

**SWITCHING CONSIDERATIONS—DEMAND AND FACILITY CHART—  
END OFFICE—SUPPLEMENTARY INFORMATION  
GENERAL ENGINEERING CONCEPTS  
NETWORK OPERATIONS METHODS**

**1. GENERAL**

**1.01** This appendix contains definitions, procedures, sample calculations, and other supplementary information pertaining to the various data items that appear on the Bell System Standard Demand and Facility Chart (D&F Chart) for End Offices.

**1.02** Whenever this appendix is reissued, the reason for reissue will be listed in this paragraph.

**1.03** A listing of succeeding part headings and a brief description of the various kinds of information included in this appendix is as follows:

- (a) Part 2—General Definitions—Basic definitions of terms such as main stations and equipment types.
- (b) Part 3—Main Station Capacities—Describes the various types of main station capacity.
- (c) Part 4—Derived Percent Fills—Describes this term as it applies to lines and numbers.
- (d) Part 5—Dates—Defines the various kinds of dates and specifies the common format for data entries.
- (e) Part 6—Capacity Adjustments—Defines the various types of capacity adjustments. Adjustments included are:
  - Capacity Required for Changing Future Usage (CRCFU)
  - Reassessment of Usage Characteristics (REACH)

- Engineering Objective Changes

- Main Station-to-Line Ratio.

**1.04** References in this appendix to methods, planning, data requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

**2. GENERAL DEFINITIONS**

**2.01** The definitions of terms which pertain to Demand and Facility Charts (D&F Charts) are as follows:

(a) **Main Station (MS)**—This term is used in the Construction program to represent the total of all Main Telephones plus Equivalent Main Telephones as defined in Comptrollers' Letter M-222, *Outline of Procedures Covering the Accounting for Station Apparatus and Station Connections*.

(b) **Equipment Type**—This term represents the End Office equipment type. One of the following abbreviations should be used:

PAN — Panel

1XB — No. 1 Crossbar

3XB — No. 3 Crossbar

5XB — No. 5 Crossbar

5AXB — No. 5A Crossbar

SXS — No. 1 Step-by-Step without common control. Includes 350A and 360A

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- SXC — No. 1 Step-by-Step with common control
- 1ES — No. 1 Electronic Switching System
- 1AES — No. 1 Electronic Switching System with  
1A Processor
- 2ES — No. 2 Electronic Switching System
- 2AES — No. 2 Electronic Switching System with  
Trailerized Frames
- 2BES — No. 2 Electronic Switching System with  
2B Processor
- 3ES — No. 3 Electronic Switching System
- OTH — Any other type without common control
- OCC — Any other type with common control

(c) **Entity**—An entity is defined as the office equipment served by common originating equipment. In particular, an entity may be defined as:

- **Panel Office**—An entity is the End Office equipment served by a common decoder arrangement (eg, 767 or 841-2 or 229, 664).
- **No. 1 Crossbar**—An entity is the End Office equipment served by a common originating marker group, and the dial tone speed results are obtained on this basis. A No. 1 Crossbar originating marker group which has two terminating marker groups is defined as one entity, whether or not the incoming matching loss results for each are different, and whether or not an equipment addition may involve only one of the terminating marker groups.
- **No. 5 Crossbar**—An entity is the End Office equipment served by a common marker group (eg, MGO, MG100, etc).
- **Step-by-Step**—An entity is the End Office equipment served by a common intermediate distributing frame.
- **Electronic Offices**—An entity is the End Office equipment served by the same central control group.

(d) **Growth Addition**—For D&F Chart purposes, a growth addition is defined as any equipment addition that increases the limiting main station capacity of an entity. Hence, a trunk relay addition is not generally considered to be a growth addition since trunk relay equipments are not considered as limiting items. However, if a trunk relay addition requires other equipment such as miniswitches, trunk link frames, or other common equipment, then the addition is considered a growth addition.

(e) **Busy Season Prior to Exhaust**—All limiting main station capacities are based on calculations which use the traffic characteristics forecasted for the busy season prior to exhaust. The busy season prior to exhaust of an addition is defined as the latest busy season for which the installed equipment will provide levels of service at or below the design objectives and will have sufficient lines and numbers to operate at or below objective fills.

### 3. MAIN STATION CAPACITIES

**3.01** The process of determining capacity levels for various items of equipment is a very important part of the End Office relief planning function. It is not intended to provide detailed instructions on how to calculate the capacity of all items of equipment. For simplicity and common understanding, the term main station capacity (including equivalent main stations) is used as the common denominator in determining the capacity of an entity. The network designer can state, in terms of main stations, the capacity of all items of equipment. This includes equipment items where capacity is limited by attempts, provided the holding times are reasonably consistent. The responsibility for determining these main station capacities rests with the appropriate Network Department(s).

#### DEFINITIONS OF CAPACITY LIMITS

**3.02** The following are capacity limit determinations, as shown on the D&F Charts:

(a) **Switching Equipment Capacity**—The main station capacity of switching equipment is the minimum of several equipment capacities since the term “switching equipment” (call carrying) is an inclusive term for various components of Central Office Equipment (COE)

except lines and numbers. For D&F Chart, as well as Dial Office Load Service Report (DOLSR) purposes, these components can be grouped into four categories. Figure 1 shows four different types of COE and how some of these components might be grouped. The four categories are:

- (1) Dial Tone Equipment
- (2) Talking Channels
- (3) Switching Common Control
- (4) Trunk Terminations.

(b) **Talking Channel Capacity (TC)**—The main station capacity of talking channel equipment of an entity is the maximum number of main stations that can be served without exceeding the percent incoming matching loss (IML), incoming first failure to match (IFFM), or overflow (in SxS and Panel) objective for that entity. Since talking channel capacity is one of the four categories of switching equipment capacity, if an entity is TC limited, it is also switching-equipment limited.

(c) **Main Station Capacity as Limited by Lines**—The main station capacity as limited by lines is the maximum number of main stations that can be working on installed lines at the derived percent line fill of the entity. Refer to the Percent Fill Definitions in Part 4 and to Section 780-200-014. This capacity is calculated by (1) multiplying the differences between the installed line equipments and those line locations dedicated for trunks and junctors by the Derived Percent Line Fill and (2) then multiplying the product of step (1) by the Main Station/Line ratio for the year of exhaust.

Main Station Capacity Limited = Installed by Lines	=	Installed Lines	—	Dedicated for trunks and Junctors	×	Derived percent Line Fill	×	MS/L Ratio
5632	=	(5900)	—	200*	×	.95	×	1.04

\*200 line locations dedicated for tandem trunking

(d) **Main Station Capacity as Limited by Numbers**—The main station capacity as limited by numbers or terminals is the maximum number of main stations that can be working on installed numbers at the derived percent number fill of the entity. Refer to the Percent Fill Definitions in Part 4 and Section 780-200-014. This capacity is computed by (1) subtracting the numbers unavailable for assignment from the total installed numbers and (2) multiplying the result in (1) by the derived percent fill.

Example

Main Station Capacity Limited by Numbers	=	Total Installed Numbers	—	Numbers Unavailable for Assignment	×	Derived Percent Fill
7912	=	(9000	—	400*)	×	(.92)

\* 400 numbers required for 200 tandem trunks

The “numbers unavailable for assignment” are to include numbers reserved for tandem trunks and/or numbers provided for a second rate area, CENTREX-CU, etc.

(e) **Most Limiting Main Station Capacity**—The most limiting main station capacity of an office is the arithmetic minimum of: (1) Main Station Capacity as Limited by Lines, (2) Main Station Capacity as Limited by Numbers, or (3) Switching Equipment Main Station Capacity.

**ABBREVIATIONS FOR LIMITING LINE**

**3.03** Equipment abbreviations for the limiting switching equipment items on the D&F charts and associated code letters for DOLSR purposes are included in Fig. 1.

**4. DERIVED PERCENT FILLS**

**4.01** The derived percent *line fill* provides for line equipments that are administratively unusable because of their use for test, dial tone speed, assignment restrictions such as class-of-service, and for being out on assignment lists. This percent, computed by dividing the total workable lines by the difference between the equipped lines and the lines dedicated to trunk and junctors, will vary according to the entity equipment type, service

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features, and the amount of peak month in and out movement. The derived percent line fill should not be one value applied to all entities, but is calculated for each individual entity on an empirical basis by the Network Administrator.

**4.02** The derived percent **number fill** provides for numbers that are administratively unusable because of intercept requirements, PBX growth, coin and official series, rate protection, and for other requirements such as being out on assignment lists. Care also needs to be taken, where applicable, to make allowance for CENTREX requirements. As in derived percent line fill, the quantity of numbers classified as administratively unusable will vary with entity characteristics. The derived percent number fill, which is computed by dividing the total assignable numbers by the difference between the equipped numbers and the numbers dedicated to trunks, numbers provided for a second rate area, CENTREX-CU etc, is calculated on an empirical basis for each individual entity by the Network Administrator.

**4.03** The procedures for determining derived percent fill for lines and numbers are outlined in Section 780-200-014.

## 5. DATES

**5.01** Definitions of the different dates or forecasts which appear on a Demand and Facility Chart (D&F Chart) are as follows:

(a) **WECO Turnover Date**—This is the manufacturer published date for installation complete. If the Telco requires additional time for testing, loading, and office balancing, this should be allowed for as the difference between the Turnover Date and the Required for Service Date.

(b) **Required for Service Date**—This is the date beyond which service impairment or encroachment on administrative line and terminal reserves may be expected to occur if equipment relief is not available. This date is used to determine the placement of the Timing Arrow. By this date all balancing, testing, rearrangements, and trunk relief must have been concluded.

(c) **Ready for Service Date**—This is the scheduled date by which the equipment is

ready for service with testing, balancing, and rearrangements completed. This is the date on which the main station capacity of an office would be increased and depicted on the D&F Chart by the main station riser.

(d) **Commercial Forecast**—This date is either the Wire Center Forecast date (in the case of a multientity office, the Entity Split Forecast date) or the date of a special forecast from which the job was engineered or modified.

(e) **Entity Forecast**—This forecast occurs only in multientity offices where the office forecast must be split between several entities for loading purposes.

(f) **Ship Date**—This is the date end office equipment ships from Western Electric.

**5.02** All dates on the D&F Chart should be in the form "MONTH/DAY/YEAR" (for example, 08/12/77).

## 6. CAPACITY ADJUSTMENTS

**6.01** An important aspect of capacity analysis, the comparison of equipment capacities versus main stations, is the ability to identify specific types of "adjustments" that are applicable to both growth and nongrowth entities. Adjustments that affect the Most Limiting (ML) capacity and the Talking Channel (TC) capacity should be reported.

### A. Capacity Required for Changing Future Usage

**6.02** Capacity Required for Changing Future Usage (CRCFU) is an important "adjustment" concept that indicates the impact on main station capacity of central office entities due to forecasted changes in CCS/MS. Although CRCFU has no real effect on capacity, it is an extremely useful concept from a budget analysis standpoint. This effect is expressed by the amount of TC and ML capacity (in main stations) that will be expended or lost, during specific future design intervals when CCS/MS is increasing. Conversely, it is the amount of TC and ML capacity to be recovered, or gained, during specific future design intervals when CCS/MS is decreasing.

**6.03** The engineered Line and Number capacity levels in a central office are primarily dependent on the "main station forecast" for that

office. However, the engineered Switching Equipment capacity level is not only dependent upon the main station forecast, but also upon the forecasted CCS/MS of *all* subscribers. Since the demand that is placed on Switching Equipment capacity is a function of both the main stations and the CCS/MS, it is necessary to establish recording techniques that will account for each component.

**6.04** CRCFU is reported to aid in construction budget analysis from a budget year expenditure standpoint. If an end office is experiencing rapid growth in usage, the central office equipment (COE) expenditures per main station added will be higher than another end office which is not experiencing as rapid a usage growth. CRCFU, when added to the main station capacity added, represents the "gross capacity added". This gives an end office an expenditure per main station that is more appropriate for comparative analysis.

**6.05** The following example illustrates the CRCFU concept and its relationship to the "gross capacity added" and "limiting capacity added" concepts. Assume there are two central offices, A and B, (refer to Fig. 2). Both offices currently have the identical equipment configuration for the limiting capacity item, and both offices are receiving the identical equipment addition for the limiting capacity item. Both offices have identical usage characteristics, as expressed by the CCS/MS at the start of the job. The usage in Office A is forecast to increase during the life of the addition; however, the usage is forecast to remain constant in Office B. The limiting capacity (switching in this case) that is being added by these identical additions is less for Office A than for Office B.

**6.06** Offices A and B both have a 1976 limiting capacity of 21,031 main stations, and each adds four line link frames. Office A is forecasting main station growth as well as usage growth, while Office B is forecasting only main station growth. The four line link frame addition yields a new capacity of 22,190 main stations in Office A, while it yields a new capacity level of 22,942 main stations in Office B, a difference of 752 main stations. In other words, the increased usage forecast (2.95 CCS/MS to 3.05 CCS/MS) in Office A used up 752 main stations of capacity from the four line link frame addition.

**6.07** In order to give proper recognition to the capacity added by the four line link frame

addition in Office A, it is necessary to state it in gross capacity terms. Figure 3 illustrates how this can be accomplished. By comparing Office A in Fig. 3 with Fig. 2, it is evident that the gross capacity added in Office A is, in fact, the same as in Office B, even though the additional capacity gained for *subscriber main station growth* is considerably less in Office A than B.

**6.08** The recording of this data in tabular form yields the following:

Gross Capacity Added	Office A 1911	Office B 1911	Total For Reporting Purposes 3822
Capacity Required for Changing Future Usage Adjustment	(-) 752	0	(-) 752
Limiting Capacity Added	1159	1911	3070

**6.09** CRCFU for growth entities is defined as the difference between (1) the calculated talking channel capacity level after the addition based on the last busy season CCS/MS characteristic, and (2) the design talking channel capacity after the addition based on the CCS/MS characteristic of the busy season prior to the exhaust date of the addition under report.

**6.10** The sign conventions for CRCFU are as follows:

- (1) If the values of forecasted CCS/MS are **increasing**, the CRCFU value is **positive**.
- (2) If the values of forecasted CCS/MS are **decreasing**, the CRCFU value is **negative**.

It should be noted that the sign (+ or -) of the CRCFU entry into the D&FDBS will be the exact opposite of the sign as it appears on Table II of the Construction Budget Summary. As a result, increasing usage will have a negative impact on capacity, and decreasing usage will have a positive impact on capacity.

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6.11 CRCFU may also be applied in non-growth entities to indicate the impact on capacity due to forecasted changes. Fig. 4 shows a CRCFU-TC adjustment for a non-growth entity.

#### B. Other Capacity Adjustments

6.12 In addition to Capacity Required for Changing Future Usage, these additional types of "capacity adjustments" frequently appear on the Demand and Facility Chart (D&F Chart) and in various construction budget documentation. The three other types of adjustment are as follows:

- (1) Reassessment of Usage Characteristics
- (2) Engineering Objective Changes
- (3) Main Station to Line Ratio Changes

#### Reassessment of Usage Characteristics

6.13 Reassessment of Usage Characteristics (REACH) designates changes in the TC or ML capacity level, brought about as a result of reassessing and then changing CCS/MS characteristics on which the **current** TC or ML capacity was designed. Adjustments of this nature will often occur when actual CCS/MS data indicate that the forecasted CCS/MS data, upon which the current equipment is designed, no longer appears appropriate. As a result, the old CCS/MS forecast would be revised and a new TC or ML capacity would be determined. An example of a REACH adjustment is shown in Fig. 5.

6.14 Adjustments of this nature may be taken in both growth and non-growth entities. They occur more often in growth entities than in non-growth entities because non-growth offices generally are more stable, and because the capacity levels in non-growth offices may be adjusted annually, while the capacity level in a growth entity is usually stated for the life of an addition. These adjustments are reported as **positive** if the capacity **increases**, or **negative** if the capacity **decreases**. These adjustments should

not be taken with an addition and included as part of CRCFU.

#### Engineering Objective Changes

6.15 Engineering Objective Changes (ENG OBJ) are the changes in the TC or ML capacity level brought about as a result of new or revised instructions, concerning the determination of central office talking channel or equipment capacity.

6.16 Adjustments to the ML capacity result from changes such as changing the design schedules from Incoming Match Loss (IML) to Incoming First Failure to Match (IFFM), or from restating capacity levels of various equipment items. An example of an ENG OBJ-ML adjustment is shown in Fig. 6. Both TC and ML ENG OBJ adjustments can be taken for a growth or a non-growth entity. These adjustments are reported as **positive** if the capacity is **increased** or as **negative** if the capacity **decreases**.

#### Main Station to Line Ratio Changes

6.17 Main Station to Line Ratio (MS/LN) changes are those in the limiting capacity level brought about as a result of a changing "main station to line ratio". This type of adjustment is not applicable to talking channels. An example of an MS/LN adjustment is shown in Fig. 7.

6.18 Adjustments of this nature may occur in either growth or non-growth entities. In non-growth entities that are limited on line equipment, the value of the adjustment would be equal to the annual step-down of the capacity level, corresponding to a decreasing main station-to-line ratio. Adjustments may also be made when actual MS/LN ratio data indicate that the forecasted ratio data, upon which the current capacity was determined, no longer appears appropriate. As a result, the old MS/LN ratio will be revised and a new limiting capacity determined. When these adjustments occur, they will occur primarily in growth entities, but they also may be taken in non-growth entities.

Abbreviations and Code Letters of Principal COE Components

Limiting Switching Capacity

MACHINE TYPE	DIAL TONE EQUIPMENT	TALKING CHANNELS	SWITCHING COMMON CONTROL	TRUNK TERMINATIONS
PAN	LFCCS = Line Finders (A) SS = Subscriber Senders (B) PL = Panel Links (C)	OS = Office Selectors (D) FS = Final Selectors (E)	DEC = Decoders (F) AS = Auxiliary Senders (G)	DOSM = District and Office Selector Multiple (H) IS = Incoming Selectors (I)
1XB	SS = Subscriber Senders (A) DJTR = District Junctors (B)	C = (Discontinued) JTRP = Junctor Pattern (D)	OM = Originating Markers (E) AS = Auxiliary Senders (F) TS = Terminating Senders (G) TM = Terminating Markers (J) AMA = AMA Equipment (K)	ITRM = Incoming Link Frame Terminations (H) OTRM = Office Link Frame Terminations (I)
5XB 5AXB 3XB	OR = Originating Registers (A) DTM = Dial Tone Markers (B)	JTRP = Junctor Pattern (C) D = (Discontinued)	CM = Completing/Combined Markers MFOS, DPOS = Outgoing Senders (F) MFIR, DPIR = Incoming Registers (G) AMA = AMA Equipment (I)	TLF TERM = Trunk Link Frame Terminations (H) OSF TERM = Outsider Link Frame Terminations (J) IRF TERM = Incoming Register Link Frame Terminations (K)
SXS  SXC  OTH OCC	LFCCS = Line Finders (A) OR = Touch Tone Orig. Regs. Recv. Conv. (B)  OR = Originating Registers (B)  DT LINK = Links (CX, etc.) (C)	SEL = Selectors (D) CONN = Connectors (E) TC LINK = Links (F)	CCE = Common Control Equipment if SXC office (G)  TTE = TOUCH TONE Equipment if SXC office (H)	IS = Incoming Selectors (I) T LINKS = Links (J)

Fig. 1—Abbreviations and Code Letters of Principal COE Components—Limited Switching Capacity (Sheet 1 of 2)

Abbreviations and Code Letters of Principal COE Components  
Limiting Switching Capacity (Contd)

MACHINE TYPE	DIAL TONE EQUIPMENT	TALKING CHANNELS	SWITCHING COMMON CONTROL	TRUNK TERMINATIONS
No. 1 ESS No. 1A ESS	CDR = Customer Digit Receivers (A)	NTW = Network (B)	<p>Service Circuits</p> <p>Receivers:            SCRMF = MF (C)            SCRDP = DP (D)            SCRRLP = RP (E)</p> <p>Transmitters:            SCTMF = MF (F)            SCTDP = DP (G)            SCTRPL = RP (H)</p> <p>Ringling:            SCP = Power (I)            SCA = Audible (J)            CS = Call Stores (K)            PS = Program Stores (L)            (for other than directory numbers)</p> PROC = Processor (M) AMA = AMA Software (P)	TERM = Trunk Link Network Terminations (N)
No. 2 ESS No. 2A ESS No. 2B ESS	CDR = Customer Digit Receivers (A)	NTW = Network (B)	<p>Service Circuits</p> <p>Receivers:            SCRMF = MF (C)            SCRDP = DP (D)</p> <p>Transmitters:            SCTMF = MF (F)            SCTDP = DP (G)</p> <p>SCP = Power Ringing (I)            CS = Call Stores (J)            PS = Program Stores (K)            (for other than directory numbers)</p> PROC = Processor (L)	TERM = Line Trunk Network Terminations (M)
No. 3 ESS	CDR = Customer Digit Receivers (A)	NTW = Network (B)	<p>Service Circuits</p> <p>Receivers:            SCRMF = MF (C)</p> <p>Transmitters:            SCTMF = MF (F)            SCTDP = DP (G)</p> <p>SCP = Power Ringing (I)            MS = Memory (K)            PROC = Processor (L)</p>	TERM = Line Trunk Network Terminations (M)

Fig. 1—Abbreviations and Code Letters of Principal COE Components—Limited Switching Capacity (Sheet 2 of 2)

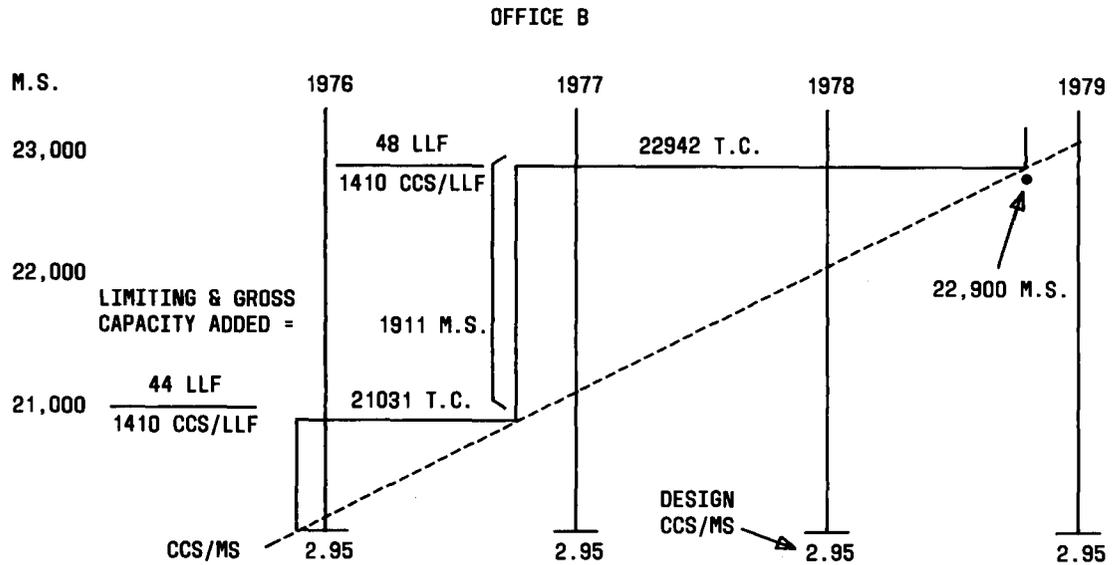
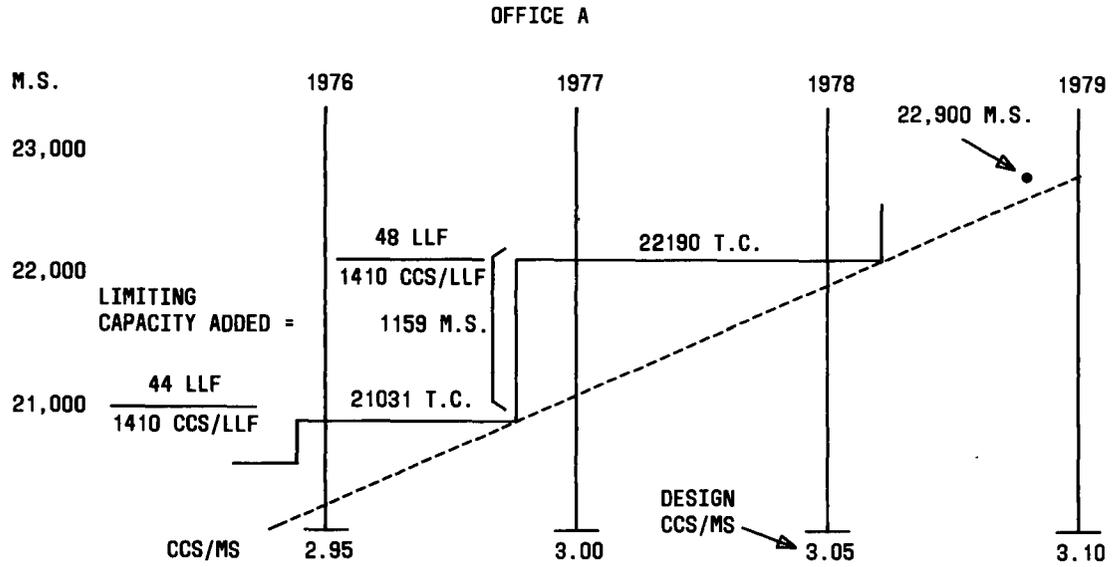
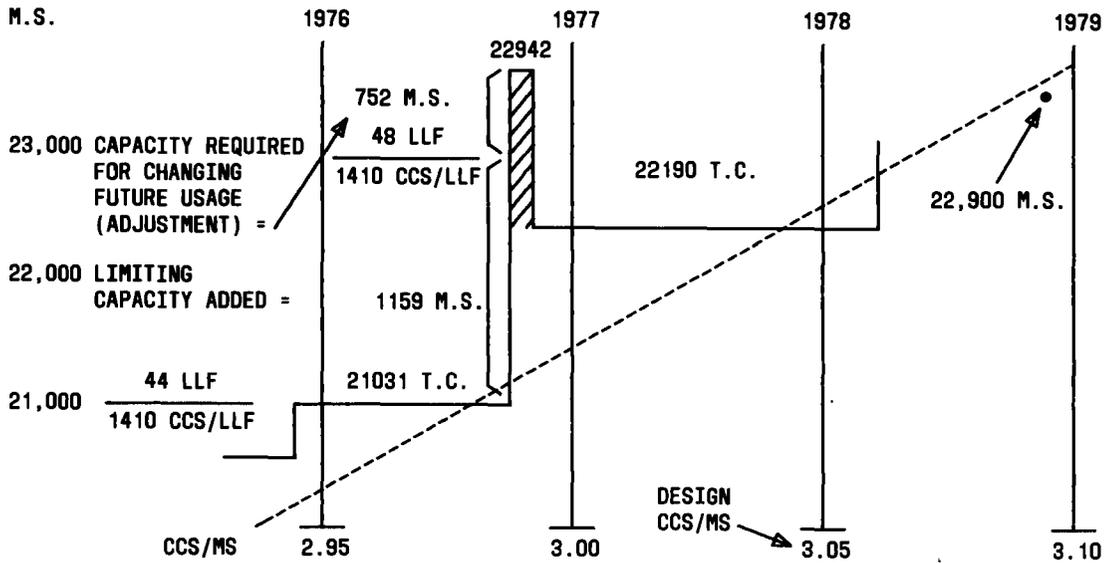


Fig. 2—Reporting of Gross Capacity Added and Limiting Capacity Added

OFFICE A

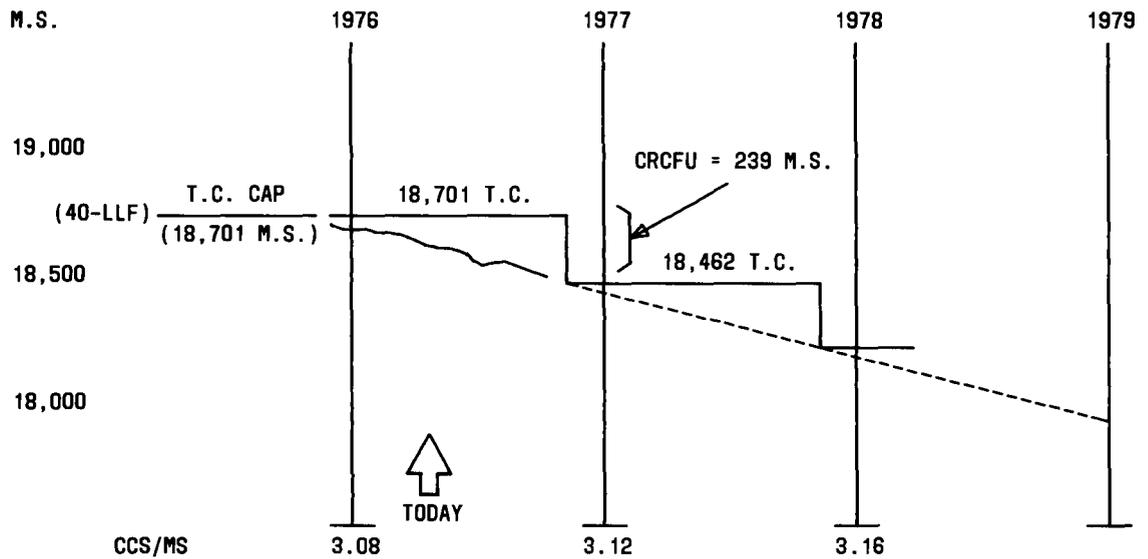


GROSS CAP ADDED = LIM. CAP. + CAP. REQ. FOR CHANGING FUTURE USAGE

GROSS CAP ADDED = 1159 + 752 = 1911 M.S.

Fig. 3—Alternate Reporting Showing Capacity Required for Changing Future Usage (CRCFU) Pulse

CRCFU = (CALCULATED M.S. CAPACITY WITH NO USAGE CHANGE) -  
(LIMITING M.S. CAPACITY AFTER USAGE CHANGE)



CRCFU = (CAPACITY AFTER USAGE CHANGE) - (CAPACITY BEFORE USAGE CHANGE)

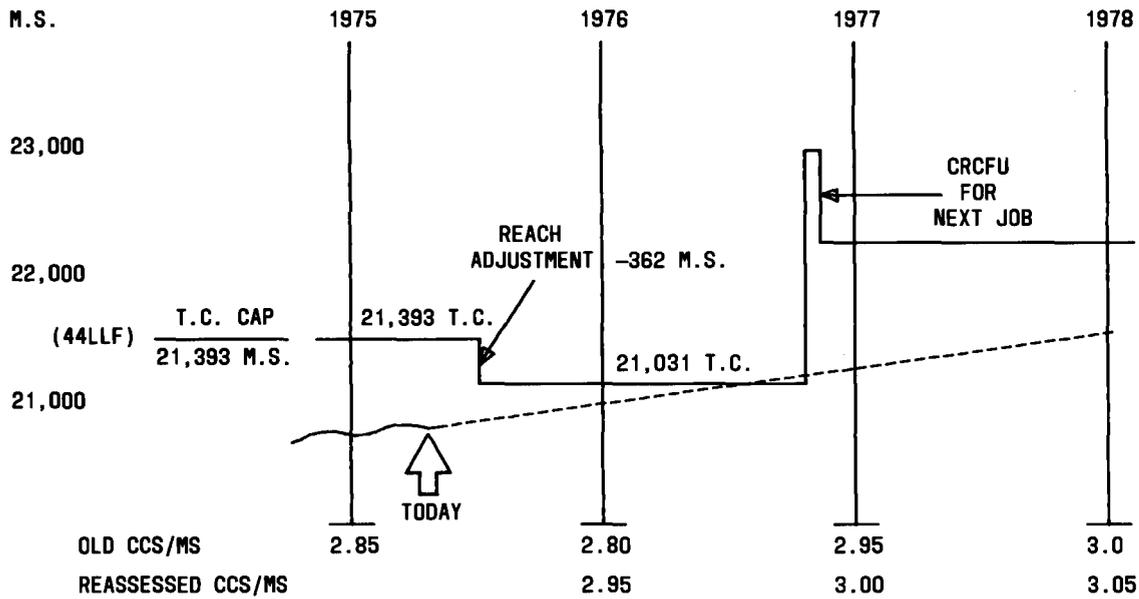
CRCFU = 18,462 - 18,701 M.S. = -239 M.S.

NOTE: IN ALL CASES THE CAPACITY REQUIRED FOR CHANGING FUTURE USAGE (CRCFU) IN NON GROWTH ENTITIES IS ALWAYS THE DIFFERENCE IN THE LIMITING CAPACITY LEVELS RESULTING FROM THE FORECAST OF FUTURE CALLING CHARACTERISTICS. THIS PERTAINS TO ALL SWITCHING LIMITING ITEMS, I.E., CCS, ATTEMPT, MARKER, REGISTER, ETC.

Fig. 4—Reporting of Capacity Required for Changing Future Usage (CRCFU) Adjustment for Nongrowth Entity

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REACH = (CAPACITY BASED ON REASSESSED USAGE CHARACTERISTICS)  
 - (OLD CAPACITY LEVEL)

$$\text{REASSESSED CAPACITY} = \frac{44\text{LLF} \times 1410 \text{ CCS/LLF}}{2.95 \text{ CCS/MS}} = 21,031 \text{ M.S.}$$

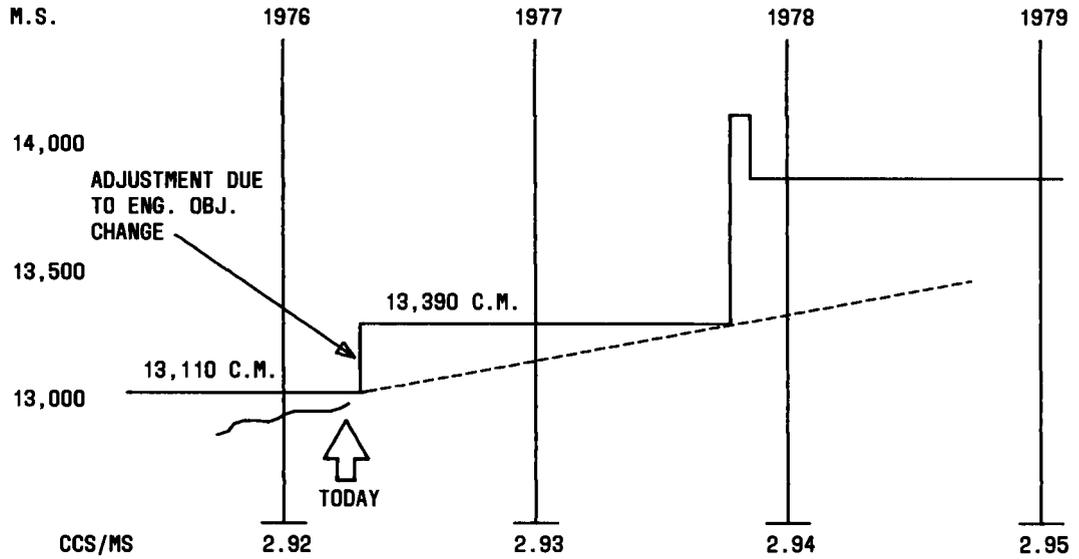
$$\text{OLD CAPACITY LEVEL} = \frac{44\text{LLF} \times 1410 \text{ CCS/LLF}}{2.90 \text{ CCS/MS}} = 21,393 \text{ M.S.}$$

$$\text{ADJUSTMENT DUE TO (REACH)} = -362 \text{ M.S.}$$

NOTE: ADJUSTMENTS DUE TO REACH MAY BE TAKEN ON ALL SWITCHING LIMITING ITEMS, IN GROWTH AS WELL AS NON GROWTH ENTITIES.

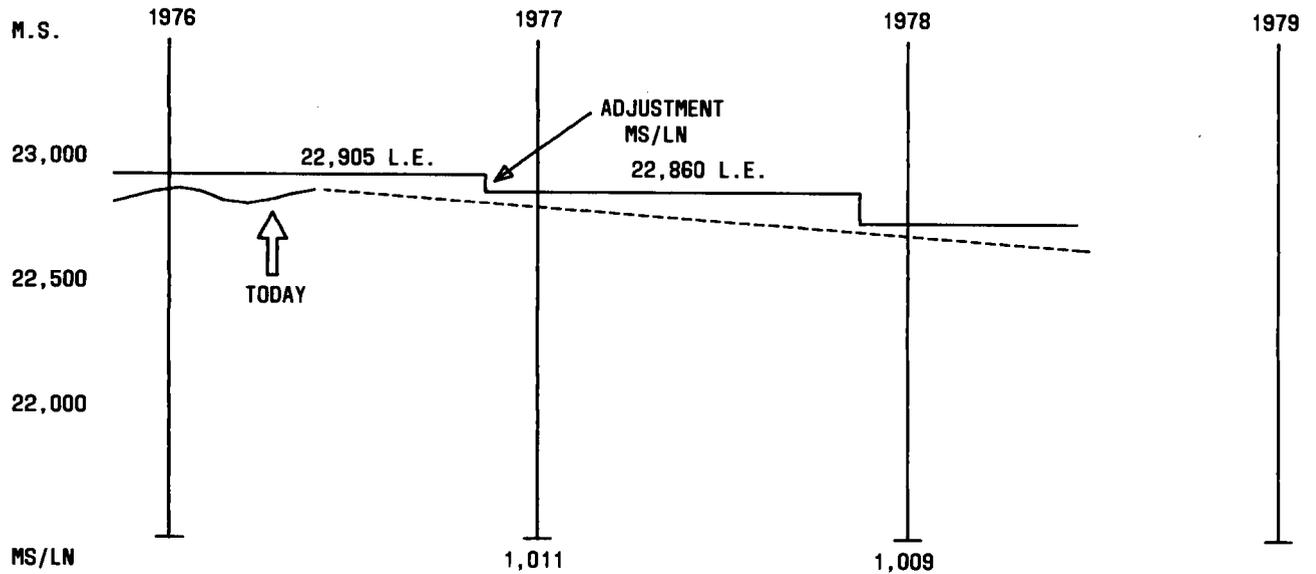
IT SHOULD ALSO BE NOTED THAT THE CALCULATION FOR CRCFU FOR THE NEXT PLANNED ADDITION SHOULD BE BASED ON THE REVISED USAGE FORECAST. THAT IS: 3.05 CCS/MS AND 2.95 CCS/MS AS COMPARED TO 3.0 CCS/MS AND 2.90 CCS/MS.

Fig. 5—Reporting of Reassessment of Usage Characteristics (REACH) Adjustment



ADJ. - ENG. OBJ. = (LIM. CAPACITY LEVEL AFTER THE ADJUSTMENT)  
- (LIM. CAPACITY LEVEL BEFORE THE ADJUSTMENT)  
ADJ. - ENG. OBJ. = 13,390 M.S. - 13,110 M.S. = + 280 M.S.

Fig. 6—Reporting of Engineering Objective Changes (ENG-OBJ) Adjustment



ADJUSTMENT - MS/LN = (CAPACITY LEVEL AFTER MS/LN CHANGE) - (CAPACITY LEVEL BEFORE MS/LN CHANGE)  
ADJUSTMENT - MS/LN = (22,860 MS) - (22,905 MS) = -45 M.S.

Fig. 7—Reporting of Main Station-to-Line Ratio Change (MS/LN) Adjustment