

9109-098-503-NA

Issue 1  
March 1997

SX-200® ML PABX

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LIGHTWARE™ 16  
ML Practices  
Index

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# 1 General

This section contains a list of practices for the SX-200® ML Private Automatic Branch Exchange with SX-200 ML LIGHTWARE™ 16 software.

## Documentation Index

1.1 The SX-200 ML PABX documentation is contained in three volumes as follows:

Volume 1 - 9109-098-001-NA, contains system description, feature operation information, peripheral equipment descriptions, and engineering information pertaining to the system and its components.

Volume 2 - 9109-098-002-NA, provides installation and administration information which includes testing, data entry, troubleshooting, and maintenance information.

Volume 3 - 9109-098-003-NA, contains ARS and SMDR documentation as well as various feature and application package details.

Table 1-1 Practices Index		
VOLUME 3		9109-098-003-NA
Practice Number	Title	Issue
9109-098-503-NA	Practices Index	Issue 1
9109-098-220-NA	Automatic Route Selection and Toll Control	Issue 1
9109-098-221-NA	Station Message Detail Recording	Issue 1
9109-098-230-NA	Tenanting	Issue 1
9109-098-450-NA	Traffic Measurement	Issue 1
9109-098-602-NA	Hotel / Motel Feature Package Description	Issue 1
9109-098-620-NA	ACD TELEMARKETER® Application Package	Issue 1
9109-098-625-NA	Automated Attendant Application Package	Issue 1



**SX-200<sup>®</sup> ML PABX**

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# Automatic Route Selection and Toll Control

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## Table of Contents

<b>1. General</b> .....	1-1
Introduction .....	1-1
Reason for Issue .....	1-1
ARS: General Description .....	1-1
<b>2. Numbering Plans</b> .....	2-1
General .....	2-1
North American Numbering Plan .....	2-1
<b>3. Call Routing Options</b> .....	3-1
General .....	3-1
Direct Distance Dialing .....	3-1
Tie Line Service .....	3-1
Foreign Exchange Service (FX) .....	3-2
Wide Area Telephone Service (WATS) .....	3-3
Specialized Common Carrier Service (SCC) .....	3-4
<b>4. Detailed Description</b> .....	4-1
Introduction .....	4-1
Alternative Routing .....	4-1
Least Cost Routing .....	4-1
Toll Control .....	4-2
Overlap Outpulsing .....	4-2
Expensive Route Warning Tone .....	4-3
Callback Queueing .....	4-3
Camp-on Queueing .....	4-3
Return Dial Tone .....	4-3
Maximum Digits Dialed .....	4-3
<b>5. ARS Tables</b> .....	5-1
General .....	5-1
ARS Digit Strings Tables (CDE Form 26) .....	5-2
ARS Maximum Dialed Digits (CDE Form 27) .....	5-6
ARS Route Plans Table (CDE Form 25) .....	5-7
ARS Day Zone Definition Table (CDE Form 21) .....	5-9
ARS Route Lists Table (CDE Form 24) .....	5-10
ARS Route Definition Table (CDE Form 23) .....	5-11
ARS Modified Digit Table (CDE Form 22) .....	5-12
ARS COR Group Definition Table (CDE Form 20) .....	5-14
Key System Toll Control (CDE Form 46) .....	5-15
Examples .....	5-18
<b>6. ARS Operation and Programming</b> .....	6-1
General .....	6-1
Programming Process - General .....	6-1
Programming Process - Key System Telephones .....	6-2
System Programming .....	6-2
<b>7. Application</b> .....	7-1
General .....	7-1
Scenario .....	7-1

Trunk Groups .....	7-1
COR Assignments .....	7-2
ARS Form Completion .....	7-2
ARS Digit Strings .....	7-5
Route Definition Table .....	7-6
Route List Table .....	7-6
Route Plan Table .....	7-7
Day Zone Table .....	7-10
COR Group Definition Table .....	7-10
Modified Digits Table .....	7-10
Scenario - Key System Toll Control .....	7-10
<b>8. Automatic Data Route Selection (ADRS) .....</b>	<b>8-1</b>
General .....	8-1
Application .....	8-1
Trunk Groups .....	8-1
COR Groups .....	8-2
Voice Station Requirements .....	8-2
Data Station Requirements .....	8-3
Day Zones .....	8-4
Modified Digits .....	8-4
Route Definition .....	8-5
Route Lists .....	8-5
Route Plan .....	8-6
Scenarios .....	8-8
Example 1 .....	8-8
Example 2 .....	8-8
Example 3 .....	8-9
Example 4 .....	8-9
Example 5 .....	8-10
<b>Appendix A - Preventing Toll Fraud .....</b>	<b>A-1</b>
Analyze all ARS Digit Strings .....	A-1
DISA And Dial-In Trunks .....	A-3
Auto Attendant .....	A-3
ONS or COV Interfaces Voice Mail/Auto Attendant(COV/ONS VM/AA) .....	A-3
System Abbreviated Dial .....	A-3
Direct to ARS .....	A-4
Passwords .....	A-4

### List of Figures

Figure 3-1	Typical Tie Line .....	3-2
Figure 3-2	Typical Foreign Exchange Line .....	3-3
Figure 3-3	Canadian WATS Zoning (Zone 1 Being Area Code 613) .....	3-4
Figure 3-4	Typical SCC Arrangement .....	3-5
Figure 5-1	ARS Table Hierarchy .....	5-2
Figure 5-2	FORM 26 - ARS Digit Strings Table - Leading Digits .....	5-3
Figure 5-3	ARS Digit Strings - Nested Table .....	5-6
Figure 5-4	FORM 27 - ARS Maximum Dialed Digits .....	5-7
Figure 5-5	FORM 25 - ARS Route Plans Table .....	5-8
Figure 5-6	FORM 21 - ARS Day Zone Definition .....	5-9



Figure 5-7	FORM 24 - ARS Route Lists Table .....	5-11
Figure 5-8	FORM 23 - ARS Route Definition Table .....	5-12
Figure 5-9	FORM 22 - ARS Modified Digit Table .....	5-14
Figure 5-10	FORM 20 - COR Group Definition Table .....	5-15
Figure 5-11	FORM 46 - Key System Toll Control .....	5-17
Figure 7-1	Trunking Network .....	7-3
Figure 7-2	Table Network (Part 1) .....	7-8
Figure 7-3	Table Network (Part 2) .....	7-9
Figure 7-4	Typical Key System Toll Control Form .....	7-11
Figure A-1	Example 1: Digit Strings Subform for Form 26 .....	A-1
Figure A-2	Example 2: Digit Strings Subform for Form 26 .....	A-2

### List of Tables

Table 8-1	Trunk Groups .....	8-2
Table 8-2	COR Groups .....	8-2
Table 8-3	Customer Requirements Table .....	8-3
Table 8-4	Digit Modification .....	8-4
Table 8-5	Route Definition .....	8-5
Table 8-6	Route List Table .....	8-6



# 1 General

## Introduction

- 1.1 This practice contains a comprehensive description of the Automatic Route Selection (ARS) and Toll Control features of the PABX. The Toll Control feature will allow or deny specific telephones access to certain routes (usually long distance) that are available to the PABX. Parts 2 and 3 provide the reader with background information on the North American Numbering Plan and on the routing options offered to PABX owners by telecommunications companies. A clear understanding of these sections is essential in order to fully implement ARS. The remainder of the document is dedicated to a detailed description of ARS, which concludes with a description of how an ARS plan is prepared on paper, with a scenario centering around a fictitious company.

## Reason for Issue

- 1.2 This practice is issued to provide a description of the operation and available features of the Automatic Route Selection (ARS) and Toll Control software. Key System Telephone Toll Control is also included.

## ARS: General Description

- 1.3 Within this practice, references are made to the customer, the installation company, and the user. These terms are defined as follows:
- The customer is the owner of the PABX.
  - The installation company is a company which is authorized by MITEL® to sell and install the PABX. This company works closely with customers to determine their requirements and then installs and programs the system accordingly.
  - The user is a person who makes use of the facilities of the PABX through one of the system's peripheral devices (telephone sets).

When a trunk call is initiated from within a PABX, there are a number of factors which govern its routing and connection. They are:

- (a) route availability, where a route is defined as a collection of similar trunks within a trunk group,
- (b) cost, when more than one route exists,
- (c) caller's toll restriction (i.e., whether the caller is allowed to make such a call, and if so, on what routes).

ARS is a standard feature of the PABX. The ARS feature begins automatically every time a trunk call is initiated and routes the call accordingly. The process is totally transparent to the caller, no access code is required, and the process does not depend on a fixed numbering plan.



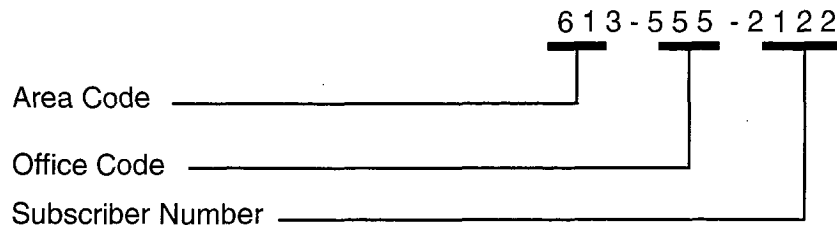
## 2 Numbering Plans

### General

- 2.1 The ARS feature is universal and is compatible with any numbering plan which may be employed by any public network. It is, however, necessary to understand the numbering plan of the public network which serves the PABX in order to make full use of the toll control application of the ARS feature.

### North American Numbering Plan

- 2.2 The purpose of any numbering plan is to enable any subscriber in the network to be connected to any other subscriber in the network. When the North American numbering plan was introduced, subscribers were assigned a unique digit string comprising a maximum of ten digits, compiled as follows:



The area code defines a geographic telephone area, the office code identifies a central office (CO) within the area, and the subscriber number identifies a subscriber of the CO.

It was possible to create a distinction between area and office codes by ensuring that the second digit of the area code was 1 or 0 and the second digit of the office code was any digit in the range 2 through 9. However, as the number of COs within each area grew, it became necessary to augment the supply of office codes by allowing the second digit of the code to be in the range 0 through 9. This produced a conflict between area and office codes which was resolved by the introduction of the digit 1 as prefix to all area codes (e.g., 1-613-555-2122).

The prefix digit 1 has now been generally adopted as a toll prefix in large areas, where toll charges are incurred for calls made between offices in the same area (e.g., 1-555-2122).

In addition to the digit strings described above, there are sets of numbers which are reserved for special services; for example, 411 for directory assistance. These numbers do not conflict with area or office codes.

The present North American numbering plan comprises digit strings of one, three, seven, eight, and eleven digits.

Some examples are:

Operator	0
Service Number	411
Local Call	555-1111
Toll Call Within an Area	1-555-2222
Toll Call to Another Area	1-416-555-3333
Toll Call Within an Area (NO 1 prefix)	557-2222

## 3 Call Routing Options

### General

- 3.1 Telephone companies offer a number of different methods of routing calls over the public network (e.g., DDD, tie lines, WATS lines), with each having a different cost structure. Correct use of these trunks can provide substantial cost savings to the user.

To determine which routing options are best suited to any given PABX, a traffic survey should be completed by the installation company prior to installation. The Traffic Measurement and Station Message Detail Recording features of the PABX allow the use of these routes to be monitored once the system is installed, so that they may be modified as traffic demands change.

The PABX supports the following long distance services:

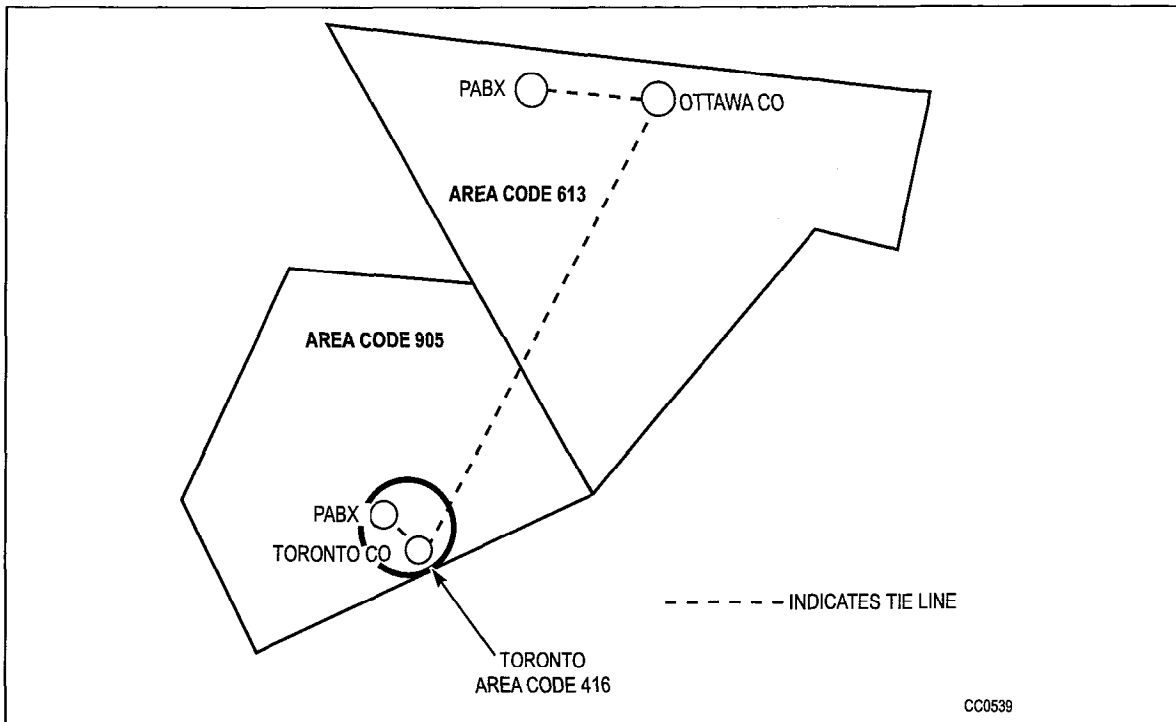
- Direct Distance Dialing (DDD)
- Tie Line
- Foreign Exchange (FX)
- Wide Area Telephone Service (WATS)
- Specialized Common Carrier (SCC)

### Direct Distance Dialing

- 3.2 Direct Distance Dialing allows telephone users to call subscribers within the home and international networks without the assistance of the operator. Connections are completed over standard trunk routes and are charged on a usage basis at a rate which varies with distance, time of day, and day of the week. DDD rates are given in the local telephone directory or you can contact the local telephone company for rate information which is not listed.

### Tie Line Service

- 3.3 Tie Line Service provides a "tie" between two PABXs. The charge for each tie line is a flat rate charge based on the airline mileage of the line. Figure 3-1 shows a typical tie line connection between a PABX in Ottawa and a PABX in Toronto.

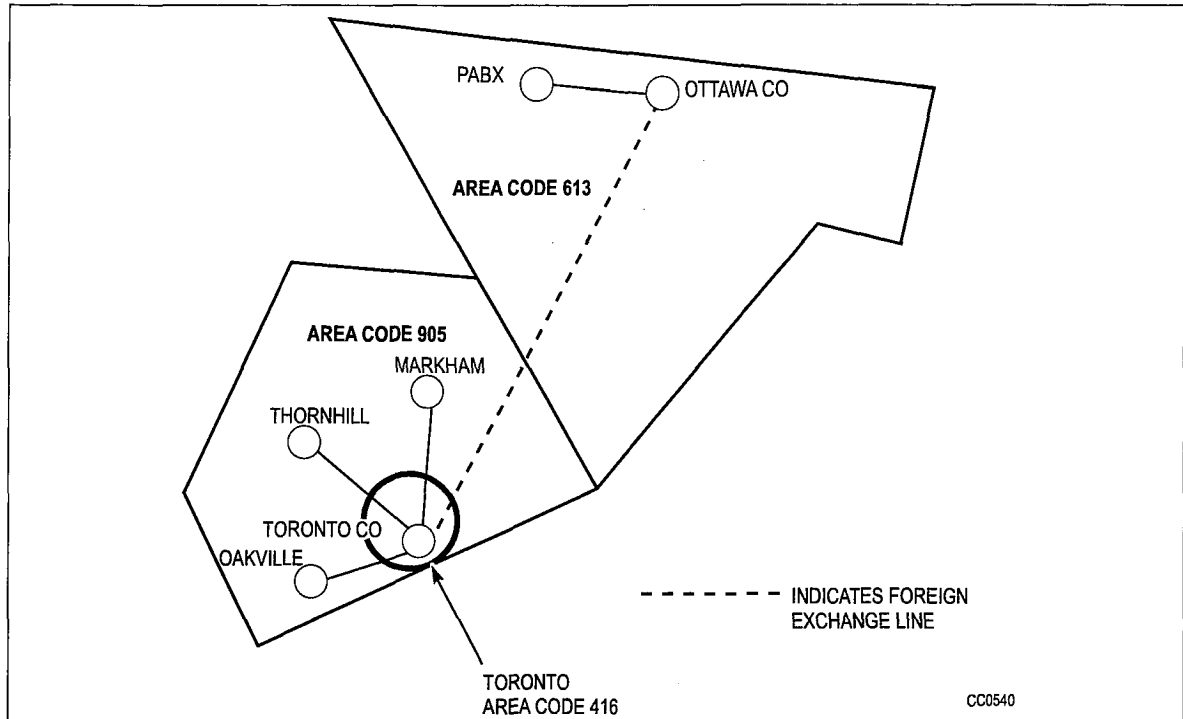


**Figure 3-1 Typical Tie Line**

### Foreign Exchange Service (FX)

- 3.4 A Foreign Exchange (FX) Line can be thought of as a tie line between a PABX and a Central Office (CO) which is located in a telephone area other than that designated for the PABX. Via an FX Line, the PABX appears as a local subscriber to the distant CO and is billed accordingly for calls which are placed through that CO. FX lines have two applications. The first offers a method of reducing telephone costs in business situations where many toll calls are made to destinations which are within close proximity to one another. For example, a company located in Ottawa which does much of its business with companies located in and around Toronto could benefit from an FX line, as shown in Figure 3-2. The second application allows a company to offer the use of the FX to its customers to permit them to call the company office (the PABX) without incurring toll charges.





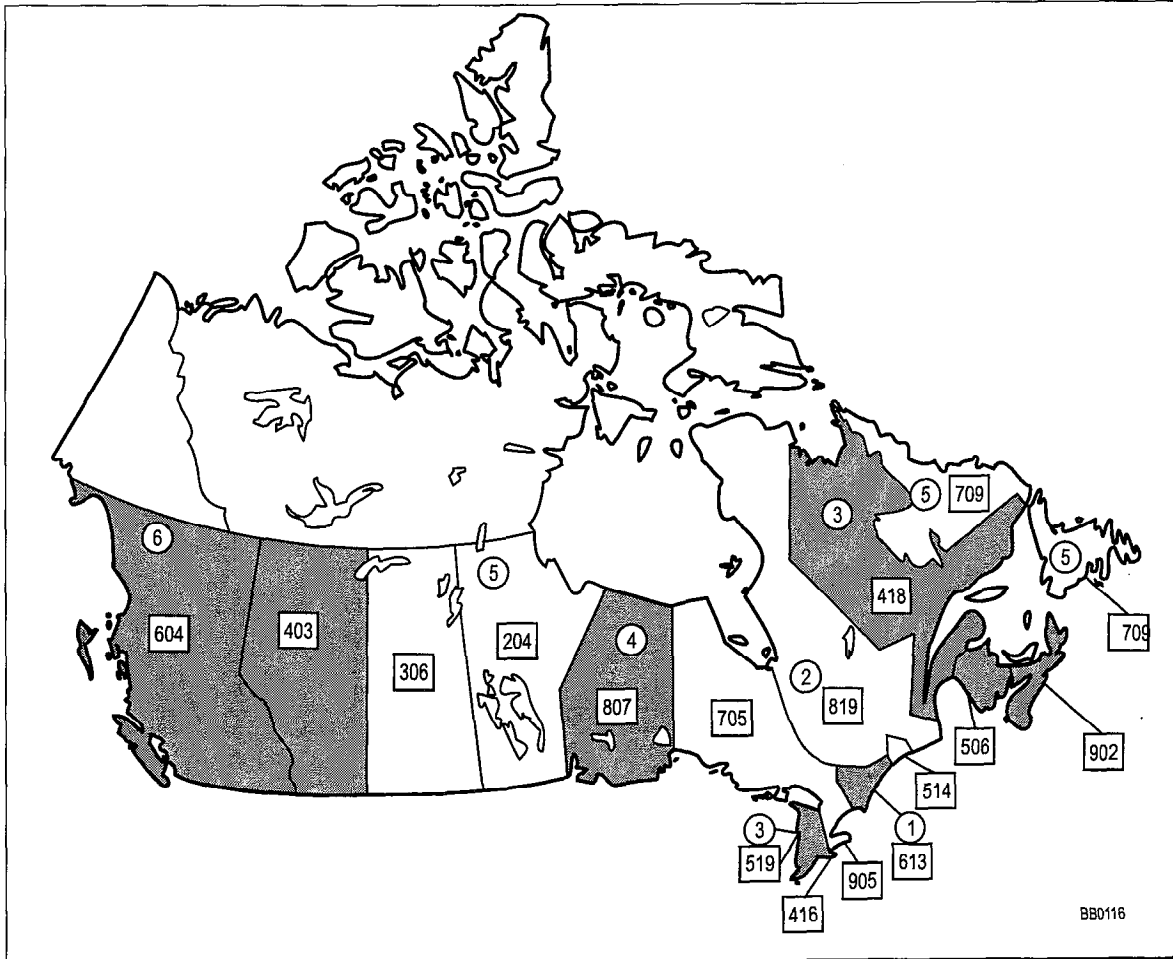
**Figure 3-2 Typical Foreign Exchange Line**

### Wide Area Telephone Service (WATS)

- 3.5 Wide Area Telephone Service (WATS) is designed to meet the needs of customers who make or receive a large number of long distance calls to or from the same geographical region(s) within the home country. Calls are originated via Outward WATS lines and received over Inward WATS lines (800 Service). Generally, each WATS line is arranged to provide either inward or outward service, but not both.

WATS divides the country into geographical regions known as zones. Zones are incremental, numbering 1 through n, from the home zone. For example, zone 4 provides a WATS subscriber in the home zone (zone 1) with access to all telephone subscribers in zones 1, 2, 3 and 4. Likewise, zone n provides a WATS subscriber in the home zone with access to all telephone subscribers in all zones. Figure 3-3 shows Canadian WATS zones 1 through 6 and the zone numbering which is unique to WATS subscribers within Area Code 613, where MITEL Corporation headquarters is located.

The rates for both Outward and Inward WATS are based on the zone and the hours of service subscribed to by the customer.



**Figure 3-3 Canadian WATS Zoning (Zone 1 Being Area Code 613)**

### Specialized Common Carrier Service (SCC)

3.6 Specialized Common Carrier Service, offered by private companies, provides telephone service between major locations at a rate which may be less than that charged by the telephone companies. The rate is based on a monthly subscription fee plus a usage charge. Specialized common carriers must be approved by local communications regulations and may not be universally available. Currently, SCC services are not available in Canada.

The restriction of this service is that some SCC directories are limited to major locations. Therefore, to avoid additional toll charges, the SCC company office must be within a local dialing distance. A typical SCC arrangement is shown in Figure 3-4.

When a business subscribes to an SCC, it is issued with an account code (normally seven digits). Calls can then be routed via the company's office by dialing a digit string similar to that shown in the following example:





## 4 Detailed Description

### Introduction

- 4.1 The ARS feature is part of the PABX software package. It automatically selects one of a preprogrammed (programmed during CDE) list of trunk routes every time an outgoing call is made. The routes are selected based upon the digits dialed, in order of cost (i.e., least expensive route first), and in accordance with the caller's toll restriction. The use of digit analysis and digit modification within the ARS package allows the system to recognize and modify any digit string which is dialed by the user, alleviating the need for the user to dial special trunk access codes, or to dial a different digit string for each of the various routes to the same destination.

The complete ARS package provides the following:

- Alternative Routing
- Least Cost Routing
- Toll Control
- Overlap Outpulsing
- Expensive Route Warning
- Callback Queueing
- Camp-on Queueing
- Return Dial Tone.

### Alternative Routing

- 4.2 Alternative Routing is the automatic selection of an alternate trunk route when the first choice is busy. Routes (e.g., tie trunks or WATS lines) are preprogrammed in an implied sequence of selection within the Route Lists Table as described on page 5-10.

### Least Cost Routing

- 4.3 Least cost routing enables the customer to capitalize on the cost benefits offered by each type of trunk by allowing the installation company to define, via the Route Plans and Route Lists Tables, the order in which the trunk groups are to be selected. A number of different route lists can be defined to account for the fluctuation in rates with respect to the day and time of the week. Route lists are associated with day and time zones through the programming of the Route Plans table and Day Zone table, described on pages 5-9 and 5-7.

## Toll Control

- 4.4 Toll control is an integral part of the ARS feature package. It allows the customer to restrict user access to specific trunk routes and/or specific directory numbers.

Every peripheral device which is capable of accessing a trunk is assigned a class of restriction (COR). These CORs are arranged within COR groups which are associated with trunk groups through the programming of the Route Definition table. The Route Definition table defines a trunk group, how the digits dialed are to be modified, and which classes of restriction CANNOT access the route. A maximum of 50 COR Groups, each containing a maximum of 25 COR members, can be programmed. A COR group is simply a list comprised of several COR members. Once constructed, the group is assigned a number (1 to 50). This is the number used in route definition.

Toll control takes place in the following way. Each time a trunk call is initiated, the system checks that the COR of the originating device is NOT included in the COR group assigned to the selected trunk route, verifying that the call is toll allowed (that is, the user is authorized to make the call).

CORs are assigned to peripheral devices during the initial system programming, in accordance with the customer's requirements, and can be modified at any time from an attendant workstation or CDE terminal by the proper authority (e.g., the telecommunications manager).

## Overlap Outputting

- 4.5 The basic principle of overlap outputting is to seize a trunk and commence outputting as soon as sufficient digits have been received to identify the route. This is necessary in order to minimize the post-dialing delay which would otherwise be experienced due to the serialization of digit collection, trunk seizure and digit outputting. The number of digits collected prior to outputting can be programmed by the customer during customer data entry. These digits may be subject to digit modification prior to being passed to the appropriate sender (dial pulse or DTMF) for outputting. Subsequent digits are collected by the system and are outputted. At the end of dialing, indicated by an interdigit time-out, or the dialing of a complete digit string of known length, the dialing sender is disconnected. System Option 26, No Overlap Outputting, inhibits overlap outputting for all calls.

When overlap outputting is used, ARS destinations must not have conflicting length differences. Such conflicts will cause the first match to be used, not necessarily the best or specified match. If the following ARS example is used with overlap outputting, the first match on 95 will always select route 2. Route 1 will never be selected.

Leading Digits	Digits to Analyse	Route
9	56	1
9	5	2

The post-dialing delay (i.e., the time lapse between the completion of station dialing and the receipt of ringback) which would be experienced when using a DTMF trunk, is minimum (slightly more than 1 second for a 10-digit number). If no overlap outputting is enabled, the delay for a 10-digit number outputted over a dial pulse trunk would be approximately 16 seconds at 10 pulses per second (pps).

Trunk routes are seized only after the ARS process has determined the validity of the call with respect to the caller's class of restriction. In this way, false traffic will not be generated at the CO (or distant PABX) by aborted seizures.

### **Expensive Route Warning Tone**

- 4.6 The Expensive Route Warning Tone is a programmable option which presents a tone to the user during call setup, and, if a SUPERSET 420™ or SUPERSET 430™ telephone is used, the message EXPENSIVE ROUTE appears on the LCD when the route selected by ARS is programmed as an expensive route. Any route but the first one may be programmed to deliver an Expensive Route Warning Tone. When alerted by the warning, the user then has the option of whether or not to continue the call.

### **Callback Queueing**

- 4.7 Callback Queueing (Automatic Callback) allows a user who encounters busy tone after dialing an ARS digit string (i.e., all trunks busy) to dial a callback access code, or, if a SUPERSET 420 or SUPERSET 430 telephone is used, to select CALLBACK, and be placed in a queue for the first available trunk. When a trunk becomes free, it will be seized, the originating device will be rung back, and, when answered, the previously entered digits will be automatically outpulsed. When honouring a callback, expensive route choices are skipped when ARS scans for an available trunk.

### **Camp-on Queueing**

- 4.8 Camp-on Queueing allows the user who encounters busy tone after dialing an ARS digit string (i.e., all trunks busy) to wait off-hook, or, if a SUPERSET 420 or SUPERSET 430 telephone is used, to select CAMP ON and remain off-hook until a trunk becomes free. (When a non-display telephone is used, the user remains off-hook for 10 seconds and is automatically camped on to the busy trunk group.) When a trunk becomes free, the system seizes it automatically and the previously entered digits are automatically outpulsed. Expensive route choices are skipped when ARS scans for an available trunk when honouring a camp-on.

### **Return Dial Tone**

- 4.9 Return Dial Tone is a programmable option which allows the system to simulate CO dial tone for customers who consider that its absence would confuse the users of their system. For further information, refer to ARS Digit Strings Tables, paragraph 5.2 on page 5-2.

### **Maximum Digits Dialed**

- 4.10 The maximum number of digits that may be dialed is 26.





## 5 ARS Tables

### General

5.1 The ARS package is a network of tables which contain data relevant to the setting up of a trunk call, such as routing options and CORs. The tables are interconnected through a series of indices and pointers. A total of nine tables make up the ARS network. They are, in order of programming:

- ARS Digit Strings
- ARS Nested Digit Strings
- ARS Maximum Dialed Digits
- ARS Route Plans
- ARS Day Zone Definition
- ARS Route Lists
- ARS Route Definition
- ARS Modified Digit
- ARS Class of Restriction Groups.

The hierarchy for the tables is shown in Figure 5-1. The system follows this hierarchy in deciding which routes to select and which users are toll-restricted on the selected routes. The following paragraphs describe the layout and fields of each table. Refer to the *Customer Data Entry Practice* for further information. The way in which the tables combine to form the ARS network is described in general in Part 6, and in the scenario given in Part 7.

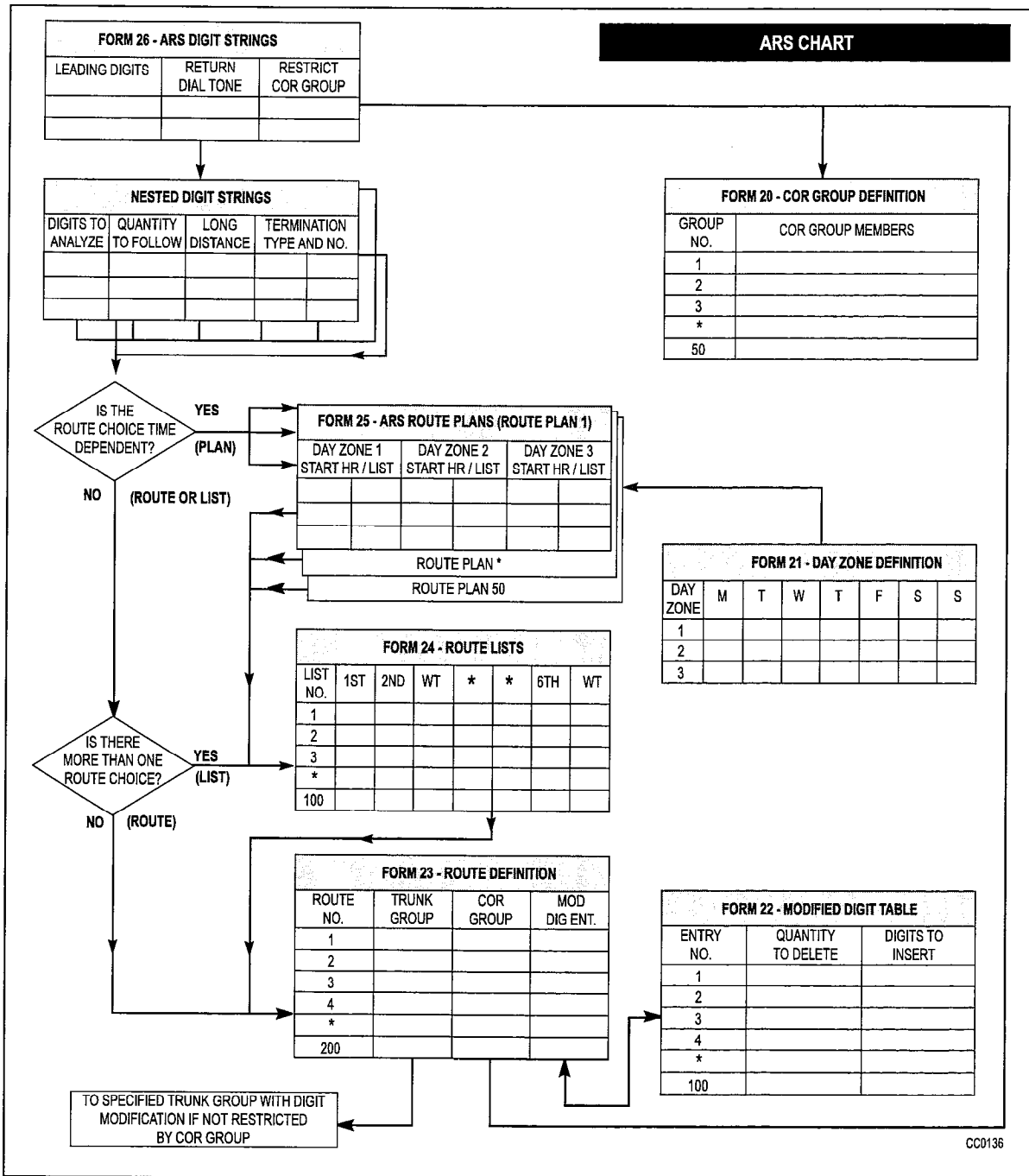


Figure 5-1 ARS Table Hierarchy

### ARS Digit Strings Tables (CDE Form 26)

5.2 The ARS Digit Strings tables consist of one primary and one nested table. The nested table is accessed from the primary table by pressing the SHOW STRINGS softkey on the attendant console or CDE terminal. (Note: If no leading digits are entered on the primary table, the nested table cannot be accessed.) The primary table permits the programming of leading digit information. Actual digit strings and routing information for each of the leading digit entries is programmed on the nested table.

The primary table is shown in Figure 5-2 and the nested table in Figure 5-3. The primary (leading digits) table is comprised of three fields:

**Leading Digits:** This is essentially the same as a trunk group access code (e.g., the digit 9) but it may be any digit combination that the customer desires to be analyzed. An asterisk (\*) is also permitted as a leading digit. A maximum of 100 leading digit combinations may be specified.

**Return Dial Tone:** This field allows a simulated dial tone to be returned to the call originator, after the dial 9 access code for trunks has been received by the system, since the central office dial tone is not returned until digit analysis has been completed and a trunk seized. A YES or NO value is entered via the appropriate softkey on the attendant console or CDE terminal. The default value is NO.

**Restricted COR Group:** This field is optional and may be programmed with a COR group number between 1 and 50. Programming a COR group number in this field will define which group members will NOT be permitted to dial the specified leading digits. If access to specified leading digits is unrestricted, the field is left blank. For example, if all users are permitted to dial the leading digit 9, the field would be left blank. If only those peripheral devices tagged as COR 1 are permitted to dial a given leading digit combination, the COR group must contain ALL CORs EXCEPT COR 1.

LEADING DIGITS		RETURN DIAL TONE		RESTRICTED COR GROUP	
9		NO		Unrestricted	
8		NO		Unrestricted	
4		NO		Unrestricted	
9		NO		Unrestricted	
1-	2-	3- INSERT	4-	5-	
6- QUIT	7- LEADING DIG	8-	9- SHOW STRINGS	0-	

CC0441

**Figure 5-2 FORM 26 - ARS Digit Strings Table - Leading Digits**

The nested form specifies the actual digit strings which are to be analyzed. The form is comprised of four fields; the fourth field being subdivided into two. The fields are:

**Digits to be Analyzed:** Each line in this programmable field constitutes one entry. Digits programmed in this field are used by the system in conjunction with the leading digits to select the appropriate route. The following wildcard digits may be specified to simplify entering the digit strings:

- N0X
- N1X
- X
- 1N1X
- 1N0X
- 0N1X
- 0N0X
- 10XXX0N0X
- 10XXX0N1X
- 10XXX1N0X
- 10XXX1N1X
- 10XXX0
- 10XXX1

where N is any digit from 2 through 9 and X is any digit from 0 through 9.

Wildcard digit sequences beginning with N, 0, and 1 may ONLY be used at the BEGINNING of the digit string; X may ONLY be used at the END of the digit string. The wildcard digits allow for the following cases:

To cover routing for any area code NOT SPECIFICALLY ROUTED, N0X and N1X followed by seven digits would cover all unspecified area codes. They each represent half of the area codes in North America.

For example, N0X-555-1212 and N1X-555-1212 covers routing for all directory assistance calls.

To cover routing for any area code NOT SPECIFICALLY IDENTIFIED and where dialing is preceded by a 1 or 0 long distance access code, 1N1X, 1N0X, 0N1X, and 0N0X followed by seven digits would cover all unspecified area codes. This allows wild card restriction of 555 and 976 numbers.

For example, 1N0X-976-XXXX, 1N1X-976-XXXX, 0N0X-976-XXXX, and 0N1X-976-XXXX cover routing for all 976- calls.

If routes are to be selected based on office codes, blocks of office codes can be specified; for example, 82X, 83X, etc.

The wildcard sequences 10XXX0N0X, 10XXX0N1X, 10XXX1N0X, 10XXX1N1X, 10XXX0, and 10XXX1 are designed for the call aggregator market (i.e., hotels, motels, hospitals, universities) to prevent unauthorized calls from being billed to the originating line, while allowing consumers access to the long distance carrier of their choice. They are accessed by pressing the \*\* MORE \*\* softkey three times.

1-10XXX0N0X	2- 10XXX0N1X	3- INSERT	4- 10XXX1N0X	5- **MORE**
6-QUIT	7- FIND STRING	8- DELETE	9- 10XXX1N1X	0-

The system sorts digit strings in such a way that explicitly stated digit strings will be routed to their routes, while all others will be covered by wildcards. The ordering of digit strings is performed automatically by CDE after each string is entered. If two routes are defined for 416 and 416-555-1212, CDE will ensure that the specific string will occur first in the digits to be analyzed field. The number of entries which can be made in this field is limited only by the amount of available system memory.

**Quantity to Follow:** This programmable field specifies the number of digits to be dialed AFTER the digits to be analyzed, and may be specified as UNKNOWN. The advantage of specifying the quantity to follow; i.e., 9-592 plus four digits, is that when the final digit is received, outpulsing can begin, and the DTMF receiver can be dropped; if UNKNOWN is specified, the interdigit time-out must occur before this happens, tying up PABX resources for a longer time than necessary on each call. The total number of digits in this field, and in the digits to be analyzed field, plus the leading digits (from the primary table), must be no greater than 26 digits.

**Long Distance:** This programmable field is used to specify digit strings which are to be treated as long distance in order to enforce COS option 201, Account Code, Forced Entry - Long Distance Calls. This field is also used for Room Status Restriction in hotel/motel applications to restrict long distance calls. A caller with this COS option must enter an account code prior to dialing one of the designated digit strings. A YES or NO value must be specified.

**Termination Type and Number:** Digits dialed may terminate on a route, a route list, or a route plan. These two subfields combine to index where each valid digit string is to be found. The first subfield is programmed with one of ROUTE, LIST, or PLAN, depending on whether a route, route list, or route plan is indexed. The second subfield contains the number of the entry within the table referenced in the first subfield. For example, many destinations can be accessed only by direct distance dialing (DDD). For such a destination, ROUTE is specified as the termination type. Free calls such as 911 (in North America) always terminate directly on a route for DDD. If several route choices are available, a LIST is specified as the termination type, if the choices do not vary with time of day. A route plan, with day and time zone variations, is not required. This situation arises where an FX route is always preferred over DDD. In a situation where multiple route choices are offered, with preferences depending on time of day and day of the week, a termination type of PLAN is specified.

DIGITS TO BE ANALYZED		QTY TO FOLLOW	LONG DISTANCE	TERM TYPE AND NUM	
10		7	NO	ROUTE	10
11		7	NO	ROUTE	11
20		7	NO	ROUTE	20
21		7	NO	ROUTE	21
22		7	NO	ROUTE	22
23		7	NO	ROUTE	23
24		7	NO	ROUTE	24
25		7	NO	ROUTE	25
26		7	NO	ROUTE	26
4		7	NO	LIST	4
5		7	NO	LIST	5
6		7	NO	LIST	6
10		7	NO	ROUTE	10
1-	2- X	3- INSERT	4- NOX	5- **MORE**	
6- QUIT	7- FIND STRING	8- DELETE	9- N1X	0-	

CC0442

Figure 5-3 ARS Digit Strings - Nested Table

### ARS Maximum Dialed Digits (CDE Form 27)

5.3 Countries with open numbering plans require an ARS package that restricts the user based on the number of digits dialed. Each class of restriction has a maximum number of digits which can be dialed associated with it. If the maximum is exceeded, the call follows intercept handling for Illegal number routing. The table, shown in Figure 5-4, is comprised of two fields:

**COR:** The COR field cannot be modified.

**Maximum Number of Dialed Digits:** This field is programmable and a value must be specified for each COR. The allowable range is from 1 to 26 digits plus the default value of Unlimited. If a COR group has limited access, UNKNOWN must be entered in the Quantity to Follow column in the nested form of Form 26, ARS: Digit Strings. This ensures that ARS will not drop after analyzing the first digits. As well, System Option 47, ARS Unknown Digit Length Time-out, must be set at an appropriate value so that ARS is not terminated before the CO drops its receivers. In addition, the end-of dial key (#) which is optional via CDE should be disabled. This prevents the user from dialing undetected digits after the system's DTMF receiver has been dropped. If a COR group has unlimited access, UNKNOWN is not required in the Quantity to Follow column in the nested form of Form 26 and a quantity can be specified.

**Note:** The default value of Unlimited is used in North America and must be specified in this column.

COR		MAXIMUM NUMBER OF DIALED DIGITS		
1		UNLIMITED		
2		UNLIMITED		
3		UNLIMITED		
4		UNLIMITED		
5		UNLIMITED		
6		UNLIMITED		
7		UNLIMITED		
8		UNLIMITED		
9		UNLIMITED		
10		UNLIMITED		
11		UNLIMITED		
12		UNLIMITED		
1		UNLIMITED		
1-	2-	3-	4- TOP	5- BOTTOM
6- QUIT	7-	8- COR	9-	0-

CC0443

**Figure 5-4 FORM 27 - ARS Maximum Dialed Digits**

### ARS Route Plans Table (CDE Form 25)

- 5.4 The ARS package accommodates a maximum of 50 route plans, each of which is contained within a dedicated Route Plans table. The header of each table contains the time zone and the number of the day zone which is to be associated with the route plan. When first accessed, Route Plan 1 is displayed. By selecting the ROUTE PLAN softkey, the current route plan is identified, and the display prompts for the route plan desired: ROUTE PLAN = Entering a number (1 through 50) results in the associated plan being displayed.

This table defines which route list (see Route Lists Table) is to be used in any given time zone (1 through 6), in any given day zone (1 through 3). Up to six time zones may be defined for each day zone, creating a total of 18 possible time zones per week. A different route list may be specified for each of these. When Time Zone 1 is in effect, the Route List used at a given time is determined by specifying a START HOUR. The hour is specified as a 2-digit number (00 through 23). The last START HOUR will create a time period which extends from that time up to the first START HOUR listed which creates a time zone loop for each day zone. If no route list is specified for a given START HOUR entry, all calls accessing the route plan containing this omission WILL BE DENIED.

The Route Plans table is referenced from the ARS Digit String table. The layout of the table is shown in Figure 5-5.

The Route Plans table contains four fields:

**Time Zone:** This non-programmable field lists the six time zone numbers associated with the currently accessed route plan.

**Day Zone 1:** This programmable field consists of two sub-fields, used to assign the Start Hour and Route List number. The Start Hour subfield indicates the time (in 24-hour format, 00 to 23) from which the route list is available. The route list is available until the start hour of the next Time Zone. (**Note:** Day zones are planned on the Day Zone Definition table. Day Zone 1 is typically Monday through Friday; Day Zone 2 is typically Saturday; and Day Zone 3 is typically Sunday.) This field on the Route Plans table informs the system as to what times each day zone is to be in effect. The Route List subfield informs the system as to what route list is to be used during these times in these day zones.

**Day Zones 2 and 3:** These programmable fields are identical to Day Zone 1.

TIME ZONE	DAY ZONE 1		DAY ZONE 2		DAY ZONE 3		
	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	
01							
02							
03							
04							
05							
06							
01							
6- QUIT		7- ROUTE PLAN		8-		9- 0-	

CC0444

Figure 5-5 FORM 25 - ARS Route Plans Table



### ARS Day Zone Definition Table (CDE Form 21)

5.5 Since telephone call rates vary during the day and with the days of the week, the system must be able to select the least expensive route based on this schedule. The Day Zone Definition table does this. The week may be broken into a maximum of three zones. Typically, these are (1) Monday through Friday, (2) Saturday, and (3) Sunday. The information from this table is used in route plan definition. Refer to Figure 5-6.

The system allows for one definition of three day zones. The Day Zone Definition table accommodates this feature. The table has eight fields:

**Day Zone:** This is a non-programmable field which lists the zone numbers 1 through 3.

**Mon-Sun:** These seven programmable fields either ENABLE (shown by \*) or DISABLE (shown by a blank) a given day zone on a given day of the week. Positioning the cursor on the desired day of the week results in softkey 1 showing the opposite function to what is entered in that field. For example, if Day Zone 1, MON, is ENABLED (an asterisk is displayed), the softkey will show DISABLE. Pressing the softkey will disable that day zone for that day. The MON field will then be blank for Day Zone 1 and the softkey will now show ENABLE. There must be at least one day zone defined for each day of the week. A user cannot exit from this form if any day does not have one zone defined.

DAY ZONE	MON.	TUE.	WED.	THU.	FRI.	SAT.	SUN.
01	*	*	*	*	*	*	*
02							
03							
01	*	*	*	*	*	*	*
1- DISABLE	2-		3-		4-		5-
6- QUIT	7-		8-		9-		0-

CC0445

**Figure 5-6 FORM 21 - ARS Day Zone Definition**

## ARS Route Lists Table (CDE Form 24)

- 5.6 The Route Lists table contains a maximum of 100 one-line entries, each of which defines up to six routes. The routes within each entry are listed in the order in which they are to be tried; i.e., least expensive (Route 1) to most expensive (Route 6). If there are two or more routes to a given set of locations, and the order in which they are to be tried changes with the time of day because of rate changes, two lists must be programmed to reflect this.

The table makes provision for the assignment of an expensive route warning to each of the second through sixth routes, as required by the customer.

Layout of the table is shown in Figure 5-7. The seven fields which comprise the table are described below:

**List Number:** This non-programmable field lists the route list entries. Up to 100 route lists, each having up to six route choices, may be programmed.

**First:** This programmable field defines the first choice (least expensive) route. This route is identified by a one, two, or three-digit number in the range of one through 200. The number in this field is the route number from the Route Definition table.

**Second:** This programmable field contains one subfield. This field defines the second choice route. This route is identified by a one, two, or three--digit number in the range of one through 200. The number in this field is the route number from the Route Definition table. The subfield enables the Expensive Route Warning (WT), associating the warning with this route. When the warning is required, ON is entered; when the tone is not required, the WT subfield is left blank. The default value is no expensive route warning (blank subfield).

**Third through Sixth:** These programmable fields are identical to the second field, defining the third, fourth, fifth and sixth route choices.

LIST NUM	FIRST	SECOND	WT	THIRD	WT	FOURTH	WT	FIFTH	WT	SIXTH	WT
01											
02											
03											
04	4	5	ON								
05	5	7	ON								
06	6	4	ON								
07	7	6	ON								
08											
09											
10											
11											
12											
01											
1- DISABLE		2-		3-		4- TOP		5- BOTTOM			
6- QUIT		7- LIST NUM		8-		9-		0-			

CC0446

Figure 5-7 FORM 24 - ARS Route Lists Table

### ARS Route Definition Table (CDE Form 23)

- 5.7 The Route Definition table contains a maximum of 200 one-line entries. Each entry identifies a route. A route comprises a trunk group, the COR Group associated with the trunk group, and an index to the Digit Modification table. The layout of the Route Definition table is shown in Figure 5-8.

The same trunk group may be used to create several routes; for example, a call in the U.S.A. may be routed via either the primary or secondary Specialized Common Carrier service (SCC). Also, COR groups may be varied so that different COR groups are assigned to the same trunk group. Because of these variations, more routes are required than trunk groups. The PABX therefore allows you to program up to 200 routes which allows for a worst-case situation where four routes are assigned to each of the 50 trunk groups.

The Route Definition table contains five fields:

**Route Number:** This non-programmable field lists the 200 route numbers.

**Trunk Group Number:** This programmable field identifies the trunk group associated with each route. Entries are made in the form of one or two-digit numbers in the range of one through 50. A maximum of 50 trunk groups may be programmed.

**COR Group:** This programmable field identifies the COR group associated with each trunk group. Entries are made in the form of one or two-digit numbers in the range of one through 25. A maximum of 25 COR groups may be programmed.

**Modified Digit Entry:** This programmable field is the Entry Number on the Modified Digit table. Entries are made in the form of one, two, or three-digit numbers in the range of one through 100. This entry is used by the system as an index to the Modified Digit table.

**Comments:** This programmable field permits the CDE programmer to enter any comment desired against each entry number. The maximum length of the comment is 20 characters.

ROUTE NUM	TRUNK GROUP	COR GROUP	MOD DIGIT ENTRY	COMMENTS
01	1	1	1	LOCAL DDD
02	1	2	2	LONG DISTANCE DDD
03	2	1	3	BAND 2 WATS
04				
05				
06				
07				
08				
09				
10				
11				
12				
03	2	1	3	BAND 2 WATS
1-	2-	3-	4- TOP	5- BOTTOM
6- QUIT	7- ROUTE NUM	8- DELETE	9-	0-

CC0447

**Figure 5-8 FORM 23 - ARS Route Definition Table**

### ARS Modified Digit Table (CDE Form 22)

5.8 The Modified Digit table contains a maximum of one hundred 1-line entries. These are sequences indexed through a numerical index, 1 through 100, and are associated with routes through the Route Definition table. Refer to Figure 5-9.

The purpose of digit modification is to allow the station user to dial calls in a consistent pattern, irrespective of the destination of the call or how it is routed. This table directs the system as to how digits are to be inserted into or deleted from the dialing sequence. For example, an FX trunk is installed between two cities, permitting calls to be placed between the two as if they were local calls. A caller in one of the cities placing a call to the other city would dial the distant area code, unaware that the system automatically selects the FX routing for the call. The Modified Digits tables instruct the system to delete the dialed area code from the dialing sequence when the FX route is chosen by the ARS package.

**Note:** The system will not automatically delete or insert any digits. The digits to be inserted or deleted must be programmed in CDE.

The Modified Digit table contains four fields:

**Entry Number:** This non-programmable field lists the entry numbers one through 100. The entry number is used in route definition.

**Quantity to Delete:** This programmable field defines the number of leading digits that the system must delete from a valid digit string prior to outputting. A maximum of 25 digits may be specified.

**Digits to be Inserted:** This programmable field defines the digits and dial tone markers which are to be inserted in place of the digits deleted by the previous field. These digits are prefixed to the modified valid digit string and outputted over the trunk. The digits may be telephony digits 0 through 9, and for DTMF trunks 0 through 9, \* and #. A maximum of 38 digits can be inserted; including any pauses and wait for dial tone symbols. Special number sequences are:

- \*1 = Pause for five seconds
- \*2 = Wait for dial tone
- \*3 = Switch to DTMF for Subsequent Digits
- \*4 = Stop or start displaying modified digits. Modified digits are displayed on the sets and in the SMDR records (SMDR must be enabled in CDE Form 16, Trunk Groups). The first time \*4 appears in a digit string the system stops displaying the following modified digits. The next time \*4 appears, the system starts displaying the following modified digits. You can repeat \*4 in a digit string to stop or start the displaying of digits.
- \*5 = Pause 10 seconds
- \*6 = Insert caller's ID (for analog networking)
- \*7 = Insert caller's dialed account code (for analog networking)
- \*8 = Insert PBX node ID number (for analog networking)
- \*9 = Pause for 1 second

To generate \* on a trunk, \*\* must be inserted.

**Comments:** This programmable field permits the CDE programmer to enter comments against each entry number. The maximum length for comments is 20 characters.

ENTRY	QTY TO DEL	DIGITS TO BE INSERTED			COMMENTS
01	1				
02	2				ISDN DESIGN LINK
03					
04	2	000			PUBLIC CLID
05	3	000			PUBLIC
06	3	010			PRIVATE
07	3	020			INWATS
08	3	030			FX
09	3	040			TIE
10	3	050			BANDED OUTWATS
11	3	060			UNBANDED OUTWATS
12					
03	1				
1-	2-	3-	4- TOP	5- BOTTOM	
6- QUIT	7- ENTRY NUM	8- DELETE	9-	0-	

CC0448

Figure 5-9 FORM 22 - ARS Modified Digit Table

### ARS COR Group Definition Table (CDE Form 20)

- 5.9 The CORs of the peripheral devices are grouped within the Class of Restriction Group Definition table. These COR groups are referenced from the Route Definition table and their contents are interrogated to determine whether or not the calling device has insufficient privilege to complete the call. Absence of the calling device's COR from a COR group indicates to the system that the call CAN be completed. A maximum of 50 COR groups, each containing a maximum of 25 members, can be programmed. COR members are numbered in the range one through 25; COR groups are numbered in the range one through 50. Refer to Figure 5-10.

The COR Group Definition table has three fields:

**COR Group:** This is a non-programmable field which lists the COR group numbers one through 50.

**COR Group Members:** This programmable field is used to specify which COR group members are to be associated with the specified group number. COR member numbers range from one through 25 and may be entered in any order (member numbers must be separated with spaces); where entries are consecutive, they must be entered in the format 1-13.

**Comments:** This programmable field is used by the programmer to enter any 20-character-long reminder against each group number.

COR GROUP	COR GROUP MEMBERS (SEPARATE WITH SPACES)				COMMENTS
01	15 19-22				LONG DISTANCE DDD
02	2-12				
03	5 7 14				
04					
05					
06					
07					
08					
09					
10					
11					
12					
01					
1-	2-	3-	4- TOP	5- BOTTOM	
6- QUIT	7- COR GROUP	8-	9-	0-	

CC0458

**Figure 5-10 FORM 20 - COR Group Definition Table**

### Key System Toll Control (CDE Form 46)

5.10 When a key system telephone user makes a CO trunk call, either by pressing a CO line key or by dialing a direct CO line access code followed by a trunk number, the dialed digits are subject to digit analysis according to the digit strings in CDE Form 46, Key System Toll Control.

Digit analysis is performed as follows:

1. Try to match the dialed digits against the digit string entries.
  - If there is a unique match, go to step 2.
  - If there is a partial match, wait for the inter-digit timer to time out before deciding if the user may make a call.
  - If there is no match, allow the user to make the call, without checking the termination type or COR.
2. Determine whether the user needs to dial an account code to make this call (Is the LONG DISTANCE option YES or NO?). If the option is NO, go to step 3. If the option is YES and the user has already dialed the account code, go to step 3; otherwise the call is toll denied.
3. Determine whether the termination type matches the selected trunk. If the termination type is a trunk group, the selected trunk must be a member of the trunk group to qualify for a match, otherwise the call is toll denied. If the termination type is a trunk, the selected trunk must match the termination trunk. If the termination type matches, go to step 4; otherwise, the call is toll denied.

4. Determine whether the user's COR is a member of the specified COR group. If it is, deny the call; otherwise, allow the call.

**Note:** The CO trunk is not seized until enough digit analysis is done to determine that the call may be allowed.

CDE Form 46, which specifies the actual digit strings to be analyzed, has five fields:

**Digits to be Analyzed:** Each line in this programmable field constitutes one entry. The following wildcard digits may be specified to simplify entering the digit strings (N is any digit from 2 to 9, X is any digit from 0 to 9):

- N0X
- N1X
- X
- 1N1X
- 1N0X
- 0N1X
- 0N0X
- 10XXX0N0X
- 10XXX0N1X
- 10XXX1N0X
- 10XXX1N1X
- 10XXX0
- 10XXX1

Wildcard digit sequences which begin with N, 1, or 0 may ONLY be used at the beginning of the digit string; X may ONLY be used at the END of the digit string. The wildcard digits allow for the following cases:

For any area code NOT SPECIFICALLY IDENTIFIED, N0X and N1X followed by seven digits would cover all unspecified area codes. They each represent half of the area codes in North America.

- For example, N0X-555-1212 and N1X-555-1212 covers routing for all free directory assistance calls.

For any area code NOT SPECIFICALLY IDENTIFIED and where dialing is preceded by a 1 or 0 long distance access code, 1N1X, 1N0X, 0N1X, and 0N0X followed by seven digits would cover all unspecified area codes. This allows wild card restriction of 555 and 976 numbers.

- For example, 1N0X-976-XXXX, 1N1X-976-XXXX, 0N0X-976-XXXX, and 0N1X-976-XXXX cover routing for all 976- calls.

If routes are to be selected based on office codes, blocks of office codes can be specified; for example, 82X, 83X, etc.



The wildcard sequences 10XXX0N0X, 10XXX0N1X, 10XXX1N0X, 10XXX1N1X, 10XXX0, and 10XXX1 are designed for the call aggregator market (i.e., hotels, motels, hospitals and universities) to prevent unauthorized calls from being billed to the originating line, while allowing consumers access to the long distance carrier of their choice. They are accessed by pressing the \*\* MORE \*\* softkey twice and three times.

1- 10XXX0N0X	2- 10XXX0N1X	3- INSERT	4- 10XXX1N0X	5- **MORE**
6-QUIT	7- FIND STRING	8- DELETE	9- 10XXX1N1X	0-

The system sorts digit strings in such a way that explicitly stated digit strings will be routed to their routes, while all others will be covered by wildcards. The ordering of digit strings is performed automatically by CDE after each string is entered. If two routes are defined for 416 and 416-555-1212, CDE ensures that the specific string occurs first in the digits to be analyzed field. The number of entries which can be made in this field is limited only by the amount of available system memory.

DIGITS TO BE ANALYZED		QTY TO FOLLOW	LONG DST	TERM TYPE AND NUM		COR GROUP
416		7	NO	TRUNK	12	1
555		7	NO	TRUNK	10	1
N0X		UNKNOWN	YES	TRUNK	11	2
1-	2- X	3-	4- N0X	5- **MORE**		
6- QUIT	7- FIND STRING	8-	9- N1X	0-		

CC0448

**Figure 5-11 FORM 46 - Key System Toll Control**

**Quantity to Follow:** This programmable field specifies the number of digits to be dialed AFTER the digits to be analyzed, and may be specified as UNKNOWN. The advantage of specifying the quantity to follow; i.e., 9-592 plus four digits, is that when the final digit is received, outpulsing can begin, and the DTMF receiver can be dropped; if UNKNOWN is specified, the interdigit time-out must occur before this happens, tying up PABX resources for a longer time than necessary on each call. The total number of digits in this field, and in the digits to be analyzed field, must not exceed 26. This field is ignored unless System Option 26, *No Overlap Outpulsing* is enabled. Entry is disabled by default.

**Long Distance:** This programmable field is used to specify digit strings which are to be treated as long distance in order to enforce COS option 201, *Account Code, Forced Entry - Long Distance Calls*. A YES or NO value must be specified. With a yes option, a key system caller must dial a specified internal number and enter an account code to receive dial tone, then select an external line, and then dial the called number.

**Termination Type and Number:** Digits dialed may terminate on a trunk or a trunk group. Trunks are numbered 1 to 200, and trunk groups are numbered 1 to 50; if only a number is specified, termination type defaults to trunk group.

**COR Group:** This programmable field identifies the COR group by a number in the range of 1 through 50. If the field is left blank, every COR group can access the digit string. Users with CORs in the listed COR group number are restricted from dialing the specific digit string.

### Examples

A key set user selects trunk 12 and dials 416. From Figure 5-11, the first entry matches the dialed digits. The next step is to check if the user must dial an account code to make the call. For this example, the LONG DISTANCE field is NO; therefore the user is not required to dial an account code. The next step is to check if the termination type matches. The final step is to check if the user's COR is specified in COR GROUP 1; if it is not a member, the user is allowed to make the call, otherwise the call is toll denied.

If the user selects trunk 10 and dials 416, reorder tone is returned. The user is allowed to dial 555 plus seven digits, and any combination of digits other than 416 and NOX types using trunk 10.

To dial an NOX type, the user must access trunk 11.

To dial 613, the user may use trunk 10, 11, or 12 to make the call.

# 6 ARS Operation and Programming

## General

- 6.1 The object of ARS is to choose one route for a call to take from one location to another (usually the least expensive) when several routes are available. The ARS package is the software program which instructs the system on how to make the choice. The choice the system eventually does make depends upon the parameters defined within it by the CDE programmer. These are not arbitrary. The parameters are determined by the needs of the PABX.

Programming the ARS features properly requires (1) an understanding of what the customer needs, and (2) what the system must know to reflect those needs. It is important for the ARS programmer to have a good understanding of the cost structure of the different routes leading from the PABX to any called destination, since it is largely on the basis of cost that route selection takes place.

## Programming Process - General

- 6.2 In general, the ARS programming process follows this plan:
1. Determine the customer's needs. The needs of the customer will determine what types of calls will be permitted by which peripheral devices. Knowing this, the ARS programmer can assign classes of restriction to the peripheral devices on CDE Form 09, Stations/SUPERSET™ Telephones.
  2. Determine the customer's facilities. The ARS programmer must know with what types of trunks the customer is equipped (CDE Form 14, Non-Dial-In Trunks and Form 15, Dial-In Trunks) and the relative cost of each to the customer.
  3. Define CORs and COR groups on CDE Form 20, ARS: Class of Restriction Groups, and apply these to trunk groups. The COR Group tables specify which classes of restriction will be toll-denied on a given route.
  4. Define day zones (i.e., when rates will vary), modified digits, routes, lists, and plans.
  5. Define digit strings. The leading digits and digit strings data are most important, since these form the link between what the set user dials, and what plan, list, or route is used.
  6. Specify the maximum number of digits dialed by each COR. For North America: specify UNLIMITED (no further programming required).

Note that the ARS decision hierarchy, as shown in Figure 5-1, is essentially the inverse of the programming procedure. The first data programmed (COR members) are the last used in the ARS decision. The last data programmed (Digit Strings and Leading Digits) are the first used in the ARS decision, and point towards the required route, route list, or route plan.

The rationale for this dual approach to the ARS structure is this: From the system's viewpoint, COR groups and members define the "rank" in importance of each user to the system. When ARS is given a digit string, it will ultimately accept or reject the call on the basis of the rank of the peripheral device attempting to make the call, but in order to do this, it must first determine how the desired call is to be routed. From a programming viewpoint, it is necessary to identify who possesses what rank before access to the various routes can be allowed or denied. In this way, digit analysis programming must take place with the COR of the peripheral devices always in mind.

### **Programming Process - Key System Telephones**

- 6.3 Key system toll control checks for a digit string match; if one exists, the call is denied. If there is no match, the call is allowed. In general, the ARS programming process follows these steps:
1. Determine what types of calls will be permitted by which peripheral devices. Knowing this, the ARS programmer can assign classes of restriction to the peripheral devices on CDE Form 45, Key System Telephones.
  2. Determine what types of trunks the customer has from CDE Form 14, Non-Dial-In Trunks, and which ones each telephone may access.
  3. Define CORs and COR groups on CDE Form 20, ARS: Class of Restriction groups, that apply to these trunks and/or trunk groups. The COR group tables specify which classes of restriction will be toll-denied on a given trunk. Members of a listed COR group are restricted from dialing the specific digit string.
  4. Define Digit Strings. The digit strings data is most important, since it forms the link between what the set user dials, and whether the call is allowed or denied.
  5. Specify the quantity of digits still to be dialed (or unknown) for each digit string.
  6. Specify whether or not long distance is allowed.

### **System Programming**

- 6.4 When the paper forms are complete, the data must be entered into the system memory through the CDE terminal or attendant console. This is part of the customer data entry process, described in the *Customer Data Entry Practice*.

# 7 Application

## General

- 7.1 ARS is implemented on the PABX in a 2-stage process. First, data must be collected concerning the customer's needs and the facilities, such as trunk groups, that they possess. From this data, the ARS plan can be formulated on paper. Second, the plan must be transferred from paper to the system memory, through the attendant console or CDE terminal. Refer to the *Customer Data Entry Practice*.

## Scenario

- 7.2 This scenario begins with the first stage of ARS implementation, namely, the data collection and ARS plan formulation stage. For the purposes of this scenario, a fictitious company is established.

The company has two Canadian locations: its headquarters in Ottawa, and a service office in Winnipeg. The company also has a plant in Boca Raton, Florida, major accounts and suppliers in the Toronto area, and the company must be able to make international telephone calls. The PABX located in Ottawa is to be programmed.

### Trunk Groups

In consulting the traffic studies performed by the PABX installation company, it was decided, in conjunction with the customer, that the PABX in Ottawa would be most cost-effective when connected to the public network via four trunk groups, and an SCC (specialized common carrier) link. The trunk groups were defined as follows:

**Trunk Group 1:** Local trunks, and specialized common carrier account, for calls to the Boca Raton plant.

**Trunk Group 2:** Zone 2 WATS Trunks (covering area codes 613, 416, 705, 819 and 514).

**Trunk Group 3:** Ottawa-to-Toronto FX Line.

**Trunk Group 4:** Two-way tie line to the Winnipeg office.

The cost guidelines which apply to these groups are:

Tie Lines and FX lines are always less expensive than any other trunk group.

WATS is less expensive than direct distance dialing during the hours of 08:00 through 18:00, Monday through Friday, and 08:00 through 12:00 on Saturday.

SCC is less expensive than direct distance dialing during the hours of 8:00 through 18:00, Monday through Friday, and 08:00 through 12:00, on Saturday.

The following office codes are to be allowed:

Toronto: 471, 825, 678  
Winnipeg: 786  
Ottawa: All office codes  
Boca Raton: 994

The trunking network for this scenario is shown in Figure 7-1.

### **COR Assignments**

The employees at the company's head office in Ottawa were separated into COR groups for purposes of toll control.

COR numbers were assigned to the various workers as follows:

**COR 1:** Executive. The executive level can access all trunk groups, including the international network.

**COR 2:** Upper Management. This level can access WATS, FX, tie, and local trunks, and can access the SCC office.

**COR 3:** Middle Management. This level can access FX, tie, and local trunks, and can access the SCC office with free calls to any area.

**COR 4:** Technical Staff. This level can access FX, tie, and local trunks.

**COR 5:** Administrative Staff. This level can access tie and local trunks.

For all other stations not previously assigned, the following COR was given:

**COR 6:** This level can access the internal network only.

**Note:** It should be remembered that toll control can be applied not only to individual digit strings, but to trunk groups as well. An example of this is described later in this scenario.

### **ARS Form Completion**

Because ARS involves trunks and trunk groups (both incoming and outgoing), the PABX forms concerning trunks and trunk groups must first be completed before starting the ARS tables.

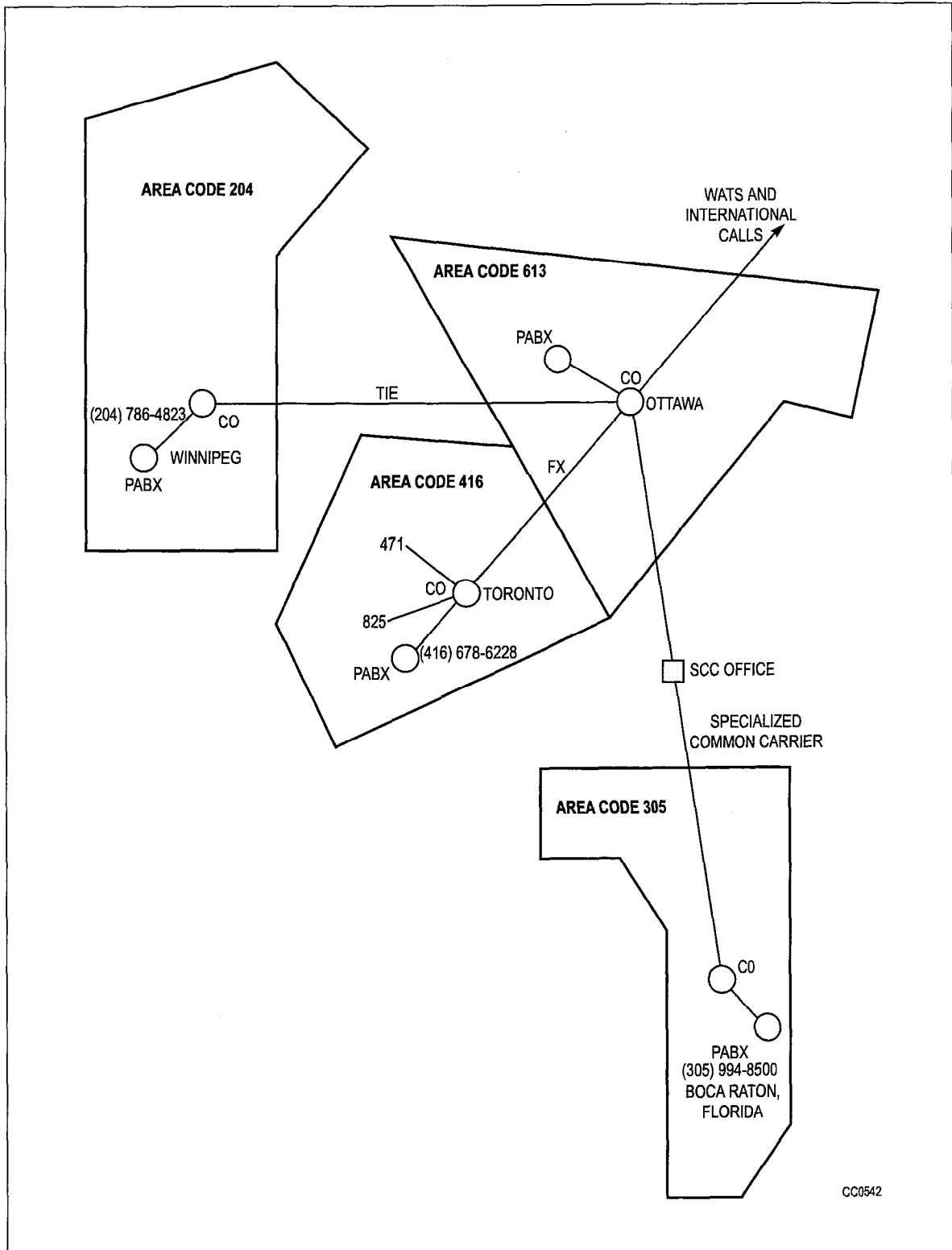


Figure 7-1 Trunking Network

The ARS tables in Figure 7-2 and Figure 7-3 have been completed using the raw data produced in this scenario. The order in which they were completed is the order in which they would normally be programmed. A detailed description of the contents of the tables is given in the paragraphs immediately following Steps 1 through 3.

1. Complete the COR Group Definition table, listing in each COR group the COR members to be included. The *Comments* field may include reminders concerning which level within the company is contained within each group, or comments concerning the destinations being restricted by each COR group.

Complete the Day Zone table to provide day zones which satisfy the effect of changing rates for the trunk groups involved.

2. Complete the Modified Digits table. This table instructs the system which digits to outpulse and which to absorb. For example, if the "outside line" access code 9 is not to be outpulsed, the system should be instructed to delete the leading digit 9 from any digit string being analyzed. Similarly, if long-distance DDD calls are permitted, the system could be instructed to insert the digit 1 into the digit string, after 9 has been deleted. Since in this scenario it is known that the SCC network will be accessed, the system can be told to insert the SCC number and account code. The user would then simply dial a 7-digit telephone number (in this case, the office in Boca Raton). Digit modification need not consider specific user-dialed digit strings, but the various dialing possibilities MUST be considered.

Complete the Route Definition table. Determine how many routes are available for the given trunks and complete the table accordingly. For example, if Trunk Group 1 has five routes available, each route must appear on this table with its own route number.

Complete the Route List table. Assign each route defined a level of "choice". If Trunk Group 1 has five routes available, order these according to first, second, third, fourth and fifth choices. The priority of the routes is normally dependent on cost.

Complete the Route Plan table. This will permit the system to select a route list on the basis of fluctuating costs due to time of day and day of the week. The hours at which the rates change must be entered in the *Start Hour* column.

3. List the leading digits which are to be considered valid by the system; i.e., those which satisfy the customer's required access to the public network. The following order is recommended: (1) directory inquiry numbers and local office codes; (2) codes which provide unrestricted access to toll routes (i.e., 0 and 01); (3) specific toll route codes; (4) tie lines; (5) FX lines; (6) WATS lines; (7) calls to be completed via specialized common carriers. As each leading digits string is entered, specify the number of digits to follow in the *Qty To Follow* column.

Complete the nested Digit Strings table. Digit strings index a route, route list, or route plan depending on the type of call initiated by the digit string. Analyze each digit string individually and complete the nested Digit Strings table accordingly, ensuring that each digit string terminates appropriately (as a route, list, or plan).

If necessary, specify the maximum number of dialed digits, otherwise the default value of unlimited applies (unlimited for North America).



## ARS Digit Strings

The contents of the ARS Digit Strings tables have been composed in accordance with the requirements of the following scenario. Each entry is described below.

- The leading digit has been specified as 9, which, in the scenario, represents the trunk access code of the PABX. Return dial tone is not required, therefore YES is specified in the *Return Dial Tone* field.
- Entries 1 and 2 contain digit strings which define free service calls to any area code, using the wildcard digits N0X and N1X. These calls are completed over local trunks and only one route is required (Route 9).
- Entries 3 through 5 contain the complete digit strings for emergency services, repair services, and directory assistance. As such, there are no digits to follow and a 0 is placed in the *Qty To Follow* column. These calls can only be completed over one route (i.e., local trunks), and are therefore assigned to the first available route (Route 1) in the Route Definition table.
- Entries 6 through 12 contain a cross section of office codes in the Ottawa area. In reality, it is likely that all office codes would have to be listed. The number of digits to follow in each case is four; i.e., the remaining number of digits required to complete a local call. These calls can only be completed over one route; i.e., local trunks. A route (Route 1), having the same trunk group, COR and digit modification requirements as those required for entries 4 through 10 has previously been defined. Therefore, Route 1 can be entered in the *Terminator Type and Number* column of these entries.
- Entry 13 provides an example of how access to an individual telephone number can be controlled. Access to this number (a local stockbroker) is restricted to the executive level by indexing it to a route (Route 2) which is associated (through COR Group 3) with COR 1. The number of digits to follow is 0.
- Entries 14 and 15 contain digits which allow unlimited access to the toll call network; i.e., digit 0 for operator assistance and 01 for access to the international network. The number of digits to follow for entry 14 is 0. The number of digits to follow for entry 15 is Unknown, since it is dependent on the call destination. The *Qty To Follow* entry for this string therefore contains the word Unknown. A route exists (Route 2) and satisfies the COR and digit modification requirements for entries 14 and 15. Route 2 is therefore entered in the *Terminator Type and Number* column of these entries.
- Entry 16 contains the complete digit string for the service office in Winnipeg. As such, the number of digits to follow is 0. This call can be completed over either of two routes: the tie trunk or DDD. Since these routes are not time-dependent (tie trunks are always less expensive than DDD), a List (List 1) is defined in the *Terminator Type and Number* column.
- Entry 17 is an example of a toll number within the home area; therefore, a new digit modification sequence must be defined which inserts the toll digit 1 prior to outpulsing. This digit modification sequence is defined in entry 2 of the Modified Digits table and is referenced from a newly defined route within the Route Definition table (Route 3).

- Entry 18 contains the digit string which defines the number of the plant in Boca Raton. Calls to this destination can be completed using one of two long distance services: SCC or DDD. The tariff structure for SCC is similar to WATS in that SCC is less expensive than DDD during business hours. As such, the two routes for entry 18 are indexed via the Route Plan table and Route List Definition table. The number of digits to follow is 0 and the first available route plan is Plan 1.
- Entries 19 through 21 contain the digit strings which define toll routes to specific COs within area code 416. The number of digits required to complete a call to any of these offices is 4. These calls can be completed over any one of three routes: FX, WATS, or DDD. These routes are time-dependent (i.e., during some times WATS is less expensive than DDD, and at others, DDD is less expensive), and as such, they are indexed to PLAN 2 in the *Terminator Type and Number* column.
- Entry 22 contains a digit string which defines the area code 416. The digits to follow can be any combination of seven digits. This provides a user, having the required COR, with unrestricted access to any CO within the area defined by area code 416. Like entries 19 through 21, these calls can be completed over any one of three routes which are time-dependent. However, unlike entries 19 through 21, user access is not restricted to specific COs, and therefore an additional set of routes having the relevant CORs is required. Consequently, additional route lists are required to list the new routes and an additional route plan is required to associate the new route lists with day and time zones. Plan 3 is therefore entered in the *Terminator Type and Number* column.
- Entries 23 through 25 contain digit strings which define the three area codes which, in conjunction with entry 22, define the area codes accessible through Zone 2 WATS. Unlike entry 22, calls made via entry 23 through 25 can only be completed over either of two services: WATS or DDD. These two routes are time-dependent and are therefore indexed to Plan 3 in the *Terminator Type and Number* column.

### **Route Definition Table**

Calling devices which are routed to Route 1 from the ARS Digit Strings tables are allowed to complete calls over the CO Trunk Group 1 if they are part of COR Group 1. The digit modification sequence for such calls is defined in Modified Digits table entry 1. Similarly, devices are routed via Routes 2 through 9 from the Route List table.

### **Route List Table**

List number 1 is referenced from the ARS Digit Strings table. It provides alternate routing by listing two routes: Route 4 and Route 5. The routes are listed in order of cost (Route 5 is identified in the Route Definition table as the tie line between Ottawa and Winnipeg), and as such it is always less expensive than the alternative DDD route defined by Route 4.

List numbers 2 and 3 are referenced from Route Plan 1. Within that plan, they are assigned to time zones such that for any given time zone, they define the least cost routing. Each entry lists two routes: Routes 3 and 6 (Route 3 being DDD and Route 6 being identified within the Route Definition table as SCC).

List numbers 4 and 5 are referenced from Route Plan 2. They list three routes (2, 7 and 8) in order of cost for the day and time zones defined within Route Plan 2.

---

List numbers 6 and 7 are referenced from Route Plan 3. They are similar to entries 4 and 5 with the exception that the FX line is not included.

### **Route Plan Table**

Route Plans 1 through 3 are referenced from the ARS Digit Strings tables. They assign route lists to the day and time zones which are defined in the associated Day Zone table. In Route Plan 1, least cost routing is provided by Route List 2 during Day Zone 1, Time Zones 1 and 2, and Day Zone 2, Time Zone 1, and by Route List 3 in the remaining day/time zones.

**ARS FORMS WORKSHEET**

**FORM 26 - ARS: DIGIT STRINGS**

Leading Digits		Return Dial Tone (Y/N)		COR Group	
9		Y			
NESTED FORM					
Digits to Analyse	Quantity to Follow	Long Distance	Termination Type & Number		
1 NOX5551212	0		R	9	
2 N1X5551212	0		R	9	
3 911	0		R	1	
4 411	0		R	1	
5 611	0		R	1	
6 449	4		R	1	
7 445	4		R	1	
8 643	4		R	1	
9 663	4		R	1	
10 830	4		R	1	
11 832	4		R	1	
12 592	4		R	1	
13 5928246	0		R	2	
14 0	0		R	2	
15 01	Unknown		R	2	
16 2047884023	0		L	1	
17 624	4		R	3	
18 3059448500	0		P	1	
19 416678	4		P	2	
20 416471	4		P	2	
21 416825	4		P	2	
22 416	7		P	3	
23 514	7		P	3	
24 705	7		P	3	
25 819	7		P	3	

25 DIGITS MAX (INCLUDING LEADING DIGITS)

**FORM 21 - ARS: DAY ZONE DEFINITION**

Day Zone	MON	TEU	WED	THU	FRI	SAT	SUN
1	*	*	*	*	*		
2						*	
3							*

SPECIFY A DAY ZONE FOR EACH DAY OF THE WEEK WITH AN ASTERISK (\*)

**FORM 25 - ARS: ROUTE PLANS**

**ROUTE PLAN #:**

Time Zone	Day Zone 1		Day Zone 2		Day Zone 3	
	Start Hour	Route List	Start Hour	Route List	Start Hour	Route List
1	8	2	8	2	8	3
2	12	2	12	3	12	3
3	18	3	18	3	18	3
4						
5						
6						

**ROUTE PLAN #:**

1	8	4	8	4	8	5
2	12	4	12	5	12	5
3	18	5	18	5	18	5
4						
5						
6						

**ROUTE PLAN #:**

1	8	7	8	7	8	6
2	12	7	12	6	12	6
3	18	6	18	6	18	6
4						
5						
6						

THERE ARE A MAXIMUM OF 50 ROUTE PLANS. IF THIS FORM IS USED, THEN ALSO FILL OUT FORM 21.

CC0137

**Figure 7-2 Table Network (Part 1)**

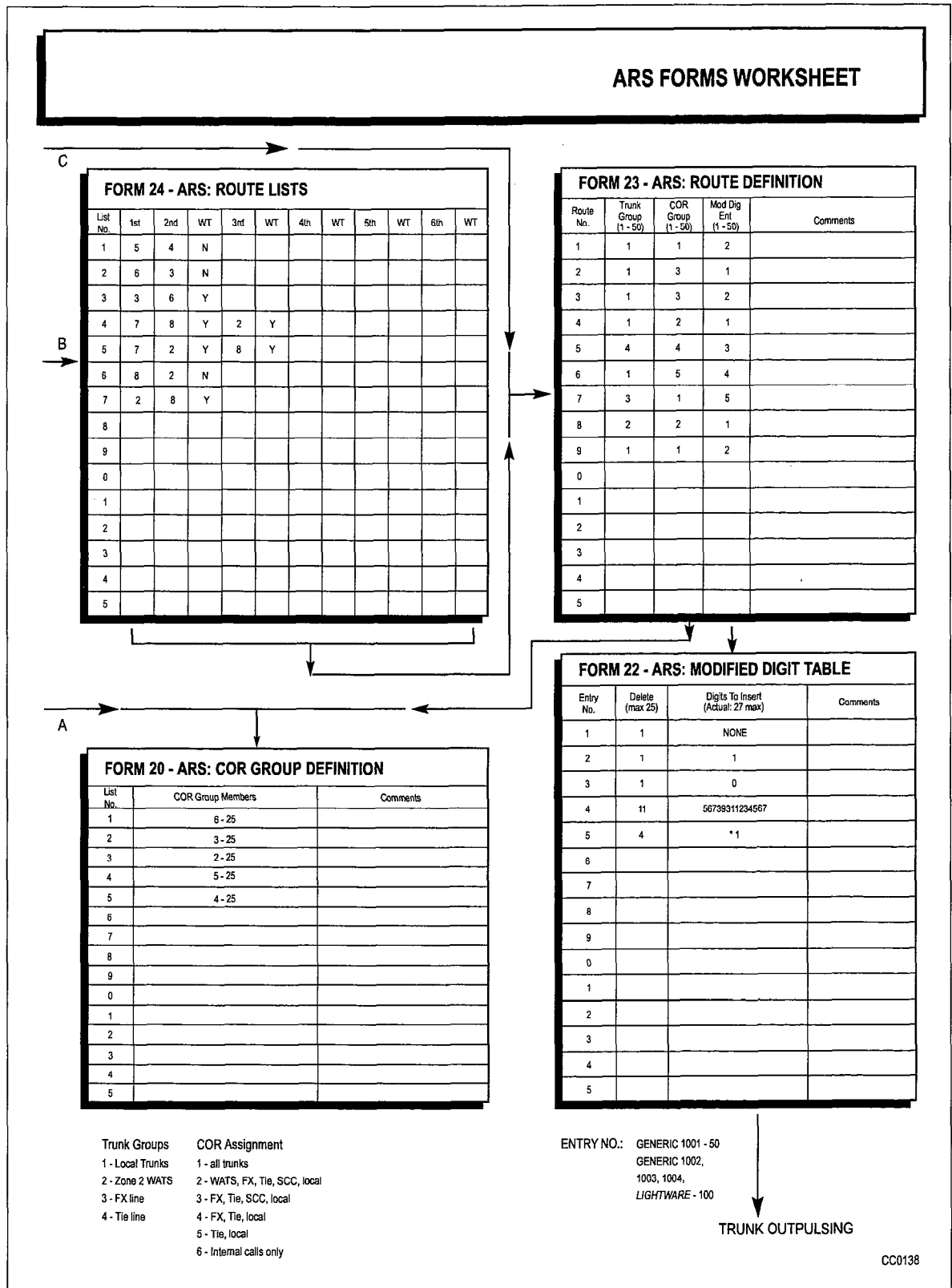


Figure 7-3 Table Network (Part 2)

### **Day Zone Table**

The Day Zone table defines three time zones for each day. These are combined in the Route Plan table to form nine day and time zones.

In this scenario, three trunk groups are time-dependent: the WATS lines and the CO and SCC trunks. The tariff structure for these two groups is such that WATS is less expensive than DDD on Monday through Friday from 08:00 - 18:00, and on Saturday from 08:00 - 12:00.

### **COR Group Definition Table**

All entries in the COR Group Definition table are referenced from the Route Definition table. Group 1 contains CORs 6 through 25. Peripheral devices which have been assigned any of these CORs are restricted from completing calls via routes which reference COR Group 1. Similarly, COR Groups 2 through 5 define different levels of service.

### **Modified Digits Table**

All entries in the Modified Digits table are referenced from the Route Definition table.

- Entry Number 1 is associated with digit strings in the ARS Digit Strings table where the digits to be outpulsed are identical to those dialed by the user. As such, only the leading digit of the string is absorbed and no digits need be inserted.
- Entry Number 2 is associated with digit strings in the ARS Digit Strings table which represent toll calls and therefore require the leading digit to be absorbed and the toll digit 1 to be inserted.
- Entry Number 3 is associated with digit strings in the ARS Digit Strings table which are outpulsed over the tie line to Winnipeg, and as such, all digits dialed by the user are deleted and a 0 for the distant attendant is inserted.
- Entry Number 4 is associated with calls which are completed via the SCC link. The SCC account code is inserted in the digits to be outpulsed.
- Entry Number 5 is associated with the digit strings in the ARS Digit Strings table which are outpulsed over the FX Line to Toronto. The first four digits are deleted and a dial tone marker is inserted in the DIGITS TO BE INSERTED column.

## **Scenario - Key System Toll Control**

- 7.3 When a Key System telephone selects a CO line to make a call, toll control is invoked before the trunk is seized. Key System Toll Control is essentially a verification to determine if the dialed digits are restricted from being dialed on the selected trunk; otherwise, the call is allowed. As digits are received, they are analyzed; if there is no digit match on the selected trunk, the call is allowed. If there is a match, the long distance and type of termination is checked to see if the call should be denied. If the call is allowed, then the COR Group is checked to see if the caller is allowed to make this call.

A typical CDE Form 46, Key System Toll Control, as shown in Figure 7-4, has been composed for this scenario and each entry is described below.

- Entry 1 allows users who are not included in COR group 1 to make long distance calls to Area Code 416 on trunk 1.  
Area code 416 may be dialed by non-members of COR group 1.
- Entry 2 allows non-members of COR group 1 to dial 555 numbers using trunk 2. 555 plus seven digits, and any combination of digits other than 416 and N0X types is allowed using trunk 10.
- Entry 3 allows non-members of COR group 3 to dial 976 numbers using any trunks in trunk group 4.  
Denied to dial any call to 976 plus four digits.
- Entry 4 allows non-members of COR group 2 to dial N0X calls using trunk 3.  
Allowed to dial N0X long distance calls.

DIGITS TO BE ANALYZED	QTY TO FOLLOW	LONG DST	TERM TYPE AND NUM		COR GROUP
416	7	NO	TRUNK	1	1
555	7	NO	TRUNK	2	1
976	7	NO	GROUP	4	3
N0X	UNKNOWN	YES	TRUNK	3	2
1-	2- X	3-	4- N0X	5- **MORE**	
6- QUIT	7- FIND STRING	8-	9- N1X	0-	

CC0543

**Figure 7-4 Typical Key System Toll Control Form**

**Digits to be Analyzed Strings:** These digits are analyzed to find a match, or to determine that there is no match.

**Quantity to Follow:** The number of digits which are to follow the digit string is listed here.

**Long Distance:** This column allows or does not allow a long distance call.

**Term Type and Number:** The type of termination for this key (either trunk or trunk group) and its number are programmed in this column. After the digits are analyzed, this column is checked to verify that the selected trunk is included so that the call may be allowed.

**COR Group:** The COR Group Definition table lists the COR members to be included in each COR group. The COMMENTS field may include reminders concerning the destinations being restricted by each COR group. The last check that is made before allowing a call is whether or not the caller is a member of a restricted group.



# 8 Automatic Data Route Selection (ADRS)

## General

8.1 Similar to voice calls, outgoing data calls are dependent upon the digits dialed, time of day, and restrictions set up during CDE. An additional requirement of ADRS is the grouping of trunks by their ability to carry data at a maximum baud rate. Since trunks can presently be grouped and named, no modifications are required to the existing program. ADRS is not available with *LIGHTWARE* Basic software.

## Application

8.2 This section is intended as an example of an ADRS/ARS program which could be used by a programmer in Kanata. In this section, a bottom-up path through the steps taken by the programmer will be followed. This is not intended to represent the full CDE requirements.

In the following example, Mitel has three locations: Kanata, Florida, and England. The programmer needs the following information:

1. Knowledge of available trunks (number, type, and line speed)
2. The assigned class of restriction
3. Toll control requirements
4. Internal numbering plan specifics.

The following outgoing trunks are available:

1. Eight CO trunks, comprising five 600 baud lines, two 1200 baud lines and one 4800 baud line
2. A 1200 baud tie line to Florida.

## Trunk Groups

The CO trunks are defined in CDE Form 14, Non Dial-In Trunks, and the tie trunk is defined in CDE Form 15, Dial-In Trunks. The following tables list trunks that are grouped according to their common characteristics in CDE Form 16, Trunk Groups. In this example, shown in Table 8-1, all trunks of the same type and speed are considered to form a group.

<b>Table 8-1 Trunk Groups</b>		
<b>Trk Grp #</b>	<b>Trunk Type</b>	<b>Group Members</b>
1	600 baud CO	1, 2, 3, 4, 5
2	1200 baud CO	6, 7
3	4800 baud CO	8
4	1200 baud tie	9

### **COR Groups**

CDE Form 20, COR Group Definition, is used to create all necessary COR groupings, as shown in Table 8-2.

<b>Table 8-2 COR Groups</b>		
<b>COR Group</b>	<b>COR Group Members</b>	<b>Comments</b>
1	1	President
2	1-3	President & Upper Management
3	1-6	President & Managers
4	1-9	All but Administration
5	1-15	All

### **Voice Station Requirements**

Table 8-3 summarizes the customer's requirements and the following restrictions apply for outgoing voice calls:

1. Everyone is allowed to call Florida using the tie trunk.
2. Technical staff, all management, and the president are allowed to call anywhere in North America using any trunks.
3. Middle management is allowed to call the England office only during evening hours when the discount rate applies.
4. Upper management is allowed to call the England office any time.
5. The president is allowed to call any number (including the operator 9-0) any time.
6. Administration staff are not allowed any long distance calls.

**Data Station Requirements**

The following restrictions apply for outgoing data calls:

1. The president is unrestricted and can use lines of any speed during the day or night.
2. The 4800 baud CO trunk is used for data calls only.
3. The president and all management are allowed use of the 4800 baud line subject to the time of day restrictions imposed by voice station requirements.
4. Technical staff are allowed use of the 4800 baud line at night only, but for local calls only.
5. Technical staff, all management, and the president can use any trunk to Florida (subject to time of day restrictions listed above).
6. The 1200 baud tie line to Florida is only cheaper than CO trunks with lower or the same baud rates during the day.
7. Administration staff are not allowed outgoing calls originating at a data station.

**Table 8-3 Customer Requirements Table**

<b>Digit String</b>	<b>Route Type</b>	<b>Time</b>	<b>COR's</b>
System Abbreviated Dial Number (England)	600 Baud CO	Day	1..3
	600 Baud CO	Night	1..6
	1200 Baud CO	Day	1..3
	1200 Baud CO	Night	1..6
	4800 Baud CO	Day	1..3
	4800 Baud CO	Night	1..6
System Abbreviated Dial Number (Florida)	1200 Baud Tie line	-	1..15
	600 Baud CO	-	1..9
	1200 Baud CO	-	1..9
	4800 Baud CO	-	1..6
9-305-994-8500 (Florida)	1200 Baud Tie line	-	1..15
	600 Baud CO	-	1..9
	1200 Baud CO	-	1..9
	4800 Baud CO	-	1..6
9-0 (Operator Long Distance)	600 Baud CO	-	1
	1200 Baud CO	-	1
	4800 Baud CO	-	1

Page 1 of 2

<b>Table 8-3 Customer Requirements Table (continued)</b>			
<b>Digit String</b>	<b>Route Type</b>	<b>Time</b>	<b>COR's</b>
9-Else (Local)	600 Baud CO	-	1..9
	1200 Baud CO	-	1..9
	4800 Baud CO	Day	1..6
	4800 Baud CO	Night	1..9
9-1-Else (Long Distance)	600 Baud CO	-	1..9
	1200 Baud CO	-	1..9
	4800 Baud CO	-	1..6
			Page 2 of 2

### Day Zones

In this example, the day zones are as follows:

- Day Zone 1, Monday to Friday
- Day Zone 2, Saturday
- Day Zone 3, Sunday

Day zones are entered on CDE Form 21, ARS: Day Zone Definition.

### Modified Digits

CDE Form 22, ARS: Modified Digit Table, defines digits which are replaced before outpulsing. Four digits are deleted because there are four digits in each system abbreviated dial number, described later in this section. The digit modification table used in this example is shown in Table 8-4.

<b>Table 8-4 Digit Modification</b>		
<b>Entry</b>	<b>QTY to DEL</b>	<b>Digits to Be Inserted</b>
1	4	011-44-62872821
2	4	None
3	4	1-305-994-8500
4	1	1
5	1	None

## Route Definition

CDE Form 23, ARS: Route Definition, as shown in Table 8-5, is derived from the Customer Requirements table, Table 8-3. The Route Definition table finalizes the customer requirements table by specifying a trunk group number and the digit modification to use for the dialed digit string.

Route Num	Trunk Group	COR Group	Mod Digit Entry
1	1	2	1
2	1	3	1
3	2	2	1
4	2	3	1
5	3	2	1
6	3	3	1
7	4	5	2
8	1	4	3
9	2	4	3
10	3	3	3
11	4	5	2
12	1	4	4
13	2	4	4
14	3	4	4
15	1	1	4
16	2	1	4
17	3	1	4
18	1	4	4
19	2	4	4
20	3	4	4
21	3	4	4
22	1	4	5
23	2	4	5
24	3	4	5

## Route Lists

If a call can use more than one route, digit translation accesses CDE Form 24, ARS: Route Lists, instead of a route. For example, if the digit string 8822 were produced, route 7, 8, 9 or 10 can be used to complete the call. Note here that the routes in each route list are entered in order of ascending cost. Table 8-6 defines the route lists for this example.

List Num	First	Second	WT	Third	WT	Fourth
1	1	3		5		
2	2	4		6		
3	7	8		9		10
4	8	9		10		7
5	11	12		13		14
6	12	13		11		14
7	15	16		17		
8	18	19		20		
9	18	19		21		
10	22	23		24		

### Route Plan

CDE Form 25, ARS: Route Plans, is used when time of day dependencies exist for a given digit string. Each entry in the route plan identifies either a route or a route list from which a trunk group is selected. For this example, the three time zones are:

- Time Zone 1 (TZ1) = ( 08 to 17 )
- Time Zone 2 (TZ2) = ( 18 to 22 )
- Time Zone 3 (TZ3) = ( 23, and 0 to 7 )

The following route plans were created according to the customer's requirements:

#### Route Plan 1

Time Zone	Day Zone 1		Day Zone 2		Day Zone 3	
	Start Hr	Rte List	Start Hr	Rte List	Start Hr	Rte List
1	08	1	08	1	08	1
2	18	2	18	2	18	2
3	23	2	23	2	23	2

## Route Plan 2

Time Zone	Day Zone 1		Day Zone 2		Day Zone 3	
	Start Hr	Rte List	Start Hr	Rte List	Start Hr	Rte List
1	08	3	08	3	08	3
2	18	4	18	4	18	4
3	23	4	23	4	23	4

## Route Plan 3

Time Zone	Day Zone 1		Day Zone 2		Day Zone 3	
	Start Hr	Rte List	Start Hr	Rte List	Start Hr	Rte List
1	08	5	08	5	08	5
2	18	6	18	6	18	6
3	23	6	23	6	23	6

## Route Plan 4

Time Zone	Day Zone 1		Day Zone 2		Day Zone 3	
	Start Hr	Rte List	Start Hr	Rte List	Start Hr	Rte List
1	08	8	08	8	08	8
2	18	9	18	9	18	9
3	23	9	23	9	23	9

The ARS programmer defines the digit string for the Tie trunk in CDE Form 26, ARS: Digit Strings. This trunk is programmed as shown below:

Leading Digits	Return Dial Tone	Restricted COR Group
89	NO	Unrestricted

In CDE Form 31, System Abbreviated Dial Entry, the following index numbers are defined:

Index Number	Digit String
22	3059948500
23	89
30	0114462872821

These numbering plans result in the following system abbreviated dial numbers (sometimes referred to as system speed call numbers):

LocationDirectory NumberSpeed Call Number

Florida 305-994-8500 8822  
Florida 89 (Tie Trunk)8823  
England 011-44-628728218830

An originator can dial either the speed call digit string or the full CO trunk directory number for Florida, but only the speed call digit string is used for any calls to England.

## Scenarios

8.3 The following examples illustrate how the ADRS/ARS system uses the tables in the above application. Each example assumes a Monday to Friday day zone (DZ1).

Abbreviations used are as follows:

RP1= Route Plan 1  
RL1= Route List 1  
R1= Route 1  
DZ1= Day Zone 1  
TZ1= Time

### Example 1

At 1:00 PM, a member of the administration staff dials the digit string 9-416-652-5555 from a 600 baud data terminal.

Digit translation follows the path 9-else to select RP4.

1:00 PM represents TZ1 and RP4 [DZ1, TZ1] selects RL8.

RL8 contains the routes R18, R19, R20.

Each of the routes in the route list has legal COR values of [1 to 9], barring their use since the administration staff COR is [10 to 15].

The call cannot be completed.

### Example 2

A member of middle management dials the digit string 8830 from a 1200 baud data terminal at 10:00 AM.

Digit translation follows the path 8-8-3-0 to select RP1.

10:00 AM represents TZ1 and RP1 [DZ1, TZ1] selects RL1.

RL1 contains the routes R1, R3, R5.

Each of the routes in the route list allows only COR values from [1 to 3] which bars their use, since a middle manager's COR is [4 to 6].

The call cannot be completed.



**Example 3**

At 9:00 PM, a member of upper management dials the digit string 9-305-994-8500 from a 600 baud data terminal.

Digit translation follows the path 9-3-0-5-9-9-4-8-5-0-0 to select RP3.

9:00 PM represents TZ2 and RP3 [DZ1, TZ2] selects RL6.

RL6 contains the routes R12, R13, R11, R14.

Each of these routes will allow the call since:

1. They all allow COR values 2 to 3 (upper management)
2. The originator's baud rate of 600 is less than or equal to the baud rate of all trunk groups.

The call can be completed.

Observe the order in which the trunk groups are selected. All CO trunks of baud rates less than or equal to the tie trunk are selected before the tie trunk. Since the call originated during the night, the CO trunks are less expensive than the tie trunk and, as stipulated in the requirements, least cost route selection is demonstrated.

**Example 4**

At 10:00 PM, a member of the technical staff dials the digit string 8822 from a 4800 baud data terminal.

Digit translation follows the path 8-8-2-2 to select RP2.

10:00 PM is TZ2, RP2 [DZ1, TZ2] selects RL4.

RL4 contains the routes R8, R9, R10, R7.

R7 allows the technical staff's COR. R7 uses Trunk Group 4. Trunks in Trunk Group 4 are each 1200 baud. The call is barred from completion on R7 based on incompatible baud rates.

R8 allows technical staff's COR. R8 uses Trunk Group 1. Trunks in Trunk Group 1 are each 600 baud. The call is barred from completion on R8 based on incompatible baud rates.

R9 allows technical staff's COR. R9 uses Trunk Group 2. Trunks in Trunk Group 2 are each 1200 baud. The call is barred from completion on R9 based on incompatible baud rates.

R10 does not allow the technical staff COR so the call is barred on R10.

The call cannot be completed.

**Example 5**

At 9:00 AM, a member of the administration staff dials the digit string 8822 from a 1200 baud data terminal.

Digit translation follows the path 8-8-2-2 to select RP2.

9:00 AM is TZ1, RP2 [DZ1, TZ1] selects RL3.

RL3 contains the routes R7, R8, R9, R10.

R7 is the Tie trunk to Florida.

The call completes. If the tie trunk was already in use, the call would not complete since no other route in the route list allows administration COR [10 to 15].

# Appendix A

## Preventing Toll Fraud

This appendix explains how to program the ARS CDE forms to minimize the possibility of unauthorized toll access.

All SX-200® PABX systems with any combination of Direct Inward System Access (DISA), Integrated Auto Attendant or peripheral COV or ONS interfaced Auto Attendant/Voicemail are susceptible to fraudulent use by unauthorized users.

### Analyze all ARS Digit Strings

ARS Digit String entries determine your toll control plan. You should analyze them closely to ensure that they provide the desired level of toll control. It's extremely important that you clearly understand which digit string entries the system will identify as the closest match to the digit string dialed. The digit string that ARS identifies as the closest match may not be the same digit string entry that you intended the dialed digits to match.

For Example:

All stations are Class of Restriction (COR) restricted from Route 9. The entry "X" is intended to pick up all local calls that begin with digits 2 through 9.

DIGITS TO BE ANALYZED		QTY TO FOLLOW	LONG DISTANCE	TERM TYPE AND NUM	
0		UNKNOWN	NO	ROUTE	2
1900		7	NO	ROUTE	9
1		10	NO	ROUTE	2
X		6	NO	ROUTE	1
1-		2-	3- INSERT	4- N0X	5- **MORE**
6- QUIT		7- FIND STRING	8- DELETE	9- N1X	0-

CC0544

**Figure A-1 Example 1: Digit Strings Subform for Form 26**

At first glance, this ARS program appears to deny all calls to 1-900. This restriction applies if a user dials 9 followed by 1-900. If however, a user dials 9 followed by 1 and then pauses, the ARS Unknown Digit Length Timer will run until it expires and the system will select Route 2. The user could then continue dialing, 9-0-0 or any other digits. This access is allowed because the entry of digit string "1" is the closest match to the digits dialed by the user.

In addition, the SMDR records for these calls may be missing or incomplete. This is a side-effect caused by users pausing during ARS digit strings for lengths of time longer than the ARS Unknown Digit Length Time setting. SMDR records are not generated for these calls because the DTMF receiver is dropped from the trunk when the ARS Unknown Digit Length Time expires if the dialed digit string is matched.

To prevent these types of calls from being routed, program the ARS as follows.

DIGITS TO BE ANALYZED		QTY TO FOLLOW	LONG DISTANCE	TERM TYPE AND NUM	
0		UNKNOWN	NO	ROUTE	2
1900		7	NO	ROUTE	9
1XXXXXXXXXX		10	NO	ROUTE	2
X		6	NO	ROUTE	1
1-	2-	3- INSERT	4- NOX	5- **MORE**	
6- QUIT	7- FIND STRING	8- DELETE	9- N1X	0-	

CC0545

**Figure A-2 Example 2: Digit Strings Subform for Form 26**

In the form shown in Figure A-2, the entry of "1xxxxxxxxx" forces the user to enter a full 10 digits after dialing 1 before the call routes out. Some areas may require an entry of "1xxxxxxx" for 1 plus seven digit dialing. In the above example, all calls to 1-900 are toll denied. Test all conflicting ARS entries to determine that insufficient dialing does not cause the system to route calls incorrectly.

With the recent increase in international long distance toll fraud, you should give special attention to 011 calls. Sites that do not normally require international dialing should toll control all 011 calls. These calls could be routed through the console operator for screening so that only internal employees would be transferred to an ARS route that allows 011 to be dialed.

## DISA And Dial-In Trunks

DISA presents the greatest potential for abuse by external callers. Two levels of security can be provided by restricting the Class of Restriction (COR) and Class of Service (COS) of the DISA trunk from making external calls, and then allowing the trunk to have external access if a Verified Account Code is dialed after the DISA Feature access code. The Verified Account Code changes the COR and COS of the normally restricted DISA trunk, allowing external access for authorized users. The use of 12-digit account codes provides the greatest number of possible account code combinations, and therefore the highest level of protection. Using 12-digit account codes allows one trillion possible codes. The use of 4-digit account codes only allows ten thousand possible codes.

## Auto Attendant

The PABX Auto Attendant feature is very similar to DISA in its operation. The only difference between DISA and Auto Attendant is that the caller is listening to a recorded announcement with Auto Attendant.

## ONS or COV Interfaces Voice Mail/Auto Attendant(COV/ONS VM/AA)

Proper considerations should be made for toll control of COV and ONS VM/AA ports. Many peripheral systems simply perform blind transfers to any digit sequence entered on the incoming trunk. Some ONS VM/AA system use station ports looped back onto loop start trunks for message-sending setups. This loop-around setup used in conjunction with System Option 22 (Last Party Clear Dial Tone), can allow a caller who has been dropped by the VM/AA to receive dial tone, and possibly proceed to dial through ARS. All station ports used in loop backs should be properly toll controlled and should only have the minimum required COS options.

## System Abbreviated Dial

It's important to note that in the *SX-200* LIGHT Systems, Abbreviated Dial (speed call) is not subject to toll control. Access to system speed call is controlled through Class of Service programming for stations and Dial-In Trunks that require restriction.

A system speed call entry that consists of manually inserted digits could potentially bypass all COR restrictions. A speed call of this type would be set as follows:

\*3XX

"XX" is any digit 0 to 9 designating the quantity of user dialed digits to be inserted. If a user accesses a speed call entry which has been configured in this manner, the user could enter an ARS Leading Digit and enough digits to cause ARS to route. This type of call would not be subject to COR restrictions.

## **Direct to ARS**

Any device with Direct to ARS enabled in its COS or the COS of an Account Code dialed, can bypass the Restricted COR Group entry programmed against the ARS leading digit programmed in Feature Access Code 37, Direct to ARS. Therefore, a trunk or station that is COR restricted from an ARS leading digit can still place a call out through this leading digit, if it is done through the Direct to ARS feature access code. COR restrictions on specific routes will still apply to all ARS or Direct to ARS calls made by all devices.

## **Passwords**

Change all levels of passwords from the default passwords on systems that have modems connected to the maintenance port.

**NOTES**

**NOTES**



**SX-200<sup>®</sup> ML PABX**

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Station  
Message  
Detail  
Recording

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## Table of Contents

<b>1. Introduction</b> .....	1-1
General .....	1-1
Reason for Issue .....	1-1
Brief Description .....	1-1
<b>2. Detailed Description - Trunk SMDR</b> .....	2-1
General .....	2-1
Trunk Call Record Buffers .....	2-1
Recorded Information .....	2-1
Call Timing .....	2-7
Trunk SMDR Call Record Examples .....	2-8
5-Digit SMDR Option .....	2-10
<b>3. Detailed Description - Data SMDR</b> .....	3-1
General .....	3-1
Recorded Information .....	3-1
Data SMDR Call Record Examples .....	3-8
Data Call Record Buffers .....	3-11
<b>4. ACD TELEMARKETER® Reporting System SMDR</b> .....	4-1
General .....	4-1
Recorded Information .....	4-1
ACD Call Record Examples .....	4-6
<b>5. External Devices</b> .....	5-1
General .....	5-1
Printer .....	5-1
Tape Machine .....	5-1
Cabling .....	5-1
<b>6. SMDR Programming and Control</b> .....	6-1
General .....	6-1
TRUNK SMDR and ACD SMDR Programming Options .....	6-1
Data SMDR Programming Options .....	6-3
<b>7. Operational Parameters</b> .....	7-1
General .....	7-1
Non-Recording Conditions .....	7-1
Attendant-Handled Calls .....	7-1
Incoming Calls .....	7-2
Data SMDR .....	7-2
<b>Appendix A - Account Codes</b> .....	A-1
General .....	A-1
Description .....	A-1
Account Code Terminator .....	A-1
Forced Account Codes .....	A-1
Operation .....	A-2
Account Code entry at the start of an outgoing call: .....	A-2
Account code entry during a call on a SUPERSET 420™ telephone: .....	A-2
Account code entry during a call on a SUPERSET 430™ telephone: .....	A-2

**Appendix B - DATA Account Codes** ..... B-1

    General ..... B-1

    Description ..... B-1

    Incoming, Outgoing, and Internal Data Calls ..... B-1

        Incoming Data Calls ..... B-1

        Outgoing and Internal Data Calls ..... B-2

        Incoming Call over Special DISA Trunk ..... B-3

    System Abbreviated Dial Numbers ..... B-3

    Forced Account Codes ..... B-4

**List of Tables**

Table 2-1 Summary of Fields in Trunk SMDR Records ..... 2-5

Table 2-2 SMDR Fields Changed for 5- digit Trunk SMDR ..... 2-10

Table 3-1 Summary of Fields in a Data SMDR Record ..... 3-4

Table 3-2 Data Call Disconnect Reasons ..... 3-5

Table 4-1 Summary of Fields in ACD SMDR Records ..... 4-2

Table 6-1 CDE-Selected SMDR COS and System Options ..... 6-2

Table 6-2 CDE-Selected Data SMDR COS and System Options ..... 6-3

# 1 Introduction

## General

- 1.1 This document describes the Station Message Detail Recording (SMDR) feature of the PABX. The document includes a detailed description of the feature and its operational parameters. Refer to the *Peripheral Devices Practice* and the *Installation Information Practice* for information on the installation of external devices (e.g., printers).

## Reason for Issue

- 1.2 This practice is issued to describe the SMDR feature of the PABX. This practice also describes changes that have been made to allow the SMDR feature to interface with the MITEL ACD TELEMARKETER® Reporting System.

## Brief Description

- 1.3 The Station Message Detail Recording or “call detail recording” feature is an integral part of the system. It generates a descriptive call record for every incoming and outgoing trunk call made via the PABX. These call records can be routed to an RS-232 port for processing or printing. They allow the customer to evaluate the use of the system’s trunks and determine whether the quantity and type of trunks are the most economical mix for the traffic being handled by the PABX. In addition, the customer can analyze the use of the trunk network by corporate personnel. Misuse can then be corrected through modifications to the toll control assignment.

Data SMDR provides a record of each data call which is made within the PABX so that all data-related traffic may be analyzed.

ACD TELEMARKETER Reporting System SMDR provides a record of each ACD call which occurs within the PABX so that all ACD-related traffic may be analyzed.

SMDR



## 2 Detailed Description - Trunk SMDR

### General

- 2.1 The SMDR data collection process is initiated every time a trunk (incoming or outgoing) is seized. The collection process forms part of the system's call processing routines; as such, data is collected on a per-call basis for the duration of each call. The data is formatted into an SMDR record and is routed to a printer output port. The records can be routed directly to the output port as described in Part 4 of this practice.

When SMDR (outgoing and incoming) is selected, a record is generated for every trunk call regardless of the call duration, the identity of the originating party or whether the call is completed. When two or more trunks are involved in a call, a separate record is generated for each trunk, allowing each trunk to be analyzed for costing purposes. When a station which is involved in a trunk call invokes a transfer to another station, only one record is generated; however, the number of the second station appears in the SMDR call record. A call may be transferred several times but only the first and second party is recorded. If account codes are entered, a record is generated for each account code.

An SMDR record is not generated for:

- calls which encounter busy trunks,
- internal calls between stations or between a station and the Attendant,
- calls made from stations or going to trunks whose class of service includes SMDR disable.

**Note:** Automatic Number Identification (ANI), Custom Local Area Subscriber Services (CLASS), and Dialed Number Identification Service (DNIS) information can also be reported in an SMDR trunk record. Enable COS Options 814, SMDR - Record ANI/DNIS/CLASS, and 806, SMDR - Record Incoming Calls. Please refer to the *Features Description Practice* for a complete operational description of ANI/DNIS and CLASS.

### Trunk Call Record Buffers

- 2.2 The PABX has 200 buffers which store call record information. If all buffers become full, there are two options: overwrite the oldest record, or do not allow trunk calls until buffers are available.

### Recorded Information

- 2.3 Each SMDR call record occupies a single 85 character line (88 if a 3-digit system identifier is included). The information which may be included in a call record is as follows:
- Call Start time and date
  - Calling party

- Called party
- Call duration
- Call completion status (e.g., called number busy)
- Digits dialed on the trunk (maximum 26 digits)
- Meter pulses (optional)
- Outgoing and incoming trunk numbers
- Long calls identified (optional)
- Time to answer incoming calls
- Identifies the second station in a transfer or in a conference
- Identifies conferences and transfers
- Indicates when the Attendant was involved in the call
- ARS leading digits
- Account code (optional)
- System identifier (optional)
- ANI digits (optional)
- CLASS digits (optional)
- DNIS digits (optional)
- CLASS name (optional)

The definition of the data and its position in the record is given in Table 2-1. The table has five columns: the first identifies the data; the second defines the data's position within the record; the third indicates the format of the data; the fourth describes the data; and the fifth provides additional notes.

A description of the call record fields detailed in Table 2-1 is as follows:

**Note:** Five-digit SMDR is described later in this section; see 5-DIGIT SMDR OPTION.

**Long Call Indicator (z):** This optional field contains a dash (-) for calls 5 to 9 minutes, 59 seconds, a percent symbol (%) for calls 10 to 29 minutes, 59 seconds, or a plus symbol (+) for calls of 30 minutes or more. This is useful when records are to be scanned manually.

**Date (mm/dd):** The date is reported numerically as a 2-digit month followed by a 2-digit day separated by a (/) slash. The year is not reported.

**Start Time (hh:mmp):** The start time of a call is reported in hours and minutes. System option "24 Hour Clock" determines whether a 12-hour or 24-hour format is used. The letter "p" indicates pm in 12-hour format.

**Duration of Call (hh:mm:ss):** The call duration is reported in hours, minutes and seconds with leading zeroes being output (maximum time that can be recorded is 18 hours, 12 minutes, 15 seconds).

**Calling Party (pppp):** This is the identity of the party that originated the call. If a 5-digit extension numbering plan is used, only the last four digits will be used by SMDR to identify the calling party. It may be a station, the attendant, or an incoming trunk, as described below:



**Station Number as Calling Party (cccc):** A station number may be one to four digits (0-9, \*, #) which are left-justified; i.e., no leading zeroes.

**Attendant as Originating Party:** Calls originated by the attendant which do not involve a third party report a calling party of the console directory number. If the attendant calls an outside party on behalf of a station or trunk, that station or trunk is reported as the caller but the Attendant Flag symbol (\*) appears in the "Attendant was Involved" field.

**Trunk Number as Calling Party (Tnnn or Xnnn):** When the originating party is an incoming CO trunk, "Tnnn" appears on the record, where "nnn" is the number of the trunk. When the originating party is an incoming non-CO trunk, "Xnnn" appears in the trunk record. The "T" or "X" ensures that CO Attendant trunks may be distinguished from TIE trunks. The trunk number is the trunk ID specified during customer data entry in the Trunk Assignment tables.

**Attendant (f):** This 1-digit field contains an asterisk (\*) when a call is originated by or initially answered by the Attendant. This flag will not appear when a call is transferred to the attendant.

**Time to Answer (ttt):** This is the number of seconds from the time the incoming trunk is seized until the call is answered. If the call is never answered, this field displays \*\*\*. It applies to incoming calls only. Leading zeroes are output and the field remains at 255 when an overflow is reached.

**Leading Digits (up to 5 ARS leading digits):** This field applies to outgoing calls. For incoming calls, this field reports Time to Answer (see above). Leading digits correspond to digits programmed in the ARS digit string form during CDE. Leading digits reported may be from one to four digits long (0-9, \*, #) (only the first 4 of 5 digits are reported). The field is left-justified and space filled.

**Digits Dialed on the Trunk (xxx---x):** The maximum number of digits (0-9, \*, #) recorded is 26. When the SMDR Meter Pulse On option is selected, this number is reduced to 20. This field does not include the trunk group access code on outgoing calls. The digits recorded are the actual digits outpulsed on the trunk after digit modification has been performed. On dial-in trunk calls, the digits dialed in on the trunk are recorded. When more than 26 digits are dialed, only the first 26 are recorded and the rest are ignored.

**Meter Pulses (mmmmm):** The number of reversals (i.e., meter pulses) received from an outgoing trunk can be recorded when COS Option 247 (SMDR - Record Meter Pulses) is enabled. However, the maximum number of digits dialed on a trunk that are recorded is reduced from 26 to 20. The range of the count of meter pulses is 00000 to 65535, with leading zeroes being output. Meter pulses are used most frequently in Hotel/Motel applications, where each call generates a pulse, and for outside North America, where a number of meter pulses is generated for each toll call, proportional to the distance and duration of the call. Refer to meter pulses in the *Features Description Practice*.

**Call Completion Status (h) (Outgoing Calls):** This field is used to report the completion status of an outgoing call in so far as the PABX is able to determine it. When the trunk group is programmed to receive "Answer Supervision" and a supervision is received, an "A" is reported.

**Call Completion Status (h) (Incoming Calls):** The PABX can monitor the outcome of the call and provide a comprehensive report on the call's completion. From a dial-in trunk, but not a direct-in-line trunk, if the station or hunt group to which the call is directed is busy, a "B" is recorded. When an incoming dial-in trunk dials an invalid number and receives reorder tone, an "E" is reported. The field is blank for incomplete calls. A "T" is reported if the incoming trunk is answered with TAFAS. When an incoming call is forwarded by the Attendant to a busy station, a "B" appears in the call completion status field. Recall no answer is indicated by an "N" or an "R"; an "N" indicates that a transferor did not answer a recall, and an "R" indicates that the transferor did answer the recall.

**Speed Call or Call Forward Flags (C,R, or F):** This field contains a "C" when the number is speed dialed and an "F" when the call is forwarded through the external call forward feature. Otherwise, "R" will appear (routed via ARS, the default for outgoing trunk calls).

**Called Party (qqqq):** This is the party to whom the call is directed. It may be a station number, the Attendant, or the trunk number for outgoing calls. The format in which the called party is output is identical to that used for the calling party. See Calling Party (pppp). For incoming calls to the attendant, the called party is recorded as the attendant unless the attendant transfers it to a station. For direct-in lines, it would be the station number. On outgoing calls handled by the attendant, the called party would be the trunk number which the call went out on.

**Transfer/Conference Call (K):** This field identifies calls that involve three or more parties. It contains a "T" for supervised transfers, "X" for unsupervised transfers (i.e., dead transfer or transfer into busy) and a "C" for 3-way conversations and conferences.

**Third Party (rrrr):** The third party field contains the number of the station to which a trunk call has been transferred. When several transfers take place during a trunk call, the first party is the only one reported. The format is identical to that of the Calling Party (pppp).

**Account Code (aa...a):** Account codes are typically used to charge the cost of calls either to internal departmental cost centers or to project accounts for billing to specific projects. An extension may have the option or be forced to enter an account code for trunk calls. The account code may be 1-12 digits (the default value is six digits). If COS Option 246 (SMDR - Extended Record) is enabled, up to 12 digits of the Account Code are recorded. Otherwise, only the first eight digits of the account code are recorded.

**System Identifier (iii):** This optional 3-digit field may contain values from "000" to "999". "000" indicates that no identifier has been entered. The system identifier is programmed at the System level and is printed only if COS Option 246 (SMDR - Extended Record) is enabled.

**ANI/CLASS Digits (nn....n):** This optional field may contain up to 10 digits. If COS Options 806 (SMDR - Record Incoming Calls) and 814 (SMDR - Record ANI/DNIS/CLASS) are enabled, the ANI or CLASS digits received from an incoming trunk will be recorded. If no digits are received, this field will be blank.

**DNIS Digits (dd....d):** This optional field may contain up to 10 digits. If COS Options 806 (SMDR - Record Incoming Calls) and 814 (SMDR - Record ANI/DNIS/CLASS) are enabled, the DNIS digits received from an incoming trunk will be recorded. If no DNIS digits are received, this field will be blank.

**CLASS Name:** This optional field may contain up to 15 characters. If COS Options 246 (SMDR - Extended Record) and 814 (SMDR - Record ANI/DNIS/CLASS) are enabled, the CLASS name received from an incoming trunk will be recorded. If no name is received, this field will be blank.

**Table 2-1 Summary of Fields in Trunk SMDR Records**

Name	Columns	Format	Definition	Notes
Long Call (Optional)	1	z	- = 5-9 min % = 10-29 min + = 30 or more min	
Date	2-6	mm/dd	mm = Month dd = Day	mm = 01-12 dd = 01-31
Spacer	7			
Start Time	8-13	hh:mmp	hh = Hours mm = Minutes p = PM (12-hour clock)	00-23 00-59
Spacer	14			
Duration of call	15-22	hh:mm:ss	hh:mm:ss = duration in hours:minutes:seconds	hh = 00-18 mm = 00-59 ss = 00-59 maximum = 18:12:15
Spacer	23			
Calling Party	24-27	pppp	cccc = Extension Number Tnnn = Trunk Number (CO) Xnnn = Trunk Number (Non-CO) mmmm = Attendant Console Directory Number	c = 0-9, *, # nnn = 001-200 m = 0-9, *, #
Spacer	28			
Attendant	29	f	* = Attendant -- = Attendant not involved	Attendant answered or initiated the call, then transferred it to an extension.
Leading Digits	30-33	cccc	cccc = Access Code (outgoing and tandem calls only)	c = 0-9, *, #, left-justified
Time to answer (Alternate)	30-32	ttt	ttt = time in seconds *** = Call unanswered	ttt = 000 - 255, leading zeroes output, incoming calls only

**Table 2-1 Summary of Fields in Trunk SMDR Records (continued)**

Name	Columns	Format	Definition	Notes
Digits dialed on the trunk	34-59	xx .... x	Up to 26 (20 if metering) digits dialed on the trunk	x = 0-9, *, or #; private speed call numbers are not recorded
Meter (Optional)	55-59	mmmmm	mmmmm = number of meter pulses	mmmmm = 00000 to 65535, leading zeroes output
Call Completion Status	60	h	A = Answer Supervision B = Callee is Busy E = Caller Error T = TAFAS answered R = Incoming call recalled and was answered by transferor N = Incoming call recalled and was not answered by transferor	Outgoing Incoming Direct/Dial-In Incoming/Dial-In Incoming Incoming/Outgoing
Speed Call or Call Forward Flags	61	C,R, or F	C = Number was Speed called (ARS implied) F = Forwarded through External Call Forward R = default (ARS implied)	Outgoing - All trunk calls are ARS by default.
Called Party	62-65	qqqq	cccc = Extension Number Tnnn = Trunk Number (CO) Xnnn = Trunk Number (Non-CO) mmmm = Attendant Console Directory Number	c = 0-9, *, # nnn = 001-200 m = 0-9, *, #
Transfer/Conference Call	66	K	T = Supervised Transfer X = Unsupervised Transfer C = 3-Way or Conference	
Spacer	67			
Third Party	68-71	rrrr	cccc = Extension Number Tnnn = CO Trunk Number Xnnn = Non-CO Trunk Number mmm = Attendant	c = 0-9, *, # n = 001 - 200 m = 0 - 9, *, #
Spacer	72			
Account Code (Optional)	73-84	aa .... a	Length of 1 to 12 digits	a = 0-9, space-filled
Spacer (Optional)	85			
System Identifier (Optional)	86-88	iii	Programmed at System level	i = 0-9 iii = 000-999 000 = no code entered

Table 2-1 Summary of Fields in Trunk SMDR Records (continued)

Name	Columns	Format	Definition	Notes
Spacer (Optional)	89			
ANI/CLASS Digits (Optional)	90-99	nn .... n	Up to 10 digits from an incoming ANI/DNIS or CLASS trunk	n = 0-9, *, #
Spacer (Optional)	100-102			
DNIS Digits (Optional)	103-112	dd .... d	Up to 10 digits from an incoming ANI/DNIS trunk	d = 0-9, *, #
Spacer (Optional)	113			
CLASS Name (Optional)	114-128	15 char's	Up to 15 characters from an incoming CLASS trunk	

Page 3 of 3

SMDR

## Call Timing

- 2.4 The timing functions which apply to incoming and outgoing calls are described as follows:

**Incoming Call** - Three timing aspects of an incoming call are recorded on an SMDR call record: the date, the time taken for the called party to answer and the duration of the call. The time to answer is the difference between the time when the called device is seized and the time when the called party answers. The duration of the call is the difference between the time when the call is answered and the time when the call is released; i.e., call clear-down.

**Outgoing Call** - For an outgoing call, the date, the call start time and the call duration are recorded on an SMDR call record. The call start time is recorded as either the time when the called device is seized, or, in the case of answer supervision, the time when the called device answers. Call answer is determined by an answer supervision signal provided by the trunk. The call duration is the difference between the time when the call is answered and the time when the call is released; i.e., call clear-down. To be recorded, calls must either be answered or exceed the duration specified by the Pseudo Answer Supervision Timer, unless SMDR is specifically programmed. Otherwise; see Part 6, SMDR Programming and Control.

## Trunk SMDR Call Record Examples

2.5 Examples of typical trunk SMDR call records, excluding account codes and system identifiers, are shown below:

### 2-PARTY OUTGOING CALL

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890									
-06/13	11:42	00:08:29	214	9	16135552122		ART054		000

On June 13th at 11:42 AM, extension 214 obtained trunk number 54 and dialed "1-613-555-2122". Answer supervision was provided. The conversation lasted 8 minutes, 29 seconds.

### 2-PARTY OUTGOING CALL

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890									
05/17	10:51	00:01:52	213	9	201		ARX082		000

On May 17th at 10:51 AM, extension 213 accessed an identified trunk group, then dialed 201 to obtain an extension in the other PABX. The other PABX provided answer supervision and the conversation lasted 1 minute, 52 seconds. The trunk number was 082.

### 2-PARTY INCOMING CALL

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890									
01/30	15:10	00:02:22	T102	008	201		201		000

On January 30th at 3:10 PM, incoming Direct-in Trunk Number 102 rang in to extension 201. The extension answered after 8 seconds and they talked for 2 minutes, 22 seconds.

### 2-PARTY INCOMING CALL

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890									
03/12	09:11	00:01:12	X116	078	63		224		000

On March 12th at 9:11 AM, Dial-in Tie Trunk 116 dialed hunt group with access code "63". Extension 224 answered after 7 seconds, and the conversation lasted 1 minute, 12 seconds.

### ATTENDANT-HANDLED CALL - OUTGOING TRUNK

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890									
+01/30	15:27	00:35:11	201	*9	165556951		ART052		000

On January 30th, extension 201 dialed the attendant and asked for an outside line. The attendant dialed 1-654-555-6951. At 3:27 PM, the other party answered and the conversation lasted 35 minutes, 11 seconds. Trunk number 52 was used.

## ATTENDANT-HANDLED CALL - INCOMING TRUNK

0	1	2	3	4	5	6	7	8	9
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
04/05	13:42	00:00:31	T090	009		1234			000

On April 5th at 1:42 PM, trunk 90 rang into the attendant. After 9 seconds, the attendant at 1234 answered. The trunk party spoke to the attendant for 31 seconds, then hung up.

## CALLING EXTENSION TRANSFER CALL

0	1	2	3	4	5	6	7	8	9
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
04/02	09:36	00:04:55	103	9	5552122		RT162T	100	000

On April 2nd at 9:36 AM, extension 103 dialed ARS leading digit code followed by 555-2122. The called party answered and after conversing, the caller transferred the called party to extension 100. After further conversation, extension 100 hung up. The total period for both conversations was 4 minutes, 55 seconds. Trunk number 162 was used for the call.

## CALLED EXTENSION TRANSFER CALL

0	1	2	3	4	5	6	7	8	9
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
03/12	07:42	00:03:06	T162	*003		241T	215		000

On March 12th at 7:42 AM, trunk 162 rang the console and requested to speak to extension 241. The attendant took 3 seconds to answer the call. After speaking to extension 241, the latter extension then transferred the call to extension 215. The total conversation lasted 3 minutes, 6 seconds.

## ANALOG NETWORKING - OUTGOING CALL

0	1	2	3	4	5	6	7	8	9
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
01/16	09:52	00:02:21	2664	9	7082664#95551022		RX124		

On January 16th at 09:52 AM, extension 2664 accessed a tie trunk and dialed 95551022. The call lasted 2 minutes and 21 seconds. The Analog Networking feature caused the analog network access code (708 as defined in Modified Digits Table) and the calling extension (2664) to be passed onto the trunk.

## ANALOG NETWORKING - INCOMING CALL

0	1	2	3	4	5	6	7	8	9
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
01/13	15:26	00:01:18	4300	004	*94300#2777		2777		

On January 13th at 3:26 PM, extension 2777 received a call from an incoming tie trunk. The incoming digits dialed on the trunk were 2777 (the called extension); the Analog Networking feature added \*9 (network feature access code as defined in CDE) and 4300 (the calling party identification for that tie trunk). The call lasted 1 minute, 18 seconds.

## 5-Digit SMDR Option

- 2.6 For those environments where a five digit record of parties in a call is required, the calling, called, and transferred parties may be identified by five digits instead of four digits. The Trunk SMDR record is modified as detailed in Table 2-2. The remainder of the record remains the same as for four digit numbers. System Option 08, Five Digit SMDR, must be enabled; otherwise, regular 4-digit trunk SMDR is in effect.

**Calling Party (ppppp):** This is the identity of the party that originated the call. It may be a station, the attendant, or an incoming trunk, as described below.

**Called Party (qqqqq):** This is the party to whom the call is directed. It may be a station number, the attendant, or the trunk number for outgoing calls. The format in which the called party is output is identical to that used for the calling party. See Calling Party (ppppp).

**Third Party (rrrrr):** The third party field contains the number of the station to which a trunk call has been transferred. When several transfers take place during a trunk call, the first party is the only one reported. The format is identical to that of the Calling Party (ppppp).

**Table 2-2 SMDR Fields Changed for 5- digit Trunk SMDR**

Name	Columns	Format	Definition	Notes
Calling Party	24-28	ppppp	cccc = extension number Tnnn = trunk number (CO) Xnnn = trunk number (Non-CO) mmmmm = attendant console aaaaa = agent ID number	cccc = 0-9, *, # nnn = 001-200 mmmmm = 0-9, *, # aaaaa = 0-9, *, # left-justified
Called Party	62-66	qqqqq	cccc = extension number Tnnn = trunk number (CO) Xnnn = trunk number (Non-CO) mmmmm = attendant console aaaaa = agent ID number ppppp = ACD path number	cccc = 0-9, *, # nnn = 001-200 mmmmm = 0-9, *, # aaaaa = 0-9, *, # ppppp = 0-9, *, # left-justified
Transfer/ Conference Call	67	K	T = supervised transfer X = unsupervised transfer C = 3-way or conference	
Third Party	68-72	rrrrr	cccc = extension number Tnnn = CO trunk number Xnnn = non-CO trunk number mmmmm = attendant aaaaa = agent ID number ppppp = ACD path number	cccc = 0-9, *, # n = 001 - 200 mmmmm = 0 - 9, *, # aaaaa = 0-9, *, # ppppp = 0-9, *, # left-justified
<b>Note:</b> The changes in data for columns 28, 66, 67, and 72 may affect call costing machines connected to the PABX, unless the call costing machines are programmed for these new fields.				



Examples of typical trunk SMDR call records (with 5-digit fields) are shown below:

**OUTGOING CALL WITH CONFERENCE**

0	1	2	3	4	5	6	7	8	9
12345678901234567890123456789012345678901234567890123456789012345678901234567890									
06/13	11:42	00:08:29	1701	9	5552122				
									RT001 C10065

On June 13th at 11:42 AM, extension 1701 dialed 555-2122 via trunk 001 and added extension 10065 to make a conference call. The conversation lasted 8 minutes, 29 seconds.

**OUTGOING CALL PLACED VIA ATTENDANT**

0	1	2	3	4	5	6	7	8	9
12345678901234567890123456789012345678901234567890123456789012345678901234567890									
05/17	10:51	00:01:52	10065	*9	5552122				
									RT002

On May 17th at 10:51 AM, extension 10065 had the attendant place a call to 555-2122 via trunk 002. The conversation lasted 1 minute, 52 seconds.

**INCOMING CALL WITH TRANSFER BY ATTENDANT AND THEN BY CALLED EXTENSION**

0	1	2	3	4	5	6	7	8	9
12345678901234567890123456789012345678901234567890123456789012345678901234567890									
04/02	09:36	00:04:55	T002	*004					
									10065T 1701

On April 2nd at 9:36 AM, a call is received on trunk 002 and answered by the attendant. The call is transferred to extension 10065, who then transfers it to extension 1701. The total period for both conversations was 4 minutes, 55 seconds.

SMDR



# 3 Detailed Description - Data SMDR

## General

- 3.1 The Data SMDR feature allows the printing out of detailed records for external and internal data calls in a format similar to existing Trunk SMDR printouts.

**Note:** Data SMDR is not available with *LIGHTWARE* Basic software.

The major differences between a Data SMDR record and a Trunk SMDR record are: the month and day are separated by a dash (-) rather than a slash (/) and the "Digits Dialed on a Trunk" field is replaced by three fields: Data Call Indicator, Type of Data Call, and Reason for Disconnect. When an external data call uses a pooled modem to interface the internal data device to analog trunks, the Data SMDR record shows the call between the data device and the pooled modem, while the Trunk SMDR record shows the call between the trunk and the pooled modem. An internal modem pooling call shows the Data SMDR record between the pooled modem and the data device.

The Data SMDR function operates with the trunk SMDR feature in the PABX. Its printouts may be directed to a specific printer port by programming it in CDE Form 34, Directed IO. The Data SMDR record format is such that an application processor can print the records with other call records but not cost them. Through CDE, a data user can have the option or be forced to enter a data account code.

## Recorded Information

- 3.2 Each Data SMDR call record occupies a single line of 85 characters (88 if it includes a 3-digit system identifier). The information included in a Data SMDR record includes:
- Long Call Indicator (optional)
  - Date
  - Call Start Time
  - Duration of Call
  - Calling Party
  - Calling Party Disconnect
  - Data Call Identifier
  - Data Call Type
  - Party Which Caused the Disconnect
  - Call Completion Status
  - Indication If Call Was Speed Dialed
  - System Identifier (optional)
  - Called Party

- Called Party Disconnect
- External Indicator
- Trunk SMDR Indicator
- Account Code

A summary of the fields printed in a Data SMDR record is shown in Table 3-1. Many of these fields are the same as in a Trunk SMDR record.

A description of the fields printed in a Data SMDR record follows:

**Long Call Indicator (z):** This optional field contains a dash (-) for calls of 5 to 9 minutes, 59 seconds, a percent symbol (%) for calls of 10 to 29 minutes, 59 seconds, a plus symbol (+) for calls of 30 or more minutes, or a space ( ) for durations less than five minutes. This is useful when records are to be scanned manually.

**Date (mm-dd):** The date that the data call was initiated is reported numerically as a 2-digit month followed by a 2-digit day separated by a (-) dash. The year is not reported.

**Start Time (hh:mmp):** The start time of a call is reported in hours and minutes. System Option "24 Hour Clock" determines whether a 12-hour or 24-hour format is used. The letter "p" indicates pm in a 12-hour format.

**Duration of Call (hh:mm:ss):** The call duration is reported in hours, minutes and seconds with leading zeroes being output (maximum time that can be recorded is 99 hours, 59 minutes, and 59 seconds).

**Calling Party (ppppp):** This is the identity of the party that originated the call. A 5-digit extension numbering plan is used. The extension number is a data device (either a data station or a pooled modem) originating a data call. The pooled modem's extension number is for an incoming modem pooling call. It may be a station or an incoming trunk, as described below:

**Station Number as Calling Party (ccccc):** A station number may be one to five digits (0-9, \*, #). If less than five digits, they are left-justified; i.e., no leading zeroes.

**Trunk Number as Calling Party (Tnnn or Xnnn):** When the originating party is an incoming CO trunk, "Tnnn" appears on the record, where "nnn" is the number of the trunk. When the originating party is an incoming non-CO trunk, "Xnnn" appears in the trunk records. The "T" or "X" ensures that CO Attendant trunks may be distinguished from TIE trunks. The trunk number is the trunk ID specified during customer data entry in the Trunk Assignment tables.

**Calling Party Disconnect:** The carat character (^) indicates that the calling party caused the call to be disconnected.

**Data Call Indicator:** (DATA) indicates a Data SMDR record.

**Type of Data Call:** This field has four possible values: DTRX, ADL, HM, or ACD. HM indicates that a Monitor HM session originated from DTRX occurred. ACD indicates that a Monitor ACD session originated from DTRX occurred. This field may be left blank if the data call is an incoming or internal modem pooling call without DTRX access.

**Reason For Disconnect:** This field reports the reason the data call was terminated. Table 3-2 gives possible reasons for disconnecting a data call.

**Call Completion Status:** Two values are available: B (Busy) or E (Error).

The busy flag "B" is set if the called party is busy and the caller queues for completion to the called data device. If the caller terminates while in the queue, the busy flag will be set. If the call is completed after being queued, the busy flag will not be set.

The error flag "E" is set if the error was "user preventable". User preventable errors include:

- dialing the extension of a non-data device,
- originator's baud rate not compatible with destination,
- originator, programmed for autobaud, not entering the auto-baud character within 30 seconds,
- accessing the wrong Modem Pool,
- attempting a call which requires a Pooled Modem, but not dialing a Modem Pool access code and there is NO default Modem Pool.

**Speed Call Indicator:** A flag is set if the data call is dialed via system abbreviated dial or personal speed call on a SUPERSET™ telephone.

**Called Party (qqqqq):** This is the party to whom the call is directed. It may be a 5-digit data station number or a pooled modem number for outgoing modem pooling calls (the called party may not appear in a Data SMDR record which has an error flag set). The format in which the called party is output is identical to that used for the calling party.

**Called Party Disconnect:** The carat character (^) indicates that the called party caused the call to be disconnected.

**External Data Call Indicator:** "EX" is displayed in this field when the data call involves a pooled modem and a trunk, regardless of the direction of the call (incoming or outgoing). This indicator is not dependent on the existence of a trunk SMDR record.

Only external data calls involving trunks and a pooled modem are flagged. Internal data calls using a pooled modem are not indicated in this field.

**Trunk SMDR Indicator:** This field displays an asterisk (\*) when there is a trunk SMDR record associated with this data call. This facilitates the matching of data SMDR records with SMDR records.

**Speed Call or Call Forward Flags (S):** This field contains an "S" when the number is speed dialed.

**Account Code (aa...a):** Account codes are typically used for security purposes to charge the cost of calls either to internal departmental cost centers or to project accounts for billing to specific projects. Data account codes may be optional or a data caller may be forced to enter an account code when making an internal or an external data call. The account code may be 1-12 digits (the default value is six digits).

**System Identifier (iii):** This optional 3-digit field may contain values from "000" to "999". "000" indicates that no identifier has been entered. The system identifier is programmed at the system level and is printed only if COS Option 246 (SMDR - Extended Record) is enabled.

**Table 3-1 Summary of Fields in a Data SMDR Record**

Field	Column	Format	Definition
Long Call (Optional)	1	z	- = 5 to 9 minutes, 59 seconds % = 10 to 29 minutes, 59 seconds + = 30 or more minutes
Date	2-6	mm-dd	mm = Month dd = Day
Spacer	7		
Start Time	8-13	hh:mm	hh = Hours mm = Minutes
Spacer	14		
Duration of Call	15-22	hh:mm:ss	hh = Hours mm = Minutes ss = Seconds
Spacer	23		
Calling Party	24-28	ppppp	ppppp = Extension Number
Calling Party Disconnect	29	^	Indicates that the calling party caused the disconnect.
Spaces	30-33		
Data Call Indicator	34-37	DATA	Flags a data call.
Spacer	38		
Type of Data Call	39-42	XXXX	XXXX = DTRX or ADL or ACD or HM or blank (blank only for incoming or internal modem pooling call).
Spaces	43-44		
Reason for Disconnect	45-58	14 char's	14 character explanation - see Table 3-2
Spacer	59		
Call Completion Status	60	h	B = Callee is busy E = Caller error
Speed Call Indicator	61	S	S = Number was speed called
Called Party	62-66	qqqqq	qqqqq = Extension Number
Called Party Disconnect	67	^	Indicates that the called party caused the disconnect.
Spacer	68		
External Indicator	69-70	EX	Indicates this was an external data call.
Trunk SMDR Indicator	71	*	Indicates that there is an associated Trunk SMDR report.
Spacer	72		

**Table 3-1 Summary of Fields in a Data SMDR Record (continued)**

Field	Column	Format	Definition
Account Code	73-84	aa. . . a	a = 0-9 space filled; length of 1 -12 digits
Spacer	85		
System Identifier (optional)	86-88	iii	i = 0 to 9 iii = 000 to 999 000 = no code entered

Page 2 of 2

**Table 3-2 Data Call Disconnect Reasons**

Reason	Explanation
ADL DISCONNECT	ADL disconnect code dialed.
ANSWER: DTR HI	The device is programmed for Auto Answer and has DTR high.
ANSWER: DTR LO	The device is not programmed for Auto Answer and has DTR low. This may appear on an originator also.
ATTN BUTTON	Call/attn button on the DATASET or call/attn key on digital <i>SUPERSET</i> was pressed.
ATTN CHARACTER	Programmed attention character detected.
BREAK DETECTED	Break character detected.
BUSIED OUT	The destination data device is busied out.
BUSY	The called party is already involved in a call. If the busy indicator (column 60) does not accompany this reason, then the state of the device may be transient. Try again. If this reason persists with no busy indicator, reset the device.
CALL DUR OVFLW	The duration of the call timer has overflowed. The call has not been terminated (the SMDR record has been printed) but this is to inform the system that there has been a call of long duration (exceeding the timer limit of 99 hours, 59 minutes, 59 seconds). It might be advisable to check with the originator.
CARD REMOVED	The digital line card was removed.
DIALER HANGUP	DATA originator hangs up the voice line before the data call was connected.
DISC BUTTON	Disconnect button on the DATASET or data disconnect key on digital <i>SUPERSET</i> was pressed.
DTR DROPPED	DTR for one or both parties dropped for longer than the programmed interval.
HDLC DISC	Communication has been lost to the DATASET.
INACTIVITY	Session activity timer expired; refer to CDE Form 11.
INCOMPATIBLE	The two data devices are not compatible; one is synchronous, the other is asynchronous.
INTERCONNECT	The two data parties are prevented from being connected by the interconnection table.
INVALID ACCT	The originator used an invalid account code when making a data call.

Page 1 of 3

SMDR

Table 3-2 Data Call Disconnect Reasons (continued)

Reason	Explanation
INVALID DEVICE	The pooled modem data set is not a DATASET 2102 or a DATASET 2103. The attached device is not a valid DATASET; possibly it is a digital <i>SUPERSET</i> . If the device is valid, reset the device.
INVALID NUMBER	The originator of the data call dialed a wrong number OR the originating data device has an invalid hotline number programmed.
INVALID POOL	The wrong type of modem pool was accessed or no modem pool access code was dialed and there is no default pool.
LINK ABORT/ LINK FAILURE	An error has occurred in the data link layer of the DATASET communication. Repeated occurrences may indicate faulty hardware, wiring or electrical interference.
MODEM HUNG UP	The pooled modem hung up.
NO ACCESS	The user failed to enter an access code when System Option Forced Account Code is on.
NO ADAPTER	The pooled modem is missing its modem adapter. This reason may also appear if the adapter is not a MITEL Modem Adapter.
NO ANSWER	The dialed destination has not responded to the programmed auto-answer stimulus. Check the Data Circuit Descriptor; the called modem did not respond with answer tone.
NO AUTOBAUD	The originator, who is programmed for autobaud, did not enter a carriage return.
NO CHANNEL	There are no available channels. This would indicate a busy system.
NO JUNCTOR	There are no available junctors. This would indicate a busy system.
NO SEIZE ACK	The trunk used in this outgoing data call did not receive a 'seize ack' from the far end telephone office.
ORIGINATE ONLY	The called party has the "Originate Only" Class Of Service enabled.
PM: DCD LO	The pooled modem is programmed to have DCD as "Communication Established Indicator" and DCD has NOT come HIGH 15 seconds after the offhook.
PM: DSR LO	The pooled modem is programmed to have DSR as "Communication Established Indicator" and DSR has NOT come HIGH 15 seconds after the offhook.
PM: NO OFFHOOK	The pooled modem has not gone offhook after 10 seconds of waiting. <b>outgoing</b> - DTR has been raised and the MI/MIC leads have been toggled with a 2.5 sec ON, 2.5 sec OFF cycle. <b>incoming</b> - RI has been detected, DTR has been raised.
PM: RI LO	The pooled modem has had ringing voltage applied to its analog side for 10 seconds and has not detected RI on the digital side. Possible faulty RS-232 connection between the modem and the DATASET.
POWERED OFF	The dialed destination is not powered up.
RECEIVER FAIL	At some point in the data call, especially when queuing is involved, a receiver was not available or did not function as expected.
SET FAILURE	The set failed, dropping the call. See Maintenance Logs for details.
SET POWER UP	The DATASET went through a power up sequence. This occurs if there is a power supply problem to the dataset.



**Table 3-2 Data Call Disconnect Reasons (continued)**

Reason	Explanation
SET UNPLUGGED	Twisted pair connection broken or power removed.
SETUP FAILURE	The call has failed during setup. The cause is unknown and probably obscure. In this case it is best that the user try the call again. If this persists, the DATASET should be reset. Further occurrence of this reason code may indicate a faulty data device or RS-232 connection.
SPEED MISMATCH	Ranges of baud rates of the two DATASETs are not compatible.
SYSTEM DISC	The system has disconnected for one of several reasons, none of which is a problem. <ul style="list-style-type: none"> <li>- The destination is busy and the originator cannot (or did not) queue,</li> <li>- The connection is not allowed due to invalid tenant interconnection,</li> <li>- The connection is not allowed due to type of devices involved.</li> </ul>
TENANTING	The two data parties are in different tenant groups.
UNDECODABLE	Reason unknown.
Page 3 of 3	

SMDR

### Data SMDR Call Record Examples

3.3 Examples of typical Data SMDR call records are shown below:

#### DTRX CALL FROM ANOTHER SET WHICH PRESSED BREAK KEY

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1411 ^ DATA DTRX BREAK DETECTED 1410
    
```

On March 13th at 11:25, an originating DTRX call from 1411 was answered by 1410. Extension 1411 pressed the BREAK key, disconnecting the call. The call lasted 1 minute, 24 seconds.

#### DTRX CALL NOT ANSWERED - TERMINAL POWERED DOWN

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:04 1411 ^ DATA DTRX ANSWER: DTR LO B 1402
    
```

On March 13th at 11:25, extension 1411 dialed extension 1402 (which was busy); extension 1411 was queued. Extension 1411 dropped DTR (terminal powered down).

#### DTRX CALL TO A WRONG OR INVALID NUMBER

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:03 1411 ^ DATA DTRX INVALID NUMBER E 1412
    
```

On March 13th at 11:25, extension 1411 called extension 1412, which was an invalid number. The call lasted 1 minute, 3 seconds.

#### DTRX CALL TIMES OUT AFTER BEING ESTABLISHED

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:01 1411 DATA DTRX INACTIVITY 1412 ^
    
```

On March 13th at 11:25, Extension 1411 called Extension 1412. The call timed out after one minute.

#### DTRX CALL DROPPED WHEN DATASET UNPLUGGED

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:30 1411 DATA DTRX SET UNPLUGGED 1412 ^
    
```

On March 13th at 11:25, extension 1411 called extension 1412. Extension 1412 removed power from its dataset. The call lasted 1 minute, 30 seconds.

## DTRX CALL DROPS DTR

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:08 1411      DATA DTRX  DTR DROPPED      1412 ^

```

On March 13th at 11:25, extension 1411 called extension 1412. Extension 1412 powered off its terminal and dropped DTR. The call lasted 8 seconds.

## CALL ANOTHER SET AND PRESS THE ATTN KEY

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1411 ^    DATA DTRX  ATTN BUTTON      1410

```

On March 13th at 11:25, extension 1411 called extension 1410. The call was terminated when extension 1411 pressed the ATTN key. The call lasted 1 minute, 24 seconds.

## DURING A DTRX CALL, THE CALLING SET PRESSED THE DISC KEY

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1411 ^    DATA DTRX  DISC BUTTON      1410

```

On March 13th at 11:25, extension 1411 called extension 1410. During the call, extension 1411 pressed the DISC key. The call lasted 1 minute, 24 seconds.

## DURING A DTRX CALL, THE CALLED EXTENSION PRESSES THE DISC KEY

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1411      DATA DTRX  SET UNPLUGGED    1410 ^

```

On March 13th at 11:25, extension 1411 called extension 1410. Extension 1410 pressed the DISC key. The call lasted 1 minute, 24 seconds.

## DURING A DTRX CALL, THE CALLED EXTENSION PRESSES THE BREAK KEY

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1411      DATA DTRX  BREAK DETECTED    1410 ^

```

On March 13th at 11:25, extension 1411 called extension 1410. Extension 1410 pressed the BREAK key. The call lasted 1 minute, 24 seconds.

## OUTGOING DTRX CALL DISCONNECTED WHEN THE FAR END HUNG UP

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
+03-13 11:25 02:14:46 1410      DATA DTRX  MODEM HANGUP      898 ^ EX*

```

On March 13th at 11:25, extension 1410 made an outgoing DTRX call. The far end modem hung up which then caused the pooled modem to also hang up. The call lasted 2 hours, 14 minutes, 46 seconds. There is a corresponding trunk record.

**OUTGOING ADL CALLER HANGS UP PREMATURELY**

```
0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:17 1410 ^ DATA ADL DIALER HANGUP S898 EX
```

On March 13th at 11:25, extension 1410 made an ADL call to an abbreviated dial number which was an outgoing number. Pooled modem 898 was selected from the default pool. Before the call was completed, the ADL originator hung up. The call lasted 17 seconds.

**ADL CALL DISCONNECTED BY CALLING PARTY**

```
0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1410 ^ DATA ADL ADL DISCONNECT 1411
```

On March 13th at 11:25, extension 1410 made an ADL call to extension 1411 and disconnected the call after 1 minute, 24 seconds.

**ADL CALL AND CALLED PARTY PRESSES ATTN KEY**

```
0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1410 DATA ADL ATTN BUTTON 1412 ^
```

On March 13th at 11:25, extension 1410 made an ADL call to extension 1411. The call was terminated when extension 1411 pressed the ATTN key. The call lasted 1 minute, 24 seconds.

**ADL CALL DIALED AN INVALID NUMBER**

```
0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:00:01 1410 ^ DATA ADL INVALID NUMBER E 1412
```

On March 13th at 11:25, extension 1410 dialed an invalid number. The system disconnected the call. The call lasted 1 second.

**ADL CALL CAMPS ON BUT CALLED TERMINAL IS TURNED OFF**

```
0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13 11:25 00:01:24 1410 DATA ADL ANSWER: DTR LO 1411 ^
```

On March 13th at 11:25, extension 1410 camped a call onto extension 1411. Extension 1411 turned its terminal off. The camp-on lasted 1 minute, 24 seconds.

## ADL CALL AND CALLED PARTY UNPLUGGED DATASET LINE

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13  11:25  00:00:24  1410      DATA ADL      SET UNPLUGGED      1411 ^

```

On March 13th at 11:25, extension 1410 called extension 1411. Extension 1411 unplugged its dataset from the Digital Line Card. The call lasted 24 seconds.

## ADL CALL TO ANOTHER DATASET, THEN DROPPED BY PRESSING DISCONNECT BUTTON

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13  11:25  00:01:24  1410 ^    DATA ADL      DISC BUTTON      1411

```

On March 13th at 11:25, extension 1410 established a call with extension 1411. Extension 1410 presses its Disconnect Button to disconnect the call. The call lasted 1 minute, 24 seconds.

## ADL CALL - NO HANGUP AFTER PRESSING &lt;CR&gt;

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890
03-13  11:25  00:00:22  1410 ^    DATA ADL      SETUP FAILURE      1411

```

On March 13th at 11:25, extension 1410 made an ADL call to extension 1411 but did not hang up after pressing <CR> (Carriage Return). The call lasted 22 seconds.

## Data Call Record Buffers

- 3.4 There are 128 buffers which are dedicated for Data SMDR. Data SMDR records can be directed to any IO port, independent of other directed IO, including trunk SMDR. The one error that can occur is a lack of available buffers which occurs when records are being queued for printing while the printer is not printing.

If the port to which the Data SMDR records are directed is not guaranteed to print (refer to CDE Form 34, Directed IO), and no Data SMDR buffers are available, the oldest records are automatically overwritten, irrespective of the state of COS Option 908, Data SMDR - Overwrite Buffer.

If the port to which the Data SMDR records are directed is guaranteed to print, and no Data SMDR buffers are available, the state of COS Option 908, Data SMDR-Overwrite Buffer will determine the action. If OVERWRITE is enabled in CDE, the oldest buffer in the queue will be overwritten; therefore, all calls are not guaranteed to be recorded. If the OVERWRITE option is disabled, data calls will be barred, due to lack of resources, once the buffers are full.

An external data call causes a Data SMDR record and a trunk SMDR record to be printed.



# 4 *ACD TELEMARKETER* Reporting System SMDR

## General

- 4.1 A new SMDR record is created every time an ACD path is seized. At the completion of the call, the data is formatted and routed to an RS-232 output port. The contents of this record describe how the call progressed through the ACD path. This information is required by the *ACD TELEMARKETER* Reporting System.

If the call is transferred to an ACD path, either by the attendant or from another telephone, a second SMDR record is created. The first record is the usual incoming trunk SMDR record that shows the call being transferred to the ACD path. The second record contains details about how the call progressed through the ACD path.

If an ACD call interflows out of an ACD path without being answered, a second call record is created.

Two system options must be enabled to allow creation of SMDR reports for the *ACD TELEMARKETER* feature:

- System Option 41, Automatic Call Distribution, must be enabled to allow programming of ACD paths.
- System Option 44, ACD Reports, must be enabled to generate the SMDR reports for the reporting system (System Option 41 must be enabled first).

## Recorded Information

- 4.2 Each *ACD TELEMARKETER* Reporting System SMDR call record occupies a single 85 character line. The information which may be included in a call record is as follows:
- Call Start time and date
  - Calling party
  - Called party
  - Call duration
  - Call completion status (e.g., called number busy)
  - Long calls (optional)
  - Time to answer incoming calls
  - Conferences and transfers
  - Second station in a transfer or a conference
  - Attendant involvement in a call

Table 4-1 defines the SMDR record data and its position in the record. The table has five columns: the first identifies the data; the second defines the data's position within the record; the third indicates the format of the data; the fourth describes the data; and the fifth provides additional notes.

A description of the call record fields follows Table 4-1.

<b>Table 4-1 Summary of Fields in ACD SMDR Records</b>				
<b>Name</b>	<b>Columns</b>	<b>Format</b>	<b>Definition</b>	<b>Notes</b>
Long Call (Optional)	1	z	- = 5-9 min % = 10-29 min + = 30 or more min	
Date	2-6	mm/dd	mm = Month dd = Day	mm = 01-12 dd = 01-31
Spacer	7			
Start Time	8-13	hh:mmp	hh = Hours mm = Minutes p = pm (12-hour format)	hh = 00-23 mm = 00-59
Spacer	14			
Duration of call	15-22	hh:mm:ss	hh:mm:ss = duration in hours:minutes:seconds	hh = 00-18, mm = 00-59 ss = 00-59 maximum = 18:12:15
Spacer	23			
Calling Party	24-27	pppp	cccc = Extension Number Tnnn = CO Trunk Number Xnnn = Non-CO Trunk Number mmmm = Attendant Console Directory Number aaaa = Agent ID Number	c = 0-9, *, # nnn = 001-200 m = 0-9, *, # a = 0-9, *, #
Spacer	28			
Time to answer	30-32	ttt	ttt = time in seconds (000-255) *** = Call unanswered	leading zeroes output, incoming calls only
Page 1 of 3				



Table 4-1 Summary of Fields in ACD SMDR Records (continued)

Name	Columns	Format	Definition	Notes
ACD Call Information	34-59	xxx...x	Incoming ACD Calls: P = path identifier XXXX = ACD path G1 = primary agent group number O1 = first overflow group number O2 = second overflow group number O3 = third overflow group number A1 = agent group number that answered call I = call interflowed YYYY = ACD path number to which call interflowed	Displays path of call in the ACD system (ACD path followed by agent group numbers).  With 5 digit SMDR, only the last four digits are recorded.
Called Party	62-65	qqqq	cccc = Extension Number Tnnn = Trunk Number (CO) Xnnn = Trunk Number (Non-CO) mmmm = Attendant Console Directory Number aaaa = Agent ID Number pppp = ACD Path Number	c = 0-9, *, # nnn = 001-200 m = 0-9, *, # a = 0-9, *, # p = 0-9, *, #
Transfer/ Conference Call	66	K	T = Supervised Transfer X = Unsupervised Transfer C = 3-Way or Conference	
Spacer	67			
Third Party	68-71	rrrr	cccc = Extension Number Tnnn = CO Trunk Number Xnnn = Non-CO Trunk Number mmmm = Attendant aaaa = Agent ID Number pppp = ACD Path Number	c = 0-9, *, # nnn = 001-200 m = 0-9, *, # a = 0-9, *, # p = 0-9, *, #
System Identifier (Optional)	86-88	iii	Programmed at System level	i = 0-9 iii = 000-999 000 = "No Code entered"
Spacer (Optional)	89			
ANI Digits (Optional)	90-99	nn ... n	Up to 10 digits from an incoming ANI/DNIS trunk	n = 0-9, *, #
Spacer (Optional)	100-102			

SMDR

Table 4-1 Summary of Fields in ACD SMDR Records (continued)

Name	Columns	Format	Definition	Notes
DNIS Digits (Optional)	103-112	dd .... d	Up to 10 digits from an incoming ANI/DNIS trunk	d = 0-9, *, #

Page 3 of 3

The following paragraphs define each of the fields listed in Table 4-1:

**Long Call Indicator (z):** This optional field contains a dash (-) for calls of 5 to 9 minutes, 59 seconds, a percent symbol (%) for calls of 10 to 29 minutes, 59 seconds, or a plus symbol (+) for calls of 30 or more minutes. This is useful when records are to be scanned manually.

**Date (mm/dd):** The date is reported numerically as a 2-digit month followed by a 2-digit day separated by a (/) slash. The year is not reported.

**Start Time (hh:mmp):** The start time of a call is reported in hours and minutes. System Option "24 Hour Clock" determines whether a 12-hour or 24-hour format is used. The letter "p" indicates pm when a 12-hour format is used.

**Duration of Call (hh:mm:ss):** The call duration is reported in hours, minutes and seconds with leading zeroes being output (maximum time that can be recorded is 18 hours, 12 minutes, 15 seconds).

**Calling Party (pppp):** This is the identity of the party that originated the call. If a 5-digit extension numbering plan is used, only the last four digits will be used by SMDR to identify the calling party. It is usually an incoming trunk but may be a station or the Attendant. When the originating party is an incoming CO trunk, "Tnnn" appears on the record, where "nnn" is the number of the trunk. When the originating party is an incoming non-CO trunk, "Xnnn" appears in the record.

**Time to Answer (ttt):** This is the number of seconds from the time the call is presented to the ACD system until the call is answered. If the call is never answered, this field displays \*\*\*. It applies to incoming calls only. Leading zeroes are output and the field remains at 255 when more than 255 seconds are required.

**ACD Call Information:** (PXXXX G1 O1 O2 O3 A1 or PXXXX O1 O2 O3 IYYYY). O1, O2, or O3 only appear if they are programmed and the call overflows to these groups. If the Interflow point is not an ACD path access code, only "I" appears after the last overflow group number. If the Interflow point is an ACD path, the "I" is followed by the 4-digit path access code.

**Called Party (qqqq):** This is the agent to whom the call is directed. The format in which the called party is output is identical to that used for the calling party. See Calling Party (pppp). For direct-in lines (typical ACD application), it is the agent ID number. If an agent answers an incoming call, the agent ID appears in this field.

**Transfer/Conference Call (K):** This field identifies calls that involve three or more parties. It contains a "T" for supervised transfers, "X" for unsupervised transfers (i.e., dead transfer or transfer into busy) and a "C" for 3-way conversations and conferences.

**Third Party (rrrr):** The third party field contains the number of the station to which a trunk call has been transferred. When several transfers take place during a trunk call, the first party is the only one reported. The format is identical to that of the Calling Party (pppp). When a call is transferred to an ACD system, the ACD Path Access Code appears in this field.

**System Identifier (iii):** This optional 3-digit field may contain values from "000" to "999". "000" indicates that no identifier has been entered. The system identifier is programmed at the System level and is printed only if COS Option 246, SMDR - Extended Record, is enabled.

**ANI Digits (nn .... n):** This optional field may contain up to 10 digits. If COS Options 806 (SMDR - Record Incoming Calls) and 814 (SMDR - Record ANI/DNIS) are enabled, the ANI digits received from an incoming trunk will be recorded. If no ANI digits are received, this field will be blank.

**DNIS Digits (dd .... d):** This optional field may contain up to 10 digits. If COS Options 806 (SMDR - Record Incoming Calls) and 814 (SMDR - Record ANI/DNIS) are enabled, the DNIS digits received from an incoming trunk will be recorded. If no DNIS digits are received, this field is blank.

### ACD Call Record Examples

4.3 The following subsections show examples of typical SMDR call records for various types of ACD calls. The examples omit system identifiers.

#### ACD CALLS ANSWERED BY AGENTS

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:41 00:00:08 T001 002 P2123 01 01 1101
    
```

CO Trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1101 of agent group 1.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:44 00:08:29 T002 009 P0456 05 06 05 1515
    
```

CO trunk 2 comes in on path 456 and rings agent group 5 and overflows to agent group 6. Call is answered by agent 1515 of agent group 5.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:50 00:00:22 T003 012 P2324 01 02 02 1205
    
```

CO trunk 3 comes in on path 2324 and rings agent group 1 and overflows to agent group 2. Call is answered by agent 1205 of agent group 2.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:52 00:00:05 T001 006 P2123 01 07 1703
    
```

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1703 of agent group 7 (via call pickup).

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:53 00:00:18 T003 005 P2324 01 02 02 1202X 1861
    
```

CO trunk 3 comes in on path 2324 and rings agent group 1 and overflows to agent group 2. Call is answered by agent 1202 of agent group 2. Call is transferred (unsupervised) by 1202 to 1861 (non-agent).

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:53 00:00:12 T001 006 P2123 01 01 1103T 1515
    
```

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1103 of agent group 1. 1103 transferred (supervised) call to agent 1515.

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:54 00:00:10 T001 006 P2123 01 01 1101T 1512

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1101 of agent group 1. Agent 1101 transferred (supervised) call to path 456. Agent 1512 answered call.

ACD CALLS ANSWERED BY NON-AGENTS

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:01 00:00:03 T001 004 P2123 01 00 2101

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by extension 2101 (via call pickup).

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:02 00:00:08 T003 004 P2324 01 02 00 2678

CO trunk 3 comes in on path 2324 and rings agent group 1. Call overflowed to agent group 2. Call is answered by extension 2678.

ACD CALLS ABANDONED

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:11 00:00:10 T002 \*\*\* P0456 02

CO trunk 2 comes in on path 456 and rings agent group 2. Call is abandoned.

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:14 00:00:14 T002 \*\*\* P0456 02 03

CO trunk 2 comes in on path 456 and rings agent group 2. Call overflowed to agent group 3. Call is abandoned.

0 1 2 3 4 5 6 7 8 9  
 1234567890123456789012345678901234567890123456789012345678901234567890123456789  
 07/01 09:15 00:00:07 T002 \*\*\* P0456

CO Trunk 2 comes in on path 456 and the caller hung up in delay for ringback before the call is presented to the primary agent group.

SMDR

ACD CALLS INTERFLOWED

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:04  00:00:14 T002 *** P0456 05 06 07 08 |
    
```

CO trunk 2 comes in on path 456 and rings agent group 5. Call overflows to agent groups 6, 7, 8 and is interflowed. Call is dropped.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:05  00:00:16 T001 *** P2324 01 02 04 10 12311
07/01 09:05  00:00:02 T001 *009                               2311
    
```

CO trunk 1 comes in on path 2324 and rings agent group 1. Call overflows to agent groups 2, 4,10 and is interflowed to the attendant 2311.

CO trunk 1 rings 2311. Call is answered by 2311.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:07  00:00:26 T002 *** P0456 05 06 07 08 12324
07/01 09:07  00:00:07 T002 008 P2324 01 01                               1102
    
```

CO trunk 2 comes in on path 456 and rings agent group 5. Call overflows to agent groups 6, 7, 8 and is interflowed to path 2324.

CO trunk 2 comes in on path 2324 and rings agent group 1. Call is answered by agent 1102 of agent group 1.

UNSUPERVISED TRANSFER OF CALLS TO THE ACD SYSTEM

**Note:** Each call generates two records.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:20  00:00:22 T003 000 P2324 01 02 02                               1201X 456
07/01 09:20  00:00:10 T003 004 P2324 05 05                               1501
    
```

CO trunk 3 comes in on path 2324 and rings agent group 1. Call overflowed to agent group 2 and is answered by agent 1201 of agent group 2. Agent 1201 then transferred the call to ACD path 456.

Trunk 3 comes in on path 456 and rings agent group 5. Call is answered by agent 1501 of agent group 5.

```

0       1       2       3       4       5       6       7       8       9
123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:22  00:00:04 T003 015 P2324 01 01                               1101X 456
07/01 09:22  00:00:02 T003 *** P0456 05
    
```

CO trunk 3 comes in on path 2324 and rings agent group 1. Call is answered by agent 1101 of agent group 1. Agent 1101 then transferred the call to ACD path 456.

Trunk 3 comes in on path 456 and rings agent group 5. Call is abandoned.

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890123456789									
07/01	09:24	00:00:04	T007	*005				2324	
07/01	09:24	00:00:05	T007	009	P2324	01	01	1104	

CO trunk 7 rings the attendant, the attendant answered the call and transferred it to ACD path 2324.

Trunk 7 comes in on path 2324 and rings agent group 1. Call is answered by agent 1104 of agent group 1.

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890123456789									
07/01	09:27	00:00:07	T008	005				5220X 2324	
07/01	09:27	00:00:05	T008	009	P2324	01	01	1102	

CO trunk 8 rings extension 5220. Call is answered by 5220 and is transferred to path 2324.

Trunk 8 comes in on path 2324 and rings agent group 1. Call is answered by agent 1102 of agent group 1.

**SUPERVISED TRANSFER OF CALLS TO THE ACD SYSTEM**

**Note:** Each call generates two records.

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890123456789									
07/01	09:51	00:00:10	T013	015				3201T 1456	
07/01	09:51	00:00:20	T013	009	P1456	01	01	1201	

CO trunk 13 rings extension 3201. Call is answered by 3201 (non-agent). 3201 dialed path 1456. Agent 1201 answered the call. 3201 transferred CO trunk 13 to 1201.

0	1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890123456789									
07/01	09:54	00:00:14	T008	*009				1456	
07/01	09:54	00:00:20	T008	010	P1456	01	01	1104	

CO Trunk 8 rings an attendant. Call is answered by the attendant. The attendant dialed path 1456. Call is answered by agent 1104.

SMDR

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:57  00:00:15  T003  010 P2324 01 01                1107T 1456
07/01 09:57  00:00:30  T003  005 P1456 01 01                1502
    
```

CO trunk 3 comes in on path 2324 and rings agent group 1. Call is answered by agent 1107 of agent group 1. 1107 dialed path 1456. Agent 1502 answered call.

```

0       1       2       3       4       5       6       7       8       9
1234567890123456789012345678901234567890123456789012345678901234567890123456789
07/01 09:58  00:00:12  T001  012 P2324 01 01                1101T 1606
07/01 09:58  00:00:15  T001  020                1606
    
```

CO trunk 1 comes in on path 2324 and rings agent group 1. Call is answered by agent 1101 of agent group 1. 1101 dialed agent 1606. Agent 1606 answered call and 1101 transferred CO trunk 1 to 1606.

ACD CALLS INCLUDING ANI/DNIS INFORMATION

**Note:** Assume an 80-column printer is used to record the SMDR. If a larger printer is used, the ANI/DNIS information will appear on the extreme right-hand side of the page.

```

0       1       2       3       4       5       6       7       8       9       0
1234567890123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:41  00:00:08  T001  002 P2123 01 01                1101                017230456  9485763
    
```

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1101 of agent group 1. ANI and DNIS digits received from CO Trunk 1 are respectively 017230456 and 9485763.

```

0       1       2       3       4       5       6       7       8       9       0
1234567890123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:42  00:00:15  T001  002 P2123 01 01                1102                2782212
    
```

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1102 of agent group 1. ANI digits received from CO trunk 1 are 2782212. No DNIS digits were received.

```

0       1       2       3       4       5       6       7       8       9       0
1234567890123456789012345678901234567890123456789012345678901234567890123456789
07/01 08:43  00:00:10  T001  003 P2123 01 01                1103                5922124
    
```

CO trunk 1 comes in on path 2123 and rings agent group 1. Call is answered by agent 1103 of agent group 1. DNIS digits received from CO trunk 1 are 5922124. No ANI digits were received.



# 5 External Devices

## General

- 5.1 The data formatting of SMDR records is an integral part of the system which does not require additional hardware or hardware modification. Installation is simply a matter of connecting a compatible printer or terminal to the output port of the system.

SMDR records are output from the PABX in standard RS-232 format. Any RS-232 compatible device can be connected directly to the output port for the storage of records.

## Printer

- 5.2 A summary of the parameters which must be available from an SMDR printer is as follows:
- 132 character line length
  - 300 baud to 9600 baud
  - standard ASCII character set

The baud rate of the printer port or data port is selectable from the Maintenance Terminal (refer to the *RS-232 Maintenance Terminal Practice*). Ensure the baud rate of the printer matches that selected at the Maintenance Terminal.

## Tape Machine

- 5.3 A tape machine which is capable of operating over an RS-232 interface can be connected to the SMDR output port of the PABX.

## Cabling

- 5.4 The printer, terminal or storage device should be located within 15.2 m (50 ft) of the RS-232 port. Failure to observe this precaution may cause the SMDR record to be corrupted.



# 6 SMDR Programming and Control

## General

- 6.1 The operation of the SMDR feature is determined during initial installation of the system. Programming the SMDR feature is part of the System and Class of Service Options programming known collectively as customer data entry (CDE). The operation can be modified at any time by the maintenance person, using the CDE terminal. Table 6-1 shows the Trunk SMDR options involved and Table 6-2 shows the Data SMDR options involved. A brief description of these options is given below. A complete description of the CDE forms is given in the *Customer Data Entry Practice*. For an outgoing call record to be generated, SMDR must be enabled in CDE Form 16, Trunk Groups. A device accessing a trunk group with SMDR enabled will generate an SMDR record unless COS Option 700, SMDR - Does Not Apply, is enabled in that device's Class of Service.

## TRUNK SMDR and ACD SMDR Programming Options

- 6.2 The Trunk SMDR and ACD SMDR programming options are as follows:

- **Record Incoming Calls:** This COS option enables SMDR for incoming trunk calls.

**Note:** For modem pooling, if the Record Incoming Calls option is enabled, and the SMDR buffers become full, new incoming CO calls will receive busy tone and new incoming TIE, DID, or DISA trunks will receive reorder tone. These calls will not be accepted by the PABX. Not available in LIGHTWARE Basic software.

- **Record Meter Pulses:** This COS option causes meter pulses generated by the central office to be counted and then reported in the SMDR record.
- **Drop Calls Less Than n Digits:** When this COS option is enabled, outgoing calls of less than n digits are not reported (where "n" is programmed to be between 0 and 11 and 0 disables the option).
- **Drop Incomplete Outgoing Calls:** When this COS option is enabled, incomplete outgoing calls are not recorded.

**Note:** 1. If the call duration is less than the programmed value of the system timer "Pseudo Answer Supervision Timer", the call is considered an incomplete call.

2. If Trunk Circuit Descriptor Option "Far End Gives Answer Supervision" is set to YES, and ANSWER SUPERVISION is not received, an SMDR record is not generated.

- **Extended Record:** When this COS option is enabled, the length of the SMDR record is extended from 80 to 88 columns. This allows the last four columns of 12-digit account codes and the System ID to be reported.

**Note:** If Cos Option 814, SMDR - Record ANI/DNIS/CLASS, is enabled and there are ANI/DNIS/CLASS digits to be printed, the extended record will be printed even if Cos Option 246, SMDR - Extended Record, is disabled.

- **Overwrite Buffer:** When this COS option is DISABLED and all SMDR buffers are in use, outgoing calls requiring SMDR will not be allowed. When ENABLED, the

OLDEST SMDR buffer waiting to be printed will be overwritten with the new outgoing call SMDR information.

**Note:** If the Overwrite Buffer option is disabled and the SMDR buffers become full (for example, printer out of paper), outgoing calls are prohibited until the buffers are emptied.

- **Does Not Apply:** When this COS option is enabled, no calls will be recorded for the Class of Service in which it is enabled.
- **Indicate Long Calls:** When this System Option is enabled, calls of 5 minutes or longer are flagged in the SMDR record.
- **24-Hour Clock:** When this System Option is enabled, the start time within the SMDR record will be recorded in 24-hour format. When disabled, the start time is recorded in 12-hour format (p = pm).
- **ACD Reports:** This System Option, when enabled, provides ACD information to be output to the reporting system as part of the SMDR reports.
- **Analog Networking SMDR:** When this System Option is enabled, the calling party field contains the caller's extension number as provided by Analog Networking, instead of the incoming trunk number. When disabled, the calling party field is not overwritten with the Analog Networking information.
- **Five Digit SMDR:** When this System Option is enabled, five digit numbers will be recorded for Calling party, Called party and Third party.
- **Record ANI/DNIS/CLASS:** To record the ANI and/or DNIS and/or CLASS digits received from an incoming trunk, COS Option 806 (SMDR - Record Incoming Calls) and COS Option 814 (SMDR - Record ANI/DNIS/CLASS) must be enabled.

Table 6-1 CDE-Selected SMDR COS and System Options		
Option	Type	Option Number
SMDR - Extended Record	COS	246
SMDR - Record Meter Pulses	COS	247
SMDR - Does Not Apply	COS	700
SMDR - Overwrite Buffer	COS	702
SMDR - Drop Calls < n Digits (n = 0...11, disable = 0)	COS	803
SMDR - Drop Incomplete Outgoing Calls	COS	804
SMDR - Record Incoming Calls	COS	806
SMDR - Record ANI/DNIS/CLASS	COS	814
24-Hour Clock	System	01
Analog Networking SMDR	System	06
Five Digit SMDR	System	08
SMDR - Indicate Long Calls	System	28
ACD Reports (see Note)	System	44
Pseudo Answer Supervision Timer	System	49

**Note:** ACD Reports are not available with *LIGHTWARE* Basic software.

## Data SMDR Programming Options

6.3 Three Class of Service (COS) options and one System Option, as listed in Table 6-2, are available with Data SMDR (Data SMDR is not available with *LIGHTWARE* Basic software).

- **Data SMDR - Does Not Apply:** This option, when enabled, prevents Data SMDR records from being printed.
- **Data SMDR - Extended Record:** This option, when enabled, adds the system identifier to the Data SMDR record.
- **Data SMDR - Overwrite Buffer:** This option, when enabled, will prevent a data call from being blocked due to a lack of Data SMDR buffers. However, with buffers being overwritten, there is no guarantee of recording all data calls. If disabled, data calls will be blocked if there are no available Data SMDR buffers.
- **Data SMDR - Indicate Long Calls:** This timer, when enabled, provides an identifying character in column 1 to indicate the approximate length of the call.

**Note:** If the Overwrite Buffer option is disabled and the Data SMDR buffers become full, data calls are prohibited until the buffers are emptied.

**Table 6-2 CDE-Selected Data SMDR COS and System Options**

Option	Type	Number
DATA SMDR - Does Not Apply	COS	906
DATA SMDR - Extended Record	COS	907
DATA SMDR - Overwrite Buffer	COS	908
DATA SMDR - Indicate Long Calls	System	39



# 7 Operational Parameters

## General

- 7.1 The SMDR feature is transparent to the end user. There are no operational procedures to be employed by the Attendant or station user. A summary of the operational parameters which are described earlier in this document follows.

## Non-Recording Conditions

- 7.2 SMDR is not initiated under the following conditions:
- Busy tone is obtained by the Attendant or a station when a trunk is dialed (because all trunks in the group are busy),
  - The calling or called party has a class of service which disables SMDR,
  - Reorder tone is obtained by the caller,
  - The Attendant intercepts a station attempting to access a trunk group,
  - During a power failure condition, no SMDR records are made.

## Attendant-Handled Calls

- 7.3 The following conditions are reported as shown when the Attendant handles a call:
- When the Attendant dials a trunk with no station or trunk involved, the calling party is the Attendant.
  - Direct Trunk Access by the Attendant is reported. The Leading Digits field is left blank.
  - When the Attendant answers a trunk call and does not transfer it to a station, the called party is the Attendant.
  - When the Attendant dials a trunk while it has a station as its source, the calling party is reported as the station and an (\*) appears in the "Attendant was Involved" field.
  - When the Attendant connects a previously held station to a trunk, the calling party is the station and an (\*) appears in the "Attendant was Involved" field.
  - When the Attendant has a trunk as Source, and then connects a station to the trunk, the calling party is the trunk, the called party is the station, and an (\*) appears in the "Attendant was Involved" field.

## Incoming Calls

- 7.4 When SMDR is enabled for incoming calls, the following conditions are reported:
- Digits dialed on incoming DID, DISA or dial-in TIE trunks are reported in the "Digits Dialed on the Trunk" field. When the dial-in trunk dials an illegal or vacant number or hangs up before completing the number, the call is reported. The called party is the station dialed. The DISA Security Code is not reported.
  - The called party is always the Attendant, except when the Attendant forwards the call to a station. The station then becomes the called party and an (\*) is reported in the "Attendant was Involved" field.
  - Direct-in trunks show the station number as the called party (i.e., dial-in trunks). However, the "Digits Dialed" field is blank. When the trunk is directed to a Hunt Group, the station that answered the call is reported.
  - On incoming calls, an "E" is reported when the trunk hangs up while listening to reorder tone, or a "B" is reported when the trunk hangs up while listening to busy tone. A "T" is reported when the incoming call is answered with TAFAS.

## Data SMDR

- 7.5 All internal and external data calls are recorded if this option is enabled. External data calls generate a trunk SMDR record as well as a DATA SMDR record.



# Appendix A

## Account Codes

### General

A.1 This appendix provides a general description of account codes and their operation.

### Description

A.2 Account codes uniquely identify SMDR call records for billing purposes. Two types of account code length options (fixed length and variable length) can be programmed in the System Options form during customer data entry. A fixed length account code is preprogrammed to be of a length between 4 and 12 digits. A variable length account code can be of any length between 1 to 12 digits. Variable length account codes require a terminator digit (see paragraph A.3). When no account code length is specified during CDE programming, the default length is six digits.

The Verifiable Account Code feature is an option of SMDR which provides unique codes with assigned COS and/or COR options. Dialing a verifiable account code (which has been assigned a COS or a COR) will override the COS and/or COR currently assigned to a telephone. A new SMDR record is generated each time a new verified account code is entered.

### Account Code Terminator

A.3 The variable length account code terminator is the # digit. It is dialed at the end of a variable-length account code to indicate to the system that the account code is complete. A variable length account code cannot be dialed from rotary telephones since they have no # digit. If variable length is enabled, rotary telephone sets default to 6-digit account codes. The terminator is not required should a variable length account code of the full 12 digits be dialed.

### Forced Account Codes

A.4 COS Option 200, Account Code, Forced Entry - External Calls, may be assigned to stations in order to bar trunk access from those stations, unless the access attempt is preceded by a valid account code. COS Option 201, Account Code, Forced Entry - Long Distance Calls, may be assigned to stations in order to bar certain long distance calls (identified in the ARS Digit Strings CDE form), unless the access attempt is preceded by a valid account code.

Forced account codes can also be assigned to DISA trunks via the COS of the special DISA trunk in order to force a validation check on incoming DISA calls. System dial tone is not returned to the caller until a valid independent account code is received.

## Operation

### **Account Code entry at the start of an outgoing call:**

- Lift handset - dial tone is returned.
- Dial the feature access code followed by the account code and terminator (#); the terminator is not required with fixed length account codes.
- Dial trunk access code (usually 9).
- Dial the outgoing number.

### **Account code entry during a call on a SUPERSET 420™ telephone:**

- Press SUPERKEY.
- Press NO softkey until ACCOUNT CODE? appears.
- Press YES softkey.
- Enter Account Code number.
- Press SAVE softkey.

### **Account code entry during a call on a SUPERSET 430™ telephone:**

- Press ACCOUNT CODE softkey.
- Enter Account Code number.
- Press SAVE softkey.

# Appendix B

## DATA Account Codes

### General

- B.1 This appendix provides an overview of the Data Account Code feature. It includes examples of ADL, DTRX, and incoming and internal modem pooling call applications. For a detailed description of account codes, refer to the *Features Description Practice*.

### Description

- B.2 With the Data Account code feature, data users can have the option or be forced to enter verified or non-verified account codes. These codes must be entered during the call setup phase of a data call and can be applied to internal, external and long distance calls. For the DTRX user, an account code access is represented by a character string, "ACCOUNT", while an account code access code digit string is entered for ADL or incoming or internal modem pooling calls. Account code entries are accepted by the following circuit types: station, set, console, TIE or DISA trunk.

### Incoming, Outgoing, and Internal Data Calls

- B.3 Verified or non-verified account codes applied to data calls must be entered during the call setup phase. The following restrictions apply on incoming or outgoing data calls:

#### Incoming Data Calls

- A TIE trunk caller can dial an account code access code and an account code number only after the TIE trunk has been seized.
- An incoming special DISA caller can only enter an account code after dial tone has been returned.
- An incoming regular DISA caller dials the DISA access code and waits for returned dial tone before entering the account code access code and an account code number.
- An incoming DIL data call to the attendant requires the attendant to dial the account code for the calling party.
- The same account code will be stored in both the DATA SMDR and Trunk SMDR records.

### Outgoing and Internal Data Calls

For a DTRX application, the account code access code "ACCOUNT" and the account code number are entered after the destination number in the dialed digit string. The following are examples of an account code entered by a DTRX caller:

- CALL 1234-9-5555678-ACCOUNT-2222  
OR
- CALL 1234 9 5555678 ACCOUNT 2222  
OR
- CALL 1862-ACCOUNT-2222 (internal DTRX call with account code)  
OR
- CALL 1862 ACCOUNT 2222  
(prompt)  
CALL  
1234           - modem pool access code  
9               - ARS access code  
5555678       - directory number of the destination data device  
ACCOUNT       - account code access code character string  
2222           - 4-digit account code number  
1862           - internal destination data station

For an ADL application, the account code access code and the account code number are entered after the ADL access code. The following are examples of an ADL call:

87-75-2222-1234-9-5555678 (external ADL modem pooling call with account code)

87-75-2222-1862 (internal ADL call with account code)

- 87            - ADL access code
- 75            - account code access code
- 2222          - 4-digit account code number
- 1234          - modem pool access code
- 9             - ARS access code
- 5555678       - directory number of the destination data device
- 1862          - internal destination data station

Note that dial tone is not returned after the account code is entered.

For an internal call via the modem pool or for an incoming TIE or DISA trunk call, once the trunk has been seized, the account code access code and the account code number are entered prior to the destination digit string.

75-2222-1234-1862 (internal modem pooling call with account code)

75 - account code access code  
 2222 - 4-digit account code number  
 1234 - modem pool access code  
 1862 - destination data station

### Incoming Call over Special DISA Trunk

In order that the special DISA caller has access to the PABX, an account code without an account code access code must be dialed as a security code.

Other Calls Applying Account Codes:

- An account code access code must be dialed prior to the account code number.
- Dial account code digits.

If the account code is a variable length, the digit string must be followed by a #. If the digit string has reached the maximum of 12 digits, the caller has the option of either entering the # delimiter or leaving it out.

A non-variable length account code must be programmed with the account code length between 4 - 12 digits.

- For a non-DTRX or non-ADL call, the PABX supplies dial tone after a correct account code has been dialed.

### System Abbreviated Dial Numbers

B.4 The system abbreviated dial number for an ADL caller may include an account code.

EXAMPLE:

System Abbreviated Access Code + System Abbreviated Number =

ADL Access Code + Account Code Access Code + Account Code Number +  
 Destination Number

or

Account Code Access Code + Account Code Number + Destination Number

For DTRX callers, the Account Code cannot be included in system abbreviated numbers.

For a Speed Call number, the Account Code Access Number and the Account Code Number may be included in the digit string.

SMDR

An incoming TIE, DISA, or internal modem pooling caller may dial a speed dial number which includes an account code with the destination number. The destination number may be a modem pool hunt group number plus a data station or data hunt group number, or it may be a data station or data hunt group number (if the default modem pool hunt group is programmed).

**EXAMPLE:**

System Abbreviated Access Code + System Abbreviated Number =

Account Code Access Code + Account Code Number + modem pool hunt group number + data station/hunt group number

OR

Account Code Access Code + Account Code Number + data station/hunt group number (if default modem pool hunt group is programmed)

**Forced Account Codes**

B.5 The COS of the caller is checked to determine if any of the following options apply. If so, an account code must be entered:

Account Code, Forced Entry - Data External Calls (COS Option 327)

Account Code, Forced Entry - Data Long Distance Calls (COS Option 328)

Account Code, Forced Entry - Data Internal Calls (COS Option 326)

**NOTES**

**SMDR**

**NOTES**



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# Tenanting

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## Table of Contents

<b>1. Introduction</b> .....	1-1
Reason for Issue .....	1-1
<b>2. General Description</b> .....	2-1
Overview .....	2-1
Multiple Tenant Application .....	2-1
Multiple Customer Application .....	2-1
Data Users Application .....	2-1
Independent Consoles, Subattendants, Trunks, and Stations .....	2-2
Tenant Interconnection .....	2-3
Identifying Tenants on Consoles and SUPERSET™ Telephones .....	2-4
Local Night Switching .....	2-5
Night Bells and Night Answer .....	2-6
Dial 0 Routing .....	2-6
Call Rerouting Features and Answer Point .....	2-7
Direct Inward Dial Rerouting .....	2-8
Direct-In Line Rerouting .....	2-8
Subattendants/Enhanced Subattendants and Message Centers .....	2-8
Numbering Plan .....	2-8
Automatic Route Selection with Multiple Tenants .....	2-9
<b>3. Programming and CDE</b> .....	3-1
Tenant Assignments .....	3-1
Interconnection Between Tenants .....	3-2
Call Rerouting .....	3-3
Night Switching .....	3-5

## List of Figures

Figure 2-1	Tenant Connections to PABX .....	2-2
Figure 2-2	Tenant Interconnection with Shared Console .....	2-3
Figure 2-3	SUPERSET 430™ Telephone Serving Several Tenants .....	2-4
Figure 2-4	Night Switching Options .....	2-5
Figure 2-5	Dial 0 Call Routing .....	2-7
Figure 3-1	Station/SUPERSET Telephone Programming Form .....	3-1
Figure 3-2	Tenant Interconnection Table .....	3-2
Figure 3-3	Call Rerouting Table .....	3-3
Figure 3-4	Tenant Night Switching Control .....	3-5



# 1 Introduction

Tenancing is a feature which allows up to 25 tenants to share features and capabilities of the PABX. Some PABX features are enabled for each tenant individually through customer data entry (CDE) while other features are shared by all tenants.

## **Reason for Issue**

- 1.1 This section describes tenancing. It also explains how to program and use tenancing.



## 2 General Description

### Overview

- 2.1 Tenanting is a very powerful and flexible feature available with the PABX. The PABX may be operated as a single tenant or in a multiple customer or multiple tenant mode, by sharing services such as attendants or trunks. A typical installation may have several tenants, each with its own trunks, stations and attendant. Members of different tenants may be programmed to access each other (but not necessarily each other's features) without going through the local central office, or may be totally independent of each other. The customer (or customers) can share the economies of a larger PABX, such as specialized trunks, leased services, and other features. SMDR, described in the *Station Message Detail Recording Practice*, allows equitable assessment of costs among all users.

Up to 25 tenants (or customers) may be defined within the PABX with a maximum of 11 consoles. A maximum of 25 enhanced subattendant positions may be defined. Please refer to the *Customer Data Entry Practice* and reference Form 09, Station/SUPERSET™ Telephones, for information on the subattendant position.

### Multiple Tenant Application

- 2.2 A typical multiple tenant application is a company which occupies a large building and has attendants and/or subattendants and/or enhanced subattendants in different areas, such as each floor or department. Some features, such as attendant recall, access the local attendant instead of the main attendant position, but other features such as WATS, ARS, Tie lines, or abbreviated dialing are available to all users.

### Multiple Customer Application

- 2.3 A typical multiple customer application is a building served by one PABX, with telephone service for each customer (tenant) going through the PABX independently. When one customer calls another, the calling party must access one of its CO trunks and dial the other customer's listed directory number. The call will go through the CO and then appear as an incoming CO call at the called customer.

### Data Users Application

- 2.4 The PABX tenanting features are also available for data users. A typical application is to restrict access to certain computers, printers, and other data devices to data users in one or more specific internal departments, by placing all members into the same tenant and denying all other tenants access. Any computer resources which must be available to all users can be put into a tenant group to which everyone has access.

## Independent Consoles, Subattendants, Trunks, and Stations

2.5 The PABX is divided into distinct tenants; all stations, *SUPERSET* telephones, trunks, subattendant/enhanced subattendant telephones, and attendant consoles are assigned to a tenant as they are programmed into the PABX. Trunks and Dial 0 calls are programmed to ring to only their associated attendant/subattendant/enhanced subattendant position. Outgoing calls seize only trunks within their same tenant as shown in Figure 2-1.

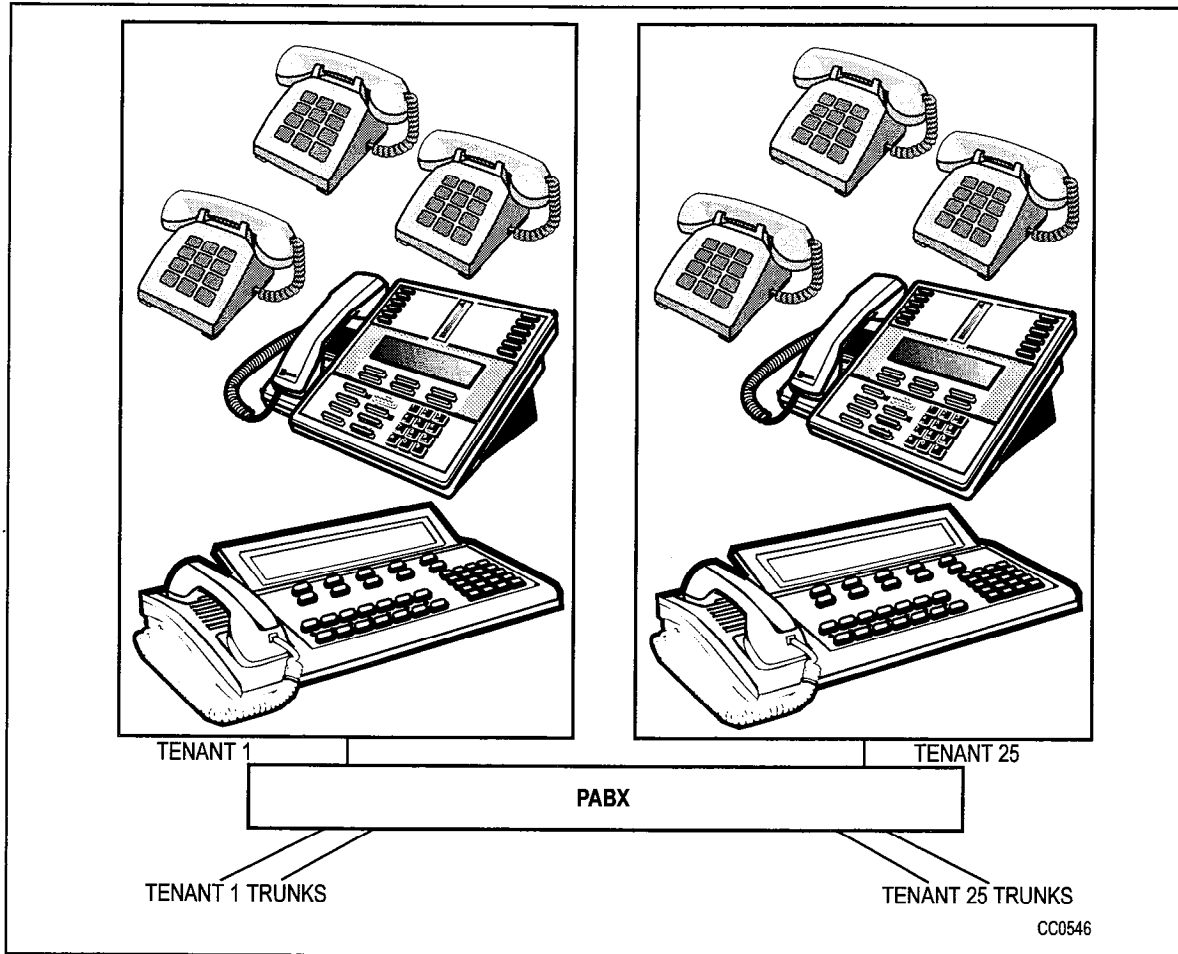


Figure 2-1 Tenant Connections to PABX



## Tenant Interconnection

- 2.6 The PABX may be programmed to allow certain tenants to connect to each other internally within the system or to allow for sharing of services such as an attendant console or trunks.

Each tenant may or may not be allowed to connect directly to any other tenant. For example, an attendant console to be shared by tenants 1, 2, and 3 can be assigned to tenant 25 and programmed to connect internally to tenants 1, 2, and 3. Tenants 1, 2, and 3 may still be programmed to NOT connect to each other as shown in Figure 2-2.

Note the exception to the case when tenant 1 can call tenant 2 but tenant 2 cannot call tenant 1. A SUPERSET 430™ telephone A in tenant 1 calls *SUPERSET 430* telephone B in tenant 2, and upon receiving no answer, sends the message to call set A. Set B can press MSG, READ MSG, and CALL softkeys, and return the call to set A, even though tenant 2 (Set B) is normally restricted from calling tenant 1 (Set A).

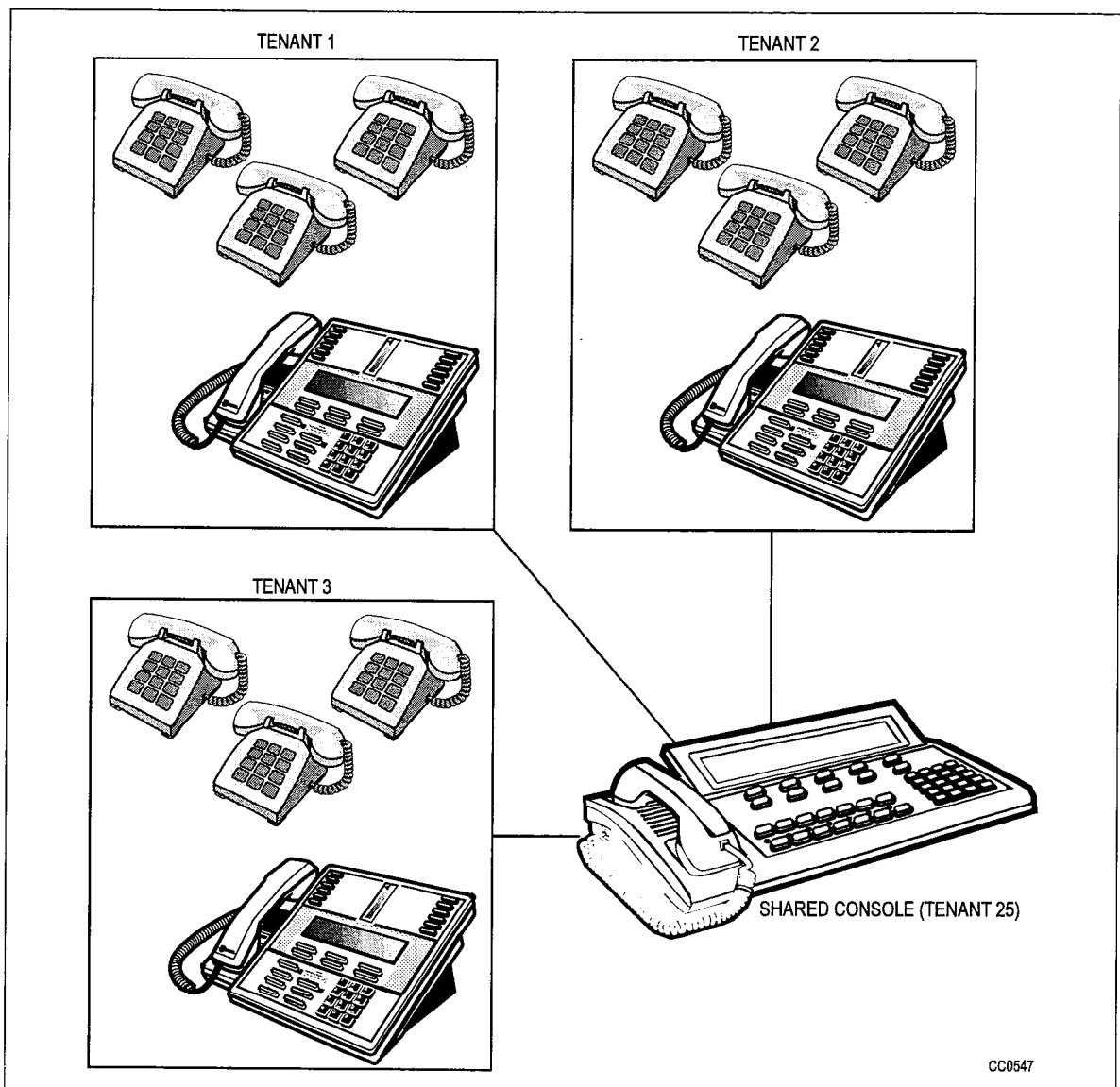


Figure 2-2 Tenant Interconnection with Shared Console

## Identifying Tenants on Consoles and *SUPERSET* Telephones

- 2.7 Attendant consoles or *SUPERSET* telephones may be programmed to provide a common answering point for incoming calls to all tenants, as well as calls that are unanswered by any tenant. Each tenant may not call the other tenants or access each other's trunks, but all of their calls will be directed to the common answering point. The incoming calls may be DID, DIL, or regular CO trunks.

When recalls are answered at a common answering point, the name of the tenant that did not answer is displayed as a NO ANSWER so that the recall may be answered with an appropriate response. If the called party has a *SUPERSET* 420™ or *SUPERSET* 430 telephone, that party's name is displayed. The calling party's trunk group may be programmed to display the company name. If the trunk has not been programmed with a name, the trunk group name is displayed. If the trunk group has not been programmed with a name, the trunk number is displayed.

The call rerouting point for all tenants may be to *SUPERSET* 410™, *SUPERSET* 420 or *SUPERSET* 430 telephones with each tenant having its own key for reroutes, as shown in Figure 2-3. A reroute to a busy line will camp on to that line, allowing queuing for each tenant's calls.

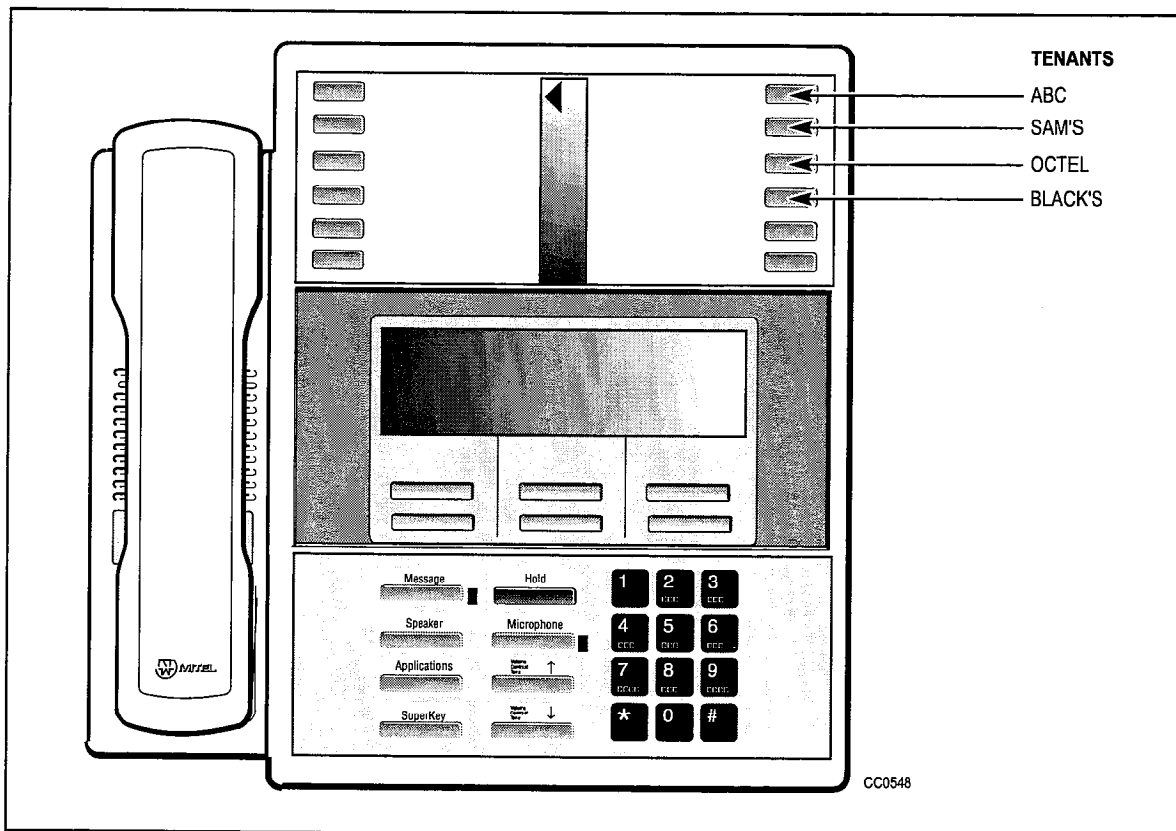
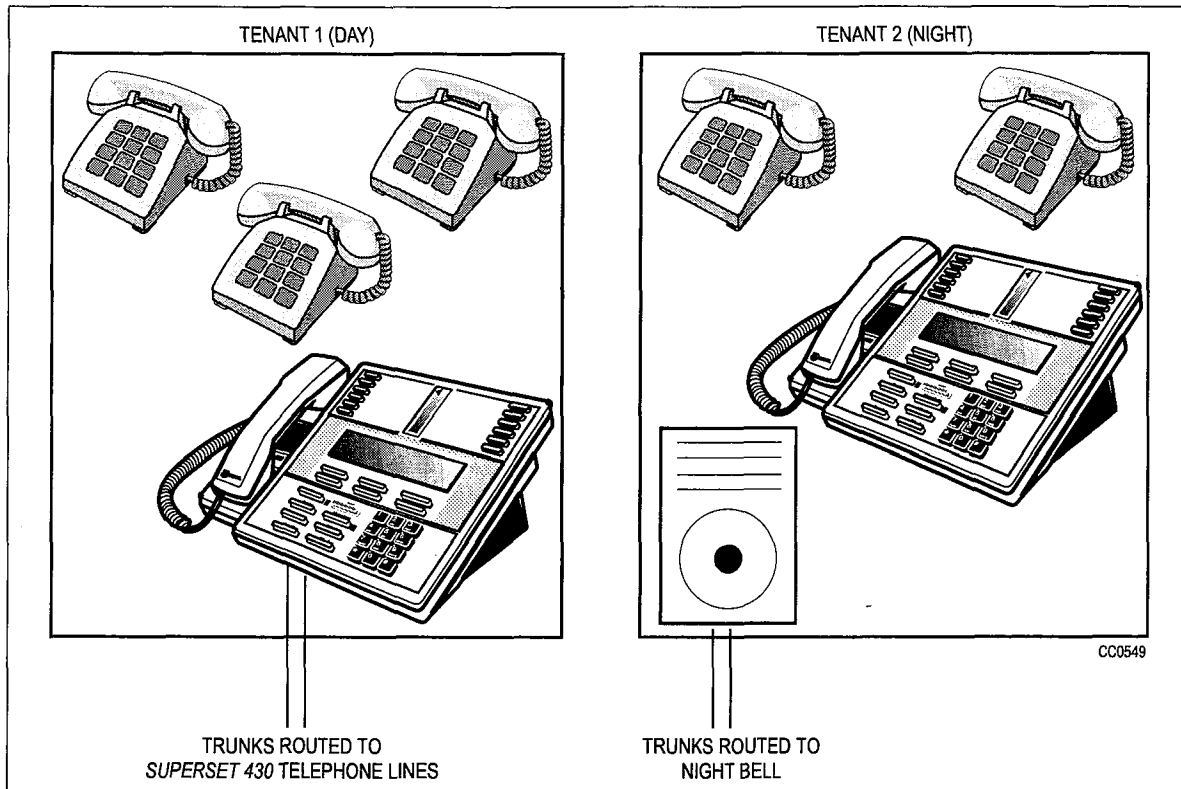


Figure 2-3 *SUPERSET* 430 Telephone Serving Several Tenants

## Local Night Switching

- 2.8 Tenants sharing the system may each require different system operation with respect to Day/Night mode. The PABX allows each tenant to switch into Night service independently and to operate independently when it has switched to Night service. Figure 2-4 shows two typical examples.



**Figure 2-4 Night Switching Options**

An attendant with a console may switch to Night 1 or Night 2 by pressing the FUNCTION key followed by the appropriate softkey.

A tenant with a *SUPERSET 420* presses the SuperKey and the NO softkey until NIGHT SERVICE? appears in the display area of the telephone. Pressing the YES softkey will display the current service mode to the user and pressing the CHANGE softkey will allow the user to switch to another mode.

To switch into night service using a *SUPERSET 430* telephone, the user presses the SuperKey and the MORE softkey until the NIGHT ANSWER softkey appears. Pressing this softkey will select the new mode of operation. To retain the current mode of service, press the BACKUP softkey or the SuperKey.

The display area for each *SUPERSET* mentioned displays the current mode of operation, either NIGHT 1, NIGHT 2 or DAY service. In the case of DAY service, the display reverts to showing the time and date after a short period of time. Please refer to the *Features Description Practice* for complete programming information.

Since call rerouting destinations and incoming CO trunks are programmed for Day, Night 1, and Night 2, switching to Night service will automatically reroute all calls for that tenant, provided that the tenant is properly programmed in CDE Form 06, Tenant Night Switching Control.

It may be desirable to have a console or a *SUPERSET 430* telephone (such as a night security desk) able to switch all tenants into Night 1 or Night 2 service. The security desk console may be programmed as a tenant that controls the Night status of tenants. When the security guard sets Night 2, all associated tenants switch into Night 2. If a tenant forgot to switch to Night service, and calls were not being rerouted, the status is corrected when the night security guard comes on duty and sets Night 2 to reroute calls to the security desk.

### **Night Bells and Night Answer**

- 2.9 The system allows incoming calls to be redirected to a Night bell. A non-display *SUPERSET* telephone in that tenant may dial the TAFAS - LOCAL TENANT feature access code to answer the first call in that tenant's queue. A *SUPERSET 410* and *SUPERSET 420* user will press a NIGHT ANSWER feature key, a *SUPERSET 430* user will press the NIGHT ANSWER softkey, and the attendant console will press the NIGHT BELL softkey. Any extension may dial the TAFAS - Any feature access code to pick up a call in any tenant to which it is allowed to connect. Please refer to the *Features Description Practice* for complete programming information.

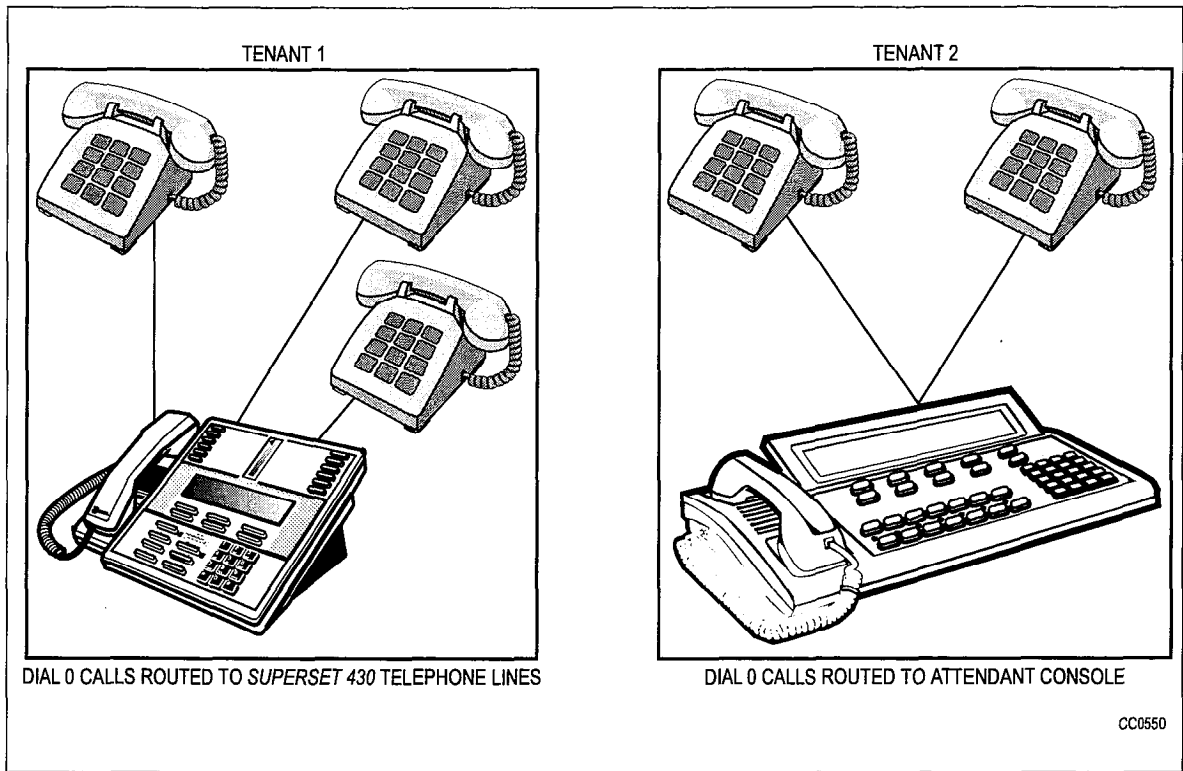
### **Dial 0 Routing**

- 2.10 Any tenant group may operate with a central attendant, subattendant or enhanced subattendant position handling incoming calls and Dial 0 calls, or may program its own Day/Night directory numbers to route Dial 0 calls. Figure 2-5 shows two examples.

The feature access code for attendant access (usually 0) is programmed systemwide for all stations. Each tenant may then specify the Day, Night 1, and Night 2 answer points to route callers who dial this access code.

## Call Rerouting Features and Answer Point

- 2.11 Each tenant may determine its method of rerouting Dial 0 calls, intercepts for illegal access, calls that are not answered or that reach busy parties. The answer point may be an attendant console, subattendant LDN, enhanced subattendant LDN, *SUPERSET* telephone line, station, hunt group, or night bell. The caller is automatically camped on to a busy station or *SUPERSET* telephone. Calls may also be routed to a staffed night answering desk for the PABX, or to an outside answering service, by routing to a system abbreviated dial key programmed to an external number.



**Figure 2-5 Dial 0 Call Routing**

Rerouted calls arrive at a console as NO ANSWER or BUSY recalls. From the display, the attendant can identify which tenant originated the recall. Calls rerouted to a *SUPERSET* telephone may ring into a different key for each tenant, thereby identifying the company that originated the recall. If the line is busy, a recall will automatically camp on to the *SUPERSET* telephone.

Several examples of Call Rerouting follow and a complete list is given in the *Customer Data Entry Practice*. Call Rerouting is described in detail in the *Features Description Practice*.

## **Direct Inward Dial Rerouting**

- 2.12 In some cases DID trunks may be shared among tenants. The block of numbers obtained is used by all the tenants, each with its own phone numbers listed in the telephone directory. The DID trunks are placed into one tenant which is programmed to be able to connect to the other tenants that share the DID trunks. If no one answers an incoming call, or if the number is busy, it may be rerouted to a specified answer point as a No Answer/Busy recall.

## **Direct-In Line Rerouting**

- 2.13 Incoming DIL trunks are directed to ring destinations in any tenant that they can connect to. An unanswered incoming call may be rerouted to a specified answer point (Day, Night 1, or Night 2) as a No Answer recall, from the tenant into which the trunk rang.

## **Subattendants/Enhanced Subattendants and Message Centers**

- 2.14 A company may set up its system with a main attendant console for receiving incoming calls and routing them to stations in the system. Usually the attendant who handled an incoming trunk call receives the No Answer recall. Any department wanting to handle its own recalls (for example, to take messages) may program alternate recall points for its calls. The department is programmed as a tenant and then uses call rerouting for its calls.

The person can take a message and set message waiting on the absent party's set. Members of a department may call their own "message center" by dialing 0. Since each tenant programs its own dial 0 answering point, people do not have to remember how to call their message desk. They can call another department's message desk by dialing its extension number.

## **Numbering Plan**

- 2.15 Since tenants are allowed to connect to each other, extension numbers must be unique across the entire system. For example, there may be one and ONLY ONE extension 201 in the PABX. Similarly, feature access codes must be the same throughout the system. SMDR records may be sorted for each tenant by their unique extension numbers.

## Automatic Route Selection with Multiple Tenants

- 2.16 Automatic Route Selection (ARS) enables the system to access, in a specific sequence, possible routes to a given destination. Routes are listed within the system in the order in which they are to be tried.

Route definition is based on trunk groups. Routes may be organized into lists of up to six route choices to arrive at a destination (refer to CDE Form 24, ARS: Route Lists). Since some tenants may be allowed to access only specific trunks, the ARS package checks the tenant interconnection table to verify if a caller may access a particular trunk. If the first choice trunks are not available to a particular tenant, the system skips them and takes the next choice trunks instead. The system automatically searches available trunks from first choice to last choice as it attempts to find a free trunk.

If tenant interconnection is allowed, shared trunks should be accessible from all participating tenants. ARS will optimize all calls made from these tenants. The administrator must collect and sort the SMDR reports for billing to each tenant.





# 3 Programming and CDE

This section describes how the customer data entry (CDE) package is programmed to set up the various functions already described in this document. The forms are more fully explained in the *Customer Data Entry Practice*.

## Tenant Assignments

- 3.1 Stations, sets, data sets, consoles, subattendants, enhanced subattendants, and trunks are assigned to a tenant when they are programmed into the system during CDE. The field labelled TEN is the tenant assignment field. Enter the tenant number (1 to 25) to which the station or *SUPERSET* telephone belongs. For example, the Station/*SUPERSET* telephones programming form (Figure 3-1) shows that extension 1301 and 1702 have both been assigned to Tenant 1.

16:08 12-DEC-94 alarm status = MAJOR

BAY	SLT	CCT	TEN	EXTN	CDS	COR	TYP	ANNOUNCE	NAME	ASSOC	COMMENTS	
1	01	10	1	1702	1	1	Stn					
1	01	11					Stn					
1	01	12					Stn					
1	03	01	1	1301	1	1	401					
1	03	02	1	1302	1	1	401					
1	03	03	1	1303	1	1	Sub					
1	03	04	1	1304	1	1	Sub					
1	03	05	1	1305	1	1	Sub					
1	03	06	1	1306	1	1	Sub					
1	03	07	1	1307	1	1	Sub					
1	03	08	1	1308	1	1	Sub					
1	03	09	1	1309	1	1	Sub					
1	03	03	1	1303	1	1	Sub					
1-MOVE				2-FIND EXT			3-EXPAND SET			4-		5-RANGE
6-QUIT				7-BAY/SLT/CCT			8-DELETE			9-REVIEW		0-

Figure 3-1 Station/*SUPERSET* Telephone Programming Form

Tenancing

### Interconnection Between Tenants

3.2 Each tenant may be allowed or not allowed to call any other tenant, as specified in the Tenant Interconnection Table. On each horizontal line, an asterisk ( \* ) indicates tenants that may be connected, and a period ( . ) indicates tenants that may not be connected from one tenant to another. The tenant being examined (horizontal row) can connect with each tenant that has an asterisk ( \* ) in its column.

The diagonal of the matrix is labelled 0 because a tenant may not be prohibited from calling within itself. Connection control is unidirectional; if tenant 1 may connect to tenant 2, tenant 2 may not necessarily be able to connect to tenant 1. This allows for a master tenant who could call everyone but who may not be called by everyone.

Figure 3-2 shows an example where tenant 1 may call any tenant except tenants 5 and 7.

The Tenant Interconnection Table can provide security for data devices connected to the PABX through data sets by restricting access only to data sets within the same tenant group. Each group of data users who are to be able to access only each other are placed within the same tenant. Data set calls between tenants are then restricted by programming Form 05, Tenant Interconnection Table.

15:58 12-DEC-94 alarm status = MAJOR

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
> 01	0	*	*	*	.	*	.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08	*	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09	*	*	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11	*	*	*	*	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
1-						2-						3-						4-TOP						5-BOTTOM		
6-QUIT						7-TENANT NUM						8-DISALLOW						9-						0-		

Figure 3-2 Tenant Interconnection Table

### Call Rerouting

3.3 The Call Rerouting Table (Figure 3-3) specifies where each tenant is to route different types of calls in Day, Night 1, or Night 2 Service. If no number is specified, the caller receives reorder tone.

For Dial-in and DID trunks, forwarding and intercepting is for calls that are dialed into the tenant currently being displayed. DID trunks, which can access multiple tenants, are routed by the tenant whose local directory number was dialed.

Night bells and Attendant/Subattendant/Enhanced Subattendant LDN keys are programmed into the system with directory numbers for reference and may be specified here along with stations, SUPERSET telephones, and logical lines.

13:47 14-DEC-94 alarm status = MAJOR

[TENANT : 1 ] TYPE OF CALL	DAY	N1	N2	
> Station Dial 0 Routing Priority Dial 0 Routing DID Recall Points On Busy DID Recall Points On No Answer DID Routing For Calls Into This Tenant DID Illegal # Intercept For This Tenant DID Vacant Number Routing For This Tenant DID Attendant Access Night Points Non-Dial-In Trunks Alternate Recall Points Dial-In Tie Recall Points On Busy Dial-In Tie Recall Points On No Answer Dial-In Tie Routing For Calls Into This Tenant	1801	1801	1801	
Station Dial 0 Routing	1801	1801	1801	
1-	2-TENANT NAME	3-	4-TOP	5-BOTTOM
6-QUIT	7-TENANT	8-DELETE	9-	0-

**Tenants**

**Figure 3-3 Call Rerouting Table**

**Note:** For programming CDE Form 19, Call Rerouting Table, DID and Dial-In Tie Trunk Attendant Access Night Points only work when the tie trunks are sent to the Attendant's extension number and not to an LDN key on the console.

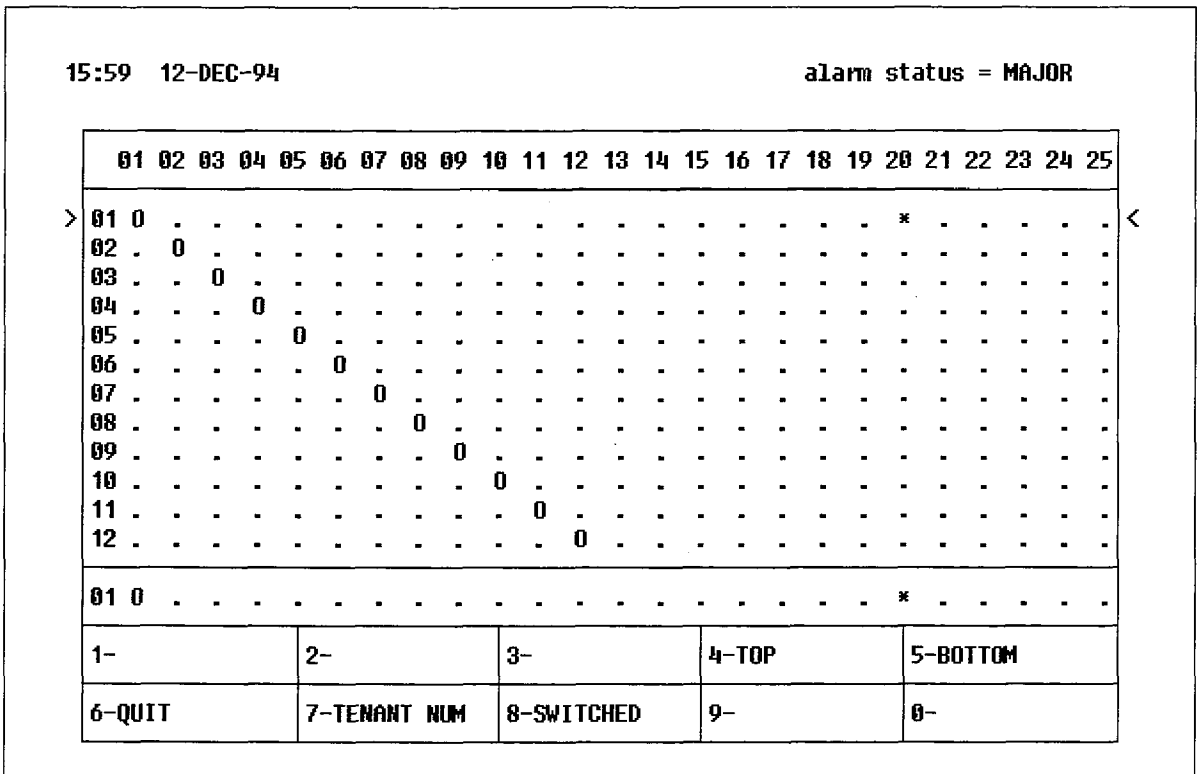
The following table defines which tenant controls the recall point for incoming calls that are not answered by the destination station:

TYPE OF CALL	CONTROLLING TENANT GROUP
DID Recall Points on Busy	Destination Station
DID Recall Points on No Answer	Destination Station
DID Routing for Calls into this Tenant	Destination Station
DID Illegal # Intercept this Tenant	Calling Trunk
DID Vacant Number Routing for this Tenant	Calling Trunk
DID Attendant Access Night Points	Calling Trunk <b>Note:</b> Will not recall on no answer if the ringing destination is the trunk's Night 1 answering point.
Non-Dial-In Trunks Alternate Recall Points	Destination Station
Dial-In Tie Recall Points on Busy	Destination Station
Dial-In Tie Recall Points on No Answer	Destination Station
Dial-In Tie Routing for Calls into this Tenant	Destination Station
Dial-In Tie Illegal # Intercept for this Tenant	Destination Station
Dial-In Tie Vacant Number Routing for this Tenant	Destination Station
Dial-In Tie Attendant Access Night Points	Destination Station
DND Intercept Routing for this Tenant	Destination Station
UCD/Attendant Recording for this Tenant	Destination Station
UCD on Hold Timeout for this Tenant	Destination Station
DISA Day Service Routing for this Tenant	Destination Station
CO Line Routing Points on No Answer	Destination Station

### Night Switching

3.4 A Tenant Night Switching Control matrix allows one or more tenants (such as a night security desk console, subattendant, enhanced subattendant or *SUPERSET* telephone) to switch all tenants into night service. This matrix is similar to the Tenant Interconnection Table.

The tenant being examined (horizontal row) will night-switch each tenant programmed with an ( \* ) in its column. This matrix is unidirectional. Tenant 1 may be programmed to night-switch tenant 2 but tenant 2 may not be programmed to night-switch tenant 1. Figure 3-4 shows an example where tenant 1 will night-switch all tenants into night service but all other tenants will only night-switch themselves. Tenant 1, therefore, is the "master tenant" for night switching control.



Tenancing

Figure 3-4 Tenant Night Switching Control

**NOTES**

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**SX-200<sup>®</sup> ML PABX**

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# Traffic Measurement

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## Table of Contents

<b>1. General</b> .....	1-1
Introduction .....	1-1
Reason for Issue .....	1-1
Traffic Analysis .....	1-1
<b>2. Traffic Measurement Methods</b> .....	2-1
General .....	2-1
Types of Traffic Counts .....	2-1
Peg Count .....	2-1
Usage Count .....	2-1
Types of Data Accumulated .....	2-2
System Activity .....	2-2
Features .....	2-3
Receivers .....	2-3
Channel Usage And Local Switching .....	2-4
Dynamic Records for Hunt Groups, Trunk Groups, and Trunks .....	2-4
Console .....	2-5
Hunt Groups .....	2-5
Trunk Groups .....	2-5
Trunks .....	2-6
Register Count Examples .....	2-6
Power Failure .....	2-6
<b>3. Traffic Measurement Commands</b> .....	3-1
Maintenance Terminal and Console .....	3-1
Traffic Measurement Commands .....	3-1
SET Command .....	3-1
STOP Command .....	3-2
SHOW Command .....	3-2
PRINT Command .....	3-3
READ Command .....	3-3
QUIT Command .....	3-3
<b>4. Installation</b> .....	4-1
General .....	4-1
Connection Requirements, Local Printer .....	4-1
<b>5. Reports</b> .....	5-1
General .....	5-1
Report Heading Description .....	5-1
Typical Report .....	5-1
336- port example .....	5-2
Condensed Traffic Report .....	5-3
Analyzing Traffic Reports .....	5-3



# 1 General

## Introduction

- 1.1 This Practice describes principles of telephone traffic measurement for a PABX, including programming and operating procedures for obtaining Traffic Measurement data.

**Note:** Traffic reports for features (such as ACD and Automated Attendant) are available only if the feature has been purchased.

## Reason for Issue

- 1.2 This Practice is issued to provide information about LIGHTWARE™ 16 ML software.

## Traffic Analysis

- 1.3 Traffic Analysis involves two activities: collecting data about the system (measurement) and interpreting this data (analysis) to optimize system performance. Once traffic measurement has been started in the PABX, it continues automatically until changed or stopped. Traffic measurement produces a single report for the system. The report includes all tenants, if a tenant service is provided.

Traffic measurement accumulates data in the form of peg counts and usage over a specified period of time. A peg count is the total number of times a facility (device, service, or feature) is accessed, regardless of the length of each access. Usage is the length of time or duration for which each facility is used. In certain applications, the peak value of facility usage during the period is also recorded. Call holding time is the average length of each call.

$$\text{usage (Erlangs)} = \frac{\text{peg counts (per hour)} \times \text{call holding time (in seconds)}}{3600 \text{ (seconds per hour)}}$$

$$\text{usage (CCS)} = \frac{\text{peg counts (per hour)} \times \text{call holding time (in seconds)}}{100 \text{ (seconds per CCS period)}} \quad (\text{CCS} = \text{centi-call second})$$

$$\text{usage (Erlangs)} = \frac{\text{usage (CCS)}}{36} \quad \text{or, } 1 \text{ Erlang} = 36 \text{ CCS}$$

Examine traffic measurement results to determine the adequacy of equipment provisioning, and the effectiveness of programmed options and features. Analyze the results to identify changes which can be implemented by reprogramming and/or reprovisioning to improve system performance.



## 2 Traffic Measurement Methods

### General

- 2.1 Traffic measurement data is accumulated in periods of 1 to 60 minutes in length. The start time, which is specified to the nearest minute, and the duration (required number of periods) identify the daily time when measurements are collected. These parameters are entered from the console or maintenance terminal. Once set, traffic measurement will begin at the same time each day and continue for the same duration, until changed or stopped.

The system clock times the length of each period; however, a guard timer also monitors each period and can terminate the period if it times out before the system clock. This situation would occur only if the system clock has been changed during a measurement period. The period length is not guaranteed if the clock is changed or the system is reset during a measurement period.

Data is accumulated in active registers during each measurement period. At the end of each period, data is transferred to storage registers and the active registers are set to zero in preparation for receiving data from the next period. The data held in these storage registers can be printed, or written to magnetic tape or a similar storage device. At the end of each period, the data in the storage registers is replaced by the data accumulated in the active registers during the period. If the data was not retrieved from the storage registers during a period, new data received at the end of that period overwrites the data, and it is lost. This sequence then repeats for the specified duration.

### Types of Traffic Counts

- 2.2 Two types of traffic counts are used in traffic measurement: peg counts and usage counts.

#### Peg Count

Each time a facility (device, service, or feature) is used, the call processing software increments its register by one count. A peg count is not concerned with the length of time of usage.

#### Usage Count

Usage counts can be divided into normal usage and maximum value counts.

**Normal Usage:** The amount of time for which a facility is used can be calculated from the usage count. At 10-second intervals, the call processing software scans each facility and increments the register if it is in use. The usage count is directly proportional to the time that a circuit is in use.

Each accumulated usage count is converted into CCS or Erlangs for the traffic measurement report. The maximum usage is 6554 CCS or 182 Erlangs which will occur if 182 devices in a facility are all busy for 1 hour. The consoles are scanned every second to increase accuracy in the average waiting time for an answered call.

**Maximum Value Count:** This type of count is obtained in a similar manner to usage count, except that the value obtained at each scan does not increment the register; instead, it is compared with the register's value and updates the register only if its value exceeds that in the register. This value reflects the scanned maximum count of the usage of a resource. Since this is a scanned value, it is possible that a busy peg can exist without the maximum count reaching the number available.

## Types of Data Accumulated

2.3 The following data is accumulated during traffic measurement:

### System Activity

System activity data indicates the extent of activity on the basic system (maximum peg count = 65535). Counts include:

**1 s Dial Tone:** Incremented every time an extension or dial-in trunk has to wait 1 or more seconds for dial tone. This peg is not incremented by the Automated Attendant feature.

**2 s Dial Tone:** This is incremented each time an extension or dial-in trunk has to wait 2 or more seconds for dial tone. This peg is not incremented by the Automated Attendant feature.

**3 s Dial Tone:** Incremented every time an extension or dial-in trunk has to wait 3 or more seconds for dial tone. This peg is not incremented by the Automated Attendant feature.

**Console Calls:** A count of all calls directed to any console, including calls that hang up before they are answered.

**Console Orig.:** A count of all console originations.

**Dataset Orig.:** This count is incremented each time a data call is originated either by ADL or DTRX.

**Dial 0 Calls:** A count of all dial 0 calls that are answered at any console. It includes priority dial 0 calls and all calls directed to Console directory numbers that are not answered.

**Ext Origin.:** Each time an idle extension goes off-hook, it causes this register to increment by one count. It does not increment when a ringing extension goes off-hook.

**Intercepted:** A count of all intercepted calls that are answered at all consoles.

**Recall:** A count of all console-answered recalls.

**Activity:** Each time a device has activity, this count is incremented.

**Illegal Calls:** This count is incremented whenever an extension, console or dial-in trunk dials a vacant or illegal number.

## Features

Feature data indicates the activity of those features which have been programmed for the installation (maximum peg count = 65535). Counts include:

**ADL Access:** Successful ADL feature accesses.

**Callback:** Callbacks that have been set up.

**Call Forward:** All call forwarding set-ups (programming) at any extension or console.

**Call Hold:** Number of hard holds by an extension.

**Call Park:** Number of call parks.

**Call Pickup:** Legally dialed call pick-ups, including local pick-ups or directed pick-ups from extensions.

**Camp-on:** Camp-ons to any device (including trunk groups and hunt groups) by another device for extension-to-trunk, extension-to-extension, and trunk-to-extension.

**Console Conf.:** The number of times consoles use the conference softkey.

**Console Hold:** The number of all call-holds made at the console.

**DND:** Do not disturb set-ups.

**DTRX Session:** Successful DTRX session accesses.

**Ext. Conf.:** Extension conferences.

**Flash Hold:** Transfers or flash and holds from an extension or console.

**Guest Room:** Guest Room softkey depressions.

**Hold Pickup:** Successful hold pick-ups (calls held at the console in a hold slot and picked up using the dialed console and hold slot number).

**Maid in Room:** Number of accesses to Feature Access Code 35, Maid in Room.

**Msg Waiting:** Applied message waiting, from any source in any manner.

**Override:** Completed busy overrides.

**Paging:** Successful pager accesses.

**Serial Call:** Console serial calls set up by all consoles.

**TAFAS:** TAFAS (night answer) answered from dialed feature access code or SUPERSET™ softkey.

**Wake-Up:** Call wake-up set-ups.

**UCD Loginout:** UCD agent logins and logouts.

## Receivers

This data records the activity on receivers within the system (maximum peg count = 65535). The PABX Digital bay implements DTMF receivers using a fixed number of dedicated circuits. Sample traffic measurements have been included in Chapter 5, Reports. The following counts are recorded:

**Peg:** The total number of times that thereceivers were accessed during the measurement period.

**Usage:** Represents the total usage (Erlangs or CCS) for the receivers during the measurement period. Does not include busied-out receivers (max = 6553.5 ccs).

**Busy Peg:** The number of times a call could not immediately be allocated a receiver due to busy conditions.

**Maximum in Use/Available:** The scanned maximum count of the number of receivers in use during the period and the number that are available for use. Does not include busied-out receivers.

### Channel Usage And Local Switching

This data records activity between bays and within each peripheral bay. The following counts are recorded:

**Bay Number:** Identifies the bay for which data is being accumulated.

**Channel Usage:** Usage of channels available to the bay. Does not include channels allocated for music or tones (maximum = 6553.5 ccs).

**Max Channel/Available:** The scanned maximum number of channels in use and the number available for use. Does not include channels allocated for music or tones.

**Local Switching Usage:** Usage of analog peripheral bay local switching (maximum = 6553.5 ccs).

**Max Local Switching:** The scanned maximum number of local switches found in an analog peripheral bay.

### Dynamic Records for Hunt Groups, Trunk Groups, and Trunks

2.4 The number of system, feature, receiver and channel pegs or records is fixed for each system. The number of console, hunt group, trunk group, and trunk records can vary. At the beginning of each period, records are allocated for consoles, trunk groups, and trunks. Each console, hunt group, and trunk group that is programmed in CDE is allocated one record. The programmed trunks are allocated the remaining records, in ascending trunk number order. A total of 300 records is allocated.

**Example:** The following traffic could be recorded:

- 4 consoles
- 8 hunt groups
- 15 trunk groups
- 70 trunks, numbered 1 to 70

97 records (total) 203 records still available (98 - 300)

The following data is accumulated during traffic measurement:



## Console

This data records activity of each console on the system. Console activity includes the following information:

**Console Number:** Directory number of the console. The console directory number is determined at the time of CDE Entry in Form 07, Console Assignments. If this console has been deleted, it will display ??? indicating that the directory number could not be determined.

**Usage:** Non-idle use of the console. The console is non-idle when it is using a channel. The console is idle when it is ringing, using the application key, or using the select features key (maximum = 36 CCS).

**Call Waiting Usage:** Usage of the Console queue for all calls presented to this console, either answered or unanswered (maximum = 655.35 CCS).

**Calls Answered:** Calls answered using the console. Includes softkey and ANSWER key answers (maximum peg count = 65535).

**Avg Waiting Time:** Average waiting time for a call directed to the console to be answered by the console.

## Hunt Groups

The activity of each hunt group is recorded. Hunt group activity includes the following information:

**Hunt Group Number:** Programmed hunt group number.

**Peg:** Number of accesses to a hunt group, including busy attempts (maximum = 65535).

**Skip Peg:** Number of failures to get a receiver, which resulted in skipping the recording and routing to the default destination (for Automated Attendant Hunt Groups only).

**Usage:** Usage of all devices in the hunt group (maximum = 6553.5 CCS).

**Busy Peg:** Number of times the hunt group was found busy by a caller.

**Max in Use/Available:** Scanned maximum number of devices in the hunt group that were busy (busied-out devices are not included) and the number of devices available for use in the group.

## Trunk Groups

This data records the activity of each trunk group. Trunk group activity includes the following information:

**Trunk Group Number:** Programmed trunk group number.

**Peg:** Number of accesses to a trunk group, including busy attempts (maximum = 65535).

**Usage:** Usage of all trunks in the trunk group making outgoing calls, measured in CCS or Erlangs (maximum = 6553.5 CCS).

**Busy Peg:** Number of times the trunk group was busy (maximum = 255).

**Max in Use/Available:** Scanned maximum number of trunks in the trunk group that were busy (busied-out trunks are not included). The number of available trunks in a trunk group is determined at the time of the traffic measurement report and is not in the storage registers.

## Trunks

The activity of each trunk is also recorded. Trunk activity includes the following information:

**Trunk Number:** List of all trunk numbers that were accessed.

**Peg in:** Total number of times the trunk was seized for incoming calls (maximum = 255).

**Usage In:** Represents the usage (in Erlangs or CCS) for incoming calls on the trunk (maximum = 36 ccs).

**Peg Out:** Total number of times the trunk was seized for an outgoing call on the trunk (maximum = 255).

**Usage Out:** Represents the usage (in Erlangs or CCS) for outgoing calls on the trunk (maximum = 36 ccs).

## Register Count Examples

- 2.5 A call which lasts for 100 seconds has a value of 1 CCS (one hundred call-seconds). One Erlang equals 36 CCS or 3600 call seconds. Usage is measured in 10-second units; for example, a usage count of 128 (128 x 10 s) represents 1280 seconds of usage, equivalent to 12.8 CCS or 0.3556 Erlang (36 CCS equals 1 Erlang). The following example illustrates these "count" methods.

**Extension Originations Peg Count** - Each time an idle extension goes off-hook, it causes the register to increment by one count. Since it is a measure of the number of calls originated by the extensions, it does not increment when a ringing extension goes off-hook to answer a call. For example, if this register has a value of 858, the number of call originations (or off-hook originations) during the period totalled 858.

**Trunk Group Usage** - Each time the system scans the members of this trunk group, at 10 second intervals, it counts the number of members that are busy. A register value of 273 indicates that members were busy for 273 X 10 = 2730 seconds (27.3 CCS) during the measurement period.

**Usage Measurement** - Device usage is measured every ten seconds; therefore, each usage measurement is accurate to +/- 10 seconds (0.1 CCS or 0.0028 Erlang). Console usage measurement is accurate to +/- 1 second (0.01 CCS or 0.00028 Erlang) because they are scanned every second.

## Power Failure

- 2.6 If system power fails, the current traffic measurement will be lost, and the latest traffic report will also be lost if it had not been output. When power is restored, traffic measurements will restart and continue until the end of the scheduled period. The new start time will begin at system power-up.

# 3 Traffic Measurement Commands

## Maintenance Terminal and Console

3.1 The maintenance terminal or console is used to enter the data required to start traffic measurements, print measurements, monitor status, or change traffic measurement parameters. Refer to the *RS-232 Maintenance Terminal Practice* for instructions on using the terminal. At the maintenance terminal or console, select the MAINTENANCE application. From the MAINTENANCE main menu, select TRAFFIC\_MEAS (softkey 5).

## Traffic Measurement Commands

1- SET	2- SHOW	3- PRINT	4- READ	5-
6- QUIT	7-	8-	9- STOP	0-

SET Set traffic report information  
SHOW Status of current traffic report that contains information defined by the SET command  
PRINT Print the latest traffic report  
READ Read the latest traffic report  
STOP Stop current traffic measurements or stop printing report

### SET Command

1- UNITS	2- PERIOD	3- DURATION	4- AUTOPRINT	5- CANCEL
6-	7-START_TIME	8- CONDENSED	9-	0-

UNITS CCS or Erlangs  
PERIOD 1 to 60 minutes (default = 60)  
DURATION Number of periods (default = 8)  
AUTOPRINT Print report automatically after each period (toggles ON or OFF)  
CANCEL Quit SET commands  
START TIME Presented in hours:minutes format (hh:mm)  
CONDENSED Condensed report (toggles ON or OFF)

Select the SET command to enter or change any traffic measurement parameters. Use the prompts to change required data and to exit from the TRAFFIC\_MEAS function. Setting START\_TIME to a specific time prepares the traffic data collection facility. Data collection is only started when that time is reached. Until then, the PERIOD, DURATION, and START\_TIME parameters can be changed. Once traffic measurements are started, a STOP command must be issued first, followed by other commands. The AUTOPRINT and CONDENSED parameters can be changed during a traffic measurement period. At the beginning of each period of current traffic measurement, the pegs and dynamic records are initialized. If a new trunk group was set up by CDE, it would not be included in the traffic report until the next period.

### STOP Command

When the STOP softkey is pressed, two new softkeys appear (TRAFFRPT and PRINT), allowing you to select the activity you wish to stop.

TRAFFRPT - Stops the traffic measurement which is currently active. No report will be made of the incomplete collected data.

PRINT - Stops a printout from being sent to the PRINTER port.

**Note:** The STOP command will not stop an AUTOPRINT in progress. The AUTOPRINT command must be set to OFF between printouts to stop printouts.

### SHOW Command

When you press the SHOW softkey, you will see a STATUS softkey displayed. Pressing the STATUS softkey will provide a summary report on the current traffic measurement parameters.

```

STATUS:           Activated/OFF
START TIME:       hh:mm (hours:minutes)
DATA COLLECTION: Running/OFF
PERIOD:           mm (minutes)
DURATION:         nn (periods)
AUTOPRINT:        ON/OFF
UNITS:            Erlangs/CCS
CONDENSED REPORT:ON/OFF
    
```

START TIME and DATA COLLECTION are not displayed if STATUS is set to OFF.

To set STATUS to off:

```

press STOP
press TRAFFRPT
press ENTER
    
```

The DATA COLLECTION field indicates whether data is currently being collected (if traffic is being measured). When the field is set to OFF, either the daily start time has not been reached, or, the required number of periods have been completed since the start time. In either case, no data is currently being collected.

**PRINT Command**

Pressing the PRINT softkey causes the latest traffic report held in the system to be printed immediately.

**READ Command**

This softkey command causes the latest traffic report in the system to be displayed on the maintenance terminal where it can be read by the user. READ is only available at the maintenance terminal. If the console softkey is pressed, the following message appears on the LCD display:

This function is not available for this device

**QUIT Command**

This softkey command allows the user to exit from Traffic Measurement mode at the console or maintenance terminal.



# 4 Installation

## General

- 4.1 To meet Traffic Measurement requirements during system installation, you must;
1. determine the required traffic parameters
  2. determine the required output device
  3. install the output device
  4. program the traffic parameters and output device for this installation.

## Connection Requirements, Local Printer

- 4.2 The *Installation Information Practice* details the installation. Refer to the *General Maintenance Information Practice* to reference System Set Commands. This section explains how to assign printers during installation and to perform initial maintenance programming. The Traffic Measurement data may be output to a printer, magnetic recording device, or the maintenance terminal. If required, a Data Demultiplexer may be used and the Traffic Measurement data directed to one output of it.

When a backplane printer port is used, it should be located as near as possible to the PABX and connected to the PABX data port with a 25-conductor connectorized cable, not longer than 4.5 m (15 ft) in length.

A Printer may be specified in CDE Form 34, Directed IO, which will allow all Traffic Measurement printouts to be sent to this printer which is connected to a port equipped with an asynchronous data set. Refer to the *Customer Data Entry Practice* for further details.

**Note:** Ensure that the length of time the printer requires to print one report is less than the length of time specified for a traffic measurement period; otherwise, reports will be generated faster than the printer can print them.





# 5 Reports

## General

- 5.1 The standard traffic measurement report provides a printed record of the data in the storage registers (usually the measurements taken during the preceding period). The report includes headings which make the data easy to read.

## Report Heading Description

- 5.2 Port size and system number are unique to each system and are programmed when the system is initially configured. In the following typical report, the Generic is 100Y, where Y is the last digit of the software Generic installed in the PABX. ZZZZZZ is an optional field which defines software loads that include special features; for example, an ACD load displays ACD PC. The port size is represented by XXXP. The system identifier is represented by nnn (if one has not been programmed, 0 appears). The CHANNELS data for a maximum system configuration is printed. Local Usage and Max Local apply only to analog bays.

## Typical Report

- 5.3 In this report, four different CHANNELS examples are given. In an actual system printout, only one CHANNELS report (for that systems port configuration) is printed.

SX-200 DIGITAL Generic 100Y ZZZZZZ XXXP TRAFFIC REPORT

SYSTEM nnn  
27-AUG-94  
9:00 to 10:00

### SYSTEM ACTIVITY:

1s dial tone	0	2s dial tone	0	3s dial tone	0
Console calls	0	Console orig.	0	Dataset orig.	7
Dial 0 calls	0	Ext. origin.	66	Intercepted	0
Recall	0	Activity	1775	Illegal calls	1

### FEATURES:

ADL access	0	CallBack	0	Call hold	4
Call Forward	2	Call Park	0	Call Pickup	0
Campon	1	Console conf.	0	Console hold	0
DND	0	DTRX session	6	Ext. conf.	0
Flash hold	2	Guest Room	0	Hold pickup	0
Maid in Room	0	Msg Waiting	1	Override	0
Paging	0	Serial call	0	TAFAS	0
Wakeup	0	UCD Login/out	0		

DTMF RECEIVERS:

Peg	Usage	Busy Peg	Max/Avl
203	8.10 ccs	5	4 / 12

PSEUDO DTMF RECEIVERS:

Peg	Usage	Busy Peg	Max/Avl
203	8.10 ccs	0	4 / 12

**336- port example**

CHANNELS:

Bay	Usage	MaxAvl	Local Usage	Max local
1	17.60 ccs	2 / 123		
2	85.90 ccs	6 / 61		
3	344.60 ccs	13 / 94		
4	50.60 ccs	5 / 94		

CONSOLE:

Directory Number	Usage	Calls Answered	Calls Waiting Usage	Avg. Waiting Time (sec)
4900	0.00 ccs	0	0.00 ccs	0.00
4888	0.00 ccs	0	0.00 ccs	0.00

HUNT GROUPS:

Number	Peg	Usage	Busy Peg	Max/Avl
1	3	6.60 ccs	0	3 / 3
2	5	139.90 ccs	0	5 / 5
3	0	35.40 ccs	0	1 / 3

Number	Peg Skip	Peg	Usage	Busy Peg	Max/Avl
4	6	1	123.00 ccs	1	2 / 3

TRUNK GROUPS:

Number	Peg	Usage	Busy Peg	Max/Avl
1	6	22.00 ccs	0	2 / 3
2	26	23.40 ccs	0	3 / 7
4	0	0.00 ccs	0	0 / 1
5	0	0.00 ccs	0	0 / 1

TRUNKS:

Number	Peg In	Usage In	Peg Out	Usage Out
1	0	0.00 ccs	2	1.40 ccs
2	0	0.00 ccs	2	0.60 ccs
3	0	0.00 ccs	2	19.90 ccs
4	0	0.00 ccs	0	0.00 ccs
5	0	0.00 ccs	0	0.00 ccs
20	5	5.10 ccs	3	2.40 ccs
22	6	6.20 ccs	4	0.80 ccs
24	6	1.20 ccs	4	2.50 ccs
26	5	2.10 ccs	4	7.70 ccs
28	5	4.40 ccs	4	3.40 ccs

30	4	4.90 ccs	4	4.90 ccs
32	4	0.90 ccs	3	1.80 ccs
40	0	0.00 ccs	0	0.00 ccs
42	0	0.00 ccs	0	0.00 ccs

### Condensed Traffic Report

5.4 The condensed report contains the data only, in decimal form. Register numbers and assignments are known for each particular software Generic. The dynamic section of the report requires a header for each group of data and the device number beside the device data. A program which analyses the data knows the format in which the condensed report is structured, and can interpret the data accordingly.

### Analyzing Traffic Reports

5.5 From reading the Traffic Report, the following total traffic values can be determined:

$$\text{Total Traffic} = \text{Sum of channel usage} - \text{Receiver usage}$$

$$\text{Number of Calls} = \text{Extension Originations} + \text{Console Originations} + \text{sum of incoming trunk pegs}$$

The following table lists typical business traffic:

Traffic Type	Number of Ports	Traffic / Port (CCS)	Total CCS
Light	250	1.4	350
	300	1.4	420
	350	1.4	490
	400	1.4	560
	480	1.4	672
Medium	250	3.0	750
	300	2.9	870
	350	2.9	1015
	400	2.9	1160
	480	2.9	1392
Heavy	250	5.5	1375
	300	5.4	1620
	350	5.4	1890
	400	5.4	2160
	480	5.4	2592

Traffic Measurement

**NOTES**

**SX-200<sup>®</sup> ML PABX**

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# Hotel/Motel Feature Package Description

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## Table of Contents

<b>1. Introduction</b> .....	1-1
General .....	1-1
Intended Audience .....	1-1
Document Structure and Contents .....	1-1
Referenced Documents .....	1-2
<b>2. System Description</b> .....	2-1
Introduction .....	2-1
Hotel/Motel Feature Package .....	2-1
Feature Access .....	2-2
List of Features .....	2-2
Attendant Console Access .....	2-5
Front Desk Terminal Access .....	2-9
Keyboard Data Entry .....	2-16
SUPERSET™ Display Telephone Access .....	2-17
Industry-Standard Telephone Access .....	2-19
PABX Access .....	2-20
System Configuration .....	2-21
Hardware .....	2-21
Feature Description .....	2-23
Attendant Message Waiting Setup and Cancel 2-23	
Guest Room Message Indication .....	2-23
Audits 2-24	
Attendant Message Register Audit .....	2-24
Room Status Audit(s) .....	2-25
Room Type Audit .....	2-29
Wakeup Audit .....	2-30
Wakeup/Room Condition Audit .....	2-30
Automatic Wakeup 2-31	
Attendant Wakeup .....	2-31
Guest Room Wakeup .....	2-33
Call Blocking .....	2-34
Call Restriction .....	2-35
Check Out .....	2-36
Do Not Disturb .....	2-36
Guest Names .....	2-38
Guest Room SUPERSET Key Programming .....	2-39
Maid in Room .....	2-40
Maid in Room Status Display - SUPERSET 420™ and SUPERSET 430™	
Telephones .....	2-42
Message Lamp Test .....	2-43
Message Register .....	2-43
Multi-User .....	2-44
PMS Interface .....	2-45
Room Condition .....	2-45
Room Occupancy .....	2-48
Room Status Display .....	2-50
Attendant Console and Front Desk Terminal .....	2-50
Room Types and Room Codes .....	2-51
Searches .....	2-52
Guest Search .....	2-52
Room Number Search .....	2-53

Room Type Search .....	2-53
Maid in Room Search .....	2-54
Room Status Search .....	2-55
Single Line Reports .....	2-57
<i>SUPERSET</i> Telephone Room Status Display .....	2-59
Property Management System (PMS) .....	2-60
PMS-Specific Features .....	2-60
Feature Interactions .....	2-61
Keyboard Commands .....	2-62
Feature Availability .....	2-63
<b>3. Hardware Installation .....</b>	<b>3-1</b>
General .....	3-1
<b>4. Programming Hotel/Motel .....</b>	<b>4-1</b>
General .....	4-1
Programming Procedures .....	4-1
Attendant Message Waiting .....	4-14
Audits .....	4-15
Automatic Wakeup .....	4-17
Call Blocking .....	4-19
Call Restriction .....	4-20
Do Not Disturb .....	4-21
Guest Room <i>SUPERSET</i> Key Programming .....	4-21
Maid in Room .....	4-22
Maid in Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones .....	4-22
Message Lamp Test .....	4-23
Message Register .....	4-24
Room Status .....	4-25
Room Types and Room Codes .....	4-26
Single-Line Reports .....	4-27
<i>SUPERSET</i> Telephone Room Status Display .....	4-28
<b>5. Using The Hotel/Motel Feature Package .....</b>	<b>5-1</b>
Accessing Hotel/Motel from the Attendant Console .....	5-1
Attendant Message Waiting Setup and Cancel .....	5-2
Audits .....	5-3
Automatic Wakeup .....	5-4
Call Blocking .....	5-5
Call Restriction .....	5-5
Do Not Disturb .....	5-6
Message Register .....	5-7
Room Status Display .....	5-8
Searches .....	5-10
Accessing Hotel/Motel with a Front Desk Terminal .....	5-11
Attendant Message Waiting Setup and Cancel .....	5-14
Audits .....	5-15
Automatic Wakeup .....	5-17
Call Restriction (known as Call Privilege on Front Desk Terminal) .....	5-19
Check Out .....	5-20
Do Not Disturb .....	5-21
Guest Names .....	5-22
Maid in Room Display .....	5-23
Message Register .....	5-23
Room Condition .....	5-24



Room Occupancy .....	5-25
Searches .....	5-26
Accessing Hotel/Motel with a Telephone .....	5-29
Attendant Message Waiting - Guest Room Message Retrieval .....	5-29
Maid in Room .....	5-30
Maid in Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones .....	5-31
Room Status Display - <i>SUPERSET</i> Telephone .....	5-32

## List of Figures

Figure 2-1	Hotel/Motel Features Available on the Console .....	2-5
Figure 2-2	Attendant Console Access to Hotel/Motel Features .....	2-6
Figure 2-3	Guest Room Display During a Call from the Guest Room .....	2-6
Figure 2-4	Guest Room Display with Idle Console .....	2-6
Figure 2-5	Console Display after Pressing GUEST ROOM Softkey .....	2-7
Figure 2-6	Console Display after Pressing VAC/DIRTY RM Softkey .....	2-7
Figure 2-7	Console Display if no VAC/DIRTY Rooms .....	2-7
Figure 2-8	Hotel/Motel Features Available on the Front Desk Terminal .....	2-10
Figure 2-9	House Statistics Screen .....	2-11
Figure 2-10	Room Search Mechanism .....	2-12
Figure 2-11	Vacant Room Template .....	2-13
Figure 2-12	Hotel/Motel Features Available on a <i>SUPERSET</i> Display Telephone .....	2-17
Figure 2-13	Occupancy/Condition Display on <i>SUPERSET 420</i> Telephone .....	2-18
Figure 2-14	Hotel/Motel Features Available on Industry-Standard, <i>SUPERSET 401+</i> <sup>™</sup> , and <i>SUPERSET 410</i> <sup>™</sup> Telephones .....	2-19
Figure 2-15	Hotel/Motel Features Available Only from the PABX .....	2-20
Figure 2-16	Hotel/Motel System Configuration .....	2-22
Figure 2-17	Message Register Audit .....	2-25
Figure 2-18	The Four Sections of the Room Status Audit (Attendant Console) .....	2-27
Figure 2-19	Room Status Audit for All Rooms of a Particular Type (Front Desk Terminal) .....	2-28
Figure 2-20	Room Type Audit (Front Desk Terminal) .....	2-29
Figure 2-21	Automatic Wakeup Audit .....	2-30
Figure 2-22	Breakdown of the Add Name Command .....	2-61
Figure 5-1	House Statistics Screen after Log On .....	5-13
Figure 5-2	Wakeup Time Prompt .....	5-18

## List of Tables

Table 1-1	Intended Audience .....	1-1
Table 1-2	Contents of this Practice .....	1-1
Table 2-1	Hotel/Motel Features .....	2-2
Table 2-2	Attendant Console Key Functions .....	2-8
Table 2-3	Front Desk Terminal Softkey Functions .....	2-13
Table 2-4	Front Desk Terminal Hard Key Functions .....	2-16
Table 2-5	<i>SUPERSET 420/SUPERSET 430</i> Access Functions .....	2-18
Table 2-6	Industry-Standard Telephone Access Functions .....	2-19
Table 2-7	PABX Access Functions .....	2-20

Table 2-8	Hotel/Motel Hardware	2-21
Table 2-9	Audits by Terminal Type	2-24
Table 2-10	Room Status Audits	2-26
Table 2-11	Automatic Wakeup	2-32
Table 2-12	Do Not Disturb	2-37
Table 2-13	Guest Names	2-38
Table 2-14	Maid in Room	2-40
Table 2-15	Maid in Room	2-41
Table 2-16	Maid in Room Status Display	2-42
Table 2-17	Room Condition	2-46
Table 2-18	Room Occupancy	2-48
Table 2-19	Room Status Display	2-50
Table 2-20	Room Types (Examples)	2-51
Table 2-21	Room Number Search	2-53
Table 2-22	Maid in Room Search	2-54
Table 2-23	Room Status Search	2-55
Table 2-24	Single Line Reports	2-58
Table 2-25	<i>SUPERSET</i> Telephone Room Status Display	2-59
Table 2-26	PMS Keyboard Commands	2-62
Table 2-27	Feature Availability	2-63
Table 5-1	Hotel/Motel Features Accessed from the Attendant Console	5-1
Table 5-2	Room Status	5-9
Table 5-3	Hotel/Motel Features Accessed from the Front Desk Terminal	5-11
Table 5-4	Hotel/Motel Features Accessed from Telephones	5-29

### List of Charts

Chart 3-1	Installing Hardware	3-1
Chart 4-1	Programming the Hotel/Motel Application	4-2
Chart 4-2	Programming for PMS	4-11
Chart 4-3	Programming Attendant Message Waiting Setup and Cancel	4-14
Chart 4-4	Programming Attendant Message Register Audit	4-15
Chart 4-5	Setting Up Room Status Audit	4-15
Chart 4-6	Programming Wakeup Audit	4-16
Chart 4-7	Producing an Automatic Audit of Wakeups/Changing Room Status at a Predetermined Time	4-16
Chart 4-8	Setting System Time	4-17
Chart 4-9	Programming Guest Room Automatic Wakeup	4-17
Chart 4-10	Programming Attendant Automatic Wakeup	4-18
Chart 4-11	Programming Call Blocking	4-19
Chart 4-12	Programming Call Restriction	4-20
Chart 4-13	Programming Do Not Disturb	4-21
Chart 4-14	Guest Room <i>SUPERSET</i> Key Programming	4-21
Chart 4-15	Programming Maid in Room Status	4-22
Chart 4-16	Programming Maid in Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones	4-22
Chart 4-17	Programming Message Lamp Test	4-23
Chart 4-18	Programming Message Register	4-24
Chart 4-19	Setting up Room Status	4-25

Chart 4-20	Programming Room Types and Room Codes	4-26
Chart 4-21	Enabling Single-Line Reports	4-27
Chart 4-22	Programming Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones	4-28
Chart 5-1	Setting Up Message Waiting - Attendant	5-2
Chart 5-2	Canceling Message Waiting - Attendant	5-2
Chart 5-3	Requesting Audits	5-3
Chart 5-4	Setting Automatic Wakeup	5-4
Chart 5-5	Canceling Automatic Wakeup	5-4
Chart 5-6	Setting Up/Removing Call Blocking	5-5
Chart 5-7	Setting Up Do Not Disturb - Attendant	5-6
Chart 5-8	Canceling Do Not Disturb - Attendant	5-6
Chart 5-9	Displaying the Message Register for an Extension	5-7
Chart 5-10	Clearing the Message Register	5-7
Chart 5-11	Checking / Changing Status of a Room (Call Restriction, Room Occupancy, Room Condition, Maid)	5-8
Chart 5-12	Searching for a Particular Room by Number	5-10
Chart 5-13	Searching for Rooms by Status (Room Status, Room Condition, Maid)	5-10
Chart 5-14	Accessing the Hotel/Motel Feature Package from a Front Desk Terminal	5-12
Chart 5-15	Refreshing the House Statistics Screen	5-13
Chart 5-16	Logging Off	5-13
Chart 5-17	Setting Up/Canceling Attendant Message Waiting	5-14
Chart 5-18	Printing a Message Register or Wakeup Audit	5-15
Chart 5-19	Printing a Room Type Audit	5-15
Chart 5-20	Printing Room Status Audits	5-16
Chart 5-21	Setting an Automatic Wakeup	5-17
Chart 5-22	Canceling a Wakeup Call	5-19
Chart 5-23	Changing Call Privilege	5-19
Chart 5-24	Check Out (Single Key)	5-20
Chart 5-25	Setting / Clearing Do Not Disturb	5-21
Chart 5-26	Entering Guest Names	5-22
Chart 5-27	Removing Guest Names	5-23
Chart 5-28	Checking the Maid in Room Status	5-23
Chart 5-29	Clearing the Message Register	5-24
Chart 5-30	Changing the Condition Field	5-24
Chart 5-31	Changing the Occupancy Field	5-25
Chart 5-32	Guest Search	5-26
Chart 5-33	Searching for Particular Rooms	5-27
Chart 5-34	Searching for a Guest Room by Number	5-27
Chart 5-35	Searching for a Particular Room Type	5-28
Chart 5-36	Retrieving a Message	5-29
Chart 5-37	Changing Maid in Room Status from the Room Telephone	5-30
Chart 5-38	Monitoring Maid in Room Status from <i>SUPERSET</i> Display Telephone	5-31
Chart 5-39	Monitoring Room Status from <i>SUPERSET</i> Display Telephone	5-32



# 1 Introduction

## General

- 1.1 This practice describes the hotel/motel features offered on the SX-200® ML PABX.

**Hotel/Motel Feature Packages.** The hotel/motel feature package integrates standard PABX features with custom hotel/motel features. The PABX can also interface with a property management system (PMS).

The SX-200 ML PABX with SX-200 ML LIGHTWARE 16™ can operate with either the Hotel/Motel Package or the Property Management System package, but not both.

### Intended Audience

The intended audience for this practice is described in Table 1-1.

<b>Audience</b>	<b>Section</b>
Those who need a general description of the Hotel/Motel application and the different Hotel/Motel features.	2. System Description
Installers	3. Installation
System programmers	4. Programming
Installers, programmers, users	5. User Information

### Document Structure and Contents

The contents of this practice is described in Table 1-2.

<b>Section</b>	<b>Contents</b>
1. Introduction	An introduction to the practice, including intended audience, introduction to Hotel/Motel applications, and the list of documents that have been referenced in this practice.
2. System Description	A description of the Hotel/Motel application including the features accessible from different types of terminals.
3. Installation	Installing the hardware.
4. Programming Hotel/Motel	Programming the PABX to run the Hotel/Motel feature package.
5. Using the Hotel/Motel Feature Package	How to use the Hotel/Motel features from different peripherals.

### **Referenced Documents**

The documents referenced in this practice include:

- Peripheral Devices Practice
- Installation Information Practice
- Customer Data Entry Practice
- Station Message Detail Recording Practice
- Troubleshooting Practice

## 2 System Description

### Introduction

- 2.1 The Hotel/Motel feature package is provided by MITEL and is supported by the *SX-200* ML PABX.

#### Hotel/Motel Feature Package

The Hotel/Motel feature package is designed specifically for use in the hotel environment. The features facilitate guest-related activities such as checking guests in and out, providing automatic wake up calls and taking messages. The Hotel/Motel feature package can be used to configure the telephone activities that guests are allowed (such as blocking calls between rooms) and to record what use is made of room telephones. It also assists with the administration of hotel activities such as keeping an accurate record of room occupancy and tracking housekeeping activity and status.

#### Attendant Activities.

Using the Hotel/Motel feature package, the attendant can:

- check the current room status
- modify room status (assign guest rooms)
- set automatic wakeup calls for guests
- request reports of all current wakeup calls, message register counts, and status of rooms
- inhibit room to room calling
- assign outgoing call privileges on a room to room basis
- request a message register audit

#### Staff/Management Activities.

Hotel/Motel staff or management can:

- record the number of calls made from each guest room (automatic message register for guest rooms)
- receive automatic room status conversion
- access maid in room updates from guest room
- access maid status display from SUPERSET™ telephone
- access room status display from SUPERSET telephone
- interface to a property management system (PMS)
- generate single-line printouts for events such as unanswered wakeup calls, set up or canceled wakeup calls, and message register overflow

**Guest Activities.**

A hotel/motel guest can:

- set their own wakeup calls (either on the guest room telephone or by request to the attendant)
- refuse telephone calls (by setting Do Not Disturb on the guest room telephone or by request to the attendant)
- access special features and speed dial capabilities through guest room *SUPERSET* key programming

**Feature Access**

The hotel/motel features can be accessed by an attendant console, a front desk terminal, a *SUPERSET* display telephone, an industry-standard telephone, *SUPERSET 401+™* telephone, or a *SUPERSET 410™* telephone. Each of these terminal types can access a subset of the Hotel/Motel features.

**List of Features**

A list of the features available on the PABX and an indication of the features available through each terminal are shown in Table 2-1.

<b>Table 2-1 Hotel/Motel Features</b>				
Feature Name	Feature is available on...			
	<b>Attendant Console</b>	<b>Front Desk Terminal</b>	<b>SUPERSET 420™ SUPERSET 430™</b>	<b>Other Telephones<sup>6</sup></b>
Attendant Do Not Disturb	Yes	Yes	No	No
Attendant Message Waiting Setup and Cancel	Yes	Yes	No	No
Guest Message Waiting Cancel	No	No	Yes <sup>1</sup>	Yes <sup>1</sup>
<b>Audits</b>				
Attendant Message Register Audit	Yes	Yes	No	No
Room Status Audit	Yes	See All Room Status Audit	No	No
Vacant Room Audit	No	Yes	No	No
Occupied Room Audit	No	Yes	No	No
Reserved Room Audit	No	Yes	No	No
Guaranteed Room Audit	No	Yes	No	No
To be Inspected Room Audit	No	Yes	No	No
Dirty Room Audit	No	Yes	No	No
All Room Status Audit	See Room Status Audit	Yes	No	No



Table 2-1 Hotel/Motel Features (continued)

Feature Name	Feature is available on...			
	Attendant Console	Front Desk Terminal	SUPERSET 420™ SUPERSET 430™	Other Telephones <sup>6</sup>
<b>Audits (continued)</b>				
Room Type Audit	No	Yes	No	No
Wakeup Audit	Yes	Yes	No	No
Auto Room Status Conversion/Auto Wakeup Print <sup>3</sup>	No	No	No	No
Automatic Wakeup	Yes	Yes	No	No
Guest Room Wakeup	No	No	Yes <sup>7</sup>	Yes
Call Blocking	Yes	No <sup>3</sup>	No	No
Call Restriction	Yes	Yes	No	No
Check Out (single key)	No	Yes	No	No
Guest Names	Yes <sup>4</sup>	Yes	Yes	No
Guest Room <i>SUPERSET</i> Key Programming	N/A	N/A	Yes	Yes <sup>5</sup>
Maid in Room	No	No	Yes	Yes
Maid in Room Display	Yes	Yes	Yes	No
Message Lamp Test	No	No	No	Yes
Message Register Display and Clear	Yes	Yes	No	No
Multi-user	Yes	Yes	Yes	Yes
Passwords	No	Yes	No	No
PMS Interface	No	No	No	No
Room Condition Display				
Clean	Yes	Yes	Yes	No
Dirty	Yes	Yes	Yes	No
Out of Service	Yes	Yes	Yes	No
To be Inspected	Yes	Yes	Yes	No
Room Occupancy Display				
Vacant	Yes	Yes	Yes	No
Occupied	Yes	Yes	Yes	No
Reserved	Yes	Yes	Yes	No
Guaranteed	Yes	Yes	Yes	No

Table 2-1 Hotel/Motel Features (continued)

Feature Name	Feature is available on...			
	Attendant Console	Front Desk Terminal	SUPERSET 420™ SUPERSET 430™	Other Telephones <sup>6</sup>
Room Status Display	Yes	Yes	No/See next feature.	No
<i>SUPERSET 4</i> Room Status Display	No	No	Yes	No
Room Types and Room Codes	No	Yes	No	No
Searches				
Guest Search	No	Yes	No	No
Room Number	Yes	Yes	No	No
Room Type	No	Yes	No	No
Maid in Room Search	Yes	Yes	Yes	No
Room Status Search				
- Vacant/clean	Yes	Yes	No	No
- Vacant	No	Yes	No	No
- Out of service	Yes	Yes	No	No
- Dirty	No	Yes	No	No
- Reserved	No	Yes	No	No
- Guaranteed	No	Yes	No	No
- Reserved and clean	Yes	No	No	No
Single Line Reports	No	No	No	No

Page 3 of 3

<sup>1</sup> Telephones can be programmed with this feature.

<sup>2</sup> The PABX can be programmed to produce this audit and change room status at a particular time each day.

<sup>3</sup> Front desk terminal displays indication that call blocking has been set, but cannot set call blocking.

<sup>4</sup> Consoles can display guest names, but cannot enter them.

<sup>5</sup> *SUPERSET 410* only.

<sup>6</sup> *SUPERSET 410*, *SUPERSET 401+*, and industry-standard telephones.

<sup>7</sup> This is actually in the form of a Reminder. See the *Features Description Practice*.

#### Accessing Hotel/Motel Features

## 2.2 Hotel/Motel features can be accessed from:

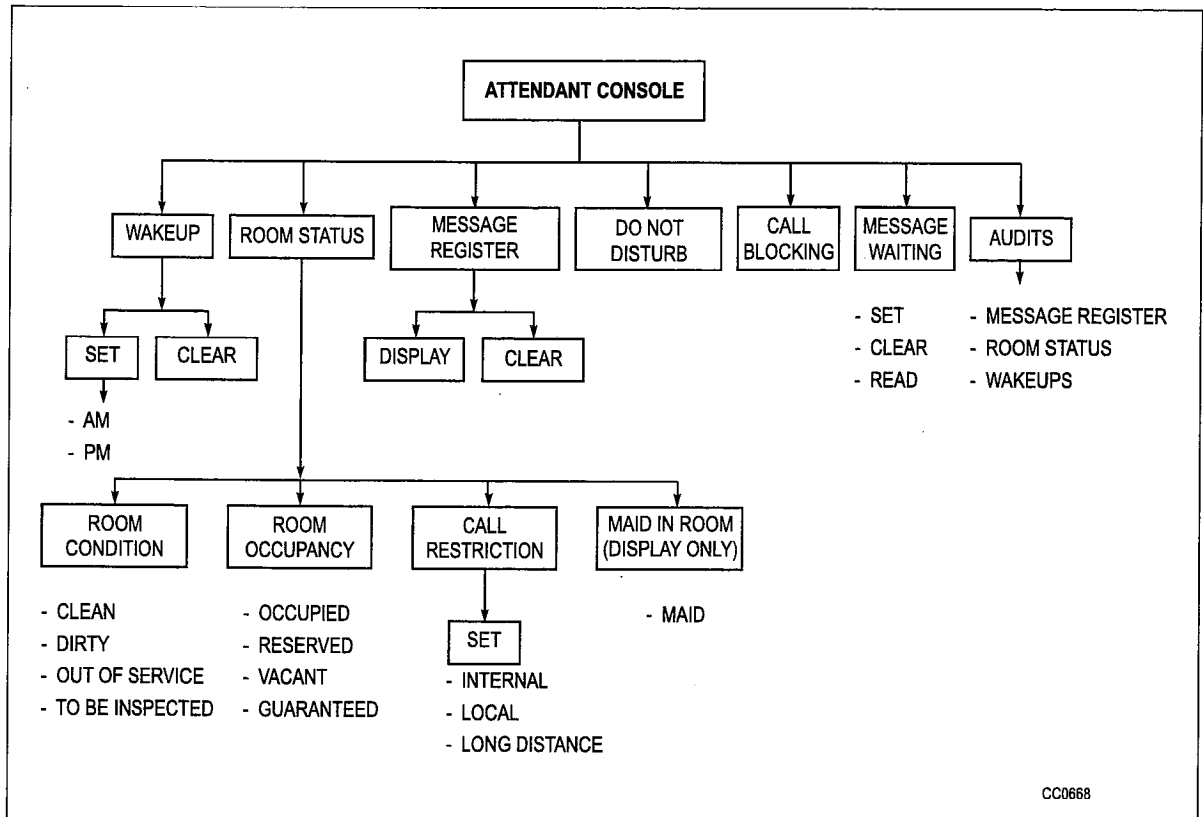
- attendant console
- front desk terminal
- *SUPERSET* display telephones
- industry-standard telephones, *SUPERSET 401+* telephones, and *SUPERSET 410* telephones.

In addition, there are several features that can only be accessed directly from the PABX.

## Attendant Console Access

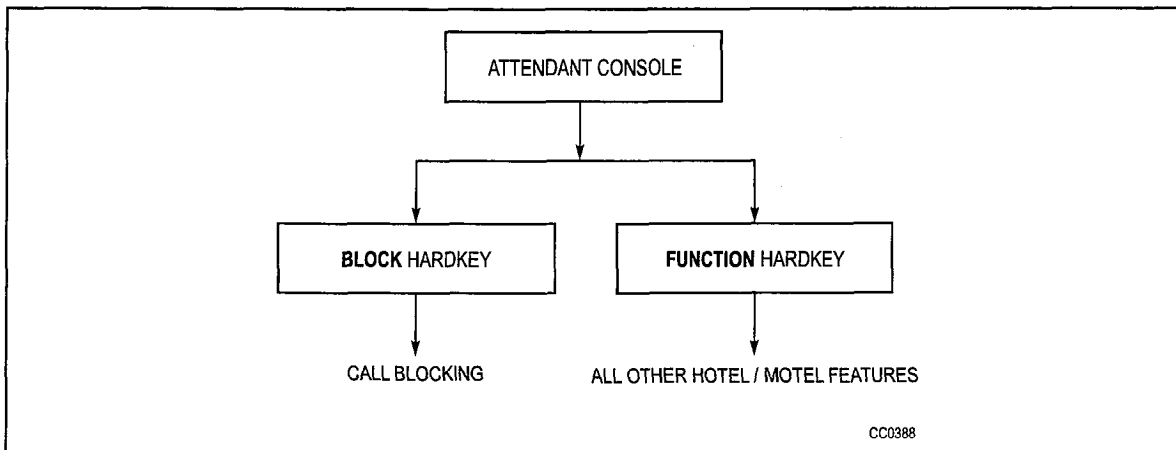
**Feature Access.** Attendant console access to the Hotel/Motel Feature Package integrates telephony with guest room functions. The attendant can be in conversation with a guest room while performing hotel/motel features. The PABX can support several (a maximum of 11) consoles. However, each console operates independently to change guest room information.

The capabilities of the hotel/motel features as accessed by the attendant console are shown in Figure 2-1.



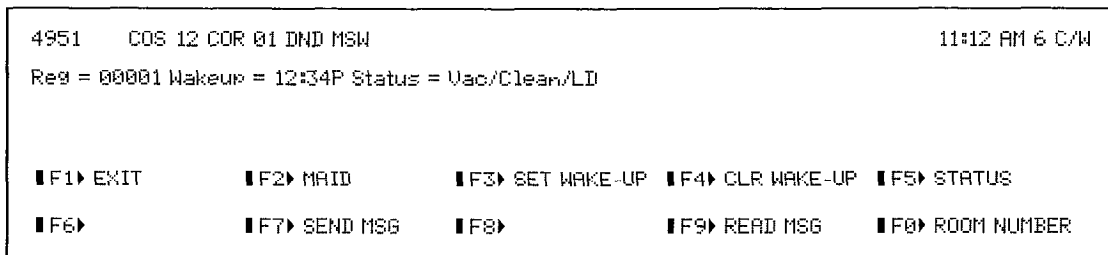
**Figure 2-1 Hotel/Motel Features Available on the Console**

**Access Mechanism.** Hotel/motel features are accessed through the FUNCTION hardkey and the GUEST ROOM softkey on the attendant console. The features are then available on softkeys. One feature, Call Block (blocking calls between rooms, see page 2-34) is accessed through the BLOCK hardkey.



**Figure 2-2 Attendant Console Access to Hotel/Motel Features**

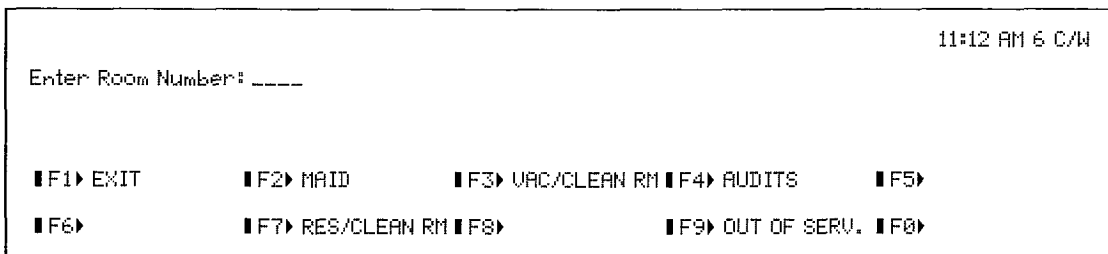
The hotel/motel features can be accessed whether the attendant console is idle or in the process of handling a call. When handling a call from a guest room, after the FUNCTION hardkey and GUEST ROOM softkey are pressed, the attendant console display shows information about the source on the top line of the display, room information on the second line, and the softkeys on the remaining two lines. Note that information about the source is presented without pressing the FUNCTION and GUEST ROOM keys. See Figure 2-3.



CC0412

**Figure 2-3 Guest Room Display During a Call from the Guest Room**

Pressing the GUEST ROOM softkey while the attendant console is not engaged in a call produces the display shown in Figure 2-4.



CC0413

**Figure 2-4 Guest Room Display with Idle Console**

Once a room number (extension number) has been entered, the display changes to the format shown in Figure 2-3 with a ROOM NUMBER softkey displayed in the F0 position. Pressing EXIT at any time returns the attendant console to its prior state (idle or busy call processing).

The following softkeys appear on the attendant console display after pressing the GUEST ROOM softkey:

				11:12 AM
Enter Room Number: _____				
■ F1▶ EXIT	■ F2▶ MAID	■ F3▶ VAC/CLEAN RM	■ F4▶ AUDITS	■ F5▶ OCC/DIRTY RM
■ F6▶ OCC/CLEAN RM	■ F7▶ RES/CLEAN RM	■ F8▶ VAC/DIRTY RM	■ F9▶ OUT OF SERV.	■ F0▶

CC0414

**Figure 2-5 Console Display after Pressing GUEST ROOM Softkey**

When one of the choices has been selected, the display is changed as follows:

TOTAL = 9	4800	4850	4900	11:13 AM
	4951	5005	5015	
■ F1▶ EXIT	■ F2▶ ROOM NUMBER	■ F3▶	■ F4▶	■ F5▶
■ F6▶	■ F7▶	■ F8▶	■ F9▶	■ F0▶ MORE ...

CC0415

**Figure 2-6 Console Display after Pressing VAC/DIRTY RM Softkey**

The total number of rooms of the specified status, e.g. VAC/DIRTY, appears in the top left corner of the display if there is at least one room which fits that description. A maximum of 6 room numbers will be shown on the same display. Pressing the MORE softkey will display the remainder of the room numbers.

When there are no VAC/DIRTY rooms, the following is displayed:

No Vacant and Dirty Rooms				11:14 AM
■ F1▶ EXIT	■ F2▶	■ F3▶	■ F4▶	■ F5▶
■ F6▶	■ F7▶	■ F8▶	■ F9▶	■ F0▶

CC0416

**Figure 2-7 Console Display if no VAC/DIRTY Rooms**

The console display could also show no occupied and clean rooms, no vacant and clean rooms, no occupied and dirty rooms or no reserved and clean rooms.

The functions of the hotel/motel keys on the attendant console are shown in Table 2-2.

<b>Table 2-2 Attendant Console Key Functions</b>		
<b>Console Hardkeys</b>	<b>Console Softkeys</b>	<b>Function</b>
<b>BLOCK</b>		Blocks calls between rooms.
<b>FUNCTION</b>		Accesses GUEST ROOM softkey.
	<b>GUEST ROOM Softkey</b>	Accesses all hotel/motel features other than call blocking.
	MAID	Produces display of all rooms with maids in them.
	RES/CLEAN RM	Produces display of all reserved and clean rooms.
	VAC/CLEAN RM	Produces display of all vacant and clean rooms.
	OUT OF SERV.	Produces display of all out of service rooms.**
	AUDITS  ROOM STATUS WAKEUP MSG REGISTER	Accesses audit softkeys. Generate printouts of: - Room Status - Wakeup calls - Message Register counts.
	NO DISTB *	Alternately sets up and cancels Do Not Disturb on an extension.
	SEND MSG *	Sets up Message Waiting for a room.
	CLEAR MSG *	Cancels Message Waiting for a room.
	READ MSG *	Reads the message for a room.
	SET WAKEUP*	Sets up an Automatic Wakeup Call.
	CLR WAKEUP*	Cancels an Automatic Wakeup Call.
	MSG REG * CLR REG *	Displays message register. Clears message register.
	ROOM NUMBER*	Allows input of a new room number.

**Table 2-2 Attendant Console Key Functions (continued)**

Console Hardkeys	Console Softkeys	Function
	STATUS *  INTERNAL LOCAL LONG DIST  OCCUPIED RESERVED VACANT GUARANTEED CLEAN DIRTY OUT OF SERV. TO INSPECT	Accesses occupancy, condition, and call restriction softkeys.  Sets internal call privilege. Sets local call privilege. Sets long distance call privilege.  Sets room occupancy to occupied. Sets room occupancy to reserved. Sets room occupancy to vacant. Sets room occupancy to guaranteed. Sets room condition to clean. Sets room condition to dirty. Sets room condition to out of service. Sets room condition to to be inspected.

Page 2 of 2

\* Must enter Room Number first.

\*\* The OUT OF SERV. softkey appears in two different contexts:

1. When the GUEST ROOM softkey is pressed, the OUT OF SERV. softkey appears. It is used to search for out of service rooms.
2. When the STATUS softkey is pressed, the OUT OF SERV. softkey appears. It is used to set the room status to out of service.

### Front Desk Terminal Access

**Feature Access.** The capabilities of the Hotel/Motel Feature Package as accessed by the front desk terminal are shown in Figure 2-8.

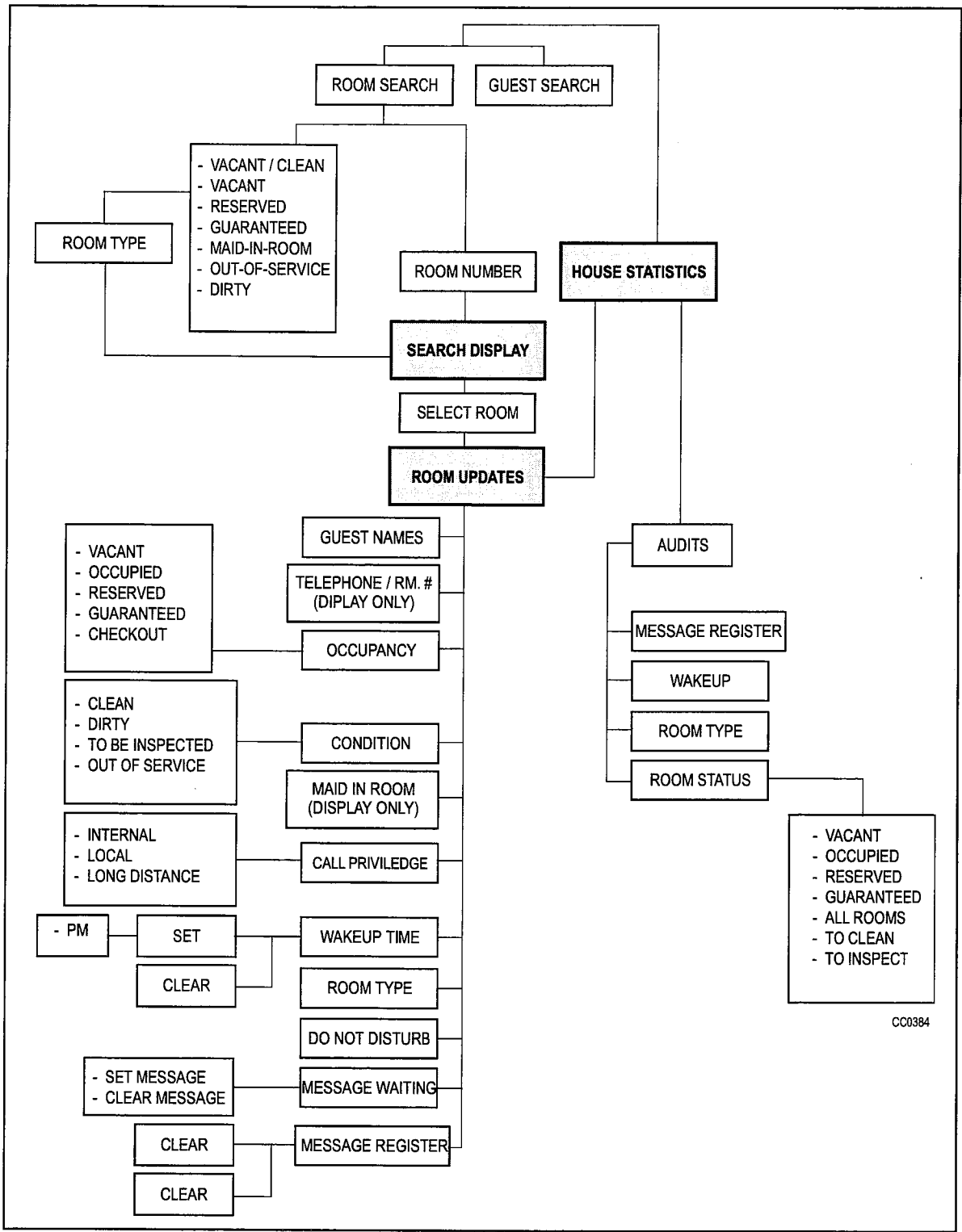


Figure 2-8 Hotel/Motel Features Available on the Front Desk Terminal



Up to four VT100™ terminals can access the Hotel/Motel Feature Package simultaneously. The VT100 terminal can access more hotel/motel features than the attendant console. For example, using a VT100-compatible terminal to input guest information permits the entry of alphanumeric characters (such as a guest name) and allows more information to be displayed at once.

A terminal interface provides a low-cost alternative to a property management system (PMS) by providing faster access to information but no room billing. The terminal provides no telephony function. Telephone activities must be performed through the attendant console or some other telephony device.

**Access Mechanism.** When the Hotel/Motel Feature Package is running on a front desk terminal, there are four modes of operation: house statistics, search by room or name, room updates, and audits.

**House statistics.** After successful login using a password, a house statistics screen appears. It contains a snapshot of the current status of the guest rooms or gives the time that the last statistics had been calculated (or when the REFRESH softkey is pressed). The information is only updated when the screen is entered. The house statistics screen is the only entry point when logging on to the application. It is also the only point the application can be exited from. Five softkeys give access to the other modes of operation. A sixth softkey is used to recalculate totals. See Figure 2-9.

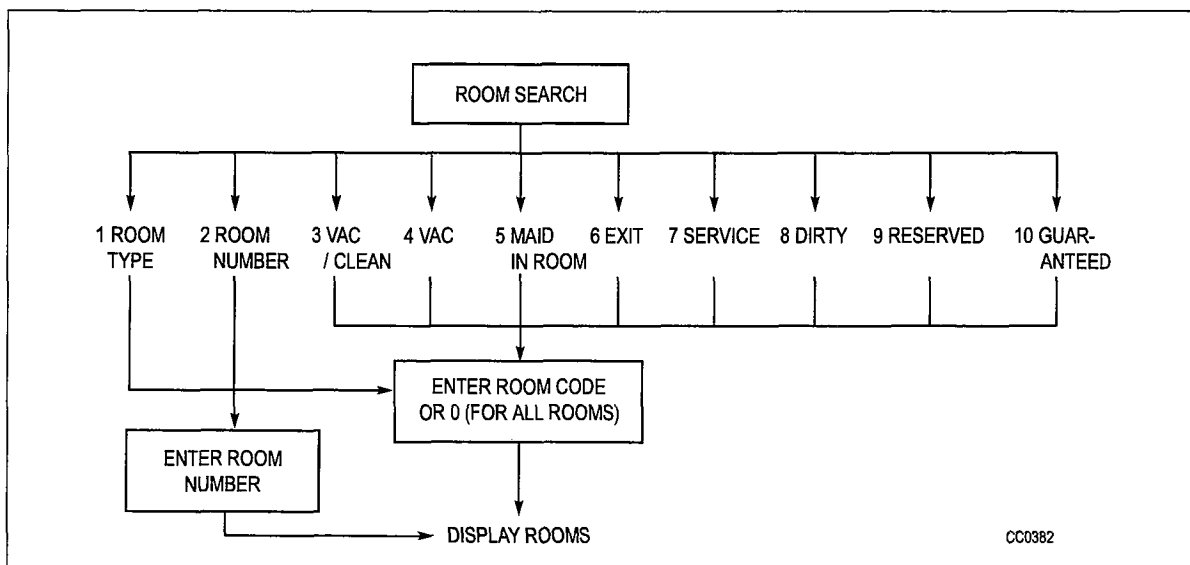
12:16 PM	28-NOV-95	<b>HOUSE STATISTICS</b>			MITEL Front Desk
House Statistics as of 12:14 PM 28-NOV-95					
<u>Guest Room Occupancy Summary</u>					
Vacant : 71		Occupied : 1		Reserved : -	
				Guaranteed : -	
<u>Room Condition Summary</u>			<u>Features Usage Summary</u>		
Clean	:	72	Do Not Disturb ON	:	-
To be Cleaned	:	-	Wake Up Set	:	-
To be Inspected	:	-	Message Waiting ON	:	-
Not in Service	:	-	Non Zero Msg Regs	:	5
Maid in Room	:	-	Call Blocking	:	OFF
■					
1-Room Update	2-	3-Room Search	4-	5-Guest Search	
6-Quit	7-	8-Audits	9-	0-Refresh	

**Figure 2-9 House Statistics Screen**

**Search by room or name.** Using a terminal allows guest first and last names to be entered as part of the check-in procedure. A search facility allows searching by last name by pressing the GUEST SEARCH softkey on the house statistics screen. A partial or complete text string can be entered and all names matching the input string are displayed.

There are nine other types of room searches. These are based on room type, room number, and room status. They are accessed by pressing the ROOM SEARCH softkey on the House Statistics screen (see Figure 2-9).

Any search other than room type or room number requires that a room code be entered to specify the type of room, such as all single rooms, that should be searched. The digit 0 can be used to search all room types meeting the search criteria. See Figure 2-10.



**Figure 2-10 Room Search Mechanism**

**Room updates.** Changes to the guest room can only occur in this mode. It can be entered from the house statistics screen, or the room search or guest search mode by pressing the ROOM UPDATE softkey. Guest name, room occupancy status, room condition, and call privilege can be changed; wakeup time, message waiting, and Do Not Disturb can be set or cleared; and the message register can be cleared from this screen. The softkeys and prompts change according to the highlighted field. See Figure 2-11.

12:25 PM 28-NOV-95		<b>GUEST ROOM UPDATE</b>		MITEL Front Desk	
Guest Name : BERNAL,V		Room Number : 2108		Room Type : 01	
Occupancy : Occupied		Message Waiting :			
Condition : Clean		Do Not Disturb :			
Call Privilege : Long Distance		Message Register :		0	
Wakeup Time : 06:30					
Press Enter to confirm Wake Up Time.					
1-	2-	3-PH	4-	5-Cancel	
6-	7-	8-	9-	0-Enter	

**Figure 2-11 Vacant Room Template**

**Audits.** Various kinds of audits (hard copy reports) can be generated on demand. Audit mode is entered from the house statistics screen by pressing the AUDITS softkey. Each kind of audit appears as a corresponding softkey. The system option to allow the audit must be enabled to allow the softkey to appear. The types of audits available are: message register, wakeup, room type, and room status. The functions of the hotel/motel softkeys on the front desk terminal are shown in Table 2-3.

Mode	Softkey	Function
<b>House Statistics</b>	Audits	Enters the Audits mode of operation.
	Room Updates	Enters the Room Updates mode of operation.
	Guest Search	Enters the Guest Search mode of operation.
	Room Search	Enters the Room Search mode of operation.
	Refresh	Recalculates the totals on the screen.

Page 1 of 3

**Table 2-3 Front Desk Terminal Softkey Functions (continued)**

Mode	Softkey	Function
<b>Guest Search</b>	N/A	
<b>Room Search</b>	Room Type	Searches for rooms of a specified room type. Displays nine rooms at a time.
	Room Number	Searches for a specified room and displays the next eight rooms as well.
	Vacant	Searches for all vacant rooms when a room code (room type) is specified or the wild card (0) is used.
	Vacant/Clean	Searches for all vacant/clean rooms when a room code (room type) is specified or the wild card (0) is used.
	Maid in Room	Searches for all rooms with a maid in them when a room code (room type) is specified or the wild card (0) is used.
	Out of Service	Searches for all rooms that are out of service when a room code (room type) is specified or the wild card (0) is used.
	Dirty	Searches for all dirty rooms when a room code (room type) is specified or the wild card (0) is used.
	Reserved	Searches for all reserved rooms when a room code (room type) is specified or the wild card (0) is used.
	Guaranteed	Searches for all guaranteed rooms when a room code (room type) is specified or the wild card (0) is used.
	Page Down	Presented in search mode on the first and subsequent screens if there are more than nine rooms meeting the search requirements. Is not displayed on the last screen. Displays subsequent (additional) rooms, nine at a time.
Page Up	Presented in each search mode on the second and subsequent screens if there are more than nine rooms meeting the search requirements. Is not displayed on the first screen. Displays previous rooms, nine at a time.	
<b>Room Updates</b>	Show Choices	When highlight bar is in the Occupancy field, presents the Occupancy softkeys. When highlight bar is in the Condition field, presents the Condition softkeys. When highlight bar is in the Call Privilege field, presents the Call Privilege softkeys.
	Check Out	Only available if room occupancy is occupied. Sets room occupancy to vacant, room condition to dirty, call restriction to the default setting. Confirmation (the Enter key) is required to set this status. Enter softkey blanks out guest name, disables Do Not Disturb (if set), clears message waiting, wakeup time and message register.
	Set Message	When pressed, notifies the guest room by bell or lamp that there is a message waiting for the guest.

## NOTICE TO CANADIAN CUSTOMERS

**NOTICE:** The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). 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 approved method of connection. 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 coordinated by a representative 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.**

**NOTICE:** The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

The Ringer Equivalence Number for the SX-200<sup>®</sup> ML PABX is 1.0B.



Table 2-3 Front Desk Terminal Softkey Functions (continued)

Mode	Softkey	Function
	Clear Message	Appears when there is a message waiting. Clears the message waiting indication in the guest room and at the front desk terminal.
	Occupancy -Vacant  -Occupied  -Reserved  -Guaranteed	Sets room occupancy to vacant and the call restriction to the vacant/reserved default* setting. Sets room occupancy to occupied and the call restriction to the occupied default setting. Sets room occupancy to reserved and the call restriction to the vacant/reserved default setting. Sets room occupancy to guaranteed and the call restriction to the vacant/reserved default setting.
	Condition -Clean -Dirty -To Inspect -Out of Serv	Sets the room condition to clean. Sets the room condition to dirty. Sets the room condition to to be inspected. Sets the room condition to out of service.
	Call Privilege -Internal -Local -Long Distance	Sets the call privilege to internal. Sets the call privilege to local. Sets the call privilege to long distance.
	Wakeup Time -Set -Clear -PM	Allows wakeup time to be entered. Clears wakeup time once it is set. Indicates that time is PM in 12-hour format.
	Do Not Disturb	Toggleing key that sets/clears Do Not Disturb.
	Clear Msg Reg	Appears when there is a message register count. Clears the count. Confirmation (the Enter key) is required to clear the message register.
<b>Audits</b>	Message Register	Generates printout of message register counts that are greater than zero.
	Wakeup	Generates printout of wakeup times.
	Room Type	Generates printout of all rooms of a specified type showing the occupancy of each room.
	Room Status -Vacant -Occupied -Reserved -Guaranteed -All Rooms -To Clean -To Inspect	Generates printout of: vacant rooms by room type or all rooms occupied rooms by room type or all rooms reserved rooms by room type or all rooms guaranteed rooms by room type or all rooms status of all rooms rooms to be cleaned by room type or all rooms rooms to be inspected by room type or all rooms.

\* Defaults are programmed in CDE in Form 04, System Options/System Timers, option numbers 57 and 58.

### Keyboard Data Entry

The following rules apply when the keyboard is used to enter non-softkey data such as a name, room number room code, password or terminal type. No softkeys are provided while this type of data is being entered. The RETURN hard key or the arrow keys are used to signal the end of data entry. See Table 2-4.

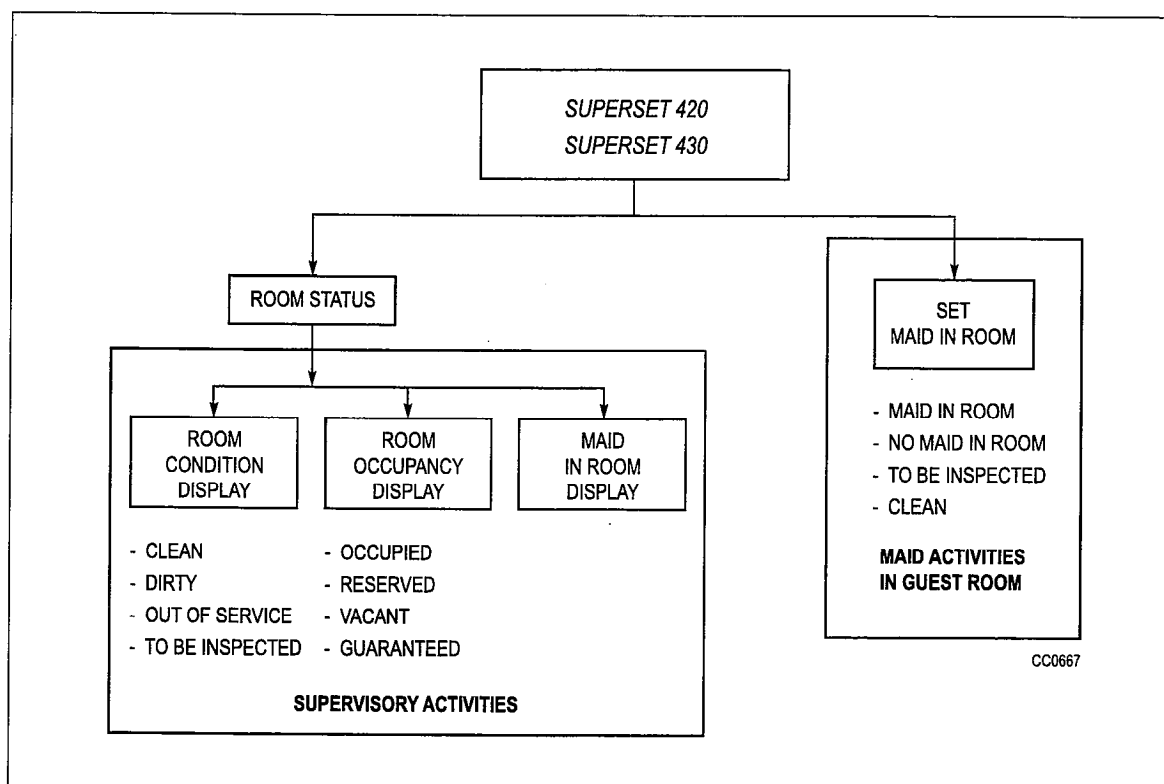
<b>Table 2-4 Front Desk Terminal Hard Key Functions</b>	
<b>Hard Key</b>	<b>Function</b>
Typing keys	All alphanumeric characters that are allowed for <i>SUPERSET 420</i> telephone displays are allowed in the Guest Name field.
Numeric keys	Wake up times and room numbers can be entered with numeric keys only.
RETURN	<p><b>Room Updates Mode:</b> If no characters have been entered, moves the shade bar to the next field leaving the previous field unchanged.</p> <p>If characters have been entered, moves the shade bar to the next field and leaves the changed information in the field.</p> <p><b>Search Display Mode:</b> Functions like a down arrow key.</p>
Down, Right Arrow keys	<p><b>Room Updates Mode:</b> If no characters have been entered, moves the shade bar to the next field leaving the previous field unchanged.</p> <p>If characters have been entered, moves the shade bar to the next field leaving the previous field unchanged.</p>
Up, Left Arrow keys	<p><b>Room Updates Mode:</b> If no characters have been entered, moves the shade bar to the previous field leaving the last field unchanged.</p> <p>If characters have been entered, moves the shade bar to the previous field leaving the last field unchanged.</p>
Down or Up Arrow Keys	<b>Search Display Mode:</b> Moves the highlight bar up or down the list of entries.
Enter softkey	Enters the information in the field into the database. (User must exit the field first.) The Enter softkey is provided whenever a change has been made.
DELETE	If no characters have been entered, the previous softkey menu is displayed.
Control R or Control W	Causes the screen currently displayed to be redrawn. If data is currently being entered when Control R is used, the data for the field is lost and the original data for the field is redisplayed.
Control Y or Control C	Ends the session and drops the data call. Similar to pressing the Quit softkey on the House Statistics screen.
Control D (if D is defined as the PBX attention character for the dataset in CDE Form 11. See the Programming section.)	Ends the session. Using Control D is not recommended because it may leave the terminal in graphics mode.



## **SUPERSET Display Telephone Access**

**Feature Access.** *SUPERSET* display telephones (the *SUPERSET 420* and *SUPERSET 430*) can be used as guest room telephones. They can also be used as supervisory telephones, for instance by housekeeping supervisors to monitor the progress of hotel cleaning staff. As guest room telephones or as supervisory sets, they provide access to a limited range of hotel/motel features.

The hotel/motel application uses the guest room telephone extension number as the room number. These extension numbers are assigned through Customer Data Entry (CDE). See the programming section of this document.



**Figure 2-12 Hotel/Motel Features Available on a *SUPERSET* Display Telephone**

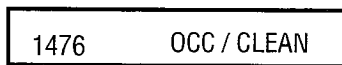
**Access Mechanism.** Guests can use several access mechanisms themselves on the *SUPERSET* display telephones: softkeys, hardkeys and access codes.

**Softkeys.** Pressing a softkey associated with the feature name on the display activates the feature (e.g., Message Waiting Clear).

**Hardkeys.** Pressing the Do Not Disturb key on a *SUPERSET 430* telephone activates or deactivates the Do Not Disturb feature. Telephony features (such as speed call numbers) could be assigned to this row of programmable hardkeys. (Blocks of hardkeys on these telephones can be programmed as speed dial and feature access keys. See Guest Room *SUPERSET* key programming, page 2-39.)

**Access Codes and Feature Codes for Information Input.** Dialing a code gives the user access to a feature to input information. For instance, a code (for example, 111) gives the maid access to the maid in room feature. A number from 1 to 4 inputs information such as whether a maid is working in the room. See page 2-40.

**Access Codes for Information Display.** Dialing a code gives the user access to information that is shown on the *SUPERSET* display; for example, room condition and occupancy status or maid in room status.



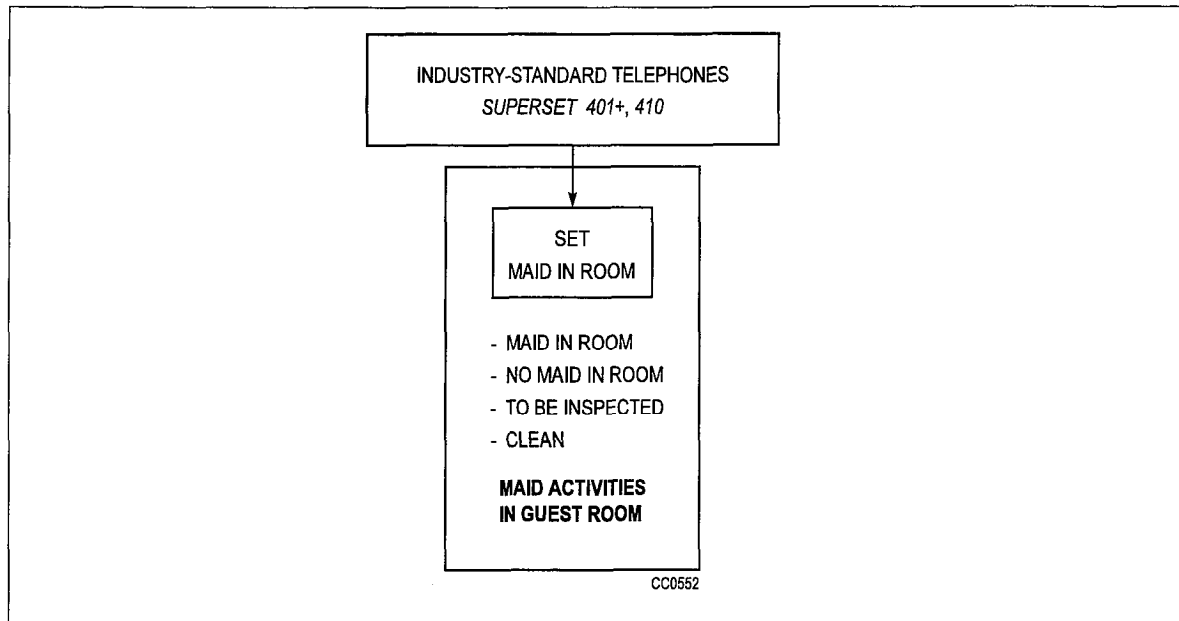
**Figure 2-13 Occupancy/Condition Display on *SUPERSET* 420 Telephone**

Table 2-5 lists the hotel/motel features available on the *SUPERSET* display telephones related to their feature access mechanisms.

Table 2-5 <i>SUPERSET</i> 420/ <i>SUPERSET</i> 430 Access Functions		
Feature	Access Mechanism	Function
<b>Set Maid in Room Status</b>	Dial Maid in Room access code followed by the code for room activity.	Maid or supervisor can input guest room status (maid in room, no maid in room, clean, inspected) from the room telephone.
<b>Display Room Occupancy and Condition</b>	Dial room status access code followed by the room number.	Room occupancy and condition status can be displayed.
	Arrow softkey	Occupancy and condition status of next rooms in numeric order can be displayed.
<b>Display Maid in Room Status</b>	Dial maid in room status access code.	Room numbers of all rooms with maids in them are displayed.
	Arrow softkey	Room numbers of next rooms in numeric order can be displayed.

## Industry-Standard Telephone Access

**Feature Access.** Any other type of telephone (industry-standard telephone, *SUPERSET 401+* or *SUPERSET 410*) can access an applicable subset of the hotel/motel features. See Figure 2-14.



**Figure 2-14 Hotel/Motel Features Available on Industry-Standard, *SUPERSET 401+*, and *SUPERSET 410* Telephones**

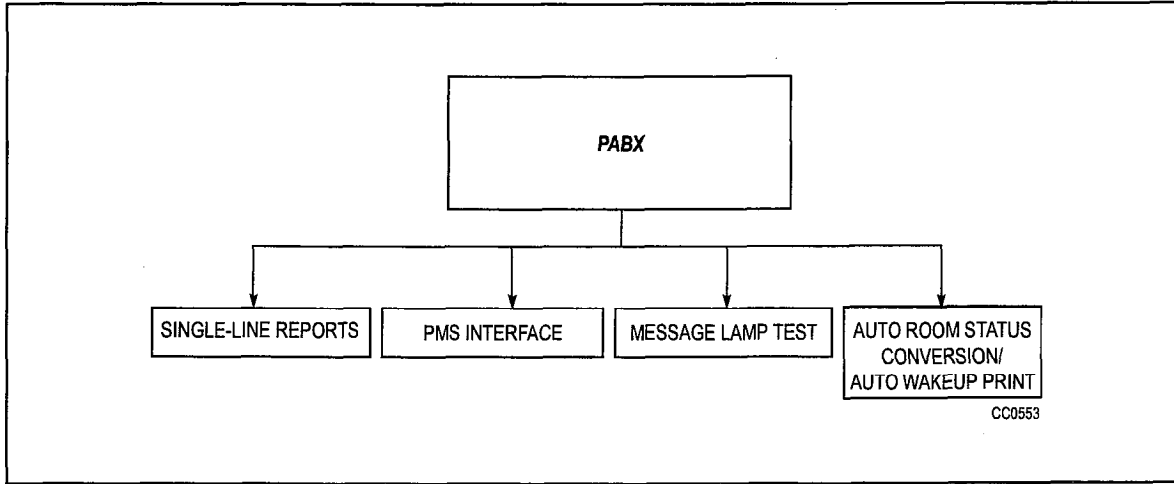
**Access Mechanism.** Most hotel/motel features are accessed by dialing feature access codes. In addition, blocks of hardkeys on the *SUPERSET 401+* and *SUPERSET 410* can be programmed as speed dial and feature access keys.

Table 2-6 shows the hotel/motel features available on industry-standard telephones related to their feature access codes.

Table 2-6 Industry-Standard Telephone Access Functions		
Feature	Access Mechanism	Function
<b>Message Waiting Indication</b>	Indicator on display or audible bell.	Lighted lamp or special ring indicates there is a message waiting for the guest.
<b>Set Maid in Room Status</b>	Dial Maid in Room access code followed by code for room activity.	Maid or supervisor can input guest room status (maid in room, no maid in room, clean, inspected) from the room telephone.

**PABX Access**

The PABX provides direct access to some hotel/motel features. These are system-level features that require no user interaction.



**Figure 2-15 Hotel/Motel Features Available Only from the PABX**

**Access Mechanism.** These features are programmed through CDE.

Table 2-7 shows the hotel/motel features accessed directly through CDE programming on the PABX and not through any terminal.

<b>Table 2-7 PABX Access Functions</b>		
<b>Feature</b>	<b>Access Mechanism</b>	<b>Function</b>
<b>Single-Line Reports</b>	Automatic	Creates a single-line printout for certain events, such as an automatic wakeup call going unanswered.
<b>PMS</b>	Automatic	Interfaces the PABX to a PMS package.
<b>Auto Room Status Conversion/Auto Wakeup Print</b>	Automatic	Prints a report of all rooms with a wakeup time set, and changes the room condition of occupied rooms from clean to dirty at a particular time each day.
<b>Message Lamp Test</b>	Automatic	Performs a test of message waiting lamps whenever the room status changes from occupied to vacant and there are no messages waiting.

## System Configuration

### Hardware

2.3 Basic hardware is described in Table 2-8 and shown in Figure 2-16.

<b>Table 2-8 Hotel/Motel Hardware</b>	
<b>Hardware</b>	<b>Description</b>
<b>PABX</b>	The PABX can be any hardware configuration.
<b>Attendant Console</b>	Provides telephony as well as access to hotel/motel features. A system supports 11 attendant consoles; however, hotel/motel applications usually use one console only. If more than one console is available on the system, each operates independently. That is, two consoles could change the same information for a room at the same time. In that case, the console that left the room last would have its changes captured by the system. If an attendant console and a front desk terminal are configured on a system, the attendant console can access a room already accessed by a front desk terminal and change the same information at the same time. However, a front desk terminal cannot access a room already accessed by a console. If the console leaves the room last, its changes are captured. The attendant console can be used in place of a VT100 terminal for maintenance and/or CDE programming. Four lines of a CDE form can be displayed at a time: three lines of information and the active line.
<b>Guest Room Telephones</b>	Any type of industry-standard telephone can be configured on the system. Industry-standard guest room telephones allow guests access to certain Hotel/Motel features. The number is limited by the hardware configuration of the PABX.
<b>Front Desk Terminal</b>	The system can support up to four VT100 terminals as front desk terminals. Each terminal must interface to the PABX through a MITEL1100-series dataset. If more than one terminal is available on the system, only one of them can make changes to the same guest room at a time. If a front desk terminal attempts to access a guest room already accessed by an attendant console, the terminal is blocked from access.
<b>VT100 Terminal</b>	Used for maintenance and/or CDE programming. It displays full-screen CDE forms facilitating data entry. The maintenance terminal can be associated with a system printer to print alarm logs.
<b>System Printer</b>	Delivers hard copies of alarm logs and prints Hotel/Motel audits and single line reports. Separate printers can be used.
<b>SUPERSET 420/430 Telephones</b>	Because these telephones can display room status information, they can be used as supervisory sets by hotel staff. They can also be used as guest room telephones. Programming allows guests single-key access to designated features.
<b>SUPERSET 401+ and 410 Telephones</b>	Programming non-display telephones allows guests single-key access to designated features.

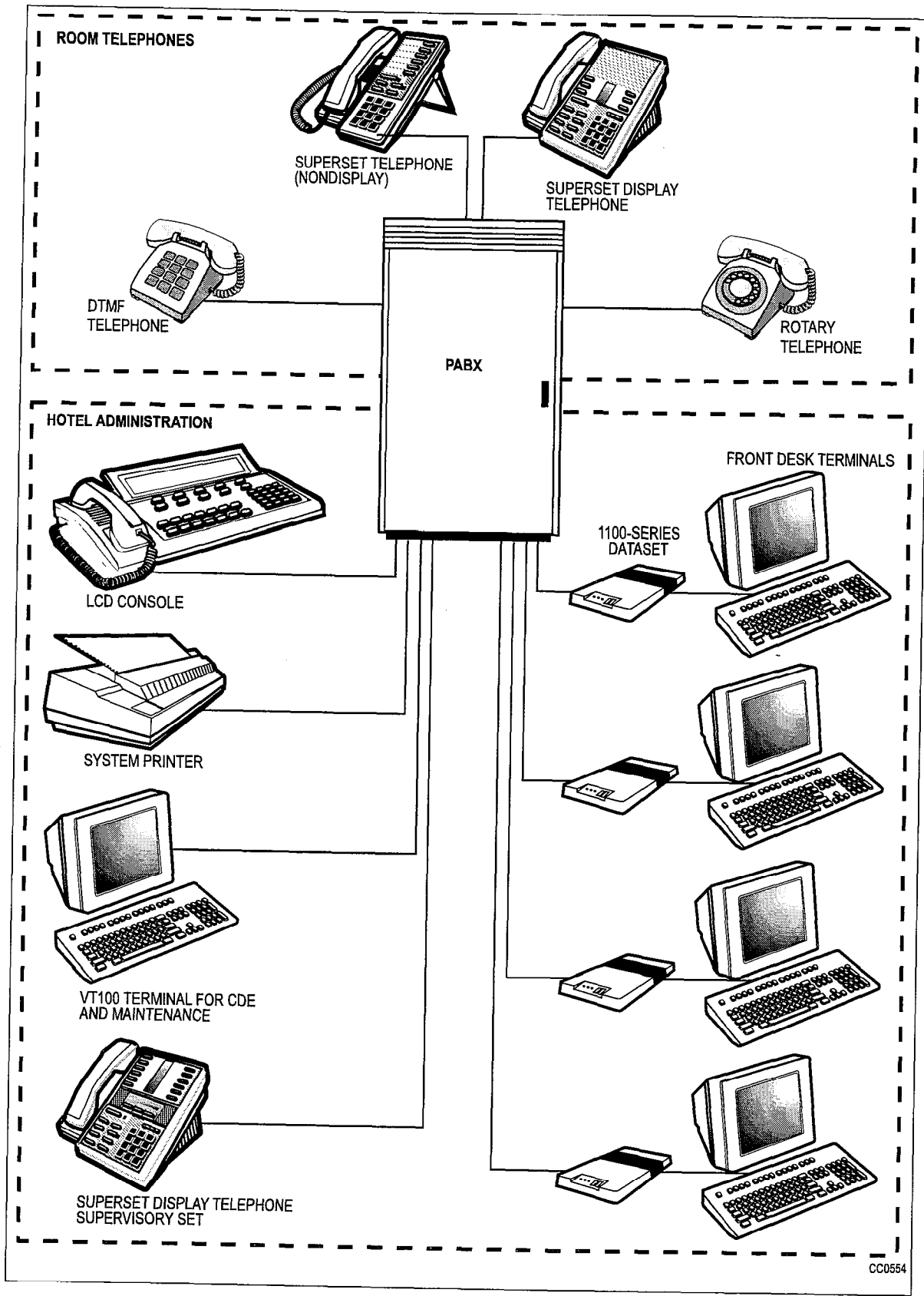


Figure 2-16 Hotel/Motel System Configuration

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## Feature Description

- 2.4 A description of each of the hotel/motel features follows. Where possible, features have been associated into groups. For example, the various types of audits are described under the main heading Audits.

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### Attendant Message Waiting Setup and Cancel

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A message waiting indication can be left on a guest room telephone. The setting and clearing of a message waiting indication can be recorded on a system printer. A single-line report can be generated, giving the room number, date, time and status change, and who changed it. See Single-Line Reports.

<i>How to Program</i>		Chart 4-3, page 4-14
<i>How to Use</i>	Console:	Chart 5-1, page 5-2
	FDT:	Chart 5-17, page 5-14

### Guest Room Message Indication

A message waiting indication on a guest room telephone can be:

- a message on the display of a *SUPERSET 420* or *SUPERSET 430* telephone.
- a continuously flashing lamp (if equipped) on the telephone. (The *SUPERSET 401+*, *SUPERSET 410*, *SUPERSET 420*, and *SUPERSET 430* have a message lamp.)
- a distinctive ringing pattern (three short bursts every 20 minutes). The telephone rings with this distinctive ringing pattern if the extension has been busy, or has Do Not Disturb set, or until message waiting is canceled.

The Cancel softkey on a display *SUPERSET* telephone can cancel message waiting. Telephones with no softkeys must call the attendant to retrieve the message. It is then canceled by the attendant. See also Message Lamp Test.

<i>How to Program</i>		Chart 4-3, page 4-14
<i>How to Use</i>	Any set	Chart 5-36, page 5-29

**Audits**

An audit is a printed report that gives a record of guest room activities or conditions. There are several types of audits. Most are requested by the attendant, but one ( the Auto Room Status Conversion/Auto Wakeup Print) is programmed to be printed automatically each day. All audit requests are directed to the printer assigned to the Hotel/Motel Audit printout type in CDE Form 34. Table 2-9 shows the audits that can be requested from each terminal.

<b>Table 2-9 Audits by Terminal Type</b>		
<b>Audit Types</b>	<b>Terminal</b>	<b>Operation</b>
Attendant message register audit Room status audit Wakeup audit	Attendant Console	The audits mode of operation is entered through the AUDIT softkey. A console cannot request an audit if it is active in a call. A console can request any number of audits at one time, but only the first three are printed. The requests are processed in a first requested, first printed sequence.
Attendant message register audit Room status audits - Vacant room audit - Occupied room audit - Reserved room audit - Guaranteed room audit - Dirty (To clean) condition audit - To be inspected (To inspect) condition audit - All rooms audit Room type audit Wakeup audit	Front Desk Terminal	The Audit mode of operation is entered from the main menu by pressing the Audits softkey. The softkeys are updated to show the various audit types. System options must be enabled to allow the various types of audits, or the corresponding softkey is not provided.
Auto Room Status Conversion/Auto Wakeup Print	N/A	Programmed to be printed automatically each day.

**Attendant Message Register Audit**

The message register can be printed for any room that has a message register count greater than zero. The audit report lists the rooms in order of their room number (lowest to highest). The message register audit is shown in Figure 2-17. See the Message Register section.



11/28 02:30P MESSAGE REGISTER AUDIT				
Room - Reg	Room - Reg	Room - Reg	Room - Reg	Room - Reg
1101 - 00021	1103 - 00054	1502 - 00024	1504 - 00001	1505 - 00002

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**Figure 2-17 Message Register Audit**

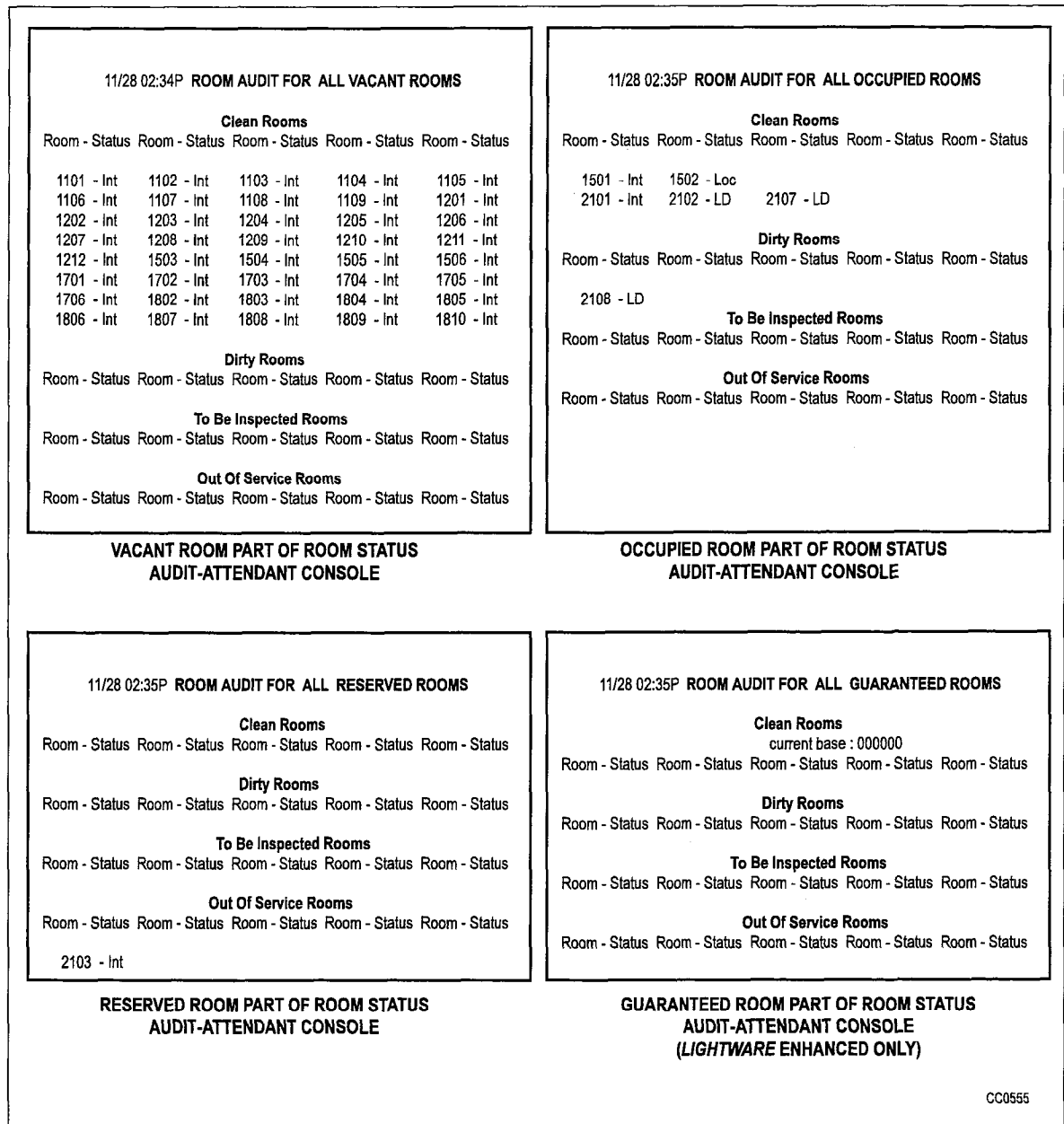
<i>How to Program</i>		Chart 4-4, page 4-15
<i>How to Use</i>	Console:	Chart 5-3, page 5-3
	FDT:	Chart 5-18, page 5-15
<i>Feature Interactions</i>		If System Option 25 (Message Register Zero After Audit) is enabled, all message registers are set to zero when the audit is requested. This includes the instance where the maximum number of audits is exceeded or the printer is unavailable for any reason. See the Programming section.

**Room Status Audit(s)**

The attendant can request a report of the current status of all guest rooms. The attendant console produces one audit that contains information on all rooms. The front desk terminal can produce two types of room status audits: room occupancy audits (vacant, occupied, reserved and guaranteed audits) and room condition audits (to clean and to inspect audits). Each of these audits can be requested by room type (see Room Type) or for all rooms. In addition, an all rooms audit can be requested from the front desk terminal. This request is the equivalent of the attendant console room status audit (see Table 2-10). Also see Room Occupancy and Room Condition.

Each audit (console or front desk terminal) shows the call restriction status of the room (see Call Restriction) and whether there is a maid in the room (see Maid in Room). The attendant console audit is shown in Figure 2-18 and a front desk terminal audit is shown in Figure 2-19.

<b>Table 2-10 Room Status Audits</b>			
<b>Terminal</b>	<b>Name</b>	<b>Content</b>	<b>Categories</b>
<b>Attendant Console</b>	Room Status Audit	All rooms by status and condition.	Four sections: vacant, occupied, reserved, or guaranteed rooms. Each section is divided by room condition: clean, dirty, out of service, or to be inspected.
<b>Front Desk Terminal</b>			
	<b>Room Occupancy Audits (All Rooms or by Room Type)</b>		
	Vacant Room Audit	All guest rooms with room occupancy status of vacant.	Listed by condition: clean, dirty, to be inspected, out of service.
	Occupied Room Audit	All guest rooms with room occupancy status of occupied.	Listed by condition: clean, dirty, to be inspected, out of service.
	Reserved Room Audit	All guest rooms with room occupancy status of reserved.	Listed by condition: clean, dirty, to be inspected, out of service.
	Guaranteed Room Audit	All guest rooms with room occupancy status of guaranteed.	Listed by condition: clean, dirty, to be inspected, out of service.
	<b>Room Condition Audits (All Rooms or by Room Type)</b>		
	To Clean Room Audit	All guest rooms with room condition of dirty.	Listed by occupancy: vacant, occupied, reserved, guaranteed.
	To Inspect Room Audit	All guest rooms with room condition of to be inspected.	Listed by occupancy: vacant, occupied, reserved, guaranteed.
	<b>Room Occupancy and Condition</b>		
	All Rooms Audit	All rooms by status and condition.	Listed by occupancy: clean, dirty, to be inspected, out of service categories for each of: vacant, occupied, reserved, and guaranteed rooms.



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**Figure 2-18 The Four Sections of the Room Status Audit  
(Attendant Console)**

11/28 02:46P ROOM AUDIT FOR ALL VACANT ROOMS				
Clean Rooms				
Room - Status	Room - Status	Room - Status	Room - Status	Room - Status
1101 - Int	1102 - Int	1103 - Int	1104 - Int	1105 - Int
1106 - Int	1107 - Int	1108 - Int	1109 - Int	1201 - Int
1203 - Int	1205 - Int	1206 - Int	1208 - Int	1209 - Int
1210 - Int	1211 - Int	1212 - Int	1503 - Int	1504 - Int
1505 - Int	1506 - Int	1701 - Int	1702 - Int	1703 - Int
1704 - Int	1705 - Int	1706 - Int	1802 - Int	1803 - Int
1804 - Int	1805 - Int	1806 - Int	1807 - Int	1808 - Int
1809 - Int	1810 - Int	1811 - Int	1812 - Int	
2104 - Int	2105 - Int	2106 - Int	2109 - Int	2110 - Int
2111 - Int	2112 - Int			
3101 - Int	3102 - Int	3103 - Int	3104 - Int	3105 - Int
3106 - Int	3107 - Int	3108 - Int	3201 - Int	3202 - Int
3203 - Int	3204 - Int	3205 - Int	3206 - Int	3207 - Int
3208 - Int				
Dirty Rooms				
Room - Status	Room - Status	Room - Status	Room - Status	Room - Status
To Be Inspected Rooms				
Room - Status	Room - Status	Room - Status	Room - Status	Room - Status
Out Of Service Rooms				
Room - Status	Room - Status	Room - Status	Room - Status	Room - Status

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**Figure 2-19 Room Status Audit for All Rooms of a Particular Type (Front Desk Terminal)**  
 (Room Status Audit for all Rooms that have an Occupancy Status of Vacant)

<i>How to Program</i>		Chart 4-19, page 4-25
<i>How to Use</i>	Console:	Chart 5-3, page 5-3
	FDT:	Chart 5-20, page 5-16

## Room Type Audit

This audit is available on the front desk terminal only. The Room type Audit produces a report of all guest rooms of a particular type; it gives their room number, occupancy, and whether there is a maid in the room. This report can only be requested from a front desk terminal. See Figure 2-20.

11/28 02:48P ROOM AUDIT FOR SINGLE ROOMS				
Room - Status	Room - Status	Room - Status	Room - Status	Room - Status
current base : 000000				
1101 - Vac	1102 - Vac	1103 - Vac	1104 - Vac	1105 - Vac
1106 - Vac	1107 - Vac	1108 - Vac	1109 - Vac	1201 - Vac
1202 - Res	1203 - Vac	1204 - Gua	1205 - Vac	1206 - Vac
1207 - Occ	1208 - Vac	1209 - Vac	1210 - Vac	1211 - Vac
1212 - Vac	1501 - Occ	1502 - Occ	1503 - Vac	1504 - Vac
1505 - Vac	1506 - Vac	1701 - Vac	1702 - Vac	1703 - Vac
1704 - Vac	1705 - Vac	1706 - Vac	1802 - Vac	1803 - Vac
1804 - Vac	1805 - Vac	1806 - Vac	1807 - Vac	1808 - Vac
1809 - Vac	1810 - Vac	1811 - Vac	1812 - Vac	
2101 - Occ	2102 - Occ	2103 - Res	2104 - Vac	2105 - Vac
2106 - Vac	2107 - Occ	2108 - Occ	2109 - Vac	2110 - Vac
2111 - Vac	2112 - Vac			
3101 - Vac	3102 - Vac	3103 - Vac	3104 - Vac	3105 - Vac
3106 - Vac	3107 - Vac	3108 - Vac	3201 - Vac	3202 - Vac
3203 - Vac	3204 - vac	3205 - Vac	3206 - Vac	3207 - Vac
3208 - Vac				

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**Figure 2-20 Room Type Audit (Front Desk Terminal)**

<i>How to Program</i>	N/A
<i>How to Use</i>	Console: N/A
	FDT: Chart 5-19, page 5-15

### Wakeup Audit

The Wakeup Audit produces a report of all guest rooms that have a wakeup call enabled. The format of the printout is identical, whether requested by the attendant console or front desk terminal. See Figure 2-21.

11/28 01:09P <b>AUTOMATIC WAKE-UP AUDIT</b>				
Room - Time	Room - Time	Room - Time	Room - Time	Room - Time
2107 - 06:30	2108 - 06:15			

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**Figure 2-21 Automatic Wakeup Audit**

<i>How to Program</i>		Chart 4-6, page 4-16
<i>How to Use</i>	Console:	Chart 5-3, page 5-3
	FDT:	Chart 5-18, page 5-15

### Wakeup/Room Condition Audit

The Wakeup/Room condition Audit produces a report of all guest rooms that have a wakeup call enabled. At the same time, the occupancy and condition of all occupied/clean rooms are changed to occupied/dirty. The PABX is programmed through CDE to print the audit and change the occupancy/condition automatically at a preset, user-selected time each day.

<i>How to Program</i>		Chart 4-7, page 4-16
<i>How to Use</i>	Console:	N/A
	FDT:	N/A

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## Automatic Wakeup

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The Automatic Wakeup feature allows either an attendant or a guest to set up a wakeup alarm call that rings the guest room at a prearranged time. An existing wakeup time can be changed or canceled. See Table 2-11.

On answering a wakeup alarm call, the guest receives a special tone (100 ms ON, 400 ms OFF, repeated), or music, or a recorded announcement. The recorded announcement can be changed for night service.

When a wakeup call is not answered within six rings, or when the extension is busy, two more attempts, at 5-minute intervals, are made to ring the extension. Each wakeup attempt can generate a single-line report on a system printer. If the call is still unanswered, the wakeup is canceled and the attendant can be notified that the wakeup was not honored.

**Note:** If the wakeup call is to a *SUPERSET 420* or *SUPERSET 430* telephone, it is treated as a timed reminder (it rings once and sets a reminder prompt). (See Reminders in the *Features Description Practice*.) A wakeup attempt on a *SUPERSET* display telephone does not generate a single-line report.

Recorded announcements are provided through recording hunt groups. When an extension answers the wakeup call, the recording device is rung. The extension hears silence until the recording device answers. If a recorded announcement is used, a wakeup is only honored when there is a free recording announcement device available. Ensure that there are sufficient RADs to provide adequate wakeup service.

### Attendant Wakeup

The attendant can set, change, or cancel the wakeup time. Wakeup times are taken as AM unless they are specifically set for PM. The attendant can print a list of all the current wakeups. See Wakeup Audit. A maintenance log is created if the Hotel/Motel Wakeup printer fails.

**Table 2-11 Automatic Wakeup**

Terminal	Description	Display
<p><b>Attendant Console</b></p>	<p>Set, wakeup and clear functions are available on softkeys. In each case, a printout automatically occurs at the associated printer if the system option to print these changes has been enabled. If system time is in 12-hour format, a PM softkey is available for afternoon wakeup times. If system time is in 24-hour format, the PM softkey does not appear. Time must always be entered as four digits (hh:mm). The system does not accept an invalid setting, but gives no error message.</p> <p>If a wakeup is set or changed by the console, and the system option to print these changes has been enabled, a SET BY CON or CHG BY CON message is printed to indicate how the change was made.</p>	<p>Wakeup time is displayed on the console's status line:</p> <p><b>Wakeup = 09:35</b> if the wakeup time is AM,</p> <p>or</p> <p><b>Wakeup = 09:35P</b> if the wakeup time is PM.</p>
<p><b>Front Desk Terminal</b></p>	<p>If no wakeup time is set for a room, the Set Wake Up softkey is displayed. If a wakeup time is set for a room, a Set Wake Up and a Clear Wake Up softkey are displayed.</p> <p>When the Set Wake Up softkey is pressed, all softkeys are cleared and a prompt to enter the wakeup time is displayed. Only the number keys, up/down arrow keys, and the Delete and Return hardkey are valid when setting the time. Time must be entered as four digits (hh:mm).</p> <p>Each digit is validated as it is entered. Any digit is accepted that could be a valid time setting. A 24-hour setting is accepted as valid in the 12-hour mode: it is automatically converted to a 12-hour format when displayed. Any time entered in a 12-hour format is taken to be AM and is displayed with AM appended.</p>	<p>Wakeup time is entered, changed, and displayed in the Wake Up Time Field on the Guest Room Update screen. If the 24-hour clock system option is enabled, the wakeup time is displayed in a 24-hour format. Otherwise, the wakeup time is displayed in 12-hour format with an AM/PM indication.</p> <p>The Search Display screen displays wakeup time for a guest room (if set).</p>



Table 2-11 Automatic Wakeup (continued)

Terminal	Description	Display
	<p>If time is entered in the 12-hour format, a PM softkey is displayed. This display allows time to be identified as morning or afternoon. Any time entered in the 12-hour format is assumed to be morning time unless the PM softkey is pressed. The key toggles the display from AM to PM. Cancel moves the shade bar to the next programmable field and leaves the wakeup time the same as it was when the form was displayed. The Enter softkey commits the wakeup time to the database.</p> <p>If a wakeup is set or changed by the front desk terminal, and the system option to print these changes has been enabled, a SET BY DESK or CHG BY DESK message is printed to indicate how the change was made.</p>	

Page 2 of 2

### Guest Room Wakeup

The Guest Room Wakeup feature allows a guest to set and cancel a wakeup call from any room telephone by dialing an automatic wakeup access code. Wakeup time must be in 24-hour format and is entered by dialing from the telephone. Dial tone indicates that a wakeup time has been set or canceled successfully.

If a guest room cancels a wake up by dialing the automatic wakeup access code followed by the digit "9" four times (9999), a single line report CAN BY ROOM is printed.

<i>Feature Interactions</i>	If a guest room telephone is programmed for Automatic Wakeup Routing, the Automatic Wakeup Music option has no effect.
	Do Not Disturb is ignored on extensions when the wakeup is honored.
	System options 12 (Automatic Wakeup Alarm) and 13 (Automatic Wakeup Print) have no effect on <i>SUPERSET 420</i> or <i>SUPERSET 430</i> telephone operation of the feature. See the Programming section.
	System Option 56 (Room Status Conversion/Auto Wakeup Print Timer) only applies if System Option 34 (Auto Room Status Conversion/Auto Wakeup Print) is enabled. See the Programming section.

<i>Conditions</i>	<p>In the event of a power failure, all expired wakeups are honored within 5 minutes of a system reset.</p> <p>If a recording hunt group is used for wakeups, there can only be one wakeup call per recording announcement device at any given time. If multiple wakeups have been set for the same time, only one can proceed. All the others are shifted. The amount of this shift is variable depending on:</p> <ul style="list-style-type: none"> <li>- the time it takes for each preceding extension to answer/acknowledge the wakeup</li> <li>- the 1-minute period that is between wakeups being scanned.</li> </ul>	
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<i>How to program</i>	Guest Room	Chart 4-9, page 4-17
	Attendant	Chart 4-10, page 4-18
<i>How to Use</i>	Console:	Chart 5-4, page 5-4, and Chart 5-5, page 5-4
	FDT:	Chart 5-21, page 5-17 and Chart 5-22, page 5-19

## Call Blocking

The Call Blocking feature can only be set from the attendant console. Call Blocking allows the attendant to inhibit room-to-room calls. Calls to the attendant or to extensions without the call blocking COS option selected can be made normally. Attempted calls between restricted extensions are treated as illegal numbers and the calling party hears reorder tone. A call blocking indication is displayed on the House Statistics screen of the front desk terminal.

<i>Conditions</i>	<p>The LED associated with the Block hardkey for all consoles with the feature enabled is updated each time call blocking is turned on or off. When the LED is on, call blocking is enabled. Consoles without the feature enabled do not have an operational key and LED.</p>	
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<i>Feature Interactions</i>	<p>Tenancing does not apply to the operation of this feature. All consoles with the feature enabled can enable or disable call blocking throughout the system.</p> <p>If Call Rerouting is used, blocked calls are treated as Station Illegal Number Routing.</p>	
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<i>How to Program</i>	Chart 4-11, page 4-19	
<i>How to Use</i>	Console:	Chart 5-6, page 5-5
	FDT:	N/A

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## Call Restriction

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The Call Restriction feature is used to assign a level of calling privilege to each guest room. There are three levels:

- internal
- local
- long distance

The attendant can assign any of the levels to a particular room telephone. In addition, the system automatically sets the call restriction for a room (to a programmable value) when an occupancy change to either vacant reserved, guaranteed or occupied occurs. On the front desk terminal screen, this feature is called Call Privilege.

<i>Feature Interactions</i>	System Features 32 (Outgoing Call Restriction) and 33 (Room Status) are mutually exclusive. System Feature 32 cannot be used in programming Hotel/Motel. See Note below regarding call restriction operation with PMS.	
<i>Conditions</i>	By default, vacant rooms (and rooms that become vacant) have their call restriction set to Internal, the most restrictive option. This setting prevents unauthorized calls from vacant rooms.	
	By default, occupied rooms have the call restriction set to Internal, the most restrictive option. Usually when a room becomes occupied, the guest is provided with a less restrictive setting.	
<i>How to Program</i>	Chart 4-12, page 4-20	
<i>How to Use</i>	Console:	Chart 5-11, page 5-8
	FDT:	Chart 5-23, page 5-19

**Note:** When a guest checks in (PMS Check In), the room telephone is enabled to allow outgoing trunk calls. The attendant may restrict the room phone to internal calls, local calls, or long distance calls using the Outgoing Call Restriction feature described in the Attendant Console Guide.

## Check Out

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The Check Out feature is available to the front desk terminal only. The Check Out softkey provides a simple checkout procedure. It is only provided if the occupancy setting of the guest room is Occupied. It has these functions:

- Sets the room occupancy field to vacant. Sets the room condition to dirty.
- Sets the call restriction to the setting specified in System Option 57 (Vacant/reserved default call restriction).
- Once the check out key is pressed, the softkeys are updated to present **Cancel** and **Enter** keys only. **Cancel** resets the room conditions as they were originally. When **Enter** is pressed, the guest name is erased, DND is turned off (if it had been set), the message register is cleared, and wakeup is turned off (if it had been set).

<i>How to Program</i>		N/A
<i>How to Use</i>	Console:	N/A
	FDT:	Chart 5-24, page 5-20

## Do Not Disturb

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The Do Not Disturb feature blocks calls from ringing at a guest's telephone. Outgoing calls are not affected. See Table 2-12. Callers to a telephone with Do Not Disturb active hear reorder (error) tone. The message Do Not Disturb appears on display sets. The system can be programmed to reroute these calls to a predetermined answering point. The console and *SUPERSET 430* telephones can override Do Not Disturb.

The attendant console can set and clear Do Not Disturb for a guest room telephone whether or not the console is connected to the guest room phone. The front desk terminal can set Do Not Disturb in Room Update mode while the highlight bar is on the DND field.

A guest can set and clear Do Not Disturb from a guest room telephone.

<b>Table 2-12 Do Not Disturb</b>		
<b>Terminal</b>	<b>Description</b>	<b>Display/Confirmation</b>
<b>Attendant Console</b>	Setting and clearing Do Not Disturb are controlled by the NO DIST softkey. When DND is set, the NO DIST softkey does not appear. When DND is not set, the softkey appears.	<i>DND On:</i> DND status flag appears on console status line. <i>DND Off:</i> There is no DND status flag on the status line of the attendant console.
<b>Front Desk Terminal</b>	Setting and clearing Do Not Disturb are controlled by a DND softkey. When DND is set, the softkey turns it off. When DND is not set, the softkey turns it on.	The DND field appears on the Guest Room Update screen. When DND is set, ON is displayed in the field. When DND is not set, the field is blank.
<b>Industry-standard Telephones</b>	Setting and clearing Do Not Disturb from a guest room telephone is done by dialing a feature access code plus 1 (to set) and 2 (to cancel) DND.	Dial tone indicates DND has been set or canceled.
<b>SUPERSET 410 SUPERSET 430 SUPERSET 401+ Telephones</b>	Setting and clearing Do Not Disturb from a guest room telephone is done by pressing the Do Not Disturb feature key.	Dial tone indicates DND has been set or canceled.
<b>SUPERSET 420 Telephones</b>	To set or clear Do Not Disturb from a <i>SUPERSET 420</i> , toggle the Do Not Disturb feature key or use the Superkey menu.	Dial tone indicates DND has been set or canceled.

<i>Conditions:</i>	For DND to be set on a guest room phone, whether it is done from the attendant console, the front desk terminal, or the guest room phone, COS option 220 must be enabled for that particular guest room phone.
<i>How to Program</i>	Chart 4-13, page 4-21
<i>How to Use</i>	Console: Chart 5-7, page 5-6, and Chart 5-8, page 5-6
	FDT: Chart 5-25, page 5-21

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## Guest Names

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Guest names can be entered and stored from the front desk terminal and from *SUPERSET* display telephones only.

The front desk terminal has two data fields: last name and first name. The last name field accepts up to 15 alphanumeric characters. The first name field accepts up to six characters. Names are displayed in uppercase, even if they are entered in lowercase. The order is LAST NAME, FIRST NAME. The *SUPERSET* display telephone can enter and display one 10-character name, or can display up to 10 characters of a name entered from a front desk terminal.

Guest names can be displayed on an attendant console if entered from the front desk terminal or a *SUPERSET* display telephone, but they cannot be entered or searched for. See Table 2-13.

<b>Table 2-13 Guest Names</b>		
<b>Terminal</b>	<b>Description</b>	<b>Display</b>
<b>Attendant Console</b>	Guest names can be displayed on an attendant console with a front desk terminal configured on the system, but they cannot be entered or searched for.	First 10 characters of the last name field as entered from the front desk terminal. (If the name entered on the front desk terminal is longer than 10 characters, the name displayed on the console is truncated at 10.)  Ten-character name as programmed from a <i>SUPERSET 420</i> or <i>SUPERSET 430</i> .
<b>Front Desk Terminal</b>	Guest names can be entered and stored, as well as displayed. There are two data fields: last name and first name.	The last name field accepts up to 15 alphanumeric characters. The first name field accepts up to six characters. They are displayed in uppercase, in the order LAST NAME, FIRST NAME.

<i>Conditions</i>		When room status is set to vacant, the name fields are cleared. Both the FDT and the console operate in this way.
		If the name field is not programmed, the data field is blank.
		If a copy database is in progress when a name update is requested from the front desk terminal (the Enter key is pressed), the name is not saved. A warning message is displayed. Any other information entered on the form is saved.
		<b>Note:</b> With the exception of name updates, a copy database is transparent to the user. All other front desk terminal functions can be carried out because the information is saved until it can be executed.
<i>How to Program</i>		N/A
<i>How to Use</i>	Console:	N/A
	FDT:	Chart 5-26, page 5-22, and Chart 5-27, page 5-23

## Guest Room *SUPERSET* Key Programming

A block of guest room *SUPERSET 401+*, *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* telephones can be programmed with Speed Dial and Feature Access keys only be done from CDE. Up to three separate blocks (templates) can be programmed at one time.

<i>Feature Interactions</i>		Keys programmed as Speed Dial keys or Feature Access keys in a Guest Room <i>SUPERSET</i> Keys Template cannot be programmed as Line Appearances in CDE Form 09 (Station/ <i>SUPERSET</i> Telephones).
<i>Conditions</i>		Guest Room set users cannot program speed dial keys when a guest room template is enabled for the extension.
<i>How to Program</i>		Chart 4-14, page 4-21
<i>How to Use</i>	Console:	N/A
	FDT:	N/A

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**Maid in Room**


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This feature allows the maid to enter a code from the guest room telephone to indicate that the room is currently being cleaned. Upon leaving the room, the maid can enter a second code indicating that the room is ready for inspection or that it is clean. See Table 2-14.

<b>Table 2-14 Maid in Room</b>		
<b>Code</b>	<b>Maid in Room Status</b>	<b>Meaning</b>
1	Maid is in room	Maid has entered the dirty room and has dialed the room access code and the maid in room code. The Room Condition does not change.
2	No maid in room	Maid has dialed the room access code and the no maid in room code. Maid has decided to leave the dirty room after dialing in the Maid in Room code. Room has not been cleaned. The Room Condition does not change.
3	Room clean, maid not in room	The room is clean. If there is a supervisor, supervisor dials this code to indicate room has been inspected and is ready to be rented out. If there is no supervisor, maid dials this code to indicate that the room is clean and ready to be rented out. Maid or supervisor has dialed the room access code and the room clean code.
4	Room to be inspected, maid not in room	Maid has finished cleaning the room. The room is ready for inspection by a supervisor. Maid has dialed the room access code and the room to be inspected code.

The attendant console or the front desk terminal can display this information. A *SUPERSET* telephone with the proper COS option can also display this information. See Maid in Room Status Display on page 2-42. A Room Status single line report is generated each time that the Maid in Room feature is used. See Single Line Reports on page 2-58. If the maid in room status changes for a room currently in room update mode, the new status is not posted until the current display (room update screen on the front desk terminal, or current display on the attendant console) is exited and reentered. See Table 2-15.



Table 2-15 Maid in Room

Status	Description of Display	Changing the Display from a(n)...			
		Attendant Console	Front Desk Terminal	Telephone	
		<b>Attendant Console</b>	<b>Front Desk Terminal</b>		
<b>Maid in room</b>	Maid in room status is displayed on the attendant console display room status line as "Maid".	The status " <b>Maid in Room</b> " in bold letters appears in the Maid in Room field on the room updates form.	Maid in Room status cannot be changed from the console.	Maid in Room status cannot be changed from the front desk terminal.	Maid dials the room access code and 1.
<b>No maid in room</b>	If there is no maid in the room, "Maid" is not displayed.	If there is no maid in the room, the field is blank.	Maid in Room status cannot be changed from the console.	Maid in Room status cannot be changed from the front desk terminal.	Maid dials the room access code and 2.
<b>Room to be inspected</b>	To be inspected condition is displayed on the attendant console display room status line as "Insp".	The status " <b>Insp</b> " in bold letters appears in the Condition field on the room updates form.	Attendant presses the Insp softkey.	On the Room Update screen, Attendant presses the Show Choices softkey and then the Insp softkey.	Maid dials the room access code and 4.
<b>Room clean</b>	Clean condition is displayed on the attendant console display room status line as "Clean".	The status " <b>Clean</b> " in bold letters appears in the Condition field on the room updates form.	Attendant presses the Clean softkey.	On the Room Update screen, attendant presses the Show Choices softkey and then the Clean softkey.	Maid or supervisor dials the room access code and 3.

*Conditions*

The Maid in Room status can only be changed from the guest room telephone.

Only the Room Condition status can be modified by the maid. This feature cannot change the Room Occupancy status of the guest room.

*How to Program*

Chart 4-15, page 4-22

*How to Use*

Console:

Chart 5-11, page 5-8

FDT:

Chart 5-28, page 5-23

**Maid in Room Status Display - SUPERSET 420 and SUPERSET 430 Telephones**

This feature allows an authorized SUPERSET 420 and SUPERSET 430 telephone to determine which guest rooms have maids in them. See Table 2-16.

<b>Table 2-16 Maid in Room Status Display</b>				
<b>Status</b>	<b>Description of Display</b>	<b>Changing the Field from a(n)....</b>		
		<b>Attendant Console</b>	<b>Front Desk terminal</b>	<b>Room Telephone</b>
<b>SUPERSET 420 Telephone</b>				
Maid in room	Rooms with a maid in them are displayed two at a time in numeric order. If there are more rooms with maids in them, a left arrow softkey appears. Pressing this softkey displays the other rooms, two at a time. See Maid in Room Search.	Maid in Room status cannot be changed from the console.	Maid in Room status cannot be changed from the front desk terminal.	Maid or supervisor dials an access code and a status code from a guest room phone.
<b>SUPERSET 430 Telephone</b>				
<b>Maid in room</b>	Rooms with a maid in them are displayed 10 at a time in numeric order. If there are more rooms with maids in them, a right arrow softkey appears. Pressing this key displays the other rooms, 10 at a time. See Maid in Room Search.	Maid in Room status cannot be changed from the console.	Maid in Room status cannot be changed from the front desk terminal.	Maid or supervisor dials an access code and a status code from a guest room phone.

<i>How to Program</i>		Chart 4-16, page 4-22
<i>How to Use</i>	420/430 Telephones	Chart 5-38, page 5-31

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## Message Lamp Test

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The message waiting lamp on a guest room telephone is automatically tested each time the room status changes. The test will run when a room status change is made from a front desk terminal, a PMS terminal, or an attendant console. There is no indication at the front desk terminal that the test has run. However, if there is a failure, notification is through the alarm icon at the console. The test verifies lamp operation and confirms that the telephone is still connected in the room. The test does not verify bell operation.

<i>Feature Interactions</i>	COS Option 232 (Message Waiting Lamp) and System Option 02 (Message Lamp Test Enable) must be enabled. See the Programming section.	
<i>How to Program</i>	Chart 4-17, page 4-23	
<i>How to Use</i>	Console:	N/A
	FDT:	N/A

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## Message Register

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The Message Register feature keeps track of the number of completed external calls or call units for each extension. This feature applies to consoles, industry standard telephones, and *SUPERSET* telephones. The extension or console which answers an incoming trunk call or places an outgoing trunk call is charged with the count on the trunk while the trunk is active in the system, even if the extension is no longer involved in the call. This operation can be changed so that the count is applied to the current extension or console talking to the trunk. If the attendant handles the trunk call first (incoming or outgoing) and transfers the trunk call to an extension (supervised or unsupervised), the console's message register is transferred to the extension. Supervision on an outgoing trunk is counted as one message register count.

There are two modes of operation. The first counts the number of external calls made by each room. The second keeps track of meter pulses being sent from the far end to the associated trunk circuit. These pulses can in turn be charged against the guestroom making the call. The attendant console or the front desk terminal displays the current value of the message register for a room each time a room number is entered. The message register can be cleared by the attendant from the console or terminal, or automatically upon requesting an audit. (See Attendant Message Register Audit.) Clearing the message register can be recorded as a single line report on a system printout - the system printer prints the message register count before it is cleared. This feature is only used in cases where COS Option 703, Message Register Applies, has been enabled for some extensions.

The maximum message register count is 50,000. The counter resets to zero when this count is reached (an alarm can also be generated). The alarm icon on the console can be set to flash when the message register overflows.

Meter pulses are recorded in SMDR. See the *Station Message Detail Recording Practice*.

<i>Conditions</i>		<p>If an extension with Message Registration connects to an outgoing trunk which does not have Message Registration, Message Registration does not apply to the extension.</p> <p>When the trunk does not provide answer supervision (trunk circuit descriptor option "Far-end Gives Answer Supervision" is not enabled), a completed outgoing call is determined by the pseudo answer supervision timer. This timer is started when a trunk seizure is acknowledged and when the timer expires, a meter pulse is counted (a pseudo answer supervision) giving an indication of a completed external call.</p>
<i>How to Program</i>		Chart 4-18, page 4-24
<i>How to Use</i>	Console:	Chart 5-9, page 5-7
	FDT:	Chart 5-29, page 5-24

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## Multi-User

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Four front desk terminals can run the hotel/motel application at the same time. However, two terminals cannot edit information for the same room at the same time.

The front desk terminal also checks that the room is not being accessed by an attendant console. The message "Room being accessed by another user. Try again later." appears on the screen if a console is currently displaying information for the room. If more than one front desk terminal is logged in with the supervisor-level password, each terminal checks that the room is not being accessed by another terminal or by the console.

The front desk terminal and a *SUPERSET* display telephone, or several display telephones can enter, change or delete a guest name. The entry that is done last is the one that is stored.

Up to 11 consoles can be configured on one system. Two (or more) consoles can access a guest room at the same time. The user that leaves the guest room last updates the database last, and that information is the valid data for the room. If two users are changing different fields at the same time, all the information should be captured because only fields that have been modified will be updated when the EXIT softkey is pressed.

<i>How to Program</i>	Console:	Chart 4-1, page 4-2 See COS option 320
	FDT:	No programming required
<i>How to Use</i>	Console:	N/A
	FDT:	N/A

Entering or changing guest room information from the front desk terminal can be controlled by passwords. When first installed, all passwords are the same, and different levels must be enabled. A CDE attendant-level password allows no editing capability. A CDE supervisor-level password allows editing. The user of an attendant password can read information about rooms, request audits, and conduct searches. The user of a supervisor password can, in addition, enter and change information about a guest room, because this password presents the Room Update softkey.

<i>How to Program</i>	Chart 4-1, page 4-2, Step 9.	
<i>How to Use</i>	Console:	N/A
	FDT:	Chart 5-14, page 5-12

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## PMS Interface

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The PABX can interface to IBM-compatible personal computers with the Lodgistix PMS software package (or a package that follows the same protocol). See Property Management System, Paragraph 2.5 on page 2-60.

<i>How to Program</i>	Chart 4-2, page 4-11	
<i>How to Use</i>	Console:	N/A
	FDT:	N/A

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## Room Condition

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Room Condition indicates the current housekeeping condition of a guest room, and can be set from an attendant console or a front desk terminal (Table 2-17). See Room Status. Some conditions can be set from a guest room telephone. See Maid in Room. Room condition can be displayed as part of the room status display on the *SUPERSET 420* and *SUPERSET 430* telephone. See Room Status Display on page 2-50.

Table 2-17 Room Condition					
Condition	Meaning	Description of Display	Changing the Field from a(n)...		
			Attendant Console	Front Desk Terminal	Room Telephone
<b>Attendant Console</b>					
Clean	Room has been inspected and is ready for occupancy.	<b>"Clean"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the CLEAN softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Clean</b> softkey.	Maid or supervisor dials <b>Clean</b> code from a guest room phone. (Maid in Room feature.)
Dirty	Room has not been cleaned by a maid.	<b>"Dirty"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the DIRTY softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Dirty</b> softkey.	Cannot be changed.
Out of Service	Room is not in use.	<b>"Serv."</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the OUT OF SERV softkey.	On the Room Update screen, Attendant presses <b>Show Choices</b> and <b>Serv</b> softkeys.	Cannot be changed.
To be Inspected	Room has been cleaned by a maid but has not yet been inspected.	<b>"Insp."</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the TO INSPECT softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Insp</b> softkey.	Maid or supervisor dials the <b>To Be Inspected</b> code from a guest room telephone. (Maid in Room feature.)
<b>Front Desk Terminal</b>					
Clean	Same as above.	<b>"Clean"</b> appears in the Condition field on the room updates form.	Attendant presses the <b>Clean</b> softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Clean</b> softkey.	Maid or supervisor dials <b>Clean</b> code from a guest room phone. (Maid in Room feature.)

Table 2-17 Room Condition (continued)					
Condition	Meaning	Description of Display	Changing the Field from a(n)...		
			Attendant Console	Front Desk Terminal	Room Telephone
<b>Front Desk Terminal (cont'd)</b>					
Dirty	Same as above.	<b>"Dirty"</b> appears in the Condition field on the room updates form.	Attendant presses the <b>Dirty</b> softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Dirty</b> softkey.	Cannot be changed.
Out of Service	Same as above.	<b>"Serv"</b> appears in the Condition field on the room updates form.	Attendant presses the <b>Serv</b> softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Out of Serv</b> softkey.	Cannot be changed.
To be Inspected	Same as above.	<b>"Insp"</b> appears in the Condition field on the room updates form.	Attendant presses the <b>Insp</b> softkey.	On the Room Update screen, Attendant presses the <b>Show Choices</b> softkey, then the <b>To Inspect</b> softkey.	Maid or supervisor dials the <b>To Be Inspected</b> code from a guest room telephone. (Maid in Room feature.)

<i>How to Program</i>		Chart 4-19, page 4-25
<i>How to Use</i>	Console:	Chart 5-11, page 5-8
	FDT:	Chart 5-30, page 5-24

**Room Occupancy**

This feature indicates the current occupancy of a guest room. The room occupancy can be set from a console or a front desk terminal (Table 2-18). See Room Status.

Table 2-18 Room Occupancy					
Occupancy	Meaning	Description of Display	Changing the Field from a(n)...		
			Attendant Console	Front Desk Terminal	Room Phone
<b>Attendant Console</b>					
Vacant	Room is not occupied.	<b>"Vac"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the VACANT softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Vacant</b> softkey.	Cannot be changed.
Occupied	Room is occupied by a guest.	<b>"Occ"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the OCCUPIED softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Occupied</b> softkey.	Cannot be changed.
Reserved	The guest room is reserved for a guest, but not paid for. If the guest does not pay for the room by a particular time, it can be rented out to another guest.	<b>"Res"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the RESERVED softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Reserved</b> softkey.	Cannot be changed.
Guaranteed	The guest room is reserved for a guest and paid for, although the guest has not checked in yet.	<b>"Gua"</b> is displayed on the attendant console display room status line.	Attendant presses the STATUS softkey, then the GUARANTEED softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Guaranteed</b> softkey.	Cannot be changed.



Table 2-18 Room Occupancy (continued)					
Occupancy	Meaning	Description of Display	Changing the Field from a(n)...		
			Attendant Console	Front Desk Terminal	Room Phone
<b>Front Desk Terminal</b>					
Vacant	Same as above.	<b>"Vacant"</b> appears in the Occupancy field on the room updates form.	Attendant presses the VACANT softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Vacant</b> softkey.	Cannot be changed.
Occupied	Same as above.	<b>"Occupied"</b> appears in the Occupancy field on the room updates form.	Attendant presses the OCCUPIED softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Occupied</b> softkey.	Cannot be changed.
Reserved	Same as above.	<b>"Reserved"</b> appears in the Occupancy field on the room updates form.	Attendant presses the RESERVED softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Reserved</b> softkey.	Cannot be changed.
Guaranteed	Same as above.	<b>"Guaranteed"</b> appears in the Occupancy field on the room updates form.	Attendant presses the GUARANTEE D softkey.	On the Room Updatescreen, Attendant presses the <b>Show Choices</b> softkey, then the <b>Guaranteed</b> softkey.	Cannot be changed.

Page 2 of 2

*How to Program*

Chart 4-19, page 4-25

*How to Use*

Console: Chart 5-11, page 5-8

FDT:

Chart 5-31, page 5-25

## Room Status Display

### Attendant Console and Front Desk Terminal

This feature allows the attendant to display and change the status of a room(s). Room status consists of: room occupancy, room condition, telephone privileges (call restriction) and maid in room. Each (except maid in room) can be set independently by the attendant. See Table 2-19.

The system can be programmed to change the status of all "occupied/clean" rooms to "occupied/dirty" at a predetermined time. At the same time, an audit of all auto wakeups is generated. See Wakeup/Room Condition Audit on page 2-30.

**Table 2-19 Room Status Display**

Terminal Type	Description of Display
<b>Attendant Console</b>	When a room number is selected, the status from the above list is displayed on the second line of the attendant console LCD. For example: Status= Vac/Dirty/Int/Maid means the room is vacant, dirty, has only internal telephone privileges and has a maid in it. The last field is blank if the maid is not present.
	Room status for a number of rooms can be displayed by doing a room search on the basis of: - Maid in room - Vacant/clean - Reserved and clean - Out of service See Room Status Search.
<b>Front Desk Terminal</b>	A. Room status for a particular room is displayed on the room update screen. occupancy, condition, call privilege, and maid are displayed as separate fields.
	B. Room status for a number of rooms can be displayed by doing a room search on the basis of: - Vacant/clean - Vacant - Maid in room - Out of service - Dirty - Reserved - Guaranteed See Room Status Search.

<i>Feature Interactions</i>		If System Option 2 (Message Lamp Test Enable) is enabled, when a room's status is changed from vacant to occupied or from occupied to vacant, the system performs a message lamp test on the telephone in that room. If the test finds the lamp defective (i.e. burnt-out or missing), it raises a minor alarm. See the Programming section.
How to Program		Chart 4-19, page 4-25
How to Use	Console:	Chart 5-11, page 5-8 Chart 5-13, page 5-10
	FDT:	Chart 5-31, page 5-25 Chart 5-28, page 5-23 Chart 5-33, page 5-27 Chart 5-23, page 5-19

## Room Types and Room Codes

Hotel guest rooms can be divided into 50 different types, such as single, double, queen, smoking, nonsmoking. This division is done through customer data entry programming from the CDE terminal by putting each room type in a separate class of service. Since each class of service can have a different name associated with it, the type of room is identified by the class of service name. The name can be eight characters long. By default, it can be identified by the code (COS number) associated with the class of service name. Searches and audits can be requested by room type or code.

Room Type	COS Name	Room Code (COS Number)
All single rooms	Single	1
All regular doubles	Double	2
All doubles facing pool	Doub_VIP	3
All suites no smoking	NoSmk_Su	4

<i>How to Program</i>	Chart 4-1, page 4-2, Step 2.
<i>How to Use</i>	Console: N/A
	FDT: Chart 5-35, page 5-28

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## Searches

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Several different types of searches can be conducted:

- Guest search (see note)
- Room number search
- Room type search (see note)
- Maid in room search
- Room status search

**Note:** Front Desk Terminal only.

### Guest Search

Guest Search searches all guest rooms for a text string that matches a guest's name. The string entered must match with the first letters of the last name field. For instance, if BLACK were entered, the name would match with BLACK or other names containing these letters such as BLACKBURN. All matches are displayed in alphabetical order using the standard front desk search display format. If last names are identical, first names are used to determine the order. If both are identical, the guest who checked in last is displayed first.

<i>How to Program</i>	N/A
<i>How to Use</i>	Console: N/A
	FDT: Chart 5-32, page 5-26

## Room Number Search

A search can be conducted for information about a particular room number. See Table 2-21.

Terminal Type	Operation	Display
<b>Attendant Console</b>	Press the Guest Room softkey and enter a room number.	The room occupancy, condition, call restriction, whether a maid is in the room, and message register count is displayed. Attendant consoles associated with a front desk terminal application display the guest name and room type.
<b>Front Desk Terminal</b>	<b>A.</b> Beginning from the House Statistics screen, press the Room Update softkey and enter the room number.	<b>Room Update Screen.</b> The name of the guest, room occupancy, condition, call restriction, whether a maid is in the room, wakeup time, room type, whether there is a message waiting, whether Do Not Disturb is set, and the message register count is displayed on the Room Update screen.
	<b>B.</b> From the Room Search menu, press the Room Number softkey and enter the room number.	<b>Search Display Screen.</b> The name of the guest, room type, room occupancy, condition, call restriction, whether a maid is in the room, message waiting indication, and wakeup time are displayed for that particular room number, and the next eight rooms.

<i>How to Program</i>	N/A
<i>How to Use</i>	Console: Chart 5-12, page 5-10
	FDT: Chart 5-34, page 5-27

## Room Type Search

Room Type Search is available on the front desk terminal only. A search can be conducted on the basis of room type. The class of service number for the room type is used as the room code for search purposes. There is a wild card entry for searching all room types.

Searches can also be conducted on the basis of room status and room type. See Room Type.

<i>How to Program</i>	N/A
<i>How to Use</i>	Console: N/A
	FDT: Chart 5-35, page 5-28

**Maid in Room Search**

A search can be conducted from *SUPERSET 420* or *SUPERSET 430* telephones, from the attendant console, or from a front desk terminal for rooms with a status of Maid in Room (Table 2-22). Rooms with a maid in them are displayed in sequence from lowest to highest room number. See Room Status Search.

**Table 2-22 Maid in Room Search**

Terminal Type	Operation	Display
<b>Attendant Console</b>	Search is initiated by pressing the MAID softkey.	The first 10 room numbers of rooms with a maid in them are displayed. If there are more rooms being cleaned, the MORE... softkey appears. This softkey displays the other guest room extension numbers, 10 at a time. When the last room number is displayed, the MORE... softkey disappears. Only room numbers are shown.
<b>Front Desk Terminal</b>	Search is initiated by pressing the Maid in Room softkey.	The first nine room numbers of rooms with a maid in them are displayed. Guest name, type of room, occupancy, condition, call restriction, message waiting indication, and wakeup time are also displayed. If there are more rooms being cleaned, the PAGE DOWN softkey appears. This softkey displays the other guest room extension numbers, nine at a time. When the last room number is displayed, the PAGE DOWN softkey disappears, and the PAGE UP softkey appears. The PAGE UP softkey allows paging backwards, nine rooms at a time. This softkey is not available on the first screen of nine rooms. If no rooms are found that meet the requirements, the user is informed and the main search menu softkeys are presented.
<b><i>SUPERSET 420</i> Telephone</b>	Search is initiated by dialing the <i>SUPERSET 420</i> Maid in Room status display access code.	The first two room numbers of rooms with a maid in them are displayed. If there are more rooms being cleaned, the arrow softkey appears.  This softkey displays the other room numbers, two at a time. When the last room number is displayed, the arrow softkey disappears.
<b><i>SUPERSET 430</i> Telephone</b>	Search is initiated by dialing the <i>SUPERSET 430</i> Maid in Room status display access code.	Search is initiated by dialing the Maid in Room access code. The first 10 room numbers of rooms with a maid in them are displayed. If there are more rooms being cleaned, the arrow softkey appears.  This softkey displays the other room numbers, 10 at a time. When the last room number is displayed, the arrow softkey disappears.

<i>How to Program</i>		Chart 4-15, page 4-22 Chart 4-16, page 4-22
<i>How to Use</i>	Console:	Chart 5-11, page 5-8
	FDT:	Chart 5-33, page 5-27
	SS420 / SS430	Chart 5-38, page 5-31

### Room Status Search

The attendant can search for guest rooms that have certain status combinations. Different types of searches can be conducted from the attendant console or from the front desk terminal. All room searches can be divided into two phases: searching and displaying. The search mode provides softkeys to select the type of search to be done. See Table 2-23.

<b>Terminal Type</b>	<b>Types of Room Status Searches</b>	<b>Operation</b>	<b>Display</b>
<b>Attendant Console</b>	<ul style="list-style-type: none"> <li>- Maid in room</li> <li>- Vacant/clean</li> <li>- Reserved and clean</li> <li>- Out of service</li> </ul>	Search is initiated by pressing the appropriate softkey.	When displaying all rooms with a particular status, as selected by softkeys, the LCD displays the numbers of up to 10 rooms that have the selected status. If there are more rooms, the MORE... softkey appears. It displays the next group of up to 10 room numbers. Rooms are displayed in order from highest to lowest room number. Only room numbers are shown.
<b>Front Desk Terminal</b>	<ul style="list-style-type: none"> <li>- Vacant/clean</li> <li>- Vacant</li> <li>- Maid in room</li> <li>- Out of service</li> <li>- Dirty</li> <li>- Reserved</li> <li>- Guaranteed</li> </ul>	Search is initiated by pressing the appropriate softkey. For each, room type (or the wild card entry 0 for all rooms) must be specified.	<p>If the search is successful, (i.e., a room meeting the search criteria exists) the first nine room numbers of rooms with that particular status are displayed. Room number, guest name, room type, occupancy, condition, whether there is a maid in the room, call restriction, message waiting indication, and wakeup time are displayed.</p> <p>If there are more rooms, the PAGE DOWN softkey appears. This softkey displays the other room numbers, nine at a time. When the last room number is displayed, the PAGE DOWN softkey disappears. The PAGE UP softkey allows paging backwards, nine rooms at a time. This softkey is not available on the first screen of nine rooms. If no rooms are found which meet the requirement, the user is informed and the main search menu softkeys are presented.</p>

**Table 2-23 Room Status Search (continued)**

Terminal Type	Types of Room Status Searches	Operation	Display
<b>SUPERSET 420</b>	Search is on a per room basis. See room status.	Search is initiated by dialing the room status display access code followed by a room number.	The LCD displays the status (occupancy and condition only) of the room: 1101 VAC/CLEAN The arrow softkey displays the status of the room with the next higher room number: 1102 RES/CLEAN When the last room number is displayed, the arrow softkey no longer appears.
<b>SUPERSET 430</b>	Search is on a per room basis. See room status.	Search is initiated by dialing the room status display access code followed by a room number.	The LCD displays the status (occupancy and condition only) of the room: 1101 VAC/CLEAN The arrow softkey displays the status of the room with the next higher room number: 1102 RES/CLEAN When the last room number is displayed, the arrow softkey no longer appears.

<i>How to Program</i>	Chart 4-19, page 4-25
<i>How to Use</i>	Console: Chart 5-11, page 5-8 Chart 5-13, page 5-10
	FDT: Chart 5-33, page 5-27
	SS420/SS430 Chart 5-39, page 5-32



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## Single Line Reports

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Single line reports are types of audits used to record changes in status for an individual room. See Table 2-24. These reports are generated automatically (under control of System Options 04, 13, and 24) and provide hard-copy evidence that a change occurred. The printouts produced by single line reports are limited to 40 characters in length. The report printouts begin with a standard prefix, containing extension number, date and time. This prefix occupies the first 19 characters of the print line, as follows:

**xxxxx mm/dd hh:mmP**

The xxxxx field refers to an extension number (five-digit maximum). The mm/dd field refers to a two-digit month and a two-digit day. The hh:mmP field refers to a two-digit hour, and two-digit minute, where P indicates PM when a 12-hour clock is used.

There are three categories of single line reports:

- **Automatic Wakeup.** Sixteen suffixes are available for automatic wakeup single line reports. Three apply to attendant console operations, three to front desk terminal operations, three to station operations (guest room telephones), and seven to wakeup attempts. Each contains the programmed wakeup time. The suffixes are summarized in Table 2-24. A sample automatic wakeup report is given below:

12345 01/23 11:20P WU 7:00 SET BY ROOM

- **Message Registration.** Message registration single line reports have only one printout suffix; it is generated whenever a room's message register is cleared from the attendant console. The register count field is five digits in length, and all leading zeros are displayed. The format of the suffix is:

REG. CLEARED AT nnnnn

nnnnn represents the register contents prior to being cleared. A sample message registration report is given below:

12345 01/23 11:40P REG. CLEARED AT 00012

- **Message Waiting.** Two suffixes are available for Message Waiting single line report printouts. One is generated when Message Waiting is turned on for an extension; the other is generated when it is turned off. The format of the suffixes is:

MESSAGE WAITING ON or MESSAGE WAITING OFF

A sample message waiting report is given below:

12345 01/23 11:45P MESSAGE WAITING ON

- **Room Status.** Room Status single line reports are generated each time the Maid in Room feature is accessed from a room phone. Room Status reports are generated whether the Property Management System is enabled or not.

A sample room status report is given below:

12345 01/23 11:45P RS INSP MAID

<b>Table 2-24 Single Line Reports</b>		
<b>Operation Type</b>	<b>Suffix</b>	<b>Definitions &amp; Notes</b>
Console Operations	WU hh:mmP SET BY CONS	WU = Wakeup hh:mmP = time and PM indicator SET BY CONS = Set by Attendant Console
	WU hh:mmP CHG BY CONS	CHG BY CONS = Changed by Attendant Console
	WU hh:mmP CAN BY CONS	CAN BY CONS = Canceled by Attendant Console
Front Desk Terminal Operations	WU hh:mmP SET BY DESK	WU = Wakeup hh:mmP = time and PM indicator SET BY DESK = Set by Front Desk Terminal
	WU hh:mmP CHG BY DESK	CHG BY DESK = Changed by Front Desk Terminal
	WU hh:mmP CAN BY DESK	CAN BY DESK = Canceled by Front Desk Terminal
Room Operations	WU hh:mmP SET BY ROOM	WU = Wakeup hh:mmP = time and PM indicator SET BY ROOM = Set by guest room telephone
	WU hh:mmP CHG BY ROOM	CHG BY ROOM = Changed by Guest Room Telephone
	WU hh:mmP CAN BY ROOM	CAN BY ROOM = Canceled by Guest Room Telephone
Wakeup Attempts	WU hh:mmP aaaaaa	aaaaaa = either:  ANSWERED NO ANS 1 NO ANS 2 NO ANS 3 * * BUSY 1, BUSY 2, BUSY 3 * *  * * Third-attempt failures for NO ANS and BUSY generate three CTRL G characters separated by seven nulls, along with the asterisks. A CTRL G character rings bell.
Room Status	RS yyyyzzzz	RS = Room Status yyyy = Room Condition zzzz = Maid in Room - this field is blank when the maid is not in the room.

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## ***SUPERSET* Telephone Room Status Display**

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The *SUPERSET* display of an authorized *SUPERSET* telephone can show a combination of occupancy and condition (one of Vacant/Occupied/Reserved/Guaranteed and one of Clean/Dirty/To be Inspected/Out of Service).

Maid in Room is displayed separately as part of the Maid in Room feature. Call Restriction is not displayed.

<b>Table 2-25 <i>SUPERSET</i> Telephone Room Status Display</b>			
Description of Display			
<b>Occupancy</b>		<b>Condition</b>	
Vacant	VAC appears as the first word in the telephone display area.	Clean	CLEAN appears as the second word in the telephone display area.
Occupied	OCC appears as the first word in the telephone display area.	Dirty	DIRTY appears as the second word in the telephone display area.
Reserved	RES appears as the first word in the telephone display area.	Out of Service	SERV appears as the second word in the telephone display area.
Guaranteed	GUA appears as the first word in the telephone display area.	To be Inspected	INSP appears as the second word in the telephone display area.

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<i>How to Program</i>	Chart 4-22, page 4-28
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<i>How to Use</i>	SS420/SS430	Chart 5-37, page 5-30 Chart 5-38, page 5-31 Chart 5-39, page 5-32
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## Property Management System (PMS)

- 2.5 The PABX interfaces to IBM-compatible personal computers with the Lodgistix PMS software package (or a package that follows the same protocol). Hotel/Motel information is stored in the PABX and in the PMS. The information is split between the PMS and the PABX as follows:

PABX Database	PMS Database
	Room Status
Message Register	Message Register
Message Waiting	Message Waiting
Automatic Wakeup	Automatic Wakeup
Guest Names	Guest Names
Do Not Disturb	

Note that the PABX will not store room status information when PMS is enabled. Refer to Chart 4-2, page 4-11 for programming information.

### PMS-Specific Features

The PMS interface maintains the following information between the PABX and the PMS:

- maid status
- message registration of outgoing trunk calls
- check in/out
- name (guest name)

**Check In/Check Out.** When a guest checks in (PMS Check In), the room telephone is enabled to allow outgoing trunk calls. Upon check out (PMS Check Out), the phone is disabled from making calls and the PMS clears message register, message waiting, Do Not Disturb and automatic wakeup from the guest room database.

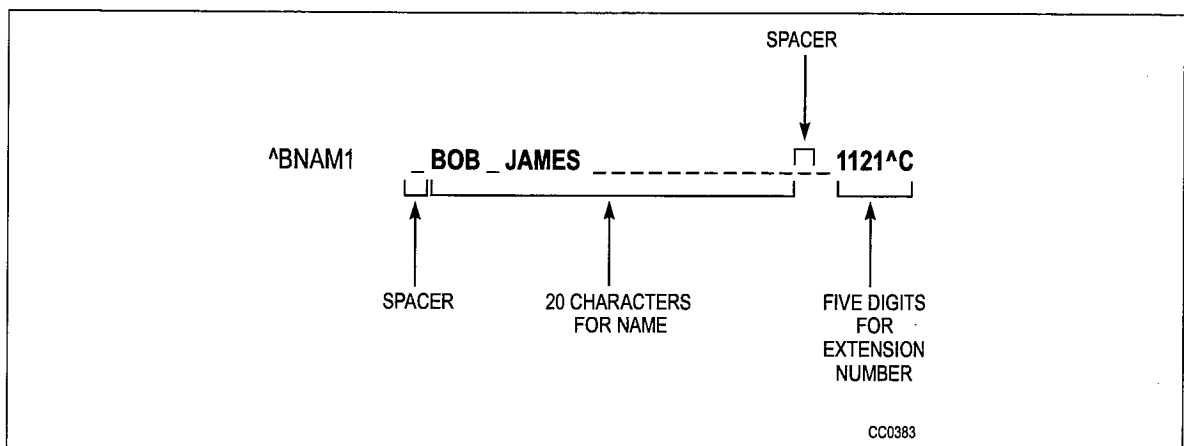
The attendant may restrict the room phone to internal calls, local calls, or long distance calls by using the Outgoing Call Restriction feature described in the Attendant Console Guide.

**Message Registration of Outgoing Trunk Calls.** This feature provides the PMS with the number of trunk calls made from a room (local and long distance). A call-accounting device connected to the PABX monitors SMDR reports for long distance calls. The charge for these calls is automatically added to the guest's bill at check out time. Call-costing equipment may be attached to the PMS, to allow the PMS to handle call costing.

**Maid in Room Status.** This feature allows the maid to change the room status (clean/dirty) from the room telephone. The maid in room status is also indicated on the PMS terminal. This feature is functionally identical to that of the PABX's attendant room status; however, the displaying and monitoring of room status is completely controlled from the PMS terminal.

**Automatic Wakeup.** This feature allows the front desk PMS terminal to set up and cancel wakeup requests from guest rooms. If programmed in the PABX, a printout will be produced upon setup of a valid time to verify that the request was committed. As well, a printout occurs when the wakeup is honored to verify the receipt of the call.

**Name.** This feature allows the guest room name in the PMS to be sent to the PABX when a guest checks in and be stored against the room extension. Figure 2-22 provides a breakdown of the Add Name command.



**Figure 2-22 Breakdown of the Add Name Command**

**Message Waiting.** This feature allows the message center PMS terminal to setup and cancel a message waiting indication on a guest room telephone. If programmed in the PABX, a printout will be produced to verify that the message was sent and the time of the message. When the message is canceled from the PMS side, another printout is produced to verify the cancelation.

### Feature Interactions

The following conditions apply to the PABX/PMS interface:

- Because all room status updates are applied against the PMS database, the following options must be disabled:
  - System Option 33 (Room Status)
  - System Option 27 (Room Status Audit)
  - System Option 34 (Auto Room Status Conversion and Wakeup Print)
  - COS option 244 (Room Status Applies)
  - COS option 608 (*SUPERSET*-Room Status Display)
- The PMS interface port is dedicated to PMS only. It cannot be used for any other applications such as CDE, ACD, or SMDR.

- Because PMS has exclusive use of the port assigned to it, it is recommended that a dataset be used as the port to allow the system printer port to be used for other printouts.
- Maintenance logs record any errors found in the PMS interface. Refer to the *Troubleshooting Practice* for details.
- Automatic Wakeup Feature Access Code must not be programmed in Form 02.

### Keyboard Commands

Table 2-26 lists the keyboard commands for the PMS personal computer.

Table 2-26 PMS Keyboard Commands		
Commands	PMS Keyboard Keys	Comments
Enquire (ENQ)	^E	^ = CTRL key
Acknowledged (ACK)	^F	
Not Acknowledged (NAK)	^U	
Start Transaction (STX)	^B	
End Transaction (ETX)	^C	
Check In	^BCHK1 XXXXX^C	XXXXX is the extension number. If the extension number is not five digits in length, use leading spaces in place of the digits.
Check Out	^BCHK0 XXXXX^C	
Add Name	^BNAM1 a-z XXXXX^C	a-z is the extension name. The extension name must be 20 characters in length followed by a single space, followed by the extension number. If the extension name is not 20 characters in length, use trailing spaces in place of the characters. Only the first 10 characters of the name are displayed.
Replace Name	^BNAM2 a-z XXXXX^C	
Delete Name	^BNAM3 a-z XXXXX^C	
Send Message	^BMW 1 XXXXX^C	Insert a space before and after the digit 1.
Delete Message	^BMW 0 XXXXX^C	Insert a space before and after the digit 0.
Set Wakeup	^BWKPTTTTXXXXX^C	TTTT is the time in hours:minutes. Use a 24-hour clock.

## Feature Availability

2.6 The following restrictions also apply to Lodging and Property Management System (PMS) features.

- Room Status (Option 33) cannot be enabled if PMS is enabled
- Room Status (Option 33) cannot be enabled if Outgoing Call Restriction (Option 32) is enabled
- Outgoing Call Restriction (Option 32) cannot be enabled if Room Status (Option 33) is enabled
- PMS cannot be enabled if Room Status (Option 33) is enabled
- PMS cannot be enabled if Lodging is enabled
- PMS cannot be enabled if Automatic Wakeup feature code is enabled
- Lodging cannot be enabled if PMS is enabled
- Options 4, 9, 12, 13, 23, 24, 25, and 27 cannot be enabled unless Lodging or PMS is enabled
- Lodging or PMS cannot be disabled if one or more of Options 4, 9, 12, 13, 23, 24, 25, or 27 is enabled.

Front desk terminals support the list of features in Table 2-27.

<b>Table 2-27 Feature Availability</b>
<b>Attendant Do Not Disturb</b>
Guest Room Do Not Disturb
<b>Attendant Message Waiting Setup and Cancel</b>
Guest Message Waiting Cancel
<b>Audits</b>
Attendant Message Register Audit
Room Status Audit
Vacant Room Audit
Occupied Room Audit
Reserved Room Audit
Guaranteed Room Audit
To be Inspected (To Inspect) Room Audit
Dirty (To Clean) Room Audit
All Room Status Audit
Room Type Audit
Wakeup Audit
Auto Room Status Conversion/Auto Wakeup Print
Page 1 of 3

<b>Table 2-27 Feature Availability (continued)</b>	
<b>Automatic Wakeup</b>	
Guest Room Wake Up	
<b>Call Blocking</b> (available on the attendant console only)	
<b>Call Restriction</b>	
<b>Check Out</b> (single key)	
<b>Guest Names</b>	
<b>Guest Room SUPERSET Key Programming</b>	
<b>Maid in Room</b>	
Maid in Room Display	
Maid in Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones	
<b>Message Lamp Test</b> (available on the attendant console only)	
<b>Message Register Display and Clear</b>	
<b>Multi-user</b>	
<b>PMS Interface</b>	
<b>Room Condition Display</b>	
Clean	
Dirty	
Out of Service	
To be Inspected	
<b>Room Occupancy Display</b>	
Vacant	
Occupied	
Reserved	
Guaranteed	
<b>Room Status Display</b>	
<b>Room Types and Room Codes</b>	
<b>Searches</b>	
Guest Search	
Room Number	
Room Type	
Maid in Room Search	
<b>Room Status Searches</b>	
- Vacant/clean	
- Vacant	
Page 2 of 3	



<b>Table 2-27 Feature Availability (continued)</b>	
- Out of service	
- Dirty (To Clean)	
- Reserved	
- Guaranteed	
- Reserved and Clean	
<b>Single Line Reports</b>	
	Page 3 of 3



# 3 Hardware Installation

## General

3.1 **PABX.** The basic hotel/motel package is available with a PABX.

**Peripherals.** Hardware installation for the hotel/motel system involves installing the following peripherals:

- attendant console(s)
- front desk terminal(s)
- dataset(s) (for front desk terminal and PMS interface)
- printer(s)
- *SUPERSET* telephones as staff supervisory sets
- *SUPERSET* or industry-standard telephones as room telephones.

**Chart 3-1 Installing Hardware**

Step	Action	Comments
1.	<b>Install the PABX</b> Install the PABX.	The PABX may already be installed at the site. <i>Installation Information Practice.</i>
2.	<b>Install the Attendant Console(s)</b> Install the attendant console(s).	If this is an existing installation, the attendant console(s) may already be installed. <i>Peripheral Devices Practice.</i>
3.	<b>Install the Front Desk Terminal(s)</b> Install up to four front desk terminals.	Documentation provided with the terminal(s).
4.	Install a MITEL1100-series dataset for each terminal installed in Step 3.	<i>Peripheral Devices Practice.</i>
5.	<b>Install Printer(s)</b> Install printer(s).	<i>Installation Information Practice.</i>
6.	<b>Install Telephones</b> Install <i>SUPERSET</i> telephones.	<i>Peripheral Devices Practice.</i>
7.	Install industry-standard telephones.	Documentation provided with the telephones.



# 4 Programming Hotel/Motel

## General

- 4.1 This section contains the programming information required for the Hotel/Motel feature package. For instructions on how to program the base system, printers, consoles, front desk terminals, and datasets, refer to the *Customer Data Entry Practice*.

### Programming Procedures

**Hotel/Motel Application.** For information on programming this feature package, see Chart 4-1.

**Property Management System.** For information on programming the interface to a property management system, see Chart 4-2.

**Adding Features.** For information on adding features to an already programmed system, refer to the following charts:

Chart 4-3 Programming Attendant Message Waiting Setup and Cancel

Chart 4-4 Programming Attendant Message Register Audit

Chart 4-5 Setting Up Room Status Audit

Chart 4-6 Programming Wakeup Audit

Chart 4-7 Producing an Automatic Audit of Wakeups/ Changing Room Status at a Predetermined Time

Chart 4-8 Setting System Time

Chart 4-9 Programming Guest Room Automatic Wakeup

Chart 4-10 Programming Attendant Automatic Wakeup

Chart 4-11 Programming Call Blocking

Chart 4-12 Programming Call Restriction

Chart 4-13 Programming Do Not Disturb

Chart 4-14 Guest Room SUPERSET Key Programming

Chart 4-15 Programming Maid in Room Status

Chart 4-16 Programming Maid in Room Status Display - SUPERSET 420 and SUPERSET 430 Telephones

Chart 4-17 Programming Message Lamp Test

Chart 4-18 Programming Message Register

Chart 4-19 Setting up Room Status

Chart 4-20 Programming Room Types and Room Codes

Chart 4-21 Enabling Single-Line Reports

Chart 4-22 Programming Room Status Display - SUPERSET 420 and SUPERSET 430 Telephones

**Note:** This information is in addition to the programming required for the PABX.

**Chart 4-1 Programming the Hotel/Motel Application**

Step	Action	Comments
1.	<p><b>Form 02: Program System Access Codes</b></p> <p><b>Set Access Code for Do Not Disturb.</b> Assign an access code for Do Not Disturb.</p> <p><b>Set Access Code for Automatic Wakeup for Room Phones.</b> Assign a one- to five-digit code for Feature 32, Automatic Wakeup.</p> <p><b>Set Access Code for Maid in Room Feature.</b> Assign a code for Feature 35, Maid in Room.</p> <p><b>Set Access Code for SUPERSET 4 Telephone Room Status Display.</b> Assign a code for Feature 36, SUPERSET 4 Room Telephone Status Display.</p> <p><b>Set Access Code for SUPERSET 4 Telephone Maid in Room Status Display.</b> Assign a code for Feature 40, SUPERSET 4 Telephone Maid in Room Status.</p> <p><b>Set access code for retrieving a message from a telephone.</b> Assign a code for Feature 42, Call Message Sender of Oldest Message.</p>	<p>Access codes can range from one to five digits.</p> <p>COS option 220 on Form 03 must also be set. The same access code sets and cancels Do Not Disturb at a guest room telephone.</p> <p>COS options 202 and 244 on Form 03 and System Option 11 on Form 04 must also be set.</p> <p>Maid in Room allows maids to dial a telephone number when they enter a room for housekeeping and dial another number when they have finished the room.</p> <p>SUPERSET 4 Set Room Status Display allows an authorized SUPERSET 420 and SUPERSET 430 telephone to display the status of guest rooms. The Room Status parameters are: Vacant or Occupied or Reserved; Clean or Dirty or Out of Service or To Be Inspected.</p> <p>SUPERSET 4 Telephone Maid in Room Status Display allows an authorized SUPERSET 420 and SUPERSET 430 telephone to determine which guest rooms have maids in them.</p> <p>Allows a guest room telephone to call the attendant to retrieve a message.</p>
Page 1 of 9		

**Chart 4-1 Programming the Hotel/Motel Application (continued)**

Step	Action	Comments							
2.	<b>Form 03: To Program Room Types (Front Desk Terminal)</b>	The hotel guest rooms can be divided into 50 groups by putting each room type into a separate COS. Each COS has a name associated with it. Therefore, the room type can be identified by the COS name.							
	<p><b>Create a COS for each different room type you have.</b> Assign a name to it by using the COS Name softkey.</p> <p>For instance,</p> <table border="0"> <tr> <td>COS 1 SINGLE</td> <td>single rooms</td> </tr> <tr> <td>COS 2 DOUBLE</td> <td>double rooms</td> </tr> <tr> <td>COS 3 NONSMOKS</td> <td>nonsmoking single</td> </tr> <tr> <td>COS 4 NONSMOKD</td> <td>nonsmoking double</td> </tr> </table> <p>The name must be: -unique -up to eight characters in length</p>	COS 1 SINGLE	single rooms	COS 2 DOUBLE	double rooms	COS 3 NONSMOKS	nonsmoking single	COS 4 NONSMOKD	nonsmoking double
COS 1 SINGLE	single rooms								
COS 2 DOUBLE	double rooms								
COS 3 NONSMOKS	nonsmoking single								
COS 4 NONSMOKD	nonsmoking double								
3.	<b>Define the Characteristics of each Room</b>								
	On each Form 03 you have, set the COS options for each type of room. Enable:								
	101 Attendant (Console only) OG Restriction/Room Status Setup	Allows console to access room status (occupancy, condition, call restriction). It provides the STATUS softkey to the console.							
	105 Attendant (Console only) Guest Room Key	<p><b>Note:</b> The front desk terminal always has access to room status. Only System Option 33 on Form 04 has to be set.</p> <p><b>Attendant Console.</b> This COS option gives access to the hotel/motel features from an attendant console. This COS option does not have to be set for the front desk terminal.</p>							
	113 Attendant (Console only) Call Block Key	<p><b>Attendant Console.</b> This COS option allows the attendant to inhibit room-to-room calls. COS option 204 and System Option 09 must also be set. This COS option does not have to be set for the front desk terminal.</p>							
202 Alarm Call	<p><b>Room Telephones.</b> This COS option allows guests to set up a wakeup alarm call from their extension. It also allows the console or the front desk to set up wakeup calls for guest rooms. See also COS option 244.</p>								
204 Call Block Applies (Performed by Attendant Console only)	<p><b>Room Telephone.</b> Room telephones are prevented from calling each other when call blocking is enabled. Error (reorder tone) is heard. This COS option must be set for each room telephone call block applies to. COS option 113 and System Option 09 must also be set.</p>								

**Chart 4-1 Programming the Hotel/Motel Application (continued)**

Step	Action	Comments
	220 Do Not Disturb	<b>Room Telephone.</b> Do Not Disturb must be enabled for any telephone that requires use of the feature. When Do Not Disturb is active, the telephone appears busy to incoming calls.
	230 Message Register Overflow Alarm	<b>Extension or Trunks.</b> Optional. This COS option should be set for the extension(s) or trunk(s) for which there is to be a message register overflow alarm indication at the attendant console. The alarm icon flashes and a maintenance log is generated.  See also COS option 703.  See also the following system options: System Option 49 System Option 04 System Option 23 System Option 40
	231 Message Waiting Bell	Room Telephones. This COS option rings the bell on a room telephone when there is a message waiting. See also System Option 02 (Form 04). COS options 231 and 232 cannot be enabled at the same time. See Note.
	232 Message Waiting Lamp	<b>Room Telephones.</b> This COS option lights the message lamp on a room telephone when there is a message waiting. See also System Option 02 (Form 04). COS options 231 and 232 cannot be enabled at the same time. <b>Note:</b> COS option 231 rings a message bell only. COS option 232 lights message lamps and also rings message bells.
	244 Room Status Applies	<b>Room Telephones.</b> This COS option must be enabled to allow guests to set up a wakeup alarm call from their extension. See also COS option 202.  It must be enabled to allow the attendant to display and change the status of a room and produce a room status audit. See Form 04, System Option 33.  It must be enabled for <i>SUPERSET 430</i> room telephones that are to be programmed with speed dial and feature access keys. See COS option 610 and Form 37.



**Chart 4-1 Programming the Hotel/Motel Application (continued)**

Step	Action	Comments
4.	320 Transparent Multi-Console Operation	<p><b>Attendant Consoles.</b> Enables more than one console to function on the system.</p> <p>Can also allow multi-consoles to view and remove messages for guest room phones.</p> <p>COS option 320 is necessary for consoles only. It is not necessary for front desk terminals.</p>
	608 <i>SUPERSET</i> Room Status Display	<p><b><i>SUPERSET</i> Supervisory Telephones.</b> This COS option allows room status to be displayed on a <i>SUPERSET</i> supervisory telephone.</p>
	610 <i>SUPERSET</i> Guest Room Template	<p><b><i>SUPERSET</i> Room Telephones.</b> This COS option allows a block of guest room <i>SUPERSET 410</i>, <i>SUPERSET 401+</i>, <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephones to be programmed with speed dial and feature access keys.</p> <p>See also COS option 244.</p> <p>See also Form 37: Guest Room <i>SUPERSET</i> Keys Template.</p>
	703 Message Register Applies	<p><b>Attendant Console, Telephones, <i>SUPERSET</i> Telephones, Trunks.</b> This COS option provides the PABX the ability to keep track of the number of completed calls, and identifies the trunks on which counts apply on a per phone basis.</p> <p>See COS option 230.</p> <p>See System Option 49 in Form 04 and optional message register features programming:                      System Option 04                      System Option 23                      System Option 40.</p>
	01 24-hour Clock	<p>System option 01 sets the system time in 24-hour format; otherwise the system time is in 12-hour format.</p>
	02 Message Lamp Test Enable	<p>System option 02 allows the message waiting lamps on room telephones to be tested from the console. See also COS option 232 (Form 03).</p>

**Chart 4-1 Programming the Hotel/Motel Application (continued)**

Step	Action	Comments
04	Message Waiting and Message Register Clear Print	<p><b>Optional.</b> Prints a single line report to the default printer each time the message register changes, including the case where the message register is cleared by the console.</p> <p>This system option also requires System Option 107 or 108 to be enabled.</p> <p>See also COS option 230 COS option 703.</p> <p>See also the following system options: System Option 49 System Option 23 System Option 40.</p> <p>See also System Option 13, Auto Wakeup Print, for enabling single line reports of automatic wakeups.</p>
09	Attendant Call Block	<p>This system option allows the attendant to inhibit room-to-room calls. COS option 113 must also be set.</p> <p>This system option also requires System Option 107 or 108 to be enabled.</p>
11	Automatic Wakeup	<p>Allows the attendant or guest to set up a wakeup alarm call. COS option 202 and 244 must be enabled for all extensions that are to use automatic wakeup.</p>
12	Automatic Wakeup Alarm	<p><b>Optional.</b> Allows the console alarm icon to be flashed in the event that a wakeup call is not answered within three attempts. Also generates a maintenance log. No effect on <i>SUPERSET 420</i> and <i>SUPERSET 430</i>.</p>
13	Automatic Wakeup Print	<p><b>Optional.</b> Allows wakeup audits and one-line messages to be printed on the system printer whenever a wakeup call is set up, canceled, answered, or an attempt is made to honor the wakeup. No effect on <i>SUPERSET 420</i> and <i>SUPERSET 430</i>.</p> <p>This system option also requires System Option 107 or 108 to be enabled.</p>
14	Automatic Wakeup Music	<p><b>Optional.</b> Allows music to be heard by an extension that answers a wakeup call. Requires a music source.</p>

Chart 4-1 Programming the Hotel/Motel Application (continued)

Step	Action	Comments
23	Message Reg. Count Additional Supervisions	Counts meter pulses after supervision is received on an outgoing trunk.  This system option also requires System Option 107 or 108 to be enabled.
24	Message Register Audit	Allows the attendant to request a message register audit (either from the attendant console or the front desk terminal). See System Option 25.  This system option also requires System Option 107 or 108 to be enabled.
25	Message Register Zero After Audit	All message registers are set to zero when an audit is requested, including instances where the maximum number of audits is exceeded or the printer is unavailable. See System Option 24.  This system option also requires System Option 107 or 108 to be enabled.
27	Room Status Audit	<b>Console.</b> Produces a printout of the current status of all guest rooms. Only rooms with COS option 244 enabled are displayed by the audit. See COS option 244, Form 03.  This system option also requires System Option 107 to be enabled.
33	Room Status	<b>Terminal.</b> Produces seven different types of audits (vacant, occupied, reserved, guaranteed, to clean, to inspect, all rooms). Allows the status of a room to be displayed and changed. Provides the three call privileges: internal, local and long distance.  See also: COS option 244 (for all extensions for which room status is to apply), System Option 34.  If System Option 02 is enabled, when a room's status is changed from vacant to occupied or occupied to vacant, the system performs a message lamp test on the telephone in that room. If the test finds out a lamp is defective, it raises a minor alarm.

**Chart 4-1 Programming the Hotel/Motel Application (continued)**

Step	Action	Comments
34	Auto Room Status Conversion/Auto Wakeup Print	<b>Optional.</b> Produces an automatic audit of all wakeups in the system every day. This option also changes the room status. For instance, all occupied/clean rooms can be changed to occupied/dirty at a set time. The time of day for the printout must be set in System Option 56 . The default is 00:00 (midnight). See System Option 56.
40	Message Register Follows Talker	Charges the extension or console last talking to a trunk with the message register count.
49	Pseudo Answer Supervision Timer	This value is applied to trunks in the system that do not provide answer supervision.
56	Auto Room Status Conversion/Auto Wakeup Print Timer	<b>Optional.</b> Sets the time of day for the automatic daily audit of all wakeups in the system. The default is 00:00 (midnight). Only applies if System Option 34 is enabled. See System Option 34. The same time is also used to convert all occupied/clean rooms to occupied/dirty.
57	Vacant/Reserved Room Default Call Restriction	By default, vacant rooms (and rooms that become vacant) have their call restriction set to Internal, the most restrictive option. This setting prevents unauthorized calls from vacant/reserved rooms.
58	Occupied Room Default Call Restriction	By default, occupied rooms have the call restriction set to Internal, the most restrictive option. Typically when a room becomes occupied, the guest is provided with a less restrictive setting.
	<p><b>Note:</b></p> <p>32 Do not enable System Option 32, Outgoing Call Restriction, for Hotel/Motel.</p>	<p>Prevents unauthorized trunk calls after a guest checks out. However, it cannot be enabled at the same time as System Option 33, Room Status. Since System Option 33 provides the three call restrictions, System Option 32 is not necessary in the hotel/motel context.</p> <p>If a PMS is used, System Option 32 must be enabled.</p>
	<p><b>To Set Up the Attendant Console</b></p> <p>5. Form 07: Console Assignments specifies the physical location of each attendant console.</p>	<p>Described in the <i>Customer Data Entry Practice</i>.</p>

Chart 4-1 Programming the Hotel/Motel Application (continued)		
Step	Action	Comments
6.	Form 08: This form specifies the listed directory numbers for each attendant console.	Described in the <i>Customer Data Entry Practice</i> .
	<b>To Set Up Telephones/SUPERSET Telephones</b>	
7.	Form 09 assigns stations and <i>SUPERSET</i> telephones to the system.  See Note 2 for extension numbering instructions.	Described in the <i>Customer Data Entry Practice</i> .  <b>Note 1:</b> If a front desk terminal is configured on the system, the names of guests in occupied rooms are displayed in the Name field on Form 09. Only the first 10 characters of the last name can be displayed.  <b>Note 2:</b> The hotel/motel application uses the guest room extension number as the room number. A simple pattern for relating an extension number to a room number should be used. For example, if four-digit extension numbers are used, they could be assigned by using format xfr:  where: <p style="margin-left: 40px;">x is always a 1 f is the floor number rr is the room number on the floor.</p> Therefore: <p style="margin-left: 40px;">Room 1 on floor 1 is 1101 Room 2 on floor 1 is 1102 Room 1 on floor 2 is 1201.</p>
Page 8 of 9		

Chart 4-1 Programming the Hotel/Motel Application (continued)

Step	Action	Comments
8.	<p><b>To Set Up the Front Desk Terminal</b></p> <p>Form 12 assigns DATASET 1100-series data sets to the system.</p> <p>Form 11: Data Circuit Descriptors.</p> <p>Form 11: Data Circuit Descriptor Options Subform.</p>	<p>Described in the <i>Customer Data Entry Practice</i>.</p> <p>Described in the <i>Customer Data Entry Practice</i>.</p> <p>Described in the <i>Customer Data Entry Practice</i>.</p> <p><b>Note:</b> When programming the PBX attention character for a dataset to be used with the front desk terminal, Control R, Control Y and Control C should not be used. The Front Desk Terminal application has predefined functions for these key sequences. No checking is done to prevent the use of these characters.</p>
9.	<p><b>To Set Up Access Restriction</b></p> <p>Form 28: Access Restriction form.</p>	<p>Described in the <i>Customer Data Entry Practice</i>.</p> <p>The CDE supervisor-level password allows editing privileges.</p> <p>The CDE attendant-level password allows no editing privileges.</p>
10.	<p><b>To Set Up Printer(s)</b></p> <p>Form 34: Directed I/O.</p>	<p>Described in the <i>Customer Data Entry Practice</i>.</p> <p>The hotel/motel wakeup printer prints single line reports.</p> <p>The hotel/motel audit printer prints wakeup, message register, room type, room status, and wakeup/room condition audits.</p>
11.	<p><b>To Set Up SUPERSET Telephones Block Programming</b></p> <p>Form 37: Guest Room SUPERSET Keys Template</p>	<p>This form provides three preprogrammed sets (templates) of speed dial and feature access keys for hotel/motel guest room phones.</p> <p>COS options 244 and 610 must be programmed in the COS of all guest rooms using SUPERSET telephones with speed dial and feature access keys.</p>

**Chart 4-2 Programming for PMS**

- Note:**
1. The PABX can be interfaced to a Property Management System.
  2. The PMS interface port is dedicated to PMS only. It cannot be used for any other applications such as CDE, SMDR or ACD.
  3. Because PMS has exclusive use of the port assigned to it, a dataset should be used as the port, to allow the system printer port to be used for other printouts.
  4. Maintenance logs record any errors in the PMS interface. Refer to the *Troubleshooting Practice* for details.
  5. Message Waiting Setup must be enabled in the COS for the guest room phone if it is an industry-standard telephone. This restriction does not apply to *SUPERSET 420* and *SUPERSET 430* telephones.
  6. **PMS Terminal.** Dial 0 calls are routed to a console (Form 19) or a console LDN or subattendant LDN (Form 08). This routing makes sure there is a single place the guest must call to receive messages. If the dial 0 point for the room is not a console or a console LDN or subattendant LDN, the message softkey is not provided on the PMS terminal.
  7. A list of the PMS Keyboard Commands is provided in Table 2-26, page 2-62.

Step	Action	Comments
<p>1.</p> <p>2.</p>	<p><b>Setting Feature Access Codes</b></p> <p>On Form 02, Programming Feature Access Codes:</p> <p>Assign an access code to Feature 35 ( Maid in Room).</p> <p>Assign an access code to Feature 10 (Do Not Disturb).</p> <p>Ensure that Feature Access Code 32, Automatic Wakeup, is not programmed.</p> <p><b>Setting COS Options</b></p> <p>Enable COS option 105 (Attendant Guest Room Key).</p> <p>Enable COS option 202 (Alarm Call).</p> <p>Enable COS option 220 (Do Not Disturb).</p>	<p>To allow room status to be changed from room telephones.</p> <p>Allows a room telephone to set up and cancel Do Not Disturb. See also COS option 220.</p> <p>To allow the attendant to set automatic wakeups. (see also System Option 11, Form 04.)</p> <p>Also allows the attendant to set up or cancel Do Not Disturb.</p> <p>Also allows the attendant to set up or cancel message waiting for a room telephone. See also COS option 231 (Bell) or 232 (Lamp).</p> <p>Enabling this COS option allows the attendant to program wakeup alarm calls for rooms from the PMS PC . See also COS option 244.</p> <p>Allows guests to set up and cancel Do Not Disturb from their extension. See System Option 10 (Do Not Disturb), Form 04.</p>

**Chart 4-2 Programming for PMS (continued)**

Step	Action	Comments
3.	Enable COS option 231 (Bell).	<b>Optional.</b> Indicates a message waiting at a room telephone. See also COS option 105.
	Enable COS option 232 (Lamp).	Indicates a message waiting at a room telephone. See also COS option 105.
	Disable COS option 244 (Room Status Applies).	All room status updates are applied against the PMS database.
	Disable COS option 608 ( <i>SUPERSET</i> Room Status Display).	All room status updates are applied against the PMS database.
	Enable COS option 703 (Message Register Applies).	To charge guests for outgoing trunk calls.
	<b>Setting System Options, Form 04 (System Options/System Timers):</b>	
	Enable System Option 04 (Message Waiting and Message Register Clear Print).	The message register is cleared in the PABX on checkout. System Option 04 produces a record of it.  Also produces a record of messages still waiting on the room telephone.
	Enable System Option 11 (Automatic Wakeup).	To allow the attendant to set automatic wakeups. See also COS option 105, Form 03.
	Enable System Option 13 (Automatic Wakeup Print).	For a record of wakeup cancelations at checkout time.
	Disable System Option 27 (Room Status Audit).	All room status updates are applied against the PMS database.
	Enable System Option 32 (Outgoing Call Restriction).	To prevent unauthorized trunk calls after the guest has checked out.
	Disable System Option 33 (Room Status).	All room status updates are applied against the PMS database.
	Disable System Option 34 (Auto Room Status Conversion and Wakeup Print).	All room status updates are applied against the PMS database.
Enable System Option 35 (Property Management System).		
4.	<b>Define the Data Circuit</b>	
	Form 11: Define a data circuit descriptor to match the RS-232 interface of the PMS in CDE Form 11 (Data Circuit Descriptor Options Subform).	The PMS documentation has further details.  A typical RS-232 interface for the PMS port is: 7 ASCII data bits No parity One stop bit 1200 baud.



**Chart 4-2 Programming for PMS (continued)**

Step	Action	Comments
5.	Form 12: Define the data circuit used for connection to the PMS in CDE Form 12 (Data Assignment).	Described in the <i>Customer Data Entry Practice</i> .
6.	<p><b>Form 19</b> ( Dial 0 calls )</p> <p>If Dial 0 calls are routed for a guest room, program Form 19. Enter Day, N1 and N2.</p> <p>The Dial 0 point must be a console, a console LDN or subattendant LDN.</p>	<p>Day, N1 and N2 can be the same number.</p> <p><b>Note:</b> If Day, N1 and N2 numbers are not provided, it is impossible to set message waiting from the PMS terminal. However, it can be done from the attendant console.</p>
7.	Form 34: Configure the dataset port for PMS application in CDE Form 34 (Directed I/O).	Described in the <i>Customer Data Entry Practice</i> .

## Attendant Message Waiting

**Feature Description:** Refer to page 2-23.

**User Information:** Console: Chart 5-1, page 5-2; Front Desk Terminal: Chart 5-17, page 5-14; Telephones: Chart 5-36, page 5-29.

<b>Chart 4-3 Programming Attendant Message Waiting Setup and Cancel</b>		
<p><b>Note:</b> 1. Front Desk Terminal. Dial 0 calls are routed to a console (Form 19) or a console LDN or subattendant LDN (Form 08). This routing makes sure there is a single place the guest must call to receive messages. If the dial 0 point for the room is not a console or a console or subattendant LDN, the message softkey is not provided on the front desk terminal.</p> <p>2. Message Waiting Setup must be enabled in the COS for the guest room phone that is an industry-standard telephone. This restriction does not apply to <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephones.</p>		
Step	Action	Comments
<p>1.</p> <p>2.</p> <p>or</p> <p>COS option 232 (Message Waiting Lamp).</p> <p><b>Form 03</b></p> <p>3.</p> <p>4.</p>	<p>Enable COS option 105 (Attendant Guest Room Key) for the console to access message waiting from the Guest Room softkey.</p> <p>Enable COS option 231 (Message Waiting Bell) for the guest room extension,</p> <p>COS option 232 (Message Waiting Lamp).</p> <p><b>Form 04</b></p> <p>Select System Option 04 (Message Waiting and Message Register Clear Print).</p> <p><b>Form 19</b> ( Dial 0 calls )</p> <p>If Dial 0 calls are routed for a guest room, program Form 19. Enter Day, N1 and N2.</p>	<p><b>Room Telephones.</b> This COS option rings the bell on a room telephone when there is a message waiting. See also System Option 02 (Form 04). COS options 231 and 232 cannot be enabled at the same time.</p> <p><b>Room Telephones.</b> This COS option lights the message lamp on a room telephone when there is a message waiting. See also System Option 02 (Form 04). COS options 231 and 232 cannot be enabled at the same time.</p> <p><b>Note:</b> COS option 231 only rings message bells. COS option 232 lights message lamps and rings message bells.</p> <p>This option also enables printing of single-line reports for message register changes.</p> <p>Day, N1 and N2 can be the same number.</p> <p><b>Note:</b> If Day, N1 and N2 numbers are not provided, it is impossible to set message waiting from the front desk terminal. However, it can be done from the attendant console.</p>

**Audits**

**Feature Description:** Refer to page 2-24 to page 2-30.

**User Information:** Console: Chart 5-3, page 5-3; Front Desk Terminal: Chart 5-18, page 5-15 to Chart 5-21, page 5-17. Telephones: None

<b>Chart 4-4 Programming Attendant Message Register Audit</b>		
<p><b>Note:</b> 1. This feature allows the attendant to print the message register for all rooms that have a message register count greater than zero. This feature is only used in cases where COS Option 703, Message Register Applies, has been enabled for some extensions.</p> <p>2. A printer must be assigned to the "Hotel/Motel Audit" printout type in Form 34 (Directed IO).</p>		
<b>Step</b>	<b>Action</b>	<b>Comments</b>
1.	<p><b>Form 04</b></p> <p>Select System Option 24 (Message Register Audit).</p> <p>Select System Option 25 (Message Register Zero After Audit) to reset all message registers to 0 after an audit request.</p>	

<b>Chart 4-5 Setting Up Room Status Audit</b>		
<p><b>Note:</b> 1. Only rooms with COS option 244, Room Status Applies, enabled are displayed by the audit.</p> <p>2. A printer must be assigned to the "Hotel/Motel Audit" printout type in CDE Form 34 (Directed IO).</p>		
<b>Step</b>	<b>Action</b>	<b>Comments</b>
1.	<p><b>Form 03</b></p> <p>Select COS Option 244 (Room Status Applies) for all extensions for which room status is to apply.</p>	
2.	<p><b>Form 04</b></p> <p>Enable System Option 27 (Room Status Audit) to allow room status printouts.</p>	

**Chart 4-6 Programming Wakeup Audit**

**Note: 1.** A printer must be assigned to the "Hotel/Motel Audit" printout type in CDE Form 34 (Directed IO).

Step	Action	Comments
1.	<p><b>Form 04</b></p> <p>Select System Option 13 (Automatic Wakeup Print) to allow wakeup audit printouts and one- line messages to be printed on the system printer whenever a wakeup call is set up, canceled, answered, or an attempt is made to honor the wakeup.</p>	

**Chart 4-7 Producing an Automatic Audit of Wakeups/  
Changing Room Status at a Predetermined Time**

Step	Action	Comments
1.	<p>On Form 04, enable system options:</p> <p>34 Auto Room Status Conversion/Auto Wakeup Print</p> <p>56 Auto Room Status Conversion/Auto Wakeup Print Timer</p>	<p>Produces an automatic audit of all wakeups in the system every day. This option also changes the room status. All occupied/clean rooms can be changed to occupied/dirty at a set time. (This room status is the only status that can be changed automatically). The time of day for the printout and the condition change must be set in System Option 56 . The default is 00:00 (midnight). See System Option 56.</p> <p>Sets the time of day for the automatic daily audit of all wakeups in the system. The default is 00:00 (midnight). Only applies if System Option 34 is enabled. See System Option 34.</p>

## Automatic Wakeup

**Feature Description:** Refer to page 2-31 to page 2-33.

**User Information:** Console: Chart 5-4, page 5-4; Front Desk Terminal: Chart 5-21, page 5-17 and Chart 5-22, page 5-19.

Chart 4-8 Setting System Time		
Step	Action	Comments
1.	On Form 04, enable System Option 01, 24-hour Clock.	This option sets the system time in 24-hour format; otherwise the system time is in 12-hour format.

Chart 4-9 Programming Guest Room Automatic Wakeup		
<p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. If a guest room telephone is programmed for Automatic Wakeup Routing, the Automatic Wakeup Music option has no effect.</li> <li>2. System Options 12 (Automatic Wakeup Alarm) and 13 (Automatic Wakeup Print) have no effect on <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephone operation of the feature.</li> <li>3. Recorded announcements are provided through recording hunt groups.</li> </ol>		
Step	Action	Comments
1.	<p><b>Form 02</b></p> <p>Assign an Access Code to Feature 32 (Automatic Wakeup).</p> <p><b>Form 03</b></p> <p>Enable COS Option 202 (Alarm Call) and COS Option 244 (Room Status Applies) for the extension.</p> <p><b>Industry-Standard, SUPERSET 401+, SUPERSET 410 Telephones:</b></p> <p><b>Form 04</b></p> <p>Enable System Option 11 (Automatic Wakeup Enable).</p> <p>Enable System Option 13 (Automatic Wakeup Print) to print CHG BY ROOM, SET BY ROOM, CAN BY ROOM single-line reports.</p>	<p>System Option 11 is not required for <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephones.</p>

**Chart 4-10 Programming Attendant Automatic Wakeup**

- Note:**
1. If a guest room telephone is programmed for Automatic Wakeup Routing, the Automatic Wakeup Music option has no effect.
  2. System Options 12 (Automatic Wakeup Alarm) and 13 (Automatic Wakeup Print) have no effect on *SUPERSET 420* and *SUPERSET 430* telephone operation of the feature.
  3. Recorded announcements are provided through recording hunt groups.
  4. System Option 13 can be enabled to print changes to wakeup status. Enabling this option causes a SET BY CON or CHG BY CON message (attendant console) or a SET BY DESK or CHG BY DESK (front desk terminal) to be printed to indicate how the change was made.
  5. A printer must be assigned to the "Hotel/Motel Wakeup" printout type in CDE Form 34 (Directed IO) for the status messages for wakeup activity. Audits of wakeups from the console are directed to the Hotel/Motel Audit printer.

Step	Action	Comments
1.	<p><b>Form 03</b></p> <p>Enable COS option 101 (Attendant O/G Restriction/Room Status Setup) for the console.</p> <p>Enable COS option 202 (Alarm Call) and COS option 244 (Room Status Applies) for the extension.</p> <p><b>Form 04</b></p> <p>Enable System Option 11 (Automatic Wakeup Enable).</p> <p><b>Form 04: Optional.</b></p> <p>Select System Option 12 (Automatic Wakeup Alarm) to allow the console alarm icon to be flashed, in the event that a wakeup call is not answered within three attempts. This option also generates a maintenance log.</p> <p>Enable System Option 13 (Automatic Wakeup Print) to print single-line reports.</p> <p>Select System Option 13 (Automatic Wakeup Print) to allow wakeup audit printouts and one-line messages to be printed on the system printer whenever a wakeup call is set up, canceled, answered, or an attempt is made to honor the wakeup.</p> <p>Select System Option 34 (Auto Room Status Conversion/Auto Wakeup Print) to have an automatic audit of all wakeups in the system every day. This option also changes the room status. Set the time of day for the printout in System Option 56 (Auto Room Status Conversion/Auto Wakeup Print Timer). The default is 00:00 (midnight).</p>	<p>Described in Note 4.</p>

## Call Blocking

**Feature Description:** Refer to page 2-34.

**User Information:** Console: Chart 5-6, page 5-5; Front Desk Terminal: None; Telephones: None.

**Chart 4-11 Programming Call Blocking**

- Note:**
1. This feature allows the attendant to inhibit room-to-room calls by activating call blocking from the console. Calls to the attendant or to extensions without the call blocking COS option selected may be made as usual. The system treats attempted calls between restricted extensions as illegal numbers and gives the calling party reorder tone. Alternatively, call rerouting can be used to intercept blocked calls to an appropriate destination such as the attendant console.
  2. Tenanting does not apply to the operation of this feature. All consoles with the feature enabled can enable or disable Call Blocking throughout the system.
  3. For all consoles with the feature enabled, the LED associated with the Block hardkey is updated each time that call blocking is turned on or off. When the LED is on, call blocking is enabled. The key and the LED are not operational if the feature is not enabled.
  4. If Call Rerouting is to be used, blocked calls are treated as Station Illegal Number Routing.

Step	Action	Comments
1.	<p><b>Form 03</b></p> <p>Enable COS option 113 (Attendant Call Block Key) for the attendant console which can apply call block.</p> <p>Enable COS option 204 (Call Block Applies) for the extensions to which call block will apply.</p> <p><b>Form 04</b></p>	
2.	<p>Enable System Option 09 (Attendant Call Block).</p>	

## Call Restriction

**Feature Description:** Refer to page 2-35.

**User Information:** Console: Chart 5-11, page 5-8; Front Desk Terminal: Chart 5-23, page 5-19; Telephones: None.

Chart 4-12 Programming Call Restriction		
<b>Note:</b> System Features 32 (Outgoing Call Restriction) and 33 (Room Status) are mutually exclusive.		
Step	Action	Comments
1.	<p><b>Form 03</b></p> <p>Select COS option 101 (Attendant O/G Restriction/Room Status Setup) for the attendant console.</p>	
2.	<p><b>Form 04</b></p> <p>Enable System Option 33 (Room Status).</p> <p>Set a default Vacant Room Status Call Restriction type via System Option 57 (Vacant Room Default Call Restriction).</p> <p>Set a default Occupied Room Status Call Restriction type via System Option 58 (Occupied Room Default Call Restriction).</p>	<p>By default, vacant rooms (and rooms that become vacant) have their call restriction set to Internal, the most restrictive option. This setting prevents unauthorized calls from vacant rooms.</p> <p>By default, occupied rooms have the call restriction set to Internal, the most restrictive option. Typically, when a room becomes occupied, the guest is provided with a less restrictive setting.</p>



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## Do Not Disturb

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**Feature Description:** Refer to page 2-36.

**User Information:** Console: Chart 5-7, page 5-6 and Chart 5-8, page 5-6; Front Desk Terminal: Chart 5-25, page 5-21.

Chart 4-13 Programming Do Not Disturb		
Step	Action	Comments
1.	<b>Form 01</b> Set Access Code for Do Not Disturb. Assign an access code for Do Not Disturb.	The same access code sets and cancels Do Not Disturb at a guest room telephone.
2.	<b>Form 03</b> Enable COS option 220 for each extension Do Not Disturb will apply to.	

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## Guest Room *SUPERSET* Key Programming

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**Feature Description:** Refer to page 2-39.

**User Information:** None (customer-dependent).

Chart 4-14 Guest Room <i>SUPERSET</i> Key Programming		
<b>Note:</b> A block of guest room <i>SUPERSET</i> 401+, <i>SUPERSET</i> 410, <i>SUPERSET</i> 420, and <i>SUPERSET</i> 430 telephones can be programmed with speed dial and feature access keys through CDE. It is possible to program up to three separate blocks of telephones with unique speed dial and feature access keys.		
Step	Action	Comments
1.	<b>Form 03</b> Enable COS option 244 (Room Status Applies) in the set's Class of Service.  Enter the COS Template Number as well.	
2.	<b>Form 37</b> Enter the desired speed dial numbers and feature access keys in CDE Form 37 (Guest Room <i>SUPERSET</i> Keys Template) for the appropriate template.	

## Maid in Room

**Feature Description:** Refer to page 2-40 and page 2-42.

**User Information (Enter Maid in Room Status):** Console: None; Front Desk Terminal: None; Telephones: Chart , page 5-30.

**User Information (Maid in Room Status Display):** Console: Chart 5-11, page 5-8; Front Desk Terminal: Chart 5-28, page 5-23; *SUPERSET* Telephones: Chart 4-16, page 4-22.

Chart 4-15 Programming Maid in Room Status		
<p><b>Note:</b> This feature allows the maid to enter a code from the guest room telephone to indicate that the room is currently being cleaned. Before leaving the room, the maid can enter a second code to indicate that the room is ready for inspection, or that it is clean. The attendant console, front desk terminal, or a <i>SUPERSET</i> telephone with the proper COS option can display this information.</p>		
Step	Action	Comments
1.	<p><b>Form 02</b> Assign an access code to Feature 35 (Maid In Room).</p>	
2.	<p><b>Form 03</b> Enable COS option 244 (Room Status Applies) for the extension.</p>	

## Maid in Room Status Display - *SUPERSET 420* and *SUPERSET 430* Telephones

**Feature Description:** Refer to page 2-42.

**User Information:** Console: None; Front Desk Terminal: None; *SUPERSET* Telephones: Chart 5-38, page 5-31.

Chart 4-16 Programming Maid in Room Status Display - <i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones		
<p><b>Note:</b> 1. This feature is available at <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephones only.</p>		
Step	Action	Comments
1.	<p><b>Form 02</b> Assign an access code to Feature 40 (<i>SUPERSET 4</i> Telephone Maid In Room Status Display).</p>	
2.	<p><b>Form 03</b> Enable COS option 608 (<i>SUPERSET</i>- Room Status Display) in the set's Class of Service.</p>	

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## Message Lamp Test

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**Feature Description:** Refer to page 2-43.

**User Information:** None (automatic through PABX once programmed).

<b>Chart 4-17 Programming Message Lamp Test</b>		
<b>Note:</b> Lamp Test only applies to telephones connected to ONS cards in digital bays.		
<b>Step</b>	<b>Action</b>	<b>Comments</b>
1.	<p><b>Form 03</b></p> <p>Enable COS option 232 (Message Waiting Lamp) for the telephones to be tested.</p>	<p>This COS option lights the message lamp on a room telephone when there is a message waiting.</p> <p>When this COS option is enabled, COS option 231 cannot be enabled. They are mutually exclusive.</p>
2.	<p><b>Form 04</b></p> <p>Enable System Option 02 (Message Lamp Test Enable).</p>	<p>This option allows the message waiting lamps on room telephones to be tested automatically.</p>

## Message Register

**Feature Description:** Refer to page 2-43.

**User Information:** Console: Chart 5-9, page 5-7 and Chart 5-10, page 5-7; Front Desk Terminal: Chart 5-31, page 5-25; Telephones: None.

<b>Chart 4-18 Programming Message Register</b>		
<b>Note:</b> A printer must be assigned to the "Hotel/Motel Audit" printout type in CDE Form 34 (Directed IO) to define where the single-line reports are printed.		
Step	Action	Comments
1.	<p><b>Form 03</b></p> <p>Select COS option 703 (Message Register Applies) for the extensions for which counts are to be maintained and for the trunks on which counts apply.</p> <p><b>Form 03: Optional.</b> Select COS option 230 (Message Register Overflow Alarm) for the extension(s) or trunk(s) for which there is to be a message register overflow alarm indication at the attendant console.</p>	<p>The alarm icon on the console flashes and a maintenance log is generated.</p>
2.	<p><b>Form 04</b></p> <p>Select a value for System Option 49 (Pseudo Answer Supervision Timer) to be applied to trunks in the system that do not provide answer supervision.</p> <p><b>Form 04: Optional.</b> Select System Option 04 (Message Waiting and Message Register Clear Print) to print a single-line report to the default printer each time that the message register changes, including the case when a message register is cleared by the console.</p> <p>Select System Option 23 (Message Reg. Count Additional Supervisions) to count meter pulses after supervision is received on an outgoing trunk.</p> <p>Select System Option 40 (Message Register Follows Talker) to charge the extension or the console last talking to a trunk with the message register count.</p>	

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**Room Status**


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**Feature Description:** Refer to page 2-50.

**User Information:** Console: Chart 5-11, page 5-8. Front Desk Terminal: Chart 5-30, page 5-24; Telephones: Chart 4-20, page 4-26.

**Chart 4-19 Setting up Room Status**

- Note:**
1. If System Option 02 (Message Lamp Test Enable) is enabled, when a room's status is changed from vacant to occupied or from occupied to vacant, the system performs a message lamp test on the telephone in that room. If the test finds the lamp defective (i.e., burnt-out or missing), it raises a minor alarm.
  2. System Option 56 (Room Status Conversion/Auto Wakeup Print Timer) only applies if System Option 34 (Auto Room Status Conversion/Auto Wakeup Print) is enabled.

Step	Action	Comments
1.	<b>Form 03</b> Select COS option 244 (Room Status Applies) for all extensions for which room status is to apply.	
2.	<b>Form 04</b> Enable System Option 02 (Message Lamp Test Enable) to allow message lamp testing. Enable System Option 33 (Room Status). Select System Option 34 (Auto Room Status Conversion/Auto Wakeup Print). See Note 2.	This global option applies to the attendant console only.  Optional.

**Room Types and Room Codes**

**Feature Description:** Refer to page 2-51.

**User Information:** Console: None; Front Desk Terminal: None (see Searches); Telephones: None.

<b>Chart 4-20 Programming Room Types and Room Codes</b>		
<p><b>Note:</b> The hotel guest rooms can be divided into 50 groups by putting each room type into a separate COS. Each COS has a name associated with it. Therefore, the room type can be identified by the COS name.</p>		
<b>Step</b>	<b>Action</b>	<b>Comments</b>
1.	<p><b>Form 03</b></p> <p>Create a COS for each different room type you have. Assign a name to each COS by using the COS Name softkey.</p>	<p>For instance,                      COS 1 SINGLE single rooms                      COS 2 DOUBLE double rooms                      COS 3 NONSMOKS nonsmoking single                      COS 4 NONSMOKD nonsmoking double</p> <p>The name must be:                      - unique                      - up to eight characters in length.</p>

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## Single-Line Reports

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**Feature Description:** Refer to page 2-57.

**User Information:** None (automatic through PABX once programmed).

Chart 4-21 Enabling Single-Line Reports		
Step	Action	Comments
1.	<p><b>Form 04</b></p> <p>Enable the following system options:</p> <p>04 Message Waiting and Message Register Clear Print</p> <p>13 Auto Wakeup Print</p>	<p>Prints a single-line report to the default printer each time the message register changes, including the case where the message register is cleared by the console. See also: COS option 230 COS option 703.</p> <p>See also the following system options: System Option 49 System Option 23 System Option 40.</p> <p>Allows wakeup audit printouts and single-line reports to be printed on the system printer whenever a wakeup call is set up, canceled, answered, or an attempt is made to honor the wakeup. No effect on <i>SUPERSET 420</i> and <i>SUPERSET 430</i> telephones.</p>

***SUPERSET* Telephone Room Status Display**

**Feature Description:** Refer to page 2-59.

**User Information:** Console: None; Front Desk Terminal: None; *SUPERSET* Telephones: Chart 5-39, page 5-32.

Chart 4-22 Programming Room Status Display - <i>SUPERSET</i> 420 and <i>SUPERSET</i> 430 Telephones		
Step	Action	Comments
1.	<p><b>Form 02</b></p> <p>Assign an access code to Feature 36 (<i>SUPERSET</i> 4 Room Status Display).</p>	<p>This feature applies to <i>SUPERSET</i> 420 and <i>SUPERSET</i> 430 telephones.</p> <p>The display will show one room at a time.</p>
2.	<p><b>Form 03</b></p> <p>Enable COS option 608 (<i>SUPERSET</i> - Room Status Display) in the set's Class of Service.</p>	



# 5 Using The Hotel/Motel Feature Package

Hotel/Motel features can be accessed from the Attendant console, Front desk terminal, *SUPERSET* display telephones, and Industry-standard telephones (including *SUPERSET 401+* and *SUPERSET 410* telephones). In addition, there are several features that can be accessed directly from the PABX only.

## Accessing Hotel/Motel from the Attendant Console

5.1 Table 5-1 lists the features which can be accessed from the attendant console.

Table 5-1 Hotel/Motel Features Accessed from the Attendant Console	
Feature	Chart
Attendant Message Waiting - Setup and Cancel	Chart 5-1: Setting Up Message Waiting - Attendant Chart 5-2: Canceling Message Waiting - Attendant
Audits	Chart 5-3: Requesting Audits
Automatic Wakeup	Chart 5-4: Setting Automatic Wakeup
	Chart 5-5: Canceling Automatic Wakeup
Call Blocking	Chart 5-6: Setting Up/Removing Call Blocking
Call Restriction	See Room Status Display
Check In	Chart 5-13: Searching for available room (VAC/CLEAN)
	Chart 5-11: Changing the Status of a Room (to OCCUPIED)
Check In	Chart 5-11: Changing the Status of a Room (to VACANT/DIRTY/TO INSPECT)
Do Not Disturb	Chart 5-7: Setting Up Do Not Disturb - Attendant
	Chart 5-8: Canceling Do Not Disturb
Message Register	Chart 5-9: Displaying the Message Register
	Chart 5-10: Clearing the Message Register
Reserve Room	Chart 5-11: Changing the Status of a Room (to RESERVED/GUARANTEED)
Room Status Display (Room Occupancy, Room Condition, Call Restriction)	Chart 5-11: Checking/Changing the Status of a Room
Searches	Chart 5-12: Searching for a Particular Room by Number
	Chart 5-13: Searching for Rooms by Status

## Attendant Message Waiting Setup and Cancel

**Feature Description:** Refer to page 2-23.

**Programming:** Reference Chart 4-3, page 4-14.

**Operation:**

Chart 5-1 Setting Up Message Waiting - Attendant		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
	<b>Enter the extension (room) number.</b>	The SEND MSG softkey appears.
3.	Press the <b>SEND MSG</b> softkey.	The EXIT softkey appears.
4.	Press the <b>EXIT</b> softkey.	

- Note:**
1. The attendant can inform guests that there is a message waiting.
  2. The attendant can read messages for an extension sent by another guest room extension or from another console.

Chart 5-2 Canceling Message Waiting - Attendant		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
	<b>Enter the extension (room) number.</b>	The CANCEL MSG softkey appears.
3.	Press the <b>CANCEL MSG</b> softkey.	The EXIT softkey appears.
4.	Press the <b>EXIT</b> softkey.	

- Note:**
1. The attendant can cancel the message waiting indication after guests call for their message.
  2. If you are connected to the guest's extension, begin at Step 3.

## Audits

**Feature Description:** Refer to page 2-24 to page 2-30.

**Programming:** Reference Chart 4-4, page 4-15.

**Operation:**

Chart 5-3 Requesting Audits		
1.	Press <b>FUNCTION</b> .	You must not be involved in a call.
2.	Press the <b>GUEST ROOM</b> softkey.	The <b>AUDITS</b> softkey appears.
3.	<b>Press the AUDITS softkey.</b>	The <b>AUDIT</b> softkeys appear.
	<i>For a Message Register Audit:</i> Press the <b>MSG REGISTER</b> softkey.	
	<i>For a Room Status Audit:</i> Press the <b>ROOM STATUS</b> softkey.	
	<i>For a Wakeup Audit:</i> Press the <b>WAKEUP</b> softkey.	
4.	When you are finished, press the <b>EXIT</b> softkey.	

- Note:**
- 1. Message Register Audit.** The message register audit is a printout showing all non-zero message registers. The room extensions are printed in numerical order, and the current register count is given for each.
  - 2. Room Status Audit.** A four-part audit report can be printed on the system printer showing all extensions with room status. One section lists vacant rooms, one lists occupied rooms, one lists reserved rooms, and one lists guaranteed rooms. Each contains a subsection for clean rooms, dirty rooms, inspected rooms, and out of service rooms, and shows the call restriction and maid in room status of each room.
  - 3. Wakeup Audit.** The attendant can get a printout showing the wakeup times for all extensions with active wakeups set. The audit can also be printed automatically daily at a predetermined time. The audit report lists all room numbers and the wakeup time currently set for each.

## Automatic Wakeup

**Feature Description:** Refer to page 2-31 to page 2-33.

**Programming:** Reference Chart 4-8, page 4-17 to Chart 4-10, page 4-18.

**Operation:**

Chart 5-4 Setting Automatic Wakeup		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	Enter the <b>extension (room) number</b> .	The SET WAKEUP softkey appears.
4.	Press the <b>SET WAKEUP</b> softkey.	The prompt to enter wakeup time appears.
5.	Enter the <b>wakeup time</b> .	When a valid wakeup time is dialed, the softkeys change.
6.	If the wakeup time is in the morning, press the <b>SET</b> softkey.	
7.	If the wakeup time is in the afternoon, press the <b>PM</b> softkey.	
8.	When you are finished, press the <b>EXIT</b> softkey.	

- Note:**
1. To set wakeup time while you are talking to the guest, begin at Step 4.
  2. If a wakeup is set or changed by the attendant console, and the system option to print these changes has been enabled, a SET BY CON or CHG BY CON message is sent to the terminal (SMDR) or to the printer to indicate who made the change and when it was made.
  3. A valid wakeup time has the format HH:MM where HH is between 00 and 23 for 24-hour clocks and 00 and 11 for 12-hour clocks, and MM is 00 to 59.

Chart 5-5 Canceling Automatic Wakeup		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	Enter the extension (room) number.	The CLR WAKEUP softkey appears.
4.	Press the <b>CLR WAKEUP</b> softkey.	

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## Call Blocking

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**Feature Description:** Refer to page 2-34.

**Programming:** Reference Chart 4-11, page 4-19.

**Operation:**

Chart 5-6 Setting Up/Removing Call Blocking		
<b>To Block Calls:</b>		
1.	Press the <b>BLOCK</b> hardkey.	The associated LED is lit.  All calls are blocked between all extensions with the call block option (204) enabled in their COS.
<b>To Remove Call Blocking:</b>		
1.	Press the <b>BLOCK</b> hardkey.	The associated LED is turned off.  Call Blocking is removed.

---

## Call Restriction

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**Feature Description:** Refer to page 2-35.

**Programming:** Reference Chart 4-12, page 4-20.

See Chart 5-11, Checking/Changing Status of a Room on page 5-8.

**Do Not Disturb**

**Feature Description:** Refer to page 2-36.

**Programming:** Reference Chart 4-13, page 4-21.

**Operation:**

<b>Chart 5-7 Setting Up Do Not Disturb - Attendant</b>		
<b>To Set Up Do Not Disturb:</b>		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	<b>Enter the extension (room) number.</b>	The NO DISTB softkey appears.
4.	Press the <b>NO DISTB</b> softkey.	DND appears in the top line of the display.
5.	When you are finished, press the <b>EXIT</b> softkey.	

**Note:** If you are connected with the extension, begin at Step 4.

<b>Chart 5-8 Canceling Do Not Disturb - Attendant</b>		
<b>To Cancel Do Not Disturb:</b>		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	<b>Enter the extension (room) number.</b>	The NO DISTB softkey appears.
4.	Press the <b>NO DISTB</b> softkey.	DND disappears from the top line of the display.
5.	When you have finished, press the <b>EXIT</b> softkey.	

**Note:** 1. If Do Not Disturb is set on an extension, DND appears on the top line of the display, for example, COS 12 COR 01 DND.

2. If you are connected with the extension, begin at Step 4.

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## Message Register

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**Feature Description:** Refer to page 2-43.

**Programming:** Reference Chart 4-18, page 4-24.

**Operation:**

Chart 5-9 Displaying the Message Register for an Extension		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	<b>Enter the extension (room) number.</b>	The message register count is shown in the first position on line 2 of the display.

**Note:** Message registration allows the system to accumulate the number of completed call units (local and long distance) made from an extension. An alarm can be generated at the attendant console when a message register overflows. Message registration can apply to extensions and trunks.

Chart 5-10 Clearing the Message Register		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	<b>Enter the extension (room) number.</b>	If there is a message register count, the CLR REG softkey is displayed.
4.	Press the <b>CLR REG</b> softkey.	

**Note:** Clearing the register may result in having a single-line report printed (if programmed).

## Room Status Display

**Feature Description:** Refer to page 2-50.

**Programming:** Reference Chart 4-19, page 4-25.

**Operation:**

<b>Chart 5-11 Checking / Changing Status of a Room (Call Restriction, Room Occupancy, Room Condition, Maid)</b>		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	
3.	<b>Enter the extension (room) number.</b>	The <b>STATUS</b> softkey is displayed. The second line of the display shows the room's status. For example, Status = Vac/Dirty/Int/Maid means the room is vacant, dirty, has internal telephone privileges, and has a maid in it.
4.	Press the <b>STATUS</b> softkey.	The Room Status softkeys are displayed. These softkeys change according to the status of the room. For instance, if the room is dirty, the <b>CLEAN</b> softkey appears. If the room is clean, the <b>DIRTY</b> softkey appears. The second line of the display shows the room's status.
<b>To Change any Element of the Room Status:</b>		
1.	Press the softkey for the desired status.	The <b>MORE...</b> softkey returns you to the previous display.

- Note:**
1. The status of a room can be checked from an idle console (begin at Step 1) or while the attendant is in conversation with the room to be checked (begin at Step 4).
  2. The abbreviations and softkeys used in the display are shown in Table 5-2.



<b>Table 5-2 Room Status</b>			
<b>Status</b>	<b>Abbreviation</b> shown on display line	<b>Softkey Name</b>	<b>Meaning</b>
Vacant	Vac	VACANT	Room is not rented to a guest.
Occupied	Occ	OCCUPIED	Room is rented to a guest.
Clean	Clean	CLEAN	Room has been cleaned by maid.
Dirty	Dirty	DIRTY	Room has not been cleaned by maid.
Internal	Int	INTERNAL	Room can only make internal telephone calls.
Local	Loc	LOCAL	Room can make internal and local calls.
Long Distance	LD	LONG DIST	Room can make internal, local, and long distance calls.
Maid in Room	Maid	No Softkey	At present a maid is in the room.
Reserved	Res	RESERVED	Room is being held for a certain time. After that time, it can be rented out to someone other than the person who reserved it.
Guaranteed	Gua	GUARANTEED	Room is guaranteed to be paid for but not yet occupied.
Out of Service	Serv.	OUT OF SERVICE	Room is not in service.
To be Inspected	Insp.	TO INSPECT	Room has been cleaned by a maid, but is to be inspected by the supervisor.

## Searches

**Feature Description:** Refer to page 2-51 to page 2-57.

**Programming:** None required for Search facility.

**Operation:**

Chart 5-12 Searching for a Particular Room by Number		
1.	Press the <b>GUEST ROOM</b> softkey.	
2.	Enter the room number you want to check.	The status information is provided on the second line of the LCD display in the status section.

Chart 5-13 Searching for Rooms by Status (Room Status, Room Condition, Maid)		
1.	Press <b>FUNCTION</b> .	
2.	Press the <b>GUEST ROOM</b> softkey.	Search selections are displayed.
	<i>To list rooms with Maid in Room status, press the <b>MAID</b> softkey.</i>	The LCD displays the numbers of up to 10 rooms that have this status. If there are more rooms, the <b>MORE</b> softkey appears.
	<i>To list rooms by status, press the <b>VAC/CLEAN</b> softkey, the <b>RES/CLEAN</b> softkey, or the <b>OUT OF SERV.</b> softkey.</i>	The LCD shows the numbers of up to 10 rooms that have this status. If there are more rooms, the <b>MORE</b> softkey appears.
	<i>To list rooms by status beginning at a particular room number, press the <b>ROOM NUMBER</b> softkey.</i>	You are prompted to enter the room number. A valid room number results in the 10 rooms following the entered number being displayed.
3.	Press the <b>MORE...</b> softkey to see the next group of room numbers.	

## Accessing Hotel/Motel with a Front Desk Terminal

5.2 The features that can be accessed from the front desk terminal are shown in Table 5-3.

<b>Table 5-3 Hotel/Motel Features Accessed from the Front Desk Terminal</b>	
<b>Feature</b>	<b>Chart</b>
Access	Chart 5-14, Accessing the Hotel/Motel Front Desk Application
Attendant Message Waiting Setup and Cancel	Chart 5-17, Setting Up/Canceling Message Waiting - Attendant
Audits	Chart 5-21, Requesting Room Status Audits Chart 5-18, Printing a Message Register or Wakeup Audit Chart 5-19, Requesting a Room Type Audit
Automatic Wakeup	Chart 5-21, Setting Automatic Wakeup Chart 5-22, Canceling A Wakeup Call
Check In	Chart 5-35, Searching for a Particular Room Type (VACANT) Chart 5-31, Changing the Occupancy Field (OCCUPIED)
Check Out	Chart 5-24, Checking Out
Guest Names	Chart 5-26, Entering Guest Names Chart 5-27, Removing Guest Names
Do Not Disturb	Chart 5-25, Setting /Clearing Do Not Disturb
Call Privilege	Chart 5-23, Changing the Call Privilege
Message Register	Chart 5-31, Clearing the Message Register
Reserve a Room	Chart 5-31, Changing the Occupancy Field (RESERVED or GUARANTEED)
Room Status Display	Chart 5-31, Changing the Occupancy Field Chart 5-30, Changing the Condition Field Chart 5-28, Checking the Maid in Room Status
Searches	Chart 5-32, Guest Search Chart 5-33, Searching for Particular Rooms Chart 5-34, Searching for a Guest Room by Number Chart 5-35, Searching for a Particular Room Type

<b>Chart 5-14 Accessing the Hotel/Motel Feature Package from a Front Desk Terminal</b>		
1.	Enter: M[onitor] HM (letters shown in [...] are optional.)	The screen displays: Ringing Connected Once connected, the screen displays: 1 - VT 100 Compatible 2 - IBM PC SELECT A TERMINAL TYPE
2.	Enter a 1 or a 2 and press Enter.	The display shows: ENTER A PASSWORD
3.	<i>If you have made the wrong choice, use the Delete key, or drop the data call by using a special key if one is provided, or the dataset disconnect button, or waiting for the inactivity timeout to occur (approximately 10 seconds).</i>	
4.	Enter the password of the CDE supervisor (if you are going to enter or change guest information) or CDE attendant (if you are going to request audits, look at information, or do a room search).	If a password is not entered accurately, an error message states: Incorrect Password Entered. The password must contain numeric characters only.  The House Statistics screen is displayed (Figure 5-1). If the attendant-level password was used, the Room Update softkey is not displayed.

**Note:** Once the PABX is operational, access to the hotel/motel application from the front desk terminal is via the DTRX monitor command. (Some messages may vary depending on systems options programming.)

10:50 25 - May-1994		HOUSE STATISTICS		MITEL Front Desk	
House Statistics as of 10:43 25-MAY-1994					
<u>Guest Room Occupancy Summary</u>					
Vacant: 36		Occupied: 15		Reserved: 0      Guaranteed: 12	
<u>Room Condition Summary</u>			<u>Features Usage Summary</u>		
Clean : 28		Do Not Disturb ON : 0		Wake Up Set : 36	
To be cleaned : 17		Message Waiting ON : 21		Non Zero Msg Regs : 14	
To be inspected : 17		Call Blocking : Off			
Not in service : 1					
Maid in room : 3					
Enter the last name: Black					
1 Room Update	2	3 Room Search	4	5 Guest Search	
6 Quit	7	8 Audits	9	0 Refresh	

**Figure 5-1 House Statistics Screen after Log On**

Chart 5-15 Refreshing the House Statistics Screen		
1.	On the House Statistics screen, press the <b>Refresh</b> softkey.	If there has been a change to the occupancy summary, room condition summary, or features usage summary, the totals are recalculated and displayed. The date and time are updated to show the current date and time.

**Note:** The House Statistics screen presents a summary of room occupancy, room condition, and features usage. This summary is recalculated every time the House Statistics screen is newly displayed. When the House Statistics screen has been displayed for a period of time, the Refresh softkey is used to recalculate the totals.

Chart 5-16 Logging Off		
1.	Return to the House Statistics screen.	
2.	Press the <b>Quit</b> softkey.	

## Attendant Message Waiting Setup and Cancel

**Feature Description:** Refer to page 2-23.

**Programming:** Reference Chart 4-3, page 4-14.

**Operation:**

Chart 5-17 Setting Up/Canceling Attendant Message Waiting		
<b>To Set A Message:</b>		
1.	From the House Statistics screen or a search display screen, press the <b>Room Update</b> softkey.	
2.	Enter the room number.	The Room Update screen appears.
3.	On the Room Update screen, press the <b>Set Message</b> softkey.	A Clear MSW softkey appears.
<b>To Clear A Message:</b>		
1.	On the Room Update screen, press the <b>Clear MSW</b> softkey.	The Message Waiting field is blanked and the Set Message softkey appears.

- Note:**
- Setting or clearing messages is done from the Room Update screen. When setting or clearing a message, the data field pointers (> and <) can be on any field that provides softkeys. (The Name fields do not provide softkeys.)
  - Setting and clearing messages are mutually exclusive. If there is no message waiting for a room, the Set Message softkey is displayed. If there is a message waiting for a room, the Clear MSW softkey is displayed.
  - There could already be a message waiting for a room (the message would have been set from another device such as a console or another terminal). If so, when the Set Message softkey is pressed, the user is informed that the room has a message waiting and the present message cannot be set. A Clear MSW softkey appears. The waiting message must be cleared before the second message can be set.
  - Set-to-set messages are transparent to the front desk terminal. If a *SUPERSET* guest room telephone has left a message for another *SUPERSET* guest room telephone, it is not shown as a message indication on the front desk terminal.

## Audits

**Feature Description:** Refer to page 2-24 to page 2-30.

**Programming:** Reference Chart 4-4, page 4-15 to Chart 4-7, page 4-16.

**Operation:**

Chart 5-18 Printing a Message Register or Wakeup Audit		
1.	From the House Statistics screen, press the <b>Audits</b> softkey.	The Audit softkeys are displayed (MSG REG and WAKEUP).
2.	<b>For a Message Register audit:</b> Press the <b>Msg. Reg.</b> softkey.  <b>For a Wakeup Audit:</b> Press the <b>Wakeup</b> softkey.	A report of all guest rooms with a message register greater than zero is printed.  A report of all guest rooms with a wakeup call enabled is printed.  The format of each report is the same as the format of a report when a console is used to request a report from the basic hotel/motel system.
3.	After you have finished, press the <b>Quit</b> softkey.	

**Note: 1.** Message Register Audit. The message register audit is a printout that shows all non-zero message registers. The room extensions are printed in numerical order and the current register count is given for each.

Wakeup Audit. The wakeup audit is a printout that shows the wakeup times for all extensions with active wakeups set. The audit can also be printed automatically daily at a predetermined time. The audit report lists all room numbers and the wakeup time currently set for each.

**2.** Pressing the associated softkey starts the audit print. The screen displays a message to indicate that printing has begun.

Chart 5-19 Printing a Room Type Audit		
1.	From the House Statistics screen, press the <b>Audits</b> softkey.	The Audit softkeys are displayed.
2.	<b>For a Room Type Audit:</b> Press the <b>Room Type</b> softkey.	When a Room Type Audit is requested, you are prompted to enter a room code for the type of room you want information on.
3.	Enter a valid room code.	It is not possible to print an all room types audit by using 0.
4.	Press the <b>Return</b> hardkey.	An audit of all rooms of that type is printed.
5.	When you have finished, press the <b>Quit</b> softkey.	

**Note: 1.** Room Type Audit. A room type audit is a printout that shows all rooms of a particular type, for instance, all single rooms.

**2.** Pressing the associated softkey starts the audit print. No message confirms that printing has begun.

Chart 5-20 Printing Room Status Audits		
1.	On the House Statistics screen, press the <b>Audits</b> softkey.	The Room Status softkey is displayed.
2.	Press the <b>Room Status</b> softkey.	The room status softkeys are displayed.
3.	<i>Printing a Vacant Room Audit:</i> Press the <b>Vacant</b> softkey.	The vacant room audit is printed.
	<i>Printing an Occupied Room Audit:</i> Press the <b>Occupied Room</b> softkey.	The Occupied room audit is printed.
	<i>Printing a Reserved Room Audit:</i> Press the <b>Reserved Room</b> softkey.	The Reserved room audit is printed.
	<i>Printing a Guaranteed Room Audit:</i> Press the <b>Guaranteed Room</b> softkey.	The Guaranteed room audit is printed.
	<i>Printing a To Clean Audit:</i> Press the <b>To Clean</b> softkey.	The Rooms to be Cleaned audit is printed. The report lists all rooms that are currently dirty.
	<i>Printing a To Inspect Audit:</i> Press the <b>To Inspect</b> softkey.	The Rooms to be Inspected audit is printed. The report lists all rooms with status set to Inspect.
		For each of these audits, you are prompted to enter the code for the room type, or 0 for all rooms.
4.	Type the room code and press <b>Return</b> .	
5.	<i>Printing an All Rooms Audit:</i> Press the <b>All Rooms</b> softkey.	The vacant, occupied, reserved, and guaranteed room audits are combined into a single printout. Each section has the same format.
6.	To return to the main Audits menu, press the <b>Quit</b> softkey.	

- Note:**
1. This mode of operation allows various types of audits to be generated on demand. The audit mode of operation is entered from the House Statistics screen. Pressing the Audits key does not update the terminal screen. The softkeys are updated to show the various audit types.
  2. A maintenance log is generated if the Hotel/Motel printer fails.



## Automatic Wakeup

**Feature Description:** Refer to page 2-31 to page 2-33.

**Programming:** Reference Chart 4-8, page 4-17 to Chart 4-10, page 4-18.

**Operation:**

Chart 5-21 Setting an Automatic Wakeup		
<b>To set wakeup time:</b>		
1.	From the House Statistics screen, press the <b>Room Update</b> softkey.	
2.	Enter the room number.	The Room Update screen is displayed.
3.	On the Room Update screen, move the shaded bar to the wakeup field and press the <b>Set Wakeup</b> softkey.	The prompt Enter Wakeup Time (hh:mm) is displayed. The softkeys disappear (Figure 5-2).
4.	Enter the time, and press <b>Return</b> .	Only the number keys, up/down arrow keys, and the Delete and Return hardkey are valid when setting the time. Time must be entered as four digits. (The Delete hardkey deletes the last digit entered. It cannot be used after the Return hardkey has been pressed.)  Once four digits are entered, <b>Cancel</b> , <b>Enter</b> , and <b>AM/PM</b> softkeys (if the 12-hour clock option is enabled) appear.  The prompt Press Enter to confirm Wakeup Time appears.
5.	For 12-hour formats, press the <b>PM</b> softkey if you are setting an afternoon time.	Any time entered in the 12-hour format is assumed to be morning time unless the PM softkey is pressed. A 24-hour setting is accepted as valid in the 12-hour format. It is automatically converted to a 12-hour format  The AM/PM softkey toggles between AM and PM. AM is the default.
<b>To correct an error:</b>		
1.	Use the <b>Delete</b> hardkey to delete the last digit of the time (digit by digit).	
		Page 1 of 2

Chart 5-21 Setting an Automatic Wakeup (continued)		
<b>To cancel a change to the Wakeup Time:</b>		
1.	If you are setting the wakeup time and decide not to, press the <b>Cancel</b> softkey.	You must have entered the complete time (the full four digits).  The shade bar moves to the next programmable field, and leaves the wakeup field unchanged.
2.	To continue making changes, press the <b>Return</b> hardkey.  To end, press the <b>Enter</b> softkey.	
		Page 2 of 2

- Note:**
- When the highlight bar is in the Wakeup field on the Room Update screen, the Set Wakeup softkey appears. If a wakeup time has already been set, a Set Wakeup and a Clear Wakeup softkey appear.
  - If a wakeup is set or changed by the front desk terminal, and the system option to print these changes has been enabled, a SET BY DESK or CHG BY DESK message is printed to indicate how the change was made.

29-05-94	12:05	GUEST ROOM UPDATE		Mitel Front Desk
Guest Name	: Smith , Mary	Room Number	: 1102	
Occupancy	: OCC	Room Type	: Single	
Condition	: CLEAN	Message Waiting	:	
Call Privilege	: LOCAL	Do Not Disturb	:	
Wakeup Time	: ██████████	Message Register	:	
-----				
Enter Wakeup Time (hh:mm)		Then press Return		
1	2	3	4	5
6	7	8	9	0

**Figure 5-2 Wakeup Time Prompt**

<b>Chart 5-22 Canceling a Wakeup Call</b>		
1.	On the Room Update screen, move the shaded bar to the wakeup field and press the <b>Clear Wakeup</b> softkey.	The wakeup is cleared. The shade bar moves to the next field that can be modified.
2.	To continue making changes, press the <b>RETURN</b> hardkey.  To end, press the <b>Enter</b> softkey.	

**Note:** When a wakeup time is set, a Clear Wakeup softkey is displayed.

### **Call Restriction (known as Call Privilege on Front Desk Terminal)**

**Feature Description:** Refer to page 2-35.

**Programming:** Reference Chart 4-12, page 4-20.

**Operation:**

<b>Chart 5-23 Changing Call Privilege</b>		
1.	On the Room Update screen, move the shaded bar to the call privilege field and press the <b>Show Choices</b> softkey.	The call privilege softkeys are displayed: Internal: Most restrictive setting. Can only make internal calls. Local: Can only make local calls. Long Distance: Least restrictive setting. Can make long distance, local and internal calls.
2.	Press the softkey for the call privilege setting you want.	The shaded bar is automatically moved to the next field that can be changed.
3.	Continue making changes, or  <i>To end and save all changes, press the <b>Enter</b> softkey, then the <b>Quit</b> softkey.</i>  <i>To end and not save the changes, press the <b>Quit</b> softkey and follow the instructions given.</i>  <i>If no changes are necessary, press the <b>Quit</b> softkey.</i>	

**Note:** The guest room phone can be restricted from making certain calls.

## Check Out

**Feature Description:** Refer to page 2-36.

**Programming:** None required.

**Operation:**

Chart 5-24 Check Out (Single Key)		
1.	On the Room Update screen, move the shaded bar to the Occupancy field.	The Check Out softkey is displayed.
2.	Press the <b>Check Out</b> softkey.	The room occupancy field is set to Vacant. The room condition is set to Dirty. The call restriction is set to the setting specified in System Option 57 (vacant/default call restriction).  The Cancel softkey and the Enter softkey appear.  A prompt appears: Press Enter to complete check out.
3.	To cancel the checkout, press the <b>Cancel</b> softkey.	All original information is displayed.
4.	To complete the check out, press the <b>Enter</b> softkey.	The guest name is blanked out. Do Not Disturb is disabled (if set). Message waiting is cleared. Wakeup time is cleared. Message register is cleared.

**Note:** The check out softkey is a simple method of checking out a guest. It is only provided when the occupancy setting of the guest room is Occupied.

---

## Do Not Disturb

---

**Feature Description:** Refer to page 2-36.

**Programming:** Reference Chart 4-13, page 4-21.

**Operation:**

Chart 5-25 Setting / Clearing Do Not Disturb		
<b>To Set Do Not Disturb:</b>		
1.	On the Room Update screen, move the shaded bar to the DND field and press the DND softkey.	The field shows ON.
<b>To Clear Do Not Disturb:</b>		
1.	On the Room Update screen, move the shaded bar to the DND field and press the DND softkey.	The field goes blank.

- Note:**
1. This feature prevents calls from reaching the guest room extension.
  2. This field is displayed if DND is programmed in the extension's COS.

## Guest Names

**Feature Description:** Refer to page 2-38.

**Programming:** None required.

**Operation:**

Chart 5-26 Entering Guest Names		
1.	Display the Room Update screen.	On the Room Update screen, the guest name field is highlighted if the occupancy status of the room is vacant. You are prompted to enter the last name.
2.	Enter the last name (up to 15 alpha/numeric characters) in the Guest Name field.	While a name is being entered, no softkeys are provided.
		All names are stored and displayed as uppercase, even if they are entered in lowercase.
		<b>Note:</b> If you use an arrow key to move to the next field, the data you entered is lost.
3.	Press the <b>Return</b> hardkey.	The new data is displayed.
		The shade bar moves to the beginning of the next field. You are prompted to enter the guest's first name, and then press Return.
4.	Enter the first name (up to six characters) in the next field.	
5.	Press the <b>Return</b> hardkey.	The shade bar moves to the beginning of the next field. The new data is displayed.
6.	Press the <b>Enter</b> softkey.	The information is entered in the database. The Enter softkey is displayed only if the Occupancy field is not set to Vacant.

- Note:**
1. If a copy database is in progress when a name update is requested (the Enter key is pressed), the name is not saved. A warning message is displayed. Any other information entered on the form is saved.
  2. A guest name cannot be stored if the Occupancy field is set to Vacant.

---

**Chart 5-27 Removing Guest Names**
**To blank out a name in either guest name field:**

1.	Go to the Room Update screen.	
2.	Use the cursor keys to move the shaded bar to the name field to be blanked out.	
3.	Press the <b>spacebar</b> .	The name is blanked out.
4.	Press the <b>Return</b> hardkey.	
5.	Press the <b>Enter</b> softkey.	The name is removed from the database.

**Note:** The name fields are automatically blanked out when the Check Out softkey is used.

---

**Maid in Room Display**

**Feature Description:** Refer to page 2-40.

**Programming:** Chart 4-15, page 4-22.

**Operation:**

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**Chart 5-28 Checking the Maid in Room Status**

1.	On the Room Update form, check the field below the Guest name fields (this field does not have a title).	If this field has Maid in Room displayed, the maid is currently in that room. Nothing is displayed if the maid is not in the room.
----	--	--

**Note:** Also see Search for Maid in Room.

---

**Message Register**

**Feature Description:** Refer to page 2-43.

**Programming:** Reference Chart 4-18, page 4-24.

**Operation:**

**Chart 5-29 Clearing the Message Register**

1.	On the Room Update screen, move the shade bar to the message register field.	The shade bar only highlights this field if the count is greater than zero.
2.	Press the <b>Clr Msg Reg</b> softkey.	Yes and Cancel softkeys appear.
3.	To clear the register, press <b>Yes</b> .	The message register is reset to zero.
	If you decide that you don't want to clear the register, press <b>Cancel</b> .	The message register is not cleared.
4.	Press <b>Enter</b> .	The message register is cleared. The shade bar moves to the next field.

- Note:**
1. When the Message Register field is highlighted, a Clear Msg Reg softkey appears. This softkey resets the message register to zero.
  2. This field is only displayed if Message Register Applies(COS 703) is enabled for a guest room.
  3. A single-line report can be automatically generated before clearing.

## Room Condition

**Feature Description:** Refer to page 2-45.

**Programming:** Reference Chart 4-19, page 4-25.

### Operation:

**Chart 5-30 Changing the Condition Field**

1.	From the House Statistics screen or a search screen, press the <b>Room Update</b> softkey.	The Room Update screen is displayed.
2.	On the Room Update screen, move the shaded bar to the Condition field.	
3.	Press the <b>Show Choices</b> softkey.	The screen changes. The four states are presented as softkeys. They are: Clean Room has been cleaned by a maid. Dirty Room has not been cleaned. Out of Serv Room is not in service. To Inspect Room has been cleaned by a maid but must be inspected by a supervisor.
4.	Select one of the choices by pressing the key associated with it.	The field is updated and the shaded bar passes to the next field. An Enter softkey appears.
	Or, if you decide that you don't want to make a change, press the <b>Cancel</b> softkey.	
5.	If you have other changes to make, continue to make changes in the data fields.	
	If you have no other changes to make, press the <b>Enter</b> softkey.	The changes are saved in the database.



---

## Room Occupancy

---

**Feature Description:** Refer to page 2-48.

**Programming:** Reference Chart 4-19, page 4-25.

**Operation:**

Chart 5-31 Changing the Occupancy Field		
1.	From the House Statistics screen or a search screen, press the <b>Room Update</b> softkey.	The Room Update screen is displayed.
2.	On the Room Update screen, move the shaded bar to the Occupancy field.	
3.	Press the <b>Show Choices</b> softkey.	The screen changes. The four states are presented as softkeys. They are: <b>Vacant</b> Room is not occupied. <b>Occupied</b> Room is occupied. <b>Reserved</b> Room is being held until a certain time. After that, the room can be rented out to someone other than the person who had reserved it. <b>Guaranteed</b> Room has a guaranteed reservation.
4.	Select one of the choices by pressing the key associated with it.	The field is updated and the shaded bar passes to the beginning of the next field. The Enter softkey appears.
	Or, if you decide that you don't want to make a change, press the <b>Cancel</b> softkey.	
5.	If you have other changes to make, continue to make changes in the data fields.	
	If you have no other changes to make, press the <b>Enter</b> softkey.	The changes are saved in the database.

**Note:** The Occupancy field is used to indicate room availability.

## Searches

**Feature Description:** Refer to page 2-51 to page 2-57.

**Programming:** None required for Search facility.

**Operation:**

Chart 5-32 Guest Search		
1.	From the House Statistics screen, press the <b>Guest Search</b> softkey.	The display does not change.
		The softkeys are blanked.
		You are prompted to enter the last name being searched for.
2.	Enter the name.	You can enter part of a name, for instance, BLA. All the names with BLA as the first letters would be displayed.
3.	Press the <b>Return</b> hardkey.	If a match is found, the room that is matched, or the room that is the closest matched, is displayed first, followed by the next eight rooms in alphabetical order.
4.	To display the next nine names meeting the search criteria, press the <b>Page Down</b> softkey.  To display the previous nine names meeting the search criteria, press the <b>Page Up</b> softkey.	This key appears if there are any more names in the system. They are displayed in alphabetical order.  This key only appears if there is at least one name that has scrolled off the top of the display.
5.	To search for other names, use the <b>Guest Search</b> softkey.	This softkey can be used as a "Guest Phone Book" service.
6.	To return to the House Statistics screen, press the <b>Quit</b> softkey.	
	To go to the room update screen that displays information about the indicated room, press the <b>Room Update</b> softkey.	

**Note:** All guest rooms are searched for a matching name string. The string entered must match with the first letters of the last name field. The first name is used to determine the order for guests whose last names are identical. If first names are also the same, the guest who checked in last is displayed first.

Chart 5-33 Searching for Particular Rooms		
1.	From the House Statistics screen, press the <b>Room Search</b> softkey.	The softkeys show the various kinds of searches that can be selected.
2.	Press the appropriate softkey.	You are prompted to enter the code for the kind of room that you want to search: for instance, all single rooms.  The wild card (0) is used to search all room types.
3.	Enter the room code, or 0.	All rooms meeting the search requirements are displayed in a lowest to highest sequence by room number.
4.	To display the next nine rooms meeting the search criteria, press the <b>Page Down</b> softkey.  To display the previous nine rooms meeting the search criteria, press the <b>Page Up</b> softkey.	This key appears only if at least one more room matches the search criteria.  This key appears only if at least one room has scrolled off the top of the display.
5.	To return to the main room search menu, press the <b>Quit</b> softkey.	
	To go to the room update screen that displays information about the indicated room, press the <b>Room Update</b> softkey.	

**Note:** Rooms can be searched for on the basis of: vacant/clean, vacant, maid in room, out of service, dirty, reserved, or guaranteed.

Chart 5-34 Searching for a Guest Room by Number		
1.	On the House Statistics screen, press the <b>Room Search</b> softkey.	The softkeys show the various kinds of searches that can be selected.
2.	Press the <b>Room Number</b> softkey.	You are prompted to Enter the Room Number.
3.	Type the room number.	
4.	Press the <b>Return</b> hardkey.	The specified room is listed first, followed by up to eight following room numbers.  If the room number entered is not valid, the following prompt appears: Room not found. Press Enter to search for another.
5.	To search for another room, or to do a different type of search, press the <b>Quit</b> softkey.	

**Note:** The Room Number softkey is used to search for a particular guest room.

Chart 5-35 Searching for a Particular Room Type		
1.	From the House Statistics screen, press the <b>Room Search</b> softkey.	The softkeys show the various kinds of searches that can be selected.
2.	Press the <b>Room Type</b> softkey.	You are prompted to enter the code for the kind of rooms you want to search: for instance, single rooms.
3.	Enter the code for the room type, or enter 0 for all room types.	If 0 is entered, all guest rooms are displayed in order of room number.
4.	Press the <b>Return</b> hardkey.	All rooms of the required type are displayed in numerical order.
5.	To display the next nine rooms, press the <b>Page Down</b> softkey.	This key only appears if at least one more room matching the search criteria exists.
	To display the previous nine rooms meeting the search criteria, press the <b>Page Up</b> softkey.	This key appears only if at least one room has scrolled off the top of the display.
6.	To return to the House Statistics screen, press the <b>Quit</b> softkey twice.	
	To go to the room update screen displaying information about the indicated room, press the <b>Room Update</b> softkey.	
		If the room code entered is not valid, the following prompt appears: No Rooms Found. Enter Choice.  If the room code entered is over 50, the terminal beeps and the code is not accepted.
	To search for another room type, press the Enter softkey.	

- Note:**
1. The Room Type softkey is used to search for a particular room type, such as single rooms or double rooms.
  2. Each type of room has a distinct COS programmed in CDE. This COS number is the code for that type of room. There can be up to 50 COS.

## Accessing Hotel/Motel with a Telephone

- 5.3 The features which can be accessed from *SUPERSET* display telephones, *SUPERSET 410*, and *SUPERSET 401+* telephones, or industry standard telephones are shown in Table 5-4.

Table 5-4 Hotel/Motel Features Accessed from Telephones	
Feature	Chart
Attendant Message Waiting - Guest Room Message Retrieval	Chart 5-36 Retrieving a Message
Maid in Room	Chart 5-37 Changing the Maid in Room Status from the Room Telephone
Maid in Room Status Display	Chart 5-38 Monitoring Maid in Room Status from a <i>SUPERSET</i> Display Telephone
<i>SUPERSET</i> Telephone Room Status Display	Chart 5-39 Monitoring Room Status from a <i>SUPERSET</i> Display Telephone

### Attendant Message Waiting - Guest Room Message Retrieval

**Feature Description:** Refer to page 2-23.

**Programming:** Reference Chart 4-3, page 4-14.

**Operation:**

Chart 5-36 Retrieving a Message		
	<b>Industry-standard Telephones, <i>SUPERSET 401+</i>, and <i>SUPERSET 410</i> Telephones</b>	A message waiting indication at your set is a continuously flashing lamp on the extension (if equipped) and/or a distinctive ringing pattern every 20 minutes. The set rings with this distinctive ringing pattern if the extension had been busy, had Do Not Disturb set, or until Message Waiting is canceled.
1.	Call the attendant for the message.	The attendant reads the message and cancels the message waiting indication.
	<b><i>SUPERSET 420</i> and <i>SUPERSET 430</i> Telephones</b>	A message waiting indication is shown on the set's display.
1.	Press the <b>Message</b> key or the <b>MSG</b> softkey.	Follow the display instructions to retrieve your message.

**Maid in Room**

**Feature Description:** Refer to page 2-40.

**Programming:** Reference Chart 4-15, page 4-22.

**Operation:**

<b>Chart 5-37 Changing Maid in Room Status from the Room Telephone</b>		
	<b>Maid</b>	
1.	On entering the room, pick up the handset and dial the Maid In Room access code and the code for Maid in Room, then hang up.	For example, 111 could be the Maid in Room access code. 1 means maid is in room.  The number to be dialed is 1111.
2.	When you have finished in the room, pick up the handset and dial the Maid in Room access code and the code for Room to be Inspected, Maid not in Room.	4 means room to be inspected, maid is not in room.  The number to be dialed is 1114.
	If you leave the room without finishing your job, dial the code for No Maid in Room.	2 means no maid is in room.  The number to be dialed is 1112.
	Hang up after you dial.	
<b>Supervisor</b>		
3.	Enter the room and check it. If satisfactory, enter the Maid in Room access code and the code for Room Clean, Maid not in Room, then hang up.	3 means room clean, maid is not in room.  The number to be dialed is 1113.

**Note:** At any time, the current room status can be displayed on the console, a front desk terminal, a *SUPERSET 420* or a *SUPERSET 430* telephone. See Maid in Room Status Display - *SUPERSET 420*, and *SUPERSET 430* Telephones.

## Maid in Room Status Display - *SUPERSET 420* and *SUPERSET 430* Telephones

**Feature Description:** Refer to page 2-42.

**Programming:** Reference Chart 4-16, page 4-22.

**Operation:**

Chart 5-38 Monitoring Maid in Room Status from <i>SUPERSET</i> Display Telephone		
1.	Dial the access code for Maid In Room Status Display.	<p><b><i>SUPERSET 420:</i></b> The LCD displays the extension numbers of the first two rooms that have maid in room codes entered. If there are more rooms, the arrow softkey appears.</p> <p><b><i>SUPERSET 430:</i></b> The LCD displays the extension numbers of the first 10 rooms that have maid in room codes entered. If there are more rooms, the arrow softkey appears.</p>
2.	Press the <b>arrow</b> softkey to display these other guest room extension numbers.	<p><b><i>SUPERSET 420:</i></b> The rooms are displayed two at a time.</p> <p><b><i>SUPERSET 430:</i></b> The rooms are displayed 12 at a time.</p> <p>When the last room number is displayed, the arrow softkey no longer appears.</p>
3.	When you have finished, press the <b>Hangup</b> softkey.	

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## Room Status Display - *SUPERSET* Telephone

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**Feature Description:** Refer to page 2-59.

**Programming:** Reference Chart 4-22, page 4-28.

**Operation:**

Chart 5-39 Monitoring Room Status from <i>SUPERSET</i> Display Telephone	
1.	Dial the access code for <i>SUPERSET</i> 4 Room Status Display. This feature applies to the <i>SUPERSET</i> 420 and the <i>SUPERSET</i> 430.
2.	Dial the extension number of the required guest room's telephone. The LCD displays the room's status (e.g., VAC/CLEAN).
3.	Press the <b>arrow</b> softkey for the status of the next room (in order of extension number). When the last room is displayed, the arrow softkey no longer appears.
4.	When you have finished, press the <b>Hangup</b> softkey.



**NOTES**

**NOTES**

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## Table of Contents

<b>1. General</b>	1-1
Reason for Issue	1-1
Intended Audience	1-1
Document Structure	1-1
Conventions	1-2
Associated Documents	1-2
Disclaimer	1-3
<b>2. ACD Overview</b>	2-1
Automatic Call Distribution	2-1
ACD Applications	2-1
Call Queuing	2-1
Staffing an ACD System	2-2
Reporting	2-2
Monitoring	2-2
<b>3. ACD TELEMARKETER® Feature</b>	3-1
ACD TELEMARKETER Overview	3-1
ACD Path	3-2
Path Access Code	3-2
Path Priority	3-2
Path Access	3-2
Path Rerouting	3-2
Service Level	3-3
Overflow	3-3
Interflow	3-3
Music Between Recordings	3-4
Alternate Music Source	3-4
ACD Call Flow	3-5
ACD Caller	3-5
Typical Call Handling	3-5
ACD Sets	3-8
ACD Positions	3-10
Agent Group	3-11
Agent	3-12
Supervisor	3-12
Senior Supervisor	3-12
ACD TELEMARKETER Reporting System	3-13
Recorded Announcements	3-14
Recording Groups	3-14
Recording Group Operation	3-14
RAD Failure	3-14
Removing DND from RAD	3-15
<b>4. Configuring an ACD System</b>	4-1
Incoming Calls	4-1
Grouping the Agents	4-1
Recorded Announcement Planning	4-2
Planner Sheets	4-2
Agent Group Planner	4-2
Agent Group #	4-2
Name	4-3

Overflow Time .....	4-4
1st Threshold .....	4-4
2nd Threshold .....	4-4
After Work .....	4-4
Paths Using This Group .....	4-4
Path Planner .....	4-4
Purpose of This Path .....	4-5
Name .....	4-5
Path Access Code .....	4-5
Priority .....	4-5
Path Number .....	4-5
Delay to Answer .....	4-7
Recording 1 .....	4-7
MOH or Ext # .....	4-7
Recording 2 through 4 .....	4-7
Queued Calls .....	4-8
Primary Agent Group .....	4-8
Overflow Group Exists .....	4-8
Interflow .....	4-8
Interflow Point .....	4-8
Interflow Timeout .....	4-8
Allow Overflow to Interflow .....	4-8
<b>5. ACD Agent Sets .....</b>	<b>5-1</b>
ACD Agent Login/Logout .....	5-1
Login .....	5-1
Login Conditions .....	5-1
Logout .....	5-2
Logout Conditions .....	5-2
ACD Agent Functions .....	5-2
Make Busy Key .....	5-2
Purpose .....	5-2
Operation .....	5-2
Make Busy LCD Indicators .....	5-3
Queue Status Key .....	5-3
Purpose .....	5-3
Operation .....	5-3
Queue Status LCD Indicators .....	5-4
HELP Softkey .....	5-5
Purpose .....	5-5
Operation .....	5-5
After Work Timer .....	5-5
Purpose .....	5-5
Operation .....	5-6
Auto Answer .....	5-6
<b>6. ACD Supervisor and Senior Supervisor Sets .....</b>	<b>6-1</b>
ACD Supervisor and Senior Supervisor Login/Logout .....	6-1
Login .....	6-1
Login Conditions .....	6-1
Logout .....	6-2
ACD Supervisor Functions .....	6-2
ACD Senior Supervisor Functions .....	6-2
Supervisor Set With One Agent Group: Overview .....	6-3
Queue Status Key: Supervisor Set With One Agent Group .....	6-3

Purpose .....	6-3
Operation .....	6-3
Queue Status LCD Indicators .....	6-5
Agent Status Key: Supervisor Set With One Agent Group .....	6-6
Purpose .....	6-6
Operation .....	6-6
Agent Status LCD Indicators .....	6-8
Shift Key: Supervisor Set With One Agent Group .....	6-9
Purpose .....	6-9
Operation .....	6-9
Senior Supervisors and Supervisors With More than One Agent Group: Overview .....	6-10
Queue Status Key: Senior Supervisors and Supervisors With More than One Agent Group .....	6-10
Purpose .....	6-10
Operation .....	6-10
READ or AGENT Softkey .....	6-11
Shift Key: Senior Supervisors and Supervisors With More than One Agent Group .....	6-11
Purpose .....	6-11
Operation .....	6-11
Call Monitoring .....	6-12
Purpose .....	6-12
Restrictions .....	6-12
Programming .....	6-12
Operation .....	6-12
Help Call Feature .....	6-13
Operation .....	6-13
<b>7. Reports .....</b>	<b>7-1</b>
Agent Shift Summary Record .....	7-1
Path Summary Report .....	7-2
Group Summary Report .....	7-3
Printing Reports .....	7-4
Report Commands .....	7-5
Accessing Reports .....	7-5
SET Command .....	7-5
SHOW Command .....	7-6
QUIT Command .....	7-7
<b>8. ACD Monitors .....</b>	<b>8-1</b>
Four Types of Monitors .....	8-1
System Activity .....	8-1
Paths .....	8-1
Agent Groups .....	8-1
Agents .....	8-1
Hierarchy of Monitor Displays .....	8-1
Accessing Monitors .....	8-2
Restrictions .....	8-2
Entering Monitor Mode .....	8-2
Monitoring System Activity .....	8-4
System Activity Monitor Display .....	8-4
System Activity Monitor Softkeys .....	8-4
Monitoring Paths .....	8-7
Accessing the Path Summary Display .....	8-7
Path Summary Display .....	8-7
Path Summary Softkeys .....	8-8

Path Programmed Data Display .....	8-10
Path Statistics Display .....	8-12
Path Activity Display .....	8-14
Monitoring Groups .....	8-15
Overview .....	8-15
Accessing the Agent Group Summary Form .....	8-16
Agent Group Monitor Softkeys .....	8-18
Group Programmed Data Display .....	8-19
Group Statistics Display .....	8-20
Group Activity Display .....	8-22
Monitoring Agents .....	8-24
Overview .....	8-24
Accessing the Agent Summary Form .....	8-24
Agent Programmed Data Form .....	8-27
Agent Statistics Form .....	8-28
Agent Activity Form .....	8-30
<b>9. Programming .....</b>	<b>9-1</b>
General .....	9-1
System Options Form .....	9-1
ACD Agent Groups Form .....	9-2
Agent Groups Subform .....	9-4
Afterwork Timer .....	9-5
Overflow Timer .....	9-5
Threshold Timers .....	9-5
ACD Keys Template Form .....	9-6
Assigning ACD Keys .....	9-6
ACD Key Configurations .....	9-6
Assigning Non-ACD Keys .....	9-6
ACD Keys Template Display .....	9-7
COS Define .....	9-8
ACD Supervisors .....	9-10
ACD Supervisor Subform .....	9-11
ACD Paths .....	9-12
ACD Path Programming .....	9-12
Call Routing .....	9-15
Field Descriptions .....	9-16
Softkeys .....	9-16
ACD Recording Hunt Groups .....	9-16
<b>Appendix A - ACD Messages .....</b>	<b>A-1</b>
<b>Appendix B - Planner Sheets .....</b>	<b>B-1</b>



## List of Figures

Figure 3-1	ACD Call Progress - All Agents Busy .....	3-5
Figure 3-2	Overflow/Interflow .....	3-7
Figure 3-3	SUPERSET 410™ Telephone .....	3-9
Figure 3-4	SUPERSET 420™ Telephone .....	3-10
Figure 3-5	Hierarchy of ACD Positions .....	3-11
Figure 4-1	Agent Group Planner .....	4-3
Figure 4-2	Path Planner .....	4-6
Figure 5-1	Make Busy LCD Indicator .....	5-3
Figure 5-2	Sample Queue Status Display .....	5-3
Figure 5-3	Queue Status LCD Status Indicators .....	5-4
Figure 6-1	Queue Status Display .....	6-3
Figure 6-2	LCD Queue Status Indicators .....	6-5
Figure 6-3	Agent Status Display .....	6-6
Figure 6-4	LCD Agent Status Indicators .....	6-8
Figure 6-5	Using the Shift Key to Check Agent Status .....	6-9
Figure 6-6	Agent Status Display .....	6-10
Figure 6-7	Shift Key Operation .....	6-11
Figure 7-1	Agent Shift Record - Example 1 .....	7-1
Figure 7-2	Agent Shift Records - Example 2 .....	7-1
Figure 7-3	Sample Path Summary Report .....	7-2
Figure 7-4	Sample Group Summary Report .....	7-3
Figure 7-5	Accessing Reports: Softkey Labels .....	7-5
Figure 7-6	Softkey Labels, SET Softkey Subform .....	7-5
Figure 7-7	Softkey Labels for SHOW Softkey Subform .....	7-6
Figure 8-1	Monitor Hierarchy .....	8-2
Figure 8-2	System Activity Monitor Display .....	8-4
Figure 8-3	Path Summary Display .....	8-7
Figure 8-4	Path Programmed Data Display .....	8-10
Figure 8-5	Path Statistics Display .....	8-12
Figure 8-6	Path Activity Display .....	8-14
Figure 8-7	Agent Group Summary Form .....	8-16
Figure 8-8	Group Programmed Data Display .....	8-19
Figure 8-9	Group Statistics Display .....	8-20
Figure 8-10	Group Activity Display .....	8-22
Figure 8-11	Agent Summary Form Display .....	8-25
Figure 8-12	Agent Programmed Data Display .....	8-27
Figure 8-13	Agent Statistics Display .....	8-28
Figure 8-14	Agent Activity Display .....	8-30
Figure 9-1	System Options Form (CDE Form 04) .....	9-1
Figure 9-2	ACD Agent Groups Form (CDE Form 39) .....	9-3
Figure 9-3	ACD Agent Groups Subform (CDE Subform 39) .....	9-4
Figure 9-4	Agent Keys Template (CDE Form 38) .....	9-7
Figure 9-5	COS Define Form (CDE Form 03) .....	9-8
Figure 9-6	ACD Supervisor Form (CDE Form 40) .....	9-10
Figure 9-7	ACD Supervisor Subform (CDE Subform 40) .....	9-11
Figure 9-8	ACD Path Form (CDE Form 41) .....	9-12
Figure 9-9	Call Rerouting Table (CDE Form 19) .....	9-15
Figure 9-10	Hunt Groups Form (CDE Form 17) .....	9-17

## List of Tables

Table 6-1	Supervisor and Senior Supervisor Reports - Queue Status .....	6-4
Table 6-2	Senior Supervisor and Supervisor Reports - Agent Status .....	6-7
Table 7-1	Agent Shift Summary Record Fields .....	7-2
Table 7-2	Path Summary Report Fields .....	7-3
Table 7-3	Group Summary Report Fields .....	7-4
Table 7-4	SET Softkey Subform Functions .....	7-6
Table 7-5	SHOW Softkey Subform Functions .....	7-7
Table 8-1	System Activity Monitor Softkeys .....	8-5
Table 8-2	Terms Used In System Activity Display .....	8-5
Table 8-3	Terms Used In Path Summary Display .....	8-8
Table 8-4	Path Summary Display Softkeys .....	8-9
Table 8-5	Terms Used In Path Programmed Data Display .....	8-11
Table 8-6	Path Programmed Data Softkeys .....	8-12
Table 8-7	Terms Used In Path Statistics Display .....	8-13
Table 8-8	Path Statistics Display Softkeys .....	8-13
Table 8-9	Terms Used In The Path Activity Display .....	8-15
Table 8-10	Path Activity Display Softkeys .....	8-15
Table 8-11	Terms Used In Group Summary Display .....	8-17
Table 8-12	Group Summary Form Softkey Labels .....	8-18
Table 8-13	Group Programmed Data Softkey Labels .....	8-19
Table 8-14	Terms Used In Group Programmed Data Display .....	8-20
Table 8-15	Group Statistics Display Softkey Labels .....	8-21
Table 8-16	Terms Used In Group Statistics Display .....	8-21
Table 8-17	Group Activity Softkey Labels .....	8-22
Table 8-18	Terms Used In Group Activity Display .....	8-23
Table 8-19	Agent Summary Form Softkey Labels .....	8-25
Table 8-20	Terms Used In Agent Summary Display .....	8-26
Table 8-21	Agent Programmed Data Softkey Labels .....	8-27
Table 8-22	Terms Used In Agent Programmed Data Display .....	8-28
Table 8-23	Agent Statistics Form Softkey Labels .....	8-29
Table 8-24	Terms Used In Agent Statistics Display .....	8-29
Table 8-25	Agent Activity Form Softkey Labels .....	8-30
Table 8-26	Terms Used In Agent Activity Display .....	8-31
Table 9-1	System Option Form Fields .....	9-2
Table 9-2	ACD Agent Group Fields .....	9-3
Table 9-3	ACD Agent Groups Subform Fields .....	9-4
Table 9-4	ACD Keys Template Fields .....	9-7
Table 9-5	COS Options Fields .....	9-9
Table 9-6	ACD Supervisor Form Fields .....	9-10
Table 9-7	ACD Supervisor Subform Fields .....	9-11
Table 9-8	ACD Path Form Fields .....	9-13
Table 9-9	Call Rerouting Options .....	9-16
Table 9-10	Hunt Groups Form Fields .....	9-18
Table A-1	Programming Error Messages .....	A-1

# 1 General

This practice describes the features, operation, and programming of the ACD TELEMARKETER® Applications Package for the SX-200® Private Automatic Branch Exchange (PABX). The ACD TELEMARKETER Applications Package is a software option that must be purchased.

## Reason for Issue

- 1.1 This practice is issued to describe the ACD TELEMARKETER feature which is optionally available with the SX-200 ML LIGHTWARE™ 16 software.

## Intended Audience

- 1.2 This practice is for persons involved in the marketing, installation, programming, and operation of the ACD TELEMARKETER feature.

## Document Structure

- 1.3 This practice is divided into sections that cover specific areas of the ACD TELEMARKETER feature:
  - **General** describes the structure and content of the practice.
  - **ACD Overview** covers basic ACD concepts.
  - **ACD TELEMARKETER Feature** outlines the implementation of ACD in the ACD TELEMARKETER package, and introduces the terminology related to the feature.
  - **Configuring an ACD System** describes the steps to follow when planning a new ACD installation.
  - **ACD Agent Sets** describes the features and operation of the SUPERSET 410™ and SUPERSET 420™ telephones used by ACD agents.
  - **ACD Supervisor Sets and Senior Supervisor Sets** describes the features and operation of the SUPERSET 420 telephone used by ACD supervisors and senior supervisors.
  - **Reports** covers the various reports available from the ACD TELEMARKETER Application package and describes how to route the reports to the system printer.
  - **Monitors** describes the monitor displays and the contents of each display.
  - **Programming** covers tasks required to complete the programming forms for installing the ACD TELEMARKETER feature and customizing its operation to meet the requirements of the user.

## Conventions

1.4 To simplify the descriptions in this practice, the following conventions are used:

### Key Names

Names of keys on a keyboard are shown in bold, within brackets.

Example: **<Return>**

### Softkey Names

Names of softkeys used with monitors or to program are shown in uppercase.

Example: GRP\_SUMMARY

### Data Entry

Data to be entered by the user is shown in bold uppercase.

Example: **EXIT**

### Data Entry Instructions

The following conventions have been used throughout this manual when presenting data entry instructions to the user:

Type: Type the information (usually a single key) as shown without pressing the Return key.

Example: Type **A**

Enter: Type the information as shown and press the **<Return>** key.

Example: Enter **HOTEL**

Press: Press the indicated key(s) with no return.

Example: Press **<CTRL> <C>**

## Associated Documents

1.5 Refer to the following practices for additional information:

- *Features Description Practice*
- *Customer Data Entry Practice.*

**Disclaimer**

- 1.6 The following products have been manufacture-discontinued by Mitel. These products are supported but not described in *SX-200 ML Practices*:
- SUPERSET 3™ and SUPERSET 4® telephone sets
  - SUPERSET 3DN™ and SUPERSET 4DN™ telephone sets
  - DATASET 1101 data cartridge
  - SUPERSET™ DSS module.
- 1.7 The following products and peripheral devices are not supported on the *SX-200 ML PABX* and are not described in *SX-200 ML Practices*:
- Modem Interconnect Panel
  - DATASET 1102 Rack-mounted Dataset
  - DATASET 2102 Rack-mounted Dataset
  - DATACABINET 9000 data cabinet
  - DATASHELF 9100 datashelf
  - ISDN Node
  - Fiber Interface Module (and associated products)
  - Peripheral Node
  - LCD Console (and Console module for Universal Card).



## 2 ACD Overview

This section of the practice gives a general overview of Automatic Call Distribution (ACD) and describes the basic components found in ACD systems. If you are familiar with ACD concepts, turn to Section 3 of this practice for details on the implementation of the *ACD TELEMARKETER* feature for the *SX-200* ML PABX.

### Automatic Call Distribution

- 2.1 Automatic Call Distribution (ACD) offers uniform distribution of incoming calls to station users (agents). Calls are routed to groups of agents as determined by the type of information or service required by the caller. The agents are trained and equipped to provide the particular information or service that the caller is requesting. If calls cannot be handled immediately, the caller is usually provided with recorded announcements and/or music until an agent is available.

Most ACD systems generate one or more reports listing call handling statistics and ACD traffic levels. The system administrator uses these reports when determining optimum staffing levels, acceptable caller delay times, and use of system resources.

### ACD Applications

- 2.2 Typical ACD applications include airline reservation offices, telephone order desks for department stores, and customer service departments of telephone or cable TV companies. In all cases, the caller is attempting to reach an individual who can supply a service, answer a question, take a reservation, or accept a purchase order.

### Call Queuing

- 2.3 To ensure optimum use of personnel and system resources, historical calling patterns are often used to determine staffing levels for the agents. Most ACD installations set staffing at levels which ensure that the average number of callers equals or exceeds the number of agents. During peak periods when all agents are busy, callers are placed in a queue to wait for the first available agent.

While a caller is waiting in the queue, the ACD system can provide recorded announcements and music at predetermined intervals. The first recording typically advises the caller that all agents are busy, and that an agent will answer as soon as possible. If an agent is unavailable after a programmed interval, additional recordings can inform the caller about call progress, or advise the caller of information that will be required when the agent answers.

If calls arrive when some of the agents are free, the system may be programmed to equalize the work load by directing the next incoming call to the agent who has been idle the longest.

## **Staffing an ACD System**

- 2.4 In most ACD applications, the person handling ACD calls is referred to as an agent. Agents are trained to deal with the caller's problems or requests.

A supervisor normally oversees the ACD operation by monitoring the activity of the agents, reassigning agents to handle overload conditions, and dealing with unusual situations.

## **Reporting**

- 2.5 ACD systems normally provide a reporting mechanism that allows tracking of key items such as the number of calls handled during a specific time period, the length of the calls, and the number of calls abandoned (caller hangs up before an agent answers). From these reports, the supervisor can determine optimum staffing levels and track the performance of individual agents.

## **Monitoring**

- 2.6 While reports give a hard copy record of events over a period of time (such as a shift), a monitor gives a snapshot of conditions in the system at any instant. By monitoring the ACD system, the supervisor is aware of the current situation and can quickly reassign agents to handle overload conditions.



# 3 ACD TELEMARKETER Feature

## ACD TELEMARKETER Overview

- 3.1 The *ACD TELEMARKETER* Application Package is an advanced Automatic Call Distribution (ACD) system that is fully integrated with the MITEL *SX-200* ML PABX, and designed with the power and performance needed to ensure satisfaction in the most demanding telemarketing environments.

This section provides information on the *ACD TELEMARKETER* system components:

- **ACD Path.** This innovative call routing design guides incoming calls through the system. The ACD path defines all information required for each type of call, including how the system will handle queued callers. Refer to Paragraph 3.2.
- **ACD Call Flow.** Paragraph 3.3 on page 3-5 describes the handling of a typical ACD call arriving at the system.
- **ACD Sets.** *SUPERSET 420* telephones may be used in the senior supervisor, supervisor, or agent positions with the *ACD TELEMARKETER* feature package. *SUPERSET 410* telephones may be used in the agent position only. Refer to Paragraph 3.4 for details.
- **ACD Positions.** The *ACD TELEMARKETER* feature package structures the personnel handling ACD calls into a hierarchy of ACD positions. The ACD package supports three types of positions: senior supervisors, supervisors, and agents. Refer to Paragraph 3.5 on page 3-10 for further information.
- **ACD TELEMARKETER Reporting System.** The *ACD TELEMARKETER* Reporting System is a PC-based software package for collecting ACD data generated by the *SX-200* ML PABX. This reporting system produces a series of daily, weekly and monthly historical reports. Refer to Paragraph 3.6 for details.
- **Recorded Announcements.** The *ACD TELEMARKETER* feature uses recorded announcements to tell callers about the progress of their call while they wait in the queue for the first available agent. Paragraph 3.7 on page 3-14 describes recorded announcement devices (RADs) and recording groups.

## **ACD Path**

- 3.2 The *ACD TELEMARKETER* feature is built around the “ACD Path”, a call routing mechanism which provides all information required for handling an ACD call. Use of the ACD Path gives users unmatched flexibility during initial programming and when they add new features.

Up to 99 ACD paths may be programmed to allow customized routing for a wide variety of incoming calls. Each path is assigned a priority and is given a unique access code and descriptive path name (optional). This information determines how the system handles queued callers, system resources to be used, when the call will be answered, and who will answer the call.

Upon entering the ACD system, a call is allocated a path and is assigned the parameters of that path. These parameters remain with the call for its duration.

### **Path Access Code**

Incoming trunks carrying ACD calls are routed to a path access code. This code points the trunk to the ACD agent groups and recorded announcements appropriate for the type of call.

### **Path Priority**

Each path is assigned a priority level in the range 1 to 99, with 1 being the highest priority. Calls arriving on high priority paths move directly to the front of the call queues for servicing ahead of calls which entered on a lower priority path.

Path priority can be an effective tool for reducing communications costs and improving customer service. For example, call queue time can be reduced by directing expensive incoming trunks, such as long distance collect or INWATS, to a high priority path. Customers can be assured of prompt service if their calls are routed through a high priority path.

### **Path Access**

All devices have unrestricted access to ACD Paths except loop start CO and loop start DISA (Direct Inward System Access) trunks. The Class of Service (COS) Option “Loop start trunk to ACD path connect” (COS Option 812) controls ACD access for loop start trunks. By default this option is disabled, blocking loop start trunks from entering ACD.

### **Path Rerouting**

The ACD path access code can be placed in the call rerouting table to link existing routing schemes (such as DID trunk routing points) to the ACD system. Rerouting to ACD paths is set up as follows:

- For dial-in trunks, the system uses the current routing (defined in CDE Form 19) for incoming calls to send calls to an ACD path.
- For non-dial-in trunks, one or all of the Day/Night1/Night2 answering points is programmed as an ACD path.

Calls entering the system on different trunk types can be routed to the same ACD path.

The rerouting scheme means that a trunk does not have to be dedicated to ACD. The day answering point may be an ACD path but the Night1 and Night2 answering points may be an attendant console or any other valid routing point.

### **Service Level**

The service level for a path defines a standard time to answer that becomes the criteria for measuring path performance. Service level is programmable within the range from 0 seconds to 54 minutes.

When an ACD call is answered by any group in a path, software compares the actual time to answer with the programmed Service Level. The system creates a record indicating if the time to answer was:

- less than or equal to the service level time
- greater than the service level time.

This information is stored for statistical analysis and can be viewed from the ACD Path Monitors and Group/Path Summary Reports.

### **Overflow**

Higher priority paths are given special treatment when placed in overflow queues. Predictive overflow is another key element of the *ACD TELEMARKETER* feature. The system uses overflow queues to keep call queueing time to a minimum. The system performs a load calculation when each new call arrives at an agent group or when the status of an agent changes. If the system predicts that a call will not be answered before the normal overflow time, it forces an immediate overflow.

Priority calls entering an overflow queue are placed ahead of non-priority calls in the same queue. The non-priority calls maintain their position in relation to each other, but follow the priority calls.

Each path is assigned one primary agent group and up to three overflow groups. Timers programmed in CDE for each agent group determine how long a call waits on a group before overflowing. If the system predicts that a call will not be answered before the timer expires, the system forces an immediate overflow without waiting for the timer to expire.

### **Interflow**

Unlike overflowed calls, interflowed calls are rerouted from ACD to an alternate answer point. Each path has a programmable interflow timeout field that specifies the maximum period that an unanswered call can wait in a path before the system routes the call to an interflow point. The interflow point can be:

- a listed directory number, station, console, night bell, ACD path, station/set hunt group, Automated Attendant group, or UCD agent group
- a logical line
- a system abbreviated dial number.

To limit the time that a caller remains waiting for an agent, the system can also be programmed to drop interflowed calls.

The system can be programmed so that any callers dialing in to an ACD path will interflow immediately when no agents are logged in. This interflow takes place regardless of the status of the "Interflow Timeout," or the option "Allow Overflow to Interflow Point Before Timeout," or the "Interflow Point Access code" having a value of DROP CALL. "Interflow Enabled" is required for the immediate interflow to work.

A tenant number can be assigned to the ACD Path. When a tenant number is assigned, then DID and TIE trunks which dial into the ACD Path directly will follow the routing for this tenant as defined in Form 19 - Call Rerouting Table.

In addition, the customer can program the system to overflow to the interflow point as soon as the system determines that the call is unlikely to be answered by the last agent group in the path.

Calls interflowed to a system abbreviated dial number are treated by the system as an external call forward with the interflow requiring a receiver. If a receiver is unavailable when the interflow occurs, the call is dropped. The only indication of the dropped call is a receiver unavailable peg in the traffic report. The call appears in the ACD reports as an interflowed call.

If Automatic Route Selection (ARS) is busy when a call interflows to a system abbreviated dial, the system attempts a camp-on to ARS.

The path from which the caller interflows is set up as the original forwarding destination for the caller. When the interflow point is an internal device, such as a *SUPERSET 420* telephone, the display indicates that the call is being forwarded from a path.

### **Music Between Recordings**

Between each recording on an ACD path, the incoming caller, by default, listens to the system music source (if programmed). An alternate music source may be specified between each recording and after the last recording.

### **Alternate Music Source**

The alternate music source is an off hook ONS port that connects to callers in a listen-only conference. The user decides what is supplied on the ONS port - silence, music, or endless loop recordings. If there is no system music and no alternate music source, the caller hears silence between RAD messages.

The device can be a telephone, a recording device, or a transfer device (8/600 ohms) that simulates an off hook and allows connection of an audio source such as a radio. The system connects callers only if the device is off hook. There are no restrictions on how paths share alternate music sources.

**Note:** Depending upon country of installation, the alternate music source must be either an FCC Part 68 or Industry Canada approved voice coupler, or voice connecting arrangement to an ONS circuit.

## ACD Call Flow

- 3.3 The following paragraphs describe the handling of a typical ACD call arriving at the system on an incoming trunk. Included is a description of what the caller hears at each stage of the call. Figure 3-1 shows the system action when determining what the caller hears while in the queue.

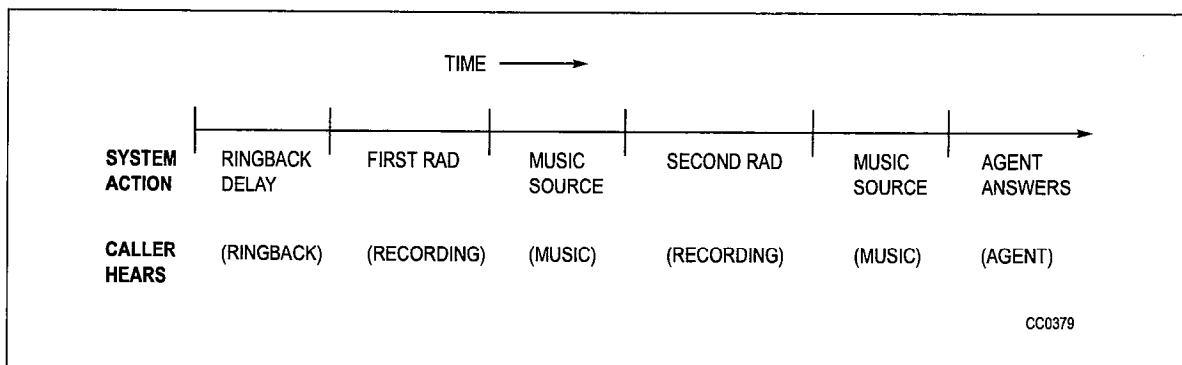
### ACD Caller

The system considers an ACD caller to be anyone who is on, or has been answered by, an ACD path. Once answered, the ACD caller status remains while the caller is talking to an agent, on hold by an agent, or in the process of being transferred by an agent.

After an ACD caller has been answered by an agent, the *SX-200* ML PABX reverts to normal call handling but provides additional tracking for ACD session timing, ACD hard-hold timing, and the caller's identification as an ACD caller. When an ACD caller reaches the console through either a supervised or unsupervised transfer, the ACD caller status ends. If, during a supervised transfer, the person performing the transfer remains on the line after the console answers, the ACD session is terminated.

### Typical Call Handling

If multiple agents are free when an ACD call is presented to a group, the system sends the call to the longest idle agent. To select the longest idle agent, the system gives a number to the first agent finishing an ACD call. The next agent to finish an ACD call is given the next higher number, and so on. When a call arrives at the group, the system sends the call to the agent with the lowest number. The number does not change if the agent makes a non-ACD call.



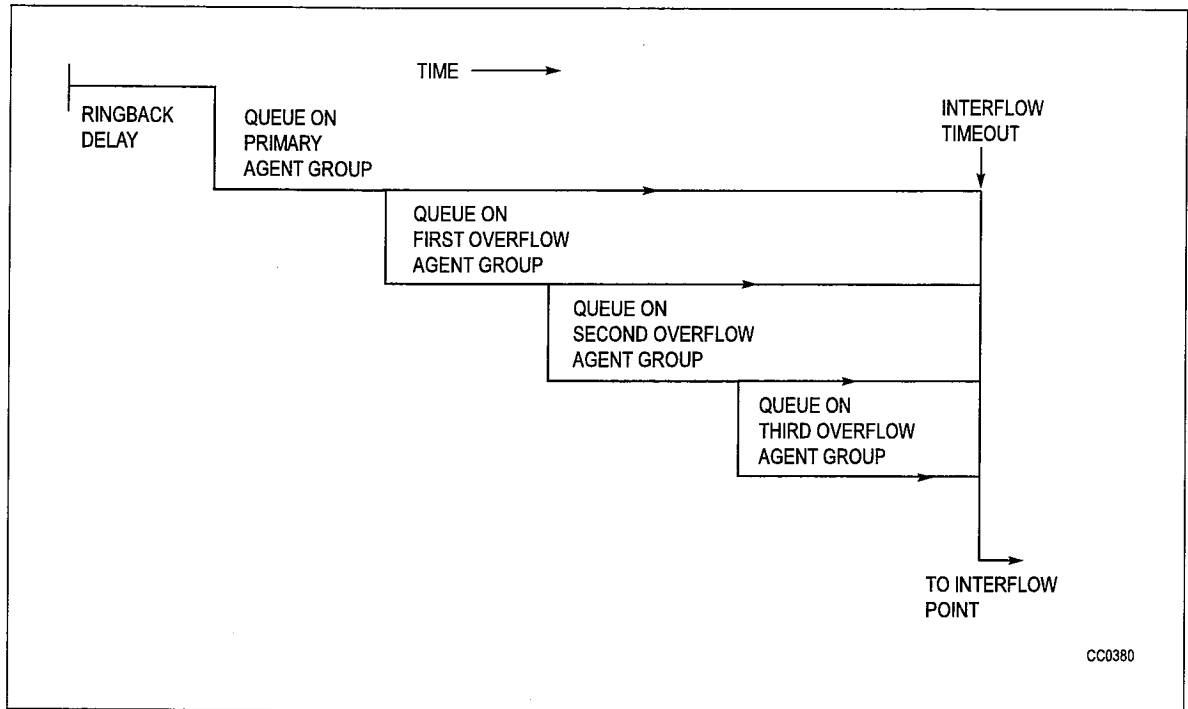
**Figure 3-1 ACD Call Progress - All Agents Busy**

1. ACD Call arrives at the path specified as the answer point for the trunk.
  - As shown in Figure 3-1, the caller hears ringback until the Ringback Delay timer expires. This timer ensures that the caller hears at least one ringback before an agent answers.

2. The incoming call queues on the primary agent group for the path.
  - If an agent is available, the call rings an agent (See Note).
  - If multiple agents are available, the call rings the longest idle agent; if not, the caller waits for first recorded announcement.
- Note:** Once the agent set begins to ring, the call must be answered. If the called agent fails to answer within the period programmed for the Forward Timer in the agent's COS, the system forces the agent's set into Make Busy and routes the call to another agent in the group. This operation is transparent to the caller.
3. The system connects caller to the first available RAD in the first recording group defined for the path.
  - The caller listens to first recording. Call remains queued on first agent group.
4. When the RAD message ends, system connects call to music-on-hold (MOH) source or to first alternate source as defined for the path.
  - The caller hears music or alternate source.
5. After time interval programmed in the path for Recording 2 starts, system connects call to first available RAD in second recording group defined for the path.
  - The caller listens to second recording. The call remains queued on first agent group.
6. The system connects call to MOH source or to second alternate source as defined for the path.
  - The caller hears music or alternate source.
  - The caller continues listening to music and recorded announcements until an agent is available. Timing is set in CDE.
  - Up to four recordings can be programmed for each path.
7. If the call remains queued against the first agent group for a period exceeding the overflow time programmed for the group, the system adds the first overflow group defined for the path.
  - The caller is now queued on two groups.
  - The caller continues listening to music and recorded announcements until an agent is available.
  - The caller retains position in queue for primary agent group.
  - Path priority determines position of call in overflow group.

The system can add up to three overflow groups if a call remains unanswered. Overflow times are programmed individually for each agent group. Figure 3-2 shows how overflow groups are added as the caller waits in the queue.
8. The system performs a load calculation when each new call arrives at an agent group, or when the status of an agent changes. If the system predicts that a call will not be answered before the overflow timer expires, the system forces an immediate overflow. This predictive overflow is always enabled.

9. As shown in Figure 3-2, if the call remains unanswered for a period exceeding the Interflow Timeout programmed for the path, the system routes the call to the interflow point which can be an internal or external destination. The call is handled as a call reroute.



**Figure 3-2 Overflow/Interflow**

## ACD Sets

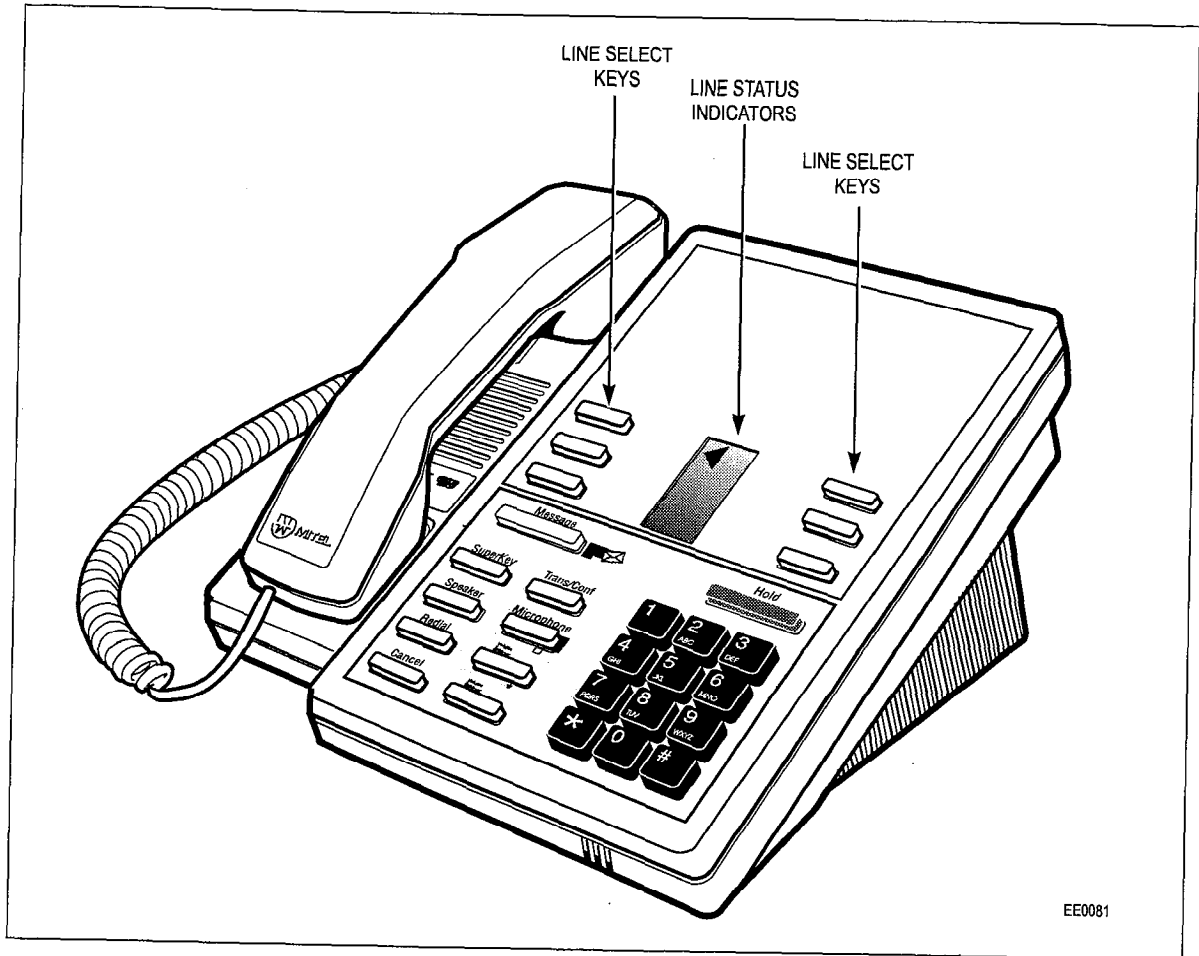
- 3.4 The *SUPERSET 410* and *SUPERSET 420* telephones (Figure 3-3 to Figure 3-4) used by ACD positions provide call status and progress information about agent groups and individual agents. A supervisor's set (*SUPERSET 420*) provides agent reports and queue status reports for the supervisor's agent groups. An agent's set (*SUPERSET 410* or *SUPERSET 420*) provides queue information for the agent's group.

*SUPERSET 410* and *SUPERSET 420* telephones used with the *ACD TELEMARKETER* Feature Package offer:

- Single key feature activation
- Supervisor monitoring of agent calls with or without agent notification
- Agent help requests during a conversation - transparent to ACD callers (not applicable to *SUPERSET 410* telephones)
- Handset/handsfree/headset operation. (COS Option number 612 must be enabled in the user's COS prior to operation. The telephone handset should remain offhook when headsets are in use.)
- LCDs load status information
- Auto answer
- Time and date display (*SUPERSET 420* telephones)
- Path name is displayed when calls are presented to the agent. (Not applicable to *SUPERSET 410* telephones.) When COS Option 654 - ACD Display Path Always is enabled, the path name remains on the display for the duration of the call.
- Make Busy keys to temporarily block ACD calls from agents sets
- A programmable name for every ACD entity: paths, RADs, groups, agents and supervisors
- A programmed set of speedcall keys (via CDE programming).

Automatic Number Identification (ANI) and Dialed Number Identification Service (DNIS) are available through COS options programmed during Customer Data Entry (CDE). ANI provides the telephone number of the calling party; DNIS provides the telephone number dialed by the calling party. Refer to the *Features Description Practice* for details.





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Figure 3-3 SUPERSET 410 Telephone

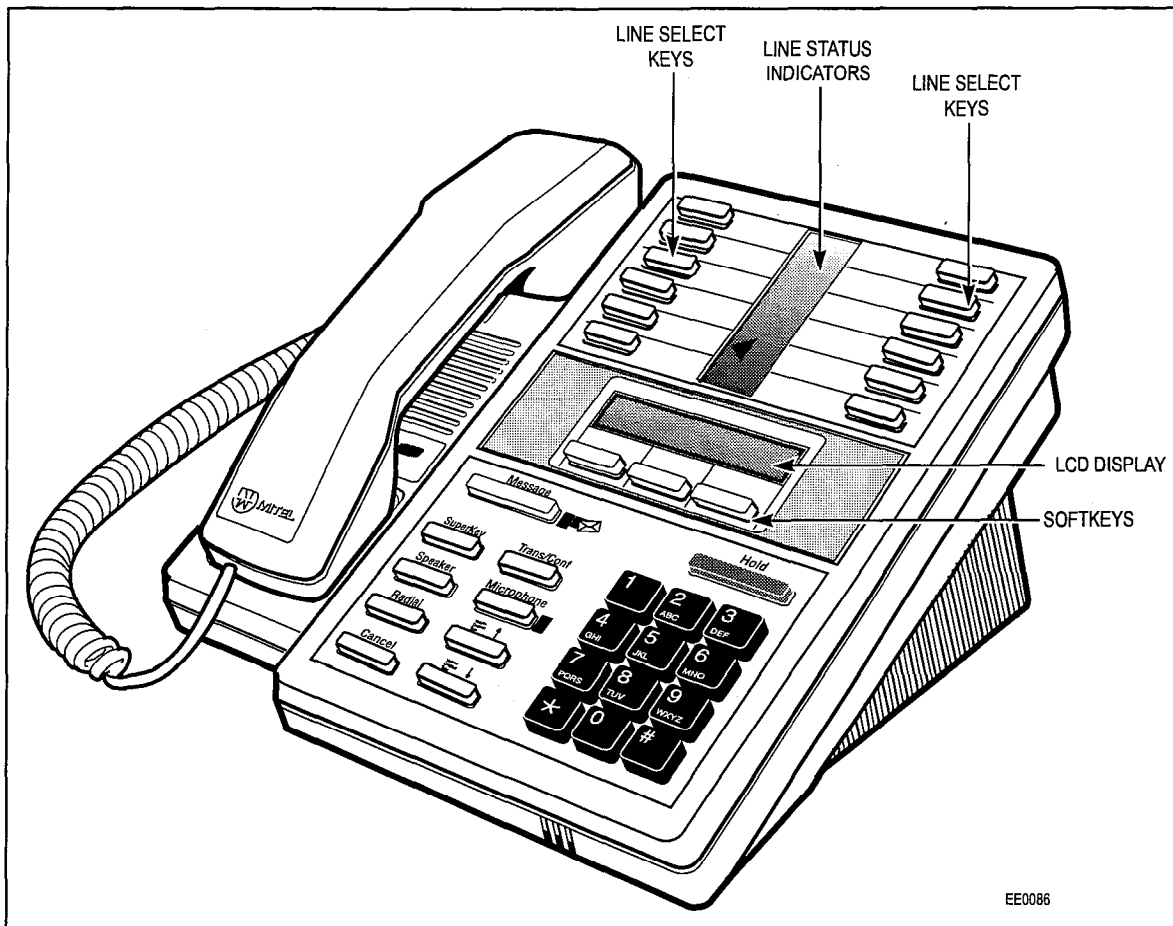


Figure 3-4 *SUPERSET 420* Telephone

## ACD Positions

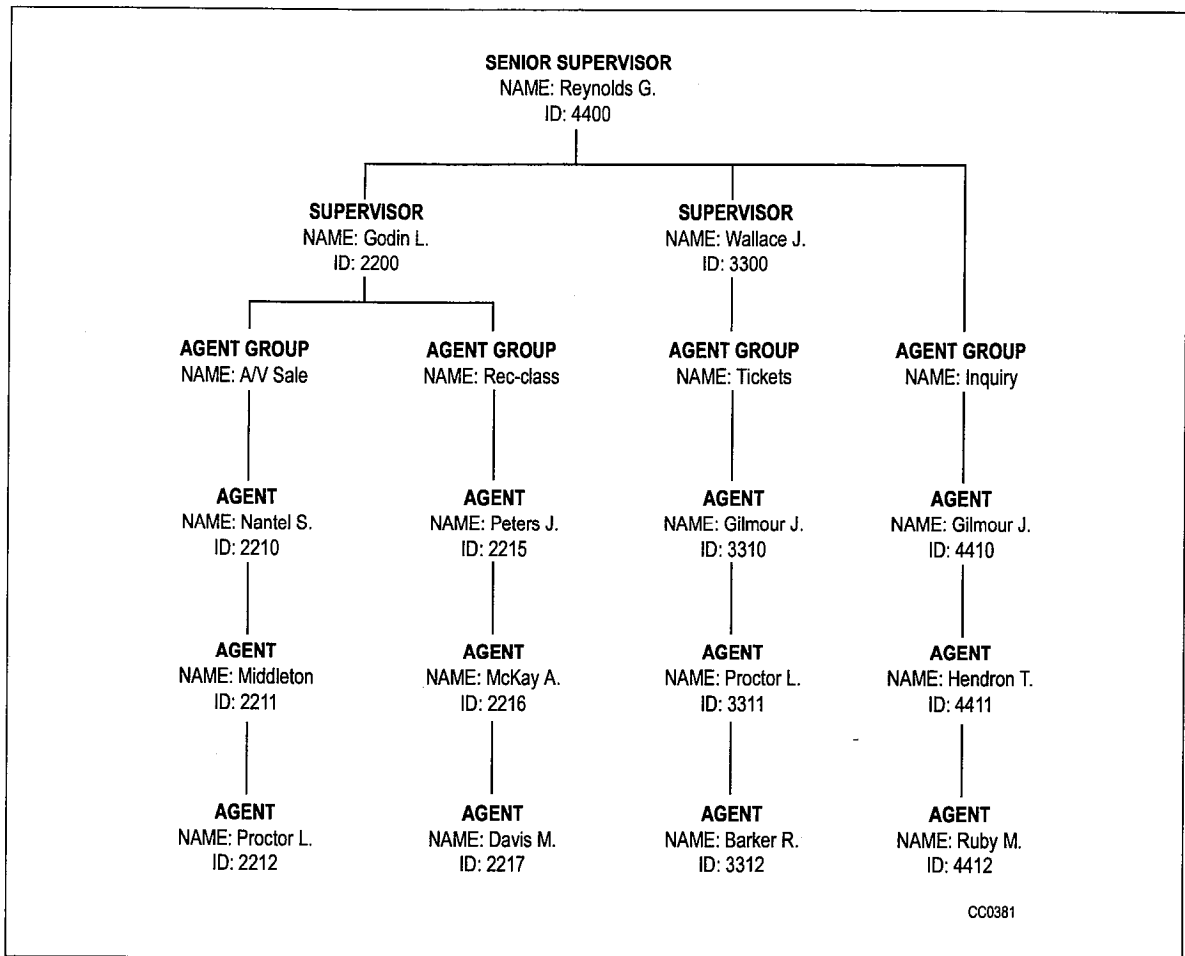
3.5 The *ACD TELEMARKETER* feature package supports three types of positions: senior supervisors, supervisors, and agents. Figure 3-5 shows an example of the ACD hierarchy.

ACD calls entering the system normally terminate on agent positions (*SUPERSET 410* or *SUPERSET 420* telephones). Agents handling similar types of calls are arranged in agent groups. Supervisors and senior supervisors (*SUPERSET 420* telephones) monitor agent and system performance, but do not handle ACD calls.

As shown in Figure 3-5 every supervisor, senior supervisor, and agent has an ID number. This is a 1- to 5-digit number assigned during customer data entry. Before they can receive ACD calls, the agent or supervisor must log in to the system by dialing an access code followed by the appropriate ID number. Agent groups and the three ACD positions are described below.

The *SX-200 ML PABX* treats the ID number assigned to each position as an access code. This number can be directly dialed by other devices in the system as normal extension numbers.

**Note:** An ACD agent is considered not available for an ACD call if the agent is on its prime key or any other line key appearing at the telephone.



**Figure 3-5 Hierarchy of ACD Positions**

### Agent Group

Agent groups are included with the ACD Agents option you purchase. An agent group consists of one or more persons, called agents, that handle incoming ACD traffic. Each agent group must contain at least one member; the maximum number of agents in a group is 100. The ACD system accepts up to 50 agent groups.

As shown in Figure 3-5 each agent group must be set up to report to either a supervisor or a senior supervisor (never both). Supervision requirements are determined by the customer and are usually dictated by the size of the group.

Agent groups are created through Customer Data Entry (CDE) by entering in the ACD agent groups form (Form 39) an agent group number in the range from 1 through 50. An optional name can also be given to the group to assist in identifying the group's function. Members are added to the group though CDE by entering a 1- to 5-digit ID number and an optional name for each agent.

Each agent group has timers that govern events such as:

- the time granted to an agent for completing paperwork after an ACD call
- the length of time a call will remain unanswered in the group before overflowing
- turning on and off visual indicators which show that calls have been unanswered for a time exceeding a programmed threshold level.

Refer to the programming section of this practice for details about creating agent groups and the fields on the agent groups form.

### **Agent**

The *ACD TELEMARKETER* feature terminates ACD calls at agent positions. In most ACD installations, all callers routed to an agent are requesting similar information or seeking a similar service. Agents can then be trained and equipped to provide the information or service requested by the caller.

The system routes calls to an agent only after the agent logs in to the ACD system. Once the agent has logged in, the system recognizes the agent as a member of a specific agent group.

The *SUPERSET 410* and *SUPERSET 420* telephones used by the agent are each equipped with a feature key to temporarily block ACD calls from ringing the set. Other feature keys provide information about the current status of the agent group.

In many cases, an agent must be given the flexibility of moving between agent groups. If, for example, the ACD agent group handling long distance trunks is suddenly overloaded and calls are overflowing to an alternate group, significant financial gain could result by reassigning Agents to the busy groups until the traffic subsides.

Because the ACD system uses the ID number to determine the members of an agent group, providing the agents more than one ID number allows the agents to be members of more than one group. To move between groups, the agent logs in by using the ID appropriate to the group. Only the ID number must be unique; an agent name can appear in any number of groups.

### **Supervisor**

The supervisor ACD position is for individuals who “supervise” the agent groups. Each supervisor is responsible for at least one agent group and reports to a senior supervisor. Supervisors do not answer ACD calls. The *SUPERSET 420* telephone used by the supervisor is equipped with special feature keys that allow the supervisor to view individual agent activities or to view agent group activities .

### **Senior Supervisor**

The senior supervisor oversees the supervisors and is, therefore, the highest level in the hierarchy of ACD positions. In smaller installations, however, where a supervisor is not required between the agent group and the senior supervisor, agent groups may report directly to the senior supervisor. The senior supervisor does not answer ACD calls. The *SUPERSET 420* telephone used by the senior supervisor is equipped with special feature keys, similar to the supervisor set, with emphasis on queue activity.

## **ACD TELEMARKETER Reporting System**

- 3.6 The *ACD TELEMARKETER* Reporting System runs on an IBM® PC AT or compatible connected to the *SX-200* ML PABX through an RS-232C interface. The system is easy to learn because it uses menu driven displays with full-color graphics. On-line help is available for all commands and applications.

During initial installation, the user creates a reporting system database that contains all agent, path, and trunk information. Once operational, the PC collects data from the SMDR information generated by the *SX-200* ML PABX, analyses the information using the reporting system database, and generates a series of detailed reports that cover agents, groups, paths and trunks.

Daily reports can be printed automatically at predetermined times. Weekly and monthly summaries can also be printed upon request. Printed reports record times to the second for all categories to highlight call handling efficiency and agent performance problems.

Daily reports generated from this database include:

- ACD Agent Daily Activity Report listing hourly totals by agent ID
- Agent Group Daily Activity Report with hourly totals handled by each agent group
- Trunk Daily Activity Report with hourly totals of calls handled by individual trunks
- Path Activity Report with detailed statistics for all ACD calls

Weekly and Monthly Summary Reports include:

- Agent Activity Summary Report with daily totals by ID and agent name
- Agent Group Summary Report listing daily totals by agent group
- Trunk Summary Report with daily totals of calls carried by a particular trunk
- Path Activity Report listing daily totals by path

## Recorded Announcements

- 3.7 A recorded announcement device (RAD) is a digital or endless-loop tape unit that can store one or more pre-recorded messages. The required RADs are designed for connection to ONS circuits and appear as a standard telephone to the *SX-200* ML PABX. The RAD's message is played when the unit is triggered by ringing current. In the *ACD TELEMARKETER* feature, the recorded messages are given while callers are waiting in the queue for a free agent.

The *SX-200* ML PABX system supports both intelligent and dumb RADs. An intelligent device hangs up when the message is finished. A dumb device provides a fixed-length recording (such as a tape) and the system must hang up on the device to prevent callers from listening to a long period of silence at the end of the message.

### Recording Groups

The recorded announcement feature is implemented by using one or more RADs programmed into a specialized hunt group called a recording group. Each RAD in the group contains the same announcement.

Recording groups are formed by using hunt groups of regular ONS ports and are defined during CDE in Form 17, Hunt Groups. Refer to the programming section of this Practice for details.

### Recording Group Operation

When a call rings a recording group, the first available idle RAD answers the call and connects its recording. If all RADs in a recording group are busy, the caller camps onto the group to wait for a free recording. When a recording becomes available, the system connects all waiting callers to a listen-only conference with the recording. (The listen-only conference does not use any *SX-200* ML PABX conference resources.) When the recording finishes, the callers are removed from the conference and are connected to music or silence as defined in the ACD Path programming form (Form 41).

- Note:**
1. The system does not use a special CODEC gain setting for listening to a recording. The gain is the same as for ringback, or set to no gain.
  2. A RAD is always rung with the standard ringing cadence.
  3. Callers are never connected after the RAD starts its message.

### RAD Failure

The ACD system handles four types of RAD failures:

**Failure to Answer:** The system considers the RAD to have failed if it does not answer within the fixed interval of 30 seconds. The system clears ringing, puts the RAD into Do Not Disturb (DND), turns on the console alarm icon, and creates a maintenance log entry as shown in the following example:

```
1997-JAN-15 12:47:04 Recording dev test failed at 01 01 01 00
Failure to answer Alarm code = 123
```

**Failure to Hang Up:** The system detects failure to hang up when the system ends the recording. The hangup time is set by COS option 404 - Recording Failure to Hangup Timer, which has a range of 1 through 255 seconds. The timer starts after the SX-200 ML PABX hangs up on the RAD. The RAD must clear down within the programmed interval. Otherwise, the PABX puts the RAD into DND, turns on the console alarm icon, and creates an entry in the maintenance log as shown in the following example:

```
1997-JAN-15 12:47:04 Recording dev test failed at 01 01 01 00
Fail to hang-up. Alarm code = 123
```

**False Origination:** If a RAD generates a false origination, the system puts the RAD into a suspended state. After the suspended timer expires, the RAD is placed into a lockout state. If the RAD goes on hook while in either suspended state or lockout state, the RAD is returned to idle and is immediately available to the system.

**Card Failure:** If the system detects a card failure, such as the card being unplugged or the bay going down, the RAD is placed into a busy-out state. Any callers listening to the RAD are handled as though the RAD had gone on hook. The RAD is not placed in DND unless it was ringing at the time (which is treated as a ring-no-answer). When returned to service, the RAD is in idle state.

### Removing DND from RAD

The system places a RAD into DND whenever the RAD fails to answer or fails to hang up. DND can be removed from a RAD by accessing the attendant console stations feature, dialing the RAD, and pressing the DND softkey. DND can also be cleared from the maintenance terminal by using the Clear Features key.

Removing DND from a RAD generates the following maintenance log entry:

```
1997-JAN-15 12:47:04 Ons Card passed at 01 01 01 00 ext 1101
Recording device test Alarm code 123
```





## 4 Configuring an ACD System

The communications manager planning the installation of an *ACD TELEMARKETER* system may find that the information in this section of the practice can help in determining the final system configuration. Because thorough planning can ensure maximum performance from the ACD system, the following guidelines have been developed to help customers define their requirements.

### Incoming Calls

4.1 Because the most critical element of an ACD system is the timely handling of incoming calls, the communications manager must first consider the level of traffic that the system will receive and then determine the types of calls and any trunking details that could influence the importance of the call. For example, long distance charges can be kept to a minimum by assigning these calls to high priority paths. The following questions serve as examples of those areas to be addressed when categorizing the ACD callers:

- Are service departments involved?
- What traffic is anticipated for each department?
- What priority is given to service calls?
- Do any service departments require a customer complaint area?
- Is there local service only or service also to out-of-town clients?
- Will there be revenue generating calls? Unless the company holds a monopoly on service, these callers should be highlighted for priority paths. Are there general information calls?
- Will agents receive long distance calls....collect?
- Does the company offer INWATS, foreign exchange, or any specialized trunking?

### Grouping the Agents

4.2 Using the caller information that was collected, begin grouping the agents. Use the following questions and comments as a guide:

- Are any agents capable of handling various types of calls? For example, will any agents be common to more than one service department?
- Which type of calls will this group specialize in? List the types of calls this group could handle as an overflow point.
- Which groups will require a wrap up time?

## Recorded Announcement Planning

4.3 Used properly, recorded announcements are a valuable tool in the *ACD TELEMARKETER* system. The following suggestions can help you gain the most from the recordings:

- Supply a company introduction to the caller. "Thank you for calling .....", followed by reassurance that the first available agent will answer the call.
- Consider the advertising potential while the caller is waiting for service. Use the recorded announcements to promote new products, specials, or services.
- Refer to the list of callers as a guide when defining the RADs. Because out-of-town callers would be frustrated by local promotions, adjust your recorded message to the caller's needs.
- Is there any information that the agent will require from the caller? Recordings can be used to minimize time with an agent if callers have prior notice of information they should have ready, such as account numbers, credit cards, or postal codes.

In addition, the Automated Attendant feature can be used to pre-screen ACD calls into the system. Refer to the *Automated Attendant Application Package Practice*.

## Planner Sheets

4.4 The agent group planner and the path planner sheets illustrated on the following pages can aid the ACD system designer when laying out the agent groups and the routing for incoming ACD calls. The planner sheets identify all major elements that must be addressed while setting up the system.

The agent group planner is completed first because it identifies the various agent groups that are required for the system. After setting up the agent groups, one path planner is completed for each path to show the ACD call handling. Each path planner includes the primary agent group, recorded announcements, overflow groups, and interflow conditions.

## Agent Group Planner

4.5 The agent group planner shown in Figure 4-1 assists in planning the distribution of workload between agent groups. After doing the initial sizing to determine the number of agent groups required to handle the calls, use this planner to assign the parameters to each group. This information will be used later during the CDE programming of the system.

The agent planner form contains space for eight agent groups. The fields shown in the box for each group are described below.

### Agent Group #

The top field in each box, labeled Agent Group #, specifies the number of the agent group. This number will be used later when assigning primary and overflow agent groups to the ACD paths.

### ACD TELEMARKETER AGENT GROUP PLANNER

<b>1</b>	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____																																								
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**INSTRUCTIONS:**

Use this planner as an aid in distributing the work-load of the agent groups. Complete this form before the Path Planner. Once completed, transfer the Agent Group Number to the appropriate group (Primary, 1st, 2nd, or 3rd) on Line 3 of the Path Planner.

1. Overflow timer default is 9 minutes (maximum 54 minutes). This is the maximum time a call can be queued on the group before overflowing. Prediction may allow the overflow before the timer expires. 1st threshold default is 3 minutes (maximum 54 minutes), 2nd threshold default is 6 minutes (maximum 54 minutes). These are indications for the agents (queue status) of how long the calls have been waiting to be answered. Afterwork timer default is 0 minutes (maximum 15 minutes). This is the amount of time an agent has after completing a call before receiving the next call.
2. Use this box to indicate how many paths the Agent Group is involved in. (P=primary, 1=1st overflow group, 2=2nd overflow group, 3=3rd overflow group.) Transfer the Agent Group Number to the Path Planner (one for each Path indicated in the box).

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**Figure 4-1 Agent Group Planner**

**Name**

The Name field specifies the name of the agent group. During CDE, transfer this information from the agent group planner sheet to the Name field on the ACD Agent Groups form (Form 39).

### **Overflow Time**

The overflow time specifies the maximum length of time that a waiting ACD call remains at this group before overflowing. The timer range is 0 seconds to 54 minutes. The use of this field is optional.

The system performs a load calculation when each new call arrives at an agent group, or when the status of an agent changes. If the system predicts that a call will not be answered before the timer expires, the system forces an immediate overflow.

During CDE, transfer this information from the agent group planner sheet to the Overflow Timer field on the ACD Agent Groups Subform (Subform 39).

### **1st Threshold**

The 1st Threshold field specifies the time period for the first call waiting threshold. If calls are waiting beyond this time period, the LCD symbol beside the Queue Status key on the SUPERSET™ telephones changes (see Figure 5-3). During CDE, transfer this information from the agent group planner sheet to the First Status Threshold field on the ACD Agent Groups Subform (Subform 39).

### **2nd Threshold**

The 2nd Threshold field specifies the time period for the second call waiting threshold. If calls are waiting beyond this second time period, the LCD symbol beside the Queue Status key on the SUPERSET telephones changes again (see Figure 5-3). During CDE, transfer this information from the agent group planner sheet to the Second Status Threshold field on the ACD Agent Groups Subform (Subform 39).

### **After Work**

The After Work field specifies the time allocated to an agent for completing paperwork following an ACD call. During this time, the agent will not receive ACD calls. The timer range is 0 seconds to 15 minutes. This time is included as part of each call in reports and statistics. It is recommended that the timer be set to a minimum of five seconds.

During CDE, transfer this information from the path planner sheet to the Afterwork Timer field on the ACD Agent Groups Subform (Subform 39).

### **Paths Using This Group**

This box allows the system planner to note the paths using this group. Refer to this box when transferring agent group information to the path planner sheets.

## **Path Planner**

- 4.6 The path planner sheet illustrated in Figure 4-2 is used in conjunction with the agent group planner when laying out the routing for incoming ACD calls. The planner identifies all major elements that must be addressed while setting up the system.

Once the path planner has been completed to the ACD system designer's satisfaction, the information is transferred to the CDE forms for system programming.

The CDE forms that pertain to the *ACD TELEMARKETER* feature are described in Section 9 of this practice. For a description of all system CDE forms, refer to the *Customer Data Entry Practice*. Appendix B of this practice contains additional blank copies of the Path Planner. Figure 4-2 shows a blank path planner sheet. The following subsections describe the fields on this sheet. Examples later in this section illustrate the use of a Path Planner and trace calls through completed path planners. Unless mentioned otherwise, all fields on the path planner have corresponding fields on one of the CDE forms used in programming the system.

### **Purpose of This Path**

The Purpose of this Path field allows the designer to summarize in a few words the intention of this path. The information in this field is for information only and is not programmed on any form during CDE.

### **Name**

The Name field contains a descriptive name that identifies the function of the path. This name appears in the ACD path monitor displays and on the agent's *SUPERSET 420* telephone when the set is presented with a call. Agents that handle calls for more than one path can answer the caller with an appropriate greeting.

During CDE, transfer this information from the path planner sheet to the ACD Path field on the ACD Path form (Form 41).

### **Path Access Code**

The Path Access Code field identifies the path to the rest of the system. The path access code can be a destination in the Non-Dial-In Trunks form and in the Call Rerouting Table. The path access code can also be attached to a Dial-In Trunk, or it can be entered in another path planner as an interflow point and programmed as a forwarding destination for a *SUPERSET 410* or *SUPERSET 420* station.

During CDE, transfer the information in this field of the path planner sheet to the "Access Code for This ACD Path" field on the ACD Path form (Form 41).

### **Priority**

The Priority field sets the relative priority for all calls that arrive on this path. The priority remains with the call for its duration, regardless of the overflow handling programmed for the path. Priorities range from 1 through 99, with 1 being highest.

During CDE, transfer this information from the Path Planner sheet to the Priority field on the ACD Path form (Form 41).

### **Path Number**

The Path Number field identifies the path number in the range 1 through 99. This number is used to sort the paths on the Path Summary display.

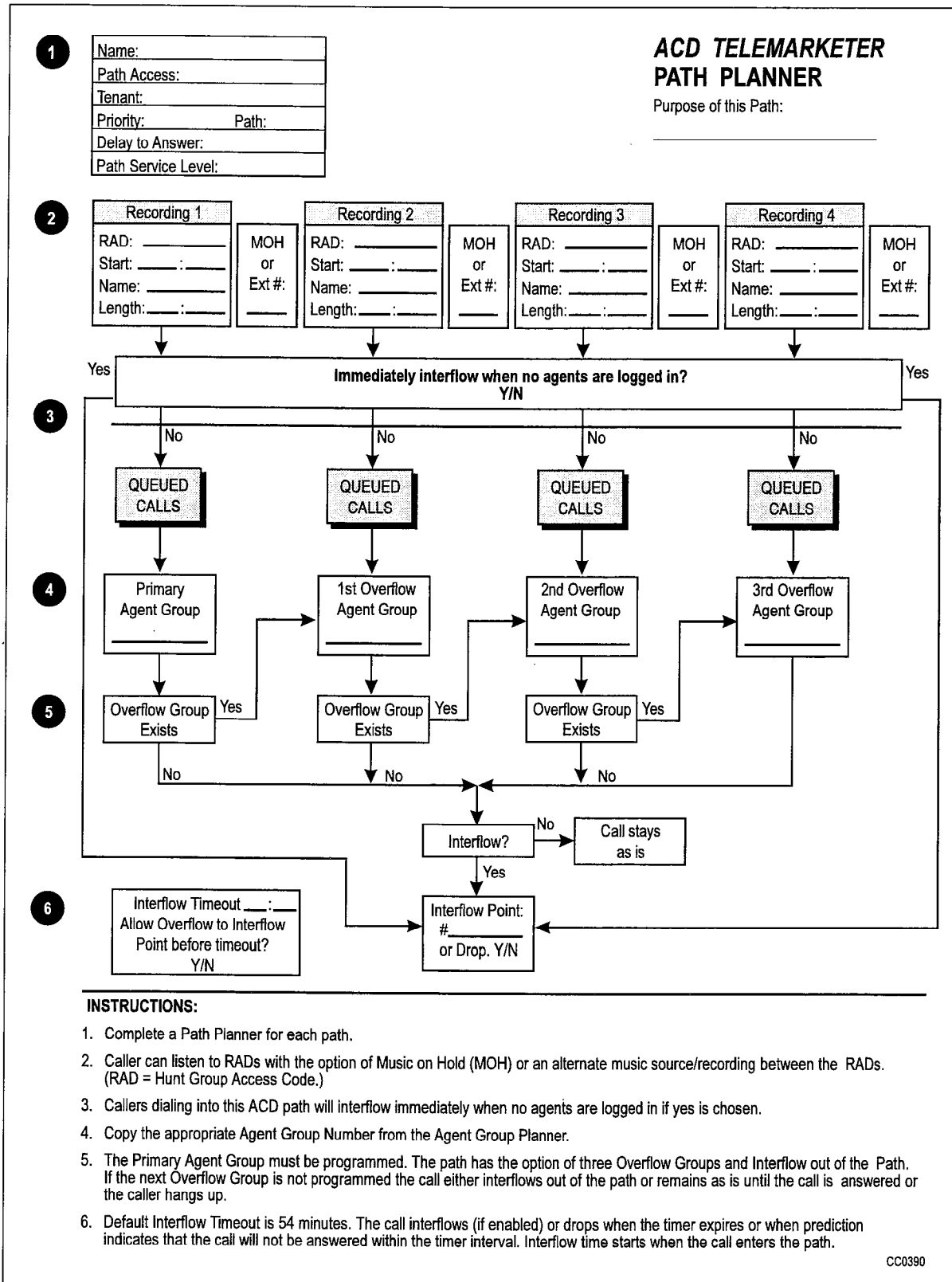


Figure 4-2 Path Planner

During CDE, transfer this information from the Path Planner sheet to the ACD Path field on the ACD Path form (Form 41).

### **Delay to Answer**

The Delay to Answer field contains the value of the Delay for Ringback timer. This value should be set high enough to ensure the caller hears ringback from the CO or SX-200 ML PABX before the agent answers. In some situations, caller confusion may arise if the agent answers the call before the caller hears ringback. This field can be set to any value from 1 second through 54 minutes. The system default is 3 seconds.

During CDE, transfer this information from the Path Planner sheet to the Delay For Ringback field on the ACD Path form (Form 41).

### **Recording 1**

The Recording 1 box contains the following three fields to capture the parameters for the first recording group:

**RAD:** This field contains the access code of the RAD group that contains Recording 1. During CDE, transfer this information from the Path Planner sheet to the Recording 1: Access Code field on the ACD Path form (Form 41).

**Start:** The Start field specifies the time between the end of the Delay for Ringback timer and the start of the first recording. During CDE, transfer this information from the Path Planner sheet to the "Recording 1: Start Time" field on the ACD Path form (Form 41).

**Name:** The Name field specifies the name of the RAD Group for Recording 1. During CDE, transfer this information from the Path Planner sheet to the Name field on the Hunt Group form.

### **MOH or Ext #**

The MOH or Ext # field allows the designer to specify what callers hear after Recording 1 is finished. The designer can give callers music on hold (MOH) from the system music source, or an alternate music source from an ONS port. Circle MOH to indicate music from the system music source, or enter the ONS port directory number that supplies the alternate music. If no music is connected, the caller hears silence.

During CDE, if an alternate music source has been selected, transfer this information from the path planner sheet to the Recording 1: Music Source Following field on the ACD Path form (Form 41). If MOH has been selected, no CDE action is required because the system connects to the default music source.

### **Recording 2 through 4**

Use the boxes labeled Recording 2 through 4 to specify the parameters for the additional recordings supplied to the caller while waiting for an agent. The MOH or Alternate fields can be used to specify different music sources following each recording.

During CDE, transfer the information from these fields as described under Recording 1.

### **Queued Calls**

The Queued Calls above each agent group block represent the calls queued against the agent group. No information is required in this block and there are no corresponding entries on CDE forms.

### **Primary Agent Group**

Transfer the number from the Agent Group Planner of the agent group designated as Primary for this path.

### **Overflow Group Exists**

For the box labeled Overflow Group Exists, circle Yes if the first overflow group is to be assigned to this path, or No if no overflow group is assigned. If Yes was selected, repeat the planning steps above for each of the overflow groups.

### **Interflow**

Next to the box labeled Interflow, circle Yes if an interflow point is to be assigned to this path. Circle No if no interflow is to be assigned.

### **Interflow Point**

The Interflow Point # field specifies the access code for the interflow device. This access code can be a listed directory number for a station, console, nightbell, ACD path, station/set hunt group, UCD agent group, or system speedcall number.

If Select Drop is left blank, the system drops the call rather than allow the call to interflow. If interflow is allowed for this path, enter the directory number of the interflow point.

During CDE, transfer this information from the Path Planner sheet to the Interflow Point Access Code field on the ACD Path form.

### **Interflow Timeout**

The Interflow Timeout field specifies the waiting time for an ACD call before the system routes the call to an interflow point outside the ACD system. The timer range is from 1 second to 54 minutes.

During CDE, transfer this information from the path planner sheet to the Interflow Timeout field on the ACD Path form (Form 41).

### **Allow Overflow to Interflow**

The Allow Overflow to Interflow Point Before Timeout field specifies whether the system can force calls to the interflow point as soon as the system determines that the call is unlikely to be answered, without waiting for the Interflow Timeout timer to expire.

During CDE, transfer this information from the path planner sheet to the Allow Overflow to Interflow Point Before Timeout field on the ACD Path form (Form 41).



## 5 ACD Agent Sets

This section describes the *ACD TELEMARKETER* features on *SUPERSET 410* and *SUPERSET 420* telephones used by ACD agents. Descriptions of the following features are provided:

- ACD agent login and logout
- Agent functions
- Special feature keys, set displays and/or indicators.

The information in this section is aimed at persons planning an ACD installation, setting up an ACD system, and operating the sets in an existing system.

### ACD Agent Login/Logout

- 5.1 All ACD positions are linked to software, not hardware, so the system recognizes a login from any *SUPERSET 410* or *SUPERSET 420* telephone within the *SX-200 ML PABX*, and immediately transforms the set to the user's preprogrammed specifications. The system routes calls to an agent only after the agent logs in to the ACD system.

When a position logs in, the set's name, COS, speedcall, and feature keys are replaced by those assigned to the position in CDE. Call forwarding, DND, redial, reminders, callbacks or messaging are not affected by position login.

While agents are logged in to the ACD system, they can't program their personal keys.

#### Login

To log in, the agent dials an access code followed by the ID number assigned through CDE. Dial tone indicates a successful login. In addition, the status indicator beside the Make Busy key turns on solid and ACD LOGIN appears briefly on display sets. It is recommended that you do not program multiple line appearances of a prime line.

#### Login Conditions

The following conditions must be met before an ACD position can log in:

- The position must not be already logged in.
- The position must be logging into a *SUPERSET 410* or *SUPERSET 420* telephone.
- The position will be unable to log in when there are multiple line appearances of a prime line, or when there are key definitions in the position's ACD Keys Template for keys which are not physically present on the set (keys 7 to 15 on a *SUPERSET 410* set and keys 13 to 15 on a *SUPERSET 420* set). An "INVALID KEY" message will appear on the *SUPERSET 420* in this case.
- The position must have the ACD template for the set type being programmed enabled in its Class of Service (COS).

- The *SUPERSET* telephone cannot have a *Programmable Key Module (PKM)* associated with it.
- The *SUPERSET* telephone must not have appearances of its prime line programmed elsewhere in the system.

### **Logout**

To log out, the agent dials the login/logout access code. ACD LOGOUT appears briefly on display sets. Dial tone indicates a successful logout. To log in to another group, the agent dials the access code followed by the ID number for the second group.

### **Logout Conditions**

An agent cannot log out while on an ACD call. If an agent on an ACD call (in progress or on softhold) attempts to log out, the agent receives reorder tone.

If a position is logged in at a *SUPERSET 410* or *SUPERSET 420* set and the user changes the set at that extension to an illegal ACD device, the position will be automatically logged out.

## **ACD Agent Functions**

- 5.2 Each logged in agent uses a *SUPERSET 410* or *SUPERSET 420* telephone that is normally programmed with one line select key or personal key assigned as a Make Busy key, and a second as a Queue Status key. *SUPERSET 420* agents also have access to a HELP softkey. The following subsections describe the functions of these keys and their operation.

### **Make Busy Key**

#### **Purpose**

- 5.3 Every agent set should be preprogrammed with one personal key allocated as a Make Busy feature key.



Activating the Make Busy feature prevents ACD calls from ringing the set. Normal operation of the set is not affected and calls in progress are not disrupted. An agent can press the Make Busy key when the set is idle or during a call. If the agent presses the Make Busy key during a call, the set is automatically placed in Make Busy state when the agent goes on hook. The set remains in the Make Busy state until canceled by the agent.

#### **Operation**

Press the Make Busy feature key. To cancel Make Busy, press the Make Busy key again. When calls ringing the set are not answered within the period specified by the Call Forward No Answer Timer in the agent's COS, the system places the set in Make Busy, and causes the LCD beside the Make Busy key to flash to advise the agent of the Make Busy state (see below). The agent must press the Make Busy key to cancel the Make Busy state.

### Make Busy LCD Indicators

The LCD indicator beside the Make Busy key will flash when the set is in the Make Busy state. The LCD indicator remains on solid when the set is not in Make Busy mode. Figure 5-1 shows the LCD indicators associated with the Make Busy key.

KEY	STATUS	LCD SYMBOL
MAKE BUSY	IN MAKE BUSY	 FAST FLASH (150 MSEC ON/150 OFF)
	NOT IN MAKE BUSY	 SOLID TRIANGLE

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**Figure 5-1 Make Busy LCD Indicator**

### Queue Status Key

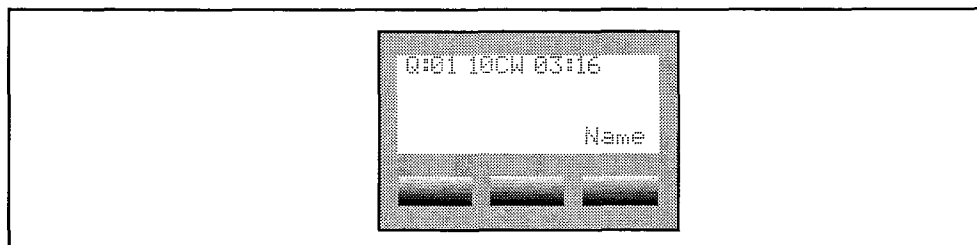
#### Purpose

- 5.4 The Queue Status key and the LCD beside the key show the agent the current status of the call waiting queue and the load condition of the queue.

The following operational information applies only to the *SUPERSET 420* telephone sets. Pressing the Queue Status key has no effect on the *SUPERSET 410* telephone. Note, however, that the LCD Indicators described below apply to all three telephone sets.

#### Operation

When the Queue Status key is pressed, the main display on the set shows the queue number, the number of ACD calls waiting in the queue, and the longest call waiting time. Figure 5-2 shows a typical display on the *SUPERSET 420* telephone set. In this example, group number 1 is displayed, showing 10 calls in the queue waiting to be answered. The oldest call has been waiting for 3 minutes and 16 seconds.



**Figure 5-2 Sample Queue Status Display**






At this point, the agent can press the SuperKey to terminate the Queue Status display. A NAME softkey will appear if the group had been assigned a name in CDE. Pressing this softkey displays the group name.

While on an ACD call, the HELP softkey is available to agents who use *SUPERSET 420* telephone sets. Paragraph 5.5 describes the HELP function.

**Queue Status LCD Indicators**

The LCD beside the Queue Status key on the *SUPERSET 410* and *SUPERSET 420* telephones indicates the load condition of the agent queue. The LCD is off when there are no calls waiting for an idle agent. When ACD calls are waiting to be answered, the LCD lights to indicate the queue status according to predefined threshold levels for the agent's group.

The LCD is updated periodically to indicate when a call remains waiting in the queue beyond an assigned threshold time. Two status threshold times are programmed in CDE for each agent group. As the timers expire, the LCD is updated to inform the agent of the workload. Figure 5-3 shows the LCD indicators associated with the Queue Status key.

KEY	STATUS	LCD SYMBOL
QUEUE STATUS	NO CALLS WAITING	
	CALLS WAITING BEFORE FIRST THRESHOLD PERIOD	 SOLID TRIANGLE
	CALLS WAITING BETWEEN FIRST AND SECOND THRESHOLD PERIODS	 SLOW FLASH (750 MSEC ON/750 OFF)
	CALLS WAITING LONGER THAN SECOND THRESHOLD PERIOD	 PULSED FLASH (600 MSEC ON/150 OFF)
	CALLS HAVE OVERFLOWED	 FAST FLASH (150 MSEC ON/150 OFF)

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**Figure 5-3 Queue Status LCD Status Indicators**

## HELP Softkey

### Purpose

- 5.5 During an ACD call, *SUPERSET 420* agent sets display the HELP prompt. Help allows the agent, while involved in an ACD call, to request that a supervisor monitor the call. The agent may also tape the call by pressing the HELP softkey and dialing the directory number of a recording device. This recording device must be a member of a hunt group.

The HELP function is not available on the *SUPERSET 410* telephone.

### Operation

To request help while involved in an ACD call, the agent presses the HELP softkey. The display changes to CALL SUPERVISOR (or CALL SENIORS, if the agent is reporting directly to a senior supervisor).

Three choices are then presented to the agent. To complete the help request call to the supervisor, the agent may press the YES softkey. If the agent decides to terminate the help request, the SuperKey is pressed.

When the NO softkey is pressed, an ENTER NUMBER prompt appears. The agent may select another help destination by either dialing a valid destination number or by pressing a programmed speed call. A valid destination number in this case is the ID for the supervisor or senior supervisor, or an access code for a recording hunt group.

Once a valid number has been entered, the agent presses the CALL softkey to complete the call. HELP REQUESTED appears on the agent set when the destination begins to ring.

When the help request is answered, the agent set display changes to "XXXXX INTRUDING" where "XXXXX" is the helper's extension number. If the destination is unavailable, the agent set displays DESTINATION BUSY. The ENTER NUMBER prompt is shown again to enable the Agent to redirect the request.

The person or recording device that responds to the help call is automatically placed in a "listen only" state. A supervisor or senior supervisor may break into the conversation by pressing the TRANS/CONF key.

## After Work Timer

### Purpose

- 5.6 When an agent completes an ACD call, a programmable "After Work Time" period is allotted during which the agent can complete work generated by the ACD call.

Agents using *SUPERSET 420* telephones can cancel the "After Work Timer" if their work is completed before the timer expires. Canceling the timer allows the agent to take the next ACD call.

Displays are provided on *SUPERSET 420* telephones to indicate that the After Work Timer is running. The *SUPERSET 410* does not provide an After Work Timer display and an agent using this set is unable to cancel the work timer.

### **Operation**

To cancel the After Work Timer, press the RESUME softkey.

### **Auto Answer**

5.7 The agent's set can be programmed with a COS option to auto-answer when a call arrives at the set. Auto Answer can be forced to be turned on when the agent logs in. The auto-answer process is described below:

1. Call arrives at free agent.
2. The agent's *SUPERSET 410* or *SUPERSET 420* telephone gives a burst of ringing.
3. The agent's *SUPERSET* telephone answers the call and the two parties are connected.
4. At the completion of the call, the external party hangs up.
5. Agent's *SUPERSET* telephone gives a hang up tone (Miscellaneous Tone). See Note below.
6. The After Work Timer starts.
7. When After Work Timer expires, a new call is waiting.
8. Agent's *SUPERSET* telephone gives a burst of ringing, and the sequence repeats for all new calls.

**Note:** Agents occasionally mistake the hang-up tone, which indicates the end of a call, for a burst of ringing which indicates a new call. This can lead to confusion because the agent is actually on the After Work Timer rather than answering a new call.

## 6 ACD Supervisor and Senior Supervisor Sets

This section describes the *ACD TELEMARKETER* features on *SUPERSET 420* telephones used by ACD supervisors and senior supervisors. *SUPERSET 410* telephones cannot be used in the supervisor or senior supervisor positions. Descriptions of the following features are provided:

- Senior supervisor and supervisor login and logout
- Senior supervisor and supervisor functions
- Feature keys, reports, set displays and/or indicators
- Call monitoring
- Help calls

The number of agents involved determines whether there is a need for both supervisors and senior supervisors to oversee ACD operations.

The information in this section is aimed at persons planning an ACD installation, setting up an ACD system, and operating the sets in an existing system.

### ACD Supervisor and Senior Supervisor Login/Logout

- 6.1 The system recognizes a supervisor only after the supervisor logs in to the ACD system. Once logged in, the set takes on the properties assigned to the supervisor through CDE.

When a position logs in, the set's name, COS, speedcall, and feature keys are replaced by those assigned to the position in CDE. Call forwarding, DND, redial, reminders, callbacks or messaging are not affected by position login.

While supervisors are logged in to the ACD system, they cannot program their personal keys.

#### Login

To log in, the supervisor dials an access code followed by the ID number assigned through the ACD Supervisor Form in CDE. ACD LOGIN appears briefly in the display, and the supervisor hears dial tone.

#### Login Conditions

The following conditions must be met before an ACD position can log in:

- The position must not be already logged in.
- The position must be logging in to a *SUPERSET 420* telephone.
- A *SUPERSET 420* telephone user will be unable to log in when key definitions are in the position's ACD Keys Template for keys which are not physically present

on the set (keys 13 to 15). An "INVALID KEY" message will appear on the *SUPERSET 420* telephone in this case.

- The position must have an ACD template enabled in its Class of Service (COS).

### **Logout**

To log out, dial the access code again. ACD LOGOUT appears briefly in the display and the supervisor hears dial tone. Press HANGUP or dial.

If a position is logged in at a *SUPERSET 420* set and the user changes the set at that extension to an illegal ACD device, the position will be automatically logged out.

## **ACD Supervisor Functions**

- 6.2 The ACD supervisor position is reserved for the individual responsible for supervising one or more agent groups.

Supervisors are unable to answer ACD calls. Instead, they are assigned pre-programmed keys which allow them to display status reports for agent queues and individual agents, establish a call monitor on an agent, or respond to a help request from an agent.

The way in which a supervisor obtains status reports for agent queues and individual agents differs slightly depending on whether the supervisor is responsible for one or more than one agent group.

Two scenarios are described in the following sections: supervisors with only one agent group (starting at paragraph 6.4), and supervisors with more than one agent group (starting at paragraph 6.8).

## **ACD Senior Supervisor Functions**

- 6.3 The ACD senior supervisor supervises one or more supervisors in addition to supervising agent groups.

Senior supervisors are unable to answer ACD calls. Instead, they are assigned pre-programmed keys which allow them to display status reports for agent queues and individual agents, establish a call monitor on an agent, or respond to a help request from an agent.

Senior supervisors obtain status reports for agent queues and individual agents in much the same way as supervisors with more than one agent group. The information provided in paragraph 6.8 onward applies to both groups.



## Supervisor Set With One Agent Group: Overview

- 6.4 The supervisor responsible for only one agent group will use the Queue Status, Agent Status, and Shift feature keys. The supervisor's *SUPERSET 420* telephone requires only one Queue Status key. The remaining feature keys can be assigned as Agent Status keys.

The Queue Status key provides ACD call queue information. The Agent Status key provides status reports for individual agents. The Shift key allows more than one agent to be assigned to a single Agent Status key. These keys are described in more detail below.

## Queue Status Key: Supervisor Set With One Agent Group

### Purpose

- 6.5 The Queue Status key and the LCD beside the key serve two functions in showing the supervisor the current status of the call waiting queue and the load condition of the queue.

### Operation

The Queue Status key is pressed to display a summary of queue activity.

The set displays the agent group number, the number of ACD calls in the queue waiting to be answered, and the length of time the oldest call has been waiting.

Figure 6-1 shows a typical queue status display on the *SUPERSET 420* telephone. The display indicates that queue number 1 has 4 calls waiting to be answered. The longest waiting call has been in the queue for 2 minutes and 4 seconds.

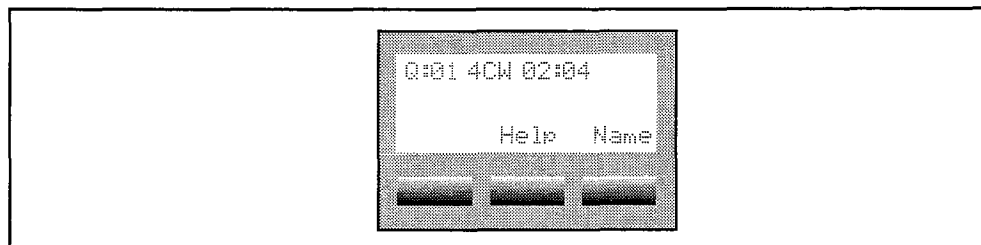


Figure 6-1 Queue Status Display

At this point, the supervisor can press the SuperKey to terminate the Queue Status display.

A NAME softkey will appear if the group was assigned a name during CDE. Pressing this softkey will display the group name.

To display the next report, the supervisor can scroll forward or backward by using the Volume ↓ key and the Volume ↑ key.

A HELP softkey displays a prompt PRESS KEY 0-9. As each dial pad key is pressed, a help message is displayed on the set to remind the user which report is associated

with that dial pad key. Table 6-1 lists the supervisor queue status reports and the key that displays each report.

A CANCEL softkey appears after the HELP softkey is pressed. Pressing CANCEL returns the supervisor set to the queue status mode.

<b>Table 6-1 Supervisor and Senior Supervisor Reports - Queue Status</b>		
<b>Key Number</b>	<b>Sample Set Display</b>	<b>Meaning</b>
0	21 2 10 2 8 (See Note below.)	Condensed queue status report: -ACD calls answered -Number of abandoned ACD calls -Number of logged in agents -Number of times agents made busy -Number of non-ACD calls handled by the group.
1	WAIT TIME 10:23	The average waiting time, in minutes and seconds, of logged in Agents in an Agent Group.
2	# ACD CALLS 21	Number of ACD calls the group has answered.
3	ACD CALL 02:23	Average duration of ACD calls.
4	# NON ACD 8	Number of non-ACD calls made/answered by the group.
5	NON ACD 01:23	Average duration of non-ACD calls.
6	# MADE BUSY 2	Number of times agents made busy.
7	AVG BUSY 01:03	Average duration of make busy.
8	# ON HOLD 2	Number of ACD calls put on hard hold.
9	AVG HOLD 00:55	Average duration of ACD calls on hard hold.

**Note:** A senior supervisor pressing the 0 Key will receive a different report (an example of which is shown below).






# AGT LOGIN 6

This report indicates the number of ACD agents logged in.

**Queue Status LCD Indicators**

The LCD beside the Queue Status key continuously shows the load condition of the agent group reporting to the supervisor. The LCD is off if there are no calls waiting for an idle agent. When ACD calls are waiting to be answered, the LCD lights to indicate the queue status that is based on predefined threshold levels defined for the group.

The LCD is updated periodically to show when a call remains waiting in the queue beyond an assigned threshold time. Two status threshold times are programmed in CDE for each agent group. As the timers expire, the LCD is updated to inform the agent of the workload. Figure 6-2 show the LCD symbols for queue status on the *SUPERSET 420* telephones.

KEY	STATUS	LCD SYMBOL
QUEUE STATUS	NO CALLS WAITING	
	CALLS WAITING BEFORE FIRST THRESHOLD PERIOD	 SOLID TRIANGLE
	CALLS WAITING BETWEEN FIRST AND SECOND THRESHOLD PERIODS	 SLOW FLASH (750 MSEC ON/750 OFF)
	CALLS WAITING LONGER THAN SECOND THRESHOLD PERIOD	 PULSED FLASH (600 MSEC ON/150 OFF)
	CALLS HAVE OVERFLOWED	 FAST FLASH (150 MSEC ON/150 OFF)

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**Figure 6-2 LCD Queue Status Indicators**

## Agent Status Key: Supervisor Set With One Agent Group

### Purpose

- 6.6 The Agent Status key and the LCD beside the key serve two functions in showing the supervisor the current status of an individual agent, and reporting on the performance of the agent.

### Operation

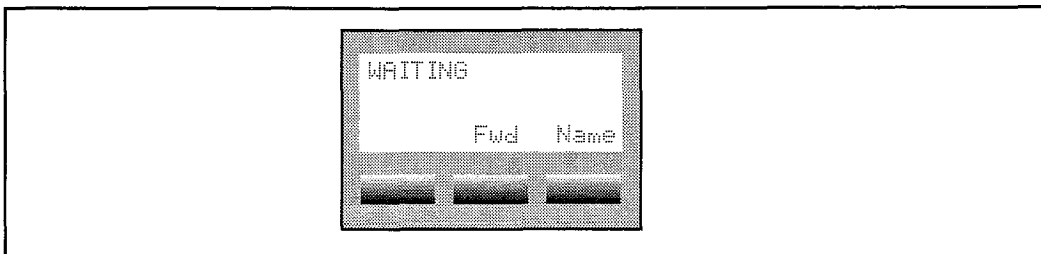
Press the Agent Status key to start the report displays, beginning with the current state of the first agent in the group. An agent can be in any one of the following states:

LOG OUT	WAITING
ACD CALL	ACD WORK
NON ACD or DND	ACD HOLD
MAKE BUSY	

Pressing subsequent keys allows the supervisor to identify the name of the agent and to obtain further agent status information. Ten categories of agent reports are available to the ACD supervisor.

It is not necessary to exit one Agent Status display before moving on to check the status of the next agent. Pressing the Agent Status key while already in agent status mode allows the supervisor to start the report display for the next agent.

Figure 6-3 shows a sample display on the *SUPERSET 420*, when the Agent Status key is pressed.



**Figure 6-3 Agent Status Display**

The supervisor is then presented with a number of options. Pressing the SuperKey terminates the Agent Status display.

Pressing the NAME softkey identifies the agent associated with the displayed agent status. Additionally, when these softkeys are pressed, the CALL softkey is displayed. This key allows the supervisor to call the agent without dialing the Agent ID number or extension number.

To display the next report, the supervisor can scroll forward or backward by using the Volume ↓ key and the Volume ↑ key.








The FWD or BACK softkeys allow the supervisor to move on to the next or to the previous agent in the group.

To access the HELP softkey, the user must press an Agent Status key and then dial 0 on the dial pad. The HELP softkey prompts the user to 'PRESS KEY 0-9'. Pressing a dial pad key displays a help message to remind the user which report is associated with the dial pad key. See Table 6-2 for a list of dial pad keys and examples and explanations of the agent reports available.

<b>Table 6-2 Senior Supervisor and Supervisor Reports - Agent Status</b>		
<b>Key Number</b>	<b>Sample Set Display</b>	<b>Meaning</b>
0	398 BOB	Agent identification number and name.
1	WAIT TIME 01:55	Average waiting time for the agent.
2	# ACD CALL 25	Number of ACD calls answered by the agent.
3	ACD CALL 02:25	Average duration of ACD calls.
4	# NON ACD 2	Number of non-ACD calls made/answered by the agent.
5	NON ACD 01:46	Average duration of non-ACD calls.
6	# MADE BUSY 2	Number of times the agent made busy.
7	AVG BUSY 02:58	Average duration of make busy state.
8	# ON HOLD 2	Number of ACD calls put on hard hold.
9	AVG HOLD 00:47	Average duration of ACD calls on hard hold.

**Agent Status LCD Indicators**

The LCD beside the Agent Status key continuously shows the call-status of the agent assigned to the key. The LCD is off when the agent is logged out. The display changes to reflect changes in the status of the ACD agent. Figure 6-4 describes the agent status LCD indicators on a *SUPERSET 420* telephone.

KEY	STATUS	LCD SYMBOL
AGENT STATUS	AGENT LOGGED OUT	
	AGENT LOGGED IN - NO CALLS WAITING	 <p>PULSED FLASH (600 MSEC ON/150 OFF)</p>
	AGENT IN MAKE BUSY STATUS	 <p>FAST FLASH (150 MSEC ON/150 OFF)</p>
	AGENT ON ACD CALL	
	AGENT ON NON-ACD CALL OR DND	 <p>SLOW FLASH (750 MSEC ON/750 OFF)</p>
	ACD CALL ON HOLD	
	AFTER-CALL WORK TIMER	

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**Figure 6-4 LCD Agent Status Indicators**

**Shift Key: Supervisor Set With One Agent Group****Purpose**

- 6.7 If an ACD supervisor has more agents than available keys, the system provides a Shift key. The Shift key allows the supervisor's set to accommodate more than one agent on a single Agent Status key.

**Operation**

If there are three agents in a group and two Agent Status keys information for agents one and two is displayed by Agent Status keys one and two respectively.

Reports for the third agent are viewed on the first Agent Status key and are accessed by pressing the Shift key followed by the Agent Status key. At this point, the name and ID of Agent 03 are displayed and the LCD indicator shows the status of the third agent.

Figure 6-5 provides an example of a configuration with three Agent Status keys and seven agents. Pressing Agent Status key 1 displays the status of Agent 1. Pressing the Shift key at this point displays Agent 4. Agents 2 and 3 are associated with Agent Status keys 2 and 3 respectively.

KEY NAME	Agent Status Key #1 display	Agent Status Key #2 display	Agent Status Key #3 display
Agent Status	Agent 1	Agent 2	Agent 3
Shift	Agent 4	Agent 5	Agent 6
Shift	Agent 7	none	none
Shift	Agent 1	Agent 2	Agent 3

**Figure 6-5 Using the Shift Key to Check Agent Status**

## Senior Supervisors and Supervisors With More than One Agent Group: Overview

- 6.8 Senior supervisors and supervisors who are responsible for more than one agent group use one Queue Status key for each agent group, the Shift key and the AGENT softkey. Senior supervisors and supervisors who are responsible for more than one agent group cannot have Agent Status keys programmed on their sets.

Each Queue Status key provides information about one of the agent groups. The Shift key allows the senior supervisor or supervisor's telephone set to accommodate more than one agent group on a single Queue Status key. The AGENT softkey provides individual agent status information. These keys are described in more detail below.

### Queue Status Key: Senior Supervisors and Supervisors With More than One Agent Group

#### Purpose

- 6.9 The Queue Status key and the LCD display beside the key (Figure 6-2) provide the senior supervisor or supervisor with queue and load condition information for one agent group.

In addition, the AGENT softkey, which appears after the Queue Status key has been pressed, provides reports on individual agents within the displayed group.

#### Operation

Press the Queue Status key of the desired agent group. The set displays the agent group number, the number of ACD calls in the queue waiting to be answered, and the length of time that the oldest call has been waiting.

Figure 6-3 shows a typical queue status display on the *SUPERSET 420* telephone. The display indicates that queue number 5 has 10 calls waiting to be answered. The longest waiting call has been in the queue for 2 minutes and 4 seconds.

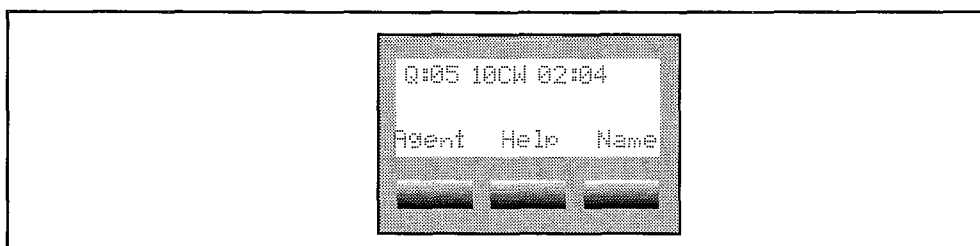


Figure 6-6 Agent Status Display

At this point, there are several options available to the senior supervisor or supervisor. Pressing the SuperKey will terminate the Queue Status display.

The NAME softkey will display the name of the agent group, if a name had been assigned during CDE.

Pressing the HELP softkey displays the prompt PRESS KEY 0-9. As each dial pad key is pressed, a help message is displayed on the set to remind the user which report



is associated with that dial pad key. Table 6-1 lists the queue status reports and the key that displays each report.

To display the next report, the senior supervisor or supervisor can scroll forward or backward to the next agent report by using the Volume ↓ key and the Volume ↑ key.

### **READ or AGENT Softkey**

The AGENT softkey also appears after the Queue Status key has been pressed. This softkey provides access to a variety of reports for individual agents within the displayed group.

The identification of the first agent in the group is displayed initially. From this point, the senior supervisor or supervisor can scroll backward or forward through agent reports, call the agent by pressing the CALL softkey, request help on agent reports (see Table 6-2), move onto the next or previous agent in the group (FWD and BACK softkeys) or CANCEL the agent reports and return to Queue Status mode.

## **Shift Key: Senior Supervisors and Supervisors With More than One Agent Group**

### **Purpose**

- 6.10 The Shift feature key is assigned during Customer Data Entry. It is required when the number of agent groups that a senior supervisor or supervisor controls is greater than the number of Queue Status keys on the supervisory set.

The Shift key allows one Queue Status key to address more than one agent group. This key has no effect when the number of Queue Status keys programmed is greater than the number of agent groups.

### **Operation**

If there are three agent groups and two Queue Status keys, information for agent groups one and two is displayed by Queue Status keys one and two respectively.

Reports for the third agent group are viewed on the first Queue Status key; they are accessed by pressing the Shift key and then the Queue Status key. At this point the name and ID of Agent Group 3 is displayed and the LCD indicator reflects the status of the third agent group.

The example in Figure 6-7 shows a configuration with three Queue Status keys and seven agent groups. Pressing the Queue Status key 1 displays the status of Agent Group 1. Pressing the Shift key at this point displays Agent Group 4.

KEY NAME	Queue Status Key #1 display	Queue Status Key #2 display	Queue Status Key #3 display
Queue Status	Agent Group 1	Agent Group 2	Agent Group 3
Shift	Agent Group 4	Agent Group 5	Agent Group 6
Shift	Agent Group 7	none	none
Shift	Agent Group 1	Agent Group 2	Agent Group 3

**Figure 6-7 Shift Key Operation**

## Call Monitoring

### Purpose

- 6.11 The Call Monitoring feature allows the senior supervisor or supervisor to listen-in on an agent's conversation. During a call monitor, the system gives the supervisory set a one-way audio path, thus preventing the agent and the caller from hearing the supervisor.

### Restrictions

The monitoring can be performed on any line and on any agent conversation that can be overridden. Monitoring is not permitted, for example, on 5-party calls, held calls and conferences. Keyline privacy is ignored for the call monitor.

### Programming

To enable monitoring:

- assign an ACD Silent Monitoring access code in the Feature Access Code CDE form
- enable System Option 42, ACD Silent Monitoring

If agents are to be notified when a monitor is in progress, enable System Option 43, ACD Silent Monitoring Beeps. When the monitoring starts, the agent hears beeps and the set displays the extension number of the monitoring set followed by "INTRUDING".

### Operation

The senior supervisor or supervisor initiates a call monitor by dialing the ACD Monitor access code, followed by the agent's ID code.

- If the agent set is idle and COS option 655 is disabled in the supervisor's class of service, the supervisory set indicates the agent's set is idle.
- If the agent is in a call and call monitoring begins, the supervisory set displays the extension number of the agent's set.
- An agent may be monitored by only one supervisor at a time. A senior supervisor or supervisor attempting to monitor an agent who is already being monitored receives busy tone and the normal busy display.
- An illegal user attempting to set up a monitor causes an ACCESS DENIED message to appear on the set.
- An attempt to monitor an agent who is not logged in results in a set displaying that the number is invalid.
- Attempting to monitor an agent who has Do Not Disturb activated and is idle results in the supervisory set displaying that the set has Do Not Disturb activated.

At any time while monitoring, the senior supervisor or supervisor may enter the conversation by pressing the TRANS/CONF key.

If COS option 655 is disabled in the supervising set's class of service, that supervisor will be disconnected from monitoring when the agent places the caller on hold, transfers

the call, or the call is terminated by the agent or the ACD caller. The supervisory set displays "DISCONNECTED" and the system gives re-order tone.

If COS option 655 is enabled in the supervising set's class of service, that supervisor will not be disconnected regardless of the call state, unless the agent logs off. If the agent set places the caller on hold, performs a transfer, or the agent or ACD caller terminate their call, the supervisor's set goes into waiting state and displays "WAITING".

The supervisor ends monitoring by pressing the CANCEL key.

## Help Call Feature

- 6.12 The Help Call feature is initiated by an agent who needs assistance from a supervisor. A supervisor or senior supervisor receiving a help request gets an audible and visual indication on the *SUPERSET 420* telephone.

### Operation

When an agent initiates a help request, the supervisory set rings and the display changes to "HELP" followed by the agent's name and ID number. When the senior supervisor or supervisor lifts the handset, a monitor begins. To form a conference with the agent and ACD caller, the supervisor/senior supervisor must press the TRANS/CONF key.

If a help request is sent to a busy supervisory set, the set rings and displays "HELP" with the agent's name and ID. The supervisory set can only handle the request after the current call is terminated.

If auto answer is enabled at a supervisory telephone, it will be ignored. The telephone will ring until the handset is lifted.



# 7 Reports

The *ACD TELEMARKETER* package generates a series of printer directed reports that list call and performance information for agents, paths, and groups. The Agent Shift Summary Record covers the agent's logon period and is automatically printed when an agent logs off. The Path and Group Summary reports present information collected over a pre-defined period.

The reporting parameters may be selected through the maintenance terminal or the console. Refer to Report Commands (paragraph 7.5) for descriptions of the parameters and how they are selected.

## Agent Shift Summary Record

- 7.1 An Agent Shift Summary Record prints automatically whenever an agent logs out. Once enabled, this report requires no predefined time parameters. Refer to the SET Command section of paragraph 7.5 for instructions on enabling the Agent Shift Summary Record.

Figure 7-1 and Figure 7-2 provide examples of Agent Shift Summary Records. The fields in the record are defined in Table 7-1.

DATE	GRP	AGENT	EXTN	LOGIN	SHIFT	CALLS	TIME	EXT-OUT	TIME	MAKEBUSY	TIME
09/27/95	0018	00349	01432	13:28	06:35	0485	03:34:51	0016	01:25:26	1	00:15:02

CC0417

**Figure 7-1 Agent Shift Record - Example 1**

The display in Figure 7-1 shows that on September 27, 1995, agent 349 of agent group 18 at extension 1432 logged on at 13:28 for a period of 6 hours and 35 minutes.

The agent answered 485 ACD calls which lasted a total of 3 hours, 34 minutes and 51 seconds.

Sixteen non-ACD external outgoing calls lasting a total of 1 hour, 25 minutes and 26 seconds were made by this agent during the shift. The agent's extension was in Make Busy state once for 15 minutes and 2 seconds.

DATE	GRP	AGENT	EXTN	LOGIN	SHIFT	CALLS	TIME	EXT-OUT	TIME	MAKEBUSY	TIME
11/12/94	0001	24157	05211	08:26	07:45	0036	07:01:23	0008	00:31:52	3	00:35:10

CC0418

**Figure 7-2 Agent Shift Records - Example 2**

The example in Figure 7-2 shows that on November 12, 1994, agent 24157 of agent group 1 at extension 5211 logged on at 08:26 for a period of 7 hours and 45 minutes.

The agent answered 36 ACD calls which lasted a total of 7 hours, 1 minute and 23 seconds.

Eight non-ACD external outgoing calls with a total duration of 31 minutes and 52 seconds were placed by the agent during the shift. The agent's extension was in Make Busy state three times and it spent a total of 35 minutes and 10 seconds in Make Busy.

<b>Softkey Label</b>	<b>Function</b>
DATE	Month/day/year (mm/dd/yy).
GROUP	Agent group (4 digits).
AGENT	Agent ID (5 digits).
EXTN	Extension number (5 digits).
LOGIN	Login time (hh:mm).
SHIFT	Agents' shift length (hh:mm).
CALLS	Number of ACD calls answered by the agent (4 digits).
TIME	Total time spent by the agent on ACD calls (hh:mm:ss).
EXT-OUT	Number of non-ACD external outgoing calls made (4 digits).
TIME	Total time the agent spent on non- ACD external outgoing calls (hh:mm:ss).
MAKE BUSY	Total number of times that the agent went Make Busy.
TIME	Total time the agent's extension was in Make Busy (hh:mm:ss).

## Path Summary Report

- 7.2 A Path Summary Report is printed only for programmed entities. This report includes:
- total counts for traffic entering the path during the specified time period
  - the number of those calls that were answered, abandoned, and interflowed.

Figure 7-3 provides an example of a Path Summary Report. Fields in the report are defined in Table 7-2.

PERIOD: 7-NOV-95 8:30 TO 4:30						
PATH	ENTERED	ANSWERED	ABANDONED	INTERFLOWED	SERVICE	
23	1732	1578 000:15	0020 003:08	0134 003:27	0	

CC0420

**Figure 7-3 Sample Path Summary Report**

The example in Figure 7-3 shows that path number 23 received 1732 calls and, of these, 1578 were answered within an average of 15 seconds.

Twenty calls were abandoned after waiting an average of three minutes and eight seconds. The 134 calls that interflowed out of the path did so after an average time of three minutes and 27 seconds. No calls were answered within the Path Service Level time.

Table 7-2 Path Summary Report Fields	
Softkey Label	Function
PATH	Path number.
ENTERED	Total number of calls entering this path.
ANSWERED	Total number of calls entering this path that were answered and the average time to answer.
ABANDONED	Number of calls which entered this path that were abandoned and average time the caller waited before abandoning.
INTERFLOWED	Number of calls which interflowed out of this path and the average time before interflowing.
SERVICE	Number of callers that were answered within the path service level in this time frame.

### Group Summary Report

7.3 A summary record for the Group Reports is printed for programmed entities only. The information in the Group Summary Report is categorized as:

- offered
- answered
- non-ACD external calls
- non-ACD other calls
- the average number of agents logged in during the period.

Figure 7-4 provides an example of a Group Summary Report. Table 7-3 defines the fields in this report.

GROUP	OFFERED	ANSWERED	NON-ACD EXTERNAL	NON-ACD OTHER	AVERAGE LOGGED IN
12	0174	0131 2:21	0015 4:09	0021 1:57	7

CC0419

**Figure 7-4 Sample Group Summary Report**

The example above shows that agent group number 12 was offered 174 calls, 131 of which the group handled. Each agent spent an average of two minutes and 21 seconds speaking to the caller.

The 15 non-ACD external calls placed by the group had an average duration of four minutes and nine seconds. Other non-ACD calls, a total of 21, lasted an average of one minute and 57 seconds. An average of seven agents were logged in for this report period.

<b>Softkey Label</b>	<b>Function</b>
GROUP	Group number being summarized.
OFFERED	Total number of calls offered to the group during the reporting period from all paths.
ANSWERED	Total number of ACD calls that were answered by this group and the average length of time agents spent talking to the caller.
NON-ACD EXTERNAL	Total number of external calls made by this group and the average time of these calls.
NON-ACD OTHER	Total number of calls, other than non-ACD external calls and ACD calls, made and received by the group and the average time of these calls.
AVERAGE LOGGED IN	Average number of agents logged in during the period. The number logged in is calculated every time that the queue status keys are updated, and these counts are then averaged.

## Printing Reports

7.4 Before the reports can be printed, the printer assignment must be completed as follows:

CDE Form 34, Directed IO

- assign the ACD AGT SUM and ACD GRP SUM printouts.

Refer to the *Customer Data Entry Practice* for programming details.



## Report Commands

7.5 Either the maintenance terminal or console can be used to enter the softkey commands and parameters needed to start the ACD Reports. Refer to the *RS-232 Maintenance Terminal Practice* for instructions on using the terminal. The following subsections describe the report commands.

### Accessing Reports

To access the reports, log in to maintenance at the console or maintenance terminal using the correct USERNAME and PASSWORD. Figure 7-5a displays the softkey labels that appear after maintenance login.

To access the ACD Reports subform, press the ACD\_REPORTS softkey. The softkey labels at this level are shown in Figure 7-5b. The SET softkey sets up the various parameters for the summary reports. The SHOW softkey shows the current setup of the ACD printouts. QUIT exits the user from the ACD Report mode. These softkey commands are described in more detail below.

1-SYSTEM	2-	3-DIAGNOSTICS	4-	5-TRAFFIC_MEAS
6-QUIT	7-LOGS	8-ACD_REPORTS	9-REPORTS	0-

A) SOFTKEY LABELS AFTER MAINTENANCE LOGIN

1-SET	2- SHOW	3-	4-	5-
6-QUIT	7	8-	9-	0-

B) SOFTKEY LABELS FOR ACD REPORTS SUBFORM

CC0421

**Figure 7-5 Accessing Reports: Softkey Labels**

### SET Command

Use the SET command to enter or change any ACD Report parameters. After pressing the SET softkey, the prompts change as shown in Figure 7-6.

1-AGENT_SHIFT	2-PERIOD	3-DURATION	4-AUTOPRINT	5-CANCEL
6-	7-START_TIME	8-GRP_SUMMARY	9-	0-

CC0422

**Figure 7-6 Softkey Labels, SET Softkey Subform**

Use the softkeys to enter the required data and to exit from the ACD REPORT function. The softkey functions are described in Table 7-4.

<b>Table 7-4 SET Softkey Subform Functions</b>	
<b>Softkey Label</b>	<b>Function</b>
AGENT_SHIFT	Enables/disables printing of the agent shift summary reports. Enabled by default.
PERIOD	Sets the length of each reporting period from 10 minutes to 1 hour in 10-minute intervals. The default is 10 minutes.
DURATION	Sets the number of reporting periods. The duration must be a minimum of one period. The product of the duration multiplied by the period must be less than or equal to 24 hours. The default duration is 6 periods.
AUTOPRINT	Enables/disables printing of an intermediate report at the end of each reporting period. Enabled by default.
CANCEL	Terminates the SET command.
START_TIME	Sets the time of day, at 10-minute intervals, when the shift data collection starts. The start time must be defined before the group summary reports can be enabled. The default start time is 08:00.
GRP_SUMMARY	Enables/disables printing of the group summary reports. Disabled by default. A start time must be defined before the report is enabled.

- Note:**
1. The DURATION, PERIOD, GRP\_SUMMARY, and the START\_TIME cannot be changed once the report is running. Stop the report before attempting to change these parameters.
  2. The start time is used to clear the shift buffers, even if no printouts are enabled. See ACD MONITORS section.

**SHOW Command**

Use the SHOW command to display the status of the ACD reports. After the SHOW softkey is pressed, the labels change as shown in Figure 7-7.

1-	2-	3-STATUS	4-	5-CANCEL
6-	7-	8-	9-	0-

CC0423

**Figure 7-7 Softkey Labels for SHOW Softkey Subform**

Use the softkeys to enter the required data. The SHOW subform softkey functions are described in Table 7-5.

<b>Table 7-5 SHOW Softkey Subform Functions</b>	
<b>Softkey Label</b>	<b>Function</b>
STATUS	The STATUS softkey displays the following information in the screen window: GROUP SUMMARY: ON/OFF STATUS : Active/Inactive AUTO PRINT : ON/OFF START TIME : hh:mm PERIOD : nn minutes DURATION : nn periods AGENT SHIFT : ON/OFF
CANCEL	Cancels the show command.

#### **QUIT Command**

This softkey command allows the user to exit from the ACD REPORT mode at the console or terminal.



## 8 ACD Monitors

The ACD Monitors act as a “window” to the ACD system by giving ACD supervisors an event-display that is updated after the completion of each ACD activity. This section describes the purpose and content of each monitor and defines the monitor fields and the keys available in each display.

### Four Types of Monitors

- 8.1 The monitors allow access to four areas of the *ACD TELEMARKETER* system. The supervisor may view current information for:

#### System Activity

The System Activity monitor displays the current status of the ACD system. The display shows the number of agents logged in, the number of calls in the system, and general statistics on agent performance. Refer to paragraph 8.4 for further details.

#### Paths

The Path Summary monitors are a series of displays for individual paths. Displays include the CDE programmed parameters of the path, the current activity on the path, and a brief statistical analysis for the path. See paragraph 8.5.

#### Agent Groups

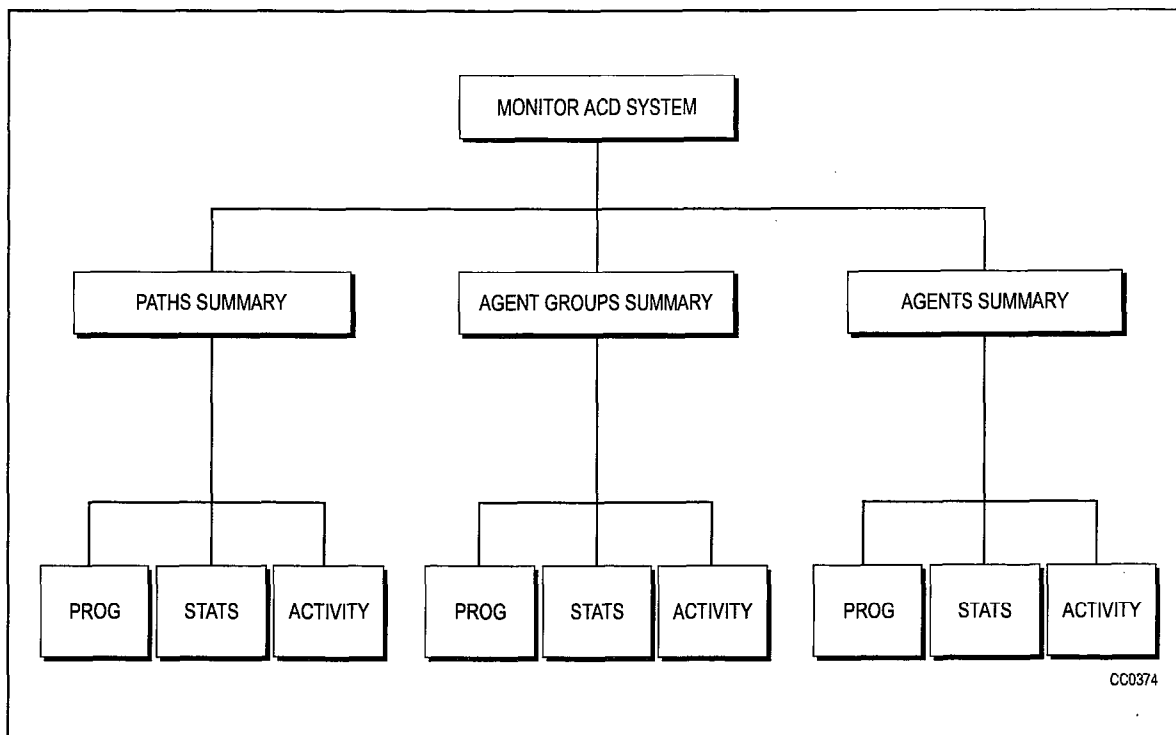
The Agent Groups Summary monitors are a series of displays for individual agent groups. Displays include the CDE programmed data for each agent group, the current activity of the group, and a brief current and historical analysis of statistical data for the group. Refer to paragraph 8.6.

#### Agents

The Agent Information monitors are a series of displays for individual ACD agents. Displays include CDE programmed data for each agent in the system, the current activity of the agents, and a brief current and historical analysis of statistical data for the agents. More details are provided in paragraph 8.7.

### Hierarchy of Monitor Displays

- 8.2 The monitor data is presented in a series of displays on a standard VT100™ compatible terminal. Most displays show a summary of performance over the last hour of operation, or from the beginning of an agent's shift. The monitors are arranged in a hierarchy as shown in Figure 8-1.



**Figure 8-1 Monitor Hierarchy**

## Accessing Monitors

### Restrictions

- 8.3 The monitors are accessed through a VT100-type terminal connected to a dataset. The dataset connects each Data Terminal (DTE) to a DNIC circuit on the *SX-200* ML PABX. The DTE connected to the dataset must be an ASCII data device that uses an RS-232C interface.

As many as four users can access the monitors simultaneously. While most displays are updated every 5 to 10 seconds, the update rate will vary according to the number of users currently requesting monitor displays.

### Entering Monitor Mode

Perform the following steps to gain access to the monitors through a VT100-type terminal:

1. Press <Return> key. The system responds with:

Welcome to Mitel SX-200 Data Switching Note: 1.

2. To request the monitors, enter: **MONITOR ACD** or **M ACD**. The display shows call progress as follows:

1 - VT100 compatible  
2 - IBM PC  
select terminal type: 1  
enter password: 1000

3. If the limitation of four simultaneous monitors has been exceeded, the system response following the **MONITOR ACD** request changes to:

Ringing  
System Busy, Try Again Later

- Note:**
1. The system response is a programmable herald that is selected during the programming of the Data Transceiver's Class Of Service. Refer to the *Customer Data Entry Practice* for details.
  2. The default password is 1000; however, the password is programmable. Contact your communications manager if the password needs to be changed. New passwords are assigned by accessing CDE Form 28 from a maintenance terminal or console. The level of access for monitors is softkey number 2, SUPERVISOR.

Once logged in to the system, the user is presented with the **SYSTEM ACTIVITY** screen, described in detail in paragraph 8.4.

## Monitoring System Activity

### System Activity Monitor Display

- 8.4 After selecting MONITOR ACD, the supervisor is presented with the SYSTEM ACTIVITY monitor (Figure 8-2). This display contains a summary of the entire ACD system showing all current call activity and agent activity as well as a summary of system performance over the past hour.

The fields in the System Activity Monitor display are described in Table 8-2.

4:06 PM 20-JAN-97		SYSTEM ACTIVITY		NITEL ACD Telemarketer	
CALLER ACTIVITY		AGENT ACTIVITY		SUMMARY - LAST HOUR	
CALLERS : 3 CALLS WTG: 1 LONGST WTG: 00:21		ON ACD : 2 READY : -		ENTERED : 7 TIMEtoANS : 00:10 SUC LEVEL< : 3 100 % SUC LEVEL> : - -	
UNDER 1ST : 100 % BETWEEN : - AFTER 2ND : -		MAKE BUSY : - DND : -		ANS by AGT : 3 00:57 ANS by AGT : 42 %	
ON RECRDNG: - HELD CALLS: -		ON non ACD: -		ON non ACD: - :	
		LOGGED ON : 2 LOGGED OFF: 2		ABANDONED : - :	
1-PATHS		2-AGENT GROUPS		3-AGENTS	
4-LANGUAGE		5-		6-QUIT	
7-PRINT		8-		9-	
0-					

Figure 8-2 System Activity Monitor Display

### System Activity Monitor Softkeys

The System Activity monitor display is accompanied by softkeys used to enter the second level in the monitor hierarchy. The softkeys presented with this display provide access to detailed displays of performance of specific paths, agent groups or agents. Table 8-1 explains the various softkeys and their purpose.



<b>Softkey Label</b>	<b>Function</b>
PATHS	Prompts the user to specify a path ID. Displays the Path Monitors for the selected Path. Refer to paragraph 8.5 for details.
AGENT GROUPS	Prompts user to specify an Agent group number. Displays the Agent Group monitors for the selected group. Refer to paragraph 8.6 for details.
AGENTS	AGENTS prompts for an Agent Id number. Displays the Agent Monitors showing current agent activity and the last hour's statistics. Refer to paragraph 8.7 for details.
LANGUAGE	LANGUAGE provides a FRANCAIS softkey; when pressed, it converts softkey prompts and the command line to French. When prompts are in French, the softkeys toggle to LANGUAGE and ENGLISH to allow selection of English prompts.
QUIT	Logs the user out of the Monitor ACD application and terminates the session.
PRINT	Prints the System Activity form on the printer used for the ACD Monitor Print.

<b>Term</b>	<b>Meaning</b>
<b>Caller Activity</b>	
Callers	The number of callers within the ACD system including callers talking to agents and callers waiting for agents, but not including callers in the delay for ringback.
Calls Wtg	The number of callers queued up waiting for an agent to become available, including those listening to silence, music, alternate music, or a recorded announcement.
Longst Wtg	The duration, in minutes and seconds, of the call that has been waiting longest in the queues.
Under 1st	The percentage of callers in the system that have been waiting less than the first threshold time programmed for the primary group of the path.
Between	The percentage of callers in the system that have been waiting longer than the first threshold time but less than the second threshold time programmed for the primary group of the path.
After 2nd	The percentage of callers in the system that have been waiting longer than the second threshold time programmed for the primary group of the path.
On Recrdng	The number of calls that are listening to a recorded announcement while waiting in the queues.
Held Calls	Indicates the number of ACD callers that have been placed on hold.

**Table 8-2 Terms Used In System Activity Display (continued)**

Term	Meaning
<b>Agent Activity</b>	
On ACD	The number of agents currently on ACD calls.
Ready	The number of agents currently ready. Those agents are not on any type of call and are available to receive ACD calls.
Make Busy	The number of logged in agents that are in MAKE BUSY. These agents receive no ACD calls.
DND	The number of logged in agents that have DO NOT DISTURB activated. These agents receive no ACD or non-ACD calls.
On Non ACD	The number of agents currently involved in incoming non-ACD calls or agent originated calls.
Logged On	The number of agents currently logged into ACD.
Logged Off	The number of agents currently NOT logged in to the ACD system.
<b>Summary - Last Hour</b>	
Entered	The total number of ACD calls that have entered a path in the ACD system over the past hour.
Time To Ans	The average time before a call is answered by an agent.
SVC Level	The summary - from all paths in the system - of the path service level statistics. The first field shows the number of calls answered within the paths' service time; the second is the percentage of calls answered outside of the service time.
Ans By Agt	The number of calls received over the past hour that have been answered by an agent and the average duration of the calls.
Ans By Agt	The percentage of all ACD calls that entered over the past hour that were answered by an agent.
On Non ACD	The number of calls over the past hour that were either incoming non-ACD calls answered by an agent or agent originated calls, and the average duration of these calls.
Abandoned	The number of callers who abandoned before being answered by an agent and the average time a caller waited before abandoning.
Page 2 of 2	

## Monitoring Paths

### Accessing the Path Summary Display

- 8.5 To access the Path Summary display, the user presses the PATHS softkey at the system level. The system responds by asking for a path access code. After the user enters a valid path access code, the screen changes to the Path Summary display shown in Figure 8-3.

4:13 PM 20-JAN-97		PATH SUMMARY		NITEL ACD Telemarketer						
PATH NUM	PATH NAME	ACCESS CODE	NUM CALLS WTG	CONN TO AGTS	SUMMARY - LAST HOUR					
					ENTERED	ANSWERED	ABANDONED	INTERFLOWED		
1	SALES	4444	-	-	10	4 00:08	1 10% 00:04	5 00:19		
2	SERVICE	4445	-	-	-	- :	- - :	- :		
1-PROGRAMMING					2-STATISTICS		3-ACTIVITY		4-	5-CANCEL
6-		7-PRINT		8-		9-		0-		

Figure 8-3 Path Summary Display

### Path Summary Display

The system displays path information on four forms. Entry into the Path monitor sub-level begins with the Path Summary display (Figure 8-3) which shows activity on the requested path.

The chosen path is the top entry on the display. If the user presses the RETURN key without first entering a path number, the lowest number path is displayed.

Entering an illegal number, such as an unprogrammed or out-of-range path, results in an error message on the work-line. The system offers the CANCEL softkey. The **<Return>** key also cancels the error message.

Table 8-3 describes the fields in the Path Summary Display.

<b>Table 8-3 Terms Used In Path Summary Display</b>	
<b>Term</b>	<b>Meaning</b>
<b>Current Information</b>	
Path Num	The path number. Paths are displayed in ascending order by path numbers (range = 1 - 50).
Path Name	The name of the path as programmed in CDE.
Access Code	The access code of the path (1 - 5 digits).
Num Calls Wtg	The number of ACD calls which originated on this path that are currently queued against any of the groups programmed in the path.
Conn To Agts	The number of callers from this path currently talking to agents of any of the groups programmed in this path.
<b>Summary - Last Hour</b>	
Entered	The number of calls that entered this path. See Note below.
Answered	The first entry is the number of calls answered by all groups in the path. The second entry is the average time to answer for those calls.
Abandoned	The first entry is the number of callers who abandoned while waiting for a group in this path. The second entry is the percentage of the calls offered that this represents, and the third is the average time a caller waited before abandoning.
Interflowed	The first entry is the number of callers who interflowed out of this path. The second entry is the average time to interflow for those calls.

**Note:** The Entered field on the Path Summary shows the number of times a call entered the path. In cases where a path interflows to itself or to another path, each call that interflows increments the entered count. Therefore, one call into the system may have "entered" many times.

### **Path Summary Softkeys**

From this point, softkeys allow the supervisor to access detailed information in three categories: CDE programmed data, statistics gathered on the path over the past hour, and current path activity.

The softkeys for the Path Summary monitor are described in Table 8-4. The displays that result from pressing the PROGRAMMING, STATISTICS and ACTIVITY softkeys are discussed in the following paragraphs.

<b>Table 8-4 Path Summary Display Softkeys</b>	
<b>Softkey Label</b>	<b>Function</b>
PROGRAMMING	Displays the Path Programmed Data form that shows information programmed in CDE for the path currently bracketed by the work-line arrows. The Path Programmed Data form is described on page 8-10.
STATISTICS	Accesses the Path Statistics form that contains a statistical overview of activity on the path at the present moment, as well as a summary of statistics collected over the past hour.
ACTIVITY	Accesses the Path Activity display that contains a frequently updated view of current traffic on the selected path including waiting callers and idle agents. The Path Activity form is described on page 8-14.
CANCEL	Returns the user to the System level display. Paragraph 8.4 describes the System level form.
PRINT	Prints the Path Summary form on the printer used for the ACD Monitor Print directed printout.
PAGE UP	If there are more path summary lines than can fit on the screen, this key accesses paths with lower Path numbers than displayed on the screen. This key only appears when an upward scroll can occur.
PAGE DOWN	If there are more path summary lines than can fit on the screen, this key accesses paths with higher Path numbers than displayed on the screen. This key only appears when a downward scroll can occur.

**Path Programmed Data Display**

Pressing the PROGRAMMING softkey in the Path Summary window displays the Path Programmed Data form (Figure 8-4). This display contains the data entered during CDE for the selected path.

The fields in this display are described in Table 8-5.

4:14 PM 20-JAN-97		<b>PATH PROGRAMMED DATA</b>		NITEL ACD Telenarketer	
<b>PRIMARY :</b> 1 <b>OVERFLOW 1 :</b> <b>OVERFLOW 2 :</b> <b>OVERFLOW 3 :</b> <b>INTERFLOW :</b> 1500 <b>IntInterfl :</b> no <b>TENANT :</b>		<b>RAD 1 ID:</b> 1100 <b>MUSIC:</b> system <b>START:</b> 00:03			
<b>I/F ENABLD:</b> yes <b>O/F to I/F:</b> yes <b>I/F TIME :</b> 00:30		<b>RAD 2 ID:</b> <b>MUSIC:</b> <b>START:</b> :			
<b>SUC TIME :</b> 03:00 <b>ANS DELAY :</b> 00:01 <b>PRIORITY :</b> 99		<b>RAD 3 ID:</b> <b>MUSIC:</b> <b>START:</b> :			
		<b>RAD 4 ID:</b> <b>MUSIC:</b> <b>START:</b> :			
<b>PATH 1 4444 SALES</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-	8-	9-NEXT	0-RETURN	

**Figure 8-4 Path Programmed Data Display**

<b>Table 8-5 Terms Used In Path Programmed Data Display</b>	
<b>Term</b>	<b>Meaning</b>
Primary	Number and name of the primary agent group for the path.
Overflow 1	Number and name of the first overflow group for the path.
Overflow 2	Number and name of the second overflow group for the path.
Overflow 3	Number and name of the third overflow group for the path.
Interflow	Access code of the interflow point.
I/F Enabl d	Yes in this field indicates that interflow is activated.
O/F to I/F	Yes in this field indicates that the call can flow from the last programmed overflow to the Interflow point before the Interflow Timeout occurs. The I/F ENABLD flag must also be "YES".
I/F Time	The time, in minutes and seconds, before the call interflows out of the ACD system. Applies only if the flag I/F ENABLD is "YES".
SVC Time	The time, in minutes and seconds, that defines the service level for this path. The time to answer of all calls answered on this path is compared to SVC Time and the results are shown as the service level data in the monitors.
Ans Delay	The time, in minutes and seconds, that the caller is allowed to hear ringback before the ACD system attempts to answer the call.
Priority	The priority of the ACD call. The highest priority is 1 and the lowest is 99.
<b>RADs 1 through 4</b>	
ID	The access code and name of the Recorded Announcement Device (RAD) hunt group.
Music	The access code of the music source to be used after the recording has been heard. If no access code has been programmed then 'system' music is displayed. When no system music is available this field is blank.
Start	The time, in minutes and seconds, that a caller is connected to the specified recording after entering this path.

Table 8-6 describes the softkeys presented with the Path Programmed Data display.

Table 8-6 Path Programmed Data Softkeys	
Softkey Label	Function
CANCEL	Returns the user to the System level display. See paragraph 8.4 for details of the System level.
PREVIOUS	This softkey is present if paths exist that have lower access codes than the path being displayed. Pressing this key displays the programmed data for the next lower ACD Path.
NEXT	This softkey is present if paths exist that have higher access codes than the path being displayed. Pressing this key displays the programmed data for the next higher ACD Path.
RETURN	The RETURN key (either hard-key or softkey) returns the user to the PATH SUMMARY form. See paragraph 8.5 for details of the Path Summary form.

**Path Statistics Display**

Pressing the STATISTICS softkey in the Path Summary window displays the Path Statistics display (Figure 8-5). This display provides a statistical overview of the path's performance for the current instant, as well as a summary of activity over the past hour. Table 8-7 describes the fields in this display.

4:39 PM 20-JAN-97		<b>PATH STATISTICS</b>			NITEL ACD Telemarketer		
GRP GROUP NUM NAME		NUM AGT /REC	NUM CALLS MTG	CONN AGT /REC	SUMMARY - LAST HOUR		
					OFFERED	ANSWERED	OVERFLOWED
<b>PRIMARY :</b>	1 MAIN	1	-	-	36 100%	11 91%	8 22%
<b>OVERFLOW 1:</b>	2 OVERFLOW	1	-	-	8 22%	1 8%	6 75%
<b>OVERFLOW 2:</b>	3	-	-	-	6 16%	-	-
<b>OVERFLOW 3:</b>		-	-	-	-	-	<b>N/A</b>
<b>RECORDNG 1:</b>	1 ACD1	1	-	-	<b>SUC LEVEL&lt;: 12 100 %</b>		
<b>RECORDNG 2:</b>		-	-	-	<b>SUC LEVEL&gt;: - -</b>		
<b>RECORDNG 3:</b>		-	-	-			
<b>RECORDNG 4:</b>		-	-	-			
<b>PATH</b>		1	4444	SALES			
1-	2-	3-	4-	5-CANCEL			
6-	7-PRINT	8-	9-NEXT	0-RETURN			

**Figure 8-5 Path Statistics Display**



<b>Table 8-7 Terms Used In Path Statistics Display</b>	
<b>Term</b>	<b>Meaning</b>
<b>Programmed Information And Current Summary</b>	
Group Num	The agent group number or recording group number, as assigned during CDE.
Group Name	The name of the agent group or recording group, as assigned during CDE.
Num Agt/Rec	The number of logged in agents in the group. If a recording group, the number of RAD ports assigned to the group.
Num Calls Wtg	The number of calls from this path waiting for the agent group or recording group.
Conn Agt/Rec	The number of callers from this path currently talking to agents in the group, or listening to RADs.
<b>Summary - Last Hour</b>	
Offered	The number of ACD calls offered to the group from this path, and the percentage of the total calls offered on the path that this number represents.
Answered	The number of ACD calls answered by agents in the group from this path only, and the percentage of the total calls answered on the path that this number represents.
Overflowed	The number of calls that overflowed from the group to the next overflow point on this path, and the percentage of calls offered to the group which overflowed. Calls which overflowed to interflow are not counted.
SVC Level<	The number of ACD calls answered on the path within the path's service time, and the percentage of calls answered that this number represents.
SVC Level>	The number of ACD calls answered on the path outside the path's service time and the percentage of calls answered that this number represents.

Table 8-8 describes the softkeys that are presented with the Path Statistics Display.

<b>Table 8-8 Path Statistics Display Softkeys</b>	
<b>Softkey Label</b>	<b>Function</b>
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 8.4.
PRINT	Prints the Path Statistics at the printer used for the ACD Summary Reports directed printout.
PREVIOUS	This softkey is present if paths exist that have lower access codes than the path being displayed. Pressing this key displays the statistics for the next lower ACD Path.
NEXT	This softkey is present if paths exist that have higher access codes than the path being displayed. Pressing this key displays the statistics for the next higher ACD Path.
RETURN	The Return key (either hardkey or softkey) returns the user to the Path Summary form. See page 8-7 for a description of the Path Summary form.

**Path Activity Display**

Pressing the ACTIVITY softkey in the Path Summary window presents the Path Activity display (Figure 8-6). This display provides a continuously updated picture of the traffic on a given path. Information relates to the callers queued for the path as well as any ready agents waiting for calls from the path.

4:37 PM		20-JAN-97		PATH ACTIVITY		NITEL ACD Telemarketer	
<b>PRIMARY MAIN</b>		<b>O/F1 OVERFLOW</b>		<b>O/F2</b>		<b>O/F3</b>	
Caller No. Utg		Caller No. Utg					
T	4	4	00:05	T	4	1	00:05
T	3	3	00:07	<hr/>			
T	1	2	00:19				
	1103	1	00:19				
<hr/>							
<b>PATH 1 4444 SALES</b>							
1-		2-		3-		4-	
6-		7-		8-		9-NEXT	
						0-RETURN	

**Figure 8-6 Path Activity Display**

All queued callers that originated on the specified path are identified by trunk number or extension access code. The longest waiting caller for each group is at the bottom of the list, immediately above the horizontal line.

As the number of waiting calls increases or decreases, the information is updated in that group's column, and the horizontal bar below the first call in the queue shifts up or down the screen accordingly. The screen displays up to twelve waiting calls.

When there are no calls waiting in a queue, the sub-title under the group name changes to AGENT name and READY time. As many as 12 idle agents can be listed below the horizontal bar, beginning with the longest idle agent.

Overflow groups that were programmed but have no callers waiting and no agents logged in to a group, are identified by the group name in the column title. If an overflow group was not assigned during the customer data entry, the column remains blank.

The fields in the display are defined in Table 8-9.

Table 8-10 describes the softkeys presented with the Path Activity Display.

<b>Term</b>	<b>Meaning</b>
Caller	The trunk number or extension access code of the caller waiting for the agent group.
No.	The queue position of the caller waiting for this group. The numbers are ordered but may not be sequential if there are callers waiting for this group who originated on another path. These other callers hold a queue position for this group but are shown on the activity display for their path.
Wtg	The time, in minutes and seconds, that the caller has been waiting in this path.
Agent	The name of a ready agent in the displayed agent group. If the agent does not have a name assigned in CDE, the agent's ID appears.
Ready	The time, in minutes and seconds, that the agent has been available and ready to accept an ACD call.

<b>Softkey Label</b>	<b>Function</b>
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 8.4.
PREVIOUS	This softkey is present if paths exist that have lower access codes than the path being displayed. Pressing this key displays the activity for the next lower ACD Path.
NEXT	This softkey is present if paths exist that have higher access codes than the path being displayed. Pressing this key displays the activity for the next higher ACD Path.
RETURN	The Return key (either hardkey or softkey) returns the user to the Path Summary form. See page 8-7 for a description of the Path Summary form.

## Monitoring Groups

### Overview

- 8.6 Four forms provide information about the agent groups programmed in the ACD system and are described as follows:
- Group Summary form displays important information about each agent group.
  - Group Programmed Data form displays the data programmed in CDE for each agent group.
  - Group Statistics form provides statistics gathered on the agent group over the past hour and since the beginning of the shift.
  - Group Activity form shows current caller and agent activity for the group.

**Accessing the Agent Group Summary Form**

To access the Agent Group Summary form, the user presses the AGENT GROUPS softkey at the system level. The system responds by asking for an agent group number. After the user enters a valid agent group number, the screen changes to the display shown in Figure 8-7. The chosen group is at the top of the screen. The fields on the display are defined in Table 8-11.

Pressing the RETURN key without first entering a group number also produces the display shown in Figure 8-7. In this case, however, groups are listed in ascending order by group number.

Entering an unprogrammed or out-of-range group number results in an error message on the work-line. The CANCEL key allows deletion of the entry. Alternately, the user may press the RETURN hardkey and re-enter a group number.

4:41 PM 20-JAN-97		<b>GROUP SUMMARY</b>			NITEL ACD Telemarketer				
GRP NUM	GROUP NAME	AGENTS LOGGED ON	NUM CALLS MTG	ON ACD CALLS	SUMMARY - LAST HOUR				
					OFFERED	ANSWERED	OVERFLOWED		
1	MAIN	1	-	-	36	11 03:22	8		
2	OVERFLOW	1	-	-	8	1 00:29	-		
3		-	-	-	6	- :	-		
1-PROGRAMMING					2-STATISTICS		3-ACTIVITY	4-	5-CANCEL
6-		7-PRINT		8-	9-	0-			

**Figure 8-7 Agent Group Summary Form**

<b>Table 8-11 Terms Used In Group Summary Display</b>	
<b>Term</b>	<b>Meaning</b>
Grp Num	The agent group's number.
Group Name	The agent group's name as programmed in CDE.
<b>Current State</b>	
AGENTSLOGGEDON	The number of agents in this group currently logged on.
NUM CALLS WTG	The number of ACD calls queued up, from all paths, for agents in this group.
ON ACD CALLS	The number of agents in this group currently active on ACD calls.
<b>Summary - Last Hour</b>	
OFFERED	The number of incoming ACD calls offered to the group from all paths.
ANSWERED	The number of incoming ACD calls answered by this group and the average duration of those calls.
OVERFLOWED	The number of calls that overflowed in any path while queued for this group as the primary group.

### Agent Group Monitor Softkeys

Softkeys which appear in the Agent Group Monitor window allow the supervisor to access detailed information on CDE programmed data, statistics gathered on the agent group over the past hour, and current group activity. The softkeys for the Agent Group monitor are described in Table 8-12. The displays that result from pressing the PROGRAMMING, STATISTICS and ACTIVITY softkeys are discussed in greater detail in the following paragraphs.

<b>Softkey Label</b>	<b>Function</b>
PROGRAMMING	Displays the Group Programmed Data form that shows the programmed CDE entries for the agent group currently bracketed by the work line arrows.
STATISTICS	Accesses the Group Statistics form that provides a statistical overview of the group's activity at the present moment, and a summary of statistics collected over the past hour. See page 8-20 for details.
ACTIVITY	Accesses the Group Activity display that shows a frequently updated view of current status of the agent group. See page 8-22.
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 8.4.
PRINT	Starts a dump of this form to the printer used for the ACD Monitor Print.
PAGE UP	Accesses groups with lower numbers if there are more agent group summary lines than fit on one screen. The key appears only when an upward scroll can occur.
PAGE DOWN	Accesses groups with higher numbers if there are more agent group summary lines than fit on one screen. The key appears only when a downward scroll can occur.

### Group Programmed Data Display

Pressing the PROGRAMMING softkey in the Agent Group Monitor window displays the Group Programmed Data form (Figure 8-8). This form displays the data programmed during CDE for the agent group.

Table 8-13 describes the softkeys presented with the Group Programmed Data Display. Table 8-14 describes the fields in the display.

4:43 PM 20-JAN-97		<b>GROUP PROGRAMMED DATA</b>		NITEL ACD Telemarketer	
<b>SUPER NAME:</b> SUPER <b>SUPER ID :</b> 510			<b>THRESHLD 1:</b> 03:00 <b>THRESHLD 2:</b> 06:00		
<b>SEN'R NAME:</b> SUPER <b>SEN'R ID :</b> 500			<b>O/F TIMER :</b> 09:00 <b>AFTER WORK:</b> 00:15		
<b>PROG AGTS :</b> 4					
<b>GROUP 1 MAIN</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-	8-	9-NEXT	0-RETURN	

**Figure 8-8 Group Programmed Data Display**

<b>Softkey Label</b>	<b>Function</b>
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 8.4.
PREVIOUS	This softkey is present if groups exist that have lower access codes than the group being displayed. Pressing this key displays the activity for the next lower ACD Group.
NEXT	This softkey is present if groups exist that have higher access codes than the group being displayed. Pressing this key displays the activity for the next higher ACD Group.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Group Summary form. Refer to paragraph 8.6 for details.

Table 8-14 Terms Used In Group Programmed Data Display	
Term	Meaning
Super Name	The name of the group's supervisor, as programmed in CDE.
Super ID	The ID number of the group's supervisor, as programmed in CDE.
Sen'r Name	The name of the group's senior supervisor, as programmed in CDE.
Sen'r ID	The ID number of the group's senior supervisor, as programmed in CDE.
Prog Agts	The number of agents programmed as members of this group.
Threshld 1	The first threshold time for a call waiting for the group. This time is used to indicate the overall caller load on the group. The flashing icons on agent and supervisory sets are updated to reflect the status derived from this time.
Threshld 2	The second threshold time for a call waiting for the group. This time is used to indicate the caller load on the group. The flashing icons on agent and supervisory sets are updated to reflect the status derived from this time.
O/F Timer	The setting of the 'overflow' timer for the group.
After Work	The setting of the after work timer for the group.

**Group Statistics Display**

Pressing the STATISTICS softkey in the Agent Group Monitor window displays the Group Statistics form (Figure 8-9). This display provides a summary of statistics collected over the past hour and shift totals for the group.

4:46 PM 20-JAN-97		<b>GROUP STATISTICS</b>		NITEL ACD Telenarketer	
LAST HOUR			SHIFT TOTAL from 8:00		
ANS by GRP :	11	03:22	ANS by GRP :	11	03:22
OFFERED :	36		OFFERED :	36	
OVERFLOWED :	8		OVERFLOWED :	8	
LOGINS :	3		LOGINS :	3	
AUG AGENTS :	1		AUG AGENTS :	-	
MAKE BUSY :	2	00:38	MAKE BUSY :	2	00:38
OUTGOING :	2	00:49	OUTGOING :	2	00:49
NON ACD :	3	00:03	NON ACD :	8	00:03
<b>GROUP 1 MAIN</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-PRINT	8-	9-NEXT	0-RETURN	

**Figure 8-9 Group Statistics Display**



Table 8-15 describes the softkeys presented with the Group Statistics display.  
Table 8-16 describes the fields in the display.

<b>Softkey Label</b>	<b>Function</b>
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 8.4.
PRINT	Starts a dump of this form to the printer used for the ACD Monitor Print.
PREVIOUS	This softkey is present if groups exist that have lower access codes than the group being displayed. Pressing this key displays the statistics for the next lower ACD Group.
NEXT	This softkey is present if groups exist that have higher access codes than the group being displayed. Pressing this key displays the statistics for the next higher ACD Group.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Group Summary form. Refer to page 8-15 for details

<b>Term</b>	<b>Meaning</b>
Ans By Grp	The number of ACD calls answered by the group both over the time interval and the average duration of those calls.
Offered	The number of ACD calls offered to the group from all paths over the time interval.
Overflowed	The number of calls that have overflowed from this group over the time interval when this group is the primary group of a path.
Logins	The number of logins which occurred in this group over the time interval.
Avg Agents	The average number of agents logged in over the time interval. The calculation is an average of counts taken every time the queue status indicators are updated.
Make Busy	The number of times members of this group went into Make Busy during the interval, and the average duration of the Make Busy states.
Outgoing	The number, and average duration, of external outgoing calls made by the agents in this group over the time interval.
Non ACD	The number, and average duration, of internal calls made and non-ACD calls received by group members over the time interval.

**Note:** The field definitions in Table 8-16 apply to the LAST HOUR field and the SHIFT TOTAL field. The shift start time is programmed from the System Maintenance facility via the ACD\_REPORTS softkey. The group shift buffers are cleared at that time.

**Group Activity Display**

Pressing the ACTIVITY softkey in the Agent Group Monitor window displays the Group Activity form (Figure 8-10). This form provides a continuously updated display of the activity of callers and agents within the group.

4:53 PM 20-JAN-97		<b>GROUP ACTIVITY</b>		NITEL ACD Telemarketer	
<b>CALLER ACTIVITY</b>			<b>AGENT ACTIVITY</b>		
CALLS WTG: 3 LONGST WTG: 00:09 UNDER 1ST : 3 BETWEEN : - AFTER 2ND : - OVERFLOWED: -  HELD CALLS: 1			LOGGED ON : 1 READY : - AFTER WORK: - ON ACD : 1 MAKE BUSY : - DND : - ON non ACD: -		
<b>GROUP 2 OVERFLOW</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-	8-PREVIOUS	9-NEXT	0-RETURN	

**Figure 8-10 Group Activity Display**

Table 8-17 describes the softkeys presented with the Group Activity display. Table 8-18 defines the fields in the display.

Softkey Label	Function
CANCEL	Returns the user to the system level. Details of the system level are provided in paragraph 8.4.
PREVIOUS	This softkey is present when a group exists that has a lower access codes than the group being displayed. Pressing this key displays the activity for the next lower ACD Group.
NEXT	This softkey is present when a group exists that has a higher access codes than the group being displayed. Pressing this key displays the activity for the next higher ACD Group.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Group Summary form. Refer to page 8-15 for details.

<b>Table 8-18 Terms Used In Group Activity Display</b>	
<b>Term</b>	<b>Meaning</b>
<b>Caller Activity</b>	
Calls Wtg	The number of callers queued for this group from all paths.
Longst Wtg	The waiting time of the longest waiting caller queued for this group.
Under 1st	The number of callers queued for this group who have been waiting for less than the first threshold timer value.
Between	The number of callers queued for this group who have been waiting for longer than the first threshold timer value but less than the second threshold timer value.
After 2nd	The number of callers queued for this group who have been waiting for longer than the second threshold timer value.
Overflowed	The number of callers queued for this group who have overflowed to the next group in the path, if programmed to do so.
Held Calls	The number of callers on hard hold by agents in this group.
<b>Agent Activity</b>	
Logged On	The number of agents currently logged on in this group.
Ready	The number of agents in this group ready to take an ACD call.
After Work	The number of agents who have just completed an ACD call, and their After Work Timer is active.
On ACD	The number of agents currently on incoming ACD calls.
Make Busy	The number of agents currently in Make Busy.
DND	The number of agents with Do Not Disturb activated.
On Non ACD	The number of agents currently on non-ACD incoming calls or outgoing calls.

## Monitoring Agents

### Overview

- 8.7 The following forms provide information about the agents who are currently logged in, and who are programmed in the ACD system. The primary form within the agent sub-level is the Agent Summary. This form provides an overview of current activity as well as a synopsis of statistical data collected over the past hour.

A set of softkeys in this form provides access to additional forms which supply detailed information about the agent and the agent's performance. These softkeys are described in Table 8-19.

The additional forms are:

- Agent Programmed Data display showing all information entered during customer data entry that affects this agent.
- Agent Statistics display with details of the agent's performance over the last hour, and a comparison between the performance of this agent and the entire group.
- Agent Activity display showing the current status of any specified agent.

These forms are described in detail below.

### Accessing the Agent Summary Form

After pressing the AGENTS softkey at the system level, the user is prompted to enter an agent ID number. After entering a valid agent ID, the user is presented with the screen shown in Figure 8-11.

Information about the chosen agent appears at the top. Table 8-20 defines the fields in the display.

Pressing **<Return>** without first entering an agent ID number also displays the screen shown in Figure 8-11, but in this case the agents are listed by group number and ID number from lowest to highest ID number as programmed during customer data entry.

Entering an unprogrammed or out-of-range agent number results in an error message on the work-line. The CANCEL key allows deletion of the entry. Alternately, the user may press **<Return>** and re-enter an agent number.

4:57 PM 20-JAN-97		<b>AGENT SUMMARY</b>		NITEL ACD Telemarketer				
GRP AGENT NUM NAME	AGENT ID	ACD STATE	SUMMARY - LAST HOUR					
			ANSWERED	CHP to	GRP AV	NONACD	MAKE BUSY	
> 1 AGENT 1	501	ready	12 02:06	75%	82%	4 00:12	4 00:22 <	
1-PROGRAMMING			2-STATISTICS		3-ACTIVITY		4-	5-CANCEL
6-			7-PRINT		8-		9-	0-

**Figure 8-11 Agent Summary Form Display**

Softkey Label	Function
PROGRAMMING	Displays the Agent Programmed Data form showing the CDE information for the agent currently bracketed by the work-line arrows. Refer to page 8-27 for a description of the Agent Programmed Data form.
STATISTICS	Accesses the Agent Statistics form that shows a statistical overview of the agent's activity at the present moment, and a summary of statistics collected over the past hour. Page 8-28 describes the Statistical Overview.
ACTIVITY	Accesses the Agent Activity display containing a frequently updated view of current status of the agent and the agent's set. See page 8-30 for a description of this form.
CANCEL	Returns the user to the system level. Refer to paragraph 8.4 for details.
PRINT	Prints the Agent Summary form at the printer used for the ACD Monitor Print.
PAGE UP	Accesses agents with lower group numbers if there are more agent summary lines than fit on one screen. The key appears only when an upward scroll can occur.
PAGE DOWN	Accesses agents with higher group numbers if there are more agent summary lines than fit on one screen. The key appears only when a downward scroll can occur.

**Table 8-20 Terms Used In Agent Summary Display**

Term	Meaning
<b>Agent Name And Current State</b>	
Grp Num	The agent group's number.
Agent Name	The agent's name as programmed in CDE.
Agent ID	The agent's ID or access code.
ACD State	<p>The current state of the agent as one of the following states:</p> <p>acd            on an ACD call  dnd            the agent's set has Do Not Disturb active  hold           agent has an ACD caller on hold  makeb        agent has entered the make busy state  nonacd       agent is on a non-ACD or outgoing call  ready        agent is ready to accept an ACD call  afterw        agent is in after work timer state</p>
<b>Summary - Last Hour</b>	
Answered	The number and average duration of incoming ACD calls answered by this agent.
Cmp To Grp Av	<p>The first percentage is the ratio of the number of incoming ACD calls answered by this agent compared to the total number of calls answered by the group over the same period. Agents logging on and off during the period affect the numbers.</p> <p>The second percentage is the ratio of the average call duration of incoming ACD calls answered by this agent compared to the average duration of calls answered by the group over the same period.</p>
Non ACD	The number and average duration of non-ACD calls received and placed by the agent.
Make Busy	The number and average duration of times the agent was in a Make Busy state.

### Agent Programmed Data Form

Pressing the PROGRAMMING softkey displays the Agent Programmed Data form (Figure 8-12). This form displays the data programmed for the agent by the installer during customer data entry. The softkeys and fields on the form are described in Table 8-21 and Table 8-22.

5:15 PM 20-JAN-97		<b>AGENT PROGRAMMED DATA</b>		NITEL ACD Telemarketer	
<b>GROUP NAME:</b> MAIN <b>GROUP NUM :</b> 1		<b>SUPER NAME:</b> SUPER <b>SUPER ID :</b> 510  <b>SEN'R NAME:</b> SUPER <b>SEN'R ID :</b> 500		<b>AGENT COS :</b> 40	
<b>AGENT 501 AGENT 1</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-	8-	9-NEXT	0-RETURN	

**Figure 8-12 Agent Programmed Data Display**

Table 8-21 Agent Programmed Data Softkey Labels	
Softkey Label	Function
CANCEL	Returns the user to the System level. Refer to paragraph 8.4 for details.
PREVIOUS	Displays the previous agent sorted by group number and agent ID. The softkey appears only when there is a preceding agent.
NEXT	Displays the next agent sorted by group number and agent ID. The softkey appears only when there is an additional agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Agent Summary form described on page 8-24.

**Table 8-22 Terms Used In Agent Programmed Data Display**

Term	Meaning
Group Name	The group's name as programmed in CDE.
Group Num	The group's number as programmed in CDE.
Super Name	The name of the agent's supervisor.
Super ID	The ID of the agent's supervisor.
Sen'r Name	The name of the agent's senior supervisor.
Sen'r ID	The ID of the agent's senior supervisor.
Agent COS	The Class of Service assigned to the agent. When this agent logs in, this COS is transferred to the set, overwriting the set's existing COS.

**Agent Statistics Form**

Pressing the STATISTICS softkey displays the Agent Statistics form (Figure 8-13). This form provides a summary of agent performance statistics collected over the past hour.

Table 8-23 describes the softkeys presented with the Agent Statistics display. Table 8-24 defines the fields on the display.

5:18 PM 20-JAN-97		<b>AGENT STATISTICS</b>		NITEL ACD Telemarketer	
<b>AGENT DATA</b>		<b>LAST HOUR</b>		<b>SHIFT TOTAL</b>	
<b>GROUP NAME:</b> MAIN <b>GROUP NUM :</b> 1  <b>LOGIN TIME:</b> 16:03:17 <b>LOGIN DATE:</b> 20-JAN-97 <b>SHIFT DUR :</b> 01:14:59		<b>ANS by AGT:</b> 10 02:21 <b>READY :</b> 10 02:05 <b>MAKE BUSY :</b> 4 00:22 <b>OUTGOING :</b> 1 00:43 <b>ON non ACD:</b> 3 00:01		<b>ANS by AGT:</b> 12 02:06	
<b>AGENT 501 AGENT 1</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-PRINT	8-	9-NEXT	0-RETURN	

**Figure 8-13 Agent Statistics Display**



<b>Table 8-23 Agent Statistics Form Softkey Labels</b>	
<b>Softkey Label</b>	<b>Function</b>
CANCEL	Returns the user to the system level. Refer to paragraph 8.4 for details.
PRINT	Prints this form to the printer used for the ACD Monitor print.
PREVIOUS	Displays the statistics, sorted by group number and agent ID, for the previous agent. The softkey appears only when there is a preceding agent.
NEXT	Displays the statistics, sorted by group number and agent ID, for the next agent. The softkey appears only when there is an additional agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Agent Summary form described on page 8-24.

<b>Table 8-24 Terms Used In Agent Statistics Display</b>	
<b>Term</b>	<b>Meaning</b>
<b>Agent Data</b>	
Group Name	The group's name as programmed in CDE.
Group Num	The group's number as programmed in CDE.
Login Time	The time the agent logged into ACD.
Login Date	The date the agent logged into ACD.
Shift Dur	The duration of the agent's shift since login.
<b>Last Hour</b>	
Ans By Agt	The number and average duration of incoming ACD calls answered by the agent.
Ready	The number of times the agent became ready to receive an ACD call and the average duration of each ready interval.
Make Busy	The number of times the agent was in Make Busy and the average time spent in the Make Busy state over the past hour.
Outgoing	The number of external outgoing calls placed by the agent and the average duration of these calls.
On Non ACD	The number of non-ACD calls handled by the agent. It includes both incoming and outgoing external calls, and all internal calls.
<b>Shift Total</b>	
Ans By Agt	The number and average duration of incoming ACD calls answered by the agent since login.

**Agent Activity Form**

Pressing the ACTIVITY softkey displays the Agent Activity form (Figure 8-14). This form provides a continuously updated display of ACD information for the agent, plus status for the agent's set and the current call.

Table 8-25 describes the softkeys presented with the Agent Activity display. Table 8-26 defines the fields on the display.

5:21 PM 20-JAN-97		<b>AGENT ACTIVITY</b>		NITEL ACD Telemarketer	
<b>GROUP NAME:</b> MAIN <b>GROUP NUM :</b> 1  <b>SET EXT :</b> 1501 <b>SET LOC'N :</b> 1 5 1 0		<b>SET STATE :</b> idle  <b>CALL TYPE :</b> -  <b>DND :</b> no <b>AUTO ANSWR:</b> no <b>ENGLISH :</b> yes		<b>ACD STATE :</b> ready <b>MAKE BUSY :</b> no :  <b>ON ACD :</b> no <b>TIMEonACD :</b> : <b>ACD ONHOLD:</b> no  <b>CALLER :</b> - <b>ORIG PATH :</b> - <b>PRIME GRP :</b> -	
<b>AGENT 501 AGENT 1</b>					
1-	2-	3-	4-	5-CANCEL	
6-	7-	8-	9-NEXT	0-RETURN	

**Figure 8-14 Agent Activity Display**

**Table 8-25 Agent Activity Form Softkey Labels**

Softkey Label	Function
CANCEL	Returns the user to the system level. Refer to paragraph 8.4 for details.
PREVIOUS	Displays the statistics for the previous agent, sorted by group number and agent ID. The softkey appears only when there is a preceding agent.
NEXT	Displays the statistics for the next agent, sorted by group number and agent ID. The softkey appears only when there is an additional agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Agent Summary form described on page 8-24.

Table 8-26 Terms Used In Agent Activity Display	
Term	Meaning
Group Name	The group's eight character name as programmed in CDE.
Group Num	The group's number as programmed in CDE.
Set Ext	The extension number of the <i>SUPERSET</i> telephone where the agent is logged in.
Set Loc'n	The physical location (bay, slot, circuit, and sub circuit) of the <i>SUPERSET</i> telephone where the agent is logged in.
Set State	The software state of the set where the agent is logged in. The state will be one of: busy            busyout        campon dialing        dnd            held idle            intoACD       locked talking        paging        reorder ringback      ringing        select suspend
Call Type	The type of call the agent is on, either two-party or conference.
DND	Indicates that the agent's set is in Do Not Disturb mode.
Auto Answr	Indicates that the set will automatically answer ACD calls to the set without agent intervention.
English	Indicates the language of the set: English or French.
ACD State	Indicates the type of activity the agent is involved in: suspnd - agent is ending a call locked - agent's set has been left off-hook acd - on an ACD call dnd - the agent's set has Do Not Disturb active hold - agent has an ACD caller on hold makeb - agent has entered the make busy state nonACD - agent is on a non-ACD call ready - agent is ready to accept an ACD call afterw - agent is in afterwork time
Make Busy	Indicates that the agent is in a Make Busy state.
On ACD	The agent is on an ACD call.
Time On ACD	The duration of the current call.
ACD On Hold	The agent has an ACD caller on hard hold.
Caller	The trunk number or extension access code of the caller waiting for the agent group. Note that callers waiting for a group may not have originated on this path.
Orig Path	Indicates the path access code where this call originated.
Prime Grp	Indicates whether this agent's group is the prime group of the caller's path.



# 9 Programming

## General

9.1 The *ACD TELEMARKETER* Applications Package is a software option that must be purchased.

Customer Data Entry for the *ACD TELEMARKETER* Applications Package involves specifying the routing of incoming ACD calls by entering data into a network of programming forms. Information in the forms is linked through a series of indexes and pointers. The forms which make up the ACD network are:

- System Options (CDE Form 04)
- Feature Access Codes (CDE Form 02)
- ACD Agent Groups (CDE Form 39)
- Agent Group Subform (CDE Subform 39)
- ACD Keys Template (CDE Form 38)
- COS Define (CDE Form 03)
- ACD Supervisors (CDE Form 40)
- ACD Paths (CDE Form 41)
- Hunt Groups (CDE Form 17)
- Call Rerouting (CDE Form 19).

## System Options Form

9.2 Figure 9-1 shows a portion of the System Options form containing the options related to the *ACD TELEMARKETER* feature package. Options are changed by editing the Status field.

SYSTEM OPTIONS (DISPLAYING ENABLED FIELDS)	STATUS	OPTION NUM
AUTOMATIC CALL DISTRIBUTION	ENABLED	41
ACD SILENT MONITORING	ENABLED	42
ACD SILENT MONITORING BEEPS	ENABLED	43
ACD REPORTS	ENABLED	44
:	:	:
:	:	:
:	:	:
MAXIMUM ACD AGENTS	ENABLED	104

CC0669

**Figure 9-1 System Options Form (CDE Form 04)**

Four fields on the System Options form control operation of the *ACD TELEMARKETER* feature. Table 9-1 defines the function of each field.

<b>Option</b>	<b>Function</b>
ACD Silent Monitoring (Option 42)	By setting this option to Enabled, a supervisor can dial a programmed feature access code to monitor ACD calls.
ACD Silent Monitoring Beeps (Option 43)	Set this option to Enabled if agents are to be notified when monitoring is in progress.
ACD Reports (Option 44)	Setting this option to Enabled changes the format of the SMDR records to that required by the <i>ACD TELEMARKETER</i> Reporting Package. For additional information, refer to the <i>Station Message Detail Recording Practice</i> .
Maximum ACD Agents (Option 104). See Note.	Setting this option to Enabled allows access to the programming forms related to ACD.

**Note:** System Option 104 (Maximum ACD Agents) must be set to Enabled before programming the remaining CDE forms related to ACD.

## ACD Agent Groups Form

9.3 ACD agent groups are included with the *ACD TELEMARKETER* option you purchase. Figure 9-2 shows a blank ACD Agent Groups Form (CDE Form 39). All Agents must be a member of an ACD Agent Group. The system accommodates a maximum of 50 ACD agent groups. Each group must contain a minimum of one Agent. The maximum number of agents per group is 99. The ACD system supports 100 agents logged in at the same time.

The ACD system allows CDE programming of 999 ACD positions in any combination of agents, supervisors, and senior supervisors.

The agent information entered on this form is the agent name, agent ID, and COS. The agent ID is a 1- to 5-digit access code that allows the agent to log onto the ACD system. Entries in the Agent Group form are sorted by this ID number. The ID is associated with an agent, not a particular extension, so that any *SUPERSET 410* or *SUPERSET 420* telephone that the agent uses reflects that agent's name and ID.

The ordering of agents on the form has no effect upon the agent selection algorithm.

The fields on the ACD Agent Group form contain customer-defined data. Table 9-2 defines the contents of each field.

6:45 PM 9-JAN-97 alarm status = NO ALARM

[ ACD GRP: 1 MITEL ]		AGENT ID	AGENT NAME	COS
>		1901	P.MOSHER	1
		1902	J.THOMAS	1
		1901	P.MOSHER	1
1-ACD GRP NAME	2-FIND ID	3-ADD	4-TOP	5-BOTTOM
6-QUIT	7-AGENT GROUP	8-DELETE	9-OPTIONS	0-

**Figure 9-2 ACD Agent Groups Form (CDE Form 39)**

Table 9-2 ACD Agent Group Fields	
Field	Meaning
ACD GRP	The group number and name.
ACD GROUP NUMBER	A programmable field containing a 1- or 2-digit number in the range 1 through 50 that identifies an ACD group.
ACD GROUP NAME	An optional field that allows the customer to assign a name to the agent group. A maximum of eight characters may be entered. The agent group must contain at least one member before the ACD GRP NAME softkey is presented.
AGENT ID	A programmable field of up to five digits for assigning an identification number to an ACD agent. This access code must not conflict with any other access code in the database. An ID number can exist in only one Agent Group. Agents requiring access to more than one group must be given a different ID for each group. Entries on the ACD Agent Groups form are sorted numerically by Agent ID.
AGENT NAME	An optional field that assigns a name to an agent ID. The agent name is carried to the set where the agent logs on. The name may be up to 10 characters but cannot begin with an asterisk (*). The same conditions apply to position names as well as to set names.
COS	The Class of Service number of this agent. Range is 1 to 50.

### Agent Groups Subform

9.4 The Agent Groups subform (CDE Subform 39) shown in Figure 9-3 is accessed through the OPTIONS key. This form can only be accessed if there is at least one agent in the agent group. Entries are changed by editing the status column. Four fields on the ACD Agent Group subform contain customer-defined data. The contents of each field are defined in Table 9-3.

6:47 PM 9-JAN-97 alarm status = NO ALARM

[ ACD.GRP: 1 MITEL ] OPTIONS				STATUS	
>	Afterwork Timer (MM:SS)			0:00	<
	Overflow Timer (MM:SS)			9:00	
	First Status Threshold (MM:SS)			3:00	
	Second Status Threshold (MM:SS)			6:00	
Afterwork Timer (MM:SS)				0:00	
1-	2-	3-	4-	5-	
6-QUIT	7-	8-	9-	0-	

**Figure 9-3 ACD Agent Groups Subform (CDE Subform 39)**

**Table 9-3 ACD Agent Groups Subform Fields**

Field	Meaning
Afterwork Timer	An optional field to give the agent a wrap-up time following ACD calls. Timer range is 0 seconds to 15 minutes. Default is 0 (no delay time before the next call is presented at the set). Campons and callbacks do not take precedence over a waiting ACD call. Refer to the following paragraphs for additional information.
Overflow Timer	An optional field used to specify the maximum time a waiting ACD call remains in this group before overflowing. The overflow destination is defined in the ACD Path Form (CDE Form 41). The value entered can range from 0 seconds to 54 minutes. Default value is 9 minutes. Refer to the following paragraphs for additional information.

Page 1 of 2



<b>Table 9-3 ACD Agent Groups Subform Fields (continued)</b>	
<b>Field</b>	<b>Meaning</b>
First Status Threshold	This time (range is 0 seconds to 54 minutes) must be less than the time specified in the Second Status Threshold. The field defaults to 3 minutes. Refer to the following paragraphs for additional information.
Second Status Threshold	This timer (range 0 seconds to 54 minutes) must be greater than the time specified in the First Status Threshold field. The field defaults to 6 minutes. Refer to the following paragraphs for additional information.
Page 2 of 2	

### **Afterwork Timer**

In many ACD situations, the agent may require some time after each ACD call to complete paperwork before accepting the next call. This subform allows programming of a wrap-up time (Afterwork Timer). The Afterwork Timer prevents an ACD call from being presented to this set until the specified time has expired. It is recommended that the Afterwork Timer be programmed.

### **Overflow Timer**

The Overflow Timer is programmed for each agent group in the ACD system. It specifies how long an ACD call will wait in the queue for this group before being overflowed. Overflowed calls remain in this group's queue, but are added to a queue for another agent group, to increase the chances of the call being delivered to an agent. The time selected in this form specifies the maximum time a call can wait to be answered before the call overflows. The default time is 9 minutes.

If the system predicts that a call will remain unanswered before the time out period, the system ignores the specified timer and forces an immediate overflow. The two conditions described below can cause this forced overflow:

- If the agent group form specifies an overflow time of three minutes and no agents are logged on in this group, the system ignores the timer and forces an immediate overflow to avoid an unnecessary delay to the caller.
- The second case of overflowing before the specified time out arises during an overloaded state. The system performs an algorithm for an overloaded condition each time a new caller arrives for an agent group or when the status of an agent changes. Either event causes an overflow if excess callers are waiting for the agent group.

### **Threshold Timers**

When an ACD call is initially routed to the agent group and there are no idle agents available, any appearance of the Queue Status indicator for this group reflects a call waiting in queue. This Queue Status indicator is driven by the threshold timers assigned to this form.

The First and Second Status Threshold timers provide a visual indication on all Queue Status keys of the current work load condition for this agent group.

## ACD Keys Template Form

### Assigning ACD Keys

- 9.5 The ACD Keys Template Form (CDE Form 38) allows global programming of *SUPERSET 410* or *SUPERSET 420* telephones that require common ACD feature keys.

Global programming is still possible when these telephone sets are mixed in an ACD system, in spite of the varying number of line select keys available on the *SUPERSET 410* or *SUPERSET 420* telephones. The installer must ensure that the ACD Keys Template is programmed to allow global programming.

When the set types are mixed, the installer must assign ACD keys within keys two to six on the *SUPERSET 410*, and within keys two to twelve on the *SUPERSET 420* telephone. If more than six keys are assigned to a *SUPERSET 410*, then the template is invalid, and the agent cannot login until the template is programmed correctly.

Assigning ACD keys in this way is especially important because *SUPERSET 410* or *SUPERSET 420* ACD positions will be unable to log in when ACD keys are assigned to keys not physically present on these sets.

### ACD Key Configurations

Up to three different function key configurations may be programmed for each ACD position: agent, supervisor, and senior supervisor (for a total of nine key templates). In each COS, however, only one template for one position type can be enabled.

The template assigned to a user is portable to any *SUPERSET 410* or *SUPERSET 420* telephone (with the exception of the *SUPERSET 410*, which cannot be used by a supervisor or senior supervisor). When the user logs out, the previous template is restored on the set.

**Note:** Line appearance keys assigned in the Stations/*SUPERSET* Telephones form have priority over ACD feature keys when a position logs in.

### Assigning Non-ACD Keys

Non-ACD feature keys and speed dial numbers can also be programmed in this form. Pressing the NON-ACD KEYS softkey provides access to a sub-level of softkeys through which the user can select non-ACD feature keys for the template.

**Note:** Line appearance keys assigned in the Stations/*SUPERSET* Telephones form have priority over non-ACD feature keys when a position logs in.

### ACD Keys Template Display

When selected during CDE, the ACD Keys Template form defaults to display the first Agent Keys template. The title line contains the type of template and the template number.

11:22 AM 10-JAN-97		alarm status = NO ALARM			
AGENT [1]	KEY	TYPE	SPEED DIAL NUMBER	PRIVATE	
>	02	Speed Dial	5551212	<	
	03	Speed Dial			
	04	Speed Dial			
	05	Speed Dial			
	06	Speed Dial			
	07	Speed Dial			
	08	Speed Dial			
	09	Speed Dial			
	10	Speed Dial			
	11	Speed Dial			
	12	Speed Dial			
	13	Speed Dial			
	02	Speed Dial		5551212	
1-AGENT		2-SUPERVISOR	3-SENIOR	4-ACD KEYS	5-
6-QUIT		7-KEY	8-DELETE	9-NON-ACD KEYS	0-

**Figure 9-4 Agent Keys Template (CDE Form 38)**

Several fields on the Keys Template form contain customer-defined data. Table 9-4 defines the contents of each field.

Table 9-4 ACD Keys Template Fields	
Field	Meaning
POSITION	Selectable field defining one of the following positions: Agent, Supervisor, or Senior Supervisor.
TEMPLATE NUMBER	Selectable field containing one digit in the range of 1 through 3, indicating the number of the template being programmed.
KEY	A system generated field listing set key numbers in the range of 02 to 15.
TYPE	A programmable field defining the function of the set keys. Available options are dependant upon the position selected: <b>Agent</b> - Speed Dial, Make Busy and Queue Status. <b>Supervisor</b> - Speed Dial, Queue Status, Agent Status and Shift. <b>Senior Supervisor</b> - Speed Dial, Queue Status and Shift.

Table 9-4 ACD Keys Template Fields (continued)	
Field	Meaning
SPEED DIAL NUMBER	A programmable field used to save frequently dialed numbers. This field can also be used to program feature access codes. A maximum of 25 digits may be entered in this field. This field can only be accessed if the "Type" field for that line is "Speed Dial".
PRIVATE	A programmable field used to control the display of speed dial numbers on the set. When privacy is enabled the set does not display the speed call entry. If privacy is not requested, the speed dial entry appears on the set during dialing, or when a display key is requested.

Page 2 of 2

### COS Define

9.6 The COS options shown in the COS Define form in Figure 9-5 apply to the ACD feature. These ACD options are explained below. The COS options for ACD are described below in Table 9-5.

12:33 PM 6-JAN-97 alarm status = NO ALARM

[COS: 1 ] OPTION (DISPLAYING ENABLED )	STATUS	OPTION NUM
Recording Failure to Hangup Timer 1-255 seconds	30	404
Display CLASS Name	ENABLED	503
PBX SUPERSET Telephone - Automatic Outgoing Line	ENABLED	604
SUPERSET Telephone - Enhanced Answering Position	ENABLED	606
SUPERSET Tel. - Guest An Template (0-3)(DN)	0	610
> ACD - Agent Template (0-3, 0=disable)	1	650
ACD - Supervisor Template (0-3, 0=disable)	0	651
ACD - Senior Supervisor Template (0-3, 0=disable)	0	652
Key Set/Sub Att - Call Hold Notify Timer 0-600 s	60	681
Limited Wait For Dial Tone	ENABLED	802
SMDR - Drop Calls < n Digits ( 0..11, disable=0 )	0	803
DTRX Herald Text Select ( 1-4 )	1	905
ACD - Agent Template (0-3, 0=disable)	1	650

1-	2-COPY COS	3-COS NUMBER	4-TOP	5-BOTTOM
6-QUIT	7-OPTION NUM	8-SHOW DISABLE	9-COS NAME	0-

Figure 9-5 COS Define Form (CDE Form 03)

Table 9-5 COS Options Fields

Field	Meaning
Recording Failure To Hang up Timer (COS option 404)	The values 1 through 255 are valid. Default is 30 seconds. Set this timer to a value greater than the clear-down time of the recording groups whose members have this COS. Assigning this COS timer to a recording group ensures that, in the case of the system hanging up on a RAD, the RAD eventually goes on-hook in the specified time. If it does not, the RAD is taken out of service.
<i>SUPERSET</i> - Auto Answer (COS option 600)	Set to ENABLED if the agent set is to be placed in Auto Answer mode immediately upon login. Set to DISABLED if agent is not using Auto Answer or if the agent is to manually place set in Auto Answer mode after login. Default is DISABLED.
<i>SUPERSET</i> - Headset Operation (COS option 612)	Set to ENABLED if the agent's <i>SUPERSET</i> telephone is to be used with a headset rather than a handset. Set to DISABLED if the telephone is to be used only with a handset. Default is DISABLED.
ACD - Template (Agent, Supervisor, and Senior Supervisor) (COS options 650 through 652)	Enter the template number of the appropriate ACD Keys Template Form. Three template configurations are available for each ACD position. By default they are disabled, but appear in the enabled list. All three COS options are mutually exclusive. For example, if an agent is selected, the supervisor or senior supervisor templates cannot be selected from the same COS.
ACD - Agent Always Auto-Answer (COS option 653)	When enabled in the agent COS, this option causes Auto-Answer to be activated as soon as the agent logs on. Default is DISABLED.
ACD - Display Path Always (COS option 654)	When enabled, the ACD path name is displayed on the <i>SUPERSET</i> telephone for the duration of the call. The ACD path name is programmed in Form 41. If disabled, the ACD access code is presented. Default is DISABLED.
ACD - Allow Continuous Monitor of Agent (COS option 655)	When enabled in the supervisory set COS, this option allows a supervisory set to monitor an agent set continuously, regardless of the call state. Default is DISABLED.
Loop Start Trunk to ACD path connect (COS option 812)	When enabled, this option allows a loop start trunk to connect to an ACD path.

### ACD Supervisors

9.7 The ACD Supervisors form shown in Figure 9-6 records the ID number, name, and COS of each ACD Supervisor. System option 104, "Maximum ACD Agents" must be enabled before this, or any ACD related CDE form, can be accessed.

The senior supervisor's name is carried to the set when the supervisor logs on. The ID codes assigned in this form are used in the log on procedure and may also be used as an access code to call the user.

6:50 PM 9-JAN-97		alarm status = NO ALARM		
ACD SENIOR SUPERVISOR ID CODES		NAME		COS
1903				1
█1903				1
1-FIND GROUP	2-FIND SUPER	3-ADD	4-TOP	5-BOTTOM
6-QUIT	7-	8-DELETE	9-EXPAND	0-

**Figure 9-6 ACD Supervisor Form (CDE Form 40)**

The ACD Supervisor form contains three programmable fields which must be defined by the customer. Table 9-6 defines each field.

Table 9-6 ACD Supervisor Form Fields	
Field	Meaning
ID Code	A programmable field used to record senior supervisor identification numbers. Their IDs are used when logging on and as an access code to call the user. The IDs are 1-5 digit entries, and must not conflict with other access codes already assigned in the system. The form is sorted numerically by ID.
Name	An optional programmable field used to record the supervisor's name. This name appears on any <i>SUPERSET 420</i> telephone that the user logs onto. The same conditions that apply to supervisor names apply to set names.
COS	A 2-digit field specifying the Class Of Service number of this senior supervisor. The range is 1 through 50.

Pressing the EXPAND softkey displays the subform shown in Figure 9-7. This form lists all groups reporting to the supervisor.

### ACD Supervisor Subform

9.8 This subform is sorted by SUPER ID. If the entry has no supervisor assigned, the field is sorted by group number. When more than one group is assigned to the same supervisor, the entries reporting to the supervisor are sorted by group number.

6:52 PM 9-JAN-97 alarm status = NO ALARM

GRPS OF SENIOR 1903	SUPER ID	SUPER NAME	COS
>			<
1-FIND GROUP		2-FIND SUPER	3-ADD
6-QUIT		7-	8-
		4-	5-
		9-	0-

**Figure 9-7 ACD Supervisor Subform (CDE Subform 40)**

Table 9-7 defines the fields of the ACD Supervisor Subform.

Table 9-7 ACD Supervisor Subform Fields	
Field	Meaning
Heading	A system generated field that lists the senior supervisor's name and ID. The name defaults to "SENIOR" if no name was programmed in the ACD Supervisor Form.
GRPS OF	A programmable field used to define groups reporting to the senior supervisor. If the selected group reports directly to the senior supervisor, pressing the ENTER key causes the display NO SUPER to appear in the SUPER ID field. The remaining two fields are blank.
SUPER ID	A programmable field used to assign a supervisor to the agent group.
SUPER NAME	An optional field of up to ten characters. The entry cannot begin with an asterisk (*). The same conditions that apply to supervisor names apply to set names.
COS	A 2-digit field that specifies the Class of Service number of this supervisor. The range is 1 through 50.

## ACD Paths

9.9 The ACD path is the major element of the ACD structure. Each path contains all the information necessary to carry an incoming call through the ACD system. Paths specify the resources used, the order in which the resources are encountered, and the timing of the steps through the path. Up to 99 paths may be assigned in the system. Figure 9-8 contains the ACD Path form. Table 9-8 describes the fields on the ACD Path form.

### ACD Path Programming

For a path to function, the primary agent group and the path access code must be programmed. Few restrictions exist on path programming. An agent group, for example, could be the primary group of three paths and the first overflow group of two other paths. The same applies to recording groups and the alternate music sources. The result is that a path can be custom tailored to the call being handled.

Each path is given a priority ranging from 1 through 99 (priority 1 being the highest priority). ACD calls entering a high priority path are serviced before calls that entered a path with a lower priority. This feature improves cost efficiency by routing to higher priority paths those trunks that incur additional expenses: for example, long distance calls or WATS.

All devices have unrestricted access to ACD paths except Loop Start CO trunks and Loop Start DISA trunks (if located on a CO Trunk card). Loop start trunks can be prevented from entering ACD through the use of the "Loop Start Trunk to ACD Path Connect" option (COS option 812). By default, this option is disabled, so by default loop start trunks may not enter ACD.

```

8:22 PM  9-JAN-97                                alarm status = NO ALARM

```

[ ACD PATH: 1 ]		OPTIONS	STATUS		
>	Access Code For This ACD Path			72	<
	Primary ACD Agent Group			1	
	Delay For Ringback (MM:SS)			00:03	
	Recording 1 : Start Time (MM:SS)				
	Access Code				
	Music Source Following				
	Recording 2 : Start Time (MM:SS)				
	Access Code				
	Music Source Following				
	Recording 3 : Start Time (MM:SS)				
	Access Code				
	Music Source Following				
Access Code For This ACD Path			72		
1-	2-	3-PATH NAME	4-TOP	5-BOTTOM	
6-QUIT	7-ACD PATH	8-DELETE PATH	9-	0-	

Figure 9-8 ACD Path Form (CDE Form 41)



Table 9-8 ACD Path Form Fields

Field	Meaning
ACD Path	Header field identifying the ACD path by name and number.
ACD Path Number	Programmable field containing a one or two digit number in the range of 1 through 99.
ACD Path Name	Programmable field identifying the path by name. This field cannot be accessed until the path has been assigned an access code and a primary agent group. The path name can be up to 8 characters and cannot begin with an asterisk (*).
Access Code for this ACD Path	Programmable field containing the access code for the path. This code can be used as a destination in the Non-Dial-In Trunks form (CDE Form 14) and the Call Rerouting Table (CDE Form 19), as an Automated Attendant defined destination in the Hunt Groups form (CDE Form 17), as an interflow point in another path definition, and as a call forwarding point for a <i>SUPERSET</i> telephone or station. This code allows the ACD system to tie in to existing routing schemes such as the DID trunk routing points. The connection checking between a device and ACD paths only prevents access to ACD paths.
Primary ACD Agent Group	A programmable field containing a one or two digit number in the range of 1 through 50. This entry indicates which group first receives the ACD calls on this path. The agent group must be assigned in the ACD Agent Groups Form before it can be entered in this field.
Delay For Ringback	A programmable field specifying a timer value in the range of 00:01 through 54:00. The default value is 3 seconds (00:03). All other timers connected with the ACD functions start after the Delay for Ringback timer has expired.
Recording 1: Start Time	A programmable field specifying when Recording 1 begins relative to when the caller enters the ACD system. This timer is initiated after the Delay For Ringback timer has expired. The range of the Recording 1 Start Time is 00:00 through 54:00. A 3-second minimum delay exists between recordings. During this time, the caller listens to the system or to the alternate music source.
Recording 1: Access Code	This programmable field is mandatory if a Recording Start Time has been specified. The access code entered in this field is defined in the Hunt Groups CDE form. The default value is: no recordings.
Recording 1: Music Source Following	A programmable field that directs the call to the ONS port supplying music after listening to the recording. The default music source is the system music, if provided, or silence. The entry in this field cannot have keyline or multi-call line appearances. The music source is a permanently off-hook ONS port that connects the caller in a listen-only conference. An alternate music source must be an FCC Part 68 and Industry Canada approved Recorded Announcement Device that is connected either to an ONS circuit, or to another source that is connected to an ONS circuit through an FCC Part 68 and Industry Canada approved "voice coupler" or "voice connecting arrangement".

**Table 9-8 ACD Path Form Fields (continued)**

<b>Field</b>	<b>Meaning</b>
Recording 2 through 4	The recording fields must be edited in sequence. For example, Recording 3 Start Time cannot be edited unless Recording 1 and Recording 2 are both assigned.
Overflow 1 Agent Group	A programmable field specifying the ID of the agent group that receives overflow calls. ACD calls that overflow to this group also retain their position for the Primary Agent Group. The default value for this field is no overflow.
Overflow 2 Agent Group	A programmable field specifying the ID of the second agent group that receives overflow calls. Callers waiting for this group remain in the queue for the primary and first overflow groups. An Overflow 1 agent group must be assigned before the Overflow 2 field can be accessed. The default value is no overflow.
Overflow 3 Agent Group	A programmable field specifying the ID of the third agent group that receives overflow calls. Callers waiting for this group remain in the queue for the primary, first, and second overflow groups. The default value is NO. Overflow 1 and Overflow 2 agent groups must be assigned before the Overflow 3 field can be accessed. The default value is no overflow.
Interflow Enabled	Entering YES in this field allows the waiting ACD call to exit ACD and call a specified number. If this field is enabled, the call interflows to the Interflow Point Access Code. Default for the Interflow Enabled field is NO.
Interflow Timeout	A programmable field that specifies when the waiting ACD call should leave the ACD system and be routed to the interflow point. The timer range is 00:01 through 54:00. The default value of this field is the maximum time of 54 minutes. Programming a value in this field ensures that unanswered calls do not remain in the system after the caller disconnects. This can occur with loop start trunks if the CO fails to send a disconnect to the SX-200 ML PABX. This timer also ensures that all calls are handled within a maximum time interval. Call handling may involve routing the caller elsewhere or dropping the call.
Interflow Point Access Code	A programmable field that contains the directory number of the interflow device. Valid interflow points are LDNs, stations, sets, consoles, night bells, ACD paths, station/set hunt groups, UCD agent hunt groups, Automated Attendant hunt groups, system speed call numbers or DROP CALL. If an access code is programmed, the DROP CALL softkey is provided.
Allow Overflow to Interflow Point before Timeout	Entering YES in this field allows an overflow to the interflow point before the Interflow Timeout.
Priority	A programmable field used to set the priority of the ACD Path. Priority range is 1 through 99 (1 is the highest priority). The field default is 99. Calls waiting for an Agent Group are serviced according to the path priority. Expensive trunks should be routed to a path with a high priority.

Table 9-8 ACD Path Form Fields (continued)	
Field	Meaning
Service Time	A programmable field used to establish a standard time to answer. The supervisor can use the Service Time to monitor the performance of agents answering calls on the path. The service time is programmable in the range 00:00 through 54:00. The path level of service is calculated by comparing the actual time to answer with the programmed service level.
Tenant	When a tenant number is assigned to the ACD Path, DID and TIE trunks (which dial into the ACD path directly) follow the routing for this tenant as defined in Form 19 - Call Rerouting Table. Enter a valid number (1 to 25). The default is blank (no tenant).
Immediately Interflow when no Agents Logged In	When set to YES, and "Interflow Enabled" is set to YES, then any callers dialing in to an ACD path will interflow immediately when no agents are logged in. This interflow takes place regardless of the status of the "Interflow Timeout," or the option "Allow Overflow to Interflow Point Before Timeout," or the "Interflow Point Access Code" having a value of DROP CALL. The default is NO (immediate interflow is not desired).

Page 3 of 3

### Call Routing

9.10 Dial-in trunks to ACD Paths may also be rerouted as defined in this form. The ACD Path is assigned a tenant number in Form 41. Figure 9-9 contains the Call Rerouting table. Table 9-9 describes the fields applicable to ACD.

```

11:10 AM 10-JAN-97                                alarm status = NO ALARM
  
```

[TENANT : 1 ]	TYPE OF CALL	DAY	N1	N2
>	Station Dial 0 Routing Priority Dial 0 Routing DID Recall Points On Busy DID Recall Points On No Answer DID Routing For Calls Into This Tenant DID Illegal # Intercept For This Tenant DID Vacant Number Routing For This Tenant DID Attendant Access Night Points Non-Dial-In Trunks Alternate Recall Points Dial-In Tie Recall Points On Busy Dial-In Tie Recall Points On No Answer Dial-In Tie Routing For Calls Into This Tenant	1801	1801	1801 <
	Station Dial 0 Routing	1801	1801	1801
1-	2-TENANT NAME	3-	4-TOP	5-BOTTOM
6-QUIT	7-TENANT	8-DELETE	9-	0-

Figure 9-9 Call Rerouting Table (CDE Form 19)

## Field Descriptions

The header line displays the tenant group number being programmed.

**DAY:** This field designates a directory number for each type of call in Day service mode.

**N1:** This field specifies the extension to which calls are routed during Night1 Service Mode. If this field is blank, the call reroutes to the extension specified in the DAY field.

**N2:** This field specifies the extension number to which calls are routed during Night2 Service Mode. If this field is blank, the call does not reroute.

Table 9-9 Call Rerouting Options	
Field	Meaning
DID Routing for Calls into this Tenant	All DID calls normally routed to extensions are routed here to allow screening of DID calls. This rerouting option is based on the destination tenant.
Dial-In Tie Routing for Calls into this Tenant	All Dial-In Tie calls normally routed to extensions are routed here to allow screening of Dial-In Tie calls. This rerouting option is based on the destination tenant.

## Softkeys

**TENANT:** This softkey selects a tenant group. Pressing the TENANT softkey displays the ENTER TENANT GROUP NUM: prompt on the command line. The selection is completed by entering a valid number (1 to 25). The system displays the selected tenant group number on the header line.

**TENANT NAME:** Allows a name to be programmed for the selected tenant group. The name may have a maximum of eight characters.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

## ACD Recording Hunt Groups

- 9.11 Recorded announcements are given to ACD callers while they wait for an idle agent. ACD callers entering the SX-200 ML PABX on a path hear ringback until the "Delay for Ringback" timer specified in the Path form has expired. At this point, the system attempts to provide an agent. If all agents are busy and the caller must wait, the call is routed to a recording.

The recordings are provided by hunt groups of regular ONS ports. When a RAD answers, the system collects all callers waiting for the RAD and creates a listen-only conference. The hunting type of the group determines how callers select an idle RAD. When all recordings in a group are busy, the caller camps on to the recording group and waits for a free recording. All calls which are waiting are brought into a listen-only conference with the first available recording.

At the end of the recorded message, the callers are routed to the music source defined in the Path form. If no alternate music source is defined, the caller is given system music or silence.

The ONS ports cannot have keyline or multi-call line appearances. After changing the Hunt Groups form to a Recording Hunt Group, the Hunt Groups form changes to that shown in Figure 9-10. Fields described below but not shown in Figure 9-10 are accessed through the OPTIONS softkey. Table 9-10 describes the fields on the Hunt Groups form.

9:06 PM 9-JAN-97 alarm status = MAJOR

[GRP 1: ____][TERM][STN/SET ]	EXT NUM	BAY	SLT	CCT	COMMENTS
	1801	01	08	01	
	1801	01	08	01	
1-GROUP TYPE	2-CIRCULAR	3-INSERT		4-OPTIONS	5-HUNT GROUP
6-QUIT	7-ACCESS CODE	8-DELETE		9-EXT NUM	0-

**Figure 9-10 Hunt Groups Form (CDE Form 17)**

<b>Table 9-10 Hunt Groups Form Fields</b>	
<b>Field</b>	<b>Meaning</b>
Hunt Group Number	A programmable two-digit field in the range of 1 through 99. ACD has only 99 hunt groups.
Access Code	A programmable field that contains the access code for the hunt group. This code must be a unique number that does not conflict with the system numbering plan. The entry in this field must be copied to the ACD Path form as an access code to the recordings.
Type Of Search	Enter CIRCULAR or TERMINAL to specify the desired hunting method: <b>CIRCULAR:</b> Hunting begins at the extension following the extension to which the previous call was completed, and hunts through all extensions in the hunt group in the programmed sequence. <b>TERMINAL:</b> Hunting always starts at the first extension programmed in the hunt group and terminates at the first idle extension. Figure 9-10 shows an entry of TERM in this field.
Group Type	Softkey that allows the user to specify a RECORDING group type. Figure 9-10 shows the entry RECORD in this field on the form.
Extension Number	Extension number of the ONS port(s) connected to a recording. The maximum number of entries in this field is 50.
Bay/Slot/Circuit	A system generated field that is displayed after entering the extension number of the ONS port.
Message Length	A programmable field that defines the length of the recorded announcement. The range is one second to four minutes. Default entry is ten seconds. This timer value determines whether the SX-200 ML PABX or the RAD ends the recording. If the RAD is to hang up, set the Message Length at least three seconds longer than the actual recording length. This field allows for timing and message delays. In addition, the flash hook time programmed into the PABX affects how soon the PABX sees the RAD going on hook after the RAD hangs up.
Name	A programmable field that identifies the hunt group by name. This field cannot be accessed before the Hunt Group Access code has been assigned.

# Appendix A

## ACD Messages

The error messages that may appear during programming of the ACD forms are listed, and explained, in the following table:

<b>Table A-1 Programming Error Messages</b>	
<b>Error Message</b>	<b>Meaning</b>
ACD agent group XX already assigned to a supervisor	The ACD agent group which has been edited or inserted into the sub-form is already programmed under some other supervisor.
Agent group XX has already been assigned elsewhere in this path	The selected overflow agent group or primary ACD agent group is a duplicate of an agent group already specified in this path.
ACD agent group XX not assigned to a supervisor	ACD group XX, requested by the FIND GROUP key, cannot be displayed because it has not yet been assigned to a supervisor.
ACD groups under XXXXX must first be deleted	This senior supervisor cannot be deleted from the first-level form by the DELETE key because there are ACD groups defined under this senior supervisor.
ACD keys template for this COS is invalid or disabled	An attempt was made to change the COS of a logged in ACD position. The new COS has the ACD keys template disabled or assigned to another ACD position.
ACD Monitor Print in progress	System found at least one printer - job has been started.
ACD position active - Cannot make template change	An attempt was made to disable or change a template COS option while the ACD position is logged in.
AGENT STATUS not allowed when multiple QUEUE STATUS keys are programmed	The user is attempting to program an agent status key when there is more than one queue status key programmed for the template. Only one is allowed if an agent status key is present.
Agent XXXXX does not exist	The ID entered for the FIND ID key does not exist in the database.
Agent XXXXX is on line and cannot be deleted	The DELETE key cannot be used on an agent that is on line.
Alternate music sources cannot have keyline or multi-call line appearances.	Music sources cannot be line appearances.
An ACD position is currently logged in at the SUPERSET	The user is attempting to delete a SUPERSET where an ACD position is logged in. The ACD position must first log out.
An agent's set's prime line cannot have any appearances on other sets	An ACD agent is logged in at the given SUPERSET; therefore, line appearances of that SUPERSET cannot be programmed into the data base.
Page 1 of 4	

**Table A-1 Programming Error Messages (continued)**

<b>Error Message</b>	<b>Meaning</b>
Attempting to remove an Agent Group that has calls waiting	This message is displayed if the Primary Agent group or the Overflow agent groups have calls waiting from the path, and the user is attempting to change or delete the agent group or the path.
Attempting to remove a Music Source that is currently in use	Someone is listening to the music source so it cannot be removed. This message can occur when attempting to change or delete a music source, deleting the recorded music source, or deleting the path.
Attempting to remove a Recording that is currently in use	Someone is using the Recording hunt group so it cannot be removed. This message can occur when attempting to change or delete the recording or when deleting the path.
Beep (audible sound from terminal)	The speed dial number entered is too long (maximum 25 digits).
Beeping (repeating audible sounds from terminal)	Too many digits or characters have been entered in the selected field.
Cannot change agent information at time of reassignment	The user attempted to reassign an agent to the current ACD Group AND change agent name or COS at the same time. These two steps (reassign and change) must be done separately.
Cannot change COS of an ACD position whose set is currently in use	The ACD position being updated is logged in and is using the set. To change the COS, the ACD position must be logged off or logged in to an idle set.
Cannot delete last agent while callers are waiting on ACD group XX	The user attempted to delete the last agent from ACD group XX, and thereby delete group XX itself. ACD calls waiting for group XX, so the deletion cannot be permitted at this time.
Cannot disable option when ACD programming is present	The user is attempting to disable System Option 41 (Automatic Call Distribution) when ACD programming is present in one or all of CDE Forms 38, 39, 40 and 41.
Checking status of printer(s)	The system is checking the status of the printer(s) - during this time the CANCEL softkey may be pressed to return the user to the previous level.
Delete ACD Group XX from ACD SUPERVISORS form before deleting last agent	The user attempted to delete the last agent from group XX, which would delete group XX itself. Group XX is referenced in the ACD SUPERVISORS form, so it must be deleted from that form first. Then the user is allowed to delete the last agent, which deletes the group.
Delete ACD Group XX from ACD PATH YY before deleting last agent	The user attempted to delete the last agent from group XX, which would delete group XX itself. Group XX is referenced in the ACD PATH form, for path number YY, so it must be deleted from that form first. Then the user is allowed to delete the last agent, which deletes the group.
Extension XXXXX can't have a key template and BLF module at the same time	A key template cannot be enabled in the COS because the extension has an associated PKM. The two features are mutually exclusive.



<b>Table A-1 Programming Error Messages (continued)</b>	
<b>Error Message</b>	<b>Meaning</b>
First Status Threshold must be start time of previous recording	Adjust the interflow timeout as indicated.
Form access disallowed, enable Automatic Call Distribution System Option	The user is attempting to program an ACD CDE form when ACD is not enabled in the system. System Option 104 (Maximum ACD Agents) must be enabled.
Invalid Interflow Point	The access code entered for the Interflow point is non-existent or illegal. Legal points are: LDNs, stations, sets, consoles, ACD paths, station/set hunt groups, UCD agent hunt groups, nightbells, and system speedcall numbers.
Key number XX has MAKE BUSY programmed	Each agent template can only have one MAKE BUSY key programmed.
Key number XX has QUEUE STATUS programmed	An agent keys template can have only one QUEUE STATUS key programmed. A supervisor keys template can only have one QUEUE STATUS key programmed if there is already one AGENT STATUS key programmed.
Key number XX has SHIFT programmed	Each template can have only one SHIFT key programmed.
Maximum Afterwork Timer is 15:00	The user entered a time that is out of range.
Maximum Time is 54:00	The user entered a time that is out of range for Start Time or for one of the thresholds.
Multiple QUEUE STATUS keys not allowed with AGENT STATUS keys	The user is attempting to program more than one queue status key for a template that has an agent status key programmed. Only one is allowed if an agent status key is present.
Must delete all appearances of XX from CALL REROUTING TABLE	This ACD path cannot be deleted because its access code is defined in the CALL REROUTING table (Form 19).
Must delete all appearances of XX from answer points in NON-DIAL-IN trunks	This ACD path cannot be deleted because its access code is defined in the NON-DIAL-IN TRUNKS form (Form 14).
No printer(s) defined for ACD	No printers for ACD have been programmed in CDE Form 34.
ONS Port access code XXXXX does not exist	The access code entered for the Alternate Music Source Between Recordings, or Music Source Following a Recording is non-existent or illegal.
Option XXX conflicts with this option	Only one of the ACD COS options (ACD agent, ACD supervisor, ACD senior supervisor) can be enabled in the same COS.
Option 104 must be enabled	Option 104 (Maximum ACD Agents) must be enabled before this option can be enabled.
Option 44 must be disabled	The user is attempting to disable Option 104 (Maximum ACD Agents)
Printer(s) busy, try later	Printers are programmed, but the system cannot find at least one that is idle.

Table A-1 Programming Error Messages (continued)

Error Message	Meaning
Recording access code XXXXX does not exist	The access code entered for a recording is non-existent or illegal. The code must be for a recording hunt group.
Start time of a recording must be < Interflow Timeout	Adjust the start time as indicated.
Start time of a recording must be < start time of the next recording	Adjust the recording start times as indicated.
Start time of recording must be > start time of the previous recording	Adjust the recording start times as indicated.
Supervisor XXXX does not exist	A supervisor with ID XXXX cannot be displayed, as requested via the FIND SUPER key, because this access code has not been assigned to a supervisor.
Template number must be in range (1-3)	The template number is out of range.
The access code XXXX is already assigned	In the paths form the error is: The access code entered for this ACD Path is already assigned elsewhere in the database. In the supervisor form the error is: The ID code which has been inserted into the main form or the subform already exists in the database. (It could exist as another supervisor, senior supervisor, agent, or any other device.) In the subform this error occurs if the user specified a different name or COS than was previously entered for this supervisor.
The agent group XX does not exist	The specified agent group does not exist in the data base.
The maximum ACD positions allowed are already assigned	The maximum number of ACD positions, including all position types, is 999.
The SUPERSET has a BLF module and cannot have a COS with a key template	The COS being assigned to the set has a key template enabled.
The value XX is outside valid range for ACD agent group (1-50)	The given value is outside the valid range.
XXXXX is an ACD agent ID	The specified supervisor ID from FIND SUPER is an ACD agent.
XXXXX is an ACD supervisor	The user has entered a supervisor ID for FIND AGENT.

# Appendix B



## Planner Sheets

This appendix contains additional blank copies of the agent group planner and the path planner sheets. Each sheet contains instructions on its use. For additional information on configuring an ACD system, turn to Section 4 of this practice.

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## ACD TELEMARKETER AGENT GROUP PLANNER

ACD TELEMARKETER

<b>1</b>	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____																																								
<b>2</b>	Paths using this group: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Path #</th> <th style="width: 90%;">Overflow # (P,1,2,3)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Path #	Overflow # (P,1,2,3)									Paths using this group: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Path #</th> <th style="width: 90%;">Overflow # (P,1,2,3)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Path #	Overflow # (P,1,2,3)									Paths using this group: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Path #</th> <th style="width: 90%;">Overflow # (P,1,2,3)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Path #	Overflow # (P,1,2,3)									Paths using this group: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Path #</th> <th style="width: 90%;">Overflow # (P,1,2,3)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	Path #	Overflow # (P,1,2,3)								
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**INSTRUCTIONS:**

Use this planner as an aid in distributing the work-load of the agent groups. Complete this form before the Path Planner. Once completed, transfer the Agent Group Number to the appropriate group (Primary, 1st, 2nd, or 3rd) on Line 3 of the Path Planner.

1. Overflow timer default is 9 minutes (maximum 54 minutes). This is the maximum time a call can be queued on the group before overflowing. Prediction may allow the overflow before the timer expires. 1st threshold default is 3 minutes (maximum 54 minutes), 2nd threshold default is 6 minutes (maximum 54 minutes). These are indications for the agents (queue status) of how long the calls have been waiting to be answered. Afterwork timer default is 0 minutes (maximum 15 minutes). This is the amount of time an agent has after completing a call before receiving the next call.
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## ACD TELEMARKETER AGENT GROUP PLANNER

<b>1</b>	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____	Agent Group #: _____ Name: _____  Overflow Time ____ : ____ 1st Threshold ____ : ____ 2nd Threshold ____ : ____ After Work ____ : ____																																								
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Use this planner as an aid in distributing the work-load of the agent groups. Complete this form before the Path Planner. Once completed, transfer the Agent Group Number to the appropriate group (Primary, 1st, 2nd, or 3rd) on Line 3 of the Path Planner.

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## ACD TELEMARKETER PATH PLANNER

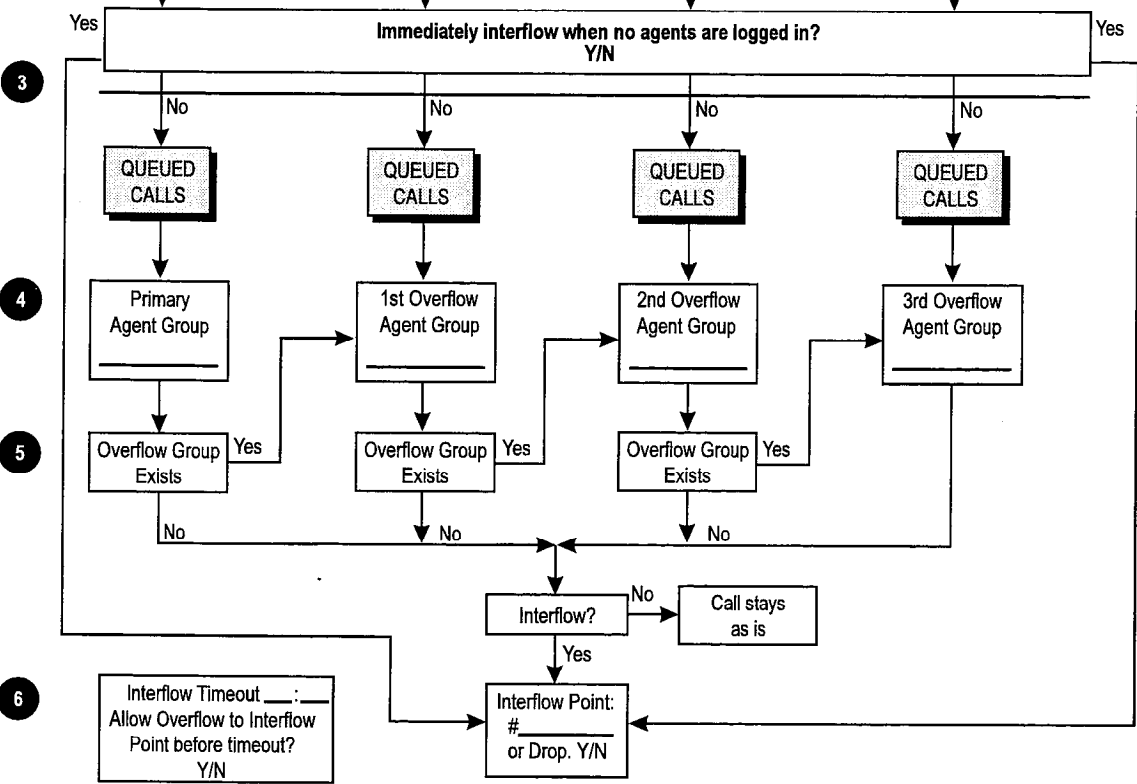
Purpose of this Path: \_\_\_\_\_

1

Name:	
Path Access:	
Tenant:	
Priority:	Path:
Delay to Answer:	
Path Service Level:	

2

Recording 1 RAD: _____ Start: ____:____ Name: _____ Length: ____:____	MOH or Ext #: _____	Recording 2 RAD: _____ Start: ____:____ Name: _____ Length: ____:____	MOH or Ext #: _____	Recording 3 RAD: _____ Start: ____:____ Name: _____ Length: ____:____	MOH or Ext #: _____	Recording 4 RAD: _____ Start: ____:____ Name: _____ Length: ____:____	MOH or Ext #: _____
---	---------------------------	---	---------------------------	---	---------------------------	---	---------------------------



**INSTRUCTIONS:**

1. Complete a Path Planner for each path.
2. Caller can listen to RADs with the option of Music on Hold (MOH) or an alternate music source/recording between the RADs. (RAD = Hunt Group Access Code.)
3. Callers dialing into this ACD path will interflow immediately when no agents are logged in if yes is chosen.
4. Copy the appropriate Agent Group Number from the Agent Group Planner.
5. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If the next Overflow Group is not programmed the call either interflows out of the path or remains as is until the call is answered or the caller hangs up.
6. Default Interflow Timeout is 54 minutes. The call interflows (if enabled) or drops when the timer expires or when prediction indicates that the call will not be answered within the timer interval. Interflow time starts when the call enters the path.

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## ACD TELEMARKETER PATH PLANNER

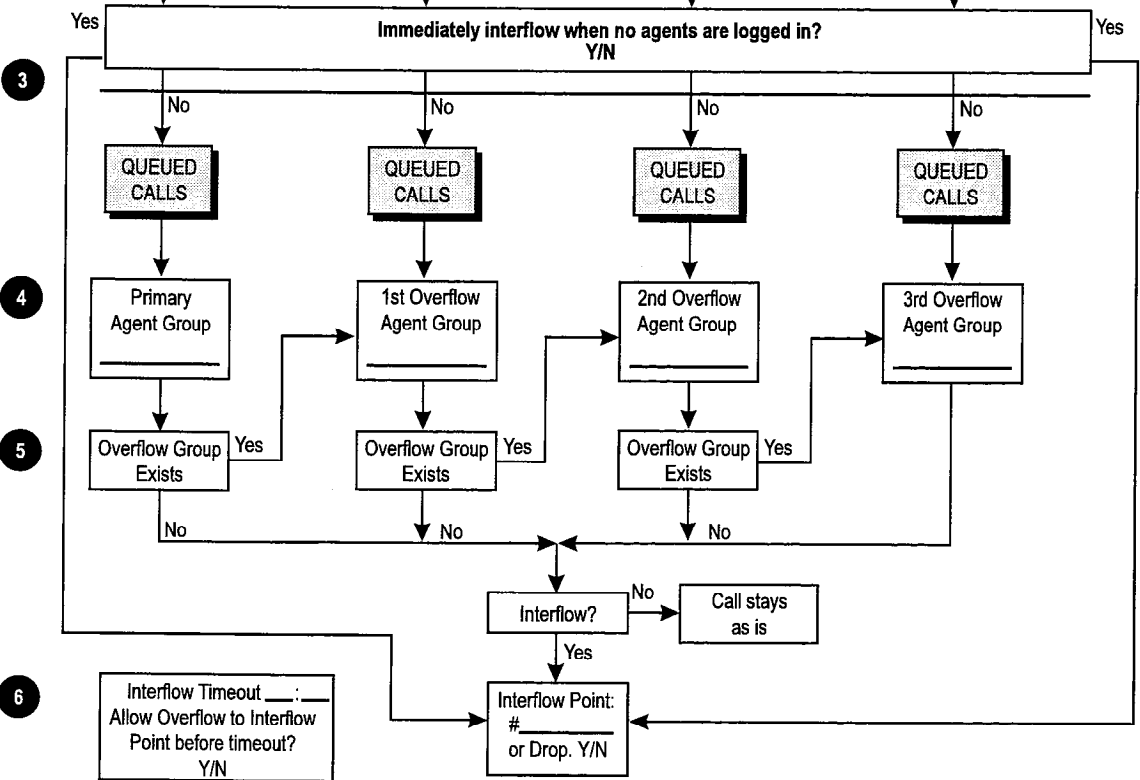
Purpose of this Path: \_\_\_\_\_

**1**

Name:	
Path Access:	
Tenant:	
Priority:	Path:
Delay to Answer:	
Path Service Level:	

**2**

Recording 1	MOH or Ext #:	Recording 2	MOH or Ext #:	Recording 3	MOH or Ext #:	Recording 4	MOH or Ext #:
RAD: _____	_____	RAD: _____	_____	RAD: _____	_____	RAD: _____	_____
Start: ____:____	_____	Start: ____:____	_____	Start: ____:____	_____	Start: ____:____	_____
Name: _____	_____	Name: _____	_____	Name: _____	_____	Name: _____	_____
Length: ____:____	_____	Length: ____:____	_____	Length: ____:____	_____	Length: ____:____	_____



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## ACD TELEMARKETER PATH PLANNER

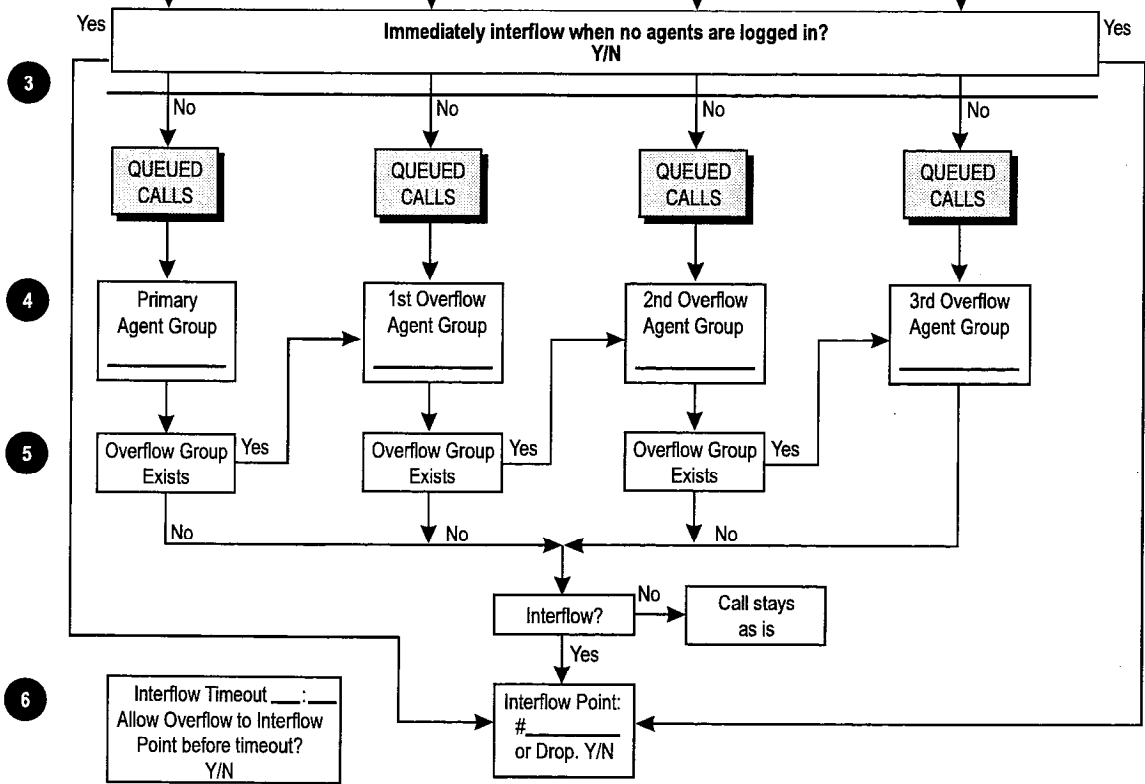
Purpose of this Path: \_\_\_\_\_

1

Name:	_____		
Path Access:	_____		
Tenant:	_____		
Priority:	_____	Path:	_____
Delay to Answer:	_____		
Path Service Level:	_____		

2

Recording 1	Recording 2	Recording 3	Recording 4
RAD: _____	RAD: _____	RAD: _____	RAD: _____
Start: ____:____	Start: ____:____	Start: ____:____	Start: ____:____
Name: _____	Name: _____	Name: _____	Name: _____
Length: ____:____	Length: ____:____	Length: ____:____	Length: ____:____
MOH or Ext #: _____	MOH or Ext #: _____	MOH or Ext #: _____	MOH or Ext #: _____



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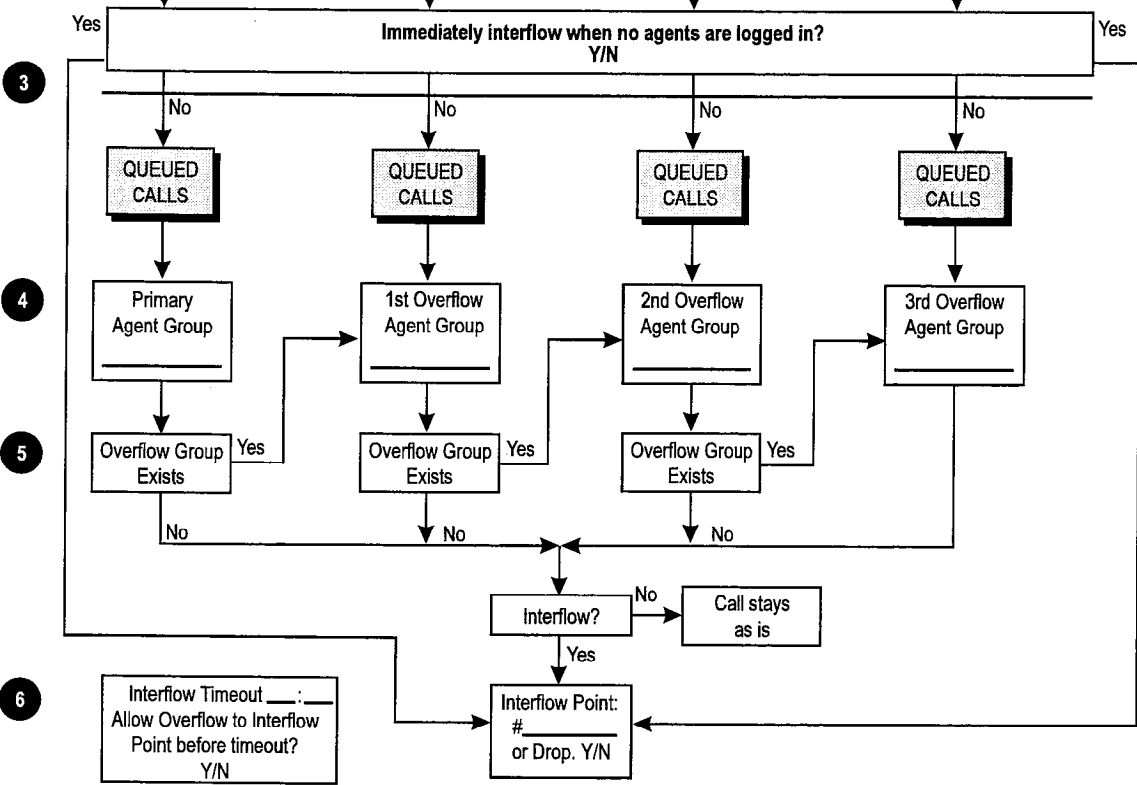
Purpose of this Path: \_\_\_\_\_

1

Name:	_____
Path Access:	_____
Tenant:	_____
Priority:	_____ Path: _____
Delay to Answer:	_____
Path Service Level:	_____

2

Recording 1		Recording 2		Recording 3		Recording 4	
RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____
Start: ____:____		Start: ____:____		Start: ____:____		Start: ____:____	
Name: _____		Name: _____		Name: _____		Name: _____	
Length: ____:____		Length: ____:____		Length: ____:____		Length: ____:____	



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## ACD TELEMARKETER PATH PLANNER

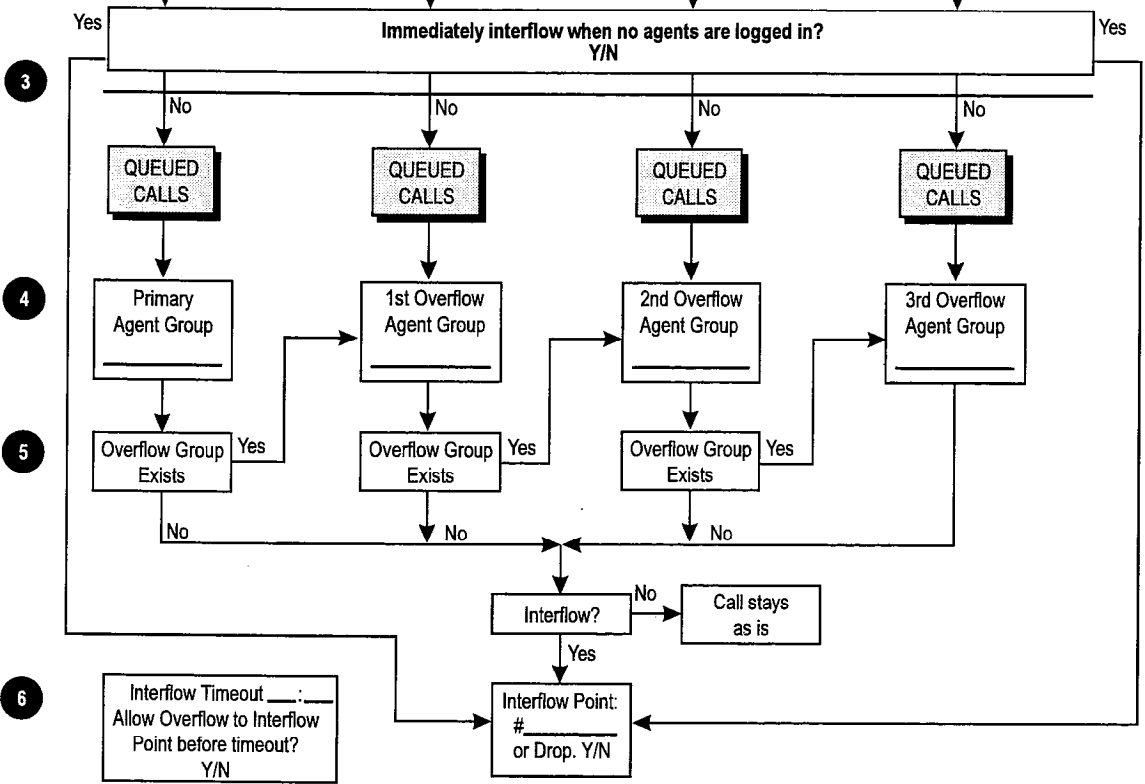
Purpose of this Path: \_\_\_\_\_

1

Name:	
Path Access:	
Tenant:	
Priority:	Path:
Delay to Answer:	
Path Service Level:	

2

Recording 1	Recording 2	Recording 3	Recording 4
RAD: _____	RAD: _____	RAD: _____	RAD: _____
Start: ____:____	Start: ____:____	Start: ____:____	Start: ____:____
Name: _____	Name: _____	Name: _____	Name: _____
Length: ____:____	Length: ____:____	Length: ____:____	Length: ____:____
MOH or Ext #: _____	MOH or Ext #: _____	MOH or Ext #: _____	MOH or Ext #: _____



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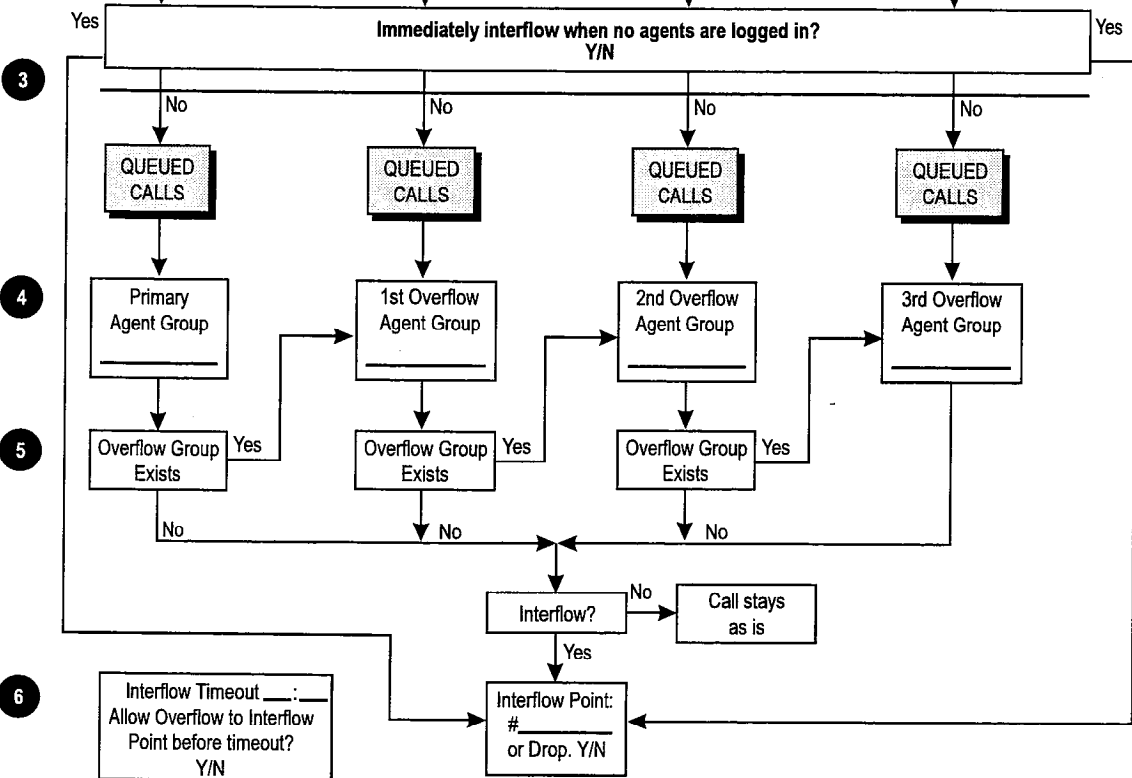
Purpose of this Path: \_\_\_\_\_

1

Name:	_____
Path Access:	_____
Tenant:	_____
Priority:	_____ Path: _____
Delay to Answer:	_____
Path Service Level:	_____

2

Recording 1		Recording 2		Recording 3		Recording 4	
RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____	RAD: _____	MOH or Ext #: _____
Start: _____	_____	Start: _____	_____	Start: _____	_____	Start: _____	_____
Name: _____	_____	Name: _____	_____	Name: _____	_____	Name: _____	_____
Length: _____	_____	Length: _____	_____	Length: _____	_____	Length: _____	_____



**INSTRUCTIONS:**

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**NOTES**

9109-098-625-NA

Issue 1  
March 1997

SX-200<sup>®</sup> ML PABX

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# Automated Attendant Application Package

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### **NOTICE**

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## Table of Contents

<b>1. Introduction</b> .....	1-1
Reason for Issue .....	1-1
Intended Audience .....	1-1
Practice Structure .....	1-1
Associated Documents .....	1-1
<b>2. Functional Description</b> .....	2-1
Overview .....	2-1
Auto-Attendant Groups .....	2-1
Basic Operation .....	2-2
Digit Handling .....	2-2
Conflict Dialing .....	2-2
Valid Destinations .....	2-3
CO Trunk Dialing .....	2-3
Prefix Digits .....	2-3
Typical Applications .....	2-4
Prefix Processing .....	2-4
Illegal Number Handling .....	2-4
Vacant Number Routing .....	2-5
Front End Recording .....	2-5
Default Destination .....	2-5
Default Answering Points .....	2-5
Routing to Default Destination .....	2-5
RAD Operation .....	2-6
Resource Allocation .....	2-6
DTMF Receiver Requirements .....	2-6
Receiver Allocation Control .....	2-7
Busy Recordings .....	2-7
Busy Receivers .....	2-8
Busy RAD or Receiver Timeout .....	2-8
<b>3. Operation</b> .....	3-1
Caller Displays .....	3-1
Called Party Displays .....	3-1
Transfers .....	3-1
Interaction with Other Features .....	3-1
Account Codes .....	3-2
ARS .....	3-2
Callbacks .....	3-2
Call Duration Display .....	3-2
Call Forwarding .....	3-2
Campon .....	3-3
DID/Dial-in Trunk Busy Rerouting .....	3-3
Direct to ARS .....	3-3
Recall on Default or Dialed Destination .....	3-3
System Abbreviated Dial .....	3-3
Tenanting .....	3-3
SMDR .....	3-4
Sample SMDR Record .....	3-4
Analog Networking .....	3-4
Traffic Measurement .....	3-5

<b>4. Programming</b> .....	4-1
System Option Form .....	4-1
COS Option Form .....	4-1
Call Rerouting Form .....	4-1
Hunt Group form .....	4-1
Sample Programming .....	4-2
Basic Automated Attendant Feature .....	4-2
ACD Front-end Message .....	4-3
Aided External Dialing .....	4-3
<b>5. Maintenance</b> .....	5-1
RAD Failure Handling .....	5-1
RADs in DND .....	5-1
Failure to Answer .....	5-1
Troubleshooting Guidelines .....	5-1
Failure to Answer .....	5-1
Call Dropped .....	5-1
RAD Fails to Drop .....	5-1
Wrong Message .....	5-2
<b>6. Installation</b> .....	6-1
Receivers .....	6-1
Main Control Card II Receivers .....	6-1
Universal Card Receiver Modules .....	6-1

### List of Figures

Figure 2-1	Automated Attendant Call Handling .....	2-1
------------	---	-----

### List of Tables

Table 3-1	SMDR Fields .....	3-4
-----------	-------------------	-----



# 1 Introduction

This document describes the features, operation and programming of the Automated Attendant feature for the SX-200<sup>®</sup> ML PABX. The Automated Attendant Application Package is a software option that must be purchased.

## Reason for Issue

- 1.1 This practice is issued to include the Automated Attendant feature, which is an option available with SX-200 ML LIGHTWARE<sup>™</sup> 16 software.

## Intended Audience

- 1.2 The intended audience includes those involved in the marketing, installation, programming, and operation of the Automated Attendant feature.

## Practice Structure

- 1.3 The practice contains six sections that cover the following topics:

Introduction - Introduces the practice and lists related documents.

Functional Description - Describes the Automated Attendant feature and the hardware and software components that make up the package.

Operation - Describes the interactions between the Automated Attendant feature and other SX-200 ML PABX features.

Customer Data Entry - Covers the CDE requirements for the feature.

Maintenance - Discusses maintenance for the Automated Attendant feature.

Installation - Briefly describes the hardware and software requirements for installing the feature and includes the provisioning of DTMF receivers.

## Associated Documents

- 1.4 Refer to the following practices for additional information:
- *Features Description Practice*
  - ACD TELEMARKETER<sup>®</sup> Application Package Practice.

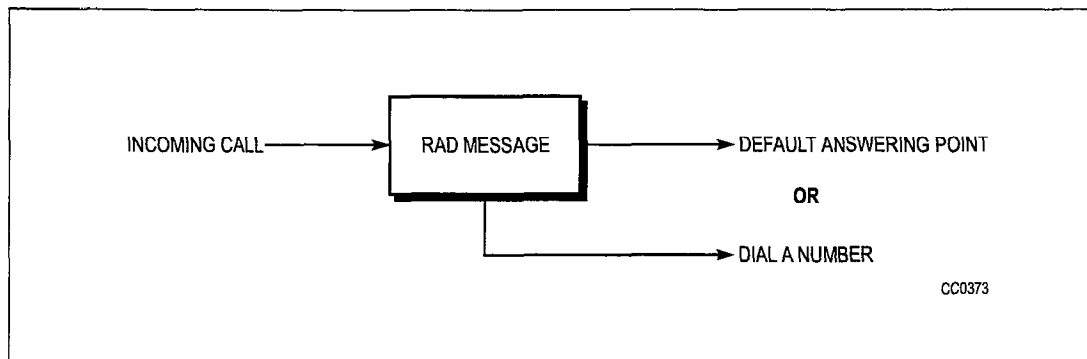


## 2 Functional Description

This section describes the basic operation of the Automated Attendant feature and the hardware and software components that make up the feature package. Included are overviews of the feature and descriptions of Auto-Attendant groups, handling of illegal calls, default destinations, DTMF receiver requirements, and resource allocation.

### Overview

- 2.1 As shown in Figure 2-1, the Automated Attendant feature directs incoming calls to a recorded announcement device (RAD). The RAD message instructs callers that they can access a directory number on the system by dialing over the message. Callers choosing not to dial during the message are routed to a default answering point, such as an attendant, when the message is finished. The Automated Attendant feature is available with *SX-200 ML LIGHTWARE 16* software.



**Figure 2-1 Automated Attendant Call Handling**

### Auto-Attendant Groups

- 2.2 The Automated Attendant feature introduces an additional hunt group type called an Auto-Attendant group. This group is similar to the recording groups used in the *ACD TELEMARKETER* feature. The Automated Attendant feature is accessed by either rerouting or dialing into an Auto-Attendant group. The Auto-Attendant group can contain only single-line ports (that is, ONS), and has the main features of any hunt group such as:

- hunt group number
- access code
- circular or terminal hunting.

Through customer data entry (CDE), auto-Attendant groups also have several programmable options that include:

- name
- message length
- default destination
- prefix digits
- dialing enabled
- wait for resources time.

The Auto-Attendant group access code can be dialed by any device. This access code can be programmed as a destination in the following CDE forms:

- Form 19, Call Rerouting
- Form 14, Non Dial-In Trunks
- Form 17, Hunt Groups (hunt group overflow)
- Form 41, ACD Path (path interflow).

The Auto-Attendant group access code can also be used as a call forwarding point. The group cannot be used as a normal recording group for Uniform Call Distribution (UCD), ACD and/or Automatic Wakeup.

## **Basic Operation**

- 2.3 When an internal or external caller reaches an Auto-Attendant group, the system hunts for an available RAD, connects the caller to the RAD, and connects a DTMF receiver to retrieve digits dialed by the caller. If the caller dials a number, the caller is routed to that number. If the caller does not dial a number, the caller is routed to a default answering point assigned during CDE. The following subsections describe basic call handling for calls to the Automated Attendant.

### **Digit Handling**

The system assigns one DTMF receiver to each caller while the caller is listening to the recording. The recording is terminated as soon as the first digit is received from the caller. After dialing a valid number, the caller is routed to that number.

### **Conflict Dialing**

When the caller dials, conflict dialing is in effect, and the normal 15-second inter-digit timeout applies. The recording is terminated when the conflict timer starts. The user listens to silence while the conflict timer is running. For additional information on conflict dialing and inter-digit timeout, refer to Conflict Dialing in the *Features Description Practice*.

### Valid Destinations

The valid destinations available to a caller depend upon what the originating device (trunk or telephone) is allowed to dial during a normal operation. All the usual PBX dialing features apply, such as:

- DID/TIE rerouting on no answer
- DID and DND interactions
- Device/tenant interconnection restrictions
- Class of Service (COS) options for Abbreviated Dial.

Dialing capability ends as soon as the recording ends. Once a destination is attempted, the automated feature ends, and the regular call features such as campon are available.

### CO Trunk Dialing

The Automated Attendant feature allows CO trunks to access several features that are normally inaccessible. A CO trunk can dial:

- account codes
- abbreviated dial numbers
- stations
- sets
- hunt groups (including data hunt groups)
- consoles
- LDNs
- night bells
- modem pools
- ACD paths
- ACD positions.

Automated Attendant also affects ARS toll control: a CO trunk can only access ARS through a system abbreviated dial number.

### Prefix Digits

- 2.4 Each Auto-Attendant group can be programmed in CDE with a string of prefix digits. The prefix can contain up to 4 digits and is inserted in front of the digits dialed by the caller. The prefix allows the caller to dial a single digit and be routed to devices that have normal multi-digit extension numbers. The prefix is only inserted if the caller dials at least one digit.

## Typical Applications

The prefix can be used to

- provide single digit menus
- reduce digit dialing
- restrict dialing to numbers that start with the prefix
- provide entry into other features that require digits (such as ARS and feature access codes).

## Prefix Processing

Processing of prefix digits starts only after the first digit is dialed. If the prefix itself is a valid access code, the caller will be considered to have dialed the access code, and the system ignores the first digit dialed by the caller.

If the prefix contains a feature access code, control of the call is given to the feature after the digits are processed. If the feature returns dial tone to the caller and other digits have to be processed, the remaining digits are ignored because the feature clears the digits from the receiver.

If, for example, the system is programmed with \* as the account code access code and 123 as a valid account code, setting the prefix to \*123 causes the system to process the prefix as a complete account code and ignore the first digit dialed by the caller. In this case, the system returns dial tone after the processing is complete.

This situation can be avoided by ensuring that the prefix does not include enough digits to run a feature to completion. Again, assuming \* is the account code access code, using a prefix of \* prevents dropping any digits. The first digit dialed by the caller is the start of the account code.

## Illegal Number Handling

- 2.5 If the dialed number is illegal, the system checks for illegal number routing using the tenant group of the first member programmed in the Automated Attendant group. If the routing point has illegal number routing programmed, the system redirects the caller to the routing point. The routing point can be another Automated Attendant group. If no illegal number routing is programmed, the caller is given reorder tone and is eventually disconnected.

Examples of illegal number conditions include:

- device interconnection
- tenant interconnection
- not valid for caller type
- feature restricted.

Each Auto-Attendant group can be assigned different rerouting points by assigning a different tenant group number to the first member of each Auto-Attendant group.

## Vacant Number Routing

- 2.6 Handling callers that dial a vacant number, such as an unassigned access code, is similar to the illegal number handling described above. In the case of a vacant number, vacant number routing rather than illegal number routing is checked.

## Front End Recording

- 2.7 Front end recordings present a message to the caller as soon as the call enters the system. Auto-Attendant groups can provide this feature by having dialing disabled during the recording. This provides a simple front-end recording without assigning a DTMF receiver. Digits dialed by the caller are ignored and the prefix digits have no affect. Calls are routed to the default destination as normal.

## Default Destination

- 2.8 When a recording ends, callers who have not dialed at least one digit during the recording are routed to the default destination for the group. Failing to program a default destination means that when the recording ends, the caller is given reorder tone and eventually disconnected.

## Default Answering Points

Valid default points for the Automated Attendant feature are:

- console
- LDN
- night bell
- station
- SUPERSET™ telephone
- logical line
- ACD path
- hunt group
- ACD positions (agent, supervisor and senior supervisor)
- system Abbreviated Dial
- Auto-Attendant hunt group.

## Routing to Default Destination

When the caller is routed to the default destination, the system handles the call as a call reroute. Device and tenant interconnection is bypassed, DND is ignored, and the caller automatically camps on to the destination if it is busy. Refer to *Call Rerouting* in the *Features Description Practice*.

## **RAD Operation**

- 2.9 RAD operation is similar to the RADs in the *ACD TELEMARKETER* applications package. The Automated Attendant feature uses the Auto-Attendant group as an enhanced recording group so that the basic recording group features apply. Refer to Recording Support, in the *Features Description Practice* for information about RADs and recording groups.

The length of the recorded message, either programmed in CDE or in the RAD itself, should be greater than the actual message to create a silent period at the end of the recording. The silent period results in a delay between the end of the message and the rerouting to the default destination to give the caller time to think about the message and to start dialing. Complex instructions in the message may require a longer delay at the end of the message.

## **Resource Allocation**

- 2.10 Each call entering the Automated Attendant feature uses two primary resources: a RAD and a DTMF receiver. Usage differs between the two resources as explained in the following paragraphs:

Each time a RAD becomes free, an unlimited amount of that resource becomes available because of the unlimited number of listen-only conferees that can be serviced by that one RAD.

When a receiver becomes free, however, only one piece of that resource becomes available because only one caller can use the receiver at a time. Receiver availability becomes the primary resource limitation for the Automated Attendant feature.

### **DTMF Receiver Requirements**

In addition to the number of receivers needed for normal PBX operation, the number of extra receivers needed for the Automated Attendant feature is approximately:

$$\frac{\text{Average number of calls per hour}}{\text{Maximum \# of messages given per hour}}$$

where:

maximum # of messages given per hour = 3600/message length (including setup and clear down time) in seconds (for groups with one RAD).

A limited number of messages can be played in one hour. Therefore, to service all callers, each message must play to a number of callers. This calculation is an estimate for a single group in the system. Additional groups require additional receivers.



As an example for a single group, assume that 100 callers per hour are accessing the group and that the message length is 20 seconds. This means 180 messages can be played per hour and 100/180 or at least one receiver is needed to service all of the callers in that hour. Round the result of this calculation up to the next whole number.

**Note:** The minimum quantity of receivers must be equal to the number of RADs assigned to the Automated Attendant feature so that RADs can operate concurrently.

### Receiver Allocation Control

The user can place limits on the number of receivers available to the Automated Attendant feature (across all Auto-Attendant groups). Without this limit, the Automated Attendant feature can potentially use up all receivers in the system and block dialing for extended periods.

The limit is specified by programming System Option 59, Receivers Reserved for Non-Auto-Attendant Use. The Automated Attendant feature uses as many receivers as possible but it will always leave at least this number of receivers available for the rest of the system.

Receivers going out of service (for diagnostics, etc.) have no effect on this number. Reducing the number of available receivers removes receivers from the Automated Attendant feature first.

When the limit is specified, the system does not check to ensure that the number of receivers present in the system is greater than the number of receivers programmed as a limit. If the system contains fewer receivers than the limit, the Automated Attendant feature is unable to access any receivers. The system handles this as a "no receivers available" condition.

Setting the number of receivers to more than the number in the system results in all calls that are directed at Auto-Attendant groups ending up at the default destination.

### Busy Recordings

If a call arrives at the Automated Attendant when all recordings are busy or unavailable, the caller is camped on to the group to wait for a recording. The wait time is programmable for each group through CDE. Unless all RADs fail, the caller wait time should be no longer than the RAD cycle time. Normal camp-on audio is returned to callers.

When a recording becomes free, the system rings the RAD. When the RAD answers, the system sets up a listen only conference for all callers camped on to the Auto-Attendant group. The callers are retrieved using the normal campon priority scheme. Callers will be retrieved until there are no more waiting callers or until all available DTMF receivers in the system have been allocated (DTMF receiver allocation is subject to the receiver usage limits for the Automated Attendant feature in the system). Once all receivers are used up, the remaining callers continue to wait for resources to become free.

### **Busy Receivers**

If no receivers are available when a RAD becomes free, the system camps the caller on to the Auto-Attendant group to wait until a receiver becomes available. The wait time is programmable through CDE.

**Note:** Internal callers dialing the group (including dial-in trunks and CO trunks coming from other groups) do not keep their receivers after dialing an Auto-Attendant group. These callers are allocated another receiver based upon the receiver allocation system option.

### **Busy RAD or Receiver Timeout**

The wait for resources timer on the group controls the length of time that a caller is allowed to wait for a RAD or for a receiver to become available. When the wait timeout occurs, the caller immediately calls the default destination without listening to a recording. If the caller is ringing a RAD when the timer expires, the timeout is ignored. Traffic measurement for this group is pegged each time that a recording is skipped because of a waiting timeout. If no default destination is specified, the caller is given reorder tone and eventually is 'put into suspended state.

# 3 Operation

The Automated Attendant feature requires no special operating instructions because calls are routed to the Automated Attendant by the system. This section describes the displays that appear on the sets of internal callers after dialing the Automated Attendant, and when receiving a call directed from the Automated Attendant. This section also describes the interaction between the Automated Attendant feature and other *SX-200* ML PABX features.

## Caller Displays

- 3.1 The SUPERSET 420™ and SUPERSET 430™ telephones and the attendant console show normal ringback, busy, and talking state displays when calling a hunt group.

## Called Party Displays

- 3.2 The display of a party called from an Auto-Attendant group is the normal call processing display for the given caller and called party. No special indication is given to show that the call came from a group, however, either the name or the access code of the group is displayed.

## Transfers

- 3.3 Callers are unable to transfer another party to a group while ringing or listening. If a transfer is attempted during ringing or listening, the system will terminate the feature and the caller will be recalled by the held party. Extensions can transfer a party to a busy group, however, the console cannot transfer to a busy Auto-Attendant group.

Calls can be indirectly transferred to groups by calling an extension that has Call Forward No Answer programmed to a group and releasing the held caller to the forwarded extension before the call forward no answer timeout has expired.

## Interaction with Other Features

- 3.4 The Automated Attendant feature can affect the operation of certain features in the system. The following subsections outline the interactions. Features are arranged in alphabetical order.

The Automated Attendant feature has no special call handling features built in for compatibility with ACD. A caller using the Automated Attendant feature to access ACD hears the Automated Attendant recording, dials an ACD path, and hears ringback tone before the ACD recordings are started.

The Automated Attendant feature does close off and print the current SMDR buffer before it enters ACD to preserve the Automated Attendant feature information in the SMDR record and to prevent a conflict between ACD and Automated Attendant information in the dialed digits field.

ACD callers using the Automated Attendant feature after an agent answers are handled as normal. In addition, the Automated Attendant feature does not add any digits into the dialed digit buffer to preserve the ACD information.

### **Account Codes**

CO trunks can dial the account code access code. No checks are made to see whether the access is from the Automated Attendant feature.

DID trunks are blocked from accessing the account code feature even through Automated Attendant.

Verified account codes can provide ARS access security. With Auto-Attendant groups, this feature can be used by assigning prefix digits that are the account code access code. The user then dials the verified account code to change dialing privileges. Because CO trunks can access account codes, the Direct to ARS feature is available to CO trunks after the CO trunk user dials an account code.

The prefix for a group can be programmed as the account code access code and may contain the leading account code digits. The user then dials the remaining account code digits.

### **ARS**

A CO trunk cannot normally dial ARS directly and must use one of three ways to access ARS: forwarding, transfer, or ACD Interflow. Because a CO trunk has no Class of Restriction (COR) number, forwarding and transfer use the COR number of the forwarder or transferrer.

For the Automated Attendant feature, as with ACD interflow, no COR number is provided for the CO trunk during dialing; therefore, there is no toll control. CO trunks, however, are unable to dial an ARS digit string directly. From the Automated Attendant feature, a CO trunk can only access ARS through a system abbreviated dial number.

### **Callbacks**

Callbacks to a group are not allowed to Auto-Attendant groups.

### **Call Duration Display**

When a *SUPERSET 420* and *SUPERSET 430* telephone answers a trunk routed from an Auto-Attendant group, the call duration display shows the call duration beginning when a non-recording answers the trunk. This method is consistent with the display for trunks from other recording applications (even though for Automated Attendant the time to answer in SMDR is the time to answer by the recording, not the set).

### **Call Forwarding**

When a caller reaches an Auto-Attendant group, the caller's current call forwarding history is cleared to prevent problems with forwarding hop limits when a group is a forwarding destination. The caller can be forwarded again for the maximum number of forwarding steps.

## **Campon**

When all RADs are unavailable, the system camps the caller on to the Auto-Attendant group. All device types except the console can be camped on to the group. Because the console is not permitted to camp on to anything, it is given busy tone and must try dialing the group again.

## **DID/Dial-in Trunk Busy Rerouting**

The DID/Dial-in trunk busy rerouting point is not operational when calling an Auto-Attendant group (the trunk always camps on if the group is busy). The feature is operational when the caller dials from the group.

## **Direct to ARS**

The Direct to ARS feature applies to calls after an account code is successfully dialed from a group (Direct to ARS applies to all devices). An added application is that Analog Networking passes the account code into the network. If a caller dials an account code from a group and then with Direct to ARS goes to an analog network trunk, the digits that the caller dials from the group will be passed into the network.

## **Recall on Default or Dialed Destination**

No recall point is set up by the Automated Attendant feature. Recall on busy and no answer operate as if the feature had not been accessed, this feature acts as if the default or dialed destination had been reached directly. The answer supervision given to the trunk during the ringing has no effect on recall.

## **System Abbreviated Dial**

Normal system operation prevents CO trunks from accessing system abbreviated dialing except through external call forwarding. With the Automated Attendant feature, CO trunks can dial the system abbreviated dial access code. The CO trunk must have the abbreviated dial access COS option enabled as is the case with other devices.

The system allows callers to access any numbers in the system. If access is given to Automated Attendant callers, the only control available is through toll control for ARS numbers.

If necessary, the prefix feature can be used to restrict access from the Automated Attendant to specific numbers. The prefix feature limits the caller to dialing only a limited set of numbers, such as those beginning with the digits 12.

## **Tenanting**

Tenanting can be used to restrict the dialing ability of callers who use the Automated Attendant feature. With the tenant interconnection table, callers can be put in a special tenant group and be allowed to dial only designated extensions in the system.

**SMDR**

- 3.5 Incoming SMDR records indicate that the Automated Attendant feature has been used. Table 3-1 below defines the significant fields.

<b>Table 3-1 SMDR Fields</b>	
<b>SMDR Field</b>	<b>Purpose</b>
Called Party	Contains the extension number of the party that answered the caller.
Call Completion Status	Indicates call completion with regard to the group called rather than the destination dialed or routed to from the Automated Attendant feature.
Dialed Digits	Shows the group access code and the destinations dialed by the caller (even if the digits dialed are invalid) or the default destination (if taken).  Dialed digits overwrite any information already in this field as a result of analog networking. The access code and digits are written to the field with a single blank between them.
Time to Answer	Indicates the time until answered by the RAD. This duration shows waiting times for receiver and RAD resources, since the trunk will only be answered when the recording is ready to be played. For UCD, ACD, and AAO (Automatic Attendant Overflow - COS option 705), the time to answer is the duration until answer by a device other than the recording.
Call Duration Time	Shows the elapsed time from the time when the RAD answers the call, not when a party in the PBX answers the call (unlike ACD, UCD, and AAO).

**Sample SMDR Record**

Below is a sample record. Trunk 001 has called in to group 123 and after 20 seconds is answered by a RAD in the group at 12:32. The trunk then dials 555 and is answered at extension 555. The trunk talks to extension 555 and then hangs up. The total duration of the trunk call was 20 minutes, 12 seconds.

06/28 12:32 00:20:12 T001 020 123 555 555

If the caller arrives at a group again or after SMDR has already recorded an answer, no special entries are made in the record. The Auto-Attendant group appears as the called destination, third party, etc., as would any hunt group.

**Analog Networking**

- 3.6 Analog networking information in the SMDR records is overwritten when a trunk that uses analog networking accesses the Automated Attendant feature and dials a number. The Automated Attendant feature information replaces the digits already stored. The SMDR record is not altered if no recording is heard; instead, normal SMDR is done.

## Traffic Measurement

- 3.7 The normal traffic measurement statistics for hunt groups are also available for Auto-Attendant groups. As with other recording groups that have listen-only conference, the busy pegs are not very useful because an unlimited number of callers are connected each time a RAD becomes free.

The usage pegs and usage CCS indicate calls handled and RAD usage. An additional peg is present for Auto-Attendant groups to help diagnose receiver shortage problems. The skip peg shows how many failures to get a receiver resulted in a call skipping the recording and routing to the default destination. A non-zero value in this field indicates receiver shortage problems.

### EXAMPLE:

#### HUNT GROUPS:

Number	Peg	Skip	Usage	Busy Peg	Max/Avl
1	6	1	123.00 ccs	1	2/3

Traffic measurement also records receiver usage from the Automated Attendant feature. The 1-, 2-, and 3-second receiver wait pegs are not updated. The receiver usage peg, receiver CCS, and max/avail fields are updated.





## 4 Programming

The Automated Attendant Application Package is a software option that must be purchased. The Automated Attendant feature is enabled and controlled through entries in customer data entry (CDE). This section lists the forms related to this feature and describes the entries required on each form.

### System Option Form

- 4.1 The following fields on the System Options Form (Form 04) affect the Automated Attendant feature:

System Option 106 - Automated Attendant: Controls the availability of the feature. This option allows programming of Auto-Attendant groups. The option cannot be disabled until all groups are deleted. The option is disabled by default.

System Option 59 - Receivers Reserved For Non-Auto-Attendant Use: A numeric field that defines the number of receivers reserved for normal call processing. Acceptable entries are 1 to 99 or ALL. The value in this field is not restricted by the number of receivers currently in the system.

By default, the value is set to UNKNOWN when the user starts programming the system. The system prevents the user from programming any Auto-Attendant groups until this value is changed to a number from 1 to 99 or ALL. "UNKNOWN" is an initial value only and can never be programmed by the user.

### COS Option Form

- 4.2 The COS (Form 03) options that apply are those for members of recording hunt groups. Refer to the Programming section of the *Features Description Practice* for details about setting the recording group COS options.

### Call Rerouting Form

- 4.3 The UCD Recording routing and Automatic Wakeup routing entries in the Call Rerouting Table (Form 19) cannot include an Auto-Attendant group.

### Hunt Group form

- 4.4 The programming of the Auto-Attendant group type in Form 17, Hunt Groups, follows the programming for all other hunt group types. The distinction is in the group type and options. The group type is selected by pressing the GROUP TYPE and then the AUTO ATT softkeys.

If the user has not filled in a value for System Option 59, Receivers Reserved For Non-Auto-Attendant Feature Use, they are not permitted to create an Auto-Attendant

group. When the ENTER key is pressed to change the group type, the following error message appears:

System Option 59 must be programmed before creating an Auto-Attendant group.

The user must return to the System Options form and program a value for Option 59.

The group type cannot be changed from AUTO ATT to some other group type unless all of the RADs in the group are either DND, busied-out, or idle. Once the group type is set, the OPTION softkey is used to set up options on the group. The options for Automated Attendant groups only appear when the group type is AUTO ATT.

The fields on the Auto-Attendant group form are described below. Default values are also shown. To change information in the fields, scroll to the desired field and, depending upon the field, either enter the desired value or press the appropriate softkey:

**Name:** Enter the name string (the same rules apply as for recording groups).  
Default: No name.

**Message Length:** Enter the message length time in minutes and seconds (the same rules apply as for recording groups). Default: message length = 10 seconds.

**Default Destination:** Enter an access code. The access code must already be assigned to a valid destination. Default: No default destination.

**Dialing Over Recording:** Select the DISABLE or ENABLE softkey that is to appear when the Dialing over Recording field is in the scroll window.  
Default: Dialing over recording enabled.

**Prefix Digits:** Enter the digit string, containing 0 to 4 digits. Valid digits are 0-9, \* and #. Default: No prefix digits.

**Wait For Resources:** Enter the time to wait in minutes and seconds (00:00 to 54:00).  
Default: Wait for resources = 1 minute.

If the group type is changed, all of the above information is deleted if the information no longer applies to the new group type. "Name" is never lost and "Message Length" is not lost if the new group type is RECORDING.

## Sample Programming

### Basic Automated Attendant Feature

4.5 Callers are routed to a group with a typical message:

"Thank you for calling the ABC company Automated Attendant number. If you know the extension number of the person you are trying to reach, and if you have a touch-dial telephone, you may dial the number before the end of this message. If not, someone will be with you shortly."

In this example, an LDN is programmed as the default destination for the Automated Attendant group. The LDN is assigned the name "ABC" which shows the attendant the name of the company that the caller was attempting to reach.

An additional group could be supplied as the illegal number routing point for the tenant group of the first RAD in the first group. The second group could have a message saying:

“You have dialed an incorrect number. Please try again or stay on the line and someone will be with you shortly.”

The default destination for the second group is an LDN that indicates a caller that had already misdialled a number. The illegal number routing point for the tenant group of the first RAD in the second group would be the same group itself, so that the caller would keep looping back to the same group when an illegal number is dialed.

### **ACD Front-end Message**

Using an ACD Front-End message, ACD callers are routed to a group with a message such as:

“Thank you for calling the ACME Supply House. If you have a touch-dial telephone, please dial 1 for housewares, 2 for seed catalogs and 9 to repeat this message. Otherwise, please stay on the line and an agent will be with you shortly.”

The default destination for this recording group is an ACD path that handles unscreened calls. The recording group also has a prefix of “123” programmed. The ACD path for housewares has the access code “1231”, the ACD path for seed catalogs has the access code “1232”, and the recording group itself has the access code “1239”.

### **Aided External Dialing**

Using aided external dialing, callers are routed to a group with a message such as:

“Thank you for calling. Please dial 1 for the Toronto office, 2 for Vancouver and 3 for Montreal. Otherwise, please stay on the line and the attendant will be with you shortly.”

The recording group is programmed with the attendant console as the default destination with a prefix of 80.

Assuming that the access code for system speed dial is 80, the caller is selecting system speed abbreviated dial numbers. Index 1 is Toronto, 2 is Vancouver, and 3 is Montreal.



# 5 Maintenance

## RAD Failure Handling

- 5.1 The RAD failure handling for the Automated Attendant feature is as described in the *ACD TELEMARKETER Application Package Practice*.

### RADs in DND

If a caller accesses an Auto-Attendant group that has all RADs in DND or Busy-out, the caller is immediately routed to the default destination. If the last RAD in a group goes out of service, the waiting callers are processed as if they had just accessed a group in which all of the RADs are out of service.

### Failure to Answer

If a RAD fails to answer, the caller ringing the RAD is routed to the default destination. The RAD is placed in DND.

## Troubleshooting Guidelines

### Failure to Answer

Problem: A call is never answered by a RAD. The call always routes to the default.

Action:

- Verify that the RAD is functioning (not all in DND or busy-out).
- Check that the RAD message length is not too short.
- Check traffic measurement for skip pegs for the group (indicates a problem with too few RADs or too few receivers required for Automated Attendant).
- Check the “wait for resources time” for the group.

### Call Dropped

Problem: A call is dropped after no number is dialed.

Action:

- Verify that a default destination is programmed.
- Confirm that a connection is allowed between possible callers and the default destination.

### RAD Fails to Drop

Problem: Recording does not end even though digits are dialed.

Action: Ensure that the option “Dialing Over Recording” is enabled for that group.

### **Wrong Message**

Problem: A caller receives the wrong message.

Action:

- Verify that message was recorded correctly.
- Check that the RAD is programmed correctly.
- Check that the RAD is connected to the correct line circuit.

## 6 Installation

The Automated Attendant feature may require additional receivers to prevent users from complaining about a delay to dial tone. The following subsections describe the installation requirements for the Automated Attendant feature:

### Receivers

- 6.1 Ensure that the system is provisioned with sufficient DTMF receivers. Traffic measurement can be used to monitor receiver usage and to identify failures to get a receiver.

#### Main Control Card II Receivers

- 6.2 The Main Control Card II contains seven receivers on the Digital Signal Processor (DSP). When additional receivers are required, a Universal Card can be installed in a high-power slot.

#### Universal Card Receiver Modules

- 6.3 Each Universal Card can contain up to four receiver modules; each receiver module contains four receivers, for a total of 16 receivers. Universal Cards can only be installed in high-power slots.

**NOTES**