

CORDLESS P.B.X. SWITCHBOARDS  
FOR CIVIL DEFENSE UNITS

1. GENERAL

- 1.01 Under disaster conditions following enemy attack, situations may exist through the failure of local exchange service, which require the provision of emergency telephone service along the perimeter of extreme damage for use by civil defense forces. A method which is one example of a way for meeting the problem is that of using cordless switchboards rapidly set up in the perimeter areas to provide facilities of an intercommunicating character.
- 1.02 Recommended equipment comprises cordless 3 x 7 switchboards, local dry battery power supply, standard drop or bridle wire, and common battery instruments.
- 1.03 Use of four switchboards in each command sector (one-fourth of forward area) is suggested. One board is to be used for fire service and the other three for general civil defense purposes. The switchboards are to be located between the Sector Headquarters (advanced command posts established after attack) and the zone of perimeter operations. Two or three of the seven extensions of each board are to be connected to Sector Headquarters. The remaining four or five extensions are to serve stations at the perimeter. Two stations are to be bridged together on each field extension and it is expected that telephones will be required at approximately 500 foot intervals throughout the perimeter zone.
- 1.04 The above set-up provides a complete local telephone system for each sector. If undamaged cable plant connecting to a working central office is available and the need arises, one to three trunks may be connected to each switchboard.

2. EQUIPMENT REQUIREMENTS

- 2.01 Emergency stocks of switchboards, battery power supply units and wire, to the extent necessary, are to be stored at suitable locations in each target area. The tele-

phone sets are to be taken from regular stocks or from subscribers' premises in the diaster zone.

2.02 The switchboards are standard type 505C 3 x 7 cordless switchboards slightly modified as follows:

1. Installation of handles, one on each side of the cabinet, to facilitate carrying.
2. Attachment of a terminal box to the rear of the cabinet. This is either a GA 11 or HS 11 terminal equipped with two 6 pair connecting blocks. A 12 pair cable connects the terminal with the terminal strip on the inside of the cabinet. The terminal is stencilled in the standard manner reading, in order: Trunks 1.2.3., Extensions 1 to 7, Battery, Generator. Tip and ring sides are also indicated.
3. Installation at one end of the above terminal box of a polarized jack (known as a #7467 Hubbell polarized motor base). The jack is connected by wire to the battery locknuts of the terminal. This jack facilitates quick connection to the power supply.

2.03 All of the above cable, wire and stencilling work is done by the Western Electric Company. No changes in circuit or interior equipment have been made.

2.04 The recommended power supply consists of 12 KS 6542 dry cells housed in a suitable carrying case. The carrying case consists of a fibre repairman's satchel (type AT 6795-2) large enough to hold 12 KS 6542 (#6) dry cells. The batteries are wired in series and connected to a terminal block marked + and -. Wood separators take up excess space in the case and one serves as a mounting for the terminal block to which is also connected a 6 foot long flexible lamp cord. The outer end of this cord terminates in a polarized plug (known as a Hubbell #7464 midget cord connector) to fit the corresponding jack mounted in the terminal box of the switchboard.

2.05 When not in use the connecting cord is coiled and kept in the tray at the top of the carrying case. The tray also will be stocked with the following items:

1. Scotch drafting tape and Scotch Brand write-on labels to be used as designation strips.
2. Strips of number cards for station instruments.

### 3. Spare handle for hand generator.

## 3. INSTALLATION PROCEDURE

3.01 Installation of the switchboard consists merely of connecting the field extensions and plugging in the battery power supply.

3.02 The wire used for connecting the extensions may be drop wire, bridle wire, cross-connecting wire or any insulated paired wire available. The wires are connected directly to the locknuts marked extensions 1-7 in the terminal mounted on the cabinet of the switchboard. The stations may be any common battery instrument taken from general stock or from subscribers' premises.

3.03 The polarized plug and jack on the battery supply line should automatically take care of correct polarity. It is recommended that the cover of the battery case be kept closed when in use to prevent possible water damage to the batteries. The cord can protrude without damage between the lid and the front edge of the case.

3.04 As the hand generator will be used for signalling, the locknuts marked "G" in the terminal may be disregarded. As will usually be the case if the system is to be isolated, the trunk locknuts in the terminal may be disregarded. If desired and working feeder cable is available nearby, one to three trunks may be connected to the trunk locknuts.

## 4. TESTING PROCEDURE

4.01 A resume of tests applicable when the switchboard is used as an isolated field unit for civil defense purposes is given below. Tests are to be made with hand test set or test receiver equipped with cord and clips.

### 1. Test for Presence of Battery

With the NIGHT SERVICE KEY or N key in the normal position, momentarily operate an idle or spare extension to an idle position. Observe that the supervisory signal operates.

2. Test for Reversed Battery Feeder

If switchboard is used as a single isolated unit with ungrounded local battery, polarity is unimportant. Correct polarity is necessary if circuits are run between two or more boards or if a central office trunk is installed. If the switchboard terminal and power supply are correctly wired the polarized plug and jack will automatically provide correct polarity. As no local ground is used the usual polarity tests can not be made. Check wiring in terminal and battery power supply unit to ascertain if positive terminals are connected to the large lug of plug and jack.

3. Test for Proper Operation of Hand Generator and Hand Generator Key

Push in the GENERATOR or G Key. Operate the ringing key associated with a nearby extension and operate the hand generator. The bell at the extension should ring.

4. Operation Test of the Supervisory Signal in Connection with Each Extension Connecting Key

Operate the extension connecting keys of the extension line under test to each position. The supervisory signal associated with each position should operate when the key is operated and should restore when the key is restored.

5. Test of Extension Line Signal and the Continuity of the Circuit Through the Extension Connecting Keys

Connect the test receiver across the extension line terminals at the terminal strip. The line signal should operate. Operate the extension connecting keys of the extension line to each position. The line signal should restore when each key is operated and the associated supervisory signal should not operate.

6. Test of Extension Ringing Keys

Connect the test receiver across the extension line terminals at the terminal strip. Push in the G key and operate the hand generator. Simultaneously

operate the extension ringing key. Note that ringing current is heard in the test receiver.

7. Test of Break Contacts of Extension Keys

Operate the lowest lever of the attendant's telephone key upward and remove the attendant's receiver from the switch hook. Connect one clip of the test receiver to the Y cord fastener of the attendant's telephone set. Tap the other clip of the test receiver to the ring terminal of the extension line under test while slowly operating the top lever of the extension connecting key to its upward position. As the key is slowly operated, a point should be reached where the ring terminal will test clear as indicated by no clicks in the test receiver. Repeat the test on the tip terminal of the extension line under test. This indicates that battery from the extension line circuit is disconnected from the extension line as the key is operated. Similarly test the other positions of the extension connecting keys.

8. Supervisory Relay Test

Operate an extension connecting key of a spare or idle extension line to the position associated with the supervisory relay under test. The supervisory signal should operate. Operate the attendant's telephone key to the same position as the operated extension connecting key and remove the receiver from the switch hook at the attendant's telephone set. Operate the switch hook several times and observe that the supervisory signal flashes.

9. Test of Attendant's Telephone Set

Operate the attendant's telephone key and remove the attendant's receiver from the switch hook. Note the side tone in the receiver. Shake and slightly twist the desk stand and receiver cords to test for cut-out or noise.

4.02 Tests for buzzer equipment and circuit are not included as the buzzer will not operate from the local battery supply.

4.03 Tests for trunk equipment and circuits are not included. In the rare cases of C.O. trunk lines being connected to the switchboard, the necessary trunk tests are as covered in other Bell System Practices.