MODIFICATION REQUIREMENTS FOR SPECIAL OUTGOING TRUNK FACILITIES FROM EMERGENCY MANUAL OFFICES EQUIPMENT DESIGN REQUIREMENTS PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements and application procedure for the modification of existing line relay, line finder, district, and subscriber panel link equipment in panel offices so that they will function as a special trunk for outgoing traffic from an emergency manual office in the neighborhood.

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 panel office frames involved in this modification are not affected.

Description

1.04 In the event of the destruction of a dial or manual central office, it may be necessary to install an emergency manual "package" office, in which case, means must be provided to permit the emergency operator to handle outgoing traffic to the various offices in the area. The special trunk facilities described herein provide a means whereby the emergency operator can originate calls, on a dial basis, which are routed thru the district multiple to any office in the area.

1.05 This "Special Trunk Equipment" as covered by SD-20697-01 consists of existing subscriber line circuits, line finder district selectors and, in some offices, panel link circuits so modified and connected that they will function together without the usual hunting features other than the hunt for an idle sender. When the emergency operator plugs into a jack to the panel office, she will receive the usual "dial tone" when a sender is available; she will then proceed to dial up the call into the regular subscriber sender, which in turn will guide the call thru the district multiple and terminating office in the usual manner. Reverse battery supervision is provided to the emergency operator by means of an added relay in the line finder district circuit.

1.06 In addition to the special trunk facilities described in paragraph 1.05, there are several other methods which might be employed as a temporary measure, or to supplement the special trunk method. Typical methods are as follows:

(a) Via regular subscriber line equipment in a dial office. This method would require monitoring on each call by the emergency manual operator as there is no provision in this arrangement for supervision. The method could be used, however, on a limited number of calls until the special trunk equipment facilities described in this specification are made available.

(b) Via regular tandem operators, if there is a tandem office available or via a DSA operator in a local dial office. Here also the amount of traffic that could be handled by these operators would be limited in relation to the total traffic offered by the emergency switchboard.

(c) Via regular call distributing "B" or cordless "B" switchboard equipment. This plan could be applied to a limited number of offices

but might entail a considerable amount of work to provide connections to all the necessary offices in the area. Furthermore, not all areas have these switchboards.

Selection of Equipment to Be Modified

1.07 It is assumed that there will be existing equipment in the panel office that can be made available for modification to work as a special trunk from the emergency manual office. The selection of this equipment should be made in accordance with the following:

(a) The flat and individual message rate line finders and districts selected for the purpose should be taken from several line groups, using care that a sufficient number remain to handle the regular traffic in each line group.

(b) Spare flat rate or individual message rate lines should be selected in the same line group with the line finders and districts to be modified. Flat rate lines should be used in preference to individual message rate lines since the message register feature is not required.

(c) Panel link type equipment should be selected in preference to the sender selector type, since the extent of the modifications required is smaller.

(d) No provision has been made for modifying line switch or rotary link type equipment, although this feature can be developed on short notice.

(e) No provision is made for modifying message rate party or coin lines.

(f) District selectors wired for use as a test selector should not be used due to added wiring complications.

Material

1.08 The only new material required for modifying existing equipment in accordance with SD-20697-01 consists of one E1446 relay, designated (RV), per line finder or district circuit and one 25-A terminal punching per line circuit. An 18AG resistance and an interrupter contact are also required per 30 modified selectors. It is assumed that this material can be supplied in a reasonable length of time and that no emergency "package" of this apparatus need be prepared in advance. Additional wires that might be required are listed in paragraph 4.19.

1.09 A resistance per KS-8512, List 4A, (950 ohms) is also required to shunt the winding of the added (RV) relay.

1.10 The circuit schematic and wiring drawing and the associated circuit descriptions for the existing circuits shall be marked as required to agree with SD-20697-01 and CD-20697-01. Three or more sets of this marked information will be required for the installer, the maintenance force, and the Western Electric Company records. It is assumed that it will not be necessary to change the tracing drawings as the modified equipment will only be used for the duration of the emergency.

1.11 If emergency service is required before this modification is completed, it may be found desirable to connect certain lines from the emergency manual office to spare flat rate subscriber lines in the panel office. In this case the operator in the emergency office will have to monitor on each call in order to properly supervise the connection.

2. SUPPLEMENTARY INFORMATION

815-000-000 — Panel Systems Index

AA128.006 — List of General Equipment Requirement Sections

X-61200 — List of Equipment Design Requirement Specifications for Offices having Ground on the Cut-off Relays

X-61400 — List of Equipment Design Requirement Specification for Offices having Battery on the Cut-off Relays

J24003 (815-402-150) — District Selector Test Frame

J27401 (815-100-150) — Line Finder Frame

J27402 (815-100-151) — Line Finder Frame — 80-Circuit Line Unit

J27501 (815-110-150) — District Frame — Battery Cut-off — Non-zone

J27503 (815-110-152) — District Frame — Ground Cut-off

J27504 (815-110-151) — District Frame — Battery Cut-off — Zone and Overtime

J28401 (815-105-150) — Subscriber Panel Link Frame

3. DRAWINGS

Keysheets

SD-21300-01 — Panel Link — Battery Cut-off Offices
SD-21680-01 — Panel Link — Ground Cut-off Office
ES-262532 — Sender Selector Offices — 3-digit Area
ES-262647 — Sender Selector Offices — 2-digit Area

Subscriber Line Circuits — Link Type — Battery Cut-off — Modified by SD-20697-01, Fig. 1

SD-20294-01 — Replaced by SD-21626-01
SD-20294-02 — Modification of -01 for Two Classes of Service
SD-21460-01 — Replaced by SD-21626-01
SD-21460-02 — Modification of -01 for Two Classes of Service
SD-21626-01 — Replaced by SD-21712-01
SD-21712-01 — Standard

Subscriber Line Circuits — Link Type — Ground Cut-off — Modified by SD-20697-01, Fig. 2

ES-20298-01 — A&M Only
SD-20298-02 — Modification of -01 and SD-21463-01 for Two Classes of Service
SD-21463-01 — Modification of SD-20298-01 for Local Control Zone Registration
SD-21715-01 — Standard

Subscriber Line Circuits — Sender Selector Type Modified by SD-20697-01, Fig. 3

ES-226909 — Replaced by ES-240292
ES-240292 — Standard for Sender Selector Offices
SD-21461-01 — Modification of ES-240292 for Local Control Zone Registration
SD-21464-01 — Modification of ES-226909 for Local Control Zone Registration

Line Finder and District Circuits — Link Type — Modified by SD-20697-01, Figs. 4 to 8

ES-21030-01 — Ground Cut-off — Non-zone Modified by Fig. 5
SD-21030-02 — Ground Cut-off — Zone and Overtime Modified by Fig. 8
SD-21077-01 — Battery Cut-off — Non-zone Modified by Fig. 4
SD-21077-02 — Battery Cut-off — Zone and Overtime Modified by Fig. 7
SD-21405-01 — Battery Cut-off — Zone and Overtime Modified by Fig. 6
SD-21627-01 — Battery Cut-off — Non-zone Modified by Fig. 4
SD-21630-01 — Battery Cut-off — Zone and Overtime Modified by Fig. 6

Line Finder and District Circuits — Sender Selector Type — Modified by SD-20697-01, Figs. 10 and 11

ES-207198 — Non-zone (Line Finder) Modified by Fig. 10
ES-207199 — Non-zone (District) Modified by Fig. 10
ES-240071 — Non-zone — Modified by Fig. 10
SD-21409-01 — Zone and Overtime — Modified by Fig. 11

Subscriber Link Circuits — Battery Cut-off — Modified by SD-20697-01, Fig. 9

SD-20294-01 — Replaced by SD-21626-01
SD-20294-02 — Modification of -01 for Two Classes of Service
SD-21460-01 — Replaced by SD-21626-01
SD-21460-02 — Modification of -01 for Two Classes of Service
SD-21626-01 — Replaced by SD-21714-01
SD-21714-01 — Standard

Subscriber Link Circuits — Ground Cut-off — Modified by SD-20697-01, Fig. 9

ES-20298-01 — A&M Only
SD-20298-02 — Modification of -01 for Two Classes of Service
SD-21463-01 — Modification of SD-20298-01 for Local Control Zone Registration
SD-21716-01 — One Class of Service Only

District Test Circuit

ES-239515 — Sender Selector Type
SD-20240-03 — Link Type

Line Relay and Line Finder Frames — Sender Selector Type

ES-225814 — 300-point — Line Finder Frame
ES-225815 — 300-point — Line Relay Unit

ES-225817 — 300-point — Line Finder and Line Relay Terminal Strips
ES-225819 — 300-point — Line Relay Bay
ES-299131 — 400-point — Mounting Plates
ES-299161 — 400-point — Line Relay Unit
ES-299184 — 400-point — Frame 28 Groups
ES-299128 — 400-point — Frame 40 Groups
ES-299183 — 400-point — Frame 60 Groups
ES-299197 — 400-point — Frame 80 Groups

Line Relay and Line Finder Frames — Link Type

ED-20244-01 — Line Relay Unit — 40 Circuits
ED-20240-01 — Line Finder — Frame 28 Groups
ED-20241-01 — Line Finder — Frame 40 Groups
ED-20242-01 — Line Finder — Frame 60 Groups
ED-20243-01 — Line Finder — Frame 80 Groups
ED-20606-01 — Line Finder — Frame 80-circuit Unit
ED-20607-01 — Line Relay — Unit 80-circuit Unit

District Selector Frame — Link Type

ED-20178-01 — Frame Equipment
ED-20178-02 — Equipment Details — Battery Cut-off
ED-20267-01 — Equipment Details — Ground Cut-off — Non-zone
ED-20267-02 — Equipment Details — Ground Cut-off — Zone and Overtime
ED-20789-01 — Frame Equipment — Selector Timing
ED-20789-02 — Equipment Details — Selector Timing
ES-373654 — Frame Equipment — 14-1/2" Plates
ES-373658 — Mounting Plates — 14-1/2" Plates

District Selector Frame — Sender Selector Type

ES-225598 — Mounting Plates — Coils on Coil Rack
ES-225604 — Frame Equipment — Coils on Coil Rack
ES-299585 — Mounting Plates — Coils on Selector Frame
ES-299578 — Frame Equipment — Coils on Selector Frame

Subscriber Panel Link Frame

ED-20750-01 — Panel Link Frame Equipment
ED-20317-01 — Panel Link Frame Equipment — Ground Cut-off
ED-20271-01 — Local Cable Plan
ED-20755-01 — Switchboard Cable Plan

District Test Connector Frame — Sender Selector Type

ES-225766 — Test Connector Frame Equipment

District Test Frame — Sender Selector Type

ES-225329 — District Test Frame Equipment
ES-225829 — Particular Circuit Chart
ES-225831 — Locating Chart

District Test Frame — Link Type

ED-20583-01 — District Test Frame Equipment
ED-20357-01 — Particular Circuit and Locating Charts

4. DETAILED DESCRIPTION OF MODIFICATIONS

Subscriber Line Relay Units

4.01 The modification of the various flat and individual message rate subscriber lines to agree with the various figures on SD-20697-01 will require the following changes:

(a) Disconnect the leads from the T, R, and S terminals of the line finder bank at the (CO) relay if they run to the (CO) relay. Otherwise disconnect them at the unit terminal strip.

(b) Disconnect the leads from the "H" terminals of the line finder banks at the (L) relay.

(c) Disconnect, if connected, and reconnect the lead from the "M" punching of the unit terminal strip at the (L) relay as shown in SD-20697-01, Fig. 51 or 52.

(d) Disconnect the common "A" or "BA" lead and the associated loop lead from the trip circuit at the (L) relay and reconnect them to an added 25-A terminal punching to be mounted under the mounting screws of the (L) relay.

(e) Four wires from the T, R, S, and M punchings on the line relay unit terminal strip shall be run to the T, R, S, and H line finder commutator terminals to facilitate the use of existing cable conductors to the district frame.

(f) At the MDF, cross connect the incoming cable pairs from the emergency office to an existing tie cable to the IDF at which point they shall be jumpered to the T and R leads of the line circuits on the VIDF.

(g) Where there is no separate tie cable between the MDF and the IDF the T and R conductors associated with vacant final terminals may be used. In this case it will be necessary to disconnect the final multiple leads at the final frame banks.

(h) In offices where the line circuits instead of the final terminals are cabled to the HMDF, it will only be necessary to jumper the incoming pairs from the emergency office to the T and R punchings of the line circuits at the MDF. With this arrangement the final multiple and associated cabling is not involved.

Line Finder Frames

General

4.02 When modified in accordance with the various figures on SD-20697-01, the line finders are definitely tied to line circuits so that the line finder elevator will not be required to hunt for a line. All changes in the line finder shall be made so that they can be readily restored to their original condition when the modification is no longer required.

Panel Link Type Line Finders

4.03 The modification of the various panel link type line finders, to agree with SD-20697-01, Figs. 4, 5, 6, 7, or 8 and Fig. 53, consists of connecting the four wires from the line relay unit terminal strip to the line finder commutator as previously described. These four commutator terminals may be already wired to line finder frame terminal strips and then cabled to the district selector frame or they may be cabled direct using the existing switchboard cables, depending upon the type of the equipment being modified. No other changes are required on the panel link type line finder frame. The disconnection of the clutch and commutator leads such as the "UP" and "DOWN" magnets and the "M" commutator shall be done at the local cable side of the district selector frame terminal strips instead of at the line finder frame.

Sender Selector Type Line Finders

4.04 The principal changes in the sender selector type line finders, when modified in accordance with SD-20697-01, Figs. 10 or 11 and Figs. 54 or 55, consist of the addition of an E1446 relay, designated (RV), per circuit. In most cases this can be mounted in a spare drilled position. When no spare position is available, it will be necessary to remove the (H) relay, which is not required in the modified circuit, in order to provide a position for the (RV) relay. The wiring from the added (RV) relay to the district frame shall be run as superimposed wire on the local cable to the line finder frame terminal strip and from there to the district frame using unused switchboard cable conductors and associated punchings. The four wires previously described in paragraph 4.01(e) shall be connected to the line finder commutator terminals and a wire added between the "H" commutator terminal and the (LF) relay, depending upon the circuit being modified. Minor modifications are also required in the frame local cable at practically all the apparatus in the circuit.

4.05 A resistance per KS-8512, List 4A (950 ohms) is required per line finder circuit. One end of this resistance shall be soldered directly to the top winding terminal of the added (RV) relay in such a manner that the resistance will not interfere with the wire soldered to the relay terminal nor touch or interfere with any other apparatus or wiring. The other end of the resistance shall be wired to battery at the bottom winding terminal of the (RV) relay.

District Selector Frames

Panel Link Type District

4.06 The principal changes in the panel link type districts, when modified in accordance with SD-20697-01, Figs. 4, 5, 6, 7, or 8 and Fig. 53, consist of the addition of an E1446 relay (RV) and associated wiring. This relay, in most cases, may be mounted in an existing spare drilled relay position. When no spare position is available, it will be necessary to remove the (H) relay, which is not required in the modified circuit, in order to provide a position for the (RV) relay. Minor changes are also required in the local cable at the sequence switch, (D) relay, (S) relay, and terminal strips. A wire shall be run from the added (RV) relay direct to the

sequence switch on the subscriber link frame for the new start lead designated "NS". A wire shall also be provided to the sequence switch ("G" cam brush 4) from the (PB) interrupter as described under "Miscellaneous".

4.07 A resistance per KS-8512, List 4A (950 ohms) is required per district circuit. One end of this resistance shall be soldered directly to the top winding terminal of the added (RV) relay in such a manner that the resistance will not interfere with the wire soldered to the relay terminal nor touch or interfere with any other apparatus or wiring. The other end of the resistance shall be wired to battery at the bottom winding terminal of the (RV) relay.

Sender Selector Type District Selectors

4.08 The modification of sender selector type district selectors, in accordance with SD-20697-01, Fig. 10 or 11 and Fig. 54 or 55, consists of minor wiring changes at the (CH) and (CS) relays and at the sequence switches and terminal strips. Certain leads in the existing switchboard cable to the line finder frame which would otherwise be unused shall be used for the leads between the (RV) relay which was added on the line finder and the district frame. The leads to the district test connector frame shall be disconnected at the district test connector switch as described in paragraph 4.13 or 4.14.

4.09 When class of service indications are provided to the sender, the class indication for unrestricted flat rate service shall be used for the modified district selectors.

Subscriber Panel Link Frames

Panel Links

4.10 The principal changes in the subscriber panel links, to modify them in accordance with SD-20697-01, Fig. 9, consist of connecting a link circuit directly to a district circuit by disconnecting the six wires from the district frame at the district finder bank and splicing them to six added wires which run to the associated district finder commutator terminals. The vacated terminals on the district finder bank shall be strapped to some other set of terminals which are associated with an equipped district. Other minor wiring changes are required at the sequence switch, (A) resistance, and (TST) jacks. A wire shall be run from the sequence switch ("W" cam brush 1) to the new (RV) relay on the district frame for the new start lead designated "NS" as described in paragraph 4.06. The connection to the district test connector switch which was associated with the modified district shall be modified as described in paragraphs 4.13 or 4.14.

4.11 When a class of service indication is provided to the sender, the class indication for unrestricted flat rate service shall be used for the modified link circuit.

District Selector Test Modifications

4.12 No provision is made for testing districts that are modified per SD-20697-01 by means of the automatic district selector test frame. Therefore, the district test circuit test connector switch shall be disconnected from the modified district selectors by unsoldering the wires from the district finder bank in link offices (six wires) or district selector frame in sender selector type offices (three wires) at the test connector switch or associated terminal punchings. This switch is located on a district test connector frame in sender selector offices and on the subscriber panel link frame in link offices.

4.13 Where the district selector test circuit is arranged to pass by unequipped intermediate districts in a line group it will be necessary to strap the vacated test connector terminals as called for in the notes on the test circuit drawing either at the switch bank or at the associated terminal punchings. The district test locating and particular circuit charts will have to be modified accordingly to show that no district is tested when the test connector is in the position of the vacated terminals.

4.14 Where the test circuit is not arranged to pass by unequipped intermediate district selectors in a line group it will be necessary to strap the vacated test connector terminals to a similar set associated with a regular equipped district selector; the test circuit will then test this district twice. The associated district test locating and particular circuit charts will have to be modified to indicate which of the regular districts are arranged to be tested a second time.

Miscellaneous

Fusing

4.15 The battery for the (RV) relay added in the line finder district circuits and the battery added to the (D) relay in Figs. 10 and 11 shall be obtained from the regular selector 48-volt signal battery.

4.16 Provide one 1-1/3-ampere, 48-volt fuse per 30 or less modified district selectors. It is assumed that this fuse can be mounted in an existing fuse position on the miscellaneous fuse board.

Resistance (PB)

4.17 Provide one 18-AG resistance designated (PB) per 30 or less modified district selectors. This resistance shall be mounted on the miscellaneous fuse board or on the frame with interrupter (PB).

Interrupter (PB)

4.18 One interrupter contact designated (PB) is required to work with each group of 30 or less modified district selectors. In most cases spare contacts will be available on existing interrupters on the miscellaneous interrupter or desk sender frame since the time interval required is one that is commonly used in panel offices.

Wire

4.19 The following is a list of typical gauges and colors of wires, commonly used in central offices that should be available for this modification. The 20-gauge wire shall be used for common leads and leads between frames, and the 22-gauge wires shall be used for the wires superimposed on the local cables.

P-358512 — Red & Red-White Pair 22 Gauge Type "C" (Approx. 190 ft. per lb.)

P-358410 — Red Single 22 Gauge Type "C" (Approx. 381 ft. per lb.)

P-300060 — Black & Black-Red Pair 20 Gauge Type "F" (Approx. 180 ft. per lb.)

P-300050 — Black Single 20 Gauge Type "F" (Approx. 217 ft. per lb.)

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