SWITCHING SYSTEMS MANAGEMENT
NO. 2 ELECTRONIC SWITCHING SYSTEM (2-WIRE)
ASSIGNMENT ADMINISTRATION CONSIDERATIONS

CONTENTS PAGE

1. GENERAL

PURPOSE

1.01 This section discusses the considerations and procedures for the initial (precutover) and continuing (post-cutover) terminal equipment assignment of the No. 2 Electronic Switching Systems (ESS). Since the No. 2 ESS is a "folded" network, the network administrator must distribute the usage generated by the lines, trunks, and service circuits as equitably as possible over all concentrators (load balance the office) while adhering to a short jumper concept on the main frame. In order to accomplish this objective, the network administrator must be knowledgeable of the No. 2 ESS and be familiar with the various documents and material which are available. The items considered to be of foremost importance are:

(a) Preplanning the office

(b) Planning the office

(c) Traffic order and equipment order

(d) Main frame administration

(e) Loading plans

(f) Updating records

(g) Growth of additions.

1.02 When this section is reissued, this paragraph will contain the reason for reissue.

2. RESPONSIBILITIES OF THE NETWORK ADMINISTRATOR

PREPLANNING THE OFFICE

2.01 Based on the general planning forecast for a wire center, the construction program for the wire center area will reflect the plan for the area. In an area where a No. 2 ESS is comtemplated, it may be as a replacement for the existing wire center which may be at capacity or it may be a new central office with or without area transfers out of one or more existing units into the new central office.

2.02 These plans are formulated well in advance and should be forwarded to the network administrator. These plans include such items as the approximate number of main stations, new NNX codes (if any), the affected customer directory date, new services planned for the area, and other items which are unique to the area.

PLANNING THE OFFICE

2.03 Once the information in 2.02 is known, the network administrator and the network design (traffic) engineer must discuss the data required and the amount of data that can be provided from the old office. As much busy season and high day data as possible should be obtained through traffic measurements in the office and through portable traffic counters where necessary. Very often, the required data cannot always be provided. Therefore, reasonable assumptions must be made.

2.04 As soon as the No. 2 ESS is in an operating mode, it will be the responsibility of the network administrator to make immediate studies of the system to ensure that adequate equipment quantities have been provided to serve the customers for the period of the job. The acquired data should be compared with the data which were used by the network design engineer. Differences should be brought to the attention of the network design engineer.

TRAFFIC ORDER AND EQUIPMENT ORDER

2.05 The network administrator must be familiar with the composition of the traffic order inasmuch as it will have all the pertinent information used (main stations, calling rates, usage rates, etc) and the number and type of equipment components required to provide customer service.

2.06 Before the equipment is shipped from the Western Electric Company (WECo), the operating telephone company has an opportunity to make any necessary corrections to the traffic order and the equipment order. Therefore, any questions concerning the traffic order should be discussed with the network design engineer. If there are any changes which should be made to the traffic order, the network design engineer and the equipment engineer will have time to authorize the necessary changes at WECo.

2.07 The worksheets discussed in Traffic Facilities Practices, Division D, Section 12L, Network Design Worksheets, should accompany each traffic order.

2.08 Shortly after the equipment order is issued, cutover meetings in which the network administrator will become involved should begin. The committee members must be aware of the various aspects of the traffic order and of the items which can affect the cutover date of the office. This awareness can be attained through answering the following questions.

(a) Will there be a directory delivery date which must be met?

(b) Will changes or modifications of instruments be necessary (coin and noncoin)?

(c) Will customers be asked to change to different dialing patterns?

(d) Will telephone company service codes be changed; ie, information, repair, etc?

(e) Will there be range extension in the office?

(f) Are centralized automatic message accounting (CAMA) and/or Traffic Service Position System (TSPS) provided?

(g) Are the right type and quantity of trunks provided?

(h) Are new coin instruction cards necessary?

(i) Are new rate areas created?

Dial Facilities Management Practices, Division H, Section 10k, Job Sizing and Timing, discusses the planning and coordination required for initial offices as well as growth additions.

MAIN FRAME ADMINISTRATION

2.09 The initial and optimal layout of trunk cable, service circuit cable, customer line cable, and terminal equipment numbers (TENs) on the main distributing frame must be planned so that load balance is accomplished using the short jumper concept whenever possible. Usually, the equipment engineer, the network design engineer, the frame administrator, and the network administrator will

be involved in the planning. Growth requirements such as area cuts, centrex, and new rate centers, as well as new classes of service, must be considered in the frame layout scheme.

2.10 In the No. 2 ESS, two types of main distributing frames generally are used:

(a) Combined distributing frame (CDF)—modular type

(b) Standard distributing frame—conversational type.

2.11 The modular or combined distributing frame is designed for flexible association of cable and terminal equipment on the front of the frame. Each module consists of ten verticals with cable distributed on the even-numbered verticals and TENs distributed on the odd-numbered verticals. Each pair of vertical files is separated by a vertical jumper wire trough. A horizontal jumper wire trough is located at the bottom of the frame and a horizontal, divided jumper wire trough is located at the top of the frame. The cable pairs are spread horizontally in groups of 20 pairs over the cable (even-numbered) verticals, with 10 pairs to the left of a vertical and 10 pairs to the right of a vertical. The TENs are similarly divided and spread over the odd-numbered verticals. This arrangement allows for the greatest short jumper access between cable pairs and TENs. The cable vertical number becomes part of any assignments which the network administrator sends to the service order assignment center. (An excessive number of cable transfers may tend to create long jumpers. Working with the frame administrator, the network administrator may change these to short jumpers, wherever possible, keeping load balance concepts in mind.) The CDF is described in detail in Bell System Practices Section 201-221-101, ESS—Type Modular Distributing Frames.

2.12 The standard main frame has a vertical side which is used to terminate cable pairs and a horizontal side, composed of shelves, which is used to terminate the TENs. The frame may be sectorized (zoned) in order to control the length of jumpers between the vertical and horizontal sides. Since the network administrator and the frame administrator are concerned with the assignment of cable to TENs in a sectorized office, they must establish the sectors which best meet the office needs. This information becomes a part of any assignments which the network administrator sends to the service order assignment center. Excessive service order activity and/or heavy cable transfer activity may preclude the use of sectorized assignments on the standard main frame. The detailed descriptions of the standard main frame appears in Bell System Practices Section 801-801-150, Main, Intermediate, and Trunk Distributing Frames.

2.13 The preferential network assignment list (PNAL) may be generated by WECo for the network administrator to use in the initial and growth addition assignment of the office. This is explained further in Dial Facilities Management Practices, Division H, Section 10o(2), Preferential Network Assignment List.

LOADING PLANS

2.14 In order to accomplish the objectives of good load balance and short jumpers on the main frame, the network administrator, with intra- and interdepartmental cooperation, must make short- and long-range plans for the equipment assignments. The short range plans include the normal day-to-day assignments. The long-range plans take into consideration the growth expected in the office with the current job as well as future growth in the office.

2.15 The assignment guidelines for initial office installations are found in the No. 2 ESS Translation Guide (TG-2H) and in the PNAL which is discussed in Section 10o(2), Preferential Network Assignment List. Once this has been accomplished and the office is in an operating mode, the loading plan must continue to reflect the growing needs of the office. The loading plan, therefore, must be analyzed periodically in order to assess the provision of equipment as well as the loading plan.

2.16 There are many sources of information available to the network administrator from which loading plans may be developed. These sources include official documents (traffic orders, main station and line gain/loss reports, forecast and development report, demand and facility chart) and historical data (Program for Administrative Traffic Reports On-Line [PATROL], service order activity, CCS/class-of-service data, load balance data). The official documents and historical data can be used to trend main station and lines, CCS/MS, CCS/TERM, etc, in order to plan orderly assignments over the switches and levels of the concentrators.

2.17 The characteristics of the No. 2 ESS probably will change from its inception until the capacity of the system is reached. Calling rates and holding times will be affected by community developments (eg, seasonal business, resort areas, college enrollment periods, new business, centrex, mobile home parks, new housing subdivision, etc). All of these items will affect the class-of-service mix. As mentioned earlier, the No. 2 ESS is usually a replacement of an existing step-by-step unit or a growth unit (area cuts) of an existing unit and the classes of service which the No. 2 ESS is able to provide will increase. This will be of concern to the network administrator once the trunks and service circuits have been balanced among the concentrators. Most often, the No. 2 ESS will be a single-entity wire center so that all classes of service will be served in the system. As the classes of service increase, so must the surveillance of the loading plan. However, one or two classes are predominant and most of the in-and-out movement will be in these classes.

2.18 In the overall scheme of the No. 2 ESS, the line trunk network is designed to carry 7372 CCS and the B-link groups are designed to carry 230.4 CCS. The wire junctors and the circuit junctors may or may not be provided to carry the theoretical design CCS capacity. The traffic order must be consulted for this information and, if necessary, the junctor capacities should be discussed with the network design (traffic) engineer.

2.19 If there are fractional networks in the 4:1 type network, some B-link groups may have one concentrator which theoretically can carry 230.4 CCS. However, these B-links may be paired in a future growth job; therefore, each unpaired concentrator in a B-link group should carry half, or 115.2, CCS. The assignments into these B-link groups must reflect this limitation.

ASSIGNMENT ACTIVITIES

2.20 The operating telephone company may have telephone number, terminal equipment assignments, and main frame assignments being issued from the network administrator's office or the assignments may be made by computer with the network administrator setting the assignment criteria. It is in this activity that the network administrator must be aware of the limitations of the B-links and the junctor CCS capacity. The load balance of the office (discussed in Dial Facilities Management Practices, Division H, Section 10g, Load Balance) should be scrutinized and changes should be made in the loading of the concentrators with the awareness that short jumpers are preferred on a modular frame (CDF) and on a zoned standard main frame.

UPDATE OF OFFICE RECORDS

2.21 In Section 10o(2), Preferential Network Assignment List, the initial office assignments are discussed. After cutover, office records produced by the Translation Office Records Generation System (TORG) and prepared by WECo are the recommended records from which continuing assignments should be made. These are discussed in the Translation Guide, TG-2H, Division 8, Office Records; in Division 2, General, Sections 6 and 7; and in General Letter GL 75-11-175).

2.22 Updated office records may be generated as often as is judged necessary. Usually, in a normally active office, office records should be generated about once a month.

2.23 Assignment restrictions are shown in the Translation Guide, TG-2H, Division 4, Preparation of Forms, and in Dial Facilities Management Practices, Division H, Section 10o(2), Preferential Network Assignment List.

GROWTH ADDITIONS

2.24 With a growth addition, the network administrator must distribute the trunks and service circuits equitably over all concentrators. If the added customer lines have characteristics similar to those of the lines in the office, rearrangement from old to new concentrators may not be necessary. If the new lines have different characteristics, such as centrex, it may be necessary to move some lines from the old concentrators in order to spread the centrex lines over all concentrators.

2.25 At the time of the addition, the wire and circuit junctors will probably be redistributed. Therefore, careful attention must be given to the procedures for junctor redistribution. This redistribution may have an adverse effect on customer service; therefore, the procedures outlined in Dial Facilities Management Practices, Division H, Section 10k, Job Sizing and Timing, should be followed.

2.26 Load balance of the office is affected with any addition and is a critical item if the equipment was exhausted at the time of the addition. In order to prevent adverse effects to customer service, prior plans should be made with maintenance personnel for any moves which may be judged necessary.

2.27 Assignment of the new equipment is discussed in the Translation Guide, TG-2H, Division 6, Administrative Changes and Growth.