer shall connect both ends of these cables on the job.

5.45 In addition to the jack and lamp equipment individual to the coin districts, an auxiliary signal relay is required for each 20 coin districts in each panel. The additional relays shall be located in the rear of the "A" switchboard where space is available. If space is not available the relays shall be located on the relay rack and cabled to the "A" switchboard as required.

DISTRICT TEST FRAME

5.46 The District Test Frame shall be wired for testing districts arranged for zone and overtime registration as well as coin districts equipped with the overtime collection feature. The difference in the test frame for these two features is not sufficient to provide separate modifications.

5.47 The introduction of zone and overtime registration and overtime coin collection features require additional testing operations which increase the time necessary to test a district. The Telephone Company should give consideration to this increase in testing time to determine the necessity of an additional test frame.

5.48 The changes required on the District Test Frame shall be completed before any of the Districts modified for overtime coin collection are ready to be cut back into service. As only a comparatively few districts will be changed at a time, the District Test Frame must be available for routing these modified districts as they are completed.

5.49 The equipment and, in some cases, the construction of the District Test Frame differs in the various types of Panel Offices. In designing modification circuits for the various test circuits, the modification circuits are based on the latest issue of the test circuits. Therefore, in modifying existing frames where the latest issue of the circuit has not been used, it will be necessary to include the changes involved in bringing the circuit up to latest issue at the same time the modification for overtime coin collection is made.

5.50 In modifying a District Test Frame in a Line Switch Office, the job, with a complete set of drawings covering the existing frame shall be referred to the Bell Telephone Laboratories for analysis.

5.51 In Sender Selector type offices, it will be necessary to modify the existing framework to provide facilities for mounting the additional equipment. The assembly change is shown on ES-225322 and the location of the equipment is covered by ES-225329 and ES-225878. The wiring to this additional equipment shall be superimposed on the existing form in general conforming in design to the existing local cable.

5.52 In Rotary Link Offices there are two types of District Test Frames, one arranged for high speed drives and the other for slow speed drives. When these frames are to be modified for overtime coin collection it is necessary to modify the existing framework per ES-299185 for frames arranged for high speed drives and ES-373531 for slow speed drives. The location of the additional equipment required for overtime coin collection for the two types of test frames is covered in ES-299187 and ES-299189 for the frames arranged for high speed drives and ES-373525 and ES-299189 for low speed drive frames. The wiring for the additional equipment for the above frames shall be superimposed on the existing frame local cable. This test frame cable for the two frames shall conform in design to ES-299190 and ES-373535.

5.53 In Panel Link Offices where the frame is wired in accordance with SD-20240-021 to -026 and the frame is constructed in accordance with ED-20581-01, no modification of the frame or local cable is required. The local cable for this frame contains the additional wiring for overtime coin collection. In modifying this frame the additional equipment shall be located in accordance with the equipment drawings ED-20583-01 and ED-20579-01. The leads in the existing local cable associated with the zone and overtime equipment will be connected by the installer.

5.54 In Panel Link Offices where the District Test Frame was not arranged initially for overtime coin collection, it will be necessary to modify the existing framework to provide facilities for mounting the additional equipment. The assembly change is shown on ES-373701 and the location of equipment is covered on ES-373694 and ES-373695 or ED-20359-01 and ED-20356-01. The wiring to this additional equipment shall be superimposed on the existing form conforming in design to the local cable plans ES-373696 or ED-20358-01.

MISCELLANEOUS EQUIPMENT

5.55 The district repeating coils in line switch offices, in all sender selector offices equipped with 300 point line finders, and in the earlier sender selector offices equipped with 400 point line finders, are located on the coil rack. The fuses for the 24 volt talking battery

in these offices are located on a fuse board adjacent to the coil rack. The existing switchboard cables from the districts are butted at the end of each shelf and formed to the repeating coil and condensers. Included in this form are the leads between the repeating coils and their associated battery fuses and ground terminals. The introduction of overtime coin collection in these types of offices necessitates a revision of the wiring of the repeating coil and associated fuses.

5.56 The battery and ground leads between the fuse board and repeating coil shall be disconnected. The form shall be cut at the repeating coil adjacent to the coil rack fuse board and that portion of the local cable to the fuses removed. All unused leads in the remaining portion of the form shall not be removed. The existing fuses shall be reused. Switchboard cable on a ten circuit basis shall be provided to the relay rack unit associated with the district to which talking battery has been supplied. Cable brackets as required shall be supplied the installer to mount on the coil rack fuse board so that the switchboard cable may run down the outside of the coil rack fuse board.

5.57 Switchboard cables shall also be provided on a ten circuit basis from the repeating coils to the applique units of the associated districts. These cables shall be butted at the end of each shelf and sewed to the existing form.

Interrupter Frame

5.58 Two interrupters per coin district frame are required in Line Switch and Sender Selector type offices. If space is available on the associated district frames these interrupters will be located on the district frame. However when coin districts are located on a frame equipped with dialing districts, individual or 2 party message rate districts no space may be available. Therefore the additional interrupters shall be located on an interrupter frame.

5.59 If the office is modified for zone and overtime registration as well as overtime coin collection the interrupters for the coin district when necessary shall be located on the district interrupter frame with the interrupters for zone

and overtime registration. If overtime coin collection feature only is to be provided the interrupters for the coin districts and those associated with the district timing frame shall be located on the existing miscellaneous interrupter frame if space is available. If not, a new district interrupter frame shall be provided.

Miscellaneous Fuse Board

5.60 In Line Switch and Sender Selector type offices a resistance lamp and associated 1/2 ampere fuse is required per district. The lamp and fuse shall be located on the Miscellaneous Fuse Board. Cable from the associated

units on a 30 circuit basis shall be provided directly to the associated resistance lamp. A local form shall be provided between the resistance lamp and the associated fuse.

List of "A&M Only" and "Mfr Disc." Equipment

The following equipment has been replaced as indicated. Where "A&M Only" items appear, the issue numbers shown are those of the issue in which the rating was first applied.

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J29203B	Mfr Disc.	2	-

Bell Telephone Laboratories, Incorporated

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