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CALL MANAGEMENT SYSTEM-SENIOR
OWNER'S MANUAL

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CHAPTER 1

INTRODUCTION

The AEC Call Management System-Senior (CMS-SR) provides reliable call answering and telecommunications management information all in one easy-to-use system.

This chapter provides a brief overview of CMS-SR features, and references to sections of this manual for further explanation.

PHYSICAL DESCRIPTION

The CMS-SR is installed as part of an Electronic Key Telephone System (EKTS) or Private Automatic Branch Exchange (PABX). The system handles from 3 to 60 CO/PBX lines.

Your new CMS-SR includes:

- the line unit, which contains most of the system hardware, and is connected to the telephone lines, and to 120 VAC power; and
- the control console, which presents real-time system information, is used to program the CMS-SR, to retrieve data, and for the agent log-on activities.

Your system may also include one or more of the following optional features: auxiliary line units, a printer, an on-hold music tape player, and Attendant Monitors.

The system is described in detail in Chapter 2.

CALL HANDLING

In the Answer Hold mode, the CMS-SR answers calls, plays one or all of three user-selected announcement messages, queues the calls, and holds the calls until an agent is available. Calls are presented to the agents in the exact order in which they are received. During the waiting period, the CMS-SR can activate an on-hold music/information source, and play Answer/Hold Second and Answer/ Hold Repeat announcements, at the intervals you select.

When the phones are not staffed, the CMS-SR may be set to the Answer Drop mode. It will answer calls, play an off-hours information announcement, and disconnect.

The Answer Off mode turns off the call-handling feature. The CMS-SR will continue to gather data for all telephone activity on the lines, and print automatic reports.

The Ring All Calls Through feature may be used when the PABX queues calls, and the announcement, music-on-hold, and superior reporting capabilities of the CMS-SR are needed.

Chapter 3 describes CMS-SR call handling options in detail.

REPORT GROUPS

Report Groups are for more than just reports. The CMS-SR can handle each group as if it were a *separate call management system.*

You may create up to four Report Groups. You assign each telephone line to any group; perhaps a group for each department. The CMS-SR issues a separate report for each group, and you may establish different data parameters for each group. The calls for each group can be handled uniquely, including different announcement messages. Chapter 4 describes how to program Report Groups in detail.

REPORTS

The CMS-SR and a printer provide reports that give you all the information you need to make intelligent telecommunications decisions, presented in clear, precise reports and graphs. *You* design the reports: The data parameters you establish form the basis of the reports.

Up to four separate Report Groups can be maintained; the CMS-SR issues a separate telephone management report for each group.

The CMS-SR reports information by line for all aspects of telephone activity: Information Totals, Sequenced Calls, Call Activity, Busy Study, Trunk Busy, Staff availability and the Staffing Requirements studies.

Interval Reports can be set to occur as often as desired; up to 99 times a day. Usually, the CMS-SR is programmed to generate these every hour, or every two hours, etc. The Interval Report is used to get a close look at the telephone traffic activity over a short period. The data registers can be set to Zero or accumulate after each interval report.

The Daily Report occurs once a day. It will be generated at any time you wish, and only on the days you select. In addition to the features in the interval report, the Daily Report includes the Agent Availability Study, the Staffing Requirements Chart, and the Staffing Requirements Summary. The Daily Zero Time is set to occur at the same time each day.

History Reports can be set to occur on 1 or more days per week, or on specific dates of the month (up to 31 days). Usually, History Reports are generated once a week, or once a month. History Report data is automatically zeroed after the scheduled printing.

Chapter 5 describes the CMS-SR reports in detail.

ACCESSING REPORTS REMOTELY

With a 1200 Baud, auto-answer modem you can access reports as well as service information for any or all groups remotely. Reports to be accessed may be pre-programmed from the CMS-SR control console. Refer to Appendix B.

To use this feature, an additional designated telephone line must be connected to the the auto answer modem.

ANNOUNCEMENT MESSAGES/AUDIO

The CMS-SR offers a reliable, high-quality, digital voice recording feature. You change the announcement message with the press of a button. There are no cassettes to change when the office closes, and no tapes to replace when they break or wear out. Once you've made your recordings, they're there to stay. Chapter 4 describes the audio system in detail.

AGENT LOG-ON

With the CMS-SR's easy, tamper-proof agent logging system, you can monitor agent performance.

Using the Agent Log-On data, the CMS-SR provides you with accurate staffing information, including the names of all agents using the system, and the times each agent was logged on to the system. The CMS-SR also reports the times and amount you are over- or under-staffed.

If you choose not to use the Agent Log-On feature, you may set the CMS-SR to use the Fixed Agent Supply. Refer to Chapter 4.

The Agent Log-On procedure is described in Chapter 3.

STAFFING PLANNING

Your agents log-on to the system; or, using the Enhanced Staffing feature on Overlay E, you may choose to set the agent supply to a fixed schedule. Either way, the CMS-SR calculates and reports the amount of over- and under-staffing, and the time periods during which these occur. The Staffing Requirements sections in Chapter 5 describe these reports in detail.

Using the Forecasting feature on Overlay E, you can experiment with and plan for staffing modifications and telephone traffic variations. Never before has your telecommunications staffing planning been so easy! The Forecasting feature is described in detail in Chapter 4.

DYNAMICALLY VARIABLE CALL THROUGHPUT (DVCT)

The Dynamically Variable Call Throughput (DVCT) feature is used to increase call throughput in extremely busy environments. This enables you to establish the number of longest-waiting (priority) calls which will be presented simultaneously. Refer to Chapter 4.

STATION GROUPS

With some limitations, the CMS-SR can be installed to provide station information reporting in addition to its normal line sequencing and reporting functions. Refer to Chapter 7 for installation information, Chapter 4 for programming instructions, and Chapter 5 for a description of the report.

PROGRAMMING THE SYSTEM

It's easy to generate management information with the CMS-SR. The control panel is clearly labeled, and all programming cues are simple and direct. The display presents the information as you enter it, and warns you of programming errors. The CMS-SR is more than user-friendly - it's user-helpful.

SYSTEM SECURITY

Special programming overlays, which are removed and kept away from unauthorized personnel, ensure the security of the CMS-SR program.

The Agent Log-On system is doubly-secured by not only the confidentiality of the agent numbers, but by the system Tamper Alert which 1) sounds a distinctive keyboard beep, and 2) uses your printer to send an "Invalid Security Code" message. Refer to the Agent Log-On description in Chapter 3.

ATTENDANT MONITOR

The optional Attendant Monitors are designed to be placed at each attendant's work station. These units display 1) the number of a line available for an outgoing call, 2) the time the longest waiting call has waited, and 3) the number of calls waiting.

This feature is described in detail in Appendix C.

INSTALLATION

The CMS-SR is installed as part of a telephone system. The connection to the CO/PBX lines are made through a standard USOC RJ71C connector. Chapter 7 explains the installation in detail.

» **NOTE:** Any telephone company installation and/or service charges are the responsibility of the customer.

SYSTEM EXPANSION

When your business and telephone system grows, the CMS-SR will grow right along with you. The system is expandable in 3-line increments, 12 per cabinet, up to a maximum of 60 CO/PBX lines.

CERTIFICATIONS

The CMS-SR has been tested and found to comply with the Federal Communications Commission Rules and Regulations Part 15, subpart J (Class A computing devices); and Part 68 (connection to the switched telephone network), and has been assigned a registration number. Chapter 6 provides complete specifications.

BATTERY BACK-UP

Lithium batteries retain the CMS-SR's option settings and management information for a period of at least one year when the system is without AC power.

A 12 volt rechargeable battery retains the digital voice recording memory for two hours when the system is without AC power.

WARRANTY

Refer to the warranty card shipped with the CMS-SR.

CHAPTER 2

PHYSICAL DESCRIPTION

OVERVIEW

The CMS-SR is installed as part of a telephone system. The system handles from 3 to 60 CO/PBX lines.

One USOC RJ71C Serial Interface is required for connection to each 12 lines. This connection is described in Chapter 7.

The CMS-SR is composed of the control console and the line unit. Auxiliary line units provide from 3 to 12 line expansion to the main line unit.

CONTROL CONSOLE

You will be using the control console to activate CMS-SR call handling, to program the unit, and to retrieve data. This unit is described in the pages that follow, and is illustrated in Figures 2.1 and 2.8. Figures 2.2 through 2.7 illustrate the programming overlays.

LINE LAMPS

Each of these lamps represents a line connected to the CMS-SR. All lamps representing lines in the Lines In condition are on, all Lines Out are off. When under CMS-SR control, the highest priority line's lamp flashes at 240 interruptions per minute (ipm); while all other calls waiting are indicated by a 30 ipm flash. Once a call is taken from CMS-SR control, the line lamp returns to steady.

DISPLAY

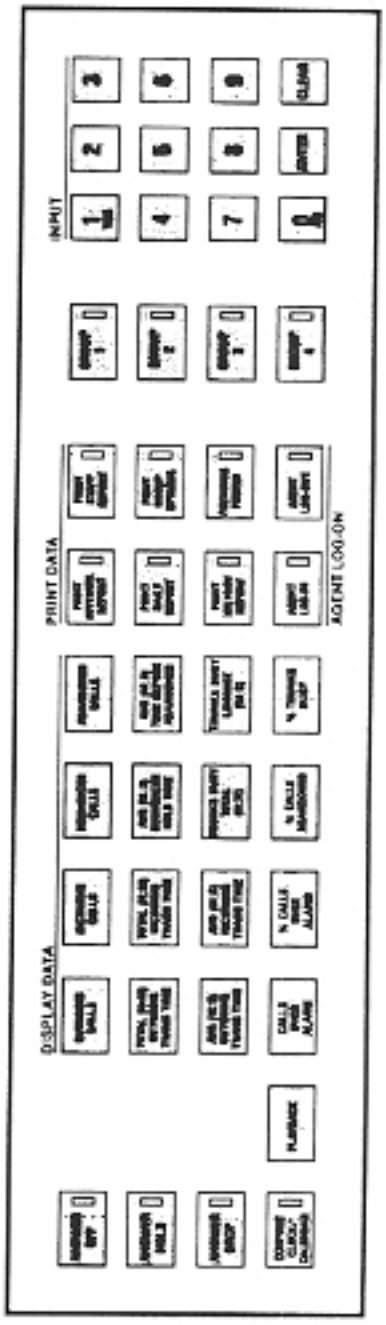
Under Answer/Hold operation, the display presents System Status, which is 1) the number of calls waiting; 2) the time, in minutes and seconds, that the highest priority call has waited; and 3) the line number of the next call to be taken.

During CMS-SR programming, the display presents programming cues, and the data as it is entered. If the CMS-SR detects a problem in the system, Fault Detection messages are displayed. Refer to the Fault Detection section of Chapter 3.

MAIN PANEL - CONTROL CONSOLE

The main panel of the control console is used during regular CMS-SR operation. It is illustrated in Figure 2.1, and its features are described in Chapter 3.

FIGURE 2.1 - CONTROL CONSOLE FRONT PANEL



PROGRAMMING OVERLAYS

In addition to the main control panel, the CMS-SR is supplied with six programming overlays. These are described below.

OVERLAY A

The label "Overlay A" appears on the left side of this overlay, which is illustrated in Figure 2.2. This overlay is used when setting the CMS-SR clock and calendar, and when programming the report schedules.

OVERLAY B

The label "Overlay B" appears on the left side of this overlay, which is illustrated in Figure 2.3. This overlay is used when programming the CMS-SR call handling options, and alarm ports.

OVERLAY C

The label "Overlay C" appears on the left side of this overlay, which is illustrated in Figure 2.4. This overlay is used when assigning agents to reporting groups, and to establish agent security codes.

OVERLAY D

The label "Overlay D" appears on the left side of this overlay, which is illustrated in Figure 2.5. This overlay is used when recording, transferring, and assigning announcement messages.

OVERLAY E

The label "Overlay E" appears on the left side of this overlay, which is illustrated in Figure 2.6. This overlay is used to program Agent Schedules for the fixed Agent Supply, and to maintain Agent Supply information while using the Fixed Agent Supply. The Forecasting feature of the CMS-SR is also enabled from Overlay E.

SECURITY OVERLAY

The label "Security" appears on the left side of this red overlay, which is illustrated in Figure 2.7. This overlay is used to set telephone system and peripheral options; restore factory options; and initiate the CMS-SR self-test routines.

FIGURE 2.2 - CLOCK/CALENDAR OVERLAY

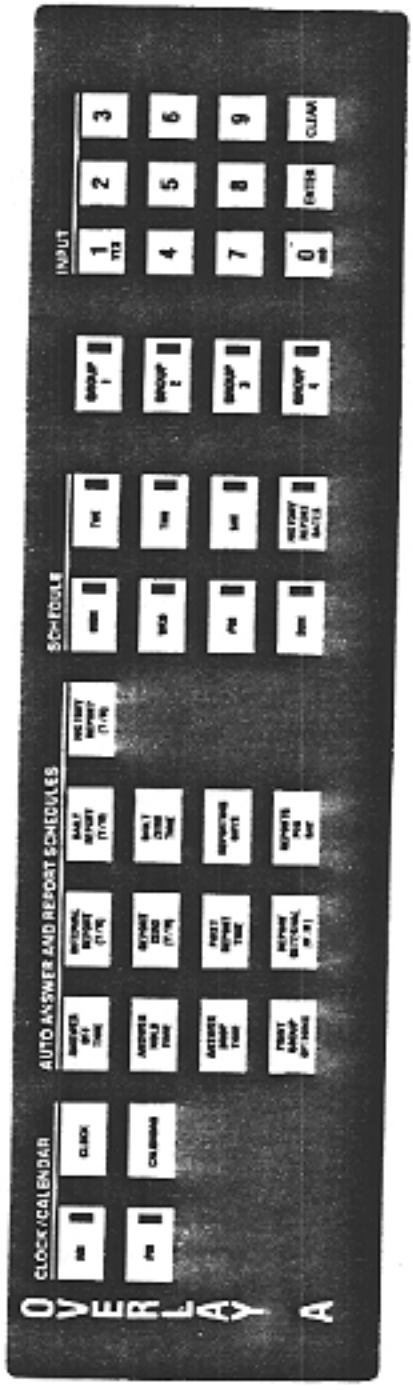


FIGURE 2.3 - GROUP OPTIONS OVERLAY

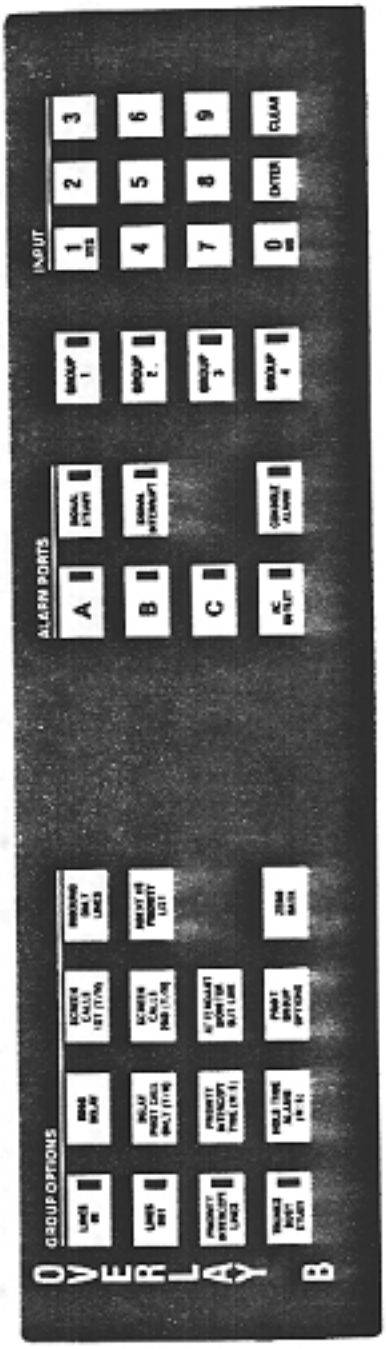


FIGURE 2.4 - GROUP AND AGENT ASSIGNMENT OVERLAY

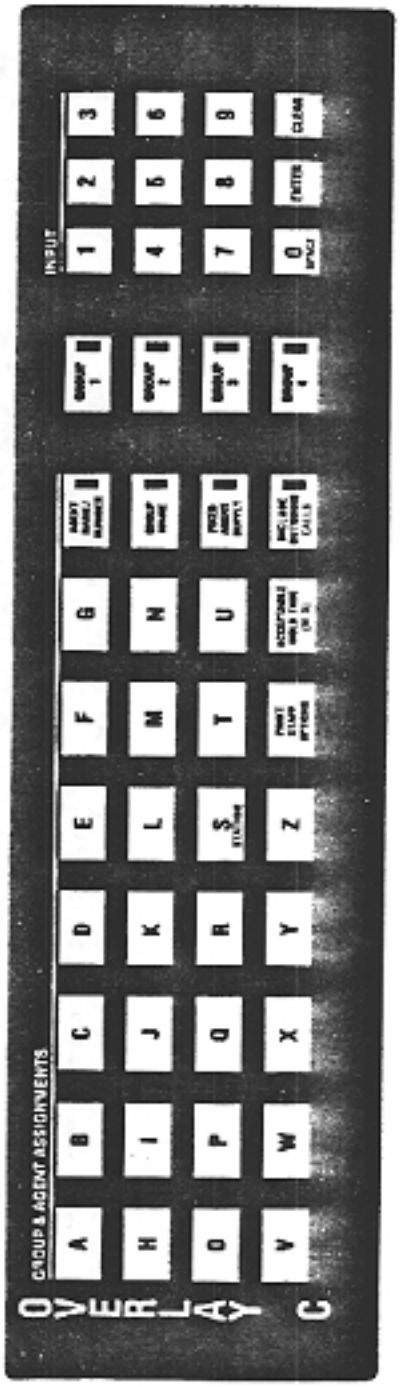


FIGURE 2.5 - ANNOUNCEMENT MESSAGE/AUDIO PORTS OVERLAY

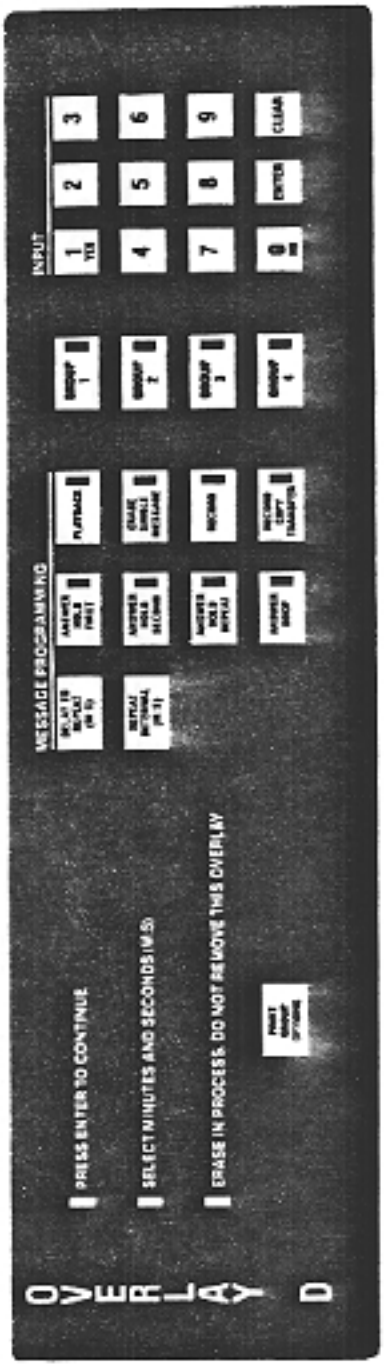


FIGURE 2.6 - OVERLAY E FORECASTING AND FIXED AGENT SCHEDULES OVERLAY

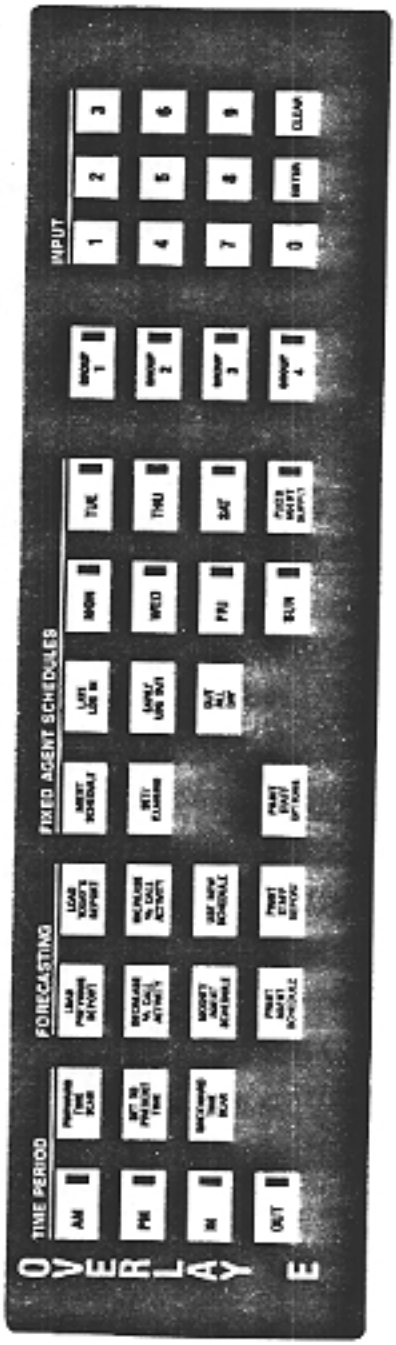
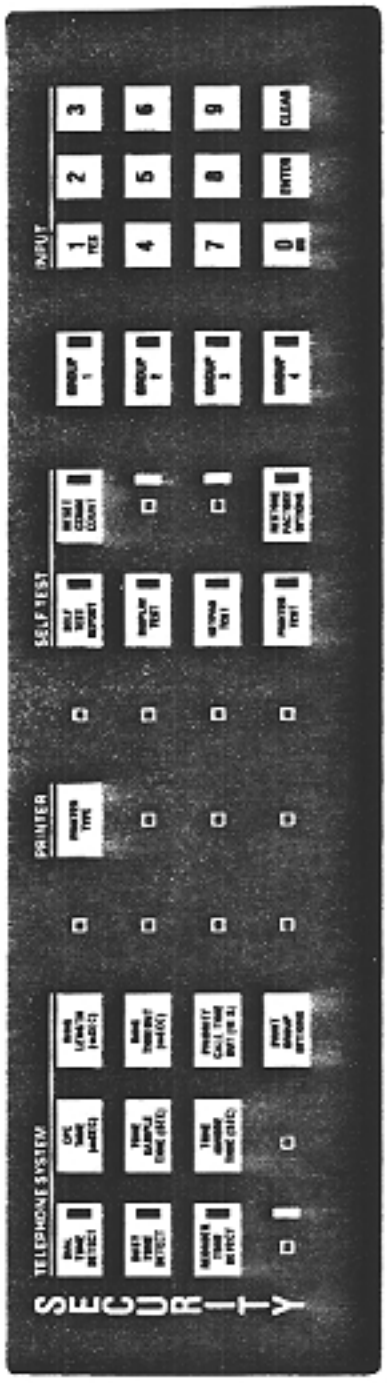


FIGURE 2.7 - SECURITY OVERLAY

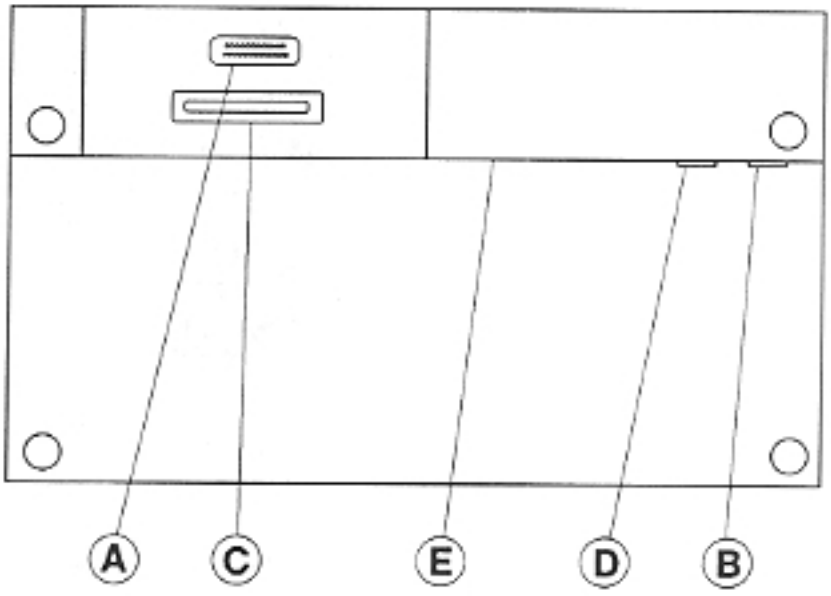


CONTROL CONSOLE REAR CONNECTIONS

The cables from the line unit of the CMS-SR connect to the rear of the control console. The microphone, and an optional printer or modem may also be connected here. The connections are as follows:

A	RS-232 Printer Connection	The optional printer or modem may be connected here, or on the line unit.
B	Microphone Connection	The condenser microphone used to make digital voice recordings connects here.
C	Line Unit Connection	The 24 AWG, 25-pair cable from the line unit connects here.
D	Line Input	A high level audio input used to record from a source other than a microphone, such as copying a pre-recorded tape cassette.
E	Attendant Monitor Jack	The connection point for optional Attendant Monitors.

FIGURE 2.8 - CONTROL CONSOLE REAR CONNECTIONS



MAIN LINE UNIT FRONT PANEL

Lamps on the front panel of the main line unit represent each line connected to the CMS-SR. The lamps reflect the status of these lines; the lamp for a line under CMS-SR control lights steady. The highest-priority call's line lamp flashes at 240 interruptions per minute (ipm); while all other calls waiting are indicated by a 30 ipm flash. When a call is no longer under CMS-SR control (has been taken by an agent, or hangs up) the line lamp returns to steady.

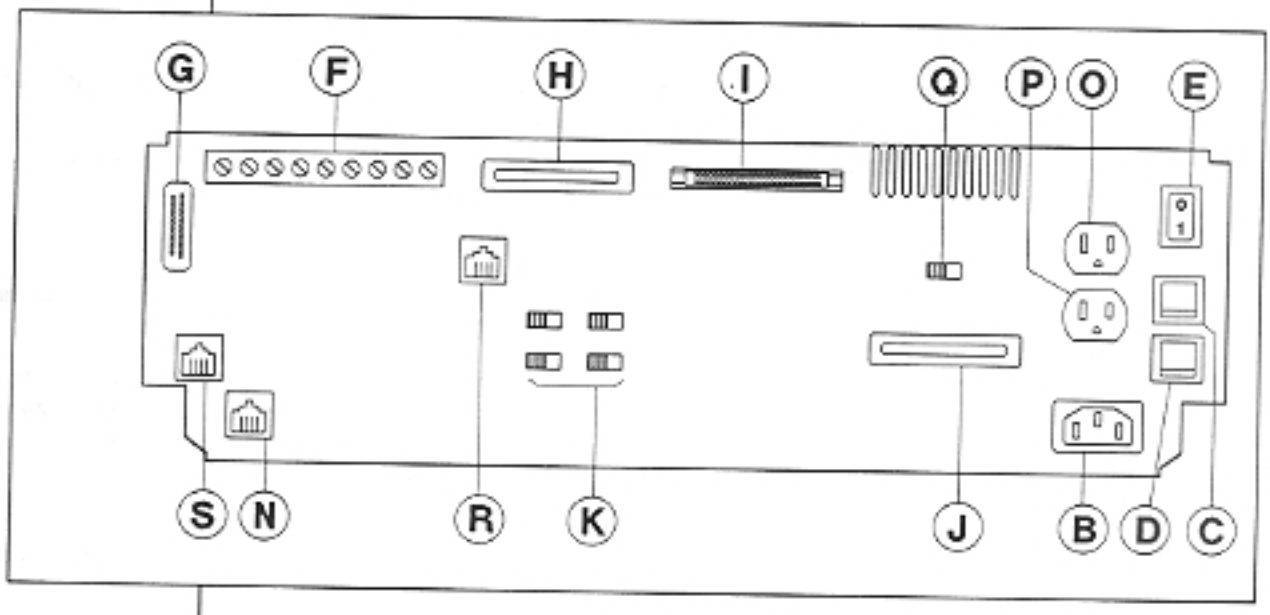
MAIN LINE UNIT REAR PANEL

The rear panel of a main line unit connects to 1) the telephone lines, 2) 120 VAC power, 3) auxiliary units, 4) the control console, and 5) any optional peripheral devices, such as the printer, attendant monitor or on-hold music source. The following lists each element of a main unit, which is illustrated in Figure 2.9.

B	AC Power Connection	The connection point to the power cord, and to 120 VAC power.
C	CMS-SR Fuse	Provides overcurrent protection to the CMS-SR.
D	AC Outlet Fuse	Provides overcurrent protection to the AC outlets on the CMS-SR.
E	Power Switch	The main power switch for the CMS-SR. This should only be used when shutting the system down for service or repair. To remove lines from CMS-SR control, select Answer Off.
F	Terminal Strip	The connection point for 1) PABX ground; 2) the optional on-hold music source; and 3) three of the alarm ports.
G	RS-232 Printer Connection	An optional printer or modem may be connected here, or on the Control Unit.
H	Control Unit Connection	The connection point to the 24 AWG 25-pair cable from the Control Unit.
I	Auxiliary Unit Data Connection	The connection point to the flat cable from the first auxiliary unit.
J	Telephone Interface	The connection point to the 12 line RJ71C interface.
K	Ground Start/ Loop Start Switches	Used to set the CMS-SR to the appropriate system setting. This may be different for each line card. S1 for Line Card 1-3, S2 for Line Card 4-6, S3 for Line Card 7-9, S4 for Line Card 10-12.
N	Auxiliary Line Unit Power Connection	The connection point to the auxiliary power connection cable from the first auxiliary unit.
O	Alarm Outlet	The outlet used for external 120 VAC alarm devices.

P	Music Source Outlet	The outlet used for external on-hold music devices.
Q	Digital Voice Backup Battery Switch	Battery switch for Digital Voice.
R	Not used	
S	Monitor Jack	The connection point for the optional attendant monitor(s).

FIGURE 2.9 - MAIN LINE UNIT REAR CONNECTIONS



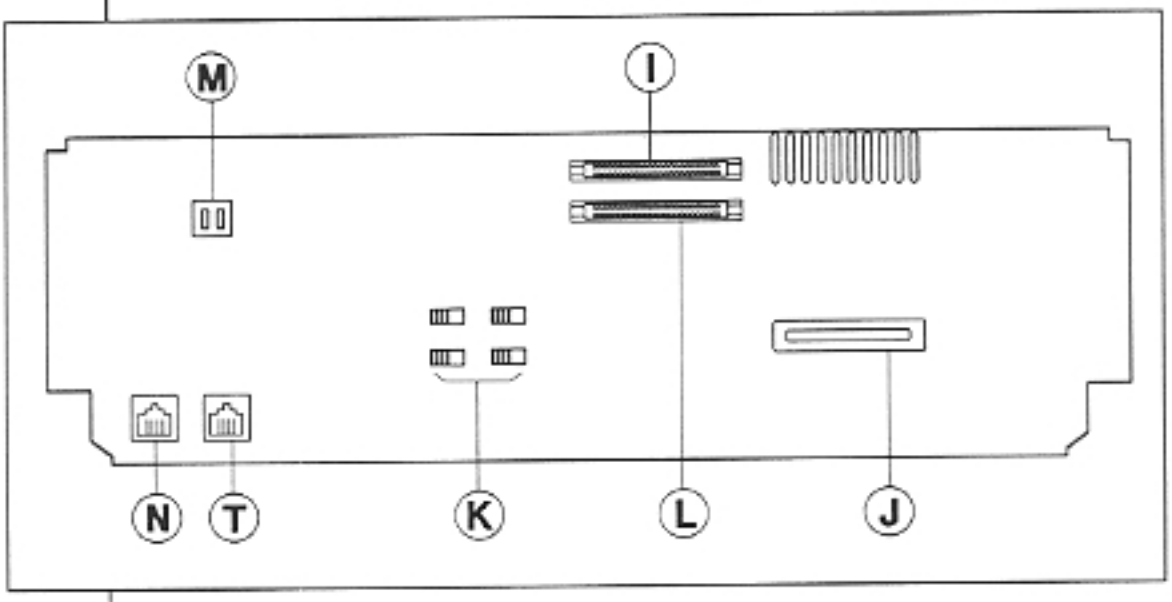
AUXILIARY LINE UNIT REAR PANEL

The rear panel of an auxiliary line unit connects to 1) the telephone lines and 2) the main line unit and other auxiliary line units. The following lists each element of an auxiliary unit, which is illustrated in Figure 2.10.

I	Auxiliary Line Unit Data Connection	The connection point to the flat cable from the auxiliary unit to the next auxiliary unit.
J	Telephone Interface	The connection point to the 12 line RJ71C interface.
K	Ground Start/Loop Start Switches	Used to set the CMS-SR to the appropriate system setting. This may be different for each line card. S1 for Line Card 1-3, S2 for Line Card 4-6, S3 for Line Card 7-9, S4 for Line Card 10-12.
L	Data Expansion Connector	The connection point for the flat cable from the main or previous auxiliary unit.

M	Device Select Switch (Auxiliary Units Only)	Establishes the level number of the auxiliary unit(s). Refer to Chapter 7.
N	Auxiliary Line Unit Power Connection	The connection point for the auxiliary power connection cable to the next auxiliary unit.
T	Auxiliary Line Unit Power Connection	The connection point for the auxiliary power connection from the main or previous auxiliary unit.

FIGURE 2.10 - AUXILIARY LINE UNIT REAR CONNECTIONS



CHAPTER 3

OPERATIONAL FEATURES

This chapter explains the operation of the CMS-SR after it has been connected to the telephone system, and the CMS-SR's telephone system options have been set (refer to Chapter 4).

GENERAL

CMS-SR will present calls to a console, station hunt group, call pickup group, or individual line buttons on multi-key phones. The CMS-SR will ring through the longest waiting call or calls. If a message is assigned to the group containing this line, then the CMS-SR will also answer the line and play the message.

If calls are sent to a call pickup group, the longest waiting call will be answered by dialing the call pickup code (such as *7, for example).

Answering a call releases it from CMS-SR control. Calls may not be placed back under CMS-SR control once they have been taken by an agent.

POWER (ON/OFF)

The CMS-SR is switched on by the main AC power switch located on the back panel of the main unit. Unless the unit is to be serviced or repaired, the main power switch is to remain on; the mode of operation is selected through the keys on the console.

Once the CMS-SR is powered, it will automatically set itself to ANSWER HOLD, as indicated by the lamp in this key. You may, at any time, select the call handling mode of your choice: ANSWER HOLD, ANSWER DROP, or ANSWER OFF.

ANSWER OFF

In the ANSWER OFF mode, calls ring directly through to the phone system and are not sequenced by the CMS-SR. Real-Time System Status messages are not presented under the ANSWER OFF mode.

The CMS-SR will continue to collect and report all telephone traffic information while in the ANSWER OFF mode, and print automatic reports.

To remove calls from CMS-SR control, select ANSWER OFF, the lamp in this key will light. The CMS-SR will continue to present any calls answered before the transition. After all calls answered by the CMS-SR have been handled, the unit will automatically switch to the ANSWER OFF mode.

The CMS-SR may be programmed to set itself to Answer Off automatically. Refer to the Answer Off Time section of Chapter 4.

ANSWER DROP

When the ANSWER DROP mode is enabled calls are not queued; the CMS-SR plays the ANSWER DROP recording and then disconnects. The System Status is presented on the display.

To place the CMS-SR in this mode press the ANSWER DROP key on the control panel, the lamp in this key will light.

When the CMS-SR is switched from ANSWER HOLD to ANSWER DROP, it will continue to present any calls answered before the transition. After all calls answered by the CMS-SR have been handled, the unit will automatically switch to the ANSWER DROP mode, and present the ANSWER DROP message to callers.

The CMS-SR may be programmed to set itself to Answer Drop automatically. Refer to the Answer Drop Time section of Chapter 4.

ANSWER HOLD

This mode enables the CMS-SR call handling options.To place the CMS-SR in this mode press the ANSWER HOLD key on the control panel, the lamp in this key will light. The real-time System Status is presented on the display.

The CMS-SR may be programmed to set itself to Answer Hold automatically. Refer to the Answer Hold Time section of Chapter 4.

REAL-TIME SYSTEM STATUS DISPLAY

During ANSWER HOLD and ANSWER DROP operation, the display presents 1) the number of lines on CMS-SR Hold; 2) the time, in minutes and seconds, that the highest-priority call has been waiting; and 3) the line number of the highest-priority call.

RING DELAY

The CMS-SR delays answering incoming calls until they have rung for the user-programmed number of rings. You may set the delay to any number of rings. This gives your agents a chance to answer the calls before the CMS-SR does.

The CMS-SR delays 1 ring unless otherwise programmed.

The first incoming call starts a Ring Delay cycle. All calls which come in during this cycle will be answered at the same time, although some may not have rung for the entire cycle. Even when several calls are answered simultaneously, the CMS-SR will present only the longest ringing call.

DELAY FIRST CALL ONLY

When you program the CMS-SR to Delay more than 1 ring, you must decide if you want it to 1) delay all incoming calls, or 2) to delay only the first incoming call. Sometimes, it is

economically desirable to let the call ring slightly longer before the CMS-SR answers (with WATS lines, for example).

The CMS-SR is set to Delay First Call Only unless programmed otherwise. The setting of the Delay First Call Only option has no effect when the CMS-SR is set to Delay 1 Ring. In Delay First Call Only, the first call which comes into the system is the only one delayed; all subsequent calls are answered by the CMS-SR after a 1 ring delay. When all calls on CMS-SR Hold have been taken, the Delay feature resets, and the answering of the next call received will start a new Ring Delay cycle.

When Delay First Call only is disabled, the CMS-SR delays answering all calls until the Ring Delay has occurred for each call.

Refer to Chapter 4 for programming instructions.

CALL ANSWERING

All calls answered by the CMS-SR hear the Announcement Message from the beginning.

When 1) the Ring Delay cycle has been completed, and 2) an audio port is available, the CMS-SR will answer all ringing calls simultaneously. These calls will hear the Answer Hold First message followed by the (optional) on-hold music. If no music source is connected, callers will hear silence after the first message is completed. Depending on how you've programmed the audio feature, callers may also hear an Answer Hold Second, and then final message. The CMS-SR can be set to repeat the Answer Hold Repeat message.

The standard CMS-SR, with one audio channel, does not answer any calls while any message is in progress. For example, if the Ring Delay cycle ends while a message is being played, all delayed calls will ring until the message ends. These calls are then answered all at once. Each ringing call is prioritized according to its arrival.

The CMS-SR with the optional Multiple Announce feature may have from 3 to 7 audio channels. This unit will answer calls and play the message(s) in a manner that will minimize long waits for messages.

PRIORITY CALL INDICATION

The CMS-SR recognizes the order of incoming call arrival on all lines. The call which has been waiting the longest is indicated at the console or agent station as a ringing line. This is the call to be answered next. As soon as the highest-priority call is taken, the next call in order rings through. This action continues until all waiting calls have been taken.

It is possible for more than one ring indication to appear at the same time, if more than one group, or a Priority Call Time Out time has been established or if the Dynamically Variable Call Throughput (DVCT) feature is enabled. In this case, each ringing call is a valid highest-priority call. Refer to the Priority Call Timeout section in Chapter 4 and to the DVCT sections in this chapter and in Chapter 4.

CALL SCREENING

The CMS-SR comes from the assembly plant with the Screen Calls First and Screen Calls Second features disabled. The Screen Calls features are enabled through Overlay B. Refer to chapter 4.

When neither Screen Calls option is in effect (NO Call Screening), ring indications appear immediately, and continue as the CMS-SR takes incoming calls and plays the message(s). In this mode agents may take calls at any time, including during the announcement message(s).

When the Screen Calls First feature is enabled, callers hear the entire first message before being connected with an agent. In this mode, the CMS-SR will not ring calls through until they have heard the Answer Hold First message once completely. The Screen Calls Second feature will play both the Answer Hold First and Answer Hold Second messages to callers before ringing them through.

The delay between when the CMS-SR answers the calls and the appearance of priority indications for those calls is the length of the message(s).

If you plan to use the Screen Calls feature routinely, we recommend that dedicated inbound only lines/trunks be established.

PRIORITY INTERCEPT LINES

You may wish to give special attention to certain lines; to ensure that these callers are handled quite promptly, Emergency Service or WATS lines, for example. The lines you designate as Priority Intercept Lines may be answered ahead of other calls.

When the Priority Intercept feature is utilized, you will also establish the Priority Intercept Time. This time applies to non-Priority calls. This ensures that, while Priority calls are given precedence, a non-Priority call will not be neglected. When a Priority line rings, any of the non-Priority lines waiting longer than the Priority Intercept Time will be presented first. Refer to the Priority Intercept Time section of Chapter 4.

DYNAMICALLY VARIABLE CALL THROUGHPUT (DVCT)

When this feature is utilized, more than one priority call may be presented at once. DVCT increases call throughput based on the number of available agents. Refer to Chapter 4.

LINE LAMPS

Each CO/PBX line connected to the CMS-SR is represented by a Line Lamp. There are two sets of these lamps; one on the front panel of the main unit, and another on the control unit.

The Line Lamp is lighted when the line is in the Lines In condition; its status is represented by the flash-rate. A fast flashing Line Lamp indicates the highest-priority call; a slower flash, a non-priority call. When the line is no longer being handled by the CMS-SR, it reverts to a steady on. Line Lamps which are out indicate lines in a Lines Out condition.

CONFIRM CLOCK/CALENDAR

The CMS-SR indicates that a power failure has occurred by flashing this key; the time and date must be confirmed or corrected. If the data is correct, simply press the "Confirm Clock/Calendar" key, followed by ENTER: the time and date will be displayed. If the time or date is not correct, enter the new data through Overlay A.

The Confirm Clock/Calendar key may be selected at any time to view the time and date.

AGENT LOG-ON PROCEDURES

When agents log on to the system, they must follow the steps outlined in this section. NOTE: There is a time limit of 15 seconds to complete the log-on procedure.

The agents will not need to log on to the system if the CMS-SR has been set to Fixed Agent Supply (refer to Chapter 4). The only exception would be to make minor corrections in their schedules (for example, arriving late or returning early from lunch). The procedure for logging on is as follows:

• Select the appropriate Agent Log On key (Agent Log-In, or Agent Log-Out)	The lamp in the key lights.
• Enter your 3-digit agent security code.	The display cues for each digit with a blinking cursor.
• Select ENTER.	The display will present "PASS" if the code was entered correctly or "FAIL" if the agent code is not valid.

» NOTE: The CMS-SR is equipped with a tamper-prevention device. When 3 faulty agent-security codes are entered in a short time period, the optional printer will record this occurrence with an Exception Report. An example of such a report follows. This enables the supervisor to re-educate any agents having difficulty in logging on, as well as intercept any attempted tampering.

```
**********************************************************************
                        EXCEPTION REPORT
6:06 AM MON JAN 22 INVALID AGENT SECURITY CODES HAVE BEEN ENTERED.
THESE NUMBERS ARE: 123, 456, 123
**********************************************************************
                        END OF REPORT
```

PLAYBACK

This section discusses the use of the Playback key on the Main Overlay. To playback using the Playback key on Overlay D, refer to the Playback section of Chapter 4.

To verify the quality and/or content of an announcement message from the main overlay, follow the steps outlined as follows.

• Select GROUP	The lamp in the key selected will light.
• Select CALL HANDLING MODE	Select Answer Hold or Answer Drop. The lamp in the key selected will light.
• Select PLAYBACK	The CMS-SR will play the message(s) for this group, and this call handling mode through once. The CMS-SR will play the Answer Hold messages in order (First, Second, and Repeat). If "PAUSE" appears on the display, this indicates that all audio channels are presently engaged. As soon as a channel is free, "PAUSE" will disappear, and playback will begin.

PRINT DATA

These keys immediately generate a current management report. The current report encompasses all data accumulated since the last Zero Data command. More than one report may be requested at a time. In this case, all reports will be printed, one after the other.

To generate a current report, select 1) the Group number, then 2) the Report(s) you wish. The key of the selected Group and Report(s) will light. The report(s) will be printed immediately. "CALC" appears on the display while the report is being formulated, and calculations are being performed.

PREVIOUS PERIOD DATA

The Previous Period is the automatic report period immediately preceding the current one.

For a copy of a report for the previous period, select 1) the Group number, 2) the Previous Period key (the lamp in this key lights), and 3) the Report key.

To view the management information from the Previous Period on the display, select 1) the Group number, 2) the Previous Period key (the lamp in this key lights), and 3) the desired Display Data key. Any Display Data key(s) selected presents its information for the previous period. To return to the current data, select Previous Period again.

ACCESSING REPORTS REMOTELY

The CMS-SR has an optional 1200 Baud internal modem. This enables you to access reports for any or all groups remotely. An external 1200 Baud auto-answer modem may also be used.

To use this feature with the optional internal modem, an additional designated telephone line must be connected to the RJ11 jack on the main unit. An external modem may be connected instead of a printer to the printer port.

Appendix B provides complete instructions on Remote Reporting.

SETTING THE SYSTEM NUMBER

In applications where several CMS-SRs are utilized, each system may be given a separate number, from 1 to 9999. Once this system number is established, it will appear on all printed reports. Refer to Appendix B.

DISPLAY DATA

When one of these keys is selected, the data appears on the control console display. The list in this section describes the data that each key presents.

To access the information, select 1) the Group number, 2) the previous key if desired, followed by 3) the desired Display Data key.

* – This information is also available on a **by line** basis for those items marked with *; after selecting the Group and Display Data keys, enter the line number, using the numeric keypad.

• OUTGOING CALLS*	The total number of outgoing calls which have been made.
• TOTAL OUTGOING TRANS TIME (H:M)*	The total transaction time, in hours and minutes, all agents have been engaged in outgoing calls.
• AVG OUTGOING TRANS TIME (M:S)*	The average transaction time, in minutes and seconds, agents spent on each outgoing call.
• INCOMING CALLS*	The total number of incoming calls.
• TOTAL INCOMING TRANS TIME (H:M)*	The total transaction time, in hours and minutes, that agents have spent handling all incoming calls.
• AVG INCOMING TRANS TIME (M:S)*	The average transaction time, in minutes and seconds, agents spent handling each incoming call.
• SEQUENCED CALLS*	The total number of calls which were answered by the CMS-SR.
• AVG SEQ HOLD TIME (M:S)*	The average time, in minutes and seconds, that calls spent on CMS-SR Hold.
• ABANDONED CALLS*	The total number of calls which disconnected from CMS-SR Hold before being taken by an agent.
• AVG TIME BEFORE ABANDONED (M:S)*	The average time, in minutes and seconds, that a caller waited on CMS-SR Hold before disconnecting.
• TRUNKS BUSY LONGEST (M:S)	The longest consecutive time, in minutes and seconds, that all Trunk Busy lines were busy simultaneously.
• TRUNKS BUSY TOTAL (H:M)	The total time, in hours and minutes, that all Trunk Busy lines were simultaneously busy.

- % TRUNKS BUSY — The percentage of time all Trunk Busy lines were simultaneously busy during the reporting period.
- CALLS OVER ALARM* — The total number of calls which went over the alarm time before being handled or abandoned.
- % CALLS OVER ALARM — The percentage of calls, based on all calls handled by the CMS-SR, which exceeded the alarm time before being handled or abandoned.
- % CALLS ABANDONED — The percentage of calls, based on all calls handled by the CMS-SR, which abandoned before being taken by an agent.

FAULT DETECTION MESSAGES

The CMS-SR constantly monitors all aspects of its operation and warns when a condition requiring correction occurs. There are four Fault Detection Messages used by the CMS-SR to indicate that a fault has been detected:

- L-OFF LINES OFF: This message indicates that all of the lines connected to the selected group of the CMS-SR are off. The CMS-SR does not answer calls in this condition; any incoming calls will ring directly into the telephone system without CMS-SR intervention.

  CORRECTION: Use Lines In to add lines into the group.

- P-OFF PRINTER OFF: This message indicates that the CMS-SR did not detect a printer when it attempted to print a Report.

  CORRECTION: Check for proper connection of the printer to the CMS-SR; make sure that the printer is on and set correctly.

- A-OFF NO FIRST ANNOUNCEMENT MESSAGE: The CMS-SR will not answer calls unless a first announcement message has been recorded.

  CORRECTION: Record an Announcement Message.

- ----- OVERFLOW CONDITION (Display Data): The selected information has overflowed the data buffers.

  CORRECTION: Reset the data to Zero using the Zero Data key on Overlay B.

CHAPTER 4

PROGRAMMING

GENERAL

We recommend you first program the Security Overlay, then print a Group Options Report. Use this report as a worksheet to determine how you will program the CMS-SR. Now program Overlay A, then Overlay B, making sure to zero the data for each group. Next, program Overlay C, Overlay D, and finally, Overlay E. By following the directions which follow, you will be sure to cover all aspects of your system's operation, and enjoy optimum performance from the CMS-SR, and your phone system.

FACTORY SETTINGS

All options will be set at the original factory settings when the CMS-SR is switched on after it has been installed. The Factory Settings are listed in Appendix A.

NOT SET INDICATION

When an option is not set, the word "OFF" is presented on the display, for example, if no Priority Intercept Time is set.

PRINT GROUP OPTIONS REPORT

This key immediately generates an Option Report (described in Chapter 5).

Before beginning any programming, we recommend that you generate one of these reports. Using this you can check the CMS-SR settings, and plan any changes to the program.

It is also wise to print an Option Report after programming the system, to verify the changes you have made to the system.

PROGRAMMING OVERLAYS

There are six programming overlays, in addition to the control console main panel. These are illustrated in Chapter 2. When inserting an overlay, place it over the control console, sliding the left side in first.

When an overlay is placed over the main panel, the display goes blank, and the Group keys flash, prompting you to select a group.

PROGRAMMING PROCEDURES

Programming the CMS-SR consists of entering numbers, times, and YES/NO responses. These instruct the CMS-SR exactly how you wish your calls and management reports to be handled.

Unless otherwise described, all CMS-SR programming **except for times** is performed as follows:

- Select GROUP — The lamp in the key selected lights steady.
- Select any program key — The present setting is displayed. If you do nothing else, the CMS-SR returns to System Status in 60 seconds. No program changes will be made.
- Enter new data — Using the numeric key pad, enter new data. This is displayed as it is entered, scrolling from right to left.

» **NOTE:** Up until this point you may **return to the existing setting** by selecting CLEAR.

- Select ENTER — The new program data is in effect.

Unless otherwise described, all CMS-SR programming **of times** is performed as follows:

- Select GROUP — The lamp in the key selected lights steady.
- Select option — The current setting is displayed.
- Enter time — Using the numeric keypad, enter the time in the 4-digit format (Hours:Minutes, or Minutes: Seconds). The colon remains fixed on the display, where the data is presented as it is entered.

» **NOTE:** Up until this point you may **return to the existing setting** by selecting CLEAR.

- Select ENTER — The new program data is in effect.

PROGRAMMING THE SECURITY OVERLAY

Before any other options are set, you must establish the telephone system and peripheral parameters for the CMS-SR. This is set using the red Security Overlay, and is normally done by a service technician when the system is installed. Refer to Figure 2.7.

TONE DETECTION

These keys establish the type of tone the CMS-SR detects to determine that a disconnect has occurred. You may choose Dialtone, Reorder, Busy, or any combination of the three. These tones must be in the 340 to 640 Hz range.

You may also set the Tone Detect Off, which instructs the CMS-SR to recognize only CPC pulses as disconnects. Use this option when you are assured of a reliable CPC pulse from the Central Office (CO).

The lamp in the key(s) selected will light, and remain on throughout system programming.

To determine the correct setting, perform an incoming call. Call a line connected to the CMS-SR. Let an agent take the call, then hang up. Listen on the line the call came in on for Dialtone, Busy, or Reorder. This setting must be as accurate as possible. Set the unit to detect all tones **only** if a variety of signals may be produced on the lines in different instances.

Dialtone may be recognized as a continuous, steady tone. The Busy signal is a tone interrupted once per second for one-half second (one-half second tone, one-half second silence). The Reorder signal is interrupted twice per second for one-quarter second (one-quarter second tone, one-quarter second silence).

If your system has station-to-station call forwarding, and/or call pickup, test several lines, and all trunks, by calling station to station, forwarding calls, and using the call pickup feature. Different tones may be present on some of these lines, or when utilizing some of these features. The programming procedure is as follows:

- Select GROUP — The lamp in the Group key selected lights steady. The present setting is indicated by a steady lamp in the Tone Detection key(s).
- Select TONE DETECTION — Choice of Dialtone, Reorder, Busy, or all three. These are alternate action keys; one press is on, another is off.

When the key in the lamp is lighted, that Tone Detect mode is in effect.

CPC TIME

Many COs transmit an electrical interruption whenever a caller disconnects from a line, this is the CPC pulse. This option should ordinarily be left at the Factory Setting of 5 mS.

This setting should not be altered unless calls are dropped from the CMS-SR while they are still in progress. Then, the CPC Time should be increased to 38 mS. If the problem persists, the CPC Time should be increased again in 33 mS increments. The unit should be set to the shortest CPC Time possible.

The CPC Time range is from 5 mS to 599 mS, in 33 mS increments. If the CPC Time is disabled (set to NO), the Tone Detect setting will still be valid. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select CPC TIME	The present setting is displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter CPC TIME	Using the numeric key pad, enter the Time. This is presented on the display as it is entered, scrolling from right to left. Up until this point you may **return to the existing setting** by selecting CLEAR.
• Select ENTER	The new program data is in effect.

TONE SAMPLE TIME

The Sample Time establishes the length of time the CMS-SR will take to analyze the type of tone on the lines.

The Tone Sample Time can be from 5 to 30 seconds. The Factory Setting of 6 seconds is recommended. A longer time decreases the possibility of certain voice pitches or music tones triggering the Tone Detection circuits. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select TONE SAMPLE TIME	The present setting will be displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter time	Using the numeric key pad, enter the Tone Sample Time. This is displayed as it is entered, scrolling from right to left. Up until this point you may **return to the existing setting** by selecting CLEAR.
• Select ENTER	If your choice is not within the Tone Sample Time parameters, the CMS-SR automatically rounds the choice to the closest setting. The new program data is in effect.

TONE IGNORE TIME

This is used to suppress the detection of tones by the CMS-SR. The CMS-SR will ignore any tones occurring on calls it has answered until the time set has elapsed.

The Tone Ignore Time Factory Setting is 0. The CMS-SR begins listening for tones as soon as it answers a call. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select TONE IGNORE TIME	The present setting is displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter TIME	Using the numeric key pad, enter the Tone Ignore Time. This is displayed as it is entered, scrolling from right to left. Up until this point you may return to the existing setting by selecting CLEAR.
• Select ENTER	The new program data is in effect.

RING LENGTH

The Ring Length is set to one-half the duration of an individual ring (either a single ring, or one of the rings composing a multiple ring).

The CMS-SR Ring Length Factory Setting is 1000 mS. The setting choices are from 100 to 8,000 mS, in 100 mS increments. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select RING LENGTH	The present setting is displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter RING LENGTH	Using the numeric key pad, enter the Ring Length. This is displayed as it is entered, scrolling from right to left. Up until this point you may return to the existing setting by selecting CLEAR.
• Select ENTER	If your the choice is not within the Ring Length parameters, the CMS-SR will automatically round the choice to the closest setting. The new program data is in effect.

RING TIMEOUT

The duration of one ring cycle (the Timeout period) is measured from the end of one ring (or group of rings) to the beginning of the next. The Ring Timeout is set to the duration of one Ring Timeout period plus one second.

The Ring Timeout Factory Setting is 5000 mS. The setting choices are from 100 to 8,000 mS, in 100 mS increments. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select RING TIMEOUT	The present setting is displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter RING TIMEOUT	Using the numeric key pad, enter the Ring Timeout. This is displayed as it is entered, scrolling from right to left. Up until this point you may return to the existing setting by selecting CLEAR.
• Select ENTER	If your choice is not within the Ring Timeout parameters, the CMS-SR will automatically round the choice to the closest setting. The new program data is in effect.

PRIORITY CALL TIMEOUT

This setting is a safety feature. If a PABX trunk malfunctions, the CMS-SR will detect and disable the line, enabling normal operation of the CMS-SR call answering and sequencing functions on all other lines.

The Factory Setting is OFF (not set). The CMS-SR begins checking line/trunk status as soon as a call comes under its control. The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select PRIORITY CALL TIMEOUT	The present setting is displayed. If you do nothing else, the display returns to System Status in 60 seconds. No program changes will be made.
• Enter TIME	Using the numeric key pad, enter the Priority Call Timeout in the 4-digit format (Minutes:Seconds). The colon remains fixed, and the data is displayed as it is entered. Up until this point you may return to the existing setting by selecting CLEAR.
• Select ENTER	The new program data is in effect.

How the Priority Call Timeout Function Operates: If, for example, Line 3 is the highest priority call for longer than the Priority Call Timeout, the CMS-SR will ring Line 4, the second longest-waiting call through. If Line 4 is taken instead of Line 3, the CMS-SR will ring the next longest-waiting call through.

The CMS-SR will repeat this process until Line 3 is answered or disconnects. If Line 3 is answered, the CMS-SR will assume an abnormally long waiting time was the cause. If Line 3 disconnects without being answered, the CMS-SR will determine that the line is faulty.

When the CMS-SR determines that a line is faulty, using the above determination, it immediately sets it to LINES OUT, and, if a printer is connected, will print the following exception report.

```
**********************************************************************
                EXCEPTION REPORT 6:16 PM MON JAN 5 LINE 3
EXCEEDED THE PRIORITY TIMEOUT. LINE 4 WAS THEN GIVEN PRIORITY ALONG
WITH LINE 3. AFTER 513 SECONDS, THE CALLER ON LINE 3 ABANDONED. IT IS
LIKELY THAN THE PABX TRUNK CARD ASSOCIATED WITH LINE 3 HAS A DEFECTIVE
RING DETECTOR. THIS CONDITION MAY BE TESTED USING THE FORCED RING
FEATURE OF THE SELF TEST. LINE 3 HAS NOW BEEN PLACED IN LINES OUT
CONDITION.
**********************************************************************
                        END OF REPORT
```

If this should occur, contact an AEC service technician. Using the Self Test, s/he will determine whether you must contact your telephone or interconnect company. When a line has been set out because of a Priority Call Timeout, the line must be re-entered into the system manually, using the LINES IN programming.

PRINTER TYPE

The CMS-SR recognizes three types of printers. The type is programmed through the numeric keypad. The following list shows the printer type to select for various printers.

- Type 1 — PANASONIC KX-P1191, STAR NL-10, STAR SG-10, EPSON 86e, CITIZEN MSP-10, CITIZEN MSP-15, CITIZEN MSP-120D, CITIZEN MSP-180D, EPSON graphics printer compatible
- Type 2 — DEC LA50
- Type 3 — OKIDATA MICROLINE 182

The Factory Setting is Printer Type 1.

SELF TESTS

The CMS-SR has four separate self tests you may order from the Security Overlay. These tests are described in the pages that follow. The Self Tests do not interfere with normal CMS-SR/telephone operation.

SELF TEST REPORT

This report presents the results of several tests of the CMS-SR internal operating software as well as testing the telephone lines and interface to which it is connected. An example of this test report follows this section.

To begin the Self Test, select the Self Test key on the Security Overlay.

If, during the Self Test printing, an automatic report comes due, or display data is requested, the CMS-SR suspends the Self Test. It then prints the scheduled report or displays the requested data. The Self Test will then automatically resume.

» **CAUTION:** If AC power is lost during the first 5 minutes of the Self Test, the option settings may be lost. This data is stored in the RAM, which is tested during this period.

For Self Test checksums, contact the Automation Electronics Technical Services Department.

```
                    AEC CALL MANAGEMENT SYSTEM-SR
TEST REPORT: SYSTEM                                          SYSTEM: 2504
PRINT TIME: 10:25 AM FRI OCT 30
*********************************************************************************
COMMUNICATIONS TEST
  LINE UNIT #1: PASSED
  LINE UNIT #2: PASSED
  LINE UNIT #3: DOES NOT EXIST
  LINE UNIT #4: DOES NOT EXIST
  LINE UNIT #5: DOES NOT EXIST
OUT OF 362595918 SYSTEM COMMUNICATIONS, 2 REQUIRED SELF-CORRECTION.
CHECKSUMS
  CONSOLE UNIT: PASSED
  LINE UNIT #1: PASSED
  LINE UNIT #2: PASSED
SOFTWARE VERSION
  CONSOLE UNIT: 16.0
  LINE UNIT #1: 16.0
  LINE UNIT #2: 16.0
INITIATING RAM TEST
BATTERY TEST
  CONSOLE UNIT: PASSED
  LINE UNIT #1: PASSED
  LINE UNIT #2: PASSED
LINE CIRCUITS INSTALLED
  LINE UNIT #1:  1  2  3  4  5  6  7  8  9 10 11 12
  LINE UNIT #2: 13 14 15 16 17 18 19 20 21 22 23 24
SELECT LINE FOR STATUS PRINTOUT (PRESS CLEAR ENTRY TO EXIT)
  LINE  1  2  3  6  7  8  9 10 11  CAME OFFHOOK
  LINE  2 WENT IDLE
10:26 AM FRI OCT 30
  LINE  6 WENT IDLE
  LINE  2 CAME OFFHOOK
  LINE  4 STARTED RINGING
10:27 AM FRI OCT 30
  LINE  4 CAME OFFHOOK
  LINE  5 STARTED RINGING
  LINE  5 CAME OFFHOOK
  LINE  6 CAME OFFHOOK
10:28 AM FRI OCT 30
  LINE  2 WENT IDLE
  LINE  2 CAME OFFHOOK
  LINE 10 WENT IDLE
  LINE  2 WENT IDLE
10:29 AM FRI OCT 30
  LINE  2 CAME OFFHOOK
  LINE  6 WENT IDLE
  LINE  7 WENT IDLE
  LINE  6 STARTED RINGING
RAM TEST PASSED FOR LINE UNIT:  1
RAM TEST PASSED FOR CONSOLE.
RAM TEST PASSED FOR LINE UNIT:  2
  LINE  6 CAME OFFHOOK
  LINE  7 STARTED RINGING
  LINE  7 WENT IDLE
  LINE  7 CAME OFFHOOK
```

```
10:30 AM FRI OCT 30
  LINE  5 WENT IDLE
  LINE 10 STARTED RINGING
  LINE 10 CAME OFFHOOK
  LINE  7 WENT IDLE
10:31 AM FRI OCT 30
  LINE  7 CAME OFFHOOK
  LINE  7 WENT IDLE
**********
LINE STATUS DETAIL FOR LINE  10 GROUP  3  ON 10:32 AM FRI OCT 30
STATE: DIRECTLY ANSWERED FOR  0:23  (M:S)
STATUS: ENABLED, VALID OFFHOOK
**********
  LINE  9 WENT IDLE
  LINE  6 WENT IDLE
  LINE  5 STARTED RINGING
  LINE  5 CAME OFFHOOK
**********
LINE STATUS DETAIL FOR LINE   5 GROUP   1  ON 10:32 AM FRI OCT 30
STATE: DIRECTLY ANSWERED FOR  0:08  (M:S)
STATUS: ENABLED, VALID OFFHOOK
**********
10:33 AM FRI OCT 30
  LINE  6 CAME OFFHOOK
  LINE  6 WENT IDLE
10:34 AM FRI OCT 30
  LINE  6 STARTED RINGING
  LINE  6 CAME OFFHOOK
  LINE  9 STARTED RINGING
  LINE  9 CAME OFFHOOK
SELECT LINE FOR FORCED RING (PRESS CLEAR ENTRY TO EXIT)
TEST WAS CANCELLED
**********
                    END OF REPORT
```

DISPLAY TEST

When this key is selected, followed by ENTER, line lamps 1 - 60, all segments of the control unit display, and 16 control key lamps should blink for 10 seconds, or until another key is selected, or the Security overlay is removed.

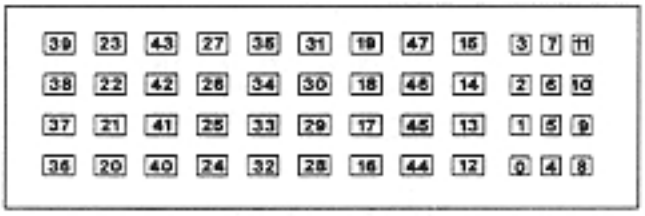
This tests that all display segments are functioning properly.

KEYPAD TEST

This tests the keypad of the control unit. When this test is selected, followed by ENTER, the keys become non-functioning in terms of normal use. Selecting each key produces a unique code on the display. The illustration which follows lists the codes in the same matrix fashion as the keys on the keypad.

The CMS-SR will exit this test mode if 1) no key is selected for 15 seconds, or 2) the Keypad Test key is selected 3 times in a row.

FIGURE 4.1 KEYPAD TEST



PRINTER TEST

This key causes the CMS-SR to immediately test and report the response of the printer to its commands. If some of the characters and/or graphics are not clear, check that the Printer Type setting is correct. Also check the printer switch settings, as recommended in the printer owner's manual.

An example of the Printer Test Report follows:

AEC CALL MANAGEMENT SYSTEM-SR
TEST REPORT: PRINTER
PRINT TIME: 10:23 AM FRI OCT 30 SYSTEM: 2604
****
PRINTER TYPE: 1
SAME LINE TEST:
THESE WORDS SHOULD BE CORRECTLY SPACED ON THE SAME LINE.
PITCH TEST:
THE LENGTH OF THIS 10 CPI LINE

REACHES THE END OF THIS 12 CPI LINE.
UP/DOWN TEST: POINTS UP, NOT DOWN

ONE INCH SQUARE BOX:
PATTERN TEST:
OPEN SHADED SOLID VERTICAL BARS
FORM FEED TEST: (SEE NEXT PAGE).

(The printer form feeds at this point.)

THIS IS THE FIRST LINE OF THE SECOND PAGE.
****
END OF REPORT

RESTORE FACTORY OPTIONS

This key restores the CMS-SR to the original Factory Option settings. Telephone management information totals are left intact. The Factory Option Settings are listed in Appendix A.

- Select RESTORE FACTORY OPTIONS — The lamp in this key lights.
- Select YES
- Select ENTER — The original Factory Settings are now in effect.

RESET COMMUNICATION COUNT

The communication count is reported in the Self Test. This number is used by the service technician to detect problems in the communication links. The Reset Communication Count key zeroes this count. This key should only be used by a qualified service technician.

This completes the description of the Security Overlay programming procedures.

PROGRAMMING OVERLAY A - CLOCK, CALENDAR, AUTO-ANSWER, and REPORTS

Overlay A is used to set the CMS-SR internal clock and calendar, as well as the call handling times, and report schedules.

All report schedules must be set up, whether or not you intend for these reports to be printed. The Interval, Daily, and History Reports are interdependent. The Historical Report depends upon the formulation of Daily Reports (whether they are printed or not), and the Daily Report depends upon the formulation of Interval Reports (whether they are printed or not). So all report scheduling must be set up to get any reporting at all.

NOT SET INDICATION

When an option is not set, the word "OFF" is presented on the display. For example, if no Priority Intercept Time is set.

PRINT GROUP OPTIONS

This key immediately generates an Option Report, which details how all CMS-SR options have been set. The Option Report is described in detail in Chapter 5.

Before beginning any programming, we recommend that you generate one of these reports. Using this report as a worksheet, you can check the option settings, and plan any changes to the program.

You should generate an Option Report after programming, to verify system changes.

CLOCK PROGRAMMING

The Clock is programmed when the CMS-SR is installed and will not require re-setting except in the event of a lengthy AC power failure.

The CMS-SR indicates that a power failure has occurred by flashing the "Clock/Calendar" key on the main panel. Then the time must be confirmed or corrected. If the time is correct, simply press the "Clock/Calendar" key on the main panel. If the time is not correct, enter a new clock time as described below.

• Select CLOCK	The display indicates present time set, and the AM or PM key lights.
• Enter TIME	Use the numeric key pad. The numbers appear on the display as they are entered.
	Change the AM/PM setting as necessary.
• Select ENTER	Programming is complete.

CALENDAR PROGRAMMING

The calendar is programmed when the CMS-SR is installed and will not require resetting except as follows: 1) in the event of an AC power failure lasting from one day to the next, and at the end of February during Leap Years. The calendar will advance automatically from February 28 to March 1, and must be manually returned to February 29. The calendar then advances from February 29 to March 1 at midnight.

After setting the time and calendar for the first time when the CMS-SR is installed, use the Zero Data key on Overlay B to establish a data collection starting time.

The programming procedure is as follows:

• Select CALENDAR	The current setting is displayed. The lamp in the day key lights.
• Select DAY OF THE WEEK	Use the schedule keys (Mon., Tues., etc.). The selected key lights.
• Enter MONTH number	Enter the number of the month, using 2 digits (eg., January is 01). The numbers are presented on the display as they are entered.
• Select ENTER	The month number remains on the display. A dash appears.
• Enter DATE (number)	Enter the date, using 2 digits. The display presents the numbers as they are entered.
• Select ENTER	For example, Monday, February 9th is entered "Monday" (from Schedule keys), "02" "ENTER" "09" "ENTER".
• Select ENTER	The display blinks the calendar setting in confirmation.
	Setting is complete.

ANSWER OFF TIME

This is the time at which the CMS-SR will cease answering the telephones, for each group, on all selected days. Calls which come in after this time will ring directly through to the console. The CMS-SR continues to monitor and tally telephone activity while in the ANSWER OFF mode.

The programming procedure in setting a daily Answer Off Time is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select ANSWER OFF TIME	The present setting is displayed. The AM or PM key will light. If no setting has yet been made, the AM and PM keys flash.
• Enter TIME	Using the numeric keypad, enter the time at which you wish the CMS-SR to stop answering calls. The data is entered in the 4-digit format. The numbers are presented on the display as they are entered. For example, 6:00 pm is entered "06:00", and the PM key lighted. Change the AM or PM key as necessary.
• Select SCHEDULE DAYS (Mon, Tues, etc.)	Select the days of the week on which the programmed Answer Off Time will operate.
• Select ENTER	The display blinks the time, and the schedule days flash in confirmation. Programming is now complete.

DESELECTING THE ANSWER OFF TIME

The programming procedure in turning off the daily Answer Off schedule is as follows:

• Select GROUP	The lamp in the key lights steady.
• Select ANSWER OFF TIME	The present setting is displayed. The AM or PM key lights.
• Select NO	
• Select ENTER	The Answer Off Time is now disabled.

ANSWER HOLD TIME

This is the time at which the CMS-SR will begin handling calls in the Answer Hold mode, for each all group, on all selected days. It will answer calls, play the announcement message(s), and present the calls to the agents in the order received.

The programming procedure in setting the Answer Hold Time is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select ANSWER HOLD TIME	The present setting is displayed. The AM or PM key lights. If no setting has yet been made, the AM and PM keys flash.
• Enter TIME	The data is entered in the 4-digit format. The numbers are presented on the display as they are entered. For example, 8:30 am is entered "08:30", and the AM key lighted. Change the AM or PM key as necessary.

• Select DAILY SCHEDULE	Select the days of the week on which the programmed Answer Hold Time will operate.
• Select ENTER	Programming is now complete.

» **NOTE:** When a holiday is scheduled to occur, set the Answer Hold time to OFF at the end of the preceding day (or Friday, if it is a Monday holiday). Be sure to reprogram the Answer Hold time on the day you return. You may instead choose to eliminate that day from the Reporting days for that week.

DESELECTING THE ANSWER HOLD TIME

The programming procedure in deselecting the Answer Hold Time is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select ANSWER HOLD TIME	The present setting is displayed. The AM or PM key lights.
• Select NO	
• Select ENTER	The Answer Hold Time is now disabled.

ANSWER DROP TIME

This is the time at which the CMS-SR will go to the Answer Drop call handling mode, for all groups, on all selected days. It will answer calls, play the Answer Drop message, then disconnect.

The programming procedure in setting the Answer Drop Time is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select ANSWER DROP TIME	The present setting is displayed. The AM or PM key lights. If no setting has yet been made, the AM and PM keys will flash.
• Enter NEW TIME	The data is entered in the 4-digit format. The numbers are presented on the display as they are entered. For example, 6:30 pm is entered "06:30", and the PM key lighted. Change the AM or PM key as necessary.
• Select DAILY SCHEDULE	Select the days of the week on which the programmed Answer Drop Time will operate.
• Select ENTER	Programming is now complete.

DESELECTING THE ANSWER DROP TIME

The programming procedure in deselecting the Answer Drop Time is as follows:

• Select GROUP	The lamp in the key selected lights steady.

• Select ANSWER DROP TIME	The present setting is displayed. The AM or PM key lights.
• Select NO	
• Select ENTER	The Answer Drop Time is now disabled.

(PRINT) INTERVAL REPORT

To allow automatic printing of any sort, Interval Reports must be scheduled. It is not necessary that these be printed, however. This option allows you to determine whether or not these reports will be printed. A YES response causes Interval Reports to be printed. No Interval Reports will be printed if NO is entered.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select INTERVAL REPORTS	The present setting is displayed. 1 is Yes, and 0 is No.
• Enter YES or NO	The response is presented on the display.
• Select ENTER	Programming is now complete.

REPORT ZERO

This option allows you to choose whether your Interval Reports will cover data for just the report interval, or all data that has been accumulated since the last Daily Zero Time. This option affects the Display Data keys as well, but has no effect upon the Daily Report. A YES response causes the CMS-SR to zero all telephone traffic data after each interval report. The data will accumulate if a NO command is given.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select REPORT ZERO	The present setting is displayed. 1 is Yes, and 0 is No.
• Enter YES or NO	The response is presented on the display.
• Select ENTER	Programming is now complete.

FIRST REPORT TIME

This is the time at which the first Interval Report of the day is printed. This option must be programmed, even if Daily Reports are not printed.

The First Report Time should be set to occur one Report Interval later than the start of the work day. For example, if your interval reports occur hourly, and work begins at 8:00 am, the first report time should be set for 9:00 am.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select FIRST REPORT TIME	The present setting is displayed. The AM or PM key lights. If no setting has yet been made, the AM and PM keys flash.
• Enter NEW TIME	The data is entered in the 4-digit format. The numbers are presented on the display as they are entered. For example, 8:00 am is entered "08:00", and the AM key lighted. Change the AM or PM key as necessary.
• Select ENTER	Programming is complete.

REPORT INTERVAL

This determines the interval of time between printed Interval Reports.

You may choose any interval between 1 minute to 24 hours. The setting is usually between 30 minutes and four hours. The Report Interval must be set, even if Interval Reports are not printed.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights GROUP steady.
• Select REPORT INTERVAL	The current setting appears on the display.
• Enter NEW DATA	Enter time in the 4-digit Hours:Minutes format. For example, a report interval of 30 minutes will be entered 00:30.
• Select ENTER	Programming is complete.

REPORTS PER DAY

This setting, based on the First Report Time and the Report Interval data, establishes 1) the number of Interval Reports to be formulated each day, 2) when the last report of the day is printed, and 3) the time of day the Daily and History reports are printed. You may choose between one and 96 reports per day.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select REPORTS PER DAY	The current setting is displayed.
• Enter NUMBER OF REPORTS	Using the numeric keypad, enter the number of reports to be issued on each reporting day. Data is displayed as it is entered. When the correct number has been entered,
• Select ENTER	Programming is complete.

» **NOTE:** If you select a number larger than is possible within a 24-hour period (based on the Report Intervals), the CMS-SR automatically rounds the number down to one that will fit in a 24-hour period.

(PRINT) DAILY REPORT

To allow automatic printing of any sort, reports must be scheduled. It is not necessary that they be printed, however. This option allows you to determine whether or not the CMS-SR will automatically issue a printed Daily Report. A YES response causes daily reports to be printed; no reports will be printed if the NO command is given.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select DAILY REPORTS	The present setting is displayed. 1 is Yes, and 0 is No.
• Enter YES or NO	The response is presented on the display.
• Select ENTER	Programming is now complete.

DAILY ZERO TIME

This is the time data accumulated on a per-day basis will be zeroed for the group selected. This option must be set.

If the Daily Zero Time is set to the time of the last report, the data occurring overnight will be included in the first report of the following day.

If the Daily Zero Time is set to occur at the beginning of the report gathering period, for example, 8:00 a.m., any data occurring overnight will not be included in the first report.

The Factory Setting for the Daily Zero Time is 8:00 AM.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select DAILY ZERO TIME	The present setting is displayed. The AM or PM key lights.
• Enter NEW TIME	The data is entered in the 4-digit format. The numbers are presented on the display as they are entered. For example, 8:00 am is entered "08:00", and the AM key lighted. Change the AM or PM key as necessary.
• Select ENTER	Programming is complete.

REPORTING DAYS

These are the days during which the CMS-SR gathers telephone management information.

The Reporting Days are also the only days on which a History Report may print. If a History Report date falls on a nonreporting day, the report will automatically be printed on an earlier reporting day.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select REPORTING DAYS	The current setting is displayed by lighted lamps in the Schedule section. The days not selected flash.
• Select SCHEDULE DAYS (Mon, Tues)	The lamps in the keys selected light steady. These are alternate-action keys: one press is on (lighted steady), a second is off (flashing). Light the lamps in the days during which the CMS-SR is to gather telephone management information.
	When all appropriate days are selected;
• Select ENTER	Programming is complete.

(PRINT) HISTORY REPORT

This applies specifically to whether or not you wish History Reports to be automatically printed. If this option is set to "NO", History Reports may still be printed manually.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select HISTORY REPORTS	The present setting is displayed. 1 is Yes, and 0 is No.
• Enter YES or NO	The response is presented on the display.
• Select ENTER	Programming is now complete.

HISTORY REPORT DAYS/DATES

The data gathering parameters for the History Report must be set, regardless of whether or not reports are to be printed. History Reports may be set to occur only on certain days of the week, or dates. Days override dates.

The programming procedure setting the history reports to occur on certain DAYS of the week (eg., Monday, Wednesday, Friday) is as follows:

• Select GROUP	The lamp in the key selected lights steady.

• Select HISTORY REPORT DAYS	Schedule days light, if assigned. If dates have been set, they scroll across the display. When all dates have been presented, a blinking cursor appears, cuing you to enter a date.
• Select SCHEDULE DAYS (Mon, Tues)	Choose any or all REPORTING DAYS. These are alternate action keys. One press is on, another is off. Light the lamps for all days on which History Reports are to be printed.
• Select ENTER	The lamps in the selected keys flash in confirmation. History Report Days programming is now complete.

SETTING THE HISTORY REPORT DATES

The programming procedure for setting the CMS-SR to issue history reports on specific DATES of the month (eg., the 1st and 15th) is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select HISTORY REPORT DATES	Schedule days light, if assigned. Deselect any schedule days (the lamps in the keys will go out). If dates have been set, they scroll across the display. When all dates are presented, a blinking cursor appears, cuing you to enter a date.
• Enter DATE	Using the numeric keypad, enter one of (eg., 01) the desired report dates. Use the 2-digit format. The numbers are presented on the display as they are entered.
• Select ENTER	
• Select YES	This confirms the date selected.
• Select ENTER	Repeat the previous 3 steps and this one until all desired reporting dates are set.
• Select ENTER	The History Report programming is now complete.

REMOVING A DATE FROM THE HISTORY REPORT SCHEDULE

The programming procedure for removing DATES from the History Report schedule is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select HISTORY REPORT DATES	The current dates scroll across the display. When all dates have been presented, a blinking cursor appears, cuing you to enter a date.

• Enter DATE	Using the numeric keypad, enter the date (eg., 15) you wish to eliminate from the report schedule. Use the 2-digit format. The numbers are presented on the display as they are entered.
• Select ENTER	
• Select NO	This confirms the removal of the date.
• Select ENTER	Repeat thr previous 3 steps and this one until all desired reporting dates are removed.
• Select ENTER	The History Report programming is now complete. This completes the programming of Overlay A.

PROGRAMMING OVERLAY B - GROUP OPTIONS

Overlay B establishes which lines are assigned to which groups, and determines how the CMS-SR will answer calls. It is also used to establish Dynamically Variable Call Throughput (DVCT) settings for each group.

PRINT GROUP OPTIONS

This key immediately generates an Option Report, which is described in Chapter 5.

Before beginning any programming, we recommend that you generate one of these reports. Using this report as a worksheet, you can check the CMS-SR settings, and plan any changes to the program.

It is also a good idea to print an Option Report after you have completed programming, to verify the changes you have made.

LINES IN or LINES OUT

LINES IN enters a line into a group. LINES OUT disables the answering of a line, but does not remove it from the group. A line may be transferred from one group to another, by using the LINES IN for another group. Its Inbound Only status will be transferred, but settings such as Priority Intercept or Trunks Busy status will not.

If, after a Group has been chosen, either LINES IN or LINES OUT is selected, all lamps representing the lines currently set as LINES IN will be lighted steady.

The CMS-SR accumulates management data on incoming and outgoing transactions for all lines regardless of whether they are in a LINES IN or LINES OUT condition.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights GROUP steady. All lines currently assigned to this group light steady, regardless of whether they are in a LINES IN or LINES OUT condition.
• Select LINES IN or LINES OUT	The lamp in the key lights steady. All line lamps representing the lines currently set as LINES IN for this group light steady. The display presents "L-", followed by a blinking cursor, cuing you for the line number.
• Enter the LINE NUMBER	Using the numeric key pad, enter the number of the line to be added to or removed from the group (2 digits).
• Select ENTER	The corresponding line lamp comes on (or goes out, if removed).

	Repeat the previous step and this one for all applicable lines. When all programming is complete:
• Select ENTER	Programming is complete. The CMS-SR returns to System Status.

PRIORITY INTERCEPT LINES

Priority Intercept lines are allowed to skip ahead of other lines in the queue. When answered, they will form a separate queue immediately after the current longest-waiting call. Priority Intercept line will not skip ahead of a line that has exceeded the Priority Intercept Time.

When this key is selected, after a Group has been chosen, all line lamps representing the lines currently set as Priority Intercept will light steady. Any lines in the group may be established as Priority Intercept Lines.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady. The line lamps for lines assigned to this group light steady.
• Select PRIORITY INTERCEPT LINES	The lamp in the key lights steady. The line lamps representing the group lines go out. The line lamps for the lines set as Priority Intercept Lines light steady.
• Select LINES IN or LINES OUT	The display presents "L-", followed by a blinking cursor, cuing you for the line number.
• Enter the LINE NUMBER	Using the numeric key pad, enter the number of the line to be established as or removed from Priority Intercept.
• Select ENTER	The corresponding line lamp comes on (or goes out, if removed).
	Repeat the previous step and this one for all applicable lines. When all programming is complete:
• Select ENTER	Programming is complete. The CMS-SR again returns to System Status.

PRIORITY INTERCEPT TIME

When a Priority Intercept line rings, any of the non-Priority lines which have waited longer than the Priority Intercept Time will be presented first. This enables you to "favor" the Priority Intercept Lines, non-Priority callers will not wait an unacceptably long time, either.

The Priority Intercept Time ranges from 2 seconds to 30 minutes. The Priority Intercept Time may also be turned off.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select PRIORITY INTER-CEPT TIME	The current setting appears on the display.
• Enter TIME	Using the numeric keypad, enter the priority intercept time in the 4-digit Minutes:Seconds format. The data will be presented as it is entered. Example: 1 minute, 15 seconds will be entered 01:15. To set the Priority Intercept Time OFF, enter one '0' here.
• Select ENTER	Programming is complete.

TRUNKS BUSY STUDY

Trunks in each group may be set into Busy Studies which are subsets of each group. The reports will then include Busy Studies on these lines. Lines in the Trunks Busy Study group will be monitored at all times, even when they are not under the call handling control of the CMS-SR.

When this key is selected, after the Group has been chosen, all line lamps representing the lines currently assigned to the Trunks Busy Study will light steady.

None, any, or all lines connected to the CMS-SR may be included in the Trunks Busy Study.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady. The line lamps for all lines assigned to this group light steady.
• Select TRUNKS BUSY STUDY	The lamp in this key lights steady. The Group line lamps go out. The line lamps for lines set to the Trunks Busy Study will be on steady.
• Select LINES IN or LINES OUT	The display presents "L-", followed by a blinking cursor, cuing you for the line number.
• Enter the LINE NUMBER	Using the numeric key pad, enter the number of the line to be added to or removed from the group.
• Select ENTER	The corresponding line lamp comes on (or goes out, if removed). Repeat the previous step and this one for all applicable lines.
• Select ENTER	Programming is complete. The CMS-SR exits the program, and returns to System Status.

INBOUND ONLY LINES

If some lines are graded to only receive incoming calls, they should be set to Inbound Only. This will allow more accurate accumulation of data from the telephone lines.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady. The line lamps for all lines assigned to this group light steady.
• Select INBOUND ONLY LINES	The lamp in this key lights steady. The Group line lamps go out. The line lamps for lines set to the Inbound Only Lines will be on steady.
• Select LINES IN or LINES OUT	The display presents 'L-', followed by a blinking cursor, cuing you for the line number.
• Enter the LINE NUMBER	Using the numeric key pad, enter the number of the line to be added to or removed from the group.
• Select ENTER	The corresponding line lamp comes on (or goes out, if removed). Repeat the previous step and this one for all applicable lines.
• Select ENTER	Programming is complete. The CMS-SR exits the program, and returns to System Status.

RING DELAY

This sets the CMS-SR to delay 1 or more rings before answering the calls. The longer the ring delay setting, the more time your agents will have to answer calls directly.

If no ring delay is set, the CMS-SR will automatically delay 1 ring.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select RING DELAY	The current setting is displayed.
• Enter number of rings	Using the numeric keypad, enter the number of rings the CMS-SR is to delay before answering the calls. The numbers are presented on the display as they are entered.
• Select ENTER	Setting is complete.

DELAY FIRST CALL ONLY

In Delay First Call Only, the CMS-SR waits until the Ring Delay is met before answering the first call received. This feature gives agents the opportunity to take the first incoming call directly, within the Ring Delay period. After at least one call has been answered by the CMS-SR, all subsequent incoming calls are answered after the first ring. At this point it is likely that the agents are too busy to answer calls directly anyway. When all calls are answered out of the CMS-SR, the Delay First Call Only feature is reinstated.

In Delay All Calls, the CMS-SR delays answering all incoming calls for the Ring Delay. Often, such as with WATS lines, it is economically desirable to allow the call to ring somewhat longer before having the CMS-SR answer it.

The Ring Delay setting establishes the number of rings in the delay. The setting of Delay First Call Only has no effect when the CMS-SR is set to Delay 1 Ring.

The CMS-SR Factory Setting is Delay First Call Only.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select DELAY FIRST CALL ONLY	The current setting is displayed. "1" is Yes, "0" is No.
• Enter YES or NO	Using the numeric keypad, enter the number 1 if you want the CMS-SR to Delay First Call Only. The number is presented on the display when it is entered. Enter '0' for Delay All Calls.
• Select ENTER	Setting is complete.

HOLD TIME ALARM

This option establishes the amount of time a call waits on CMS-SR Hold before an Excessive Holding Time Alarm sounds.

You may set the Console Alarm and/or any of the Alarm Ports to activate when the Hold Time Alarm is exceeded.

The Hold Time Alarm may be set from 10 seconds to 9 minutes. The CMS-SR will round down the setting to coincide with the Alarm Times on the Interval, Daily, or History Report. The alarm times are, in minutes and seconds, 0:10, 0:20; 0:30, 0:45, 1:00, 1:30, 2:00, 2:30, 3:00, 4:00, 5:00, 6:00, 7:00, 8:00, and 9:00.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select HOLD TIME ALARM	The display presents the current setting.

• Enter TIME	Using the numeric keypad, enter the hold alarm time in the 4-digit Minutes:Seconds format. The data will be presented as it is entered. Example: 1 minute, 15 seconds will be entered 01:15.

To turn the Hold Time Alarm OFF, enter a single "0" at this point.

• Select ENTER	The display blinks the setting. Programming is complete.

SCREEN CALLS FIRST and SCREEN CALLS SECOND

In No Call Screening, ring indications appear immediately, and continue as the CMS-SR takes incoming calls and plays the message(s). Agents may take calls at any time, including during announcement messages.

In Screen Calls First the CMS-SR does not ring through newly answered calls until the Answer Hold First message has been played through completely. In Screen Calls Second the CMS-SR plays the Answer Hold First, then the Answer Hold Second messages to callers before ringing them through.

The programming procedure is as follows:

• Select GROUP	The lamp in the key lights steady.
• Select SCREEN CALLS FIRST or SCREEN CALLS SECOND	The current setting is displayed. "1" is Yes, calls are being screened; "0" is No, calls are not being screened. The number is presented on the display as it is entered.
• Enter YES or NO	Using the numeric keypad, enter "1" for Call Screening.

Enter "0" for No Call Screening.

• Select ENTER	The display blinks the setting. Programming is complete.

When set to Screen Calls, there is a delay between the CMS-SR answering of calls and the appearance of priority indications for those calls. This delay is the length of the announcement message(s).

If you use Screen Calls routinely, we recommend that dedicated inbound-only lines/trunks be brought in to the system. This will avoid any outgoing call-blockage situations.

The CMS-SR Factory Setting is No Call Screening.

ALARM PORTS

The Alarm Ports section is used to assign alarm ports to groups, and to establish the type of alarm signal (steady or interrupt). The Alarm Ports labeled A, B, and C are contact closures, located on the back panel of the main console. The AC Outlet Alarm Port is the AC outlet on the back panel of the main unit.

The alarm ports will be activated when the Hold Time Alarm setting has been exceeded. Any or all alarm ports may be set for any, all, or none of the groups.

The programming procedure is as follows:

- Select ALARM PORT A, B, C, or AC OUTLET — The lamp in the key lights steady. The lamps indicating the current settings are on. This includes the Group or Groups, and Signal Rate.
- Select GROUP(S) — The Group keys now have an alternate action. One press is ON, a second, OFF. Light the lamps on all groups which are to trigger the selected alarm port. Turn off any other groups.
- Select SIGNAL RATE — Select Steady or Interrupt. When one is selected, the other goes out.
- Select ENTER — Alarm Port programming is complete. The setting blinks in confirmation.

External devices such as lamps or chimes may be connected to the CMS-SR to activate when calls have exceeded the maximum holding time.

CONSOLE ALARM

The Console Alarm is triggered whenever the Hold Time Alarm setting has been exceeded. This alarm can be set to occur for any, all, or none of the groups.

The programming procedure is as follows:

- Select CONSOLE ALARM — The lamp in the key lights steady. All lamps on the console go out, except the Group or Groups which currently activate the console alarm. The Signal Interrupt lamp will light.
- Select GROUP(S) — The Group keys now have an alternate action. One press is ON, a second, OFF. Light the lamps on all groups which should trigger the console alarm. Turn off the lamps on any other groups.
- Select ENTER — The display blinks the setting. Programming is complete.

The Console Alarm Factory Setting is ON for Group 1. The Console Alarm may only be set to the Interrupt signal type.

ATTENDANT MONITOR - OUTGOING LINE DISPLAY

When the optional Attendant Monitor is used, it will display the line number of a free line to use for an outgoing call.

If all of the lines serviced are incoming, or it is not possible for the attendant to select a particular line, you will probably want to turn off the outgoing line display.

The programming procedure is as follows:

• Select GROUP	The lamp in the key lights steady.
• Select ATTENDANT MONITOR OUT LINE	The current setting is displayed. "1" indicates that the outgoing line will be displayed; "2" indicates that the longest waiting line will be displayed. Selecting "0" disables the line display.
• Enter YES	Using the numeric keypad, enter "1" to or NO enable the display. The number is presented on the display as it is entered. Enter "0" to disable the display.
• Select ENTER	The display blinks the setting. Programming is complete. The Factory Setting is "0"; the line display is disabled.

DYNAMICALLY VARIABLE CALL THROUGHPUT (DVCT)

The Dynamically Variable Call Throughput (DVCT) feature is accessed through Overlay B, using the key labeled, "Agent vs Priority List". DVCT is utilized to increase call throughput in extremely busy environments.

Using this feature, you establish the number of longest-waiting (priority) calls which will be presented simultaneously. The first priority setting will always be 0 agents/1 Priority. You will add four additional DVCT settings, maximum.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select AGENT vs PRIORITY LIST	All current DVCT settings are presented on the display, one after the other. If no DVCT settings have been made, the agent prompt will occur immediately. This list is also presented on the Group Options Report. After the presenting all settings, "__A" is displayed, prompting you to enter the number of agents.
• Enter the desired number of agents	Using the numeric keypad, enter the 2-digit agents portion of the agent vs priority ratio. The numbers will be displayed as they are entered.

• Select ENTER	The display now presents the priority cue, "_P".
• Enter the desired number of priorities	Using the numeric keypad, enter the single digit number of priorities for number of agents. The number will be presented on the display.
• Select ENTER	The display will repeat the prompts described in Steps 2 through 6, until 1) 4 priority settings have been entered, or 2) ENTER is selected again. To exit the DVCT programming mode, select ENTER again.

The number of simultaneous priorities can be set to vary dynamically throughout the day, depending on the number of agents logged in. Each group may have from one to five priorities.

To remove a DVCT setting, follow this procedure:

• Select GROUP	The lamp in the key selected lights steady.
• Select AGENT vs PRIORITY LIST	All current DVCT settings are presented on the display, one after the other. After the presenting all settings, "__A" is displayed, prompting you to enter the number of agents.
• Enter '00" at this point.	This will remove the number of agents. The numbers will be displayed as they are entered.
• Select ENTER	The display now presents the priority cue, "_P".
• Enter the priority number that is to be removed.	Using the numeric keypad, enter the single digit number of priorities for number of agents. The number will be presented on the display.
• Select ENTER twice	The DVCT entry is now deleted.

Once you have programmed the agent/throughput level for each group, the CMS-SR will automatically adjust the number of priority calls ringing through as the number of logged-in agents changes. Please refer to the example, which follows.

The DVCT settings are made in the form of a list of ratios: XX agents to X priorities. The maximum number of agents per system is 40, the maximum priorities per group is five. There is a system-wide limit of 8 simultaneous priorities. This is explained in the example, which follows.

The DVCT feature will not affect the operation of the Attendant Monitor or CMS-SR Real-Time display. These will still display the line number and time-waiting of the single longest-waiting caller.

The Factory Setting for DVCT is not set. The CMS-SR will present one longest-waiting call for each group.

EXAMPLE OPERATION OF DVCT

Assume 4 groups exist in the CMS-SR. Assume the Agent vs Priority list for Group 1 is as follows:

- 05A--2P (5 agents, 2 priorities)
- 09A--3P (9 agents, 3 priorities
- 18A--4P (18 agents, 4 priorities)
- 28A--5P (28 agents, 5 priorities)

As long as Group 1 has less than 5 agents logged in, the CMS-SR will operate in the normal one-priority mode, and Priority Timeout is enabled.

When Group 1 has 5 to 8 agents, the two longest-waiting calls will be rung through. Priority Timeout is disabled whenever more than one longest-waiting call is presented.

If 2 groups both require 5 priorities at the same time, only 6 priorities will be divided between these groups, on a first-come, first-served basis. The remaining 2 priorities are reserved; one for each of the other two groups. This is the way the system-wide limit of 8 priorities is handled. At no time is any group deprived of a longest-waiting call.

If one group has a single priority, and its Priority Timeout is exceeded, and all 8 system-wide priorities are taken up, this group will receive the next priority call assignment.

ZERO DATA

This key causes the CMS-SR to reset all accumulated report data for the selected group to zero. Be sure you really want to do this: once the information has been zeroed, it is gone forever.

Zeroing the data also logs the time and date into the reporting buffers.

The programming procedure is as follows:

- Select GROUP — The lamp in the key selected lights steady.
- Select ZERO DATA
- Select YES — "1" on the numeric keypad.
- Select ENTER — All accumulated report data for this group is set to zero.

» **NOTE:** When first programming the CMS-SR, perform a Zero Data on each group after setting the correct time and date.

SYSTEM RESTART

The System Restart causes all of the memory to be cleared to zero. It erases all data, voice and programming information, and restores the system to the original factory options.

The programming procedure is as follows:

- Select GROUP — The lamp in the key selected lights steady. Even though you are entering a group number, what you are about to do affects the whole system.
- Select ZERO DATA
- Select "2" — At this point make sure that you really want to continue. After the next two steps all data, voice, and programming information will be erased and then set to the original factory options. (To cancel at this point select CLEAR ENTRY.)
- Select YES — "1" on the numeric keypad.
- Select ENTER — All data, voice and programming information has been erased. The CMS-SR has been returned to the original Factory Option settings, as described in Appendix A.

This completes the programming instructions for Overlay B.

OVERLAY C - AGENT AND GROUP ASSIGNMENTS

Overlay C is used to set agents/group assignments, and agent security codes; program the Acceptable Hold Time, establish a Report Group as a Station Report Group, and set the Outgoing Calls factor in the Staff Graph Report. The Fixed Agent Supply may also be enabled from this overlay.

PRINT STAFF OPTIONS

This key generates an Agent Verification Report, as described in Chapter 5.

Before beginning any programming, it is very important that you generate one of these reports. Using this report as a worksheet, you can check the agent names, Security Codes, and other data, and plan any changes.

After you have completed programming, generate another Agent Verification Report, to check all changes to the system.

PROGRAMMING AGENT NAMES, SECURITY CODES, and GROUP ALLOCATIONS

The following sections explain how to enter a new agent into the system, how to change an agent's group assignment and/or percentage allocation, how to set a Station Group, and how to remove an agent from the system.

If an agent's name has been spelled incorrectly, you must remove the agent from the system, and re-enter the data.

To change an Agent Security Code, refer to the instructions for Removing an Agent.

ENTERING A NEW AGENT INTO THE SYSTEM

The programming procedure is as follows:

1	Select AGENT NAME/ NUMBER	All key lamps go out. The lamp in the Agent Name/Number key lights steady. The display cue, "ALPHA" is presented.
2	Enter AGENT'S NAME	You may use up to 20 characters, and/or numbers, including spaces. You may use the alphabet and numeric keys. The zero key of the numeric pad is the space key.

» NOTE: The names will be presented on the Staff Report in the order in which they were entered. You may want the report to present the agents in alphabetical order, by last names, etc. Plan this before you enter this data.

3	Select ENTER	"ASC-" followed by a blinking cursor appears on the display. This is the cue for the Agent Security Code.

		If a code number is presented at this point, this name has already been assigned an Agent Security Code.
4	Enter number of AGENT'S SECURITY CODE	Using the numeric key pad, enter any 3-digit number except 000. The numbers are presented on the display.
5	Select ENTER	The lamps in all 4 Group keys flash, and the display presents, "PC". To assign percent availability to the agent, continue to Step 6. If, at this point, you go to Steps 8 and 9, and exit the program, the agent is in the system, assigned to the groups selected, and set to 0% availability. If the display returns to the "ASC-" prompt, this number is already assigned to an agent in the system.
6	Select GROUP	The lamp in the key lights steady. "PC-100" is presented on the display. If the agent is to be assigned to this group only, for 100% availability, proceed to Step 8. If you are assigning the agent to more than one group, or for less than 100% phone coverage,
7	Enter the number of PERCENT AVAILABLE	The data entered through the numeric key pad is presented as it is entered. Enter any number, up to 100. The total availability for all groups may not exceed 100%.
8	Select ENTER	If you attempt to program more than 100% total availability, the CMS-SR will round down the entry to a total of 100%. The completed programming data flashes for 2 seconds. All four Group lamps will flash. Repeat steps 6 through 8 until all agent assignment information is complete.
9	Select ENTER	The display flashes the data, then the display returns to system status. Programming is complete.

» NOTE: If you make a mistake while entering data, select CLEAR. The display will return to the most recent cue, and you can start over. Data entry will not be permanent up until you have entered the Agent Security Code, followed by ENTER twice.

CHANGING AGENT GROUP ASSIGNMENTS AND PERCENT AVAILABLE

The programming procedure for changing the Group Assignments and/or percent availability for an agent who is already in the system is as follows:

1	Select AGENT NAME/ NUMBER	All key lamps go out. The lamp in the Agent Name/Number key lights steady. The display cue, "ALPHA" is presented.
2	Select ENTER	This overrides the name entry. "ASC-" followed by a blinking cursor appears on the display. This is the cue for the Agent Security Code.
3	Enter AGENT SECURITY CODE	Using the numeric key pad, enter the security code for the agent. The numbers are presented on the display.
4	Select ENTER	The lamp in the Group or Groups to which the agent is currently assigned lights steady. The lamps in groups not assigned (or to which the agent has been assigned 0% availability) flash.
5	Select GROUP to be added or modified	The lamp in the selected Group key lights steady. The current percent availability is displayed. If the agent is in the system, but not assigned percent availability, "PC-100" will be presented on the display. If the agent is to be assigned to thisgroup only, for 100% availability, proceed to Step 7. If you are assigning the agent to more than one group, or for less than 100% phone coverage,
6	Enter the PERCENT AVAILABLE	The data entered through the numeric key pad is presented as it is entered. Enter any number, up to 100. Be certain that the total availability for all groups does not exceed 100%.
7	Select ENTER	If you attempt to program more than 100% total availability, the CMS-SR rounds down the entry to a total of 100%. The completed programming data flashes for 2 seconds. The lamps in the groups assigned remain lighted steady, unselected group lamps flash. Repeat steps 6 through 8 until all agent assignment information is complete.
8	Select ENTER	The completed programming data flashes, then the CMS-SR returns to system status. Programming is complete.

» **NOTE:** If you make a mistake while entering data, select CLEAR. The display will return to the most recent cue, and you can start over. Data is not permanent until you have entered the Agent Security Code, followed by ENTER twice.

SETTING A STATION GROUP

The CMS-SR can monitor individual performance by station through a Station Group. A Station Group can only be used with 2500-type single-line stations. Each line in a Station Group is wired in series with one station. Calls are sequenced through a conventional CMS-SR [Trunk] Group, through the PABX, then through the CMS-SR Station Group, and finally to the stations. The answer message and sequencing is done in the [Trunk] Group; there is no additional answer message or sequencing done within a Station Group. Refer also to the Station Group section of the Installation chapter.

The Call Management Report for a Station Group has a format identical to the usual reports, but contains only data pertinent to station monitoring. The report is described in detail in Chapter 5.

To set up a Station Group, first establish a Report Group as described on the preceding pages. Then program the Report Group to be a Station Group as follows:

• Select a GROUP key	This step initiates the Station Group programming sequence. At this point it is not important which group key is selected.
• Select the STATION key	This key is located on the "S" key of the keypad. The lamps in the keys for Groups not currently set as Station Groups flash. Station Groups on steady.
• Select the GROUP	The Group keys are now alternate action keys. When a Group key is selected which is to serve as a Station Group, the lamp in the key lights steady. Those Groups whose key lamps are out are not Station Groups. Press the key again to de-select the group.
• Select ENTER	Programming is complete.

REMOVING AN AGENT FROM THE SYSTEM OR CHANGING AN AGENT SECURITY CODE

The procedure for removing an agent from the system, or changing an Agent Security Code. This procedure is also used to remove a misspelled name from the system. The agent name and security code must then be re-entered into the system.

The programming procedure is as follows:

1	Select AGENT NAME/ NUMBER	All key lamps go out. The lamp in the Agent Name/Number key lights steady.
2	Enter AGENT'S NAME	Enter the name exactly as it is referenced in the Agent Verification Report.
3	Select ENTER	The current Agent Security Code is presented on the display.

4	Enter SECURITY CODE	To remove an agent from the system, enter "000" as the Agent Security Code; this removes the agent from the system, and all reports, effective immediately.
5	Select ENTER	The new Security Code blinks on the display.
6	Select ENTER	Programming is complete.

GROUP NAME

Each group may be named, using up to 20 characters. This name will appear on all reports produced for that group.

The programming procedure is as follows:

• Select GROUP	The lamp in the key lights steady.
• Select GROUP NAME	The lamp in the key lights steady.
• Enter GROUP'S NAME	You may use up to 20 characters and/or numbers, including spaces. You may use the alphabet and numeric keys. The zero key of the numeric pad is the space key.
• Select ENTER	Programming is complete.

FIXED AGENT SUPPLY

When the lamp in this key is lighted, the Fixed Agent Supply Schedule is in effect. The programming procedure is as follows:

• Select GROUP	The lamp in the key lights steady.
• Select FIXED AGENT SUPPLY	This is an alternate action key. To enable the Fixed Agent Supply schedule, light the lamp in this key. If agents are to log-in and -out of the system, extinguish the lamp in this key. Setting is complete.

When the lamp in this key is out, Agents log-in and -out of the system through the keys on the console.

If your staff supply does not change from day to day, you may want to use the Fixed Agent Supply. If your staff supply and/or the hours they work vary greatly, the agents should always log-on, as described in Chapter 3. This will produce the most accurate Staffing Requirements data.

The Fixed Agent Supply may be arrived at in either of two ways; 1) by programming the agent schedules, using Overlay E, or 2) the CMS-SR can calculate the staffing pattern on its own, as described in the paragraph below.

If Overlay E is not used, the CMS-SR recognizes as the Fixed Supply the Agent Logging activity which has occurred for at least one day and, ideally, for one week. The CMS-SR has a 7-day revolving memory. Whenever the agents log-on, the memory will reset for that day. If no automatic reports are scheduled for the weekends, the CMS-SR assumes no agent supply for those days. Also, please refer to the paragraph which follows; Special Circumstances.

SPECIAL CIRCUMSTANCES: FIXED AGENT SUPPLY IF NOT USING OVERLAY E

- **Making corrections to the 7-Day schedule:** For example; while establishing a Fixed Agent Supply for a Monday through Friday week, you forget to enter the logging-on data, or enter incorrect data, for Wednesday. Continue to log on for the rest of the week. The following week, set the CMS-SR to Fixed Agent Supply. On Wednesday, disable the Fixed Agent Supply, log-on the correct schedule, then return the setting to Fixed Agent Supply.
- **Making adjustments to the daily schedule after the Fixed Agent Supply has been established:** For example, an agent does not report for work. Log the agent out, using the Log-Out key on the console. If the agent returns later that same day, log the agent back in. On the following day, the CMS-SR will revert to the normal fixed schedule. If the agent is sick two days in a row, log the agent out both days. This alteration will not affect the CMS-SR Fixed Agent Supply 7-day revolving memory.

ACCEPTABLE HOLD TIME

This is the amount of time you feel is reasonable for a caller to wait on CMS-SR Hold before being handled by an agent. The Acceptable Hold Time may be different for each group. The Factory Setting is 00:00.

While calls are holding within the Acceptable Hold Time, they are not added to the call demand depicted in the Staff Graph.

• Select GROUP	The lamp in the key lights steady.
• Select ACCEPTABLE HOLD TIME	The display presents the current setting.
• Enter TIME	Using the numeric keypad, enter the Acceptable Hold Time in the 4-digit (Minutes:Seconds) format. For example, 45 seconds is entered "00:45".
• Select ENTER	Programming is complete.

INCLUDE OUTGOING CALLS

When the lamp in this key is lighted, the Include Outgoing Calls feature is enabled. In this mode, outgoing calls are reflected in the Staffing Requirements computations as additional call demand. The Factory Setting is Include Outgoing Calls.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select INCLUDE OUTGOING CALLS	This is an alternate-action key. If you wish to have outgoing calls included in the Staff Graph, light this key. If you do not wish to have outgoing calls included in the Staffing calculations, extinguish the light in this key.
	Programming is complete.

If making outgoing calls is part of the agents' job duties you will want to include these calls in the Staff Graph. In situations where the agents do not make outgoing calls as part of their job duties, you will not wish to include these calls in the Staffing Requirements survey.

This completes the programming procedures for Overlay C.

PROGRAMMING OVERLAY D - ANNOUNCEMENT MESSAGES

Announcement Messages are recorded and assigned to groups using Overlay D.

ANNOUNCEMENT MESSAGES - STANDARD CMS-SR

The standard CMS-SR software gives you 65 seconds of digital voice recording time. This unit is restricted to the use of two announcement messages only. You may utilize any two you desire.

It is recommended that Answer Hold First messages not exceed 20 seconds, in order to expedite call handling.

ANNOUNCEMENT MESSAGES - CMS-SR WITH MULTIPLE ANNOUNCE FEATURE

The CMS-SR with the Multiple Announce Feature comes with 4 minutes of recording time, and can use any or all announcement messages, up to 16 messages (4 different messages for 4 groups). You can expand the recording time on this unit, up to 17 minutes. This time may be used in any of a variety of messages. The CMS-SR will present up to 4 different announcements to each group.

You may combine your recordings and groups any way you wish. For example, you may use different Answer Hold First messages, and the same follow-up message; or you may have a different set of 4 announcements for each group, for a total of 16 different messages, as long as you stay within the recording time limitation.

Since up to seven channels may be included, the Answer Hold First messages may be longer and still allow prompt greeting of callers.

ANSWER DROP

The CMS-SR automatically plays the Answer Drop message to callers when the unit is set to ANSWER DROP. The CMS-SR plays this message through once, then disconnects the call.

EXAMPLE ANSWER DROP MESSAGE

An Answer Drop message usually directs callers to the hours during which business is conducted. The general format for this type of message is, "Thank you for calling (company name). Our business hours are 8 AM to Noon, and I to 5 PM. Please call back during these hours and we will be happy to serve you."

ANSWER HOLD

When the CMS-SR is set to ANSWER HOLD, any or all of three different announcement messages may be used. These messages are described in the paragraphs which follow.

When set to ANSWER HOLD, the CMS-SR answers the call and plays the ANSWER HOLD FIRST message. If no other Answer Hold messages have been recorded, the caller hears silence, or optional on-hold music, after this message has been played through once.

If the call has not been taken by an agent by the end of the first message, the ANSWER HOLD SECOND message will be played, followed by silence, or the optional on-hold music.

After the user-programmed Delay Time, the ANSWER HOLD REPEAT message is played to the caller. This final message is repeated at an interval established by the user, until the call is taken by an agent. The optional on-hold music will be heard between Answer Hold Repeat messages.

EXAMPLE ANSWER HOLD FIRST MESSAGE WITHOUT CALL SCREENING

The standard format for this type of message is: "Thank you for calling (company name). All agents are busy at this time. Please stay on the line and your call will be taken in the order in which it was received."

Calls will be sequenced and presented to the agents as soon as the CMS-SR answers the calls. In this mode calls may be taken by an agent at any time, including during the Announcement Message.

EXAMPLE ANSWER HOLD FIRST MESSAGE WITH CALL SCREENING

This message follows the same format as above, and includes information callers hear completely before speaking with an agent. For example, to inform callers to be prepared with an account number.

This message should be brief, 8 to 20 seconds in length, to expedite call-answering. The greatest part of your call screening information should be presented in the Answer Hold Second message.

The calls are prioritized as they are received, but are not presented to the agents until the complete message has been played.

EXAMPLE ANSWER HOLD SECOND MESSAGE WITHOUT CALL SCREENING

In this message you may wish to thank your callers for choosing your company, followed by some additional comments on new services, expanded hours of operation, etc. You may remind them that an agent will be with them shortly, and thank them for waiting.

If this is the last message, you may also tell your callers that there will be no further announcements.

EXAMPLE ANSWER HOLD SECOND MESSAGE WITH CALL SCREENING

This message may be a continuation of the information presented during the Answer/Hold First message. You may use this to present information which your agents have mentioned as "commonly asked questions", present schedule information, and so forth.

If this is the last message, you may wish to end with the statement, "If you require additional information please stay on the line and your call will be taken in the order in which it was received."

EXAMPLE ANSWER HOLD REPEAT MESSAGE

You can program the CMS-SR to repeat this final message, at whatever frequency you choose. Refer to the Delay to Repeat and Repeat Interval sections of this chapter.

This message thanks callers for waiting, lets them know they have not been forgotten, that calls are taken in the order received, and an agent will be with them shortly.

RECORDING AN ANNOUNCEMENT MESSAGE

To record an Announcement Message, the CMS-SR may be in any call handling mode. The standard CMS-SR will not answer calls while in Record. The CMS-SR with the Multiple Announce feature will answer calls while in Record.

For the best quality recording, plan what you will say in advance, and speak clearly about 4 inches from the microphone.

The recording procedure is as follows:

• ERASE any existing message.	Refer to the Erase Single Message section of this chapter.
• Insert the MICROPHONE	Plug the cord in the jack located under the control console.
• Insert Overlay D	The display goes out, and the Group keys flash.
• Select GROUP	The lamp in the selected group key lights steady.
• Select the TYPE of MESSAGE	Select Answer Hold First, Answer Hold Second, Answer Hold Repeat, or Answer Drop. Only one message type may be recorded at a time. The display presents the recording time available, and the Record, and Record Copy Transfer keys flash. If the Record key does not flash, either the recording time, or the total number of messages (2 for Single Channel, 16 for Multiple Announce) has been used up.
• Select RECORD	The lamp in this key lights. "PAUSE" may be displayed until a channel is available. When a channel is available, the lamp in the "Press ENTER to continue" cue lights, and the recording time available is again displayed.
• Select ENTER	Start speaking now. The display goes to "0:00", and becomes a timer, counting off in seconds the length of the message.

	To stop the Record action when you have completed the message;
• Press ENTER	Recording is complete. If you have made a mistake, erase the message and re-record.

If your recording sounds too loud and/or distorted, re-record your message, and increase your distance from the microphone. If the message sounds weak and fuzzy, speak more closely into the microphone.

You may also use a recording made on an ordinary cassette recorder for your announcement message. Using the Line Input jack on the control console, feed this signal from the cassette recorder Line Output or Speaker Output. Record as usual on the CMS-SR, playing the message from the cassette recorder instead of speaking.

PLAYBACK

To playback a message from the console, without Overlay D in place, refer to the Playback section of Chapter 3. To Playback a message from Overlay D, the programming procedure is as follows:

• Select GROUP	The lamp in the selected key lights steady. The message keys flash.
• Select MESSAGE TYPE (Answer Hold, Answer Drop, etc.)	The lamp in the key lights steady. The Erase and Playback keys will flash. The length of the message is presented on the display.
• Select PLAYBACK	The lamp in this key lights steady. If all channels are busy, "PAUSE" appears on the display. When a channel is free, the message is played once through the speaker under the control unit grille.

To stop PLAYBACK before the message has been played through, select PLAYBACK again.

RECORD COPY TRANSFER

To re-use a message that has already been recorded for another group or message, use Record Copy Transfer. The transferred message does not use any additional recording time, and you may use the same message in as many applications as you wish.

To transfer a message, the CMS-SR may be in any call handling mode.

When using Record Copy Transfer, **first** enter the Group and Message Type you are recording (**TO**). **Then** enter the Group and Message Type you are transferring the recording **FROM**.

In the example below, Group 3's Answer Hold Second message will be transferred from Group 1's Answer Hold/Repeat recording.

» **NOTE:** Any existing message must be **erased** before a new message can be transferred. Refer to the Erase Single Message section of this chapter.

• Select the GROUP (to be recorded)	The lamp in the key selected lights steady. In the example, you would select Group 3.
• Select the MESSAGE TYPE (to be recorded)	The lamp in the key selected lights steady. In the example, Answer Hold Second. The time available for recording is displayed, and the Record, and Record Copy Transfer keys will flash.
• Select RECORD COPY TRANSFER	The lamps in the Group keys flash.
• Select the GROUP (to copy from)	The lamp in the selected Group key goes steady. The lamps in the Message Type keys flash. In the example, Group 1.
• Select the MESSAGE TYPE (to copy from)	The lamp in the key selected lights steady. In the example, Answer Hold Repeat.
• Select ENTER	The voice recording transfer is complete.

ERASE SINGLE MESSAGE

The erase procedure is as follows (the CMS-SR may be in any call handling mode.):

• Select GROUP	The lamp in the key selected lights Steady. The Message Type lamps flash.
• Select the MESSAGE TYPE (Answer Hold, etc.)	The selected key lights steady. The length of the message is displayed, and the Erase, and Play-back keys will flash.
• Select ERASE SINGLE MESSAGE	The key lights steady.
• Select YES	The "Press ENTER to continue" cue lights.
• Select ENTER	"PAUSE" is presented until all calls listening to the message have heard it completely, then the "Erase In Process" cue lights momentarily.

When the "Erase In Process" lamp goes out, the message is erased, and the new recording time available is displayed.

» **NOTE:** If the same message is being used by several groups, the CMS-SR erases the one for the selected group and type ONLY, and retains the original message for the other applications.

DELAY TO REPEAT

The Delay to Repeat option is used only in the ANSWER HOLD REPEAT mode. This establishes how long, in minutes and seconds, elapses between the end of the ANSWER HOLD FIRST message (or ANSWER HOLD SECOND, when used) and the beginning of the ANSWER HOLD REPEAT message.

The programming procedure is as follows:

• Select GROUP	The lamp in the key selected lights steady.
• Select DELAY TO REPEAT	The display presents the current setting. The lamp in the "Select Minutes and Seconds" cue lights. The display presents a colon (indicating the division between minutes and seconds), and a cursor.
• Enter TIME	Using the numeric keypad, enter the time in the 4-digit format (Minutes:Seconds). The colon remains fixed, and the data is presented as it is entered. Up until this point you may return to the existing setting by selecting CLEAR.
• Select ENTER	The new program data is in effect.

The Delay to Repeat Factory Setting is not set.

REPEAT INTERVAL

The Repeat Interval setting is used only in conjunction with the Answer Hold Repeat mode. This establishes how much time, in minutes and seconds, elapses before the ANSWER HOLD message repeats.

The programming procedure is as follows:

• Select the GROUP	The lamp in the key selected lights steady.
• Select REPEAT INTERVAL	The lamp in the "Select Minutes and Seconds" key lights. The display presents a colon (the division between minutes and seconds), and a cursor.
• Enter the TIME	Using the numeric keyboard, enter how much time will elapse between the end of one Answer Hold Repeat message and the beginning of the next. The data is presented on the display as it is entered.
• Select ENTER	The programming is complete.

The Repeat Interval Factory Setting is not set.

This completes the description of Overlay D programming procedures.

PROGRAMMING OVERLAY E - ENHANCED STAFFING FEATURES

Overlay E is used to program Agent Schedules for the Fixed Agent Supply, and to maintain very accurate Agent Supply information while using the Fixed Agent Supply. Overlay E enables you to make agent logging changes, such as logging in a late-arriving agent, or logging out an early-departing agent, and so forth.

The Forecasting feature enables you to predict the effect staffing and/or call volume changes might make to your ability to handle telephone traffic.

FORWARD TIME SCAN

This key is used in programming the Agent Schedules, and any Fixed Agent Supply modifications (such as late logging in, etc.), and Forecasting.

Each time this key is pressed, the CMS-SR clock will step forward in 10-minute intervals. If the key is held down, the clock will scan forward in 10-minute intervals. When the desired time has been reached, release the key. To return the CMS-SR clock to the present time, select the Set To Present Time key.

BACKWARD TIME SCAN

This key is used in programming the Agent Schedules, and any Fixed Agent Supply modifications (such as late logging in, etc.), and Forecasting.

Each time this key is pressed, the CMS-SR clock will step backward in 10-minute intervals. If the key is held down, the clock will scan backward in 10-minute intervals. When the desired time has been reached, release the key. To return the CMS-SR clock to the present time, select the Set To Present Time key.

SET TO PRESENT

After using the Forward or Backward Time Scans, select this key to return the CMS-SR clock to the present time.

SET/EXAMINE

When this key is selected, the far left corner of the display presents "E". A second press changes the setting to "S". When the "**E**" is displayed, you may examine the schedule, but not make any changes. When set to "**S**", you may set a new schedule, or make changes to an existing schedule.

FIXED AGENT SCHEDULES

This section of keys enables you to examine and/or program fixed agent schedules.

Print a Staff Options Report before beginning. This helps you to list the names as they already appear in the programming, and outlines the present schedule. After you have programmed the agent schedules, print another Staff Options Report. Use this to confirm the changes you have made.

AGENT SCHEDULE

To set up a new Fixed Agent Schedule, or change an existing one, follow the procedure below.

- Select AGENT SCHEDULE
- Enter Agent Security Code — Using the numeric keypad, enter the 3-digit security code of the first agent to be scheduled. The numbers appear on the display as they are entered.
- Select ENTER

Repeat the above two steps until all agents with the same schedule have been entered.

- Select SCHEDULE DAYS (Mon, Tues) — Light all applicable days steady.
- Select ENTER — The current time appears on the display, including the lighted AM or PM key. IN or OUT is lighted to show whether the agent is currently logged in or out.

  "E" is presented on the far left of the display. You are in the Examine mode.

  Both IN and OUT will be lighted if 1) you are scheduling more than one agent, and some of these are currently logged in, and some are logged out; and/or 2) if the agent is presently assigned to different schedules on one or more of the days you have selected. (For example, if you have selected Mon, Tue, Wed, Thu, and Fri, and the agent is presently scheduled for 8-4:30 Mon through Thu, but 9:30-5:00 on Fri.)
- Select FORWARD TIME SCAN or BACKWARD TIME SCAN — As you scan through the day, in 10-minute increments, the IN and OUT lamps come on or go off. This reflects the current fixed agent schedule. This enables you to view the agent's or agents' IN/OUT status for different times during the day.

  When you come to the desired Log-In time,

• Select SET/EXAMINE	The far left character on the display changes to "S". You are now in the Set schedule mode.
• Select IN	The agent(s) fixed logging In time is now set.
• Select FORWARD TIME SCAN or BACKWARD TIME SCAN	Scan to the first desired log-out time (for example, the beginning of the lunch break).
• Select OUT	Continue this for all log-in and -out periods throughout the day.
	When you have completed the scheduling for all agents,
• Select SET/EXAMINE	The far left character on the display changes to "E". You are now in the examine mode.
• Select ENTER	The new schedule will be in effect when the Fixed Agent Supply is selected.

LATE LOG-IN

This is a temporary modification to an existing Fixed Agent Supply Schedule.

If the agent arrives late, but before his first scheduled break, he may instead log in conventionally, as described in Chapter 3.

The programming procedure is as follows:

1	Select LATE LOG IN	
2	Enter Agent Security Code	Using the numeric keypad, enter the 3-digit number. The numbers appear on the display as they are entered.
3	Select ENTER	The present time appears on the display.
		To log the agent in now, go to Step 5. To log the agent in for a different time than it is right now,
4	Press FORWARD TIME SCAN or BACKWARD TIME SCAN	When the desired log-in time is presented on the display,
5	Select ENTER	The Agent Supply for this day will be calculated based on this agent's absence up until the time he is logged in, and his presence from this time on.

EARLY LOG-OUT

This is a temporary modification to an existing Fixed Agent Supply Schedule. This logs the agent out for the rest of this day.

If the agent leaves early for lunch, or for the remainder of the day after the last scheduled break, the conventional logging-out procedure described in Chapter 3 may be used.

1	Select EARLY LOG OUT	
2	Enter Agent Security Code	Using the numeric keypad, enter the 3-digit number. The numbers appear on the display as they are entered.
3	Select ENTER	The present time appears on the display. To log the agent out now, go to Step 5. To log the agent out at a different time than it is right now,
4	Press FORWARD TIME SCAN or BACKWARD TIME SCAN	When the desired log-out time appears on the display,
5	Select ENTER	The agent is logged-out at the time selected. The Agent Supply for this day will be calculated based on this agent's presence up until the time he is logged out, and his absence from this time on.

LOG-OUT ALL DAY

The procedure below logs the agent out for this entire day. For example, when an agent calls in sick.

•	Select OUT ALL DAY	
•	Enter Agent Security Code	Using the numeric keypad, enter the 3-digit number. The numbers appear on the display as they are entered.
•	Select ENTER	The agent is now logged out for the entire day. The CMS-SR will include the agent as IN on the next regularly scheduled day.

If the agent comes in later, use the Late Log-In procedure.

FIXED AGENT SUPPLY

This is an alternate action key; one press is on, another is off. When the lamp in this key is lighted, the Fixed Agent Supply schedule you have set on this overlay is in effect. Agents do not use the log-in and log-out keys on the control panel unless they are making in or out corrections to their schedules.

When the lamp in this key is out, agents log-in and log-out of the system through the control panel.

FORECASTING

The sections which follow describe the use of the forecasting feature of the CMS-SR, which can be used to predict how an increase or decrease in call volume, scheduling changes, and/or staffing changes would affect your call handling capabilities. After projecting an ideal staffing situation, you can set the CMS-SR to put the new agent schedule into effect immediately. Refer to the Use New Schedule section.

LOAD PREVIOUS REPORT

When This key is selected, the CMS-SR puts the most recent complete Staffing graph information into the forecasting buffer. This provides the basic data for Forecasting.

LOAD TODAY'S REPORT

This key causes the CMS-SR to put today's partial Staffing graph information into the forecasting buffer. This will provide the basic data for Forecasting.

PRINT AGENT SCHEDULE

This key causes the CMS-SR to immediately generate a Modified Agent Schedule Report, which reflects the simulated changes you have made during Forecasting.

PRINT STAFF REPORT

This key causes the CMS-SR to immediately generate a Staff report, like the third page of the Daily Report. This Staff Report will reflect the simulated changes you have made during Forecasting.

PRINT STAFF OPTIONS

This key causes the CMS-SR to immediately generate a Group and Agent Assignments Report, like that described in Chapter 5. After the Use New Schedule key has been selected, this report will reflect the simulated changes you have made during Forecasting.

INCREASE/DECREASE CALL ACTIVITY

The Increase Call Activity and Decrease Call Activity keys are used in simulating a change in the percentage of call activity for a selected time period.

• Select LOAD REPORT	Before doing any forecasting, you must load some data into the buffer. You may choose to work with the Previous Report, or Today's Report.
• Select FORWARD TIME SCAN or BACKWARD TIME SCAN	Scan to the beginning time of the desired change in call activity.
• Select DECREASE or INCREASE CALL ACTIVITY	'PC' is presented on the display, cuing you for the percentage of change in call activity.
• Enter the percentage of change	Using the numeric keypad, enter the 3-digit percentage of change in call activity (0 - 100). To increase more than 100%, repeat this step.
• Select ENTER	The display again presents the beginning time of the change.
• Select FORWARD TIME SCAN	Scan to the ending time of the call activity change.
• Select ENTER	The new forecasting data is now in the buffer.
• Select PRINT STAFF REPORT	This reflects the effect your simulated changes would make to your present staffing conditions.

You may repeat this process as often as desired; simply reload a report before beginning.

» **NOTE:** If you wish to simulate the rescheduling of agents based on this modified call activity, continue to Modify Agent Schedule, omitting the first step.

MODIFY AGENT SCHEDULE

This key is used in simulating a change to the agent schedule without making any permanent changes. This enables you to "play" with the scheduling, trying out different numbers of agents, different lunch and break times, etc.

The programming procedure is as follows:

1	Select LOAD REPORT	Before doing any forecasting, you must load some data into the buffer. You may choose to work with the Previous Report, or Today's Report.
2	Select MODIFY AGENT SCHEDULE	The "ASC" prompt appears on the display, cuing for the Agent Security Code(s).

3	Enter Agent Security Code(s)	Using the numeric keypad, enter the 3-digit number of the agent or agents. All agents entered at this point must have the exact same schedule. For agents with different schedules, begin with Step 2 for each new schedule.
4	Select FORWARD TIME SCAN or BACKWARD TIME SCAN	Scan to the beginning time of the simulated change.
5	Select SET/EXAMINE	The far left character changes to "S". You are now in the Set schedule mode.
6	Select IN or OUT	Select the setting according to your simulated staffing change.
7	Select FORWARD TIME SCAN or BACKWARD TIME SCAN	Scan to the time of the end of the simulated staffing change.
8	Select IN or OUT	Make these changes according to your simulated staffing changes. Repeat Steps 4 through 8 until all simulated changes have been made to the schedule. When all changes have been made to the schedule,
9	Select SET/EXAMINE	The far left character changes back to "E". You are back in the Examine schedule mode.
10	Select ENTER	The new forecasting data is now in the buffer.
11	Select PRINT STAFF REPORT	This report reflects how this modified schedule would affect your ability to handle telephone traffic.
12	Select PRINT AGENT REPORT	This produces a copy of the simulated agent schedule you have just devised.

You may repeat this process as often as desired, reloading a report before each new modification.

To see how this simulated agent schedule would handle a decrease or increase in call activity, go to the Decrease or Increase Call Activity section, omitting the first step.

If this modified agent schedule is satisfactory, and you wish to put it into effect immediately, and have the CMS-SR base all future Fixed Agent Supply calculations on this schedule, go to the next section, Use New Schedule.

USE NEW SCHEDULE

To put a new schedule into effect, after Modifying the Agent Schedule, follow the steps below.

• Select USE NEW SCHEDULE	Days of the week keys flash.
• Select SCHEDULE DAYS (Mon, Tues)	Light the lamps steady in all days for which the new schedule will be in effect.
• Select ENTER	The new schedule is now in effect.

This completes the programming instructions for Overlay E.

CHAPTER 5

REPORTS

GENERAL

This chapter describes and illustrates each report that is available through the CMS-SR; the System Options Report, Interval, Daily, and History Reports, a Station Report Group Report, and the Group and Agent Assignment Options Report.

We present a section by section example of each type of report, followed by a description of the data presented.

SYSTEM OPTIONS REPORT

A System Options Report may be generated manually from any of the programming overlays, except Overlay C. This report presents the current settings of all system options and data gathering parameters for the Group selected.

We strongly recommend that you generate one of these reports before and after programming or reprogramming the system. It makes a handy checklist for planning changes and checking the accuracy of system settings.

SYSTEM OPTIONS REPORT HEADING

The report heading section of this report contains the following information:

- Title: AEC Call Management System-SR;
- Type of report: System Options;
- Report Group Number and Name;
- Print Time: the time, day, and date at which this report was generated.
- System Number: each system may be given a unique number. Refer to Appendix B. This does not print if no number is assigned.

```
                    AEC CALL MANAGEMENT SYSTEM-SR
OPTION REPORT: SYSTEM
REPORT GROUP 1: CUSTOMER SERVICE
PRINT TIME: 8:00 AM TUE SEP 15                              SYSTEM: 23
**********************************************************************
```

AUTOMATIC REPORT SECTION

This section of the System Options Report lists the following information:

- The time of the first report of the day;
- The report Interval (how often reports will be presented during the day), in hours and minutes;
- The number of reports to be issued for the day;
- If the data will be zeroed after each report;
- The time of day that the Report Zero will occur;
- The day or days of the week for which the CMS-SR gathers data and controls the system;
- The date or dates of the month on which the CMS-SR issues the History Reports;
- Whether or not Interval Reports will be printed;
- Whether or not Daily Reports will be printed;
- Whether or not History Reports will be printed; and

- When the next report is scheduled to print. This time will be presented, whether or not the reports are programmed to actually print.

```
**********************************************************************
                        AUTOMATIC REPORTS
FIRST REPORT TIME                       9:00 AM
REPORT INTERVAL (H:M)                   0:30
REPORTS PER DAY                         19
REPORT ZERO (Y:N)                       YES
DAILY ZERO TIME                         8:00 AM
REPORTING DAYS                          MON TUE WED THU FRI
HISTORY REPORT DATES 15                 30
PRINT INTERVAL REPORTS (Y/N)            YES
PRINT DAILY REPORT (Y/N)                YES
PRINT HISTORY REPORTS (Y/N)             YES
THE NEXT REPORT IS SCHEDULED FOR        9:00 AM
**********************************************************************
```

AUTOMATIC ANSWER SCHEDULES

This section of the report lists the times and days at which the Answer Off, Answer Hold, and Answer Drop call handling functions will occur.

```
**********************************************************************
                    AUTOMATIC ANSWER SCHEDULES
ANSWER OFF TIME                 5:00 PM  MON TUES WED THU FRI
ANSWER HOLD TIME                OFF
ANSWER DROP TIME                OFF
**********************************************************************
```

GROUP OPTIONS SECTION

This section presents the following information:

- The lines set under this report Group;
- The lines under this report Group to be studied in the Trunks Busy Study;
- The lines graded as Inbound Only;
- The lines to be given the special Priority Intercept Lines handling;
- The Priority Intercept Time, in minutes and seconds;
- The number of rings that will occur before the CMS-SR answers a call;
- Whether the CMS-SR will Delay answering the First Call Only (YES), or delay answering all calls (NO);
- Whether the CMS-SR is set to play the entire first announcement message (SCREEN CALLS FIRST/YES) to callers before presenting them to the agents, or present the calls as soon as they become priority (NO);
- Whether the CMS-SR is set to play the entire first and second messages (SCREEN CALLS SECOND/YES) to callers before presenting them to the agents;
- The time, in minutes and seconds, that a caller will wait on CMS-SR Hold before the Excessive Hold Time Alarm sounds;

- If the display on the optional Attendant Monitor will present the line number of a free outgoing line; and,
- The list of agent vs. priorities used with the DVCT (Dynamically Variable Call Throughput) feature.
- Whether the CMS-SR has been set to Ring All Calls Through (refer to the Installation chapter for details on this option).

```
**********************************************************************
                              GROUP OPTIONS
LINES IN:                     1  2  3  4  5  6  7  8  9 10 11 12
                              25 26
TRUNKS BUSY STUDY:            4  5  6
INBOUND ONLY LINES            1  2  3  4  5  6  7
PRIORITY INTERCEPT LINES      4  26
PRIORITY INTERCEPT TIME (M:S) 0:45
RING DELAY                    3
DELAY FIRST CALL ONLY         NO
SCREEN CALLS FIRST            YES
SCREEN CALLS SECOND           NO
HOLD TIME ALARM (M:S)         1:15
ATTENDANT MONITOR OUTGOING LINE ON
AGENTS VS PRIORITY LIST
  NUMBER OF AGENTS            0
  NUMBER OF PRIORITIES        1
RING ALL CALLS THROUGH        NO
**********************************************************************
```

AUDIO PORTS

This section describes the use of the Audio Ports, the Digital Voice Recording software. It presents the following information:

- The Message type (Answer/Hold First, etc.);
- Whether or not this message has been recorded and is in use;
- The length of the message, in seconds;
- The Delay, in minutes and seconds, between the end of the last Answer/Hold message (First or Second), and the first play of the Answer/Hold Repeat message;
- How often the Answer/Hold Repeat message will repeat, in minutes and seconds; and
- The Message Number information is used by service technicians in conjunction with the Line Status printout in the Self Test report.

AUDIO PORTS			
MESSAGE	STATUS	LENGTH	MESSAGE #
ANSWER/HOLD FIRST	ON	:30	1
ANSWER/HOLD SECOND	ON	:15	3
ANSWER/HOLD REPEAT	OFF		
ANSWER/DROP	ON	:15	4
DELAY TO REPEAT (M:S)		1:00	
REPEAT INTERVAL (M:S)		:30	

ALARM PORTS

Alarm ports A, B, and C are contact closures connected to the terminal strip on the back panel of the CMS-SR Main Level Line Unit. AC Outlet refers to the alarm outlet at the back of the CMS-SR Main Level Line Unit. The Console Alarm refers to the beep sound at the Control Console.

The optional Attendant Monitor Alarm is not listed here. It is controlled from a switch on the Attendant Monitor.

This section of the report lists the following:

- Whether or not the alarm port is to be activated when the Excessive Hold Time has been exceeded;
- If the alarm port is to be activated, whether it will receive a steady or interrupted signal;
- If the AC outlet is to be activated when the Excessive Hold Time has been exceeded; and
- If the Console Alarm is to sound when the Excessive Hold Time has been exceeded.

ALARM PORTS		
PORT	STATUS	SIGNAL RATE
A	ON	INTERRUPT
B	ON	STEADY
C	OFF	STEADY
AC OUTLET ON		INTERRUPT
CONSOLE ALARM (Y/N)	ON	INTERRUPT

TELEPHONE SYSTEM

This information listed in this section is primarily used by installation and service technicians. The data in this section should remain unchanged once the unit has been set up.

This section lists the following information:

- Whether the system is set to detect Dialtone, Busy or Reorder signals as a disconnect signal(s);

- The length of time, in seconds, that the CMS-SR will listen on the line to establish the disconnect signal;
- The length of time, in seconds, that the CMS-SR will wait before listening for a disconnect signal on a line;
- The CPC pulse time, in milliseconds;
- The Ring Length, in milliseconds;
- The Ring Timeout period, in milliseconds; and
- The Priority Call Timeout, in minutes and seconds. This is not a reference to Priority Intercept Lines. This will override a faulty PABX line, and enable normal CMS-SR operation. Refer to the Priority Call Timeout section of Chapter 4.

```
**********************************************************************
                        TELEPHONE SYSTEM
DIALTONE DETECTION              YES
BUSY DETECTION                  YES
REORDER DETECTION               YES
TONE SAMPLE TIME (SEC)          6
TONE IGNORE TIME (SEC)          0
CPC TIME (MSEC)                 5
RING LENGTH (MSEC)              200
RING TIMEOUT (MSEC)             5000
PRIORITY CALL TIMEOUT (M:S)     5:00
**********************************************************************
```

SYSTEM PRINTER

This section lists the type of printer, based on the Printer Types described in Chapter 4. Type 1, 2 or 3.

```
**********************************************************************
                        SYSTEM PRINTER
PRINTER TYPE                    1
**********************************************************************
```

REMOTE REPORTING

This section states whether or not the remote access feature is enabled. It also presents the types of reports which have been programmed to print, when the feature is accessed. Refer to Appendix B.

```
**********************************************************************
                        REMOTE REPORTING
REMOTE ACCESS:                  DISABLED
REMOTE REPORTS:                 PREVIOUS DAILY
**********************************************************************
```

INTERVAL/DAILY/HISTORY REPORTS

The format in which each of these reports is presented is the same. The major difference between them is in the data gathering parameters; that is, how long the CMS-SR has been accumulating the information for these lines.

You can program the CMS-SR to generate any or all of these reports automatically, at intervals you select, or manually, at any time. Refer to Chapter 4.

INTERVAL REPORTS

Interval Reports can be set to occur as often as desired; up to 99 times a day. Usually, the CMS-SR is programmed to generate these every hour, or every two hours, etc. Usually, the Interval Report is used to get a close look at the telephone traffic activity over a short period. Data is accumulated into the Interval Report at the completion of each call on a continuous basis.

The data registers can be set to Zero after each interval report.

DAILY REPORTS

The Daily Report is set to occur once a day. It is generated after the last interval report on all reporting days. In addition to the features in the interval report, the Daily Report includes the Agent Availability Study, the Staffing Requirements Chart, and the Staffing Requirements Summary. Data is accumulated into the Daily Report at each Interval Report time.

The Daily Zero Time is set to occur at the same time each day.

HISTORY REPORTS

History Reports can be set to occur on 1 or more days per week, or on specific dates of the month (up to 31 days). Usually, History Reports are generated once a week, or on the first and fifteenth of the month, etc. It follows the Daily Report on the selected days. Data is accumulated into the History Report at each Daily Report time.

History Report data is automatically zeroed at the first Daily Zero Time following each History Report. Setting the History Report to be printed on the 31st of the month will result in the report being printed on the last day of the month on months with fewer days.

REPORT HEADING

The report heading section of this report contains the following information:

- Title: AEC Call Management System-SR;
- Type of report: Automatic or Manual;
- Report Group Number and Name;

- Staffing Total: If agents log in to the system, this figure is the average number of staff logged in. If Fixed Agent Supply is used, this figure is the Fixed Agent Supply for this period, weighted by the logged in hours, and rounded to the nearest whole number;
- Report Period: the time, day, and date the CMS-SR began gathering data for this report: and the time, day and date the data gathering ended; and
- System Number: if the system has not been given a number, this information is not printed. Refer to Appendix B.

```
**********************************************************************
          AEC CALL MANAGEMENT SYSTEM-SR AUTOMATIC REPORT
REPORT GROUP 1: CUSTOMER SERVICE                          STAFF: 8
REPORT PERIOD: 8:00 AM TUE SEP 16 - 5:15 PM TUE SEP 16    SYSTEM 23
**********************************************************************
```

REPORT HEADING CHECKLIST

- Review all of the data presented: make sure it is correct. Staffing requirements studies, and other important calculations are based on this information.

INFORMATION TOTALS SECTION

This section contains the following information:

- Outgoing calls: the total number of outgoing calls. This includes all calls made on lines connected to the CMS-SR, whether or not these lines were under CMS-SR call handling control.
- Incoming calls: the total number of calls which came in on all lines connected to the CMS-SR, and which rang for a period of time greater than the Ring Length.
- Directly Answered Calls: the number and percentage of calls which were answered without CMS-SR call handling intervention, and whose transaction time was greater than 4 seconds.
- Sequenced Calls: the number and percentage of calls which were answered by the CMS-SR.
- Answered from Sequencer: the number and percentage of calls which agents answered after CMS-SR call handling, and whose transaction time was greater than 4 seconds.
- Abandoned from Sequencer: the number and percentage of calls which abandoned from the CMS-SR before being taken by an agent, or which were answered by an agent but had a transaction time of less than 4 seconds.
- Calls Exceeding Alarm Time: the number and percentage of calls which waited on CMS-SR hold in excess of the alarm time before being taken by an agent or abandoning.
- Average Sequencer Hold Time: the average time, in minutes and seconds, that calls waited on CMS-SR Hold before being taken by an agent.

- Average Time Before Abandonment: the average time, in minutes and seconds, that calls which abandoned before being taken by an agent held before disconnecting.

```
**********************************************************************************
                          INFORMATION TOTALS
OUTGOING CALLS                    265

INCOMING CALLS                    798

DIRECTLY ANSWERED CALLS            67     (  8%)

SEQUENCED CALLS                   731     ( 92%)
  ANSWERED FROM SEQUENCER         623     ( 85%)
  ABANDONED FROM SEQUENCER        108     ( 15%)

CALLS EXCEEDING ALARM TIME        303     ( 41%)

AVERAGE SEQUENCER HOLD TIME       1:35    (M:S)

AVERAGE TIME BEFORE ABANDONMENT   2:40    (M:S)
**********************************************************************************
```

INFORMATION TOTALS SECTION CHECKLIST

The Information Totals section presents a quick overview of the call activity and the level of service which your agents are providing to callers.

Call Activity

- How many outgoing calls were made? If yours is an outside sales business, are your agents using their in-house time productively? In a service, catalog sales, or approval situation, are your agents making unnecessary outside calls?
- What was the incoming call traffic activity? This may be used to rate the effectiveness of advertising campaigns, and determine peak call activity periods during a day, month, or year.

Level of Service

- What percentage of calls were directly answered? How many were answered from CMS-SR Hold? How long did the callers wait while on CMS-SR Hold (Average Sequencer Hold Time)? Are the agents responding to calls promptly? Is the staffing adequate?
- What percentage of calls abandoned from the CMS-SR? How long did they wait before disconnecting (Average Time Before Abandonment)? Is the staffing adequate? Does the Alarm Time need to occur sooner, giving the agents notice to wrap up their calls more quickly?

SEQUENCED CALLS CHART

The Sequenced Calls Chart is comprised of 32 categories, representing the length of time calls spent under CMS-SR control, and whether they were answered or abandoned. These are followed by the number of calls in each category, and by bar graphs representing the calls.

The user-established alarm time is printed on the chart to help you determine its efficacy. The chart clearly presents the number of calls which were answered or abandoned before and after the alarm time.

SEQUENCED CALLS

TIME M:S	ANSWERED	ABANDONED
0:00		
	31	3
0:10		
	63	4
0:20		
	81	8
0:30		
	40	2
0:45		
	19	1
1:00		
	30	6
1:30		
	125	14
2:00		
	106	18
2:30		
	62	19
3:00	ALARM TIME	
	38	14
4:00		
	18	8
5:00		
	9	11
6:00		
	0	0
7:00		
	0	0
8:00		
	0	0
9:00		
	0	0

SEQUENCED CALLS CHART CHECKLIST

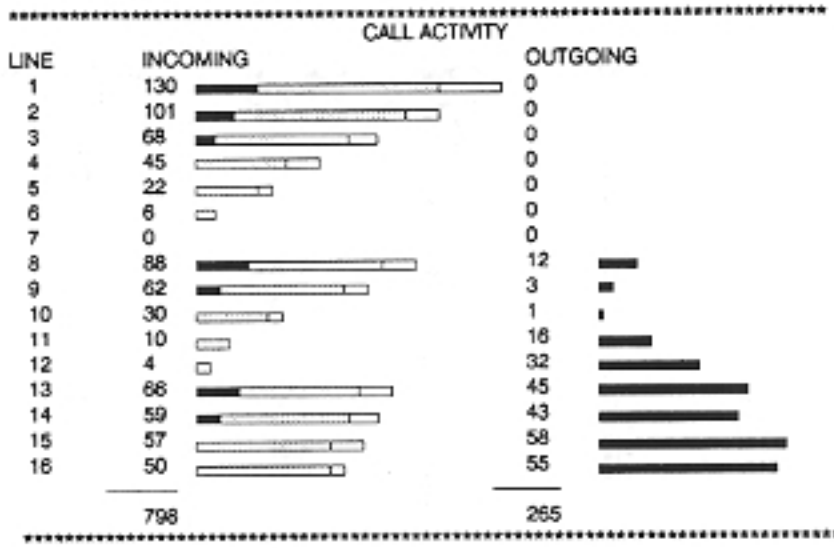
This section can be used to evaluate agent performance and staffing demands, and the hold-time alarm.

- The alarm time may be adjusted to occur sooner or later, based on the number of calls and amount of time over the alarm time. In the example chart, the Alarm Time could be set to occur at 1 minute, 30 seconds, before the majority of callers begin to abandon. The Average Time Before Abandonment from the Information Totals section may also be used to determine the Hold Time Alarm setting: deduct 10 seconds or so from this time, to enable agents to wrap up other calls they may be handling.

CALL ACTIVITY CHART

The Call Activity Chart presents the number of each line connected to the CMS-SR. This is followed by the number of incoming and outgoing calls for each line. Also included are bar graphs for each line, showing the total calls, and for incoming calls, a breakdown of which calls were directly answered, sequenced, and abandoned. The black section of the bar represents directly answered calls; the shaded section, sequenced calls; and the white area, abandoned calls.

Activity totals are registered for all lines connected to the CMS-SR, whether or not these lines are under CMS-SR control.



CALL ACTIVITY CHART CHECKLIST

The Call Activity Chart can be used to evaluate telephone usage, as well as line and equipment needs.

- The distribution of calls in a hunt group may indicate a need for more lines, and low or under-utilized lines may be removed. This can be accurately identified by setting the Trunk Busy Study to monitor a specific group of lines.

  In the example, Line 7 may not be necessary, and more lines may be advantageous in the hunt group composed of lines 13 - 16.

- Agent telephone usage may also be monitored, and potential call blockage situations avoided by referring to the Call Activity Chart.

  The agents in the example chart are not using the telephone lines optimally in the second hunt group (lines 8 through 12). Most outgoing calls are made from Line 8, creating a potential call blockage situation.

BUSY STUDY

The Busy Study presents a by-line analysis of Incoming and Outgoing Transaction activity. This includes the total time each line was engaged in incoming and outgoing calls, and the average time that was spent with each type of call. Transaction time is defined as talk time, and does not include CMS-SR Hold times.

Lines which you have established as Trunk Busy Lines will be designated with an asterisk.

The last part of this section reports the Trunk Busy Lines information, presenting the percentage of the report period, the total time, the average time, and the longest time these lines were simultaneously busy.

BUSY STUDY

LINE	INCOMING TRANSACTION TIME TOTAL (H:M)	(M:S) AVERAGE		OUTGOING TRANSACTION TIME TOTAL (H:M)	(M:S) AVERAGE
1	7:18	3:22	*	0:00	0:00
2	5:12	3:10	*	0:00	0:00
3	4:33	4:01	*	0:00	0:00
4	2:16	3:02	*	0:00	0:00
5	1:27	3:55	*	0:00	0:00
6	0:17	2:47	*	0:00	0:00
7	0:00	0:00	*	0:00	0:00
8	5:15	3:35	*	1:37	8:06
9	3:29	3:22	*	0:08	2:37
10	1:36	3:12	*	0:04	3:33
11	0:33	3:15	*	0:46	2:54
12	0:12	3:00	*	2:05	3:55
*13	5:53	5:21	*	2:42	3:35
*14	5:41	5:47	*	2:12	3:04
*15	4:55	5:11	*	4:12	4:21
*16	4:14	5:04	*	3:18	3:36
	53:00	3:50	*	17:04	3:25

* THIS COMBINATION WAS BUSY 25% OF THE REPORT PERIOD: 2:16 TOTAL (H:M)
1:35 AVERAGE (M:S)
3:00 LONGEST (M:S)

BUSY STUDY CHART CHECKLIST

Telephone Usage

- This chart can be used to evaluate telephone usage, line, and equipment needs. It is especially useful in identifying call blockage situations. How often and for how long are potential customers unable to reach you?

Performance Comparisons

- Individuals or groups who have dedicated lines can be compared with other individuals or groups. Often the method of team performance comparisons will further enhance call handling abilities and increase employee morale.

Call Handling/Agent Performance

- Transaction times are a good measure of quality of service for calls being processed. After the CMS-SR has been in operation for a few days, the user should establish a normal or average transaction time for each call. This can be used as a guide to identify deviations from the norm, particularly excessive talk times. This can also be used to encourage agents to keep their transaction times within this limit.
- The Busy Study Chart can also provide transaction information on agent performance as discussed in the Sequenced Calls Chart Checklist.

END OF REPORT

The End of Report section provides a synopsis of the report data. These may be accumulated and compared for an Executive Summary analysis.

- Whether or not the report totals were zeroed at the completion of the report;
- the day, date, and time of the report;
- CALLS OUT: the number of outgoing calls;
- CALLS IN: the number of incoming calls;
- % SEQ: the percentage of calls answered by the CMS-SR;
- % ABD: the percentage of calls which were abandoned;
- M:S AVG SEQ: the average time, in minutes and seconds, calls spent on CMS-SR Hold;
- % OVER ALARM: the percentage of calls on CMS-SR Hold which went over the Alarm Time, and
- % TRNK BUSY: the percentage of time that all lines assigned to the Trunk Busy Study were simultaneously busy.

****

TOTALS ZEROED

DATE	CALLS OUT	CALLS IN	% SEQ	% ABD	M:S AVG SEQ	% OVER ALARM	% TRNK BUSY
5:15 PM TUE SEP 16	265	798	92%	15%	1:35	41%	25%

EXECUTIVE SUMMARY

In addition to the applications suggested after each report section, a daily, weekly, or monthly overview of call activity can be easily assembled.

The Executive Summaries/End of Report data for the period may be stacked and photocopied, providing an easily-read, one-page summary. With the addition of a ring binder, you have a perpetual log of telephone traffic activities in your department or organization.

An example of such an overview appears as follows. A quick scan down each of the columns offers an overview of activity and performance.

DATE	CALLS OUT	CALLS IN	% SEQ	% ABD	M:S AVG SEQ	% OVER ALARM	% TRNK BUSY
4:00 PM MON JUL 6	17	802	75	13	1:20	24	56
4:00 PM TUE JUL 7	15	812	31	7	0:36	6	50
4:00 PM WED JUL 8	17	724	31	11	0:37	5	10
4:00 PM THU JUL 9	12	703	31	11	1:00	13	7
4:00 PM FRI JUL 10	11	790	51	15	1:02	14	7

AGENT AVAILABILITY STUDY

The Agent Availability Study appears on Daily Reports only. It presents the following information:

- The names of the agents who logged on to the system during the reporting period. The names are presented in the order in which they were programmed.
- Groups Assigned: the group or groups to which each agent is assigned;
- Time (H:M) Logged-On: the total time, in hours and minutes, from the first log-in to the last log-out, for each agent;
- Time (H:M) Available: the time, in hours and minutes, and percentage of the total time each agent was logged on to the system, subtracting the logged-out time (breaks, lunches, etc.); and
- Time (H:M) Unavailable: the time, in hours and minutes, and percentage of time each agent was unavailable to take calls.

AGENT	GROUPS ASSIGNED	TIME (H:M) LOGGED–ON	TIME (H:M) AVAILABLE		TIME (H:M) UNAVAILABLE	
ANDREW JONES	1,2,3	9:15	8:15	90%	1:00	10%
DENISE BAKER	1,2	9:15	8:15	90%	1:00	10%
GEORGE JETSON	1	9:15	8:15	90%	1:00	10%
JAN HERBERT	3	9:15	8:15	90%	1:00	10%
JOAN MCOMBER	2,3	9:15	8:15	90%	1:00	10%
MINDY DICKENS	1	9:15	8:15	90%	1:00	10%
LISA STEVENSON	2	4:00	4:00	100%	0:00	0%

AGENT AVAILABILITY CHECKLIST

- When the CMS-SR is set to the Fixed Agent Supply, this section will be the same on every report. If the agents are logging on to the system, the information in this section may be different on every report.
- When using the Agent Log-on, are all agents logging-on to the system?
- Are the times and percentages of availability and non-availability normal for this report group?
- Is staffing sufficient? This may be determined more fully by referencing the Staff Graph and Staffing Requirement Summary.

STAFFING REQUIREMENTS GRAPH

The Staffing Requirements Graph appears on Daily Reports only. This is a graphic representation of telephone traffic and agent availability throughout the day. The graph presents two curves: the staff supplied curve, and the call demand curve.

The staff supply curve, a square wave pattern, depicts the number of agents that are logged-on to the system. This curve will often be identical each day. The call demand curve depicts the incoming call activity, and is a variable wave pattern. The call activity curve will be different each day, although a pattern should develop.

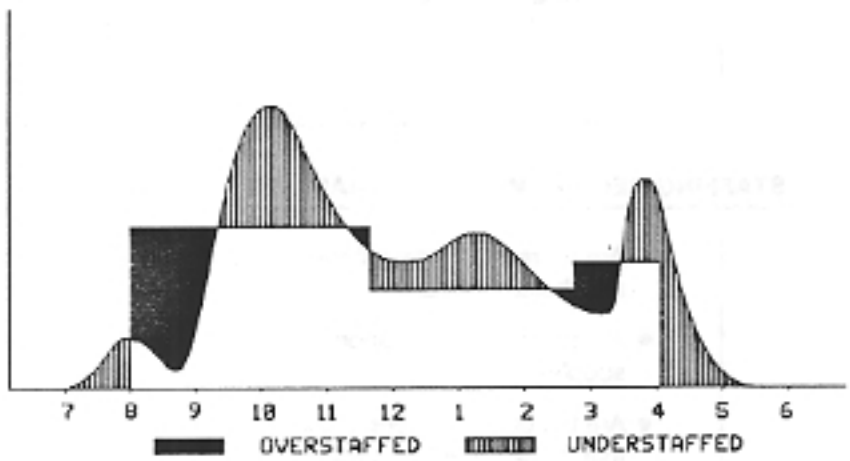
The two curves are overlaid against the daily schedule, and the resulting peaks and valleys represent over- and under- staffed time periods. These areas are shaded to more clearly illustrate the staffing inequities.

This graph is calculated by placing call seconds on the vertical axis, and the daily time schedule in one hour increments on the horizontal axis.

A complete explanation of the calculations used in determining the Staffing Requirements Report appears in Appendix D.

So that Staffing Requirements can be graphed, regardless of call volume or agent supply, the scale of the graph is adjusted to fit the page. The vertical scale adjusts to the call activity, and the horizontal scale adjusts to the report period. The scale factor is presented on the upper right of the graph.

To compare different reporting period graphs with each other, multiply the height of the graph by the scale factor. For example, a graph with a Scale Factor of 2 can represent twice the call volume as a graph with a Scale Factor of 1. If the scale factor is 0, this indicates there was no data on the graph.



STAFFING REQUIREMENTS CHECKLIST

- Is the staff supply curve representing the correct number of agents logged-on? Is the data presented accurate?
- How closely does the call demand curve match the staff supply? Are there major deviations where adjustments could be made?
- When are the busy or peak periods for call demand? Could agent breaks or lunches be shifted to better suit these peak periods?

When the Staff Graph is used with the Staffing Requirements Summary, adjustments in the staff supply can be made to best fit call demand.

» **NOTE:** Changes to the staff supply in an attempt to match the call demand should be based on a number of reports and directed to situations that are consistent. It is not well-advised to make changes based on only a few reports.

By using Overlay E, you may forecast the effects of staffing changes. Refer to the Forecasting section of Chapter 4.

STAFFING REQUIREMENT SUMMARY

The Staffing Requirement Summary appears on Daily Reports only. This translates the Staffing Requirements Graph into actual agents (over- and under- staffed) required by time intervals. The left side of the summary is the AM intervals, and the right side, the PM intervals.

The example graph in the preceeding figure indicates an over-staffing condition between 8:00 a.m. and 9:50 a.m.. The Staffing Requirements Summary gives the exact figure (2.1 agents), and the exact times. This figure is based on a 100% agent availability.

```
**********************************************************************************
                        STAFFING REQUIREMENT SUMMARY
                        OVER  UNDER       OVER  UNDER
7:00 AM  -  8:00 AM           0.2     *   0.1          12:00 PM  -  12:30 PM
8:00 AM  -  9:50 AM     2.1           *          0.5    12:30 PM  -   2:30 PM
9:50 AM  -  12:00 PM          0.8     *   0.6          2:30 PM   -   4:30 PM
                                      *   1.0          4:30 PM   -   7:00 PM
                                      *
                        ____  ____        ____  ____
                        2.1   1.0       * 0.7   1.5
**********************************************************************************
```

STAFFING REQUIREMENTS SUMMARY CHECKLIST

- Are there major deviations in staff supply that may require adjustments to better suit the call demand?
- Are there minor deviations that, when averaged together, suggest a change in staff supply?
- Are the deviations presented consistent from day to day, or can a pattern be seen that is consistent for each day from week to week? For example, is Friday always a slow day?

- How do the understaffed time periods compare with Hold times and Abandoned Call counts for the same time periods? If Hold times and Abandoned Calls are excessive, can an increase in staff supply be justified?

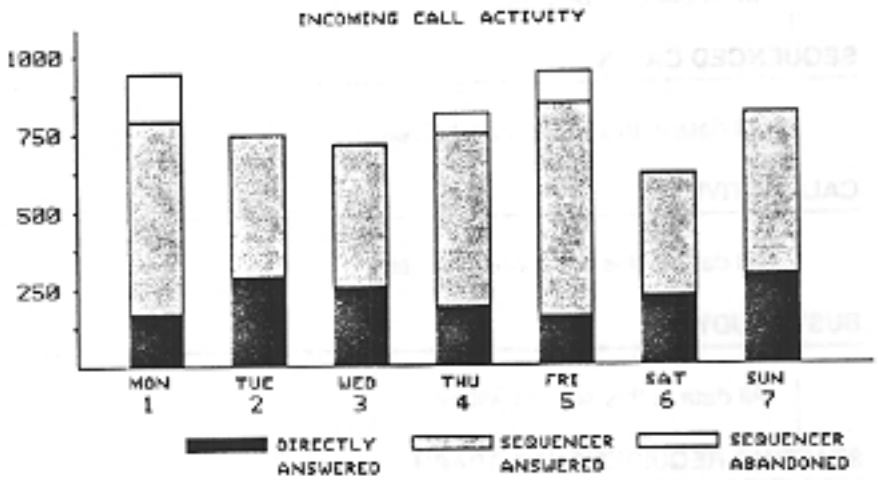
» **NOTE:** Changes to the staff supply in an attempt to match the call demand should be based on a number of reports and directed to situations that are consistent. It is not well-advised to make changes based on only a few reports.

Overlay E will facilitate the planning of any changes to your agent schedules.

INCOMING CALL ACTIVITY

This incoming call activity graph appears on History Reports only. This presents the incoming call traffic for the History Reporting period, on a day by day basis.

The days are presented on the horizontal axis, and the number of calls on the vertical axis. The solid areas represent calls directly answered; the shaded, calls handled by the CMS-SR; and the open bars are calls which were abandoned from CMS-SR Hold. The vertical scale will adjust to your call volume. The number of bars will also adjust automatically to your report period.



STATION GROUP REPORT

Refer to Chapter 4 for information on setting a Station Group.

The reports generated by the CMS-SR for a group of monitored stations will have a format identical to other reports, but with some alterations. The accuracy of the data is subject to the limitations outlined below. Because of the many variables relative to the interaction between the CMS-SR and the PABX, line and station reports should never be critically compared.

REPORT HEADING

This section will contain the usual information, but if the agents are logged into their Line Group rather than their Station Group, the Staffing data will be zero.

INFORMATION TOTALS SECTION

The Outgoing Calls, Incoming Calls, and Directly Answered Calls data will be correct. The Sequenced Calls, Answered From Sequencer, Abandoned From Sequencer, Calls Exceeding Alarm Time, Average Sequencer Hold Time, and Average Time Before Abandonment data will be zero.

SEQUENCED CALLS

All data in this section will be zero.

CALL ACTIVITY

All data in this section will be zero.

BUSY STUDY

All data in this section will be zero.

STAFFING REQUIREMENTS GRAPH

All data in this section will be valid, except that if agents are logged into their Line Group rather than their Station Group, the graph will reflect only call activity versus time of day.

LIMITATIONS

Limitations do exist in the application of the CMS-SR to station monitoring. In many cases the limitations are of no consequence or can be circumvented. However, it is important to be aware of them. They are:

- The station telephone sets must be single line, two-wire sets. Pulse or tone dialing sets will work equally well.
- Not all of the report totals will apply to station monitoring and will remain at zero.

- Agents may log into either the Line Group or the Station Group, but not to both to retain accurate staffing graphs. This is because although an agent may devote 100% of his time to answering calls, the CMS-SR will allow only a total of 100% of the agent's time to be divided between groups.
- Agents must always use the same telephone set and always answer all of their calls.
- Calls that are abandoned froma ringing condition are counted as directly answered calls at the ringing station.
- If unanswered calls are automatically forwarded by the PABX to other stations monitored by the CMS-SR, the calls will be counted twice; once at each station.
- If the call pickup feature of a PABX is used so that one agent may dial a code to answer a call from another agent's telephone, the CMS-SR will count this call as directly answered on the station that rang and as outgoing on the station that performed the call pickup.

GROUP AND AGENT ASSIGNMENTS REPORT

This report presents the current Group and Agent data for all Groups.

We strongly recommend that you generate one of these reports before and after programming or reprogramming the Group and/or Agent information. It is a handy checklist for planning changes and checking the accuracy of system settings.

GROUP AND AGENT ASSIGNMENTS REPORT HEADING

The report heading section of this report contains the following information:

- Title: AEC Call Management System-SR;
- Type of report: Group and Agent Assignments;
- Print Time: the time, day, and date at which this report was generated; and
- System Number: each system may be given a unique number. If no number is assigned, this information is not printed on the report.

```
                    AEC CALL MANAGEMENT SYSTEM-SR
OPTIONS REPORT: GROUP AND AGENT ASSIGNMENTS
PRINT TIME: 8:00 AM TUE SEP 16
********************************************************************************
```

GROUP NAME ASSIGNMENTS

This section of the report lists all CMS-SR groups, and the names you have assigned them. If no name has ben set, the space following the Group Number will be blank.

```
********************************************************************************
                         GROUP NAME ASSIGNMENTS
GROUP 1: MARKETING
GROUP 2: ORDER ENTRY
GROUP 3:
GROUP 4: SERVICE DEPT
********************************************************************************
```

AGENT NAME AND GROUP ASSIGNMENTS SECTION

This section lists the following information:

- The agent names, in the order in which they were entered into the system;
- the agent security ID codes, used for logging-on to the system;
- the groups to which the agents are assigned, and the percent of each agent's time which is allocated to each group.

AGENT NAME AND GROUP ASSIGNMENTS

AGENT NAME	AGENT ID CODE	GROUPS ASSIGNED AND % ALLOCATIONS 1	2	3	4
ANDREW JONES	123	50	30	20	–
DENISE BAKER	212	60	25	–	–
GEORGE JETSON	316	80	–	–	–
JAN HERBERT	675	–	–	–	90
JOAN MCOMBER	980	–	65	35	–
MINDY DICKENS	650	100	–	–	–
LISA STEVENSON	809	–	100	–	–

AGENT NAME AND GROUP ASSIGNMENT CHECKLIST

- Check that all of the names, Security Codes, and group assignments are correct.
- Check that the percentage of time allocated to each group is correct.

GROUP OPTION ASSIGNMENTS

This section reports the Group Options which are assigned from Overlay C.

Presented is a by-group report of factors which affect the agent call-handling studies: Whether or not Outgoing Calls are included, and the user-programmed Acceptable Hold Time.

GROUP OPTION ASSIGNMENTS

GROUP	1	2	3	4
INCLUDE OUTGOING	YES	YES	0:00	YES
ACCEPTABLE HOLD TIME (M:S)	0:30	0:30	0:00	0:45

AGENT SUPPLY SCHEDULE INFORMATION

This section reports whether agents log-on to the system, or if the Fixed Agent Supply data is being used, for all groups.

AGENT SUPPLY SCHEDULE: FIXED FOR ALL GROUPS: YES
LOG-ON FOR ALL GROUPS: NO

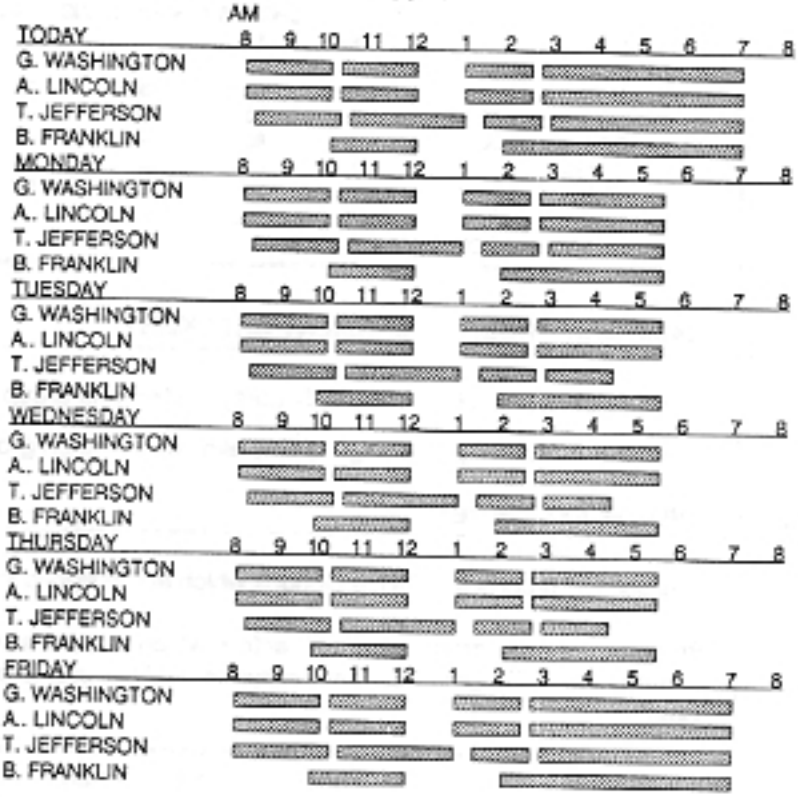
AGENT SUPPLY TIME SCHEDULE

This schedule presents the times that the agents were logged-on to the system during the 7-day agent supply memory period.

The times during which the agents were logged on are represented as a graph along the reporting period time line.

An example of this report appears on the following page.

AGENT SUPPLY TIME SCHEDULE: GROUP 1



CHAPTER 6

SPECIFICATIONS

These specifications are provided to assist you in establishing applications and acceptance criteria for the CMS-SR. Minor deviations from these specifications which do not affect the performance of the unit are excluded from the warranty.

CHARACTERISTIC	PARAMETER
Announcement Message	
• Media	Solid-state, digital voice recording, user-recordable
• Length, Standard	Variable; up to 64 seconds
• Length, Multiple Announce	Up to 2 minutes
• Length, Multiple Announce with add-on Announce Time	Up to 17 minutes
Audio Channels (voice)	
• Standard	1 channel
• Multiple Announce	3 channels
• Multiple Announce with add-on channels	7 channels
• Signal to Noise Ratio	40 dB
• VF Cross Talk	-50 dB
• VF Response	200 - 3000 Hz, ± 2 dB
Telephone Interface	
• CO/PBX Line Capacity	12 lines per cabinet - 60 lines per system
• FCC Registration Number	AAF993-72123-AN-N
• Ringer Equivalence	1.0B
• Standard mounting	Stand-alone cabinet
• Telephone Cabling	One USOC type RJ71C connector per 12 CO/PBX lines
Dimensions, Main Unit	
• Height	5.0 inches
• Width	20.0 inches
• Depth	2.0 inches

CHARACTERISTIC	PARAMETER
Dimensions, Control Console	
• Height	1.0 inches (front), 3.75" (back)
• Width	16.0 inches
• Depth	10.25 inches
Printer	
• Interface	Serial EIA RS-232C
• Baud Rate	1200 baud
• Stop Bits	2
• Data Bits	8
• Parity	No parity
Power Requirements	
• Primary Power	120 VAC ± 10% with ground
• Options and Data Battery	#2032, lithium
• Options and Data Back-up time	1 year
• Digital Voice Battery	12 volt, rechargeable
• Digital Voice Battery Back-up time for single- or 3-channel CMS-SR	3 hours
• Digital Voice Battery Back-up time for 7-channel CMS-SR	1 1/2 hours

CHAPTER 7

INSTALLATION

» **CAUTION:** Installation of the CMS-SR should be made ONLY by a qualified service technician.

UNPACKING

When the CMS-SR arrives, inspect the shipping container for visible loss or damage. Then carefully unpack the system and examine the exterior for concealed loss or damage.

The CMS-SR is thoroughly tested, inspected, and carefully packed before leaving the Automation Electronics assembly plant. Claims for loss or damage sustained in transit should be made upon the carrier, not to Automation Electronics, as follows:

- Visible Loss or Damage: This must be noted on the freight bill or express delivery sheet. The form required to file such a claim will be supplied by the carrier.
- Concealed Loss or Damage: This is loss or damage which does not become apparent until the CMS-SR has been unpacked and placed in service. When the damage is discovered, make a written request for an inspection by the carrier's agent within fifteen days of the delivery date. Then file a claim with the carrier. Incomplete shipments should be reported immediately to Automation Electronics.

SHIPPING LIST

Each CMS-SR is shipped in a specially designed container which we recommend be retained for future use. Below is a list of the items which are shipped with all CMS-SRs. Additional items may be ordered from Automation Electronics.

- the Call Management System-Senior (shipped in two containers), 1) control console, and 2) line unit);
- one Owner's Manual;
- one warranty card;
- one AC power cord
- one 6-foot, 24 AWG, 25-pair cable for connection between control unit and main unit;
- one RJ71C interface block (for each 12 lines)

INTERCONNECTION TO THE SWITCHED TELEPHONE NETWORK IN THE U.S.A.

» **IMPORTANT:** This device has been granted a registration number by the Federal Communications Commission (FCC), under Part 68, Rules and Regulations for Direct Connection to the Telephone Lines, and Subpart J of Part 15, Class A Computing Device. To

comply with these FCC rules, you must read the following instructions and follow applicable portions completely.

No connection may be made to party or coin phone lines.

If requested by the telephone company, you must inform them of the particular line(s) to which such connection is made, the FCC registration number, and the ringer equivalence of the device.

After the telephone company has been advised of the above you may connect this device.

Repairs may be made only by AEC, or an AEC-authorized service center. Unauthorized repairs void the registration and the warranty. Contact the seller or AEC for details on permissible user-performed routine repairs, and for locations of AEC Service Centers.

If, through abnormal circumstances, the telephone lines are harmed, the device should be disconnected until it is determined whether this device or the telephone line is at fault. If this device is the source, do not reconnect it to the telephone lines until it is repaired.

Should the telephone company notify you that the device is causing harm, it should be disconnected. The telephone company will, where practicable, notify you that temporary discontinuance of service may be required. However, where prior notice is not practicable, the telephone company may temporarily discontinue service, if such action is reasonably necessary. In such cases the telephone company must a) promptly notify you of such temporary discontinuance, b) afford you the opportunity to correct the condition, and c) inform you of your rights to bring a complaint to the FCC under their rules.

The telephone company may make changes in its communications facilities, equipment, operations, or procedures, where such action is reasonably required in the operation of its business, and is not inconsistent with FCC rules. If such changes can be reasonably expected to render this device incompatible with telephone company facilities, or require modifications or alteration, or otherwise materially affect its performance, written notification must be given to you, to allow uninterrupted service.

» **WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A Computing Device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

INTERCONNECTION TO THE SWITCHED TELEPHONE NETWORK IN CANADA

» **NOTICE:** The Canadian Department of Communications label identifies certificated equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment; or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

» **CAUTION:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

INSTALLATION SAFETY

When installing the CMS-SR, the following safety precautions must be observed:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

AC POWER REQUIREMENTS

The CMS-SR is wired and shipped from the assembly plant for operation from 120 VAC, 60 Hz, single-phase power line. The AC power cord supplied with the CMS-SR is provided with a third wire ground. The AC power receptacle should not be controlled by a switch. It should be on a branch circuit free from heavy transients or voltage spikes and protected by a fuse or circuit breaker. A voltage spike protector is available at most computer stores, and is highly recommended.

» **CAUTION:** Safe operation of this equipment depends upon the use of a two-wire with U-ground, 120 VAC, 15 Amp service wall receptacle.

DIGITAL VOICE EXPANSION

The CMS-SR is normally supplied with 2 minutes of Digital Voice memory, but a wide range of Digital Voice memory recording time capacities is optionally available. Refer to the table on the following page. The recording time is determined by the number and size

of Single Inline Memory Modules (SIMMs) plugged into the EMCDV. Either 1-megabyte (1 M SIMM) (AEC part number C-864) or 256-kilobyte (256 K SIMM) (AEC part number C-862) memory modules may be used. Up to four modules may be used and the two sizes may be intermixed as desired.

» **NOTE:** Although 512-kilobyte (512 K SIMM) (AEC part number C-861) memory modules are available, they should **not be used in the EMCDV.** 512 K modules consume twice the power of either the 256 K or 1 M modules. This may cause the voltage regulator which powers the Digital Voice Subsystem to overheat, or may impair the ability of the system to operate over the full power line input voltage range (120 VAC ± 10%). The battery back-up time would also be reduced.

Additional memory modules may be added in the field if necessary to increase the Digital Voice recording time. Refer to the Digital Voice Memory Expansion section later in this chapter.

The quantity and size of each module to produce each recording time capacity is shown in the following table.

TABLE 7.1 - DIGITAL VOICE RECORDING TIME

TIME (M:S)	MEMORY MODULE REQUIREMENT	
	1 M	256 K
1:00		1
2:00		2
3:10		3
4:15	1	*
4:15	*	4
5:20	1	1
6:25	1	2
7:30	1	3

TIME (M:S)	MEMORY MODULE REQUIREMENT	
	1 M	256 K
8:35	2	
9:40	2	1
10:45	2	2
12:55	3	
14:00	3	1
17:15	4	

* Four 256 K modules may be substituted for the 1 M Module.

DIGITAL VOICE MEMORY EXPANSION

The Digital Voice memory may easily be expanded after installation by adding the appropriate memory modules to the Enchanced MultiChannel Digital Voice subsystem (EMCDV) according to Table 7.1.

» **CAUTION:** Disconnect the system from power and turn off the Digital Voice Backup Battery switch before attempting to add or remove memory modules. They are not designed

to be replaced with the power on. Failure to take this precaution may result in damage to the memory modules or the EMCDV. This damage is **not** covered by the warranty.

Digital Voice messages will **not** be retained after a memory expansion.

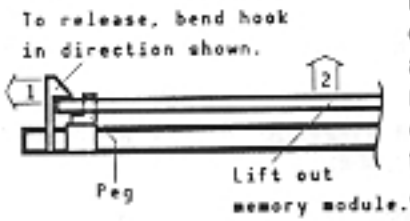
To change the recording time, perform the following steps:

1 **Disconnect all power to the system and turn off the Digital Voice Backup Battery switch.**

2 Remove the four screws and washers from the bottom and lift the top cover off.

3 Ground yourself to the chassis. This prevents the buildup of static electricity which will damage the circuitry.

4 Determine from Table 7.1 what memory modules will be used to make up the required recording time. First remove modules if necessary.



It is easy to remove memory modules, but if done incorrectly, the socket can be damaged and made useless. Look carefully at how the module is retained in the socket. A plastic peg on each end of the socket fits through a hole in the small printed circuit board of the module. Also right next to each peg is a plastic hook that retains the module on the peg. Each hook must be carefully sprung slightly to each side to allow the module to be unhooked from the peg. **DO NOT BEND THE PLASTIC HOOK TOO FAR.** This would result in the hook breaking off. When the module is free of the pegs, it can be lifted out of the socket.

» **CAUTION**: Static electricity will destroy the memory modules. They are not warranted against static electricity damage. **You must always be grounded to the frame of the system when inserting or removing SIMM modules. Also, power must be off when inserting or removing the SIMMs.** The removed modules should not be discarded. Keep them as spare parts for possible future use. They should be packed in an antistatic bag or wrapped in aluminum foil to protect them from static damage.

5 Install new modules as necessary.

Installing a new module is basically the reverse of the procedure to remove an existing module. The exception is that as the plastic hooks may be ignored as the module is hooked onto the pegs. The hooks will clip over the new module when the pegs have fully engaged. Make sure that the module is inserted in the right orientation. It fits only one way easily.

6 There are no jumpers or switches to change. The memory modules may be plugged into any SIMM socket, as long as SIMM socket 1 is also used.

» **NOTE:** The EMCDV will not operate if SIMM socket 1 is empty.

7 Proceed to the next section to test the EMCDV.

TESTING THE EMCDV

The EMCDV should be tested to verify that the installation or memory expansion has been performed correctly. Use the following procedure:

1 Reconnect the power line and turn the system on. Switch on the Digital Voice Battery Backup switch.

If the Digital Voice Battery Backup switch is turned on first, the EMCDV may not start.

2 Wait about 1-1/2 minutes for the EMCDV to test the memory modules.

During the test, the status indicators flash alternately, indicating that the test is in process.

3 When the memory test is complete, the status indicators will stop flashing. Now set up the system to record a message.

The total recording time available should be the same as or more than the amount shown in Table 7.1.

4 If the recording time is right, go to step 7. If it is less than the specified amount, perform the following steps:

5 Using a metal-tipped instrument such as a screwdriver, momentarily short together the two vertical contacts as shown in Figure 7.1, which follows. **To avoid static electricity damage, keep one hand on the frame of the system as you do this.**

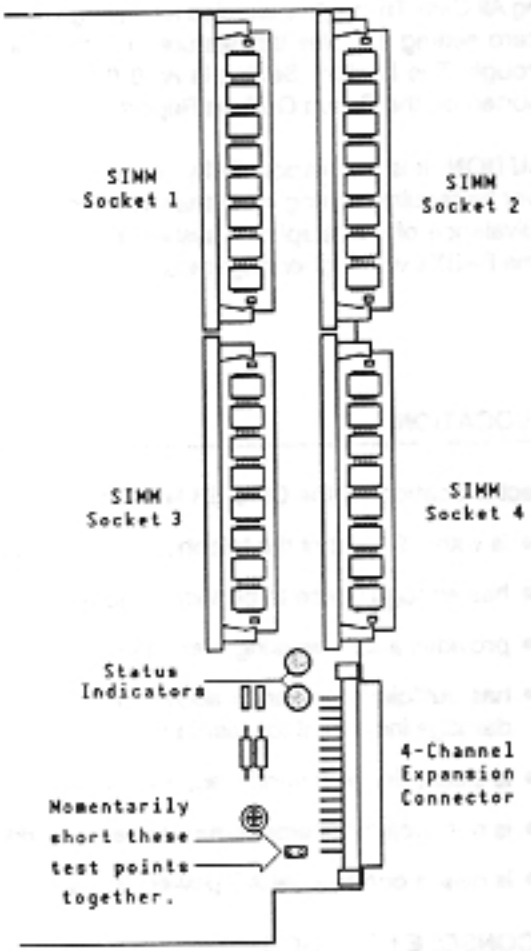
This causes the results of the memory test to be displayed. The two status lamps flash simultaneously. You will see a series of flashes, with pauses in between. Count the number of flashes occurring between pauses. The counts may be 1, 2, 3, or 4. The counts refer to the memory module SIMM socket numbers. A SIMM socket number will be displayed if the socket is empty **or** if the memory module in that socket is partially or completely defective.

6 If the display indicates that a SIMM is defective, **remove power from the system and turn the Battery Backup switch off.**

If a SIMM is indicated to be defective, but the recording time available is the same as or more than that indicated in the previous table, this indicates that only a small part of the SIMM is defective. The EMCDV will automatically refrain from using the small defective part of the memory, so you may elect to not replace the SIMM. If you determine that the SIMM should be replaced, do so at this time and return to step 1.

7 Replace the top cover of the system and fasten with the four screws and washers you originally removed.

FIGURE 7.1 - EMCDV SHORT TEST LOCATION



GROUND START/LOOP START SWITCH

A PABX/EKTS system operates on either ground start or loop start CO/PBX lines. Each 3 line card may be individually set to ground start or loop start. The telephone or interconnect company will advise you which type your system uses.

This option is set upon installation of the CMS-SR, and will not need to be reset unless the telephone system is modified or changed.

RING ALL CALLS THROUGH

The Ring All Calls Through feature may be used when the PABX queues calls, and the announcement, music-on-hold, and superior reporting capabilities of the CMS-SR are needed.

When Ring All Calls Through is enabled, the CMS-SR rings all calls through *by group*. This is set as a separate Yes/No option for each group.

Ring All Calls Through is enabled as through a hidden key on Overlay B above Zero Data. A zero setting disables this feature, a setting of 1 causes the CMS-SR to Ring All Calls Through. The Factory Setting is All 0 (Ring All Calls Through is set Off). This setting is reported on the Group Options Report.

» **CAUTION:** It is the responsibility of the installer to make certain that 1) the CMS-SR will never be required to ring more than 12 lines through simultaneously and 2) that the ringer equivalence of the telephone system is low enough that 12 lines **can** be rung into it. In some PABXs with higher ringer equivalences, it may not be possible to ring 12 lines into it.

LINE UNIT LOCATION

Select a location for the CMS-SR line unit which:

- is within 25 feet of the telephone interface;
- has enough space to provide adequate support and stability to the unit;
- provides a safe working area, and is accessible to authorized users;
- has sufficient clearance above the floor to avoid damage from water or physical damage incidental to cleaning;
- is clean, dry, well ventilated, and free from corrosive fumes;
- is not subject to temperature extremes; and
- is near a commercial AC power receptacle.

CONTROL CONSOLE LOCATION

The location of the control console should meet the same requirements as for the line unit; with the exception of the proximity to the telephone interface. The control console is connected to, and draws its power from, the line unit. It should be within 150 feet of the line unit.

With the addition of the optional Console Extender Power Supply, the distance between the control console and the line unit may be extended to 1000 feet.

CONSOLE EXTENDER POWER SUPPLY CONNECTION

In situations where the control console will be placed farther than 150 feet away from the main line unit, a Console Extender Power Supply must be installed. This unit will be powered automatically whenever the main power switch is ON.

The Console Extender Power Supply must be installed on the console end of the long cable run. First, connect the 25-pair cable from the control console to the plug on the Con-

sole Extender. Then connect the cable from the main unit to the Console Extender. Be sure the cables are connected correctly. Incorrectly installed (reversed) cables will damage the Console Extender and the CMS-SR. Now, plug the Console Extender power cord into an AC power plug. When the line unit is powered and the Console Extender is plugged in, the power lamp on the Console Extender should come on. If it does not, check the Console Extender fuse. Always replace the Console Extender fuse with one of equal rating and type.

FIGURE 7.2 - CONSOLE EXTENDER POWER SUPPLY CONNECTION

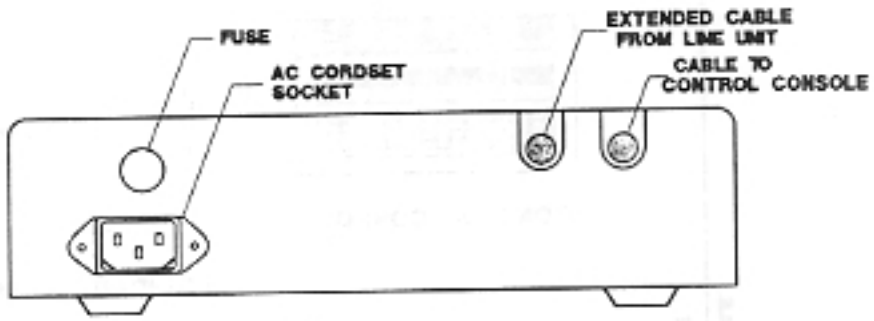
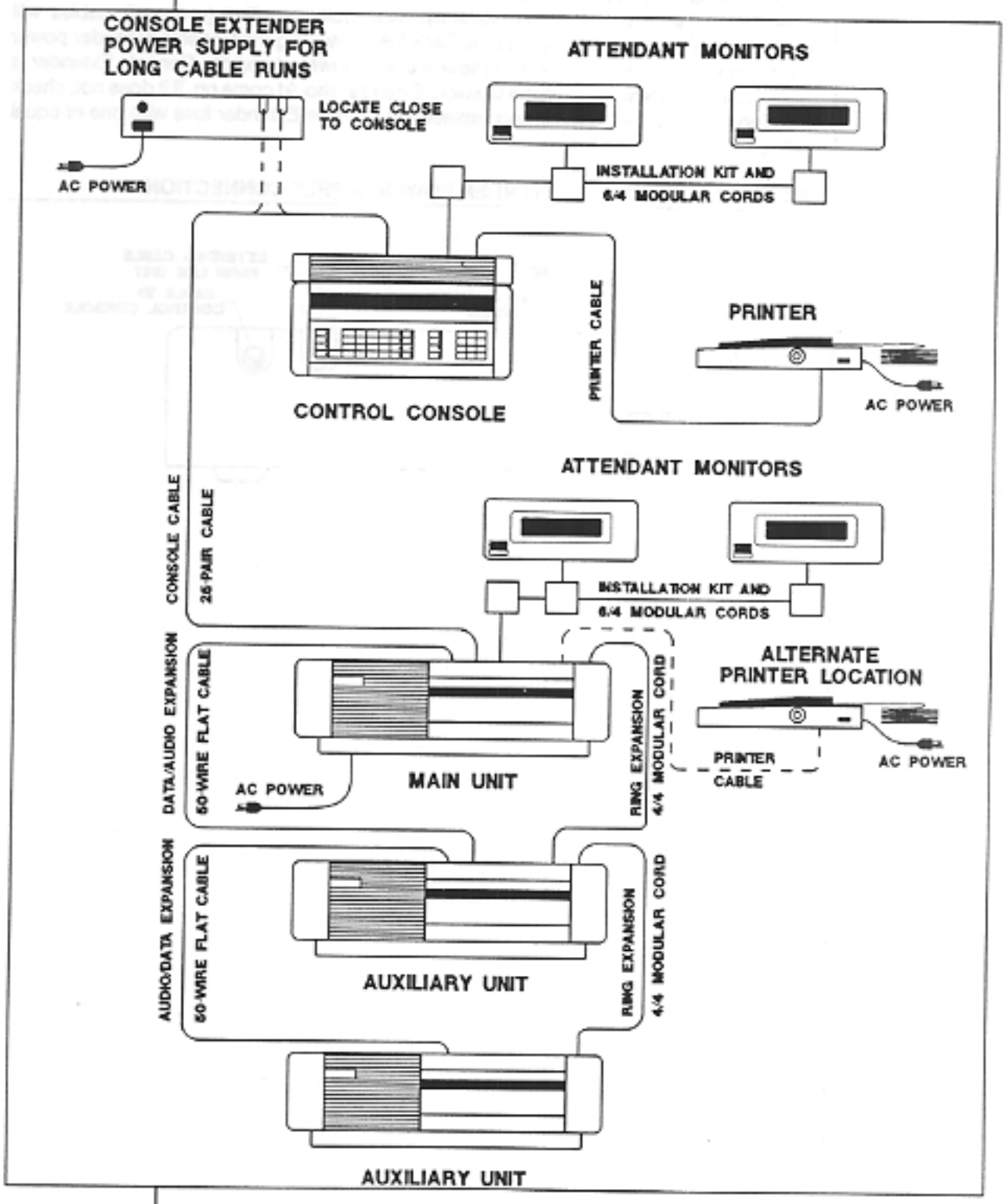


FIGURE 7.3 - SYSTEM INTERCONNECTIONS



AUXILIARY LINE UNIT CONNECTIONS

Auxiliary units are connected to the main unit *before* they are connected to the telephone interface. Auxiliary units are connected to the telephone lines in the same way as the main line unit.

- Plug the 50-pin connecting cable from this machine into the next auxiliary (or main) unit. On auxiliary units, this plug will be labeled "AUX 1".
- Set the Ground Start/Loop Start switches correctly.
- Set the level of this unit on the Device Select Switch. This is a two-position switch located on the back panel. The main unit is always Level 1; the first auxiliary unit is Level 2, and so on. The table below lists the switch settings.

LEVEL NO.	SWITCH A	SWITCH B
2	ON	ON
3	OFF	ON
4	ON	OFF
5	OFF	OFF

- Now connect the unit to the RJ71C interface, and proceed as for a single-level unit.

PRINTER LOCATION AND CONNECTION

The optional printer may be connected either to the control console or to the line unit. Both units have RS232 connectors. The printer should be located within 300 feet of the control console. If the printer is powered from the line unit, and the line unit is 100 feet from the control console, then the printer must be no more than 200 feet from the line unit.

PIN	CIRCUIT	DESCRIPTION
1	AA	Protective Ground or Shield
2	BA	Data from Printer/Modem
3	BB	Data to Printer/Modem
7	AB	Signal Ground
8	CF	Modem Carrier Detect
19	SCA	High (+12V)
20	CD	DTE Ready

ON-HOLD MUSIC SOURCE LOCATION AND CONNECTION

The optional on-hold music source should be located within 5 feet of the CMS-SR main line unit.

The optional music source output is connected to the "Music 8 ohms" terminal strip on the CMS-SR main unit rear panel. The music source must be capable of driving an 8 ohm load, with no more than 1/2 watt power output, and should have an adjustable output level which is used to set the On-Hold Music volume on the telephones.

If the installation uses an existing music source with an output that cannot be adjusted it will be necessary to install an 8 to 10 ohm L-Pad in the cable between the music source and the CMS-SR. On-Hold Music volume may then be adjusted with the L-Pad.

When using a cassette tape machine as the music source the cassette power supply is plugged into the "Music Source" outlet on the CMS-SR main unit rear panel. This outlet turns on when a call begins ringing, and turns off when there are no calls on CMS-SR Hold. This prevents unnecessary wear and tear on the cassette machine.

A lamp connected to the on-hold music source outlet will be lighted whenever a call is on hold for any group, providing a secondary indication of call traffic.

ALARM PORTS CONNECTIONS

The CMS-SR can be programmed to utilize up to 4 separate alarm systems. These are activated when the Hold Time Alarm setting has been exceeded.

The alarms consist of 3 contact-closures and one AC outlet. Each of the 3 contact closures is connected to a pair of screws on the terminal strip on the back panel of the main line.

RJ71C INTERFACE INSTALLATION

The RJ71C block provides a series connection on tip and ring for a maximum of 12 lines per block. The block is equipped with two 50-pin ribbon connectors (female) which provide the means of connection to the CMS-SR. Both connectors are wired identically, so either one can be used for connection.

A pre-wired bridging adapter is shipped loose with the RJ71C block for use in providing the series connection when the CMS-SR is not connected. To disconnect the CMS-SR, first plug the bridging adapter into the unused connector on the side of the RJ71C block, then unplug the CMS-SR from the block. Inserting the bridging adapter before disconnecting the equipment will prevent any calls from being disconnected.

Use the following steps when installing the RJ71C interface:

1. Review the "Before" and "After" diagrams (Figure 7.4), illustrating the RJ71C installation.
2. Mount the AEC-provided RJ71C block in the chosen location.

>> **NOTE:** The RJ71C block must be within 25 feet of the CMS-SR.

3. Identify which lines are to be connected to the CMS-SR. As you proceed with the installation, connect one line at a time.
4. Plug the bridging adapter provided with the RJ71C into one of the connectors (either one) on the side of the block.

For the following steps. refer to the RJ71C Connection Diagram (Figure 7.5).

5. Connect the first line of the RJ21X or, if extensions are being connected, the PBX extension to the first pair of clips on column A of the RJ71C.

>> **CAUTION:** Using a multimeter, verify the polarity is correct. Ground, Ring: -48 VDC.

6. Install bridging clips between column B and C on pair 1.
7. Connect the 13th pair of clips on column A of the RJ71C to the PBX trunk input block.

>> **CAUTION:** Using a multimeter, verify the polarity is correct. Ground, Ring: -48 VDC.

8. Install bridging clips between column B and C on pair 17.

Line 1 of the RJ71C is now completed. To connect the remaining lines, repeat steps 3 through 8, terminating the connections on the next available pair of clips in sequence on the RJ71C (refer to the RJ71C Connection Chart).

FIGURE 7.4 - RJ71C BEFORE AND AFTER DIAGRAMS

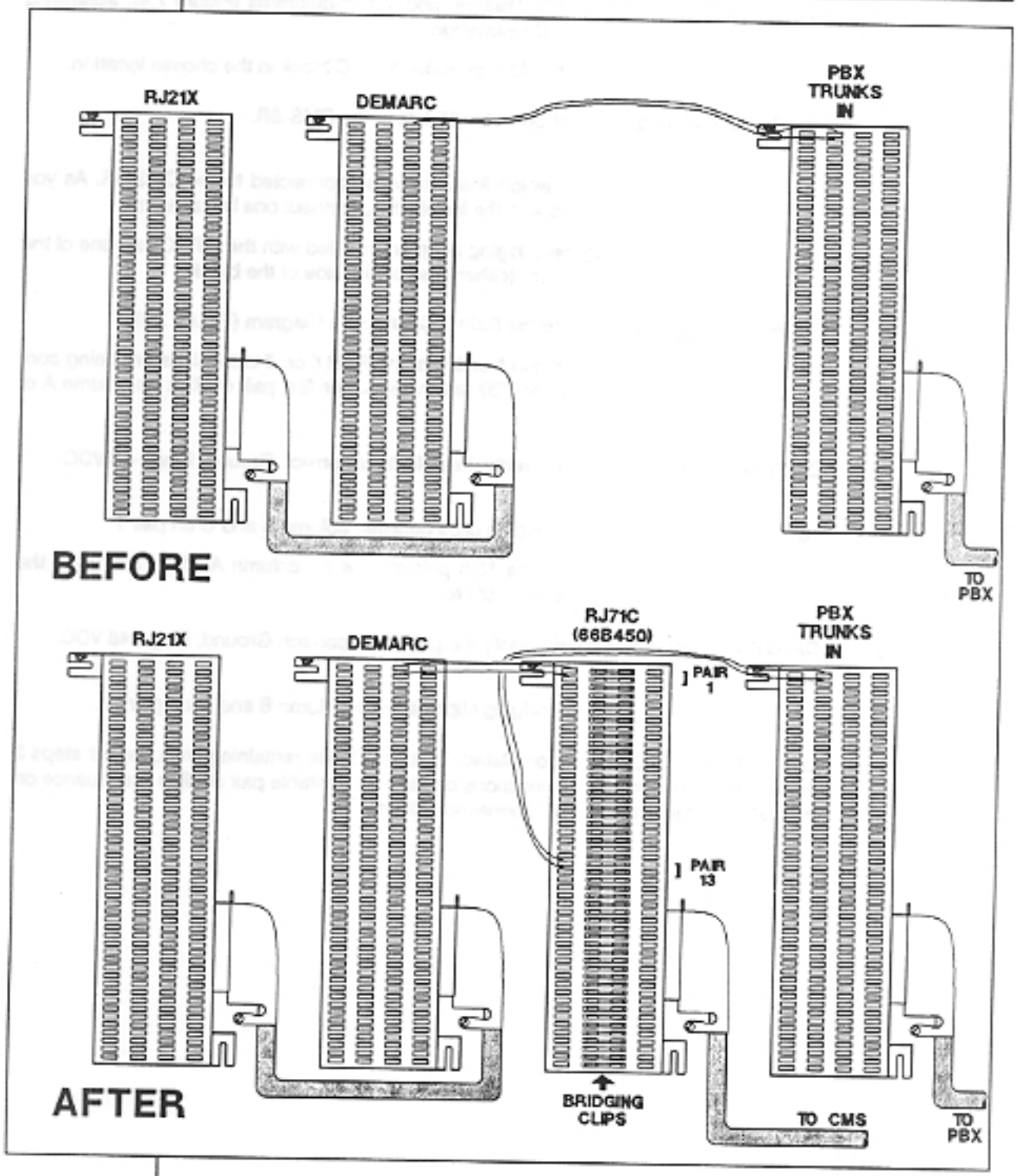
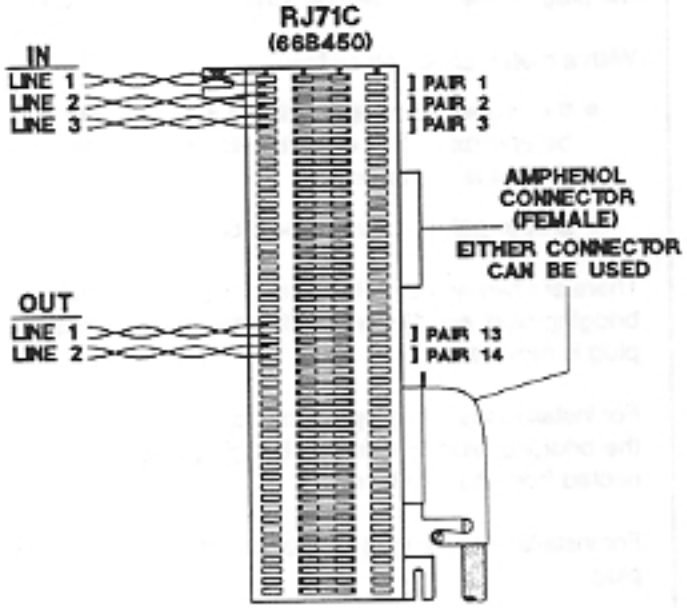


FIGURE 7.5 - RJ71C CONNECTION DIAGRAM



RJ71C CONNECTION CHART

The table below lists the line number, followed by the number of the line pair which go into the CMS-SR, followed by the pair number which go out of the CMS-SR.

LINE NO.	PAIR IN	PAIR OUT
1	1	13
2	2	14
3	3	15
4	4	16
5	5	17
6	6	18

LINE NO.	PAIR IN	PAIR OUT
7	7	19
8	8	20
9	9	21
10	10	22
11	11	23
12	12	24
Pair 25 is not used.		

CONNECTION TO THE INTERFACE

The CMS-SR should be turned OFF, using the main AC power switch on the back panel of the main unit. There will be one 25-pair plug-to-connector cable. Connect the cable to the plug on the CMS-SR first. Check the interface block as described below.

With a meter, check block for:

- the proper amount of voltage across T and R, and across T1 and R1: this should be approximately 48 volts with the phone on hook, and between 4-12 volts when the line is in use; and
- proper polarity: Ring should be negative.

There are two types of RJ71C interfaces, 1) the type that has two connectors and uses a bridging plug, and 2) the type that has one connector and automatically bridges when the plug is removed.

For installations using type 1) interfaces, simply insert the 25-pair ribbon plug, and remove the bridging plug. Retain this bridging plug for use in the event the CMS-SR is disconnected from the interface.

For installations using 2) the automatically bridging plug, simply plug in the 25-pair ribbon plug.

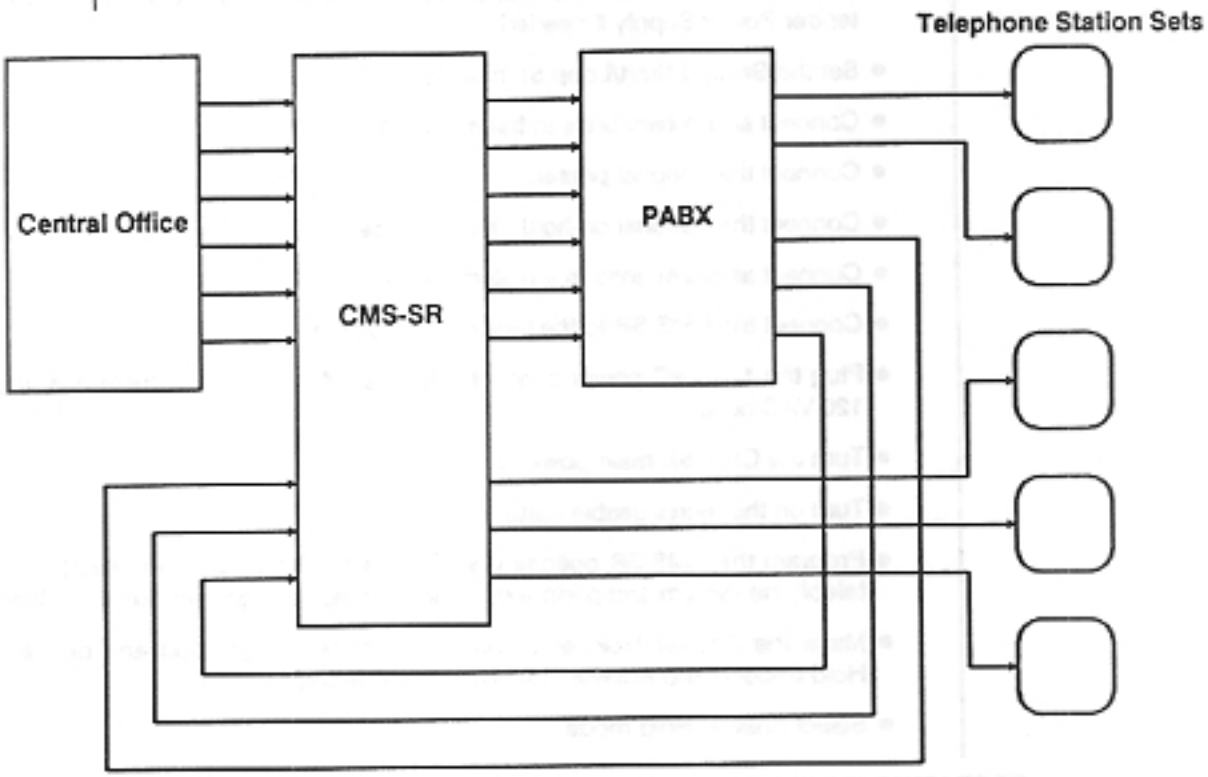
STATION GROUP INSTALLATIONS

One additional CMS-SR line card is required for each 3 stations to be monitored. A line card can handle normal CMS-SR functions with some of its line circuits and handle station monitoring with the remaining line circuits, if necessary. However, all line cards used for station monitoring must be set to Loop Start using the switch on the rear panel of the CMS-SR Line Unit. The monitored telephone station sets must be replaced with single line sets and the PABX station cards must be adjusted or replaced to accomodate this.

The telephone line connection between the CMS-SR, the Central Office (CO), and the PABX remains standard. Additional CMS-SR line cards are installed so that each line circuit is placed between each PABX station port and each corresponding station telephone set. The CO side of the line circuit connects to the PABX station port and the PABX side of the line circuit connects to the station telephone set. The line circuits monitoring stations should be placed in separate group from those line circuits serving lines normally. The station group or groups should be left in Answer Off mode.

Figure 7.6 illustrates the connection.

FIGURE 7.6 - STATION GROUP CONNECTION



ENABLING THE DIGITAL VOICE RECHARGEABLE BATTERY

A 12 volt rechargeable battery backs up the digital voice recording memory, and protects it during AC power failures of up to two hours. This battery is charged whenever the CMS-SR is receiving AC power and the main power switch is ON.

The battery power switch has been switched off at the factory to retain a charge on the battery. It must be switched on to enable the Digital Voice battery backup. The switch is on the rear panel of the main line unit.

BATTERY REPLACEMENT

Lithium batteries protect the user-programmed options and gathered data for at least one year without AC power. One is located in each line unit, and one in the console unit. These batteries have an exceptionally long life, and are soldered directly into the circuit. The condition of these batteries can be tested by using the Self Test described in Chapter 4.

The Digital Voice is backed up by a sealed lead acid rechargeable maintenance-free battery. This battery has a life of four to five years. It is located in the Main Unit and is easily plug-in replaceable. Be sure it is switched ON.

INSTALLATION CHECK PROCEDURES

- Connect the CMS-SR line unit to the control console. Connect the Console Extender Power Supply if needed.
- Set the Ground Start/Loop Start switches.
- Connect all auxiliary units to the main unit.
- Connect the optional printer.
- Connect the optional on-hold music source.
- Connect all alarm units to the alarm ports.
- Connect the CMS-SR to the telephone interface.
- Plug the 120 VAC power cord into the rear of the CMS-SR main unit, then into a 120 VAC outlet.
- Turn the CMS-SR main power switch ON.
- Turn on the rechargeable battery switch.
- Program the CMS-SR options (the Factory Options will be in effect). Be sure the telephone system and peripheral option settings are correct. Refer to Chapter 4.
- Make the Answer Hold and Answer Drop recordings, and any desired Answer Hold Second and Answer Hold Repeat recordings.
- Select Answer Hold mode.

OPERATING THE CMS-SR FOR THE FIRST TIME

After the CMS-SR has been installed, or after service or repair, the operation of the unit should be verified by conducting a Self Test as described in Chapter 4, and through the steps outlined below.

1 Select the Self Test Report on the Security Overlay. This will provide for automatic logging throughout the Operational check.

2 Dial Line number 1 connected to the CMS-SR.

3 Listen for ringing, an indication that the telephone connection is operating correctly.

4 Listen for the Answer Hold and Answer Hold Second messages, and subsequent on-hold music (if provided); check that the messages are clear and understandable.

If an Answer Hold Repeat Message is used, check that the Delay and Delay to Repeat times are accurate.

5 Watch the Line Lamp for this line, indicating when it has come under CMS-SR control, and when it becomes the longest waiting call (rapidly flashing Line Lamp).

6 Also note that the System Status on the display indicates the number of calls waiting; the line number of longest waiting call, and time, in minutes and seconds this call has waited.

7 Have someone take the call and verify that the CMS-SR releases the line.

8 Repeat Steps 2 through 7 for each line connected to the CMS-SR.

MAINTENANCE

The CMS-SR is the result of many years of design, development, and modern electronic manufacturing. This system has been designed using CMOS microprocessor technology and operates at low DC power levels. It can be expected to operate for a long time without periodic adjustments.

APPENDIX A

FACTORY SETTINGS

The following is a list of the CMS-SR Factory Settings, which will be in effect when the unit is operated for the first time, and after a Restore Factory Options action.

RESTORING FACTORY OPTIONS

When the Restore Factory Options key on the Security Overlay is selected, the CMS-SR resets itself to the Factory Settings. Telephone management information totals are left intact.

AUTOMATIC REPORTS

FIRST REPORT TIME	9:00 AM
REPORT INTERVAL (H:M)	1:00
REPORTS PER DAY	9
REPORT ZERO	YES
DAILY ZERO TIME	8:00 AM
REPORTING DAYS	MON TUE WED THU FRI
HISTORY REPORT DATES	31
PRINT INTERVAL REPORTS (Y/N)	NO
PRINT DAILY REPORT (Y/N)	YES GROUP 1 ONLY
PRINT HISTORY REPORTS (Y/N)	YES GROUP 1 ONLY
THE NEXT REPORT IS SCHEDULED FOR	9:00 AM

AUTOMATIC ANSWER SCHEDULES

ANSWER OFF TIME	OFF
ANSWER HOLD TIME	OFF
ANSWER DROP TIME	OFF

GROUP OPTIONS

LINES IN	ALL GROUP 1
TRUNK BUSY STUDY	ALL
INBOUND ONLY LINES	NONE
PRIORITY INTERCEPT	NONE
PRIORITY INTERCEPT TIME	OFF
RING ALL CALLS THROUGH	ALL 0 (OFF)

RING DELAY	1
DELAY FIRST CALL ONLY	YES
SCREEN CALLS FIRST	NO
SCREEN CALLS SECOND	NO
HOLD TIME ALARM (M:S)	OFF
ATTENDANT MONITOR OUTGOING LINE	YES

AGENTS VS PRIORITY LIST	
NUMBER OF AGENTS	≥ 0
NUMBER OF PRIORITIES	1

AUDIO PORTS

ANSWER HOLD FIRST	OFF
ANSWER HOLD SECOND	OFF

ANSWER HOLD REPEAT	OFF
ANSWER DROP	OFF

ALARM PORTS

PORT	STATUS	SIGNAL RATE
A	OFF	INTERRUPT
B	OFF	INTERRUPT
C	OFF	INTERRUPT

AC OUTLET	ON	STEADY
CONSOLE ALARM	ON	INTERRUPT

TELEPHONE SYSTEM

DIALTONE DETECTION	NO
BUSY DETECTION	NO
REORDER DETECTION	NO

TONE SAMPLE TIME (SEC)	6
TONE IGNORE TIME (SEC)	0

CPC TIME (MSEC)	5
RING LENGTH (MSEC)	1000

PRIORITY CALL TIMEOUT	OFF
RING TIMEOUT (MSEC)	5000

SYSTEM PRINTER

PRINTER TYPE	1

REMOTE REPORTING

REMOTE ACCESS	DISABLED
REMOTE REPORTS	PREVIOUS DAILY

APPENDIX B

ACCESSING THE REPORTS REMOTELY

The Remote Reporting feature of the CMS-SR enables you to access most of the CMS-SR reports for any or all groups from a remote location.

DESCRIPTION OF THE SYSTEM

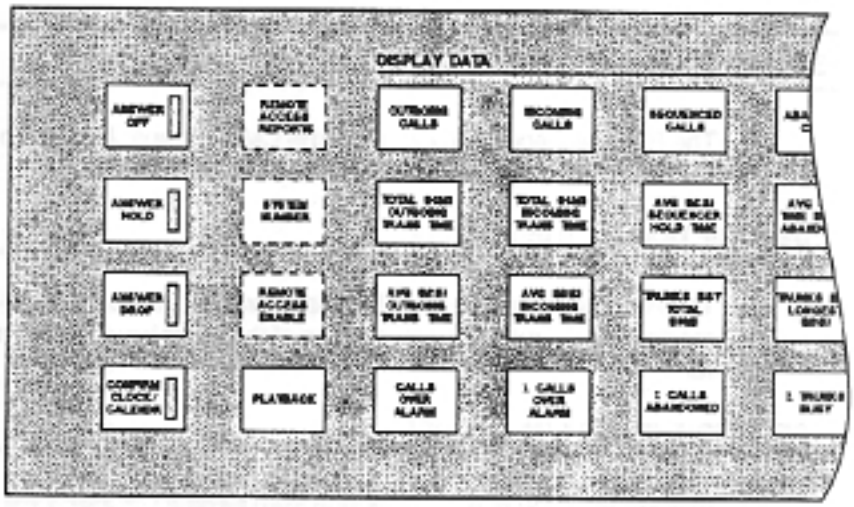
The Remote Access feature is utilized with a 1200 Baud auto-answer modem, a remote modem, and a remote printer of one of the types listed in the Printer Test section of Chapter 4.

SETTING THE SYSTEM NUMBER

In applications in which the reports from several CMS-SRs will be accessed, each system may be given a separate number, from 1 to 9999. This system number will appear on all printed reports. This number is set by using a hidden key located on the control console. Refer to the Remote Access Hidden Key Locations figure.

• Select the hidden key **SYSTEM NUMBER**	The CMS-SR displays the current system number, or '0' if no number has been set.
• Enter the new system number	Using the numeric keypad, choose any number from 1 to 9999. The numbers are presented on the display as they are entered. To remove the system number, enter "0".
• Select **ENTER**	The display blinks the new number. System number selection is now complete.

FIGURE B.1 - REMOTE ACCESS HIDDEN KEY LOCATIONS



ENABLING REMOTE ACCESS

Before the remote access feature will operate, it must be enabled. The Remote Access Enable key is a hidden key located on the Console. When you enable the remote access feature, you will also be setting the type of modem error detection (parity) to be used. The parity settings are as follows:

0 = Remote Access is not enabled
1 = Odd parity
2 = Even parity
3 = No parity

- Select the hidden key REMOTE ACCESS ENABLE — The current setting (0 - 3) will be displayed.
- Enter the parity setting — Using the numeric keypad, enter the parity setting (0,1, 2, or 3). The setting number will be presented on the display.
- Select ENTER — The CMS-SR will blink the new setting. Remote Access is now enabled.

Any type of parity selected will enable remote access. The remote printer must be set to the same parity as the CMS-SR. It is recommended that Odd Parity or Even Parity, rather than No Parity, be used to minimize any disruption in the report printing caused by telephone line noise.

WHEN REPORTING IS DONE ONLY VIA REMOTE ACCESS

If the CMS-SR reports are only to be accessed from a remote location, and not printed locally, the report scheduling must be done as follows:

- Set up all report schedules the same as if they would be printed locally;
- set the Print Report (Interval, Daily, and History) to "NO"; and
- program the Previous Report(s) to print remotely.
- Wait until after the scheduled print time(s) to access the reports.

SELECTING THE REPORTS TO BE PRINTED REMOTELY

You may program the CMS-SR to print remote reports for any or all groups, any or all of the following reports:

- Current Interval
- Current Daily
- Current History
- Current Staffing Requirements
- Previous Interval
- Previous Daily
- Previous History
- Previous Staffing Requirements

These reports may be programmed as follows:

• Select the **GROUP KEY**	The key selected lights steady.
• Select the hidden key **REMOTE ACCESS REPORTS**	Keys for the four Current report types that are programmed to print remotely light steady. Current reports not scheduled to print remotely blink.
• Select or de-select current REPORTS	The report type keys are alternate action. Light the lamps steady for the reports you wish to have printedremotely.

Extinguish any lighted keys for reports you no longer wish to have printed remotely.

• Select the **PREVIOUS** key	Keys for the Previous report types that are programmed to print remotely light steady. Previous reports not presently scheduled to print remotely blink.
• Select or de-select Previous REPORTS	The keys are alternate action. Light the lamps steady for the reports you wish to have printed remotely. Extinguish any lighted keys for reports you no longer wish to have printed remotely.

- Select **ENTER**

The reports programmed to print remotely will blink. All other lamps will be out.

A Group Options Report will further verify the Remote Reports settings.

Repeat this procedure for each GROUP.

ACCESSING REPORTS REMOTELY

Once you have enabled the Remote Reporting, and chosen the reports to be printed; you are ready to retrieve reports remotely.

To retrieve remote reports,

- Dial the modem line number. When you hear the modem tone;
- switch the Voice/Data switch on the modem to "Data". After a brief pause, the reports will begin printing. When the reports have been printed,
- return the Voice/Data switch to "Voice", and hang up the phone.

The graphics on the remote reports are simplified. The reports will be similar to those in the Example Remote Report, which follows.

AEC CALL MANAGEMENT SYSTEM-SR REMOTE REPORT

REPORT GROUP 1: CUSTOMER SERVICE STAFF: 8

REPORT PERIOD: 8:00 AM TUE SEP 16 - 5:15 PM TUE SEP 16

****

INFORMATION TOTALS

OUTGOING CALLS	265	
INCOMING CALLS	798	
DIRECTLY ANSWERED CALLS	67	(8%)
SEQUENCED CALLS	731	(92%)
ANSWERED FROM SEQUENCER	623	(85%)
ABANDONED FROM SEQUENCER	108	(15%)
CALLS EXCEEDING ALARM TIME	303	(41%)
AVERAGE SEQUENCER HOLD TIME	1:35	(M:S)
AVERAGE TIME BEFORE ABANDONMENT	2:40	(M:S)

****

SEQUENCED CALLS

TIME M:S	ANSWERED		ABANDONED	
0:00	31	XXXXXXXX	3	X
0:10	63	XXXXXXXXXXXXXXXX	4	X
0:20	81	XXXXXXXXXXXXXXXXXXXX	8	XX
0:30	40	XXXXXXXXXX	2	X
0:45	19	XXXXX	1	X
1:00	30	XXXXXXX	6	X
1:30	123	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	14	XXX
2:00	ALARM TIME			
	106	XXXXXXXXXXXXXXXXXXXXXXXXXX	18	XXXX
2:30	62	XXXXXXXXXXXXXXX	19	XXXX
3:00	38	XXXXXXXXX	14	XXX
4:00	18	XXXXX	8	XX
5:00	9	XXX	11	XX
6:00	0		0	
7:00	0		0	
8:00	0		0	
9:00	0		0	

CALL ACTIVITY

LINE	INCOMING		OUTGOING	
1	130	XXXXXXXXXXXXXXXX	0	
2	101	XXXXXXXXXXXX	0	
3	68	XXXXXXXX	0	
4	45	XXXXX	0	
5	22	XXX	0	
6	6	X	0	
7	0		0	
8	88	XXXXXXXXXX	12	XX
9	62	XXXXXXX	3	
10	30	XXXX	1	
11	10	X	16	XX
12	4	X	32	XXX
13	66	XXXXXXX	45	XXXXX
14	59	XXXXXX	43	XXXX
15	57	XXXXXX	58	XXXXXX
16	50	XXXXX	55	XXXXXX
	798		265	

BUSY STUDY

LINE	INCOMING TRANSACTION TIME TOTAL (H:M)	(M:S) AVERAGE		OUTGOING TRANSACTION TIME TOTAL (H:M)	(M:S) AVERAGE
1	7:18	3:22	*	0:00	0:00
2	5:21	3:10	*	0:00	0:00
3	4:33	4:01	*	0:00	0:00
4	2:16	3:02	*	0:00	0:00
5	1:27	3:55	*	0:00	0:00
6	0:17	2:47	*	0:00	0:00
7	0:00	0:00	*	0:00	0:00
8	5:15	3:35	*	1:37	8:06
9	3:29	3:22	*	0:08	2:37
10	1:36	3:12	*	0:04	3:33
11	0:33	3:15	*	0:46	2:54
12	0:12	3:00	*	2:05	3:55
*13	5:53	5:21	*	2:42	3:35
*14	5:41	5:47	*	2:12	3:04
*15	4:55	5:11	*	4:12	4:21
*16	4:14	5:04	*	3:18	3:36
			*		
	53:00	3:50	*	17:04	3:25

* THIS COMBINATION WAS BUSY 24% OF THE REPORT PERIOD:

2:18 TOTAL (H:M)
1:35 AVERAGE (H:M)
3:00 LONGEST (H:M)

TOTALS ZEROED

DATE	CALLS OUT	CALLS IN	% SEQ	% ABD	M:S AVG SEQ	% OVER ALARM	% TRNK BUSY
5:15 PM TUE SEP 16	265	709	92%	15%	1:35	41%	25%

AEC CALL MANAGEMENT SYSTEM-SR

REMOTE REPORT
REPORT GROUP 1: CUSTOMER SERVICE
REPORT PERIOD: 8:00 AM TUE SEP 16 - 5:15 PM TUE SEP 16

AGENT	GROUPS ASSIGNED	TIME H:M LOGGED-IN	TIME H:M AVAILABLE		TIME H:M UNAVAILABLE	
BERNIE BRECHT	1,2,3	9:15	8:15	90%	1:00	10%
WINNIE CHURCHILL	1,2,3	9:15	8:15	90%	1:00	10%
CHUCK DICKENS	1	9:15	8:15	90%	1:00	10%
BILL DURANT	1	9:15	8:15	90%	1:00	10%
SHERRY HOLMES	1	9:15	8:15	90%	1:00	10%
PERRY SHELLY	1	9:15	8:15	90%	1:00	10%
JACK STEINBECK	1	9:15	8:15	90%	1:00	10%
QUINCY WAGSTAFF	1	4:00	4:00	100%	0:00	0%

STAFFING REQUIREMENT SUMMARY

7:00 AM - 8:00 AM		0.2	*	0.1		12:00 PM - 12:30 PM
8:00 AM - 9:50 AM	2.1		*		0.6	12:30 PM - 2:30 PM
9:50 AM - 12:00 PM		0.8	*	0.6		2:30 PM - 4:30 PM
			*		1.0	4:30 PM - 7:00 PM
			*			
	2.1	1.0	*	0.7	1.6	

EFFECT OF REMOTE REPORTING ON LOCAL REPORTING

When the Remote Reporting feature is accessed, it will have the following effect on local reporting:

- If a report is in progress when remote access is begun, the local report will stop, and the remote access will be serviced. When the remote access is complete, the interrupted report will be reprinted.
- If any automatic reports come due while the Remote Reporting feature is being accessed, these reports will be delayed until after the Remote Reporting is complete.
- Local requests for manual reports will be delayed until all Remote Reporting activities are completed.
- Exception reports will wait until the Remote Access is complete, and then print locally.

APPENDIX C

ATTENDANT MONITOR

This section describes the optional attendant monitor, which interfaces directly with the Automation Electronics CMS-JR and CMS-SR. The unit is illustrated in Figure C.1.

These units are designed to be placed at each attendant's work station. They present 1) the number of a line available for an outgoing call, or the longest waiting call, 2) the time the longest waiting call has waited, and 3) the number of calls waiting.

LOCATION

The attendant monitor is a stand-alone unit, which may sit on a desk, or be mounted on a wall. Figure C.3 illustrates attendant monitor installations. Refer to the maximum distances described below.

POWER REQUIREMENTS

Each attendant monitor requires power in the form of 300 mA, at 9 to 20 volts DC.

The CMS-SR may power up to four attendant monitors. The connections are made through the jack on the back of the main unit. The attendant monitors may be powered from the control console, but the maximum distance between the main unit and the control console will be reduced, unless the optional Console Extender Power Supply is used.

The CMS-JR may power up to two attendant monitors. The connections are made through the jack on the back of the CMS-JR.

Optional wall-mount transformers may be used to supply power to as many additional attendant monitors as desired. These transformers also increase the maximum cable length to at least 1000 feet.

ALLOWABLE CABLE LENGTH TO ATTENDANT MONITOR

NUMBER OF ATTENDANT MONITORS	WIRE SIZE (AWG)			
	19	22	24	26
1	280	140	90	50
2	140	70	45	25
3	90	45	30	15
4	70	35	20	10

This table assumes the extreme case, in which all of the attendant monitors are at one end of a long cable. If attendant monitors are spaced along the cable, then greater distances are possible.

When the optional wall mount transformer is used to power an attendant monitor, then at least 1000 feet of 19-22-24-26 gauge cable may be used.

The effect of powering an attendant monitor through too great a length of cable is that the display will be dim (or off). It does not harm an attendant monitor to operate it in this condition.

The CMS-JR may power only two attendant monitors, not counting those powered by optional transformers. For these units, the distances in the table should be doubled.

FIGURE C.1 - ATTENDANT MONITOR FRONT and REAR PANEL

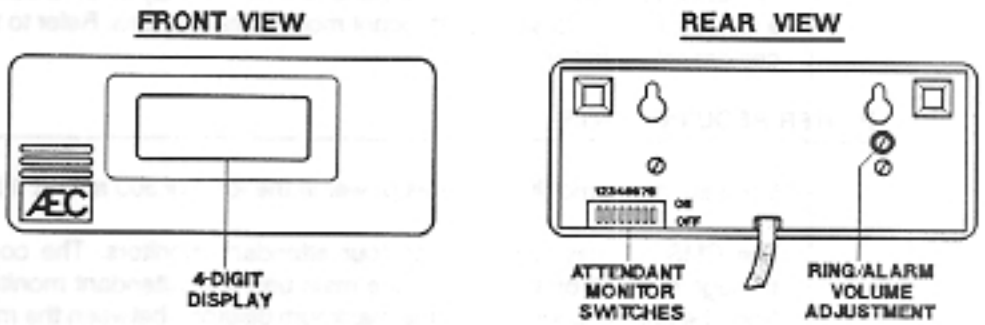


FIGURE C.2 - INSTALLATION/WIRING

This illustration appears on the following page.

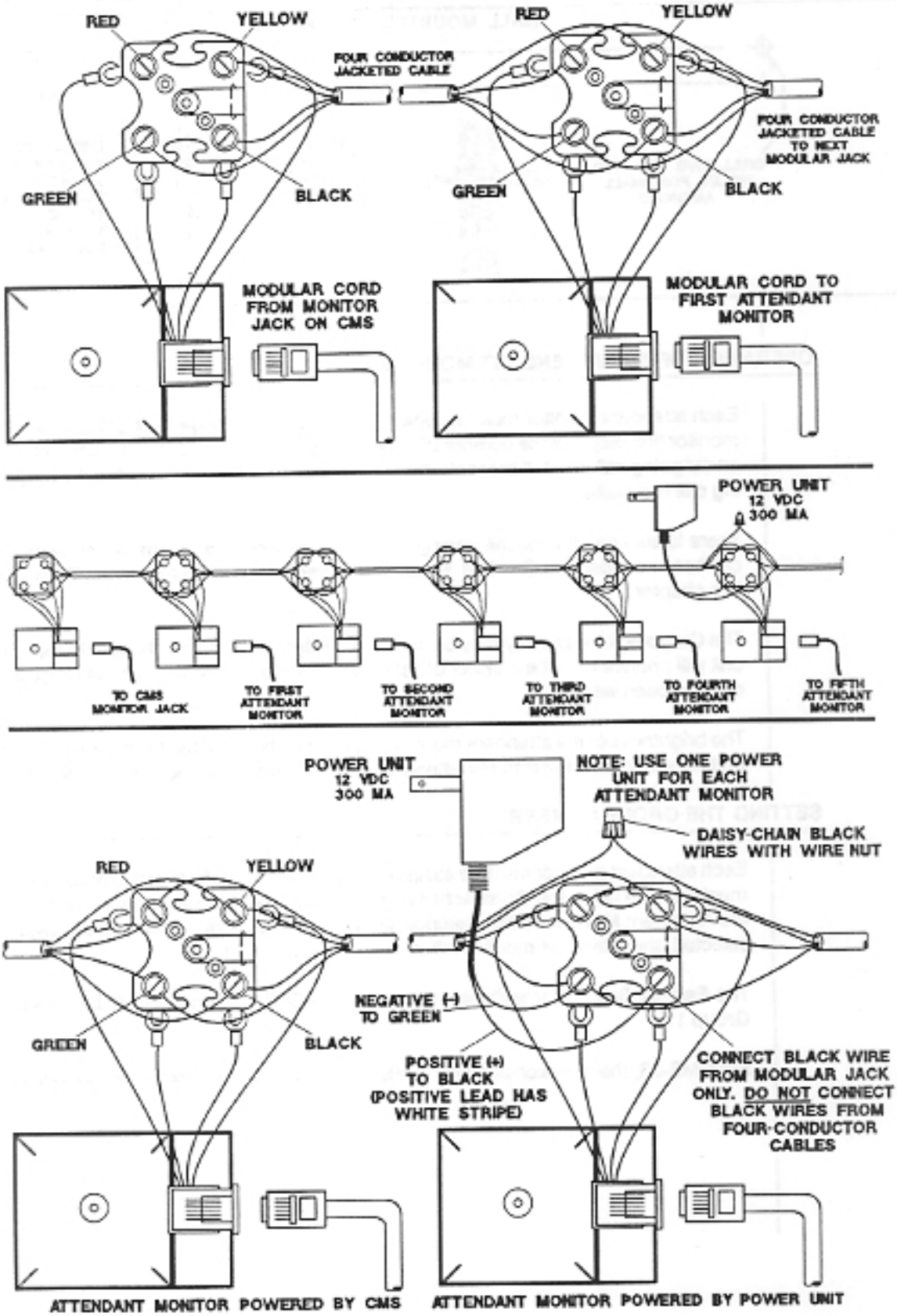
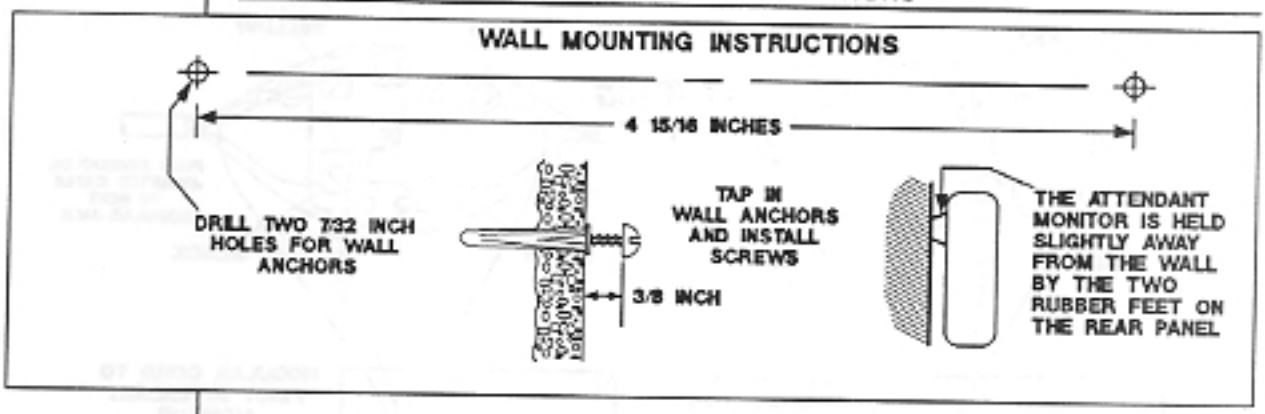

RED
YELLOW
FOUR CONDUCTOR JACKETED CABLE
GREEN
BLACK
MODULAR CORD FROM MONITOR JACK ON CMS
RED
YELLOW
FOUR CONDUCTOR JACKETED CABLE TO NEXT MODULAR JACK
GREEN
BLACK
MODULAR CORD TO FIRST ATTENDANT MONITOR
POWER UNIT 12 VDC 300 MA
TO CMS MONITOR JACK
TO FIRST ATTENDANT MONITOR
TO SECOND ATTENDANT MONITOR
TO THIRD ATTENDANT MONITOR
TO FOURTH ATTENDANT MONITOR
TO FIFTH ATTENDANT MONITOR
POWER UNIT 12 VDC 300 MA
NOTE: USE ONE POWER UNIT FOR EACH ATTENDANT MONITOR
DAISY-CHAIN BLACK WIRES WITH WIRE NUT
RED
YELLOW
GREEN
BLACK
NEGATIVE (-) TO GREEN
POSITIVE (+) TO BLACK (POSITIVE LEAD HAS WHITE STRIPE)
CONNECT BLACK WIRE FROM MODULAR JACK ONLY. DO NOT CONNECT BLACK WIRES FROM FOUR-CONDUCTOR CABLES
ATTENDANT MONITOR POWERED BY CMS
ATTENDANT MONITOR POWERED BY POWER UNIT

FIGURE C.3 - ATTENDANT MONITOR INSTALLATIONS



OPERATION OF THE ATTENDANT MONITOR

Each attendant monitor must be assigned to one call management group. The attendant monitor first displays the number of calls waiting and the number of the line to be used for an outgoing call. Next, it presents the time, in minutes and seconds, that the longest-waiting call has waited.

There is also an internal call ringing indication, as well as an alarm which warns when a call has exceeded the On-Hold Alarm time. Refer to the Calls Over Alarm Time section of this chapter.

The Outgoing Line Display may be disabled, as described in this chapter. In that case, the unit will present only the number of calls waiting, followed by the time the longest-waiting call has been waiting.

The brightness of the attendant monitor display may be adjusted through a switch located on the back panel. Refer to the Attendant Monitor Switch Settings section of this chapter.

SETTING THE GROUP NUMBER

Each attendant monitor must be assigned to only one of the CMS-SR groups. This assignment is made using the dip switches on the back panel of the attendant monitor. Refer to the Attendant Monitor Switch Settings section of this chapter. If none of the switches are selected, the attendant monitor will present data for Group 1.

The Factory Setting for switches 1 through 4 is OFF. Information will be presented for Group 1.

For CMS-JR, these switches have no effect. This unit is designed to handle one group.

CALL RINGING

A ringing call is indicated from the attendant monitor by an electronic ring. The ring will sound only when there is an incoming call and there are no agents on incoming calls.

The volume of the ring is set by a potentiometer on the back of the unit, illustrated in the Attendant Monitor Front and Rear Panel figure in this chapter. The unit is shipped from the assembly plant with this set at the mid-way point. To increase the volume, turn the pot clockwise; to decrease the volume, turn the pot counter-clockwise. This adjustment will also affect the alarm volume.

The ring may also be disabled, using a dip switch on the attendant monitor rear panel. Refer to the Attendant Monitor Switch Settings section of this chapter.

The Factory Setting is OFF. The attendant monitor call ringing indication will not sound.

CALLS OVER ALARM TIME

As long as any call has exceeded the user-selected Alarm Time, an On-Hold Alarm will be sounded from the attendant monitor.

The volume of the alarm is set by a potentiometer on the back of the unit, illustrated in the Attendant Monitor Front and Rear Panel figure in this chapter. The unit is shipped from the assembly plant with this set at the mid-way point. To increase the volume, turn the pot clockwise; to decrease the volume, turn the pot counter-clockwise. This adjustment will also affect the ring volume.

The attendant monitor On-Hold Alarm may be disabled, using a dip switch on the attendant monitor rear panel. Refer to the Attendant Monitor Switch Settings section of this chapter.

The Factory Setting is OFF. The attendant monitor On-Hold Alarm will not sound.

ATTENDANT MONITOR SWITCH SETTINGS

These switches are used to 1) establish which group is monitored, 2) control the display brightness, determine whether or not the 3) local call ringing, and 4) attendant monitor on-hold alarm will sound. The table which follows lists the effects of the different switch settings.

SWITCH	CONTROLS	SETTING	EFFECT
1	Group 1	ON	Display Group 1 Data
2	Group 2	ON	Display Group 2 Data
3	Group 3	ON	Display Group 3 Data
4	Group 4	ON	Display Group 4 Data
5	Display	OFF	Display is bright
		ON	Display is dim
6	not used	OFF	none
7	On-Hold Alarm	OFF	Audible alarm is off
		ON	Audible alarm is on
8	Call Ringing	OFF	Local call ringing off
		ON	Local ringing on
Note: Switches 1 through 4 are not used in CMS-JR applications.			

OUTGOING OR LONGEST WAITING LINE DISPLAY FOR THE CMS-SR

The Attendant Monitor will display the line number of a free line to use for an outgoing call. Alternately, the line number of the longest waiting call may be displayed. This display may also be turned off.

If all of the lines serviced are incoming, or it is not possible for the agent to select a particular line, you should disable the outgoing line display.

- Place Overlay B on the control console. — The Group lights will flash.
- Select **GROUP** — The lamp in the key lights steady.
- Select **ATTENDANT MONITOR OUT LINE** — The current setting is displayed. "**1**" indicates that the **outgoing line** will be displayed; "**2**", the **longest waiting** line. Selecting "0" disables the line display.

- Enter **YES** or **NO** — Using the numeric keypad, enter "1", or "2" to enable the desired display. Enter "0" to disable the display. The number appears on the display.
- Select **ENTER** — The display blinks the setting. Programming is complete.

The Factory Setting is outgoing call line enabled; the line number is displayed.

OUTGOING OR LONGEST WAITING LINE DISPLAY FOR THE CMS-JR

- Select **SELF TEST** — Located under the Daily Zero key.
- Select 4 followed by **ENTER** — The current setting is displayed. "**1**" indicates that the **outgoing line** will be displayed; "**2**", the **longest waiting line**. Selecting "0" disables this display.
- Enter **YES** or **NO** — Using the numeric keypad, enter "1" or "2" to enable the desired display. Enter "0" to disable the display. The number appears on the display.
- Select **ENTER** — The display blinks the setting. Programming is complete.

The Factory Setting is outgoing call line enabled; the line number is displayed.

ATTENDANT MONITOR REPLACEMENT PROCEDURES

>> **WARNING:** The following servicing instructions are for use by qualified service personnel only. To avoid injury to yourself, damage to the unit, and to protect your warranty, do not attempt to perform any servicing unless you are qualified to do so.

>> **CAUTION:** Always observe static damage control techniques when removing PCAs. Static electricity will damage PCAs. Always ground yourself when working on the Attendant Monitor.

ATTENDANT MONITOR FRONT PANEL REMOVAL AND REPLACEMENT

- Disconnect the attendant monitor from the CMS-JR.
- Remove the 2 screws from the back panel of the attendant monitor.
- Lift the front cover off the PCA and back panel.

Replace the Attendant Monitor Front Panel as follows:

- Slide the PCA and back panel into the front panel frame. Be very careful to avoid pinching the cable assemblies.
- Replace the 2 screws in the back panel.
- Reconnect the attendant monitor to the CMS-JR.

6-PIN MODULAR CABLE REMOVAL AND REPLACEMENT

- Remove the front panel. Refer to the Removal and Replacement information above.
- Cut the tie-wrap connector from around the cable and remove it from the PCA.
- Disconnect the 6-pin modular cable from the PCA, being sure to slide it out of the connecting slot on the bottom of the PCA. Remove the PCA.

Replace the 6-Pin Modular Cable as follows:

- Connect the 6-pin modular connector to the PCA, and slide the cable through the connecting slot on the bottom of the PCA.
- Using a new tie-wrap, reattach the connector cable to the PCA. Insert the tie-wrap through the same 2 holes on the PCA that the first tie-wrap was threaded through.
- Replace the front panel. Refer to the Attendant Monitor Front Panel Removal and Replacement section of this chapter.

DISPLAY LENS REMOVAL AND REPLACEMENT

- Remove the front panel. Refer to the Attendant Monitor Front Panel Removal and Replacement section of this chapter.
- Pressing from the front, gently snap the lens out of the front panel frame.

Replace the Display Lens as follows:

- Gently snap the new lens into the back of the front panel frame.
- Replace the front panel. Refer to the Attendant Monitor Front Panel Removal and Replacement section of this chapter.

ATTENDANT MONITOR PCA REMOVAL AND REPLACEMENT

- Disconnect the 6-pin modular connector cable from the PCA. Refer to the 6-Pin Modular Connector Removal and Replacement section of this chapter.
- Disconnect the regulator assembly cable plug from the PCA, and remove the PCA.

Replace the Attendant Monitor PCA as follows:

- Connect the regulator assembly cable to the PCA.
- Replace the 6-pin modular connector cable to the PCA. Refer to the 6-Pin Modular Connector Removal and Replacement section of this chapter.
- Set the option switches to match the ones on the PCA that was replaced.

- Remove the front panel. Refer to the Attendant Monitor Front Panel Removal and Replacement section of this chapter.
- Remove the regulator cable connector from the PCA.
- Using a nut driver, remove the nut and stepped washer from the regulator. Lift out the regulator assembly. Be careful not to damage the mica washer. Leave the white silicone grease on the rear panel.

Replace the Regulator Assembly and Cable as follows:

- Before replacing the regulator assembly, **be sure it will be insulated from the back panel** by the mica washer. Place the new regulator assembly on the mica washer. Using a nut driver, replace the nut and stepped washer on the regulator.
- Reconnect the regulator cable to the PCA.
- Replace the front panel. Refer to the Attendant Monitor Front Panel Removal and Replacement section of this chapter.
- If the Bright/Dim switch has no effect, and the display remains dim, then the regulator case is shorted to the rear panel.

APPENDIX D

DERIVATION OF THE STAFFING REQUIREMENTS REPORT

AGENT SUPPLY

This discussion assumes that one or more agents are assigned to handle inbound or outbound telephone traffic on a particular CMS-SR group.

Let

A_i = the i^{th} agent's available call seconds

P_i = the percent of available seconds that the ith agent can devote to telephone calls in this group

n = the number of agents in this group

Then the number of available call seconds for this agent over any time interval is:

$$A_i \times \frac{P_i}{100}$$

The sum of the available call seconds for all agents over any time interval is:

$$\sum_{i=1}^{n} A_i \times \frac{P_i}{100}$$

The 12-hour horizontal scale of the CMS-SR Staffing Requirements Graph results in one dot per 100 seconds of time. The vertical scale, when the scale factor is 1, is one dot per call second. Each dot occupies an area 1/72 x 1/72 inches. This means that one CCS of available time for an agent over a 100 second interval will be represented by a vertical line 1/72" wide and 100/72, or 1.39" high. The number of call seconds in an hour, for example, is represented by an area 36 dots (or 36/72" or 1/2" wide) and having a height that varies according to the number of agent available call seconds for each of the 36 one-hundred-second intervals in that hour. The area of the figure formed by these vertical columns of dots corresponds to the number of call seconds in that hour.

Let $S_j = \left(\sum_{i=1}^{n} A_i \times \frac{P_i}{100} \right)_j$ = the supply of the available call seconds for all agents for the j^{th} 100-second interval

m = the number of 100 second intervals displayed (1 - 432)

Then the number of available call seconds for all agents over a displayed number of 100-second time intervals is:

$$\sum_{j=1}^{m} S_j$$

CALL DEMAND

The demand graph is calculated very similarly to the Supply Graph.

Let

B_j = the number of call seconds for incoming and outgoing calls for all lines summed, excluding Sequenced Calls for the j^{th} 100 second interval

H_j = the number of call seconds that Sequenced Calls exceeded the Acceptable Holding Time for all lines summed for the j^{th} 100 second interval.

Then the demand for a call seconds for the j^{th} 100 second interval is given by:

$$B_j + H_j$$

However, due to possibly widely varying numbers of call seconds of demand between adjacent 100 second intervals, the graph could become so "fuzzy" as to be unreadable. To minimize this phenomenon, the CMS-SR averages the number of call seconds in each 100 second intervals with the numbers of call seconds in two intervals preceding and two intervals succeeding each interval. The resulting graphed demand for call seconds for the j^{th} 100 second interval is given by:

$$D_j = \sum_{i=j-2}^{j+2} \frac{B_i + H_i}{5}$$

At the left and right limits of the graph we assume:

$B_{-1} = B_0 = B_1 \quad H_{-1} = H_0 = H_1 \quad B_{433} = B_{434} = B_{432} \quad H_{433} = H_{434} = H_{432}$

The result is a curve that is always smooth enough to be readable.

Let m = the number of 100 second intervals (1-432) displayed on a graph. (There are 432 one hundred second intervals in 12 hours.)

Then the difference in the area under the Supply and Demand curves in call seconds con-

$$\sum_{j=1}^{m} (S_j - D_j)$$

stitutes an overstaffed or understaffed condition. The amount of call seconds of overstaffing (positive) or understaffing (negative) is given by:

This formula is used in calculating the Staffing Requirements Summary.

STAFFING REQUIREMENTS

At a number of times throughout the day, $S_j = D_j$. These items are the points at which the Supply and Demand curves cross. Two such consecutive crossing points are the left and right limits of bounded areas of overstaffing or understaffing. If the k^{th} 100 second interval has a crossing point and the next crossing point in time is at the m^{th} 100 second interval, then the amount of overstaffing or understaffing for that (m-k) x 100 second interval is given by:

$$R = \sum_{j=1}^{m} (S_j - D_j)$$

where R is in units of call seconds.

Since the number of call seconds of available agent time (assuming the agent spends 100% of his time on telephone calls in this group) is (m-k) x 100 call seconds,

$$\frac{R}{(m-k) \times 100}$$

produces the number (or fraction) of full time agents that this interval was overstaffed (or understaffed, if R is negative).

OTHER SCALES

The CMS-SR Staffing Requirements Graph may have a 12- or a 24-hour horizontal scale. If the 24 hour scale is used, the time interval covered by each dot is 200 seconds. Thus, all of the dots will have a value of 2 call seconds (assuming the Scale Factor is 1).

To produce a useful graph, the graph may have to be enlarged or reduced to fit the page. The CMS-SR does this automatically and indicates the amount of change with the Scale Factor. The number of call seconds that each point or area represents should be multiplied by the Scale Factor to produce the actual number of call seconds.

12:00
Pauly
& data 1 Step