SX-200® DIGITAL PABX

GENERAL DESCRIPTION

This practice describes the *SX-200®* Digital PABX with either Generic 1002 or Generic 1003 software. It provides an overview of hardware features, as well as a summary of environmental, electrical, and maintenance considerations.

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1. INTRODUCTION

GENERAL

1 .1 This practice describes the *SX-200®* Digital PABX with either Generic 1002 or Generic 1003 software. It provides an overview of hardware features, as well as a summary of environmental, electrical, and maintenance considerations. Refer to the following sections for more detailed descriptions of related information:

- Practice 9109–094–105–NA, Features Description

- Practice 9109–094–180–NA, Engineering Information

- Practice 9109–094–200–NA, Shipping, Receiving and Installation Information

REASON FOR REISSUE

1.2 This practice is reissued to describe the SX-200 Digital PABX with either Generic 1002 or Generic 1003 software. Lists of features available with these Generic software loads have been added in section 8 of this practice.

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2. SYSTEM OVERVIEW

GENERAL

2.1 The *SX-200* Digital PABX is a microprocessor controlled telephone system that handles both voice and data switching for installations up to 400 lines. The system is available in various hardware configurations ranging from 336 to 672 ports. All configurations of the system are electrically compatible with most:

- single line telephones

- MITEL proprietary sets

- key telephone systems

- PABX telephone systems

- central office exchanges

The following subsections outline the various hardware configurations and the software versions (generics) available for each configuration. Refer to Section 5 of this practice for additional information about the hardware configuraitons, and to Section 6 for an overview of the software structure.

HARDWARE CONFIGURATIONS

2.2 The SX-200 Digital PABX is available in four hardware configurations packaged as follows:

- 336 ports in a single cabinet

- 456 ports in two cabinets

- 480 ports in two cabinets

- 672 ports in two cabinets

2.3 The 336-and 672-port configurations use fully digital control circuits, line cards, and trunk cards. The 456-and 480–port configurations are hybrid systems using digital control circuits with a mixture of digital and analog peripheral cards. This allows customers with installed SX-200 analog systems to upgrade to the latest in digital switching technology while protecting their investment in cabinets, power supplies, line, and trunk cards.

2.4 The 336-port configuration consists of a single cabinet with four fully digital card bays for a maximum of 336 digital peripheral ports. This configuration is used for new installations rather than upgrades.

2.5 The 456-port configuration combines a digital control cabinet with an analog peripheral cabinet, and is used primarily for upgrading existing *SX-200* analog systems. The 456-port configuration contains five card bays offering a maximum of 240 digital and 216 analog peripheral ports.

2.6 The 480-port configuration is similar to the 456-port configuration in that it combines a digital control cabinet with an analog peripheral cabinet, and is used primarily for upgrading existing SX-200 analog systems. The 480-port configuration contains five card bays offering a maximum of 144 digital and 336 analog peripheral ports.

2.7 The 672-port configuration consists of two cabinets with eight digital card bays for a maximum of 672 digital peripheral ports. This configuration is **used for new installations and upgrades to existing 336-port configurations.** As this system accepts the digital peripheral cards, it is recommended for sites planning heavy use of data features.

SOFTWARE CONFIGURATIONS

2.8 Two software configurations are available for the *SX-200* Digital PABX, Generic 1002, and Generic 1003. The following subsections outline the features offered and the hardware configurations supported by each generic.

Generic 1002 | 2.9 The Generic 1002 software package combines a business feature package with hotel/motel and data feature packages. Features include:

- Standard telephone business features

- Advanced business features (such as ARS and tenanting)

- *SUPERSET 3* and *SUPERSET 4* stations

- 5X-200 Digital LCD Console

- Hotel/Motel features

- Resale

. UCD

- Associated modem lines

- *SUPERSET 3*DN and *SUPERSET 4*DN Digital Stations

- Data switching with DATASET 1100 series datasets

Generic 1002 software is available for the 336-, 456-, and 480-port hardware configurations.

Generic 1003 | 2.10 Generic 1003 software includes all Generic 1002 features plus the following:

- Additional basic teiephone features

- T1/D4 **trunking and features**

- DATASET 2 100 series

- **Modem pooling**

- ACD with monitor and PC reporting

Generic 1003 software is available for the 336–, 456–, 480–, and 672-port hardware configurations.

VOICECAPABILITIES

2.11 The 5X-200 Digital PABX interfaces to analog and digital peripheral devices using standard twisted-pair office wiring. Peripheral devices include, **but are not limited to, the following:**

Standard Telephones: Industry-standard rotary dial and DTMF telephones are supported; ONS lines provide an interface for these sets.

SUPERSET 3™ Telephone: The electronic *SUPERSET 3* telephone provides speedcall capabilities and a number of features designed to simplify call handling.

SUPERSET 4™ Telephone: The *SUPERSET 4* telephone is a more advanced electronic telephone, supplying visual features such as line status indication, time and date display, caller identification and word prompts to facilitate call handling.

SUPERSET 3" DN Telephone: The *SUPERSE T* 3DN telephone is a microprocessor controlled electronic telephone set, containing digital electronic circuitry and a call status display. It provides advanced call handling features such as programmable feature keys, digital communication with the host PABX and message waifing LED. A DATASET 1101 Cartridge can be integrated into this set.

SUPERSET 4™ DN Telephone: The *SUPERSET 4*DN telephone is a microprocessor controlled electronic telephone set, containing digital electronic circuitry and liquid crystal displays (LCD). The *SUPERSET 4*DN telephone is a more sophisticated telephone set, employing all the features of a *SUPERSET 4* telephone with the addition of a calculator and programmable feature keys. A DATASET 1101 Cartridge can be integrated into this set.

Attendant Console: The SX-200 Digital PABX supports two types of Atten- dant consoles; the existing LCD Console and the *SUPERCONSOLE 1000™* attendant console. The LCD Console interfaces to a console module on the Universal card, while the *SUPERCONSOLE 1000* attendant console interfaces by one pair wiring to a DNIC circuit on a Digital Line card. The latter also provides a printer port and a tilt display.

DATACAPABILITIES

2.12 The MITEL data sets provide data facilities for terminals, digital *SUPERSET™* telephones, and other types of data circuits. The DATASET 1100

series support asynchronous data communications at rates up to 19.2 kbps and interface with the 5X-200 Digital PABX through a Digital Line Card. The DATASET 2100 series support asynchronous and synchronous data communications at rates up to19.2 kbps and interface with the SX-200 Digital PABX through a Digital Line Card.

DATASET 1101 Cartridge: A DATASET **1101 Cartridge is mounted within a** SUPERSET 3DN or a SUPERSET 4DN teiephone set. The cartridge is connected via an internal cable to the telephone set circuit and is used to interface a terminal, personal computer, or-other peripheral device for connection to a host computer. It interfaces to the PABX Digital Line Card through the same pair of wires that the telephone set voice circuit uses.

DATASET 1102 Dual Rack Mounted Card: This dual rack mounted card supports two datasets, mounted on a common printed circuit board. It is installed in a DATASHELF 9100 within a DATACABINET 9000. Its primary function is to interface between a host computer and DATASET **110 1 Cartridges or** DATASET **1103 Standalone** datasets connected to the PABX.

DATASET **1103 Standalone:** The DATASET **1103 Standalone is packaged in a flat case which can be placed under a standard desk telephone set. It is functionally the same as the** DATASET **1101 Cartridge or one-half of the** DATASET **1102 Dual Rack Mounted card.**

Standalone **DATASET** 2103: The Standalone DATASET 2103 is a Synchronous/ Asynchronous data set which is used with Mitel digital private automatic branch exchanges (PABX) to interface peripheral devices to the PABX. It is packaged in a flat case which can be placed under a standard desk telephone set. The Standalone DATASET 2103 can be connected to a Digital Line Card within the PABX by a single twisted pair (the telephone set is connected independently).

Rack Mounted DATASET 2102: A Rack Mounted DATASET **2102 is a Synchronous/Asynchronous data set which is used with Mitel PABXs. It is installed in a** DATASHELF **9100 within a DATACABINET 9000. It is functionally the same as the Standalone** DATASET **2103 (it uses the same base printed circuit board). Each Rack Mounted** DATASET **2102 has LEDs on its front panel, but no switches or keys for manual operation; it interfaces to a PABX Digital Line Card circuit through a single pair. Its primary function is to interface between a host computer and the PABX; Standalone** DATASET **2103** datasets **distributed throughout the building access Rack Mounted** DATASET **2102** datasets **through the PABX.**

Terminals and Printers: A VT100 compatible terminal or IBM PC can be connected to the system as a Maintenance terminal. Printers are used to create hard-copy records such as traffic reports, maintenance information, etc.

CUSTOMER DATA ENTRY (CDE)

2.13 Customer Data Entry is accomplished from the Maintenance Terminal or from the Attendant Console. The console LCD guides the attendant through the data entry procedure by displaying a series of prompts and listing the required steps to be performed. The console display is comprised of four lines

of 80 characters each. The two top lines display the steps to be taken, and the two bottom lines display the prompts which define the 10 function keys on the Attendant Console. For additional information, refer to Practice 9109–094–210–NA, Customer Data Entry (CDE), and to Practice 9109–094–315–NA, Attendant Console Description.

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3. PHYSICAL DESCRIPTION

GENERAL

3.1 The SX-200 Digital PABX consists of a Control cabinet and an optional Peripheral cabinet. With Generic 1002, the following devices are not available: 672-port configuration, T1 trunks, Switch Matrix Card.

UNIVERSAL CONTROL CABINET (336–, 456–, AND 480– PORT CONFIGURATIONS)

3.2 The Control Cabinet for the 336–, 456–, and 480– port configurations contains a 144 port digital Control shelf with Bay 1 and Bay 2 in the lower position. Its Floppy Disk Drives plug directly into the backplane, and its Main Control Card directly controls up to three 6–circuit Power Fail Transfer cards. Access to control and peripheral cards is through the front door of the cabinet. The rear door allows access to line, trunk, and PCM cable entries, and to the PFT cards.

336–port
Control
Cabinet

3.3 The SX-200 Digital PABX 336-port Control cabinet (Figure I-I) includes a digital shelf (Bays 3 and 4, 96 ports each) above the 144 port Control shelf. Bays 3 and 4 are similar to Bay 1, except each also has a Bay Control Card (but no Disk Drive). The Bay 4 backplane does not have to be added concurrently with the shelf and Bay 3 backplane. The 336-port PABX is a single cabinet system; it cannot have a Peripheral cabinet.

Digital Bay 1 contains: 1 Bay Power Supply, 1 Floppy Disk Drive (powered and controlled from Bay 2), and up to 8 Digital Peripheral cards.

Digital Bay 2 contains: 1 Main Control Card, 1 Bay Power Supply, 1 Floppy Disk Drive, and up to 4 Digital Peripheral cards.

Digital Bays 3 and 4 each contain: 1 Bay Power Supply, 1 Bay Control Card, and up to 8 Digital Peripheral cards.

456-port
Control
Cabinet

3.4 The SX-200 Digital PABX 456-port Control cabinet includes a digital shelf (with Bay 3 only, 96 ports) above the 144 port Control shelf; Bay 3 is similar to Bay 1, except it also has a Bay Control Card (but no Disk Drive).

An optional 216–port analog Peripheral Cabinet (Bays 4 and 5) may be connected to the 456-port Control cabinet.

Digital Bay 1 contains: 1 Bay Power Supply, 1 Floppy Disk Drive (powered and controlled from Bay 2), and up to 8 Digital Peripheral cards.

Digital Bay 2 contains: 1 Main Control Card, 1 Bay Power Supply, 1 Floppy Disk Drive, and up to 4 Digital Peripheral cards.

Digital Bay 3 contains: 1 Bay Power Supply, 1 Bay Control Card, and up to 8 Digital Peripheral cards.

480–port Control Cabinet

3.5 The 5X-200 Digital PABX 480–port **Control cabinet (Figure 1-2) contains** a 120–port analog shelf (Bay 3) above the 144 port Control shelf.

An optional 216–port analog Peripheral cabinet (Bays 4 and 5) may be connected to the 480–port Control cabinet.

Digital Bay 1 contains: 1 Bay Power Supply, 1 Floppy Disk Drive (powered and controlled from Bay 2), and up to 8 Digital Peripheral cards.

Digital Bay 2 contains: 1 Main Control Card, 1 Bay Power Supply, 1 Floppy Disk Drive, and up to 4 Digital Peripheral cards.

Analog Bay 3 contains: 1 Peripheral Control Card, 1 Scanner card, 1 Digital Interface Card, and up to 15 Peripheral cards.

ANALOG PERIPHERAL CABINET (456– AND 480-PORT CONFIGURATIONS ONLY)

3.6 The SX-200 Digital PABX analog Peripheral cabinet contains a 120–port analog shelf (Bay 4) and an optional 96–port upper analog shelf (Bay 5) which **are connected to and controlled by the Control shelf through the PCM cable and the Digital Interface Card. Refer to Figure I-3.**

Analog Bay 4 contains: 1 Peripheral Control Card, 1 Scanner card, 1 Digitai Interface Card, and up to15 Peripheral cards.

Analog Bay 5 contains: 1 Digital Interface Card and up to 12 Peripheral cards.

672-PORT CONTROL CABINET

3.7 The SX-200 Digital 672-Port Control cabinet, shown in Figure 1–4, **con**tains the Control shelf, Bay 0 in the lower left position, Bay 1 on the lower right, and Bays 2 and 3 in the upper shelf. The Control cabinet supports up to **three** 6–circuit **power fail transfer cards. The 672-port configuration is not** available with Generic 1002.

Bay 0 contains: 1 Main Control Card, 1 Bay Power Supply, 1 Switch Matrix Card, and 2 Floppy Disk Drives.

Bays 1 to 3 each contain: 1 Bay Power Supply, 1 Bay Control Card, and up to 8 Digital Peripheral cards.

672-PORT PERIPHERAL CABINET

3.8 The SX-200 Digital PABX 672-port optional Peripheral cabinet (shown in Figure I-5) consists of 4 digital bays with 96 ports each. Each bay is connected to and controlled by Bay 0 in the Control cabinet. The 672-Port Peripheral cabinet also supports three 6–circuit power fail transfer cards, for a system total of 36 PFT circuits.

Bays 4 to 7 each contain: 1 Bay Power Supply, 1 Bay Control Card, and up to 8 digital Peripheral cards

NOTE: An SX-200 Digital 672-pot-t PABX may also be created by converting an installed 336–port Control cabinet to a Peripheral cabinet and add-ing a new 672-port Control cabinet.

POWER FAIL TRANSFER

3.9 Power Fail Transfer cards can be provided to connect preselected DTMF or Rotary telephones directly to CO trunks in the event of system failure.

MAINTENANCE PANELS

3.10 Two Maintenance Panels are provided. The Control Cabinet Mainte-nance Panel consists of connections for a maintenance Attendant Console, a maintenance terminal and power fail transfer switches. A connector for a re-mote maintenance terminal is on the rear panel of the Universal cabinet. The Peripheral Cabinet Maintenance Panel is not functional, with the exception of the POWER switch, and the PFT POWER SUPPLY, COMMON CONTROL, and MASTER SWITCH switches. The 672-port Peripheral cabinet does not have a Maintenance panel.

POWER SUPPLIES

3.11 The following identifies the power supply requirements for each config-uration:

336-port configuration: requires 4 Bay Power Supplies: one for each bay.

456-port configuration: requires 3 Bay Power Supplies for Bays 1, 2, and 3; and one rear door power supply for Bays 4 and 5.

480–port configuration: requires 2 Bay Power Supplies for Bays 1 and 2; and two rear door power supplies, one for Bay 3, and one for Bays 4 and 5.

672-port configuration: requires 8 Bay Power Supplies: one for each bay.

PERIPHERAL SHELF

BAY 4   BAY 3

MAINTENANCE PANEL

FANS

BAY 1   BAY 2

CONTROL SHELF

0

POWER DISTRIBUTION   AC FILTER   CC0017
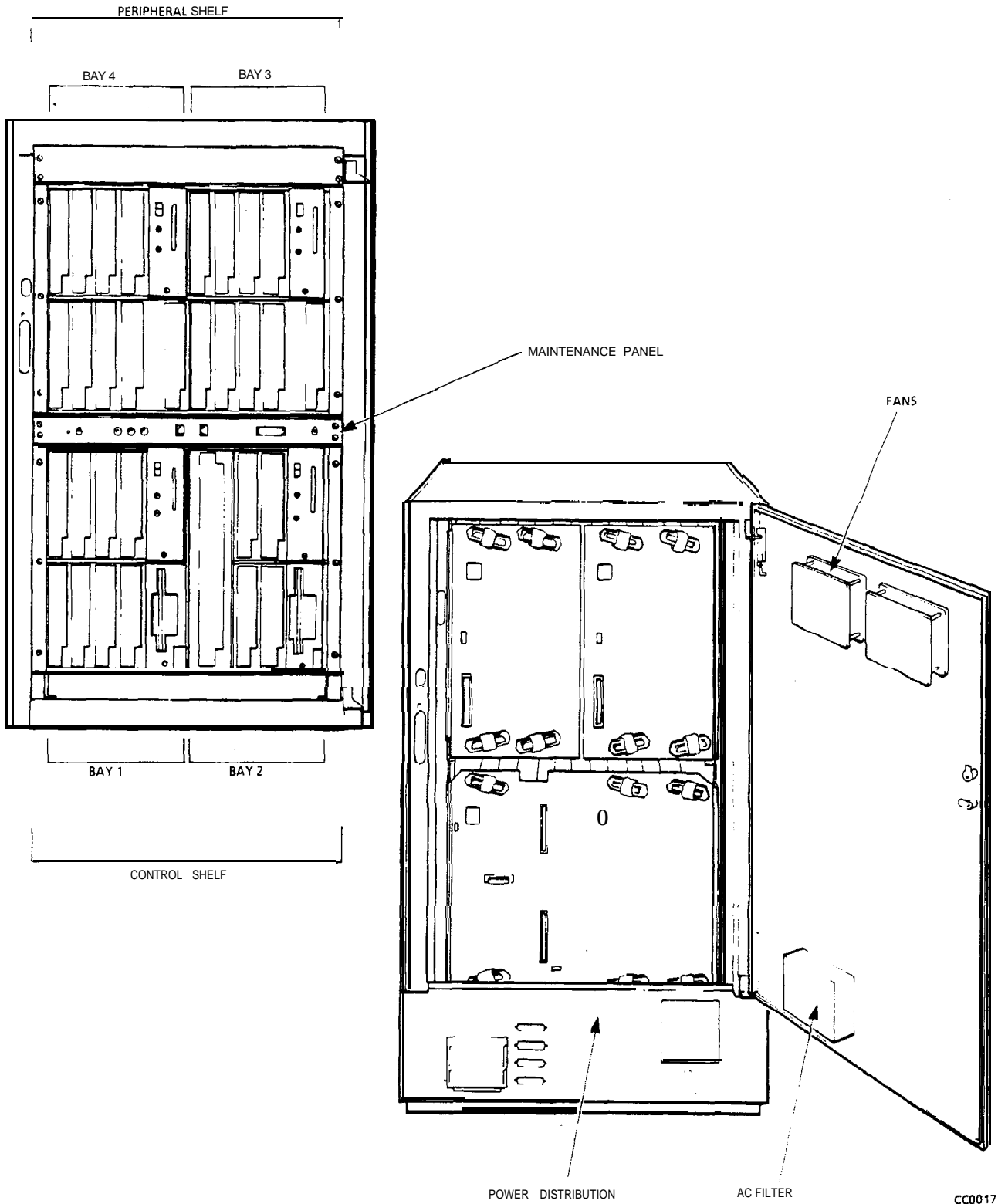
Figure 1-1 Universal Control Cabinet with Digital Peripheral Shelf

BAY 3 POWER SWITCH

PERIPHERAL SHELF
(BAY 3)

MAINTENANCE PANEL

PERIPHERAL
SHELF

FAN ASSEMBLY

BAY 1   BAY 2

CONTROL SHELF

CONTROL
SHELF

POWER SUPPLY
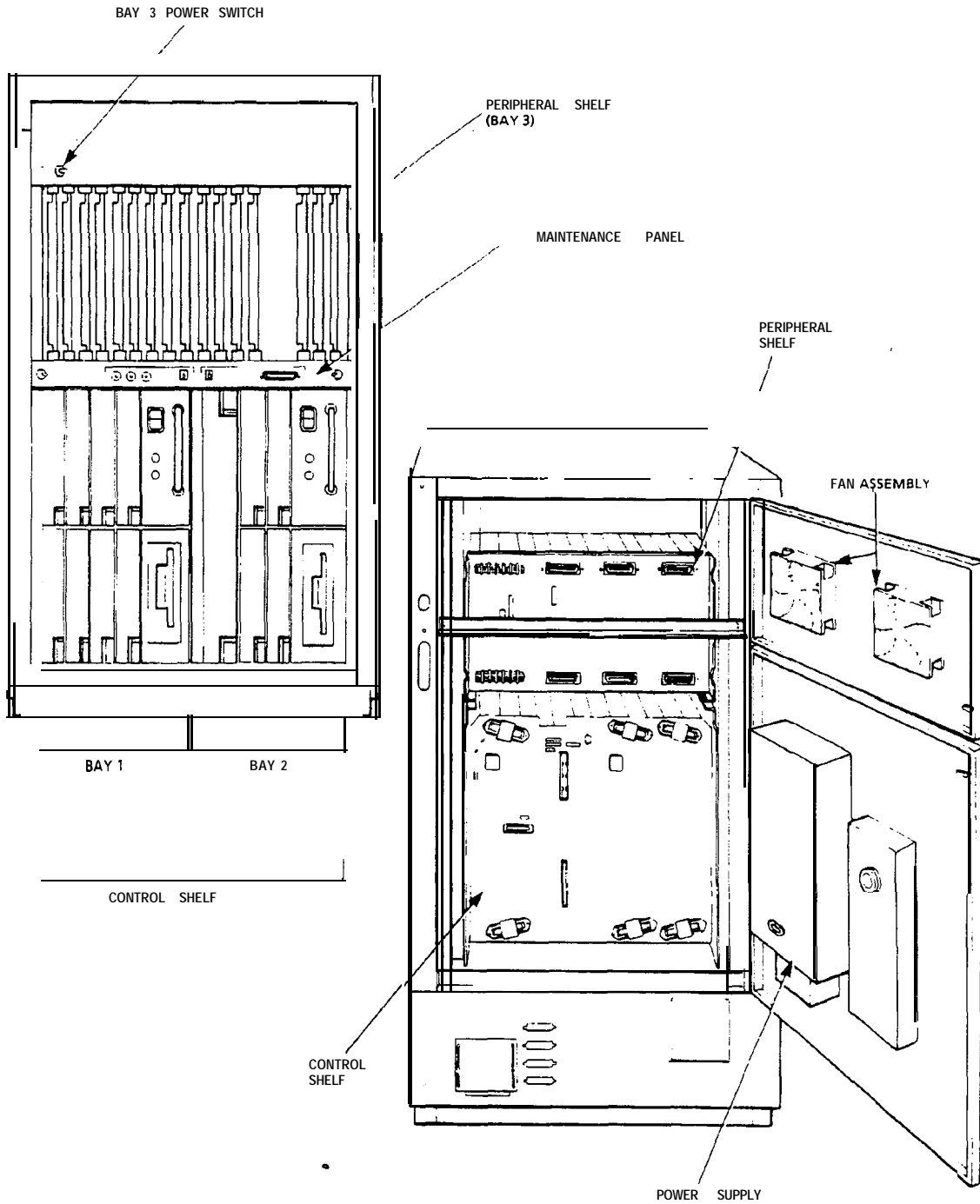
cc0010

Figure I-2 Universal Control Cabinet with Analog Peripheral Shelf
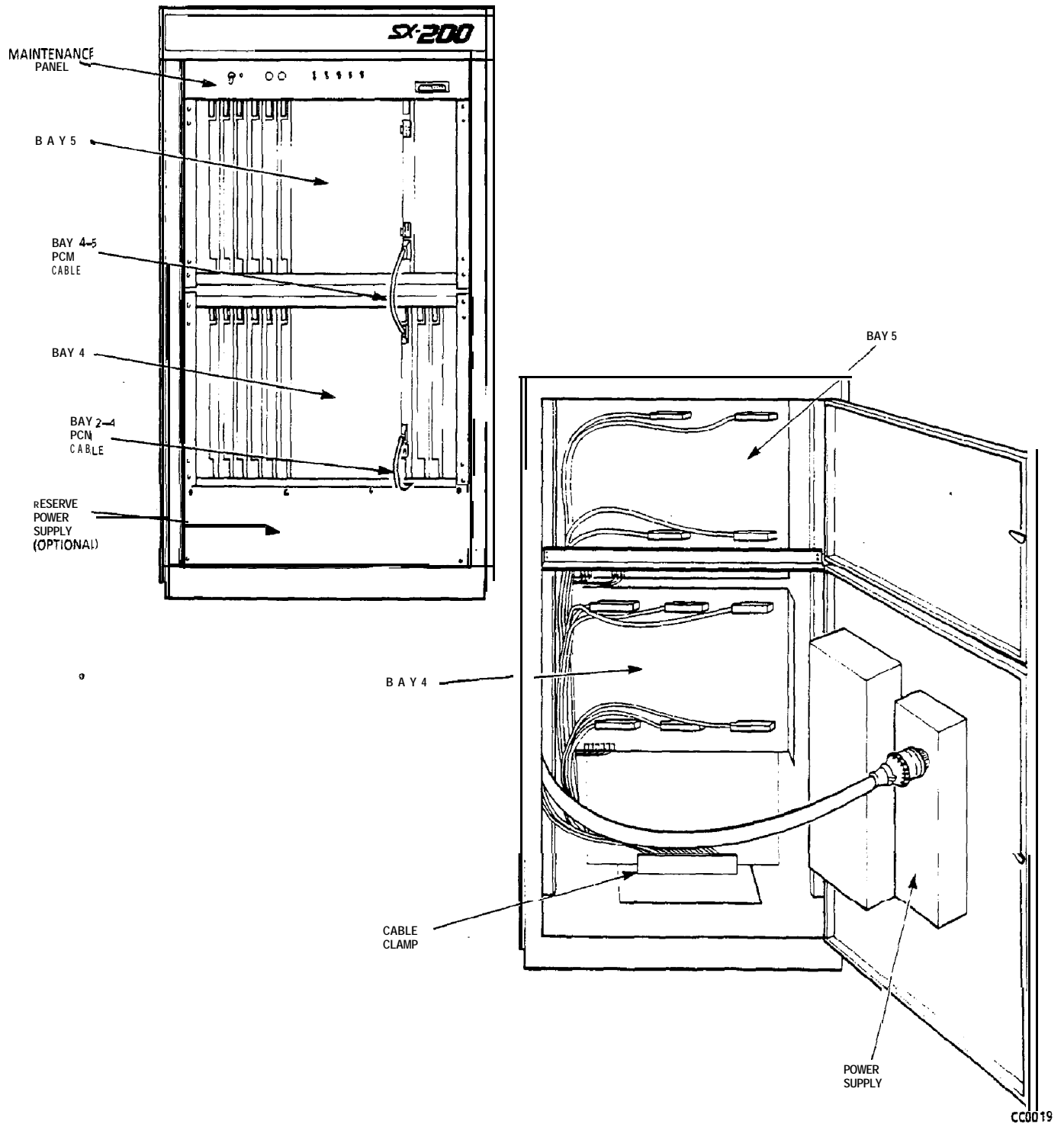
Figure 1-3 Analog Peripheral Cabinet
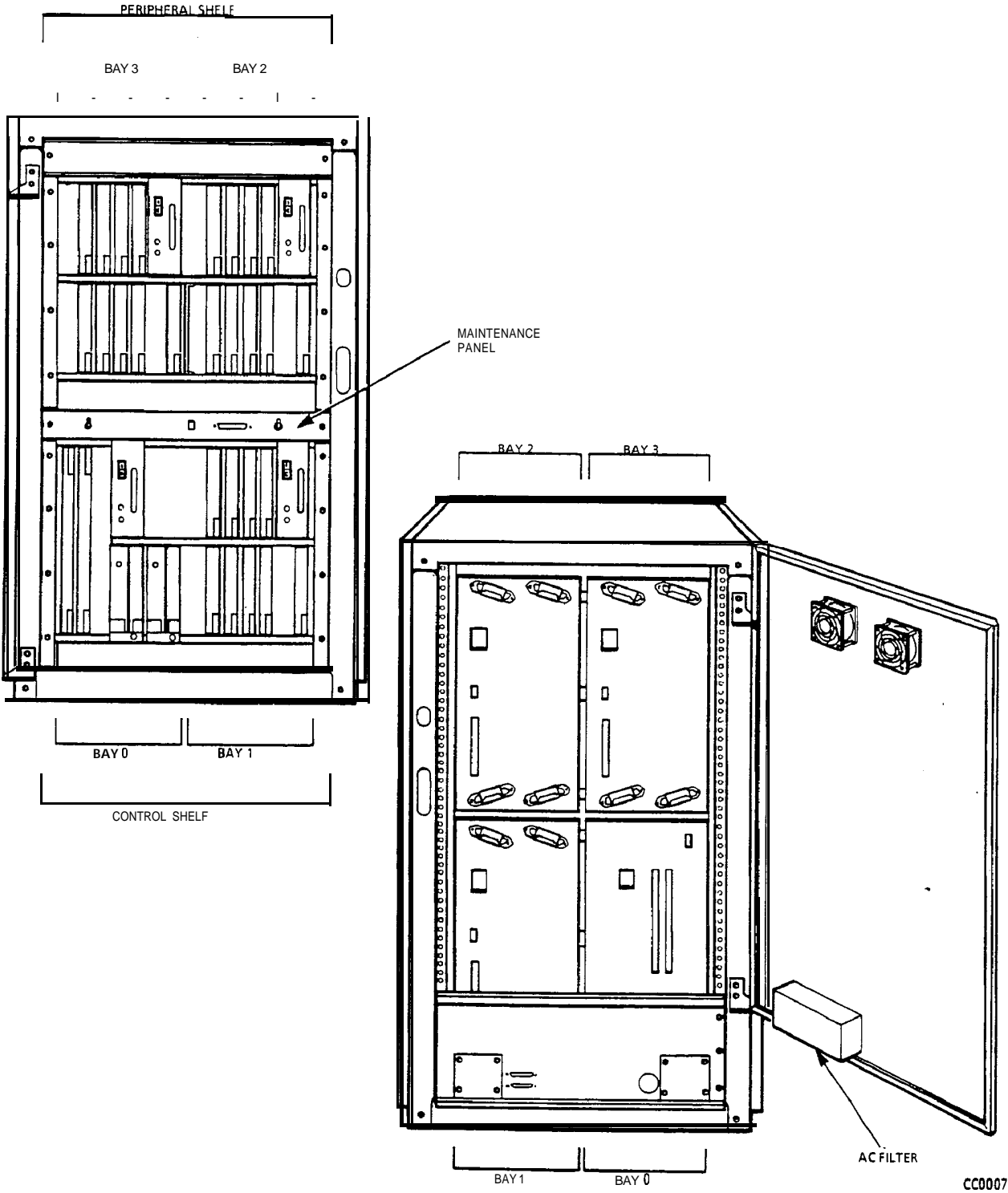
Figure 1-4 **672-Port** Control Cabinet
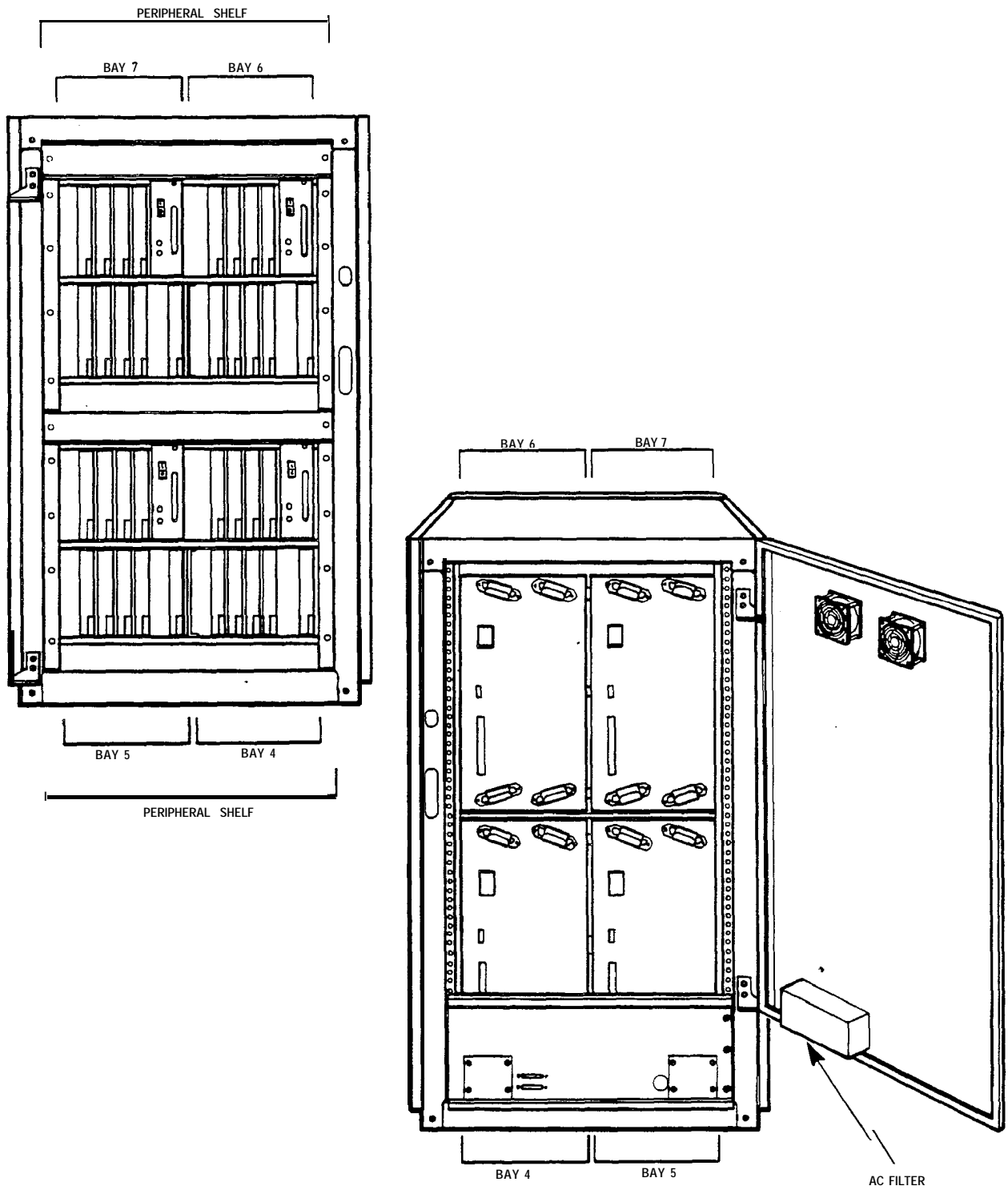
Figure **1-5 672-Port** Peripheral Cabinet

4. SYSTEM REQUIREMENTS

4.1 The environmental and electrical requirements for the *SX-200* Digital PABX are shown in Table 4-1 and Table 4-2 respectively.

Table 4-I Environmental Requirements		
Height Per Cabinet	96.0 cm	38.0 inches
Width Per Cabinet	60.0 cm	23.5 inches
Depth Per Cabinet	70.0 cm	27.5 inches
Weight Fully Loaded	230 kg	500 pounds
Operating Temperature	10 to 40° C	50 to 104° F
Storage Temperature	-20 to 50° c	–4 to 122° F
Relative Humidity (Operating) (non-condensing)	20 to 80%	20 to 80%
Relative Humidity (Storage) (non-condensing)	10 to 90%	10 to 90%

Table 4-2 Electrical Requirements	
AC Input Voltage	102-I 35 or 204-270 Vac
AC Input Frequency	47-63 Hz
AC Input Power	125 Watts RMS for each bay
DC Output Power	100 Watts for each bay
Reserve Power	Uninterruptable Power Supply (or Battery Back-uD Unit in analoa Perioheral cabinet only)

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5. HARDWARE OVERVIEW

GENERAL

5.1 The heart of the system is the Main Controller, a 16-bit microprocessor operating at a clock frequency of 8 megaHertz. The Main Controller, through its address, data, and control buses, interfaces to a floppy disk unit, memory, Direct Memory Access Controller (DMAC), a Digital Signal Processor (DSP), a Message Subsystem, and a DX Matrix or Switch Matrix Card.

In the 336–, 456–, and 480–Port configurations, the MCC controls digital Bays 1 and 2 directly.

In the 336-pot-t configuration, the MCC controls Bays 3 and 4 through their Bay Control Cards.

In the 456-port configuration, the MCC controls Bay 3 through its Bay Control Card, and controls Bays 4 and 5 through two Digital Interface Cards (DIC) which communicate with the Main Control Card via the DX module.

In the 480–port configuration, the MCC controls Bays 3, 4, and 5 through three DICs which communicate with the Main Control Card via the DX module.

tn the 672-port configuration, the MCC controls Bays 1 through 7 through their Bay Control Cards; Bay 0 (which has no peripheral cards) is controlled directly through the Bay 0 backplane.

MAIN CONTROL CARD

5.2 The Main Control Card (MCC) performs call processing and maintains overall control through communication with the Bay Control card or Peripheral Control card in each bay. In 336–, 456–, and 480–port systems, the MCC directly controls Bays 1 and 2 (COMBO backplane only). The architecture of the Main Control Card varies according to system configuration; for example, in a 672-port system, some system functions normally performed by the MCC are controlled through the Switch Matrix Card (the DX module is removed from the MCC in a 672-port configuration).

SWITCH MATRIX CARD

5.3 The Switch Matrix Card (SMC) is required only for a 672-port system; it is installed in Bay 0. It is used to expand the DX switching matrix which in other configurations is located on the Main Control Card. A DX Module is not installed on the MCC when a SMC is present.

FLOPPY DISK DRIVES

5.4 All system software and Customer Data is stored on two 5.25–inch floppy disk drives. Upon power-up, Call Processing and Maintenance routines are

downloaded from the disk to the Main Controller Memory using Direct Memory Access (DMA).

BAY CONTROL CARD

5.5 The Bay Control Card (BCC) interfaces the peripheral cards of digital bays to the MCC (one BCC for each Bay, except Bays 1 and 2 of a 144-port Control backplane).

PERIPHERAL CONTROL CARD

5.6 The Peripheral Control Card (PCC) controls all basic functions of the analog Peripheral Cards. The Peripheral Control Card also handles real time tasks, such as rotary digit collection, tone cadencing, signaling on trunks, and monitoring hardware activity via the Peripheral Control Bus. All events are reported to the Main Controller via the Message Subsystem.

DIGITAL INTERFACE CARD

5.7 The Digital Interface Card (DIC) provides an interface between the analog signals on the speech paths of the analog peripheral bays and the digital PCM links to the DX Module on the MCC. The DIC converts analog signals in the 300Hz — 3kHz band to PCM signals at 64 kilobits per second. The DIC accepts **32 analog voice inputs to provide a 2.048 Mbit/s (32 X 64 kb/s) PCM output bit** stream to the DX module. It also converts a 2.048 Mb/s PCM bit stream from the DX Module to 32 analog voice signals, and provides the Message Subsystem interface.

SCANNER CARD

5.8 The Scanner Card scans the Analog Peripheral ports to detect signals that require processor action. When processor action is required, an Interrupt Request is sent to the Peripheral Processor.

PERIPHERAL CARDS

5.9 Digital Peripheral Cards measure 35.8 cm (14.1 inches) long and 15.8 cm (6.2 inches) high, and consist of the following:

Universal Card. This card holds up to four modules as listed below:

● Receiver/Relay Module (4 DTMF Receivers and 2 Relays per Module)

● Music On Hold/Pager Module (one music input, one paging output)

● Console Module (interfaces to one console)

● E&M Trunk Module (one trunk).

Each module is assigned a power rating. The cumulative ratings of the modules on the Universal card cannot exceed a value of 10. The ratings of the modules are as follows:

- Receiver/Relay Module: 2

- Music On Hold/Pager Module: 1

- Console Module: 5

- E&M Trunk Module: 3

For example, a Universal Card could be configured with two Console Modules (5 + 5 = 10), or one Console Module, two Receiver/Relay Modules, and one Music On Hold/Pager Module (5 + 2 + 2 + 1 = 10).

ONS Line Card. There are 12 DTMF/Rotary line circuits per card. The card accepts up to three industry-standard DTMF/Rotary telephone sets per line circuit. The ONS line card interfaces the telephone analog input with the system's digital crosspoint network. It converts the analog telephone signals into the digital format used by the system, and converts the digital information back into the analog signals required by the telephone sets. This is a low power card that may be installed in any digital peripheral slot.

Digital Line Card. The Digital Line Card (DLC) interfaces *SUPERSET 3*DN telephones, *SUPERSET* 4DN telephones, asynchronous DATASETs, synchronous DATASETs, and the *SUPERCONSOLE 1000* attendant console to the *SX–200* Digital PABX through its Digital Network interface Circuits (DNIC). Each DNIC communicates via a tip-ring pair to a device which also communicates via a DNIC; the DNIC is a proprietary integrated circuit. The card has 12 circuits, and is a low power card that can plug into any digital peripheral slot.   If a *SUPERCONSOLE1000* attendant console is plugged into a DLC, that DLC must be installed in a high power slot.

LS/GS Trunk Card. The LS/GS Trunk Card contains six loop start or ground start trunks (jumper-selectable) and six message registration inputs. This is a low power card that may be installed in any digital peripheral slot.

Control Over Voice (COV) Line Card. The COV Line Card interfaces a *SUPERSET 3* telephone or a *SUPERSET 4* telephone to the PABX. Each COV card connects six *SUPERSET* telephones to the PABX. This is a high power card which can only plug into an upper digital peripheral slot.

Direct Inward Dial (DID) Trunk Card. The DID trunk card contains sixl-way Direct Inward Dial circuits. The DID trunk allows incoming trunk calls to dial directly to an extension within the PABX without Attendant intervention. It plugs into an upper (high power) slot of any digital Bay.

Off-Premise (OPS) Line Card. The OPS line card interfaces the PABX to extensions which are part of the system, but are located in a different building from the PABX. It contains additional protection circuitry to protect the PABX from **extraneous high voltages** or induced currents that may appear on the line. Each OPS card has six circuits which each connect to an extension. The OPS line card plugs into an upper (high power) slot of any digital Bay.

T1 Trunk Card. The T1 Trunk Card provides an interface to one 24–channel (D4 format) T1 trunk. It is a high power card; because of signal cable restrictions it **must be positioned in slot 6 (slot 4 of COMBO Bay 2).** T1 trunks are not available with Generic 1002.

5.10 The analog Peripheral cards, each measuring 32.5 cm (13 inches) long and 25.0 cm (10.0 inches) high, consist of the following:

8–station Line Card. This card connects to up to eight DTMF/Rotary telephone sets.

CO Trunk Card. This card connects to four CO trunks (LS/GS).

SUPERSET™ Line Card. This card connects to up to eight SUPERSET 3 or SUPERSET 4 electronic telephone sets (maximum of eight cards per cabinet).

E & M Trunk Card. This card provides two 2– or 4-wire E & M tie trunks.

DID/Loop Tie Trunk Card. This card provides two Direct Inward Dial trunks or loop tie trunks.

6. SOFTWARE OVERVIEW

GENERAL

6.1 The SX-200 Digital PABX software is divided into two separate sections, one to run the Main Control processor and one to run the Peripheral Control processors.

Upon power-up, Call Processing and Maintenance routines are downloaded from the disk to the Main Controller Memory using Direct Memory Access (DMA). The Main Controller executes the Maintenance routines and logs all major occurrences to the disk, non-volatile random access memory, Main Control Card 7–segment displays, and the maintenance terminal (if equipped).

When the system is functional, the software relevant to the peripheral systems is downloaded from the Main Controller Memory to each Peripheral Controller's Memory. The transfer is accomplished via the Message Subsystem link, using a single 64 kilobit per second channel in each direction, for each Peripheral Controller (Peripheral Control Card or Bay Control Card).

6.2 Each software section has its own layers to carry out system functions. The layers defined below apply to both controllers unless otherwise specified.

PHYSICAL LAYER

6.3 The physical layer consists of the-operating hardware such as the microprocessor, its associated memory, and input/output devices.

SCHEDULING LAYER

6.4 This layer provides for scheduling of the different events to be handled.

COMMUNICATIONS LAYER

6.5 This layer takes care of the Message Subsystem software. The messages between the processors are sent in HDLC formatted packets. The formatting, sending, receiving, and unpacking of these messages is handled by the Message Subsystem software. Messages are transmitted using a single 64 kb/s channel in each direction. If required, the transmission rate can be increased to 128 kb/s by using two channels.

MESSAGE SUBSYSTEM

6.6 The Message Subsystem is used as a communication link between the Main Controller and the Peripheral Controllers. Initially the Message Subsystem is used to download software from the Main Controller memory to the Peripheral Controllers' memory using one or two channels per peripheral bay.

During system operation, a single channel is used as a communication link between the Main and Peripheral Processors. Messages are sent in HDLC formatted frames, ensuring error-free transmission of data.

DEVICE INPUT/OUTPUT LAYER

6.7 This layer handles low level details of interfacing to input/output devices such as telephony devices and RS-232 ports.

UTILITIES LAYER

6.8 This software layer provides general utilities needed for resource management, error handling, and command interpretation.

MAIN CONTROL PROCESSOR APPLICATIONS SOFTWARE

6.9 The Main Control Processor Applications software is responsible for controlling all activities in the *SX-200* Digital PABX. It communicates with the peripheral processors via the Communications software layer for such things as "origination", "digits received", etc. It also interprets Classes of Service, System Abbreviated Dial, Personal Speed Call, Automatic Route Selection, etc. The Main Control Processor software controls all Call Processing, Customer Data Entry, and Maintenance management applications.

PERIPHERAL CONTROL PROCESSOR SOFTWARE

6.10 The peripheral processor handles tasks that are real-time intensive, such as debouncing switchhooks, collecting rotary dial pulses, tone cadencing, and signaling on trunks. The peripheral processor is also responsible for monitoring hardware activity, such as cards being added and removed, and reporting all events to the Main Control Processor via the Message Subsystem. The Main Control Processor acts as the manager of the tasks performed by the Peripheral Control Processor.

DATABASE

6.11 The Call Processing software is stored on floppy disk. Upon system power-up, the disk data is transferred to the Main Control Dynamic Random Access Memory. Customer Data Entry information is kept on floppy disk for retrieval in case of major system failures. Other system information such as switchhook flash timing, trunk timings, and rotary digit translation for different countries, is routed to the Peripheral Control systems for processing.

7. MAINTENANCE

GENERAL

7.1 This Part briefly describes the maintenance diagnostics for the *SX–200* Digital PABX. These diagnostics test the operation of the system hardware. The Main Control system has the responsibility of controlling and scheduling the diagnostics.

7.2 Upon power-up or reset conditions, the diagnostics software (if enabled) has temporary control of the entire system. Once the system has been verified and the PABX is operational, the diagnostics run as low priority background tasks.

MAINTENANCE OBJECTIVES

7.3 The objectives of the maintenance routines are to isolate a fault to a replaceable card or module. Maintenance functions can be performed from either the Attendant Console or an RS-232 terminal.

RS-232 MAINTENANCE TERMINAL

7.4 The Main Control system interfaces to an RS-232 Maintenance Terminal and to the Attendant Console in order to enable the user to access the diagnostic menu. The diagnostic menu will direct the user through the required procedures in order to interrogate the status of the diagnostic subsystem. The user can initiate maintenance routines with specific parameters via the terminal. The results can then be routed to the appropriate device (printer or terminal) according to the user's instructions.

DIAGNOSTIC LOG FILES

7.5 A file of the major occurrences in the diagnostic system is maintained on disk and/or in non-volatile RAM. This file can be directed to the RS-232 Maintenance Terminal, the Attendant Console, or a printer.

TYPES OF DIAGNOSTICS

7.6 There are three types of diagnostic routines as listed below:

- Power-up

- Background

- Directed

The Power-up diagnostic routines consist of the complete set of diagnostics for the system. When enabled, they are executed upon system power-up and

may last several minutes. These diagnostics will perform a rigorous check on the response and performance of the hardware and firmware. Any failures will be logged to the LED display, the disk, the non-volatile RAM, and the **RS-232** terminal.

The Background diagnostic routines consist of the complete routines which are run during system operation. When enabled they are executed as low priority background routines during system operation.

Directed diagnostics are diagnostic routines that are selected by the maintenance person and then run on specified circuits or devices.

8. GENERIC 1002 AND GENERIC 1003 FEATURES

8.1 The following features are available with Generic 1002 and/or Generic 1003 software.

Table 8–1 Attendant Features		
Feature	**Generic 1002**	**Generic 1003**
Abbreviated Dial Number Entry	x	x
Alarm Readout	x	x
Bell Off	x	x
Busy Override	x	x
Call Announce	x	x
Callback Busy/No Answer	x	x
Call Forward Setup and Cancel	x	x
Call Selection: LDN, Recall, Internal	x	x
Called/Calling Name, Number, COS and COR Display		x
Call Splitting and Swapping	x	x
Calls Forwarded on No Answer	x	x
Calls Waiting Display	x	x
Conference	x	x
Console Language Display	x	x
Console Lockout	x	x
Date Display and Time Display	x	x
Default Call Positions	x	x
Destination Key	x	x
Direct Trunk Select	x	x
DISA Code Setup Enable	x	x
Display of *SUPERSET* Messages	x	x
Do Not Disturb (DND) Setup and Cancel	x	x
Extension Busy-out	x	x
Flash over Trunk	x	x
Function Access	x	x
		Page 1 of 2

Table 8–1 Attendant Features
(continued)

Feature	Generic 1002	Generic 1003
Hold Positions	x	x
Implicit New Call	x	x
Individual Directory Number	x	x
Interposition Calling and Transfer	x	x
Last Number Redial	x	x
Message Waiting Setup and Cancel	x	x
New Call Ring	x	x
Night Services	x	x
Outgoing Call Restriction Setup	x	x
Override Announce	x	x
Paging Access	x	x
Paged Hold Access	x	x
Serial Call	x	x
Setup of Advisory Messages	x	x
Source Key	x	x
Timed Recall	x	x
Tone Signaling	x	x
Training Jacks	x	x
Transfer to Campon	x	x
Transparent Multi–Console Operation	x	x
Trunk Busy Out	x	x
Trunk Group Status Display	x	x

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Table 8-2 System Features		
Feature	Generic 1002	Generic 1003
Abbreviated Dial (System Speed Call)	x	x
Account Codes	x	x
Alternate Trunk Recall	x	x
Analog Networking		x
Attendant Access (Dial 0)	x	x
Attendant Automatic Overflow	x	x
Automated Attendant		x
Automatic Call Distribution (ACD) Feature Package		x
Automatic Number Identification (ANI)	x	x
Automatic Route Selection (ARS)	x	x
Calibrated Flash	x	x
Callbacks	x	x
Call Rerouting	x	x
Campon	x	x
Campon Warning Tone	x	x
Class of Restriction (COR)	x	x
Class of Service (COS)	x	x
Console LDN Keys	x	x
Consoleless Operation	x	x
Contact Monitor	x	x
COV Port Voice Mail	x	x
Customer Data Entry (CDE)	x	x
Customer Data Print	x	x
Data Demultiplexor	x	x
Default Customer Data	x	x
Device Interconnection Control	x	x
Dial Tone Disable	x	x
		Page 1 of 5

Table 8-2 System Features (continued)		
Feature	Generic 1002	Generic 1003
Dictation Trunks	x	x
DID/Dial-in/TIE Intercepts	x	x
Digit Translation	x	x
Direct-In Lines (DIL)	x	x
Direct Inward Dialing (DID)	x	x
DID with Intercept to Recording	x	x
DID Trunk Support	x	x
Direct Inward System Access (DISA)	x	x
Direct Station Select / Busy Lamp Field (DSS/ BLF)	x	x
Direct to ARS	x	x
Directed Input/Output	x	x
Discriminating Ringing	x	x
DTMF to Rotary Conversion	x	x
E&M Trunk Support	x	x
Expensive Route Warning	x	x
Flash Control	x	x
Flash Disable	x	x
Flash for Dial 0 (Attendant)	x	x
Flash Timing	x	x
Flexible Night Service	x	x
Flexible Numbering Plan (Conflict Dialing)	x	x
Global Find Access Code	x	x
Hang Up Priority	x	x
Hot Line	x	x
Hunt Groups	x	x
Illegal Access Intercept	x	x
Inhibit Automatic Supervision	x	x

Page 2 of 5

Table 8-2 System Features (continued)		
Feature	Generic 1002	Generic 1003
Inhibit Trunk Ring-Me-Back During Dialing	x	x
Intercept to Recorded Announcement	x	x
inward Restriction (DID)	X	x
Last Party Receives Dial Tone	x	X
Limited Wait for Dial Tone	x	x
Line Lockout	x	x
Line Privacy	x	x
Line Types and Appearances for *SUPERSET* Telephones	x	X
Lockout Alarm	X	X
Logical Lines	x	x
Manual Line	X	X
Meter Pulse Collection	x	x
Moving Stations and *SUPERSET* Telephones	x	X
Multi-Attendant Positions	x	x
Multiple Trunk Groups	x	x
Music on Hold	x	X
Names	X	x
Never a Consultee	x	x
Never a Forwardee	x	x
Night Bells	x	X
Night/Day Switching - *SUPERSET 4* and *SUPERSET 4DN* Telephones	x	x
Night Services	x	x
Node Identification		x
Non-Busy Extwensions	x	X
Off-Premise Extensions	x	x
Originate Only Extensions	x	x
Overlap Outpulsing	x	x
		Page 3 of 5

Table 8-2 System Features
(continued)

Feature	Generic 1002	Generic 1003
Override Security	x	x
Paging	x	x
Parallel Connection of Industry-standard Telephones	x	x
Pickup Groups	x	x
Power Fail Transfer (PFT)	x	x
Priority Dial 0	x	x
Programmable Feature Keys – Digital SUPERSET Telephones	x	x
Range Programming	x	x
Recall	x	x
Receive Only Extensions	x	x
Recording Support	x	x
Resale Package	x	x
Ringing Plan	x	x
Ringing Time–out (Final Ringback)	x	x
Satellite PABX	x	x
Station Message Detail Recording (SMDR)	x	x
Station Transfer Security	x	x
SUPERSET Telephone Support	x	x
System Identifier	x	x
Tandem Operation	x	x
Tenanting	x	x
Toll Control	x	x
Tone Demonstration Package	x	x
Tone–to–Pulse Conversion	x	x
Tone Plans	x	x
Traffic Measurement	x	x
Transfer Dial Tone	x	x

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Table 8-2 System Features (continued)		
Feature	Generic 1002	Generic 1003
Trunk Answer from Any Station (TAFAS) Day and Night	x	x
Trunk Circuit Descriptor Options	x	x
Trunk Dial Tone Detection	x	x
Trunk Groups	x	x
Trunk Operation — Direct Inward Dial (DID)	x	x
Trunk Operation — Direct Inward System Access (DISA)	x	x
Trunk Operation — Non-Dial-In	x	x
Trunk Operation — Non-Dial-in CO	x	x
Trunk Operation — TIE	x	x
Trunk Support — CO (LS/GS)	x	x
Trunk Support- Direct Inward Dial (DID)	x	x
Trunk Support — E&M	x	x
Trunk Support — T1		x
Uniform Call Distribution (UCD)	x	x
Vacant Number Intercept	x	x
Variable Timers (fully programmable)	x	x
Verified Account Codes	x	x
		Page 5 of 5

.

Table 8-3 Industry-standard and *SUPERSET* Telephone Features		
Feature	Generic 1002	Generic 1003
Broker's Call	x	x
Call Hold	x	x
Call Park	x	x
Cal I Retrieve	**X**	**X**
		Page 1 of 3

Table 8-3 Industry-standard and *SUPERSET* Telephone Features (continued)		
Feature	Generic 1002	Generic 1003
Cal I back Busy (extension and ARS)	X	X
Dial Call Pickup	X	X
Directed Call Pickup	X	X
Direct Outward Dialing	X	X
Discriminating Dial Tone	X	X
Do Not Disturb	X	X
External Call Forwarding	X	X
Flash for Attendant	X	X
Flash Disable	X	X
Forwarding	X	X
Hot Line	X	X
Hunt Groups	X	X
Immediate Ring	X	X
Inward Restriction (DID)	X	X
Line Lockout Alarm	X	X
Manual Line	X	X
Never a Consultee	X	X
Never a Forwardee	X	X
No Dial Tone	X	**X**
Originate Only	X	X
Override Security	X	X
Paging Access	X	X
Priority Dial 0	X	X
Receive Only	X	X
Transfer, Consultation Hold/Add On	X	X
Transfer Dial Tone	X	X
Transfer with Privacy	X	X
		Page 2 of 3

Table B-3 Industry-standard and *SUPERSET* Telephone Features (continued)		
Feature	**Generic 1002**	**Generic1003**
Trunk Answer From Any Station (TAFAS) Day and Night	X	X
Trunk Camp-On Warning Tone	X	X
		Page 3 of 3

Table B-4 *SUPERSET* Telephone Features		
Feature	**Generic 1002**	**Generic 1003**
Account Code Access	X	X
Add Held	X	X
Advisory Messages	X	X
ARS Expensive Route Warning Message	X	X
Auto-Answer	X	X
Auto-Hold	X	X
Background Music	X	X
Busy and Hold Indications	X	X
Call Announce	X	X
Call Duration Display	X	X
Cal l-Me-Back Messages	X	X
Call Hold (via HOLD key)	X	X
Call Hold Retrieve (via pressing line key)	X	X
Call Split	X	X
Call Swap	X	X
Called/Calling Party Identification	X	X
Callback (Busy and No Answer)	X	X
Camp-on	X	X
Camped-on Party Identification	X	X
Cancel	X	X
		Page 1 of 3

Table 8-4 *SUPERSET* Telephone Features (continued)		
Feature	Generic 1002	Generic 1003
Date/Time Display	x	x
Delay Ring Line Appearances	x	x
Display Function	x	x
Do Not Disturb Setup and Cancel with Indication	x	x
End–to–End Signaling	x	x
Executive Busy Override	x	x
Handsfree Operation	x	x
Holiday Messages	x	x
Immediate Line Selection	x	x
Immediate Ring Line Appearances	x	x
Intercom	x	x
Language Selection	x	x
Last Number Redial	x	x
Message Waiting Indication	x	x
Messaging – Advisory	x	x
Messaging – Call Me Back	x	x
Microphone On/Off	x	x
Multiline Appearance (key line and multiple call)	x	x
Music on Camp–on/Hold	x	x
Names		x
New Call Tone	x	x
Night Answer (TAFAS)	x	x
Night Switching (for Tenants)	x	x
Non–Busy Extension	x	x
No Ring Line Appearances	x	x
Overriding Party Identification	x	x
Paging Access (all zones)	x	x
		Page 2 of 3

Table 8—4 *SUPERSET* Telephone Features (continued)		
Feature	Generic 1002	Generic 1003.
Pickup — local and directed	x	x
Prime Line	x	x
Privacy/Privacy Release	x	x
Ringer Tone Adjustment	x	x
Ringer Volume Control	x	x
Secretarial Line	x	x
Speaker On/Off	x	x
Speaker Volume Control	x	x
Speed Call Keys	X	x
Subattendant Recall	x	x
Swap (Trade Calls)	x	x
Swap Campon	x	x
Timed Reminder	x	' x
Transfer/Conference	x	x
User Programmable	x	x
		Paae 3 of 3

Table 8—5 Hotel/Motel Features		
Feature	Generic 1002	Generic 1003
4ttendant Call Block Setup	x	x
Attendant Message Register Audit	x	x
Attendant Outgoing Call Restriction Setup	x	x
Automatic Wake-Up	x	x
Guest Room *SUPERSET* 3DN Telephone Key Setup		x
Maid in Room Status — *SUPERSET*. and *SUPERSET* 4DN Telephone		x
		Page 1 of 2

Table 8-5 Hotel/Motel Features (continued)		
Feature	**Generic 1002**	**Generic 1003**
Message Lamp Test	x	x
Message Register Audit	x	x
Message Registration	x	x
Property Management System (PMS)	x	x
Room Status -Attendant	x	x
Room Status Display – *SUPERSET 4* and *SUPERSET 4*DN Telephones		x
Room Status Printout	x	x
		Page 2 of 2

Table 8-6 Data Features		
Feature	**Generic 1002**	**Generic 1003**
Associated Data Line (ADL)	x	x
ADL Hotline	x	x
ADL Speed Call Originate	x	x
Abbreviated Dial For Data Calls	x	x
Auto-Answer	x	x
Associated Modem Line	x	x
Automatic Data Route Selection (ADRS)		x
Data Account Codes		x
Data Hunt Groups	x	x
Data Security	x	x
Data Station Message Detail Recording (DATA SMDR)	x	x
Data Station Queuing	x	x
Data Transceiver (DTRX)	x	x
DTRX Call By Name	x	x
		Page 1 of 2

Table 8-6 Data Features (continued)		
Feature	Generic 1002	Generic 1003
DTRX Call Originate/Disconnect	x	x
DTRX Help	x	x
DTRX Hotline	x	x
DTRX Messages	x	x
DTRX Queuing/Camp-on	x	x
Modem Pooling		x
Modem Pooling Queuing		x
		Page 2 of 2

Table 8-7 Maintenance Features		
Feature	Generic 1002	Generic 1003
Alarm indication	x	x
Alarm LEDs	x	x
Alarm Status Display	x	x
Automatic Diagnostics	x	x
Configuration Report	x	x
Copy Database	x	x
Customer Data Entry (CDE) Backup and Restore	x	x
Device Error Analysis Statistics	x	x
Device Status Report	x	x
Diagnostics	x	x
Remote Maintenance Administration and Test (RMATS) Access	x	x
Remove from Service, Return to Service	x	x
Show, Set Date	x	x
Show, Set System Time	x	x
		Page 1 of 2

Table 8-7 Maintenance Features (continued)		
Feature	Generic 1002	Generic 1003
SUPERSET Telephone Loop Test	X	X
System Logging Facility	X	X
Test Line Function	X	X
		Page 2 of 2

SX–200® DIGITAL PABX

Features Description

This practice describes each of the features available for the MITEL SX-200 DIGITAL PABX. Feature descriptions include the required conditions, customer data programming and operating procedures.

Practice :	9109–094–105–NA
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Table of Contents

List of Tables

1. INTRODUCTION

GENERAL

1 .1 This Practice describes the features provided by the MITEL *SX-200*® DIGITAL private automatic branch exchange (PABX).

REASON FOR REISSUE

1.2 This Practice is reissued to add new information for the SX-200 DIGITAL PABX with Generic 1002 and Generic 1003 software. As this issue contains extensive changes, revision bars have not been used to identify the changes from previous issues.

ABOUT THIS PRACTICE

Practice
Structure

1.3 The feature descriptions in this practice are grouped into six major categories. Separate sections of the practice describe the features in each category. The categories are:

Attendant Features: The Attendant, through the console, has access to a number of specific features described in this section of the practice. Also refer to Practice 9109-094-315-NA, Attendant Console Description for detailed operating information.

System Features: These are features which apply on a system-wide basis rather than on a peripheral level (e.g., station or Attendant level).

Telephone Features: These are features which can be activated by users having industry-standard telephones (rotary dial or DTMF), or *SUPERSET*™ Telephones.

Hotel/Motel Features: These features are unique to the hotel/motel application of the *SX-200* DIGITAL PABX.

Data Features: These are features which apply on a system wide basis for data users equipped with data devices such as PCs and Datasets, and associated. telephones (industry-standard or *SUPERSET* telephones).

Maintenance Features: The SX-200 DIGITAL PABX has a comprehensive maintenance package. Also refer to Practice 9109-094-353-NA, General Maintenance Information, and Practice 9109-094-351-NA, RS-232 Maintenance Terminal.

The practice also contains separate appendixes for the following:

Glossary of Terms: Defines commonly used PABX terms.

Summary of Call Types for Call Rerouting: Describes the types of calls found in the call rerouting table.

Data Glossary: Defines common terms used in the sections of this Practice covering the data features in the *SX-200* DIGITAL PABX. Also includes pin assignments for RS-232C connectors.

Index: Contains detailed cross references for all PABX features, Class of Service (COS) options and System Options.

Feature Descriptions

1.4 Each feature is described under four subheadings as follows:

Description: Gives a brief description of the feature.

Conditions: Lists the conditions and limitations of the feature.

Programming: Summarizes the required system programming steps to activate the feature.

Operation: Describes the operations which the end user must perform to use this feature.

References

1.5 References to other headings within this Practice are in upper case. References to other documents are by Practice number and Title. References to specific features are initial upper case; general references are lower case.

For example, to find out more about tenanting, see TENANTING, and refer to Practice 9109-094-230-NA, Tenanting.

All prompts, key designations, and selection options are in upper case.

SUPPLEMENTARY INFORMATION

1.6 Most feature descriptions in this Practice make reference to one or more of the following:

- Class of Service (COS) Options
- System Options
- Feature Access Codes

These terms are explained briefly below.

Class of Service Options

1.7 Features in the SX-200 DIGITAL PABX are controlled by enabling COS options that are accessed through Customer Data Programming (CDE). COS Options include Attendant feature options and station feature options. Refer to the Index at the end of this Practice for detailed cross references to each of the COS Options. Indexing to COS options is by both COS number and feature name.

System
Options

1.8 System Options and Timers ▬ includes the selectable system options and variable timers. Refer to the Index at the end of this Practice for detailed cross references to each of the System Options. Indexing is by both System Option number and name.

Feature Access
Codes

1.9 Feature Access Codes ▬ are the set of access codes that the user is required to enter to access features. Refer to the Index at the end of this Practice for detailed cross references to each of the Features. Indexing is by both Feature number and name.

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2. ATTENDANT FEATURES

2. 1 The following paragraphs describe all features provided by the **5X-200 DIGITAL PABX that apply to the Attendant Console. Attendant func**tions are performed by the LCD Console, which has a 4-line, 80-character Liquid Crystal Display (LCD) display, and a keyboard with an extensive range of operational key groups to perform a wide variety of different functions.

Information presented on the four lines of the LCD display includes:

- Date (if idle), or call source data, and time/call waiting indication

- Call destination data

- Softkey **labels (FI-F5)**

- Softkey labels (F6—F0).

If a Console operation cannot be done, a beep tone is heard and the display shows CANT.

When the console is used for Customer Data Entry (CDE), abbreviated CDE forms are displayed on the LCD. The console can also be used to perform maintenance functions.

More detailed information on the Attendant Console, including prompts and displays, may be found in Practice 9109—094—315—NA, Attendant Console Description.

Attendant Abbreviated Dial Number Entry

Description

2.2 This feature allows the Attendant to program system abbreviated dial numbers from the Attendant Console. There is only one table for the system's abbreviated dial numbers. Selected attendants have the option of making abbreviated dial numbers confidential. This restricts the viewing and changing of the number to only those attendants permitted to do so.

See ABBREVIATED DIAL.

Conditions

The following conditions apply to this feature:

- Only one device (console or terminal) can be programming system Abbreviated Dial numbers at one time.

- While the console is using the Abbreviated Dial Number Entry feature, CDE Form 31 (System Abbreviated Dial Entry) cannot be accessed.Similarly, the console cannot use the abbreviated dial number entry feature while CDE Form 31 (System Abbreviated Dial Entry) is being accessed.

- Except for in the *3 and *5 codes described below, the digit * may not appear in Abbreviated Dial numbers.

- The number programmed is not limited to external numbers -it can be any access code in the system.

Programming	To allow abbreviated dial programming, enable Class of Service (COS) Option 111 (Attendant Abbreviated Dial Programming) for the console.

To allow the display of confidential abbreviated dial numbers, enable COS Option 110 (Attendant Abbreviated Dial Confidential Number Display) for the console. This option applies to both programming and dialing of the confidential abbreviated dial numbers.

The console has unrestricted use of all abbreviated dial numbers, but program an access code in CDE Form 02 (Feature Access Codes) for Feature 24 (Abbreviated Dial Access). :

The following codes can be inserted into a stored number:

*3nn — wait for nn manually dialed digits

nn can range from 01 to 14

For example, the general number for external directory assistance is 9 + 1 + (area code) + 555-1212; the area code is to be dialed manually. The number to be stored would be 91*3035551212.

*5 -call to Call Announce Port. This code must be at the end of the number; it cannot have digits following it. |
| **Operation** | Refer to Practice 9 109-094-3 15–NA, Attendant Console Description. |

Attendant Alarm Readout

Description	2.3 The Attendant Console can display the alarm logs presently active in the system. The Attendant can cause a readout of the alarm messages one by one using the softkeys. The message indicates the fault and its location.
Conditions	For the Attendant to access the alarms, the following must be true:

● There must be no other console accessing alarms

● There must be no console or maintenance terminal accessing maintenance or CDE.

● There must be no current Test Line access

● Logs can be reviewed only once from the Attendant console

● The ALARM softkey appears only if the ALARM ICON is lit. |
| **Programming** | Enable COS Option 102 (Attendant Display of System Alarms) for the console. |
| **Operation** | Refer to Practice 9109-094-31 5–NA, Attendant Console Description. |

Attendant Bell Off

Description	2.4 This feature allows the Attendant to mute the console ringer. Incoming calls are indicated by a flashing Answer Key LED and LDN softkeys displayed on the console. When the console ringer is disabled, "BELL OFF" appears on the second line of the console LCD display.
Conditions	The foliowing conditions apply to this feature:
	● The system defaults this feature to "BELL ON" upon system power-up.
	● The status of the bell is ignored by Lockout Alarms ringing at the console.
	● There is no bell on the console if Attendant Tone Signaling has been enabled on the console.
Programming	Enable COS Option 100 (Attendant Bell Off) for the console.
Operation	Refer to Practice 9 109-094-3 15–NA, Attendant Console Description.

Attendant Busy Override

Description	2.5 This option allows the attendant who encounters a busy connection, to override the connection and enter the call; see OVERRIDE (INTRUDE).
Conditions	The following conditions apply to this feature:
	● See OVERRIDE (INTRUDE) for more conditions.
	● This applies to override of trunk calls through the Attendant Direct Trunk Select feature.
Programming	Enable COS Option 500 (Override) for the console.
Operation	Having reached a busy number:
	● Press and hold down the console OVERRIDE softkey – all parties in the connection hear a warning tone and the Attendant is connected to the call.
	● Release the OVERRIDE key-the Attendant is released from the call.
	● If the call cannot be overridden, reorder tone is returned, and the console LCD displays "CANT".

Attendant Call Announce

Description	2.6 This feature allows the Attendant to make an announcement through a *SUPERSET 4* telephone's Call Announce Port; see CALL ANNOUNCE.

Optionally, the Attendant may override to a *SUPERSET 4* telephone Call An-
nounce Port rather than intruding into the call; see OVERRIDE ANNOUNCE.

Conditions None

Programming None

Operation None

Attendant Callback – Busy/No Answer

Description 2.7 The Attendant can set up a callback if the called destination is busy or
does not answer. The Attendant can also cancel all callbacks in the system.

See EXPENSIVE ROUTE WARNING for callbacks to ARS for less expensive
routes.

See CALLBACKS for details on callbacks.

Conditions The following conditions apply to this feature:

● See CALLBACKS.

● When clearing all callbacks, callbacks are only canceled for a console or an
  extension if the Device' Interconnection Control checks pass between the
  device and the console.

● See ATTENDANT DEFAULT CALL POSITION for information on the call posi-
  tion where the CALLBACK softkey appears.

Programming No COS options are needed for the attendant.

Operation Having reached a busy or non-answering number, press the CALLBACK soft-
key. The console rings as soon as the destination becomes available. When
the Attendant answers the ring, CALLBACK appears on the display. As soon as
the attendant answers the callback, the called party rings.

Attendant Call Forward Setup and Cancel

Description 2.8 This feature allows the Attendant to set up, review and cancel Call For-
warding for any extension. The extension for which the Attendant sets up
forwarding need not have any of the Call Forwarding features in its COS. The
Attendant may also set up Call Forwarding from the extension to the Atten-
dant. The Console can also cancel Call Forwarding for all extensions at once.

Conditions	The following conditions apply to this feature:

- The extension or console to which the calls are forwarded must not have Option 234 (Never a Forwardee) in its COS.

- Valid forward destinations are: hunt groups (not data or modem-pool), consoles, sets, abbreviated dial numbers, Dial 0 access code, LDN, Night Bells, and ACD paths.

- The cancel of all Forwarding by the Console only applies to extensions for which Device Interconnection Control checks pass between the Console and the extension.

Programming	None

Operation	Refer to Practice 9109–094–315–NA, Attendant Console Description.

Attendant Call Selection

Description	2.9 The Attendant Console has up to 10 call selection positions which appear as softkey features when the console is receiving an incoming call. Some of the positions are set up by default by the system for certain call types and some are user defined LDN keys.

This feature allows the Attendant to answer calls either in the order in which they arrive at the console regardless of call type by using the ANSWER hard-key, or by selecting a specific call type by using a selection position softkey. As calls arrive at the console, they are queued on a first come first served basis and the ANSWER LED flashes. The display also indicates the number of calls waiting.

Conditions	None

Programming	For setting up answering positions other than the defaults listed in ATTEN-DANT DEFAULT CALL POSITIONS, see CONSOLE LDN KEYS.

Operation	To answer the first call in the Attendant queue: Press the ANSWER key-the tone ringer stops, the prompt associated with the call type is removed if there are no more calls of that type calling, the display shows the number of the calling trunk or extension and the Attendant is connected to the calling party.

To answer a specific call type: Press the softkey associated with the desired call type-the tone ringer stops, the ANSWER LED lights steadily, the display shows the number of the originating party, and the Attendant is connected to the calling party.

Attendant Called and Calling Name, Number, COS, COR Display

Description	2.10 When the Attendant Console establishes or answers a call, the display provides information about the call. The available items of information are:

- Extension Number and Set Name

- Tenant Name (not available with Generic 1002)

- Trunk Name

- Trunk Group Name

- Trunk number

- COS and Class of Restriction (COR)

- COS Name (not available with Generic 1002)

The system programmer can assign names to Sets, Classes of Service, Tenants, Trunks and Trunk Groups; see NAMES.

Conditions   The following conditions apply to this feature:

- The set name is displayed only if the set has a name programmed in CDE Form 09 (Station/*SUPERSET* Sets) or a user of a *SUPERSET 4* or *SUPERSET 4*™ DN telephone programs a name at the telephone.

- The COS number and COR number appear only if there is no COS Name programmed.

- Names associated with trunksappear only after the console answers a trunk call.

- The Tenant name appears only on rerouted TIE, DID, or Dial-In calls where the Tenant name is programmed in the CDE Call Rerouting Table. If the Tenant name is displayed, no other trunk information appears.

- The Trunk Group Name appears only if there is no Trunk Name programmed.

- The Trunk number appears only if there is no Trunk Name or Trunk Group name programmed.

Programming   None

Operation   When the Attendant Console establishes or answers a call, the display provides information described above about the call.

Attendant Call Splitting and Swapping

Description   2.11 During the setting up of a call between two parties, the attendant may be required to speak to both parties, or to speak privately with either party. The Attendant can do this by using the CONF, SOURCE, and DEST softkeys.

Conditions   None

Programming   None

Operation   Establish a 3-party conference via the CONF softkey — the Attendant may now speak to both parties.

Press either the SOURCE or DEST softkey to split the call and talk to either party privately. The Attendant may alternate between the parties by pressing one of the two softkeys, as required to select the other party.

Press the RELEASE key to disconnect the Attendant from the conference, leaving the two parties connected.

Press the CANCEL key to drop the conference, disconnecting both parties from the Attendant, and leaving the console in idle mode.

Attendant Calls Forwarded On No Answer

Description   2.12 Calls directed to the LDN of a console which are not answered within a predetermined time-out period are rerouted to a NIGHT 1 destination (if there is one). For CO trunks, the reroute is to the trunk's NIGHT 1 answer-point. For DID trunks, the reroute is to the Attendant DID Access NIGHT 1 answer point for the trunk's tenant. For dial-in Tie trunks, the reroute is to the Attendant Dial-in Tie Access NIGHT 1 answer point for the trunk's tenant. For sets, consoles, and DISA trunks, the reroute is to the Dial 0 NIGHT 1 Answer Point for the set's or console's or trunk's tenant.

See CALL REROUTING for how this fits in with recalls to the console.

Conditions   The following conditions apply to this feature:

● Rerouting does not occur unless the NIGHT 1 and day service answer points. are different.

● No further rerouting is done for DID/TIE trunks after a DID/TIE BUSY or AL-WAYS reroute, or after a DID/TIE trunk is routed to the Night Access Point for DID or TIE trunks.

● No reroute is done for calls directed to the LDN from a DND, Vacant or Illegal number intercept, or from a DID/TIE intercept routing.

● No reroute is done for a call recalling to the console (calling the default RECALL softkey).

● The feature applies after forwarding has occurred to an LDN.

● This feature is mutually exclusive with Attendant Automatic Overflow; also see ATTENDANT AUTOMATIC OVERFLOW.

Programming   Enable COS Option 107 (Attendant Automatic Call Forward — No Answer) for the console where the LDN is programmed. If the LDN is on more than one

console then the association of LDN to a COS is to the console programmed with the the lowest Bay/Slot/Circuit.

Set the time-out period via COS Option 118 (Attendant Automatic Call Forward — No Answer Timer) for the console where the LDN is programmed; the default time is 30 seconds.

Enter a NIGHT 1 routing point for the appropriate call types via CDE   Form19 (Call Rerouting Table).

Operation   When the call arrives at the console, the timer for the Forward On No Answer is started. When the timeout occurs, the caller is routed to the appropriate answer point.

Attendant Calls Waiting Display

Description   2.13 The Attendant Console may have calls from outside trunks and extensions that are waiting to be answered. The total number of calls in the queue is displayed in the Attendant Console queue (Calls Waiting) area of the display located in the top right corner of the LCD display.

See ATTENDANT NEW CALL RING.

Conditions   The following conditions apply to this feature:

● If there are no calls in the Calls Waiting queue, there is nothing in the CW area of the LCD display.

● The maximum number of calls waiting that can be displayed at the console is 99. (See Note.)

NOTE: The actual queue maximum is 200 calls waiting.

Programming   None

Operation   See ATTENDANT CALL SELECTION and/or ATTENDANT HOLD POSITIONS for operational details.

Attendant Conference

Description   2.14 This feature allows the Attendant to enter into a conference with the destination party and the source party of a call. The Attendant may also initiate a 3-party conference call. When the Attendant is in a conference, a periodic warning beep is given to ail internal parties if System Option 10 (Attendant Conference Beeps) is enabled.

Conditions	The following conditions apply to this feature:

- The console may be involved in a conference with a maximum of two other parties.

- A conference cannot be created involving another console or a Call Announce Port.

- Device interconnection checks do not apply to the conference.

Programming	To enable Attendant conference warning beeps, enable System Option 10 (Attendant Conference Beeps).

COS Option 120 (Attendant Conference Disable) must be DISABLED in the Console's COS.

Operation	To enter into a conference with the source and destination parties, press the CON Fsoftkey.

To initiate a conference, do the following:

- Dial the first party and establish a connection.

- Dial the second party and establish a connection.

- Press the CONF softkey. The three parties are now in a conference.

Attendant Console Language Display

Description	2.15 This feature allows the Attendant to change the display of Attendant Console softkeys from English to French, or from French to English.
Conditions	None
Programming	None
Operation	Refer to Practice 9109-094-315, Attendant Console Description.

Attendant Console Lockout

Description	2.16 The Attendant can enter an access code to restrict the capabilities of the Attendant Console. This is useful to prevent system tampering via the console during breaks, etc. When the console is locked out, the following restrictions take effect:

- no outgoing trunk calls can be made

        ●   there is no Attendant function access.

The Attendant Console can still be used to initiate internal calls, and to answer incoming trunk calls.

Conditions   The Attendant can lock out the console at any time as long as there is no source party connected.

Programming   Assign an access code to Feature 17 (Console Lockout Access Code).

Operation   **To lock out the console:**

● **Enter the Console Lockout access code. The display changes to "Console in Restricted Service".**

To return the console to normal operation:

● Re—enter the code.

Attendant Date and Time Display

Description   **2.17 The SX-200 DIGITAL PABX continually displays the time of day on the right-hand portion of the status line of the Attendant Console LCD display.** When the console is idle, the date (month, day, year) is also displayed. The displayed time is used by Message Waiting, Traffic Measurement, SMDR, *SUPERSET 4,* and *SUPERSET 4*DN telephones, and other features. The time may be displayed in 12— or 24-hour format. The Console can change the date and/or time.

Conditions   A date/time change may cause some traffic measurements to be lost, and can also affect ACD Reports.

Programming   If 12—hour time display is required, no clock options are required. If 24-hour time display is required, enable System Option 01 (24—Hour Clock).

Operation   Refer to Practice   9109—094—315—NA, Attendant Console Description.

Attendant Default Call Positions

Description   2.18 Three incoming call indicators are provided by the system to identify calls to the console directory number. In addition to these call indicators are LDN keys on the console; see CONSOLE LDN KEYS.

The three default positions are:

- FO (NIGHT BELL) -calls ringing any night bell in the console's tenant group (see TAFAS).

- F1 (RECALL) -recalls of calls handled by the console, or for multiple console operation, by any console in the system (see RECALL).

- F2 (INTERNAL) -calls directed to the console's internal directory number.

Conditions   The following conditions apply to this feature:

- The INTERNAL position uses whatever label is programmed at key F2. The label is by default INTERNAL but an LDN key with a different label may be programmed at the same key. This does not affect the direction of internal calls to this position — only the label used changes.

- Callbacks ringing the console appear at the INTERNAL position.

- If key FO is programmed with an LDN, calls to the LDN take precedence over Night Bell calls. In this case, the key label shows the name programmed for the LDN key. Pressing the key answers calls to the LDN. Calls to the Night Bell appear at key FO only after all LDN calls have been handled; the label changes to NIGHT BELL.

- Serial calls, being recalls, appear at the RECALL position.

- The RECALL position (key F1) cannot be changed and cannot have an LDN key programmed at the same key.

Programming   None

Operation   None

Attendant Destination (DEST) Key

Description   **2.19** This feature allows the Attendant to press a softkey (DEST) to speak to the destination party of a call, to SWAP between the destination and source parties or to SPLIT a conference call.

The destination party's extension number, COS, and COR are displayed on the second line of the console's LCD display and the source party is put on consultation hold.

See ATTENDANT CALL SPLITTING AND SWAPPING.

Conditions   This softkey only appears when the Attendant Console is connected to a multi-party call and the source party can be put on consultation hold.

Programming   None

Operation   Press the DEST softkey -the console is connected to the destination party and the source party is put on consultation hold.

Attendant Direct Trunk Select

Description 2.20 The console may be used to directly access (seize) a trunk for maintenance or operational procedures.

Conditions The following conditions apply to this feature:

- For viewing the status of and accessing a trunk, the attendant must be allowed to connect to the trunk. See DEVICE INTERCONNECTION CONTROL.

- For accessing the trunk, the trunk must not be in the process of being seized by another device in the system.

- SMDR applies to the call when a trunk is accessed. If there are no SMDR records available, the call continues without an SMDR record; see STATION MESSAGE DETAIL RECORDING.

- Trunks cannot be accessed by "Attendant Function" if the console's COS has COS Option 200 (Account Code, Forced Entry – External Calls) or COS Option 201 (Account Code, Forced Entry – Long Distance Calls) enabled.

Programming None

Operation Refer to Practice 9109-094-31 S-NA, Attendant Console Description.

Attendant DISA Code Setup

Description 2.21 This option allows the Attendant to change the Direct Inward System Access (DISA) security code (Feature 19) in CDE Form 02 (Feature Access Codes) that a DISA caller must dial to access the system.

Conditions The following conditions apply to this feature:

- The DISA code cannot conflict with the numbering plan.

- The DISA code is limited to a maximum of five digits.

- The DISA code cannot be displayed.

- An Attendant cannot delete the DISA code; it may only be deleted via CDE Form 02 (Feature Access Codes). Refer to Practice 9109-094-210-NA, Customer Data Entry (CDE), for further details.

- While the DISA code (Feature 19) in CDE Form 02 (Feature Access Codes) is being setup from the Console, CDE Form 02 cannot be accessed from Customer Data Entry. Similarly, while Feature 19 in CDE Form 02 (Feature Access Codes) is being accessed from Customer Data Entry, the DISA code cannot be changed from the console.

Programming	Enable COS Option 103 (Attendant DISA Code Setup) for the console.
Operation	Refer to Practice 9109-094-315, Attendant Console Description.

Attendant Do Not Disturb (DND) Setup, Cancel or Override

Description
2.22 The Attendant may set up or cancel Do Not Disturb (DND) for an extension.

The Attendant may override Do Not Disturb (DND) on an extension when the extension is called.

See DO NOT DISTURB.

Conditions
If the extension does not have COS Option 220 (Do Not Disturb) enabled in its COS, then the extension is not able to alter the DND setting; it can only be done through the console.

Programming
Enable COS Option 220 (Do Not Disturb) in the Console's COS. It is not needed in the extension's Class of Service.

Operation
Refer to Practice 9109–094–315–NA, Attendant Console Description.

Attendant Extension Busy-Out

Description
2.23 This feature allows the Attendant to busy out any extension (the exten- sion is removed from service and cannot originate or receive any calls), and to remove the busy-out condition. The same operation is provided in Mainte- nance. Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal. If the Attendant dials the number of a busied-out extension, the console dis- plays the extension number and "BSY OUT" in the Destination display and the Attendant will receive reorder tone.

Conditions
The following conditions apply to this feature:

● If the extension is idle when the Attendant sets the busy-out condition, the extension is busied-out immediately.

● If the extension is not idle when the Attendant sets the busy-out condi- tion, the extension is busied-out as soon as the extension becomes idle.

● The extension is treated as being busy with regard to forwarding. If the extension has "Call Forwarding ▬ Busy" or "Call Forwarding ▬ Follow Me" set up, the forwarding occurs.

- If the extension is a member of a hunt group, all calls to the hunt group bypass the busied-out extension.

- A locked out extension cannot be busied out.

Programming **Enable COS Option 112 (Attendant Station Busy-Out).**

Operation **Refer to Practice 9109-094-315, Attendant Console Description.**

Attendant Flash Over Trunk

Description **2.24** The Attendant may flash on a trunk (any type) by pressing the FLASH softkey. A flash is sent out on the trunk, and dialing is restarted on the trunk.

Conditions The following conditions apply to this feature:

- There must be only one party at the console.

- The attendant may flash on incoming and outgoing trunks.

- The trunk must be in a trunk group.

- The feature is not available when the console is locked out.

- The flash duration is based on the trunk hardware used. For trunks in Digital bays, the duration is programmed using the Flash Duration Trunk Circuit Descriptor Option, For all other trunks, the time is approximately 200 ms.

- If the trunk is the source party then the trunk becomes the destination party.

- **Dialing continues until an inter-digit timeout or the maximum number of digits (26) have been dialed.** Digits dialed on the console keypad are sent out on the trunk (tone or pulse) by the system, based on the DTMF Trunk Circuit Descriptor Option for the trunk.

- When dialing is restarted:

  - If COS Option 802 (Limited Wait For Dial Tone) is not enabled for the trunk then the system will wait indefinitely for dial tone to be detected. COS Option 805 (Trunk No Dial Tone Alarm) does not apply.

  - Tones are turned off at the console and must be turned on again if needed later; see ATTENDANT TONE SIGNALING.

  - The trunk's SMDR is completed before dialing is restarted. SMDR applies to the dialing that is started on the trunk.

Programming **None**

Operation **While the attendant is connected to an outgoing trunk:**

- Press the FLASH softkey.

- Dial as required.

Attendant Function Access

Description   2.25 By pressing the Console FUNCTION key and the ATT FUNCTION   softkey,
the Attendant can access Attendant Functions, which include:

- ABBR DIAL

- ALARM (read alarms)

- APPLICATION (To access CDE or Maintenance)

- BELL ON/OFF (if named)

- BUSY OUT

- CALL FORWARD

- CANCEL ALL CALLBACKS

- CANCEL ALL CALL FORWARDING

- DAY/NIGHT I/NIGHT 2 switching

- DO NOT DISTURB SETUP AND CANCEL

- FLEXIBLE NIGHT SERVICE

- FORCED TRUNK RELEASE

- FRANCAIS (French language prompts and messages on console)

- GUEST ROOM functions (if enabled)

- MESSAGE WAITING SETUP AND CANCEL

- SEND MESSAGE

. SET DATE

. SET TIME

- SET UP MESSAGE

- STATIONS

- SYSTEM IDENTIFIER

. TRUNK STATUS/ACCESS/BUSY OUT

For more information about Attendant Functions, refer to the individual fea-
ture descriptions in this Practice.

Conditions   Attendant Functions are not available if the Attendant Console Lockout op-
tion (Feature 17) is invoked.

Programming **None**

Operation **Refer to Practice 9109-094-3 15–NA, Attendant Console Description.**

Attendant Hold Positions

Description 2.26 The Attendant may place an extension or trunk on hold in one of eight HOLD positions. There are four keys; HOLD1, HOLD2, and HOLD3 are for hold positions1 through 3, while HOLD4 is for hold positions 4 through 8. A call hold recall time of 10 to 240 seconds may be programmed (default is 30).

Conditions The following conditions apply to this feature:

- A HOLD key LED is on when it has a call on hold.

- If music is available on the system the held party receives music on hold while on hold, even after the party starts alerting the console after a hold time-out. If no music is provided, the caller hears silence rather than ring-back.

- When the call hold timeout occurs, the call alerts the console at that-hold key- the call does not appear at any LDN position nor does it recall. The calls waiting display is updated.

- The console can selectively answer the held call by selecting individual hold key.

- Non-busy extensions cannot be placed on hold.

- Conference calls cannot be placed on hold.

- If the current party is a Call Announce Port at the console, the call on hold cannot be retrieved. If the source has a call on consultation hold, the call on hold cannot be retrieved.

- If the Attendant with a call on hold is talking to a destination, and presses the HOLD key to retrieve the call, the destination party is placed on consultation hold and becomes the source. The held call is connected to the attendant and becomes the destination. The attendant can switch between parties by pressing the SRC and DEST keys on the console, or can connect the parties by pressing the RELEASE key.

Programming Program COS Option 116 (Attendant-Timed Recall – HOLD) in the console's COS to set the time-out period (default time is 30 seconds).

Operation To put a Call on Hold at the console:

- Press the ANSWER key when call rings console.

- Press an idle HOLD key (1-4); call is put on hold at this HOLD key.

To Retrieve a Call on Hold at the console:

* If the call has been recalled by a call hold time-out, the HOLD key LED **flashes.**

* Press the key (flashing) to speak with the call on hold.

If the call is to be retrieved before a time-out, the Attendant may press the HOLD key where the call is being held. By pressing the HOLD key, the call is transferred to the SOURCE, or to the DEST if there is a SOURCE already.

If HOLD key 4 is used, the user must next press one of the softkey hold slots **(HOLD slots 4 through 8) for both holding and retrieving.**

Attendant Implicit New Call

Description   2.27 When the Attendant presses a key on the console dial pad, by default a new call is initiated. When the first key is pressed, an existing party is automatically placed on hold. At the completion of dialing, the Attendant can transfer the call to the dialed destination by releasing from the call.

By pressing the TONES ON softkey (if available), this feature is temporarily disabled. See ATTENDANTTONE SIGNALING.

Conditions   None

Programming   None

Operation   Press any dial pad key.

Immediately, the current call (if one exists) is placed on hold, and a new call is initiated.

Attendant Individual Directory Number

Description   2.28 Each Attendant Console has a unique directory number identifying that console.

The directory number is in addition to the general attendant access number (usually 0) used to obtain the attendant or any LDN keys programmed at that console. A calling party has the choice of either dialing the general attendant access number, or dialing the directory number which is dedicated to a particular attendant position (useful when there is more than one attendant position).

Conditions   The following conditions apply to this feature:

- Calls to an individual Directory Number are not presented to other attendants (if any).

- Calls directed to the Directory Number appear at a default softkey position provided by the system; see ATTENDANT DEFAULT CALL POSITIONS.

Programming   Program the Directory Number of each attendant position in CDE Form 07 (Console Assignments).

Operation   None

Attendant interposition Calling and Transfer

Description   2.29 In a multiple console environment, an Attendant can call or transfer a **call to any other Attendant using the individual Attendant Directory Number.** The call is transferred in the same method as a call to an extension.

Conditions   The following condition applies to this feature:

- Since Consoles cannot be put on hold, normal Attendant operations (hold, swap, etc) are not available when talking to another Console.

Programming   Program the Directory Number of each attendant position in CDE Form 07 (Console Assignments).

Operation   When the call has been answered, dial the Directory Number of the attendant console to which the call is to be transferred.

While listening to ring back or when the Attendant answers, press the RE-LEASE key to transfer the SOURCE caller to the called console.

Attendant Last Number Redial

Description   2.30 The Attendant has the option of using a single softkey to have the system redial the last external/internal number manually dialed from the Attendant Console.

Conditions   The following conditions apply to this feature:

- The redial number is changed when an internal destination is successfully dialed or a trunk group is dialed and found busy or an external number is successfully dialed.

- The REDIAL softkey does not appear until a destination has been dialed and the number can be changed.

- The number is not updated after a call made using Abbreviated Dial.

- The REDIAL softkey can be used while calls are ringing the console.

- If a call is directed to an LDN programmed at the same key as the REDIAL key (softkey 9), the LDN label replaces the REDIAL softkey and the Redial feature is not available.

- The REDIAL key does not appear when the console is locked out; see AT-TENDANT CONSOLE LOCKOUT.

Programming   Enable System Option 29 (*SUPERSET* Last Number Redial).

Operation   To redial the last number dialed from the console, press the REDIAL softkey.

Attendant Message Waiting Setup and Cancel

Description   2.31 This feature allows the Attendant to inform extension users that there is a message waiting. The message waiting indication may take the form of a message on the display of a *SUPERSET 4* or *SUPERSET 4*DN telephone, a continuously flashing lamp on the extension (if equipped), or the extension may be rung every 20 minutes with a distinctive ringing pattern (three cycles of 3.5 ips ringing).

If either message waiting COS Option is enabled, the extension rings every 20 minutes when idle, or until the message waiting is canceled. If the message waiting indication is given by a lamp, the lamp flashes (at 60 ipm). When the user returns and calls the Attendant, and the Attendant answers, the "MSW" indicator appears on the console display to indicate that there is a message waiting for that extension.

As an option, the system may be programmed to print a message on a system printer indicating each instance of a new message waiting. See ATTENDANT MESSAGE WAITING SETUP AND CANCEL-GUEST ROOM.

When Transparent Multi-Console Operation is used, a console may review or cancel a message waiting indication for any station; without this feature, only the console that set Message Waiting for a specific station can review or cancel it. Also see ATTENDANT TRANSPARENT MULTI-CONSOLE OPERATION.

Conditions   The following conditions apply to this feature:

- If the message waiting indication is given by ringing the extension, the first ring starts 10 seconds after the extension becomes idle.

- The message waiting lamp or display indicator on *SUPERSET* telephones is always lit for any message irrespective of COS options.

- If the extension. has Do Not Disturb enabled, the ringing indication is not given.

- All consoles with this feature must be in the same tenant, and have COS Option 320 (Transparent Multi-Console Operation) enabled.

- Any console within this tenant with COS Option 320 (Transparent Multi-Console Operation) enabled may cancel Message Waiting, instead of just the console that set it.

Programming
Enable COS option 232 (Message Waiting Setup - Lamp) and/or COS Option 231 (Message Waiting Setup - Bell) for each extension on which the console is to place a message.

COS Option 231 enables ringing at an extension; both COS Option 231 and COS Option 232 enable ringing at a *SUPERSET* telephone.

Enable COS Option 320 (Transparent Multi-Console Operation) for each console that is to operate in Transparent Multi-Console Operation mode.

Operation
Refer to Practice 9109-094-315-NA, Attendant Console Description.

Attendant New Call Ring

Description
2.32 The first call placed in the Attendant call waiting queue, while the Attendant is active on a call, signals the Attendant with a single burst of ringing. Subsequent calls do not alert the Attendant when they are added to the queue. Their presence is shown by the CW (Call Waiting) indication on the top line of the display; see ATTENDANT CALLS WAITING DISPLAY.

Conditions
The following conditions apply to this feature:

- This feature is disabled if the attendant bell is turned off from the console. Refer to ATTENDANT BELL OFF.

- This feature is disabled if TONES ON is on.

Programming
Enable COS Option 106 (Attendant New Call Tone) for the console.

Operation
None

Attendant Night/Day Switching

Description
2.33 The Attendant may select NIGHT1 service, NIGHT2 service, or DAY service via softkeys; also see NIGHT SERVICES.

Conditions
The following conditions apply to this feature:

● When NIGHT1 or NIGHT2 has been selected by an Attendant Console, the status is displayed on the right-hand side of the destination line of the display for all affected consoles.

● The console switches service for tenants controlled by that console; refer to CDE Form 06 (Tenant Night Switching Control) and to Practice 9109-094-230-NA, Tenanting.

Programming   Refer to NIGHT SERVICES and to TENANTING.

Operation   Refer to Practice 9109-094-315-NA, Attendant Console Description.

Attendant Override Announce

Description   2.34 This feature allows an Attendant reaching a busy *SUPERSET*™ telephone to override to the called set's Call Announce Port. This operation takes precedence over normal override; see OVERRIDE ANNOUNCE.

Conditions   The following conditions apply to this feature:

● See OVERRIDE ANNOUNCE.

Programming   **To allow the Attendant to override to *SUPERSET 4*™ telephone Call Announce Ports, enable COS Option 500 (Override) and COS Option 501 (Override Announce) for the console.**

Operation   Having reached a busy number, press and hold down the console OVERRIDE softkey.

If a *SUPERSET 4* telephone being overridden has a Call Announce Port and the **Attendant has Override Announce enabled, the conversation with the Attendant is through the telephone's speaker and microphone.**

Release the OVERRIDE key-the Attendant is released from the call.

Attendant Paging Access

Description   2.35 The Attendant may access a paging zone or zones by use of the PAGE key on the Attendant Console. When the PAGE key is pressed, the console handset is connected directly to the zones of the paging equipment programmed for default access for the console, and overrides any extension announcement in progress. The Attendant may alternately access the paging circuit by dialing the associated access code followed by a digit 0 ➡ 9 for the zone required (0 accesses all zones).

See also ATTENDANT PAGED HOLD ACCESS and PAGING.

Conditions The following conditions apply to this feature:

- If the attendant is to connect to specific zones, program an access code in Feature 13 in CDE Form 02 (Feature Access Codes).

- Any extension(s) using the paging zone(s) that the console is attempting to access is overridden and removed from the pager and given busy tone. A *SUPERSET 4* telephone displays the message KICKED OFF.

- The console bell is turned off while the PAGE key is held down.

- If System Option 03 (Single Paging Amplifier) is enabled then the Attendant cannot override the current pager user(s).

- A console cannot override another console in a paging zone.

- For paging on all zones simultaneously, all zones must be either not in use or the console must be able to override the user of the zone(s).

- While the PAGE key is held down, all other console keys are non-operational.

- When on a pager that has been accessed by a feature access code, tone signalling can be turned on using the TONES ON softkey. See ATTENDANT TONE SIGNALING.

Programming Enable one or more of the following COS Options for the console in CDE Form 03 (COS Define) as shown in the following table.

COS Option Number	Description
303	Paging Zone 1 Access
304	Paging Zone 2 Access
305	Paging Zone 3 Access
306	Paging Zone 4 Access
307	Paging Zone 5 Access
308	Paging Zone 6 Access
309	Paging Zone 7 Access
310	Paging Zone 8 Access
311	Paging Zone 9 Access
312	Paging Default (0 to 9) (0 Gives All Enabled Zones)

For access to the default zone, assign an access code to Feature1 2 (Paging Access to Default Zone) in CDE Form 02 (Feature Access Codes).

Assign an access code to Feature 13 (Paging Access to Specific Zones) in CDE Form 02 (Feature Access Codes) for access to zones other than the default zones.

Operation   To connect to the default paging zone, hold down the **PAGE** key. The connec-
tion remains until the **PAGE** key is released.

To connect to a paging zone other than the default zone, dial the 'Paging
Access To Specific Zones' access code, followed by the desired paging zone
number (l-9).

While the console's default page zone is in use, the **PAGE** key LED is lit on all
consoles for which the same default zone applies.

If the paging zone(s) cannot be accessed, busy tone is returned.

Attendant Paged Hold Access

Description   2.36 The Attendant can put a party on hold, and page for someone to pick up
the call from the attendant hold position.

The paged party dials a code consisting of the Hold Pickup Access Code, fol-
lowed by two digits that identify the console, followed by the hold slot num-
ber. The Attendant should announce this digit string when paging the called
party.

Also see **ATTENDANT PAGING ACCESS.**

Conditions   The following conditions apply to this feature:

* Consoles, industry-standard telephones, *SUPERSET* telephones, DISA
  trunks and TIE trunks can pickup the held calls.

* The party picking up the call must be able to connect to the held party; see
  DEVICE INTERCONNECTION CONTROL.

* The attendant cannot pick up a held call if it has a source party.

* An extension cannot pick up the held party if the extension has a consulta-
  tion hold in progress and the held party has COS Option 233 (Never A   Con-
  sultee) enabled.

* A station or *SUPERSET* telephone (with a consultation hold in progress)
  cannot pick up the held trunk if the station or   *SUPERSET* telephone has
  COS Option 214, (Cannot dial a trunk after flashing) enabled.

* A station or *SUPERSET* telephone with a conference with a trunk on con-
  sultation hold cannot pick up the held trunk if the station or *SUPERSET*
  telephone has COS Option 215, (Cannot Dial a Trunk if Holding or in Conf
  With a Trunk) enabled.

Programming   Assign an access code to Feature 16 (Hold Pickup Access – Attendant Hold
Slots).

Enable COS Option 225 (Hold Pickup Access -Attendant Hold Slots) in the
COS of the device from which the pickup call is made.

Operation   If paging the default paging zone:

- Put the calling party on hold using one of the console HOLD slots.

When the Attendant presses the PAGE key, the console displays the access code assigned to Feature 16 followed by two digits that identify the console, followed by n. The "n" digit represents the hold slot number. The Attendant should learn this code; it is not displayed when specific zone paging is used.

- Page the second party, specifying the displayed number (the last number being the number of the hold slot).

- When the second party dials the displayed number, the second and held parties are connected.

- If the paged party does not call, the held party recalls to the Attendant automatically; see ATTENDANT HOLD POSITIONS.

If paging a zone other than the default zone:

- Put the calling party on hold using one of the console HOLD slots.

- Dial the 'Paging Access To Specific Zones' access code, followed by the desired zone.

- Page the second party, specifying the console's Hold Pickup Access Code, followed by the number of the hold slot, e.g. 677002 (where 677 is the Access Code, 00 is the Console, and 2 is the Hold Slot number).

- The paged party dials the announcedcode. If the paged party does not call, the held party recalls the Attendant automatically.

Refer to Practice 9109–094–315–NA, Attendant Console Description.

Attendant Serial Call

Description   2.37 An incoming trunk call can be set, before being transferred by the Attendant, to recall to the Attendant after the trunk finishes a call in the system. This is in addition to the normal recall features. This allows a caller to speak to several individuals in the system without the need for transfers by the called extensions.

Conditions   **The following conditions apply to this feature:**

- Attendant Serial Call is available on all trunk calls for all trunk types.

- Serial call returns a trunk to the console that established the call under the following conditions:

  - The party, except a console, that is talking to a serial trunk hangs up.

  - ACD interflows a serial trunk to a DROP CALL interflow point.

  - **A final ringback time out occurs for the serial trunk and it is not ringing** a console, LDN or night bell.

- Transparent Multi-Console Operation has no effect on Serial Call.

- The RING AGAIN softkey does not appear for a serial trunk call that recalls back to the console (however it recalls).

- A serial call that is released to a Subattendant will not have its recall point changed to the Subattendant telephone; see SUBATTENDANT.

- Enabling serial call clears any previous serial call setting by another console and any recall point set up to any other device; see RECALL.

- Serial calls appear at the RECALL call position at the console; see ATTENDANT DEFAULT CALL POSITIONS.

Programming   Enable COS Option 109 (Attendant Serial Call) for the console.

Operation   Refer to Practice 9 109-094-3 1   5-NA, Attendant Console Description.

Attendant Setup of Set Advisory Messages

Description   2.38 There are eight default and seven programmable messages for use on *SUPERSET 4* and *SUPERSET 4*DN LCD displays. The Attendant can read a set's currently displayed message, or read through the available messages and choose one for display on the set; see MESSAGING -ADVISORY.

Conditions   None

Programming   None

Operation   Refer to Practice 9109-094-3 15, Attendant Console Description.

Attendant Source Key

Description   2.39 This feature allows the Attendant to press the SOURCE   softkey to speak to the source party of a call, to swap between the source and destination parties or to split up a conference call.

The source party's extension number, COS, and COR are displayed on the first line of the console's LCD display and the destination party is put on consultation hold.

A party that is on consultation hold at the console does not hear system music.

See ATTENDANT CALL SPLITTING AND SWAPPING.

Conditions   This softkey only appears when the Attendant Console is connected to a multi-party call and the destination party can be put on Consultation Hold.

Programming	None
Operation	Press the SOURCE softkey ▬ the console is connected to the source party and the destination party is put on Consultation Hold.

Attendant Timed Recall

Description   2.40 This feature automatically alerts the Attendant when a call extended through the console or a call held at the console has not been answered within the preselected time.

Selectable recall times include:

COS Option	Name	Timer Range
115	Attendant-Timed Recall ▬ No Answer	5 to 240 s (0 = disable)
116	Attendant-Timed Recall ▬ Hold	10 to 240 s
117	Attendant-Timed Recall ▬ Campon	5 to 240 s (0 = disable)

For full details-of Recall, see RECALL. Also see ATTENDANT TRANSPARENT MULTI-CONSOLE OPERATION.

Conditions   The following conditions apply to this feature:

- A value of 0 for COS Options 115 and 117 disables the Recall; however, the final ring timeout applies.

- Recalls to the console are inoperative during Night Service unless the console is the night answer point.

Programming   Select the desired recall times for COS Options 115 (Attendant-Timed Recall ▬ NO ANSWER), 116 (Attendant-Timed Recall ▬ HOLD), and 117 (Attendant–Timed Recall ▬ CAMPON), for the console's COS.

Operation   See RECALL.

Attendant Tone Signaling

Description   2.41 The Attendant Console normally does not transmit DTMF tones. However, some applications require the attendant to transmit tones (e.g., voice mail,etc.). This feature allows the console to transmit DTMF tones during a call (the console set itself generates the tones).

Conditions	The following conditions apply to this feature:

- The TONES ON/OFF softkey does not appear if the Attendant is receiving an Audible Lockout Alarm (if enabled).

- The tones remain on unless turned off or the attendant places a party on hold, or retrieves a party from hold, or goes idle.

- The key appears if the console is talking to a trunk, *SUPERSET* telephone or industry-standard telephone or the console is on the pager through dialing a pager access code (not through the PAGE key).

- Dialing on the keypad by the attendant usually starts a new call implicitly, and puts the current party on consultation hold as the source party. With TONES ON enabled, this feature is disabled and either tones must be turned off or the call must be put on hold at one of the attendant hold positions before another call can be started.

- New Call Tone is disabled while TONES ON is enabled.

Programming	Enable COS Option 119 (Attendant Tone Signaling) for the Attendant Console.
Operation	Refer to Practice 9109–094–315–NA, Attendant Console Description.

Attendant Training Jacks

Description	2.42 Training jacks are provided on the Attendant Console for use by a Supervisor or Trainer who is training a new attendant. Each console is equipped with two Attendant jacks; either jack may be used by the Attendant, while the other provides a monitoring, Supervisor, or training function.
Conditions	Removal of both headsets and/or handsets does not automatically switch the console into Night Service.
Programming	None
Operation	Console or system operation does not change in any way.

Attendant Transfer To Campon

Description	2.43 This feature allows the Attendant to connect calls to a busy extension, hunt group or trunk group for automatic completion when the called busy party becomes free. The attendant itself cannot camp on but can transfer calls into campon; see CAMPON. For details of recall from Campon, see RECALL.

Conditions   The following conditions apply to this feature:

- Calls that are not completed within the campon time-out will recall; see RECALL.

- The transferred party must be able to connect to the'busy party; see DEVICE INTERCONNECTION CONTROL.

- A transfer cannot be made to a locked-out extension.

Programming   Specify a time-out period in COS Option 117 (Attendant-Timed Recall — CAMPON); (default time is 30 seconds). A value of 0 disables recall from Campon to the Attendant.

Enable COS Option 301 (Campon) for the console to transfer to internal devices; enable COS Option 237 (Outgoing Trunk Campon) for transfers to busy trunk groups.

Operation   To camp a call onto a busy number:

- Attempt a call to a busy extension.

- Press the RELEASE key-this automatically camps on the calling party to the busy number. If the transfer is not allowed then a beep tone is heard, CANT is displayed on the console, and no transfer is done.

Attendant Transparent Multi-Console Operation

Description   **2.44 The Attendant Transparent Multi-Console Operation feature allows** some features to apply to a group of consoles within a Tenant. Messages set by any console in this group can be read or canceled by any consoles within this group. Recalls to the RECALL softkey for any console in the group can be answered by any of the consoles in the group.

Conditions   The following conditions apply to this feature:

- **Transparent Multi-Console Operation must be enabled for each participating console.**

- When a *SUPERSET 4* or *SUPERSET 4*DN telephone user presses the CALL softkey to call the console in response to a message received, if the message was left by a console with the Transparent Multi-Console Operation feature enabled, the call is turned into a normal Dial 0 call and routes to the **Dial 0 point of the *SUPERSET* telephone.**

Programming   Enable COS Option 320 (Transparent Multi-Console Operation) for each console within this tenant that is to be a member of the group.

Assign access codes to the Dial 0 entry in CDE Form 19 (Call Rerouting Table) for the tenant of the caller. To have the calls ring the attendant in the group, the access code must be an LDN on the consoles in the console group.

Operation None

Attendant Trunk Busy-Out

Description 2.45 The Attendant may busy out a trunk to prevent access to the trunk, and may remove the busy condition as required. If the Trunk Busy-Out Enable option is not selected, the Attendant may still access individual trunks, but-is unable to force them into a busy condition.

Conditions The following conditions apply to this feature:

- As with station and *SUPERSET* telephones, if the trunk is not idle when the busy is attempted, the busy out will be pending and will be processed when the trunk becomes idle.

- The console must be able to connect to the trunk; see DEVICE INTERCON-NECTION CONTROL.

Programming Enable COS Option 114 (Attendant Trunk Busy-Out) for the console.

Operation Refer to Practice 9109-094-315-NA, Attendant Console Description.

Attendant Trunk Group Status Display

Description 2.46 This feature allows the Attendant to display the status of the trunk groups. If this feature is activated while the console is idle, the display is refreshed approximately every 5 seconds to allow a constant up-to-date monitoring of the trunk groups.

Conditions None

Programming None

Operation Refer to Practice 9109-094-315-NA, Attendant Console Description.

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3. SYSTEM FEATURES

3.1 This section of the practice describes the system features which apply to all extension users.

3.2 System features are those features that are available to all devices, or to several devices'such as extensions, datasets, consoles, trunks, and *SUPERSET* telephones, or that apply to the PABX.

Abbreviated Dial

Description

3.3 This feature allows trunks and extensions to dial or to be routed to an abbreviated number (two to eight digits) in place of a longer number (which can be up to 26 digits in length). The Attendant or CDE programmer can program or view system abbreviated dial numbers. Up to 1000 numbers (000 to 999) maybe programmed as abbreviated dial numbers.

Special codes can be imbedded in the numbers to allow users to insert digits or to allow the call to access the Call Announce port feature. See ATTENDANT ABBREVIATED DIAL NUMBER ENTRY for details of Abbreviated Dial numbers.

Numbers can be marked as confidential so that they will not be shown on display telephones when accessed, or in SMDR reports.

Abbreviated Dial can be used to allow system-wide access to a defined set of long distance numbers, while denying general access to long distance dialing.

System Abbreviated Dial numbers can be used as Dial-in Trunk prefixes, as routing points for ACD interflow, for Automated Attendant, and as a call forwarding point.

Conditions

The following conditions apply to this feature:

- Tie and DISA trunks, extensions, *SUPERSET* telephones, data devices,and consoles can access abbreviated dial numbers directly.

- Calls can be forwarded to Abbreviated Dial numbers.

- No Toil Control is done for external calls using Abbreviated Dial.

- Through the Automated Attendant feature, all devices can directly dial Abbreviated Dial numbers.

- Confidential numbers can only be viewed from CDE or by consoles with COS Option 110 (Attendant Abbr. Dial Confidential Number Display) enabled.

- Access to Abbreviated Dial numbers is available to: Interflow points in ACD Paths, and Automated Attendant default destinations.

- Abbreviated Dial Numbers dialed after ARS leading digits will be interpreted as ARS digits to be outpulsed rather than as an Abbreviated Dial number.

- If an Abbreviated Dial number is to appear in another speed dial number (Abbreviated Dial or Speedcall), then the Abbreviated Dial number index must be three digits in length (leading zeros required).

Programming   Enable COS Option 245 (Abbreviated Dial Access) for non-console devices to access Abbreviated Dial directly. Consoles do not need this option enabled to access Abbreviated Dial directly.

Enter the desired abbreviated dial index numbers, and the digit strings to be dialed, into CDE Form 31 (System Abbreviated Dial Entry). These can also be entered from the Attendant Console. See ATTENDANT ABBREVIATED DIAL NUMBER ENTRY.

Assign an access code to Feature 24 (Abbreviated Dial Access) in CDE Form 02 (Feature Access Codes).

Operation   To dial an Abbreviated Dial number, when dial tone is heard:

- Dial the Abbreviated Dial access code.

- Dial the desired Abbreviated Dial index number (one to three digits).

Account Codes

Description   3.4 Account codes are. typically used to charge the cost of outgoing trunk calls to departmental cost centers or project accounts. The account code, 1 to1 2 digits long, can be optional or required and appears on all SMDR records or as an additional SMDR record during a call. Refer to Practice 9109–094–221–NA, Station Message Detail Recording for further details. This can apply to both incoming and outgoing trunk calls.

For verified account codes, see VERIFIED ACCOUNT CODES.

The COS and COR for a caller can be changed with an entered account code— see VERIFIED ACCOUNT CODES.

Account Codes can also apply to data calls; see DATA ACCOUNT CODES.

Conditions   The following conditions apply to this feature:

- If Verified Account Codes are used, Account Codes can be one, four, six, eight or 12 digits in length.

- If the Account Code is of the Variable Length type, the account code digits must be followed by a "#", except where the entered code length is 12 digits.

- Rotary-dial type telephones always have a digit length of six, as they can not dial the # character.

- The user of a *SUPERSET 4* or *SUPERSET 4*DN telephone can also enter account code(s) during a call.

● A "*" or a "#" is not allowed in an account code.

● A "#" is only allowed to be dialed if the account codes are of the variable length type.

● If no SMDR buffers are available then the extension user receives busy tone when the account code entry is attempted.

● Enabling Forced Account Codes for industry-standard telephones with the Direct To ARS feature enabled prevents the industry-standard telephones from originating calls without first dialing an account code.

● The Direct To ARS feature applies to SUPERSET telephones when a valid account code has been entered.

● For SUPERSET 4 and SUPERSET 4DN telephones, an account code can only be entered during a call if the call is a two party call with the other party being a trunk (of any type).

● For a SUPERSET 4DN telephone, the ACCOUNT CODE softkey is only present if the set does not have a consultation hold in progress and when the set has completed dialing.

● In addition to station and SUPERSET telephones and consoles, DISA and Tie trunks can also access account codes. If an error is made when entering a verified account code, the trunk is dropped.

Programming

To force an extension user or trunk to use account codes for long distance calls, enable COS Option 201 (Account Code, Forced Entry — Long Distance Calls) for the device. Refer to Practice 9109—094—220—NA, Automatic Route Selection, for the designation of Long Distance calls.

To force an extension user or trunk to use account codes for all external calls, enable COS Option 200 (Account Code, Forced Entry — External Calls) for the device's Class of Service.

Set Account Code Length (Option 55) in CDE Form 04 (System Options/System Timers).

Assign a feature access code to Feature 01, Account Code Access in CDE Form 02 (Feature Access Codes).

COS Option 700 (SMDR Does Not Apply) must be disabled in the extension's COS before the extension may use account codes.

COS Option 806 (SMDR — Record Incoming Calls) must be enabled in a trunk's COS to permit account codes to be used on incoming calls on the trunk to a SUPERSET telephone.

Enable all of required SMDR options as outlined in Practice 9109—094—221—NA, Station Message Detail Recording.

Operation

Operation varies depending upon the type of device as described below.

Station and SUPERSET Telephones:

To access a trunk via account code entry:

- Dial access code for account code entry.

- Dial account code digits (if System Option 55 -Account Code Length is selected, account code digits must be followed by a *"#"* to indicate end of account code)

- Dial tone is returned. The account code entered now applies to the trunk call immediately made while still listening to dial tone.

- Dial the trunk call.

At the completion of the call, an SMDR record is printed. This printout includes the time of call, trunk used, duration of call, and the Account Code.

SUPERSET 4 **Telephones:**

During a call, or immediately prior to dialing (listening to dial tone):

- Press the SELECT FEATURES key.

- Dial 5 (feature number 5 is Account Code (5:ACC CODE)).

- Dial account code digits (DTMF tones are not heard) and if dialing, dial tone is removed.

- Press the SAVE key. The prompt PLEASE TRY LATER occurs if the recording process is busy. The display reverts to the condition applicable at that time;if dial tone had been removed, it is resumed.

There are two ways to correct an entry:

1. Press the ◄— key to back space and erase one or more incorrect digits.

2. Press the EXIT key to cancel the entire entry.

At the completion of the call, an SMDR record is printed. This printout includes the time of call, trunk used, duration of call, and the Account Code.

SUPERSET 4DN Telephones:

During a call, press the ACCOUNT CODE softkey. The LCD second line shows ENTER ACCOUNT CODE:.

Enter the Account Code. Press the ◄— softkey to erase incorrect digits.

Press SAVE softkey.

-

Alternate Trunk Recall

Description   3.5 The feature provides an alternate recall point for trunks in the system. The alternate recall point can be specified for each tenant and each NIGHT/DAY

service. Under the following conditions, trunks are rerouted to the alternative call point:

- for all trunk types, when an extension with a trunk on consultation hold is listening to reorder tone and times out. The trunk is removed from consultation hold and rerouted.

- for DISA and CO trunks, when a trunk recalls from campon or ringing an extension; see RECALL.

Conditions   The following conditions apply to this feature:

- This feature does not apply to DTS or private trunks ringing into the SUPERSET telephone where the line appears.

- For the reorder tone case, the reroute is done before recalling serial trunks.

- For the reorder tone case, the tenant group of the extension is used to determine the routing point.

- For the reorder tone case, if there is no point programmed for the current NIGHT/DAY service then the trunk is dropped; Serial trunks recall.

- An LDN key cannot be the routing point.

- For recall situations, the tenant of the called party is used to determine the rerouting point. When a logical line is called, the tenant of the first appearance of the line is used. When a hunt group is called, the tenant of the first member of the hunt group is used.

- The feature does not operate when calling an LDN, Night Bell, or console.'

Programming   In CDE Form 19 (Call Rerouting Table), program the recall points for Non-Dial-In Trunk Alternate Recall Point in the tenant of the called party.

Operation   None

Analog Networking

Description   3.6 Analog Networking allows an SX-200 DIGITAL PABX to send and receive caller information over a private network. The other nodes in the network can be any combination of MITEL SX-200 DIGITAL PABXs and SX–2000® Integra ted Communications" systems. Analog Networking uses the ARS Modified Digit feature to insert feature access codes and other codes (called information elements) into the outgoing digit string. The information elements consist of special codes for inserting the caller's extension number, account code, and node identification.

The SX-200 DIGITAL PABX with Analog Networking can function as an end node, an intermediate node, or a hub. As an end node, network elements are

transmitted into the network via DTMF digits. As an intermediate node, all information elements received by the intermediate node are passed on to the next node. As a hub, the 5X-200 DIGITAL PABX receives information elements to provide Calling Party identification.

The information elements are:

Caller's Extension Number: This element is displayed on a *SUPERSET 4* telephone, a *SUPERSET 4*DN telephone, or a console; when the call is answered, the caller's extension number replaces the trunk number or trunk name. The caller's extension number also replaces the trunk number in SMDR records.

Caller's Dialed Account Code: The existing account code access code identifies the beginning of a Caller's Dialed Account Code. The account code is written into the SMDR record associated with the call. Verified account codes can be used to implement Travelling Class Marks, by providing a COS and COR with the account code, which, at the destination node, replaces the COS and COR associated with the trunk being used. The destination node processes the call using the COS and COR associated with the caller's Verified Account Code that was passed on the trunk.

PABX Node ID: This information element is associated only with the originating node and must be imbedded with another information element because it has no access code of its own (usually it is the first digit of the extension number).

Analog Networking is not available with Generic 1002.

Conditions   The following conditions apply to this feature:

- SMDR for outgoing calls must be enabled for the account code to be sent **to the destination. Refer to Practice 9109-094-221-NA, Station Message Detail Recording.**

- **This feature matches that on the *SX-2000*ᴿ Integrated Communications™ System.**

- The calling extension number and account code are prefixed with an appropriate feature access code.

- If data associated with an information element (such as an account code) is not available, no digits are outpulsed for that element. This could cause the call to fail at the far end because the feature access code is sent, but not the data associated with it.

- The Analog Network feature transmits additional digits, increasing post dialing delay.

- SMDR can be instructed not to record the digit modification done for passing **the network information.**

- Dial pulse trunks cannot be used for Analog Networking because the # digit is not available on them.

- Analog Networking does not work with System Option 36 (End of Dial Character #) enabled.

- The destination node trunk must be a dial-in type trunk (Tie, DID, or DISA).

- Only the last five digits of the calling extension number are displayed on *SUPERSET* telephones and consoles.

- The # digit is required after the account code if the far end expects a variable length account code.

- The node identification provides a combined access code or calling extension number for the far end. If not associated with one of these elements, then it must match the same access code in the far end.

- If a device is forwarded to an analog network trunk, then the extension number of the forwarding telephone is sent as the calling extension number.

- On an intermediate node call (if incoming and caller's extension were received on the trunk), the caller's extension number received on the trunk is sent as the caller's extension number, even if the incoming trunk was forwarded to an outgoing trunk or routed to ARS.

Programming

In CDE Form 22 (ARS: Modified Digit Table), program the caller information elements that are to be transmitted on the trunk.

Enable COS Option 806 (SMDR – Record Incoming Calls) if SMDR is to record incoming caller information; refer to Practice 9109-094-221-NA, Station Message Detail Recording.

In CDE Form 02 (Feature Access Codes) assign a feature access code to Feature 39 (Analog Network Accept Caller's Extension) for PABXs that will be receiving analog network trunk calls.

Programming Example

This example shows how CO type trunks can be used with Analog Networking. The trunks are programmed as DISA trunks on the destination node so that the network information can be dialed on the far end and accepted. The DISA access code must be sent prior to the analog networking information, Because the originating node must receive dial tone from the destination node before dialing the DISA access code, precede the DISA access code with a pause (the number and type of pauses depend on the trunk and the destination node DISA answer time). For example: if the destination node has a DISA answer time of 4 seconds, a DISA access code of 3333, and an accept caller's extension access code 49, the following modified digit string is required:

> *2 3333 49 *6 #

where:

*2 is 10 second pause (in originating node) -to wait for dial tone from the far end

3333 is DISA access code (in destination node)

49 is accept callers extension (in destination node)

*6 is insert callers extension number (in originating node)

is callers extension terminator (in destination node)

Operation The *SX-200* DIGITAL PABX detects an incoming network information element on an incoming analog network call, and then displays the calling extension number on the called console or display *SUPERSET* telephone.

<table>
<tr><td colspan="2" align="center">Table 3-I Glossary of Analog Networking Terms</td></tr>
<tr><td align="center">Term</td><td align="center">Definition</td></tr>
<tr><td>COS</td><td>Class of Service</td></tr>
<tr><td>COR</td><td>Class of restriction</td></tr>
<tr><td>ARS</td><td>Automatic Route Select</td></tr>
<tr><td>ANI</td><td>Automatic Number Identification</td></tr>
<tr><td>Travelling Class Marks</td><td>A means of tagging the call with the caller's level of authorization (COS and COR), based on account codes, to be used by the private network in the handling of the call.</td></tr>
<tr><td>End Node</td><td>A network node that supplies network information elements to the network, but does not receive information elements from the network; (i.e., information flows from the end node out into the network.)</td></tr>
<tr><td>intermediate Node</td><td>A network node linking at least two other network nodes. Information elements received by Node B from Node A, are supplied to Node C.</td></tr>
<tr><td>Hub</td><td>A node in the network that uses information elements from other nodes in the network in order to provide some network feature.</td></tr>
<tr><td>Information Elements</td><td>The following information elements are available: Caller's Extension Number, Caller's Dialed Account Code, and Primary Node-ID of the PABX.</td></tr>
<tr><td>Null Network Element</td><td>This is a network element's access code followed immediately by a terminator.</td></tr>
<tr><td>Marker</td><td>This is a special character to identify Information Elements that are programmed in CDE Form 22 (ARS Modified Digit Table); currently "*6","*7", and "*8" are used.</td></tr>
<tr><td colspan="2" align="right">Page 1 of 1</td></tr>
</table>

	Table 3-2 Information Elements for Analog Networking		
Information Element	Feature Access Code	Delimiter	Comments
Caller's extension number	Accept Caller's Extension (destination node)	*6	The extension number passed in intermediate node or the extension number ofthe forwarding party or the extension number associated with the telephone issent.
Caller's dialed account code	Verifiable Account Code (destination node)	*7	The account code the caller dialed is sent. If the trunk at the destination is a special DISA trunk and this information element appears first in the digit string, the feature access code is not required.
PABX Node ID	Node ID (originating node)	*8	The Node ID of this PABX is sent. This marker usually precedes the caller's Extension marker, forming a compound extension number.
			Page 1 of 1

Attendant Access (Dial 0)

Description   3.7 A feature access code is provided for reaching the Attendant by dialing a code (usually 0). The destination changes based on NIGHT/DAY service and can be many different device types besides a console or LDN. There is also a second class of Dial 0 -see PRIORITY DIAL 0.

The attendant can be reached by dialing:

- attendant access code (usually 0), which is to a console directory number

- console directory number

- attendant access code which is routed to an LDN key

Conditions   The following conditions apply to this feature:

- The Attendant Access-code can generally be used in the system wherever an attendant individual directory number can be programmed except in the call rerouting table; this can include Call Forwarding.

- If there is no feature access code defined, the Dial 0 routing point is still used by several features.

Programming   Assign an access code to Feature 11 (Extension General Attendant Access).

Assign access codes to the Dial 0 entry in CDE Form 19 (Call Rerouting Table) for the tenant of the caller.

Operation   Dial Attendant Access Code.

Attendant Automatic Overflow

Description   3.8 Attendant Automatic Overflow provides a recorded announcement to incoming calls, which are not answered by the Attendant within a predefined time. This feature operates primarily during peak periods of incoming traffic.

Conditions   An answering machine should not be used, as the caller cannot leave a message; the connection to the Recorded Announcement Device is listen only.

Programming   In the Console's Class of Service, enable COS Option 118 (Attendant Call Forward — No Answer) and set it for the time to wait before giving the recorded announcement; enable COS Option 705 (Automatic Overflow from Attendant) in the caller's COS (trunk, extension, or *SUPERSET* telephone).

Operation   Enter the extension of a recording device hunt group into CDE Form 19 (Call Rerouting Table) under "UCD/Attendant Recording Routing for This Tenant", under the Console's tenant. When an incoming call is not answered within the programmed time, a recording is connected to the caller to advise the caller that there are many incoming calls and the call will be answered shortly. The actual message is recorded by the customer, on a customer-provided Recorded Announcement Device. The caller keeps his position in the queue waiting to be answered, even while receiving the recorded message; the call is connected to the attendant as soon as the attendant is free, even during the recorded announcement. After the message, the caller is connected to system Music on Hold.

Automated Attendant

Description   3.9 The Automated Attendant feature connects incoming calls from a DTMF telephone to a recording and a receiver. The recording directs the caller to dial one or more digits to be routed to a specific answering point, such as sales, service, parts, or general office. Once a digit has been dialed, the system can add prefix digits in front of the dialed digit to provide a valid extension number, a hunt group number, a system abbreviated dial number, or a feature access code, to route the call to a specific answering point. If a digit is not dialed (or cannot be dialed because the incoming telephone is not DTMF) the incoming caller is routed to a default answering point at the completion of the message.

Valid default answer points include: console, LDN, Night Bell, extension, logical line, ACD path, ACD position (agent, supervisor, or senior supervisor), hunt group, or system abbreviated dial number.

Automated Attendant is only available with software loads that include the ACD *TELEMARKETER* Application Package.

Automated Attendant is not available with Generic 1002.

Refer to Practice 9109–094–625–NA, Automated Attendant Feature Package.

Conditions   Refer to Practice 9109–094–625–NA, Automated Attendant Feature Package.

Programming   Refer to Practice 9109–094–625–NA, Automated Attendant Feature Package.

Operation   None

Automatic Call Distribution (ACD)

Description   3.10 Automatic Call Distribution (ACD) is a method of distributing calls evenly among trained operators (Agents). Refer to Practice 9109–094–620–NA, *ACD TELEMARKETER* Application Package for more information.

Automatic Call Distribution is not available with Generic 1002.

Conditions   Refer to Practice 9109–094–620–NA, **ACD** *TELEMARKETER* Application Pack-'age.

Programming   Refer to Practice 9109–094–620–NA, *ACD TELEMARKETER* Application Package.

Operation   Refer to Practice 9109–094–620–NA, ACD *TELEMARKETER* Application Package.

Automatic Number Identification (ANI)

Description   3.11 This feature is a mechanism that allows the PABX to identify a calling party on an outgoing trunk. The identifying information consists of the calling party's extension number which is transmitted (tones or pulses) on the trunk, after the PABX has successfully dialed an external number on that trunk.

Conditions   The following conditions apply to this feature:

● The far-end must provide answer supervision and be capable of handling the ANI protocol.

● The extension numbers of station and *SUPERSET* telephones and consoles are sent.

- If the caller has forwarded to the ANI trunk then the forwarding extension's number is sent.

Programming

Enable COS Option 800 (ANI Applies) for the trunk.

Enable Circuit Descriptor option "Far End Gives Supervision" for the trunk.

The Circuit Descriptor option "DTMF" for the trunk must match the far end.

Operation

When a call is made on an ANI trunk, an answer supervision received on the ANI trunk is treated as a signal to send the calling party's extension number. During transmission of the calling extension number, the calling party is not connected to the speech path. This inhibits putting any noise (that could be mistaken for DTMF signaling) onto the line until all dialing is finished. Once the extension number has been sent, the calling party's audio will be cut through and no further signaling will occur.

Automatic Route Selection (ARS)

Description

3.12   The *SX–200* DIGITAL PABX Automatic Route Selection (ARS) feature package combines the concepts of standard ARS (selecting optimum call **routes, inserting/deleting routing digits) and Toll Control** (allowing/disallowing specific extensions the ability to make specific types of external/long distance calls).

Also provided are:

- a universal numbering plan capability,
- six time-of-day zones,
- three day zones for week days, and
- overlap outpulsing.

Refer to Practice 9109–094–220–NA, Automatic Route Selection and Toll Control.

Conditions

Refer to Practice 9 109–094–220–NA, Automatic Route Selection and Toll Control.

Programming

Refer to Practice 9109–094–220–NA, Automatic Route Selection and Toll Control.

Operation

Refer to Practice 9109–094–220–NA, Automatic Route Selection and Toll Control.

Calibrated Flash

Description

3.13   Telephone users **access** many PABX features using a switch hook flash from industry-standard telephones. Calibrated Flash allows the system to

consistently create the proper flash time thus preventing confusion between flash and hang up attempts. On rotary dial sets, the user sends a calibrated flash by dialing the digit "1". On DTMF sets equipped with a flash key, the user presses this key to send a switch hook flash to the PABX.

Conditions   The following conditions apply to this feature:

- For rotary dial telephones in analog Bays, the Calibrated Flash feature and Message Waiting are mutually exclusive.

- DTMF sets equipped with a flash button must have a calibrated flash time of 50 to 140 ms.

- Rotary dial set users can perform a calibrated flash at any time, except while dialing a number. (During dialing, the system interprets the digit 1 as part of the number).

- To use rotary dial telephones and the Calibrated Flash feature in analog bays, a calibrated flash line card PN91 10–310–000–NA, must be installed.

- For ONS and OPS line cards, flash timers have no effect on the calibrated flash detection circuits.

- For DTMF telephones in analog Bays, the Calibrated Flash card must be used if the telephone sends a flash between 50 and 140 ms; the card expands it to a 200 ms flash.

Programming   In CDE Form 04 (System Options/System Timers):

- Enable Option 37 (Calibrated Flash).

- Set Option 52 (Minimum Flash Timer) to 200 ms. if a Calibrated Flash line card is used.

- Enable Option 38 (Switchook Flash).

In the CDE Form 03 (COS Define):

- Disable COS Option 223 (Flash Disable) to allow a flash to be processed.

Operation   In an established call:

- From a rotary set, dial the digit 1 and proceed as appropriate for the feature.

- From a DTMF set, press the cali brated flash button and proceed as appropriate for the feature.

Callbacks

Description   3.14 The Callback feature allows a user to be notified when a busy device becomes is free or when a set has been used after a no answer condition was encountered.

Callback busy allows a user who has encountered a busy set, hunt group or trunk group to have the call completed when the required set, hunt group or trunk group becomes idle. The system continuously monitors the originating set or console and the required device. When the originating set or console is idle and the call can now be completed, the system calls the originating set or console; when that set or console answers, it calls the required device.

Callback No Answer allows a user, after dialing an extension which does not answer, to have the call completed later after the called party uses the telephone. The system continuously monitors the originating set or console and the called set. When the called set goes off-hook and then returns to idle, the 'callback is handled in the same way as Callback Busy.

Up to 100 Callback requests may be active within the system at any time; however, a maximum of only 25 ARS callbacks is permitted in these requests.

See ATTENDANT CALLBACK BUSY/NO ANSWER and CALLBACK BUSY/NO ANSWER.

Conditions   The following conditions apply to this feature:

- If more than one callback request is active on any device, the requests are queued and serviced in order of placement.

- Duplicate callback requests supercede the original request.

- if the two parties involved in a callback hold a telephone conversation (not a conference) before the callback is honored, the callback is canceled automatically.

- Callbacks to a busy ARS digit string are NOT canceled if the same ARS digit string to which the callback was set is successfully dialed.

- A callback is canceled as soon as the telephone that originated it is rung, even if a conversation is not established.

- Internal callbacks outstanding for more than 8 hours are canceled automatically; callbacks to a busy ARS digit string are canceled after 1 hour.

- If a callback is not answered by the originating set or console within 20 seconds, it is automatically canceled.

- If the called party becomes busy before the originating party answers the callback, the originating party hears busy tone when the callback is answered. The callback is not canceled and remains active.

- When a callback is placed to a hunt group, it is placed to the whole hunt group and not to any particular member.

- The scan for an idle hunt group member for the callback does not alter the next extension to hunt for in a circular hunt group.

- Callback – Busy must be activated within 10 seconds of receiving busy tone.

- Campons to extensions are honored before callbacks.

- Originate Only extensions do not have access to this feature.

- Call Forwarding is ignored when a callback rings at the originating set.

- Callbacks ringing at a set cannot be picked up using CALL PICKUP.

- If a *SUPERSET* telephone originates a callback, the callback always rings the set's Prime Line. If the prime line has Key line appearances, the system places the key appearances'into a simulated busy state to prevent them from ringing during the callback. If the prime line has Multiline appearances, they remain unchanged.

- A callback only rings a *SUPERSET* or industry-standard telephone if the set and the prime line are available.

Programming	None
Operation	None

Call Rerouting

Description   3.15 This feature provides flexibility for the routing of incoming calls, attendant access, call interception, and routings for various features. Different types of calls can be routed to different answering points in DAY, NIGHT 1, and NIGHT 2 service for each tenant. For a summary of call types, see Appendix B.

Rerouted calls are processed differently than normal calls. The system considers rerouted calls to be important calls that must get through. Some features on the reroute point are ignored because of this.

Also see DID/DIAL-IN/Tie INTERCEPTS, NIGHTSERVICES, CO TRUNK TYPES, and UNIFORM CALL DISTRIBUTION.

Conditions   The following conditions apply to this feature:

- Do Not Disturb is ignored on reroute points.

- Rerouted callers are automatically camped on to the reroute point regardless of COS options. Campon is not done for consoles.

- Valid access codes for reroute types, with the exceptions listed below, are: LDNs, consoles, industry-standard telephones, *SUPERSET* telephones, logical lines, hunt groups (all types except data hunt groups), ACD paths and Night Bells.

- Console access codes are not valid rerouting points for the following:

    DID always routing to this tenant.

    DID forward on busy/no answer.

    Dial-in Tie always routing to this tenant.

    Dial-in Tie forward on busy/no answer.

- LDN Access Codes are not valid rerouting points for Non-dial-in trunks alternate recall points.

- Only Recording Hunt Groups are valid for recording routings.

- **CO trunks use rerouting when they originate, following the routing points** programmed for each individual trunk; see CO TRUNKS TYPES.

- Forwarding is examined on a reroute point (regardless of the number of forwardings already done). See **CALL FORWARDING.**

- Whenever a DID trunk reroutes to the Night 1 point of its Attendant Access Night Point, it does not recall due to a no answer on that point. The same applies for Tie trunks and the Tie Attendant Access Night Point and for DISA trunks, and for internal extensions and the Dial 0 point.

- Device Interconnection checking is done between the rerouted party and the reroute point. For LDN keys as reroute points, the checking is done between the calling party and the console with the lowest Bay/Slot/Circuit PLID where the LDN key appears. If the connection is not allowed then the reroute point is ignored.

Programming   All Call Rerouting entries are programmed in CDE Form 19 (Call Rerouting Table). Enter a valid extension number or LDN access code in one of the DAY, Nlor N2 service columns as desired. Whether the tenant of the calling or called party is used depends upon the feature selected.

Also see **NIGHT SERVICES.**

Operation   See **ATTENDANT NIGHT/DAY SWITCHING** and   *SUPERSET* NIGHT/DAY SWITCH-ING for changing the night/day service.

Campon

Description   3.16 A device is able to indicate to a busy party that communication is desired, and to be connected when the party is free. Also, the user can make a continuing request for a trunk when the Trunk Group is busy, and be connected to a trunk when one becomes free.

When calling an extension, hunt group, or ARS, if the destination is busy, the caller usually receives a tone for a period and then camps on to the busy device. The tone given indicates whether or not campon is allowed during the period, or is done at the end of the period.   For some calls, the period is skipped.

The busy called extension receives a tone alerting the par&y that there is a call waiting; see CAMPON WARNING TONE.

An extension can consult the first waiting party (in hunt groups as well) using the SWAP CAMPON feature.

Campon may be initiated on a trunk group that has been programmed to give the expensive route warning; see EXPENSIVE ROUTE WARNING.

For recall from Campon, see RECALL.

Conditions   The following conditions apply to this feature:

- The identity of the first waiting party appears for a few seconds on a *SUPERSET 4* telephone in talking mode (then reverts to normal display); on a *SUPERSET 4*DN telephone the identification display occurs in any mode.

- On a *SUPERSET 4DN*, the camped on party identification display takes precedence over the held party display.

- Calls camped on to a device are serviced in two groups, trunks and internal callers, with trunks being served first. Within each group calls are serviced on a first-come, first-served basis.

- When a party camps on to a busy trunk group, the DTMF receiver used to reach the trunk group is released. The campon to the trunk group is honored when a trunk group is free and a DTMF receiver is free.

- The Attendant or an extension can transfer a call to a busy destination. The transferred party camps on immediately.

- The transferred party can camp on as long as the transferring party can camp on. COS checks are done on the transferring party and the transfer is disallowed if the transferring party cannot camp on.

- The transferred party hears system music while camped on; if there is no system music, silence is heard.

- All devices except the console can camp on; consoles and extensions can transfer a call into campon.

- If Campon is allowed for a call, special busy tone is supplied for10 seconds, after which the device is camped on automatically.

- If campon is not allowed for the call then busy tone is heard for 30 seconds and then the call is disconnected.

- DID and CO trunk calls that campon to busy devices receive ringback tone.

- Tie and DISA trunk calls that campon to-busy devices receive busy tone (the same audio as internal callers).

- If there is no busy intercept then a DID trunk immediately camps on to a busy device if the trunk is allowed to campon to the device.

- On busy tone timeout, a serial call is dropped, and does not recall.

- On *SUPERSET 4* or *SUPERSET 4*DN telephones, a CAMPON softkey is provided. On a *SUPERSET 3*DN telephone a programmable feature key may be provided.

- If a *SUPERSET* telephone is using the display or **SUPERKEY** feature while camped on to ARS, the campon is not honored when ARS becomes available; it is only honored after the telephone exits from the feature **and ARS is available.**

- Industry-standard telephones and *SUPERSET* telephones that camp on to a device without using a softkey hear busy tone while camped on.

- All trunk types and station and *SUPERSET* telephones can camp on.

- Calls can camp on to busy industry-standard telephones, *SUPERSET* telephones, logical lines, hunt groups, and trunk groups.

- Campon is done immediately for reroute points that are busy regardless of Campon COS options; see CALL REROUTING.

- Campon is done for Automated Attendant hunt groups regardless of campon COS options; see AUTOMATED ATTENDANT..

- Campon tones are not passed to lines which have COS Option 216 (Data Security) enabled in their COS.

- The Campon warning tone applies to the party being transferred to.

Programming   Enable COS Option 301 (Campon) for the device to allow it to camp on.

If Campon is to be permitted on outgoing trunks, enable COS Option 237 (Outgoing Trunk Campon) for the device in addition to COS Option 301 (Campon).

Operation   Operation varies depending upon the device as described below:

Industry-standard and *SUPERSET* 3 Telephones

To camp on to a busy device:

- **Dial the number-special busy tone is returned.**

- After 10 seconds of special busy tone, Campon is done and busy tone is returned. The called extension receives campon warning tone.

- When the called extension goes on-hook, the calling extension hears ringing tone and the called extension is rung, or,

- The called trunk group becomes idle-the system dials the originally dialed digits.

SUPERSET 3DN Telephone

If the set does not have a Campon feature key programmed, use the procedure for industry-standard telephones, above. If the Campon feature key is programmed, use the following procedure.

To camp on:

- Dial the number — busy tone is returned.

- Press the Campon feature key. Remain off-hook.

SUPERSET 4 Telephone

- While receiving special busy tone, press the CAMP ON   softkey. Remain off-hook.

SUPERSET 4DN Telephone

- While receiving special busy tone, press the I WILL WAIT   softkey. Remain off-hook.

To Transfer into Busy:

- Put a party on consultation hold.

- Dial the extension to transfer the call to. Special busy tone is heard.

- Hang up.

Console

See ATTENDANT TRANSFER INTO CAMPON.

Campon Warning Tone

Description
3.17 When a device camps on to an extension or hunt group, a warning tone is sent to the extension user over the current call. The warning tone can be programmed to repeat every 5 to 15 seconds.

Conditions
The following conditions apply to this feature:

- A different tone is given for internal and external calls. When an industry-standard telephone or SUPERSET telephone calls, a single burst of 440 Hz tone is given for 200 ms. For trunks and consoles calling, a double burst of the same tone is given.

- The tone is not heard by other parties involved in the call with the busy extension, but a short silent period may be noticed.

- COS Options 242 (Repeated Campon Beeps) and 216 (Data Security) are mutually exclusive.

- COS Option 216 (Data Security) prevents the tone from being applied to particular extensions. This has no effect on the SWAP CAMPON feature.

- Repeated campon beeps applies only when trunks are camped on.

- Trunks camped onto extensions with Repeated Campon Beeps do not re-call.

- For hunt groups, the tone is given to the first busy member of the hunt group that is not Do Not Disturb and that is logged in (UCD).

- The COS of this member is used to check if repeated campon beeps on a hunt group applies to the first party in the hunt group. The tone is applied irrespective of the line that is in use.

- If the extension selected from the hunt group for the tone has Data Security enabled then no tone is given. No other extension is selected.

- The tone is not given to members of recording hunt groups.

- The feature applies to *SUPERSET* telephones only if their prime line is a key line (in which case all parties on the line get the tone) or their prime line has no appearances and they are on their prime line appearance.

- The feature applies to logical lines only if the line is a key line or a single appearance multicall line. The first *SUPERSET* telephone where the line appears gets the tone. All parties on the key line get the tone.

- The warning tone is applied only if the party to get the tone is talking to another party or is held by another party.

- Music is removed while the Campon tone is applied (digital Bays only).

- Extensions in analog bays do not receive Campon tone if they are connected to Music on Hold.

Programming

Enable COS Option 242 (Repeated Campon Beeps) for the extension if trunk calls should continue to notify the extension. For hunt groups, this option should be enabled for the first extension in the hunt group.

Enable COS Option 216 (Data Security) for the extensions that should not receive the warning tone. For hunt groups, this option should be enabled for each extension in the group.

Set the cycle time for the repeated beeps via COS Option 255 (Repeated Campon Beeps Timer). The default setting is 10 seconds.

Operation

A call camps on and a tone is heard. For *SUPERSET* telephones, the SWAP CAMPON feature can be used to consult with the party that camped on. Alternativety, for any extension, finish the current call; hang up, and the camped on party rings the extension.

Class of Restriction (COR)

Description

3.18 Fifty Class Of Restriction (COR) groups are available in the system to provide 50 different levels of outgoing call capabilities. Each extension, *SUPERSET* telephone, dataset, console or dial-in trunk is assigned a COR which defines the outgoing call capabilities for that device. All devices with the same COR have access to the same outgoing call capabilities. By using CORs, the amount of ARS programming is reduced.

The Class of Restriction allows the system to restrict which trunk scan not be accessed by a user. For example, COR 01 could restrict users from accessing CO

trunks (local and DDD), WATS, and tie lines. COR 02 could restrict users from accessing WATS, tie lines, and DDD (but allow local calls). COR 03 could restrict users from accessing DDD and WATS (but allow local calls and tie line calls).

NOTE: All extensions belong to COR group 1 in the default database.

Conditions   The following conditions apply to this feature:

- CO trunks do not have a COR. When they access ARS, it is either using the COR of the transferring or forwarding party, or no COR at all, giving universal access.

- The COR may change temporarily for a caller through Verified Account Codes.

- The maximum dialed digits feature is based on the COR of the caller. Refer to Practice 9109-094-220-NA, Automatic Route Selection and Toll Control.

Programming   Assign a COR number to each extension, *SUPERSET* telephone, dataset, Dial-In Trunk and console via CDE Forms 09 (Stations/*SUPERSET* Sets), 07 (Console Assignments), 15 (Dial-In Trunks) and 12 (Data Assignment).

Refer to Practice 9109-094-220, Automatic Route Selection and Toll Control for additional information on COR programming,

Operation   None

Class of Service (COS)

Description   3.19 Each extension, trunk, *SUPERSET* telephone, dataset, ACD Position, or console is assigned a Class Of Service (COS) which defines the features available for that device. All devices with the same COS (which defines the COS Options) have access to the same features. Fifty Classes Of Service are available in the system to provide 50 different levels of feature accessibility. Each CO5 can have a name associated with it. COS names are not available with Generic 1002.

In the default database, all devices belong to COS 1.

Conditions   The following conditions apply to this feature:

- Several COS options are mutually exclusive; these are identified with the description of each feature.

- The COS may change temporarily for a caller through Verified Account Codes (Travelling Class Marks).

- The COS used is sometimes that of the caller and sometimes that of the called party. Check the feature to determine whose COS is used.

- LDNs do not have a COS. The COS for an LDN is determined from the lowest Bay/Slot/Circuit PLID of the console where the LDN is programmed.

- Logical lines do not have a COS. The COS is determined from the first *SUPERSET* telephone on which it is programmed. See LOGICAL LINES.

Programming   Assign the desired features to each COS via CDE Form 03 (COS Define).

Assign a COS to each console, extension, Dial-In Trunk, Non Dial-in Trunk, dataset, and ACD position via CDE Forms 07, 09, 12, 14, 15, 39 and 40.

Operation   None

Conflict Dialing

Description   3.20 The system can differentiate between conflicting extension numbers such as "52345" and "5234". This implies that extensions can be programmed as 1-, 2-, 3-, 4-, or 5-digit numbers with the first digits being identical. The system selects the shorter extension number if the next digit is not dialed within a preselected time.

A conflict exists between two extension numbers if the first number is contained in the second number, starting with the first digit. For example, 1234 conflicts with 12345 but 1234 does not conflict with 123 (123 conflicts with 1234).

Conditions   The following conditions apply to this feature:

- First digit conflict between the access codes assigned to Executive Busy Override and the Callback ━ Busy features, and other numbers within the numbering plan, are permitted.

- Feature Access Codes are not permitted to conflict with any other access codes in the system. Extension numbers may conflict with Feature Access Codes.

- ARS leading digit strings are not permitted to conflict with any other access codes in the system. Extension numbers may conflict with ARS leading digits.

- Modem Pool Hunt group access codes cannot conflict with any other access code in the system and no access code may conflict with a Modem Pool Hunt group access code.

- Conflict dialing applies to features that need to have access codes entered (call forwarding for example). This includes the programming features on the *SUPERSET* telephones.

• Normal system inter-digit timeout is 15 seconds (not ARS dialing). If a con-flict exists, the Dialing Conflict Timer applies.

Programming   Select an appropriate time-out period for System Option 50 (Dialing Conflict Timer 2-10 s).

Operation   None

Console LDN Keys

Description   3.21 Each Console has nine programmable Listed Directory Number (LDN) po-sitions. Each LDN position can be programmed as the answer point for a par-ticular type of call and can have a descriptive label, allowing the Attendant to answer the call with an appropriate response.

LDNs can appear at more than one console in a system and so allow calls to be presented to specified consoles simultaneously.

The console can answer calls from an LDN by either using the ANSWER key or by selecting the LDN key directly; see ATTENDANT CALLSELECTION.

Conditions   The following conditions apply to this feature:

• Any or all LDN keys and labels may be programmed to appear.

• Each console must have its own LDN numbers explicitly programmed in CDE Form 08 (Attendant LDN Assignments).

• There are several default call positions provided by the system for various call types; see ATTENDANT DEFAULT CALL POSITIONS.

• The RECALL key (key #1) cannot be changed.

• Station and SUPERSET telephones and consoles cannot directly dial an LDN.

• Each LDN key is provided with a default label. For key F2, the label is 'IN-TERNAL'. For key F3 to key FO it is 'LDN n', where n is from 1 to 8. An LDN programmed at the key can have a label that replaces the default label.

• It is recommended that key F2 not be assigned to an LDN key since some calls are directed to that key by the system; see ATTENDANT DEFAULT CALL POSITIONS.

• If the Trunk Answer From Any Station (TAFAS) feature is used then is it rec-ommended that key FO not be programmed as an LDN or that calls not be routed to the LDN when TAFAS calls are also to be answered; see ATTEN-DANT DEFAULT CALL POSITIONS.

Programming   Assign access codes to the console's LDN positions via CDE Form 08 (Attendant LDN Assignments). The feature descriptions in this practice identify which fea-tures can use Console LDN keys as answer points.

Operation	The Attendant may selectively answer any incoming call type by pressing the appropriate LDN softkey.

Consoleless Operation

Description	3.22 The system may be operated without the use of an Attendant Console. Under these conditions all features associated with the console are not available. *SUPERSET* telephones may be used as Subattendant positions. These may switch the system night service (see NIGHT/DAY SWITCHING) and have enhanced call handling and recall capabilities (see SUBATTENDANT).
Conditions	Attendant features are not available at Subattendant positions.
Programming	No attendant consoles are programmed.
Operation	None

Contact Monitor

Description	3.23 This feature allows a station line circuit to be used for monitoring an alarm contact. The contact to be monitored is connected across Tip and Ring of the circuit. When the contact closes, a call is originated by the station line circuit and the call is directed to its tenant's Dial 0 or Priority Dial 0 Routing Point. The PABX handles the call as a call reroute; see CALL REROUTING, ATTENDANT ACCESS (DIAL 0), and PRIORITY DIAL 0.

Conditions	The following conditions apply to this feature:

- Contact Monitor is available on OPS, ONS, and analog Line cards.
- COS Options 400 (Contact Monitor) and 241 (Receive Only) are mutually exclusive.
- The contact signal is non-latching; if the contact opens, the Dial 0 call is terminated.
- If the station line circuit has COS 239 (Priority Dial 0) enabled then the Priority Dial 0 Routing point is used.
- If there is no Routing point then the origination is still processed (the station line circuit is now busy) and the station set is given reorder tone.
- If the call is answered at a console, the console display indicates that the caller is a contact monitor.

Programming	Enable COS Option 400 (Contact Monitor) for the extension.

Operation	Close the contact and a call is made to the Dial 0 Routing point or to the Priority Dial 0 Routing point.

COV Port Voice Mail

Description	3.24 Voice Mail devices may use the MITEL COV (*SUPERSET 3* and *SUPERSET 4* telephones) interface.
Conditions	None
Programming	Enable COS Option 229 (COV Voice Mail Port) for the COV port(s) used by the Voice Mail device.
Operation	Refer to the documentation provided with the Voice Mail device.

Customer Data Entry (CDE)

Description	3.25 Customer Data Entry is a full screen application, using softkey prompts and simple graphics, for entering and changing customer programming. Enter customer data from a terminal via the RS-232 connector on the Maintenance panel or the rear of the Universal Control cabinet, or from an Attendant Console (a screen of reduced height is used). Customer Data Entry can also be performed from a remote location, using a terminal connected to the PABX via modems.
Conditions	None
Programming	. Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE), for detailed programming information.
Operation	None

Customer Data Print

Description	3.26 This feature provides a means of displaying the current state of programming of the *SX–200* DIGITAL PABX. Each or all of the CDE forms may be printed, one at a time, in a presentable format.
Conditions	The printer must be PABX compatible; refer to DIRECTED INPUT/OUTPUT.

Programming	See DIRECTED INPUT/OUTPUT for details on directing the output to the desired printer.
Operation	Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE), for user information.

Data Demultiplexer

Description	3.27 The Mitel Data Demultipiexer used with *SX–100ᴿ* and *SX–200* PABX systems may be used with the SX-200 DIGITAL PABX. The PABX provides digit **identifiers in front of each printed line in order to route the RS-232 output to** various storage devices. Refer to Practice 9160–080–300–NA, Data Demultiplexer, for additional information on the device. The Directed Input/Output feature of the *SX–200* DIGITAL PABX replaces the Data Demultiplexer feature.
Conditions	The printout type and the digit identifier used for it are as follows:

CDE data print	- 0
ACD	- 0
Traffic Measurement	– 0
TRUNK SMDR	- 1
DATA-SMDR	- 1
Printer tests	– 1
Hotel/Motel	- 2
Maintenance	- 3

Programming	Enable System Option 15 (Data Demultiplexer).
	Refer to Practice 9160–080–300–NA, Data Demultiplexer, for further programming information.
Operation	Refer to Practice 9160–080–300–NA, Data Demultiplexer, for additional information.

Default Customer Data

Description	3.28 The system is preprogrammed with default Class-Of-Service (COS) Options and Class-Of-Restriction Options; if no alternates are programmed, the system defaults to the preprogrammed data. The Feature Access Codes can be entered during Customer Data Entry.

Conditions   None

Programming   Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE).

Operation   Default data programmed into the database includes:

- Device Interconnection Table

- T1 Link Descriptor

- Test Line

- Console

- Class of Service Timers

- System Timers

- Trunk Circuit Descriptors

- Data Terminal Equipment (DTE) Profile

- Data Circuit Descriptors

- System Printouts

Device Interconnection Control

Description   3.29 This feature provides a means of disallowing connection between de-
vices of different types. The feature is primarily intended to control trunk in-
terconnection but applies to other devices as well. This is intended to provide
a method of meeting interconnection regulations imposed by various regula-
tory authorities.

The checks apply when a device calls another device,   when a transfer (super-
vised or unsupervised) is attempted and when the console attempts to per-
form operations on devices. The sections in this practice mention Device Inter-
connection checks where they apply.

See FLASH CONTROL for details on controlling the ability of extensions to
flash when extensions are involved with trunk calls.

There are three aspects of the feature: Tenant Interconnection, the Device
Interconnection Table, and COS Options.

Tenant Interconnection is described in Practice 9109–094–230–NA, Tenanting.
The check for tenant connection is done when the Device Interconnection
Table check is done. The other aspects of interconnection are done only if the
tenant connection check passes.

The Device Interconnection Table is a table that the installer can program to
limit interconnection from one device type with another   and with itself. This

restriction can be applied in either direction if desired. The Device Interconnection Table alone applies when the two devices in question are not both trunks. When two trunks are to be connected together, the Device Interconnection Table restrictions apply. In this case, COS Options may apply additional restrictions.

The COS Options apply additional checks when trunks are to be connected together. The COS Options do not override the Device Interconnection Table but add finer control to the table. The Options apply when a third party (a console, extension or trunk) attempts to leave two or more trunks connected together by a supervised transfer. The COS of the third party is used for the checks.

The following rules apply for the COS Option checks:

- DISA to any trunk, any trunk to DISA has no COS Option checking

- Incoming Tie trunks have no COS Option checking

- CO to CO trunk checks COS Option 313 (CO Trunk To CO Trunk Connect)

- CO to Tie checks COS Option 3 14 (CO Trunk To Tie Trunk Connect)

- Tie to CO checks Cos Option 314 (CO Trunk To Tie Trunk Connect) and 319 (Extension non-CO Trunk To Trunk Connect)

- CO to DID checks COS Options 315 (CO Trunk To DID Trunk Connect)

- DID to CO checks COS Options 315 (CO Trunk To DID Trunk Connect) and 319 (Extension non-CO Trunk To Trunk Connect)

- Tie to Tie checks COS Option 316 (Tie Trunk To Tie Trunk Connect) and 319 (Extension non-CO Trunk To Trunk Connect)

- DID to Tie, Tie to DID checks COS Option 317 (Tie Trunk To DID Trunk Connect) and 319 (Extension non-CO Trunk To Trunk Connect)

- DID to DID checks COS Option 318 (DID Trunk To DID Trunk Connect)

Conditions   The following conditions apply to this feature:

- When a device hangs up from a three party call, the Device Interconnection feature applies between the remaining parties. The third party that is used in the COS option checks is the party that hung up. If the two remain-. ing parties cannot connect, then the call is cleared down.

- When a device hangs up from a four or five party conference call, if there are only trunks left in the call, the Device Interconnection feature is applied between each trunk in the call (both ways). The third party that is used in the COS option checks is the party that hung up from the call. If at least one trunk can connect to one other trunk in the conference then the Device Interconnection check passes. If no trunks can connect to any other trunks in the call then the call is completely cleared down.

- If the Console is not allowed connection to a device, it cannot exercise features affecting that device.

- Device Interconnection applies directly to trunks, stations, sets, data stations, modem pools, and consoles.

- Connection is always allowed to Night Bells, Call Announce Ports, and LDNs.

- Device connection checking is done when an ACD position is directly dialed. The checks apply between the caller and the set where the position is logged in.

- No checking is done for ACD calls from an ACD path.

- No checking is done between callers and members of recording or auto attendant hunt groups.

- Checking is done with hunt groups using the tenant of the first programmed member of the hunt group.

- Checking is done with logical lines using the tenant of the *SUPERSET* telephone where the first appearance of the line resides.

- When a trunk is accessing ARS directly or for trunks transferred into ARS before a trunk is seized, the third party used is the trunk itself.

- When an extension times out from reorder tone with a conference on hold, the above rules apply to the call that is left; it is as if the extension had hung up from the call.

Programming Set the interconnection rules in CDE Form 30 (Device Interconnection Table) as required.

Enable the appropriate COS Options for the devices that can connect the desired trunks.

Operation None

Dial Tone Disable

Description 3.30 Assignment of this feature to a dial-in trunk suppresses dial tone on an incoming trunk call. If this feature is assigned to an extension, the extension does not receive dial tone whenever dialing is initiated.

Conditions When applied to DISA trunks, the option suppresses the initial dial tone returned for dialing the DISA feature access code. The second dial tone, after a successful code is dialed, is not affected by the option.

Programming Enable COS Option 701 (No Dial Tone) for the device.

Operation None

Dictation Trunks

Description
3.31 This feature indefinitely extends the dialing stage on a trunk to allow
tone-to-pulse or pulse-to-tone conversion, based on Trunk Circuit Descriptors, of all digits dialed during a trunk call. Without the feature, only DTMF
signaling is possible from extensions so equipped.

Conditions
The following conditions apply to this feature:

- A DTMF receiver circuit is used for the duration of the call.

- Dictation trunks cannot be put on hold but callers can be transferred to
dictation trunks.

- The dialing stage cannot be terminated on the trunk during the call.

Programming
Set the switches on the analog CO trunks cards to the appropriate setting;
refer to Practice 9109-094-200-NA, Shipping, Receiving, and Installation Information.

Enable appropriate options for the trunks via CDE Form 13 (Trunk Circuit Descriptors); also see TRUNK CIRCUIT DESCRIPTOR OPTIONS.

Operation
Dial the necessary digits to access the dictation trunk. The system keeps the
extension in dialing mode on the trunk and converts all digits dialed to the
appropriate format for the trunk selected (tone or pulse).

DID/Dial-in/Tie Intercepts

Description
3.32 This feature allows a customer to specify that all DID and Dial-in Tie
Trunk calls directed to a busy extension (or one which does not answer within
a selected time period) are rerouted to a call rerouting point. As well, the
trunks can be programmed to be redirected immediately or to be redirected
under certain error conditions.

See RECALL for how this fits in with general recall operation.

When a DID trunk dials in, the following conditions are tested-in the following order:

- If calling an LDN and the DID Attendant Access Night point is defined,
then the trunk is rerouted to that point.

- If calling a station, *SUPERSET* telephone, hunt group, or logical line and
the DID Routing Point is defined, then the trunk is rerouted to that point.

- If calling a busy industry-standard telephone, *SUPERSET* telephone, or
logical line and the extension has forwarding — busy/always programmed,
then the trunk is forwarded.

- If calling a busy industry-standard telephone, *SUPERSET* telephone, logical line, or hunt group and the DID Recall Points on Busy is defined, then **the trunk is rerouted to that point.**

- If calling a station or *SUPERSET* telephone with Do Not Disturb enabled and a Do Not Disturb Intercept point is defined, then the trunk is rerouted **to that point.**

- If the station or *SUPERSET* telephone called does not answer and the extension has forwarding – no answer programmed, then the trunk is forwarded.

- **If the industry-standard telephone,** *SUPERSET* telephone, **hunt group member, or logical line called does not answer and the DID no answer point is defined, then the trunk is rerouted to that point.**

The above applies, except for DND intercept, for Tie trunks, but using the equivalent Tie routing points.

Conditions   The following conditions apply to this feature:

- If an illegal number is dialed or an illegal feature is attempted and the DID **Intercept Routing point is defined, then the DID trunk is rerouted to that** point. The tenant of the trunk is used. The same applies for Tie trunks and the Dial-in Tie Intercept point. If no point is specified, reorder tone is given.

- Calls routed to an LDN or to a console through the DID/Tie intercepts are identified as intercepted calls on the console display, when they are answered .

- Calls routed to an LDN through DID Intercept busy/no answer routing point, show the tenant name of the called party when answered at the console.

- If a vacant number is dialed and the DID Vacant Number Routing point is **defined, then the DID trunk is rerouted to that point. The tenant of the** trunk is used. The same applies for Tie trunks and the Dial-in Tie Vacant **Number Routing point.**

- The DID or Tie no answer point applies in recall situations if the trunk was ringing a party and has not been answered yet by any device in the system (excluding recordings). See REDIAL.

- The reroute for no answer does not occur if calling a console, LDN or Night Bell. It also does not occur if already ringing the reroute point.

- The reroute point on busy or no answer cannot be a console.

- The tenant of the called party is used to determine the rerouting point. When a logical line is called, the tenant of the first appearance of the line is used. When a hunt group is called, the tenant of the first member of the hunt group is used. When an LDN is called, the tenant of the console with the lowest Bay/Slot/Circuit plid where the LDN appears is used.

- The answer time timing for reroute/no answer is taken from COS Option 115 (Attendant Timed Recall – NO ANSWER) of the trunk used for the reroute on no answer. If the time value is zero, then no reroute is done.

- The application of busy and attendant night access points applies only when the trunk initially dials in. The no answer point applies when ringing any extension unless the trunk has been answered. This includes ringing an extension after a call forward no answer on the initial dialed destination.

- COS Option 210 (Call Forwarding Inhibit on Dial-In Trunks) for the called party is checked on the always, busy, and no answer routing points. If the COS option is enabled for the point, then the reroute is not done.

- Extensions may be restricted from receiving DID trunk calls directly from DID trunks, by selecting COS Option 226 (Inward Restriction ⚊ DID) for the extension.

- For DID and Tie calls, the routing for all calls is done once dialing is completed.

- The busy and no answer points do not apply when calling consoles, LDNs, or Night Bells.

Programming Enter the desired rerouting points via CDE Form 19 (Call Rerouting Table) in **the appropriate tenant.**

To disable rerouting when a particular station or *SUPERSET* telephone is called, enable COS Option 210 (Call Forwarding Inhibit on Dial-In Trunks) for the required extension(s).

See DID Call Inhibit for details on blocking DID trunk calls altogether to a particular extension.

Operation None

Digit Translation

Description 3.33 The 5X-200 DIGITAL PABX may be programmed to provide one of four Digit Translation Plans for rotary telephone sets. The default Digit Translation Plan is Plan 0.

Table 3-3 Digit Translation Plans				
Digit	Plan 0	Plan 1	Plan 2	Plan 3
1	1 pulse	2 pulses	9 pulses	10 pulses
2	2 pulses	3 pulses	8 pulses	9 pulses
3	3 pulses	4 pulses	7 pulses	8 pulses
4	4 pulses	5 pulses	6 pulses	7 pulses

Table 3-3 Digit Translation Plans				
Digit	Plan 0	Plan 1	Plan 2	Plan 3
5	5 pulses	6 pulses	5 pulses	6 pulses
6	6 pulses	7 pulses	4 pulses	5 pulses
7	7 pulses	8 pulses	3 pulses	4 pulses
8.	8 pulses	9 pulses	2 pulses	3 pulses
9	9 pulses	10 pulses	1 pulse	2 pulses
0	10 pulses	1 pulse	10 pulses	1 pulse

Conditions   Only one translation plan may be in effect at a time.

Programming   Select the desired translation plan via System Option   46 (Digit Translation Plan o-3 j.

Operation   None

Direct-in Lines (DIL)

Description   3.34 This feature allows non-dial-in type trunks to ring specific answering points, rather than at the Attendant Console; this may vary with Night Service changes. An answering point may be one of the following in addition to a console or LDN:

● an ACD Path

● an extension number (Industry-standard telephone, *SUPERSET* telephone, logical line)

● a hunt group access code

● a modem pool access code

● a Night Bell access code.

See RECALL for effects on recal l.

Conditions   Refer to TRUNK OPERATION — NON-DIAL-IN CO

Programming   In CDE Form 14 (Non-Dial-In Trunks) enter the desired answering points for each of the Day, Nightl, and Night2 modes of operation.

Operation   None

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Direct Station Select / Busy Lamp Field (DSS/BLF)

Description   3.35 The DSS/BLF feature allows a *SUPERSET* telephone to have DSS/BLF keys and LCDs. The LCDs indicate the status of each associated telephone; pressing a DSS key immediately transfers a call to the associated telephone.

Conditions   The following conditions apply to this feature:

- Line appearance keys on *SUPERSET 4*, *SUPERSET 3*DN, or *SUPERSET 4*DN telephones may also be programmed as DSS/BLF keys.

- The DSS key is available when the user is talking to a party, and can put that party on consultation hold.

- The DSS key is available and acts as a Speedcall key if the user is idle or listening to dial tone.

- If the Secretarial Option is enabled, the caller is released to the destination automatically when the DSS key is pressed (if a release is possible); the caller is camped onto a busy party.

Programming   Programming for the various devices associated with the DSS/BLF is described below.

Busy Lamp Field

Program BLF/DSS keys in the EXPAND SET of CDE Form 09 (Station/*SUPERSET* Sets).

Enable DSS for each key in the DSS field of the EXPAND SET of CDE Form 09 (Station/*SUPERSET* Sets). Enable the Secretarial Option to provide automatic release when a DSS key is pressed.

Operation   Operation of the various devices associated with the DSS/BLF is described below.

Busy Lamp Field

The lamp indicates the status of the associated telephone, as follows:

- idle – LCD is clear

- busy – LCD inner circle is lit and outer square is clear

- do not disturb -outer square is lit and inner circle is clear

BLF operation is the same when the lamps are associated with DSS keys.

DSS Keys with a *SUPERSET* Telephone

To transfer a call to a station:

- press the DSS key for that station (Secretarial Option must be enabled). The call is transferred and the *SUPERSET* telephone returns to idle or to dialing, or,

- press the DSS key for that station

- press RELEASE (for DSS keys without Secretarial Option enabled).

- the call is transferred and the *SUPERSET* telephone returns to idle.

Direct to ARS

Description

3.36 This option allows an industry-standard telephone to be directly routed to ARS without dialing, and for other devices to be routed after dialing a valid account code. The system dials up to five digits automatically for the extension.

Conditions

The following conditions apply to this feature:

- For industry-standard telephones, the feature only applies when the station initially starts a call. Once the initial trunk call has been established, normal operation resumes (for example, flashing is not affected).

- This feature applies to all devices that can access Account Codes, only after a valid account code is entered; see ACCOUNT CODES.

- Direct to ARS conflicts with the maintenance test-line function.

- The Contact Monitor and Manual Line features cannot access the Direct To ARS feature.

- Industry-standard telephones cannot have the Forced Account Code feature enabled.

- There must be an existing ARS Leading Digit string that matches the Direct to ARS code.

Programming

Enable COS Option 217 (Direct To ARS) for the extension.

Program an ARS leading digits string.

Program the same digits as the access code to Feature Number 37 (Direct to ARS).

Operation

For Industry-standard Telephone: lift the handset and the PABX automatically dials the ARS access code.

For other devices: enter a valid account code and the PABX automatically dials the ARS access code.

Directed input/Output

Description

3.37 This feature allows the routing of printouts to the system printer port, to any data port, or to the printer port on the *SUPERCONSOLE* 1000 Attendant Console. If no new port is specified through CDE, printouts default to the system printer port. All printer ports are RS-232C interface. Printout types include:

- Traffic Measurement

- SMDR (Trunk, Data, ACD)

. CDE

- Hotel/Motel system printouts

- PMS interface port

- ACD Reports

- Maintenance Logs

Customer programming printouts may be directed to any or all of seven user-defined printers. A maximum of six DNIC-based printer ports can be defined; the remaining port is the system printer port.

CDE forms may be printed individually or collectively.

Certain CDE forms require the user to specify which sub-forms are to be printed (in a "from -to" format).

Conditions

The following conditions apply to this feature:

- Printouts may be sent to more than one printer at a time. The time required to print is determined by the slowest printer.

- &□♦ more than five printouts may be directed to one printer. .

- Some printouts can be guaranteed. If there is a printer failure, the information is preserved and printed when the printer is ready again.

- If the printer runs out of paper and can send flow control information, the system suspends printing until the printer is ready again.

- If the printer or dataset is powered down, the system waits until the printer or dataset is ready again.

- Printers must have an RS-232C interface.

- A functioning printer must always be connected to the port assigned for SMDR printouts. If the printer fails or is disconnected, outgoing trunk calls are disabled as soon as the internal storage buffer is full if 'No Overwrite' (COS Option 702) is enabled in the COS for the trunk. The system's internal SMDR record buffer holds 200 SMDR records; this provides sufficient time for printer maintenance.

- The PMS printer port must be dedicated to PMS only; it cannot be shared with any other application.

- The *SUPERCONSOLE 1000* Attendant Console printer port limitations are described in Practice 9109–094–315–NA, Attendant Console Description.

Programming   For a printer connected via a   dataset, define an appropriate Data Circuit Descriptor in CDE Form 11 (Data Circuit Descriptors). Program the   dataset in Form 12 (Data Assignment) using the new Data.

Complete programming of Form 34 (Directed IO); specify the printer ports available, and then direct each printout to its associated printer.

After assigning the *SUPERCONSOLE 1000* Attendant Console in CDE Form 07 (Console Assignments), program subcircuit 2 of the console's Bay/Slot/Circuit location as a DSCONS in CDE Form 12 (Data Assignment), if the console port is to be a printer port.

NOTE: Printer connected to a printer port must have parameters set up as shown in Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Operation   The system checks CDE Form 34 (Directed IO) whenever it generates a printout, to determine to which printer port it should route the printout.

Discriminating Dial Tone

Description   3.38 An extension having a feature enabled that prevents calls from ringing the extension hears a distinct dial tone (350/440 Hz, 400 ms on, 100 ms off for six cycles, then continuous tone) when going off-hook to make a call. These features include Do Not Disturb, Call Forwarding – Follow Me, or Call Forwarding – I Am Here.

Conditions   The following conditions apply to this feature:

- The tone heard is the same one that is used for Transfer Dial Tone.

- COS Option 701 (No Dial Tone) must be disabled.

Programming   Enable COS Option 219 (Discriminating Dial Tone) for the extension.

Operation   None

Discriminating Ringing

Description   3.39 This feature provides two different ringing cadences to allow a user to distinguish between internal incoming calls (standard ringing) and external

incoming or Attendant calls (discriminating ringing). The system can also be programmed to provide discriminating ringing for all calls.

Standard ringing	1 second on, 3 seconds off
Discriminating ringing	1/2 second on, 1/2 second off, 1/2 second on, 2 1/2 seconds off.

Conditions   The following conditions apply to this feature:

● Discriminating Ringing does not apply to Night Bells or Recorded Announcement Devices. ,

● The feature applies to both the prime and additional lines on a   *SUPERSET* telephone.

● In an unsupervised transfer situation, the ringing cadence of the called party is not changed after the transfer is done.

Programming   To provide discriminating ringing on incoming trunk and Attendant calls:

Enable System Option 17 (Discriminating Ringing).

Disable System Option 18 (Discriminating Ringing Always).

To provide discriminating ringing for all calls:

Enable System Option18 (Discriminating Ringing Always).

If System Options 17 and 18 are not selected, standard ringing is provided for all calls.

To provide only standard ringing for specific trunks or consoles calling (while still providing discriminating ringing to others), select COS Option 809 (Standard Ring Applies) for the specific trunks or consoles.

Operation   None

DTMF-To-Rotary Dial Conversion

Description   3.40 This feature automatically converts DTMF tones from DTMF equipment **to rotary dial outpulsing on outgoing trunks which have been programmed** as rotary dial trunks. The DTMF digits also appear on the trunk, as early line split is not provided.

Conditions	None
Programming	Specify the trunk as non-DTMF in CDE Form 13 (Trunk Circuit Descriptors).
Operation	None

Expensive Route Warning

Description

3.41 A trunk route can be programmed to give an expensive route warning tone (three short tones), and on *SUPERSET 4* telephones, *SUPERSET 4*DN telephones and the console, the LCD displays a message. The user can continue with the call or hang up and try again later when a less expensive route may be available. *SUPERSET 4* and *SUPERSET 4*DN telephones have the additional options of camping on to wait for a less expensive route or placing a callback on a less expensive route.

Conditions

The following conditions apply to this feature:

- If Callback is activated, the callback is to the least cost non-expensive route.

- If the caller waits (camps on), the caller waits for the least cost route.

- Campon and callback to an expensive route are available to *SUPERSET 4* and *SUPERSET 4*DN telephones, and to *SUPERSET 3*DN telephones which have Campon and Callback feature keys programmed.

- Warning tone is supplied to all devices (including incoming tandem trunks).

Programming

Program Warning Tone (WT) in CDE Form 24 (ARS Route Lists). Refer to Practice 9109–094–220–NA, Automatic Route Selection for designating expensive routes.

Enable COS Option 301 (Campon) and COS Option 237 (Outgoing Trunk Campon) in the COS for the extension to allow campon for less expensive routes.

Enable COS Option 300 (Automatic Callback) and COS Option 236 (Outgoing Trunk Callback) in the COS for the extension to allow callbacks to less expensive   routes.

Operation

A trunk or extension attempts an external call and ARS cannot find a route that does not have the expensive route designation. The warning tone is provided; if no action is taken by the caller, the call proceeds after a 5 second delay.

For *SUPERSET 4* and *SUPERSET 4*DN telephones, see CALLBACK-BUSY for the operation of the CALLBACK softkey and see CAMPON for the operation of the CAMPON/I WILL WAIT softkeys.

Flash Control

Description	**3.42** This set of options limits the use of consultation hold (switchhook flash) under certain conditions when an extension is in a call with a trunk or attempts to establish a call with a trunk.

Flash On Incoming Trunk

This feature allows extension users to place an incoming trunk on consultation hold. This enables the trunk call to be transferred, held, or added to a conference. The option does not apply when the extension is talking to a DISA trunk that has dialed into the system.

Flash on Outgoing Trunk

This option is the same as the previous option but it applies to outgoing trunks.

Cannot Dial a Trunk After Flashing

This option prohibits the extension user from accessing a trunk, through dialing or picking up a trunk on hold at another extension, while a consultation hold is in progress. The option does not apply to industry-standard telephones with COS Option 203 (Broker's Call) or COS Option 252 (Transfer With Privacy) in their COS or when picking up trunk calls that are ringing at another extension.

Cannot Dial a Trunk If Holding or in Conference with a Trunk

This option prevents devices from dialing a trunk call or picking up a trunk from another extension while another trunk is in a call (conference or two party) on consultation hold. This option does not apply to industry-standard telephones with COS Option 203 (Broker's Call) or COS Option 252 (Transfer With Privacy) in their COS.

Conditions	The following conditions apply to this feature:

- The options are disabled if the extension has COS Option 223 (Flash Disable) enabled in its COS.

- The options are disabled for industry-standard telephones if System Option 38 (Switchhook Flash) is disabled.

Programming	Enable any or all of the following COS Options for the extension:

212 (Can Flash if Talking To An incoming Trunk)

213 (Can Flash if Talking To An Outgoing Trunk)

214 (Cannot Dial a Trunk After Flashing)

215 (Cannot Dial a Trunk if Holding or in Conference with a Trunk)

Flash Disable

Description   3.43 An extension may be inhibited from using all services requiring the use of the switch hook flash. For *SUPERSET* telephones, this prevents the extension from putting a call on consultation hold.

Conditions   The following conditions apply to this feature:

- COS Options 223 (Flash Disable) is mutually exclusive with:

    COS Option 224 (Flash for Attendant)

    COS Option 203 (Broker's Call)

    COS Option 252 (Transfer with Privacy)

    COS Option 302 (Flash In Conference)

Programming   Enable COS Option 223 (Flash Disable) for the extension.

Enable System Option 38 (Switchhook Flash) to allow flashing for all   Industry–Standard telephones in the system.

Operation   None

Flash For Dial 0 (Attendant)

Description   3.44 An extension can be set to automatically ring the Dial 0 Routing Point (usually the Attendant) if a transfer is attempted while in an established call.

Conditions   The following conditions apply to this feature:

- The extension cannot access any other feature requiring a switch hook flash; such as Brokers Call, or Transfer/Conference, or Call Hold.

- The conditions for consultation hold must be met before the call can proceed; see TRANSFER.

- The extension calls the DIAL 0 or PRIORITY DIAL 0 routing, based on the extension's tenant, COS, and the current NIGHT/DAY service. If there is no

point specified for the given conditions then no call is made and reorder tone is supplied.

- This only applies if there is not a call on Consultation Hold.

Programming   Enable COS Option 224 (Flash for Attendant) for the extension.

Operation   While on an established call, flash the switchhook or press the transfer soft-key. The extension rings the Dial 0 (Attendant) Routing Point; the other party is placed on consultation hold.

Flash Timing

Description   3.45 The flash timer is a systemwide programmable item; its value applies to all industry-standard telephones in the system.

Minimum Flash Timer	(10 ms units) 20 ➡ 50 units
	200 to 500 ms
Maximum Flash Timer	(10 ms units) 20 ➡ 150 units
	200 to 1500 ms

Conditions   **None**

Programming   Set the desired times in CDE Form 04 (System Options/System Timers); System Options 52 (Minimum Flash Timer) and 53 (Maximum Flash Timer).

Operation   **None**

Flexible Night Service

Description   3.46 This option allows the Attendant to change the night service assignment of non-dial-in trunks. The system allows full flexibility of trunk assignment.

Conditions   The following conditions apply to this feature:

- The console must be able to connect to the trunk. (See DEVICE INTERCON-NECTION CONTROL.)

- CDE is prevented from accessing Form 14 (Non-dial-In Trunks) when the console is updating the night point of a trunk. Similarly, the console is prevented from changing the night service while CDE is accessing form 14.

- The rules for the assigned access codes are the same as in CDE.

Programming	Enable COS Option 104 (Attendant Flexible Night Service Setup) for the Console.
Operation	Refer to Practice 9109–094–315–NA, Attendant Console Description.

Flexible Numbering Plan (Conflict Dialing)

Description	3.47 The numbering plan used within the system is completely flexible. The user may select any combination of 1-, 2-, 3-, 4-, and S-digit numbers. Also see CONFLICT DIALING.
Conditions	Leading digits of extension numbers must not match Feature Access codes except codes 20 (Call Back Busy), and 31 (Executive Busy Override).
Programming	Assign the required extension numbers.
Operation	None

Global Find Access Code

Description	3.48 This feature allows the user to view all access codes in the system. The system reports the type of device associated with the access code and its location (Bay/Slot/Circuit). The user can also query the system about a particular access code. Data in CDE Form 35 (Global Find Access Code), is generated by the system and cannot be modified.
Conditions	None
Programming	None
Operation	Refer to Practice 9109–094–210–NA, Customer Data Entry(CDE).

Hot Line

Description	3.49 This feature enables a Manual Line to be set up as a Hot Line. Upon going off-hook, it automatically dials a preprogrammed number (internal or external). The number is specified as the call forwarding destination for that extension.

Conditions	The following conditions apply to this feature:

- The extension must be programmed as a Manual Line.

- Manual Line and Automatic Callback are mutually exclusive.

- The extension must have access to Abbreviated Dial, and External Call Forwarding (if it is to dial an external number).

- The type of forwarding programmed has no effect on the feature.

- If the extension is called, then the forwarding feature still works as usual.

- The Hot Line call is a reroute to the forward number; see CALL REROUTING.

- Valid Hot Line destinations include all valid Call Forwarding destinations.

- A DTMF receiver circuit is needed for the Hot Line call regardless of the **type of the destination.**

Programming   Enable COS Option 228 (Manual Line) for the extension.

The Attendant must program a "Call Forward — Follow Me" destination number for that extension; see ATTENDANT CALL FORWARD SETUP AND CANCEL.

If programming the destination number from the extension then enable one of the call forwarding COS options in the extension's Class of Service.

Operation   **Lift handset; the extension is rerouted to the forwarding destination automatically.**

Hunt Groups

Description   3.50 Hunt groups, or master number hunting, allows a collection of devices to share a common access code. A caller can be routed to or dial the access code (the master hunt number of the hunt group), and have the call completed to an available extension in that hunt group. Extensions within a hunt group may still be accessed directly by dialing the extension number.

A Hunt Group is busy if all members of the Hunt Group are busy.

If all devices in a Hunt Group are busy and there is an Overflow point programmed, the call is forwarded to the Overflow point (if it is available).If there is no Overflow point programmed or if it is busy, then the caller finds **the hunt group busy. See CAMPON for information on Campon to busy hunt groups.**

If the caller camps on then the first extension in the Hunt Group list without Do Not Disturb activated receives a campon beep and Swap Campon capability for the first party camped on to the hunt group; see SWAP CAMPON.

See TRUNK GROUPS for details on trunk groups.

Some special types of hunt groups include:

- Recording hunt group; see RECORDING DEVICE SUPPORT.

- UCD Agent Hunt Group; see UNIFORM CALL DISTRIBUTION.

- **Automated Attendant Hunt Group; see AUTOMATED ATTENDANT.**

Two types of hunting are provided by the system, Circular and Terminal:

- Circular Hunting starts at the extension after the last extension in the hunt group to which a call was completed (the extension rung), and hunts over-all extensions in the hunt group in the sequence programmed. Hunting stops at the first idle extension found.

- Terminal Hunting starts at the first extension in the hunt group and termi-nates at the first idle extension found. Hunting takes place in the order in -which the extensions were programmed into the hunt group.

Conditions   The following conditions apply to this feature:

- An extension must be programmed before programming it into a Hunt Group.

- A maximum of 50 hunt groups may be programmed.

- **A hunt group may have a maximum of 50 members.**

- The overflow is only checked once, when the call is initially made to the **Hunt Group.**

- An Extension cannot be assigned to more than one Hunt Group.

- An extension in a hunt group is passed in the hunt, if:

   it is busy

   call forwarding is in effect

   Do Not Disturb is set

   it is busied-out

   it is locked out

   it is a *SUPERSET* telephone with a busy prime line

- A hunt group can have only one Overflow point; however, a device can be the Overflow point for more than one hunt group.

- The following overflow points are allowed: hunt groups, sets, extensions, datasets, consoles, LDNs, Night Bells, and ACD paths.

- Data hunt groups can have only other data devices (or data hunt groups) for an Overflow point.

- Overflow is not permitted if the overflow point has forwarding active.

- **When a hunt group overflows to another hunt group, overflow to the second hunt group's overflow point is not permitted.**

- All tenant and COS checks involving a hunt group use the first programmed member of the hunt group.

- Recall never involves hunt groups (unless a reroute through CALL REROUTING) — recall can only occur to the individual hunt group members.

Programming   Program all extensions via CDE Form 09 (Station/*SUPERSET* Sets). Program datasets via CDE Form 42 (Data Assignment).

Program the Hunt Group via CDE Form 17 (Hunt Groups).

Enter the desired extension numbers of sets, datasets.

Enter the hunt group access code.

Enter the appropriate options for the hunt group.

Illegal Access Intereept

Description   3.51 Calls to restricted access codes or extension numbers can be routed to a given answering point for completion. This point can be an LDN position on the Attendant Console (see CONSOLE LDN KEYS) or any valid reroute point. Ilegal number intercept points can be programmed to be different or the same for DAY, NIGHT1, and NIGHT2 operation.

Conditions   The following conditions apply to this feature:

- If the required programming is not done, such calls receive reorder tone.

- Only sets, DISA trunks, and CO trunks are routed to the answering point.

- See DID/DIAL-IN/Tie INTERCEPTS for illegal number handling for DID and Tie trunks.

- If the call is routed to a console, the call is shown as an intercept call at the console.

Programming   To cause all calls to restricted numbers to be routed to a specific answering point, access CDE Form 19 (Call Rerouting Table) and enter the desired answering point access code, into the appropriate column for the "Station Illegal Number Routing For This Tenant" Call Type.

Operation   None

Inhibit Trunk Ring-Me-Back During Dialing

Description   3.52 This feature inhibits the operation of a particular instance of the Station Transfer Security feature. If an industry-standard telephone is dialing and

goes on-hook while a trunk is on consultation hold, that trunk does not ring-
**back the station and is instead dropped. This prevents trunk lock-ups when
the flash on the trunk was intended as a hang-up and the station user did not
.expect a trunk to be on consultation hold.**

Conditions   The following conditions apply to this feature:

*   COS Options 401 (Call Park) and 403 (Trunk Recall Partial Inhibit) are mutu-
    ally exclusive.

*   This only operates for industry-standard telephones.

*   This only operates for single trunks on consultation hold. Non-trunks and
    conference calls ring back the industry-standard telephone.

*   Serial trunks are not dropped; they recall back to the console.

*   If the station has called another party that has external call forwarding
    enabled and hangs up during the dialing of the external number, the held
    trunk is transferred to the external number and is not dropped.

Programming   Enable COS Option 403 (Trunk Recall Partial inhibit) for the extension.

Operation   Establish a trunk call.

Flash.
Dial tone is returned

Hang up.
Trunk is dropped.

Intercept to Recorded Announcement

Description   3.53 Incoming trunk calls can be intercepted to groups of recording devices
after dialing vacant numbers, reaching busy extensions, obtaining no answer,
or as required.

Conditions   None

Programming   See RECORDING SUPPORT.

Enter the extension of the recording device hunt group into CDE Form 19
(Call Rerouting Table) for the appropriate routing.

Operation   None

Inward Restriction (DID)

Description   3.54 An extension may be restricted to not receive calls directly from DID
trunk calls.

Conditions	None
Programming	Enable COS Option 226 (Inward Restriction — DID) for the extension.
Operation	None

Last Party Receives Dial Tone

Description	3.55 This feature allows the last party left on a call, after the other party(s) hang up, to receive dial tone and be able to dial. Normally, this party would receive silence and after 30 seconds be locked out: see LINE LOCKOUT.

Conditions   The following conditions apply to this feature:

- The feature applies only to station and *SUPERSET* telephones.

- The feature has no effect on *SUPERSET* telephones which have the handset in the cradle, have the auto answer feature set, or are on a line that cannot be used for originating calls.

- The feature has no effect on station sets that are members of recording **hunt groups.**

- This feature does not work on telephones with either COS Option 228 (Manual Line) or COS Option 241 (Receive Only) enabled in their Class of Service.

Programming	Enable System Option 22 (Last Party Clear — Dial Tone).
Operation	Establish a call. All of the parties in the call except one hang up. The remaining extension hears dial tone and can dial a new call.

Line Lockout

Description	3.56 If an extension goes off-hook, and does not dial digits or go back on-hook for a length of time, or if the extension does not hang up at the end of a call, then the extension will be locked out. In the locked-out state, the extension cannot originate or receive calls. The extension appears busy to potential callers.

See LOCKOUT ALARM for an alarm generated from Line Lockout.

Conditions   The following conditions apply to this feature:

- Dial tone time-out is 15 seconds, with an additional 30 seconds of reorder tone before lockout is applied to the extension.

● Calls cannot be transferred to locked out extensions.

● Locked out extensions are not hunted in hunt groups.

Programming   N o n e

Operation   **To remove the extension from the locked-out state, go back on-hook.**

Line Types and Appearances for *SUPERSET* Telephones

˙ Description   3.57 *SUPERSET* telephones are equipped with keys that can be used as Line Select Keys to provide additional lines to the telephones, appearances of other telephones, and direct access to trunk lines.

SUPERSET telephones have two components then – the telephone and the lines on the telephone. The telephone and the lines are not always busy at the same time. The system sometimes has to distinguish between the *SUPERSET* telephone and the lines on the telephone. One or more lines (except the Prime line) may be in use, but the telephone itself is still idle and available for a call.

Lines have root devices, which can be telephones, *SUPERSET* telephones, or logical lines.

Prime Line: Every *SUPERSET* telephone must have a Prime Line. The *SX-200* DIGITAL system identifies the set by its Prime Line extension number.

● A prime line can be a multicall or key line depending upon the type of the next programmed appearance of the prime line. If an appearance of a prime line is programmed at other sets as a multicall line, then the prime line is a multicall line. If an appearance of a prime line is programmed at other sets as a key line, then the prime line is a key line.

● The prime line is always a both way and immediate ring line.

There are five line types:

Personal Outgoing Line: This line is an outgoing-only line that allows the user to make an outgoing call without making the Prime Line busy to incoming calls.

● It has no extension number associated with it.

● There can only be one per *SUPERSET* telephone.

Key Line: This is an appearance of an extension number that can be an industry-standard telephone's line, a *SUPERSET* telephone's Prime Line or a logical

line. If the line is in use at one set, the other appearances of the line are busy and unavailable for separate calls. See the Line Privacy feature description in this Practice for joining established calls on key lines.

- Direction and Ring Variants can be programmed independently for each appearance.

- It can appear on several *SUPERSET* telephones.

- There can be only one appearance of any one key line on a *SUPERSET* telephone.

Multicall Line: This is an appearance of an extension number that can be an industry-standard telephone's line, a *SUPERSET* telephone's Prime Line or a logical line. When one appearance of a Multicall Line is in use, the other appearances are still available to make or answer calls.

- Direction, Ring and Secretarial Variants can be programmed independently for each appearance.

- It can appear on several *SUPERSET* telephones.

- There can be up to fifteen appearances of any one multicall line on a given *SUPERSET* telephone.

- The Secretarial Operation feature description in this Practice only applies to multicall lines.

Direct Trunk Select Line: A DTS Line operates like a Key Line, but it accesses a specified dedicated CO trunk directly. It can be used for incoming and outgoing calls.

- Direction and Ring variants can be programmed independently for each appearance. The Direction variant allows control of the type of trunk call, incoming or outgoing or both.

- It can appear on several *SUPERSET* telephones.

- There can be only one appearance of any one Direct Trunk Select line on a *SUPERSET* telephone.

- The trunk associated with the line must be in a trunk group for outgoing calls to be possible.

- The trunk ignores Do Not Disturb on the *SUPERSET* telephone when it originates if there is only one appearance of the line.

- The calls on the trunks bypass ARS but do use the SMDR feature if enabled.

- The user can transfer calls on this line to other extensions.

- When the far end hangs up on a Direct Trunk Select line, all parties connected are cleared down, and the trunk occupies the line while it clears down.

- When the trunk hangs up, all parties in the call on the line are put idle.

- DTS trunks are unavailable to ARS, regardless of ARS programming.

Private Line: Like a DTS Line, a Private Line accesses a specified dedicated CO trunk directly. However, the user can only transfer established calls on this line to other SUPERSETtelephones that have an appearance of the line, using Privacy Release. See PRIVACY ENABLE/PRIVACY RELEASE. *SUPERSET 4* telephones are registered multi functional (MF) to accommodate this type of operation where the operating TELCO provides a less expensive rate for trunks connected to private trunk lines.

- The same conditions apply as for Direct Trunk Select Lines.

Line Appearance Variants

Direction: both way, incoming only, outgoing only.

This allows an appearance of a line to be restricted to being used for originating or receiving calls, or both.

NOTE: The outgoing direction for a line on a set is ONLY available if the line is programmed for no ring; if programmed for delayed ring or immediate ring then the line must be either both way or incoming only.

Ring: no ring, delayed ring, immediate ring.

This allows new calls to an appearance to cause a   *SUPERSET* telephone to ring immediately, ring after a delay or not ring at all. The delay time is from COS Option 253 (Call Forward ‑ Don't Answer Time). The Class of Service used is **derived from the root device (trunk,** *SUPERSET* telephone, **industry-standard** telephone) of the line. For logical lines, the first   *SUPERSET* telephone where the line is programmed is used. The use of the Call Forward   ‑ Don't Answer time prevents delay ring calls from ringing an extension or line from which they could be forwarded momentarily.

Secretarial: non-secretarial, secretarial.

This allows special interaction with the Do Not Disturb feature; see SECRE-TARIAL LINE.

Line ringing

For key line types, there can be only one caller calling the line at a time. When the caller calls the line, all of the appearances indicate a ringing line and the SUPERSETtelephones where the appearances appear may start to ring if the SUPERSETtelephones are idle.

When a multicall line is called, there can be as many callers ringing the line as there are appearances that are free to be rung. When a caller rings the line,

the first appearance of the called line is rung on all *SUPERSET* telephones where the line appears. The next caller of the line makes the next appearance on all *SUPERSET* telephones (the next level or tier of appearances) ring. On a single *SUPERSET* telephone, the appearances of a multicall line are rung in order from lowest key number to highest key number.

Each line on a *SUPERSET* telephone that rings can cause the *SUPERSET* telephone to ring if the set is not in use and as long as the set does not have the Auto-Answer feature activated. If the *SUPERSET* telephone is in use and off-hook or the Auto-Answer feature is enabled then each line that starts to ring causes the set to warble briefly if the set is off-hook. This new call ring can be limited with COS Option 611 (Limited New Call Ring) so that only the first ringing line on a telephone provides the short ring.

Conditions   The following conditions apply to this feature:

● Any line of any line type can have a maximum of sixteen appearances, including the prime line of a set.

● An extension or trunk can be the root of only one line type.

● See FORWARDING for details on lines and forwarding.

● For some features, the programmed sequence of appearance is important; the Review feature in CDE allows the sequence to be viewed.

Programming   Specify a time for COS Option 253 (Call Forward — Don't Answer) in the Class of Service of the appropriate device for the delay ring time for a line.

For *SUPERSET* telephones with heavy call traffic on several lines on the set, enable COS Option 611 (Limited New Call Ring) to limit the new call ring given to the set.

Operation   Not Applicable.

Local Switching

Description   3.58 Local Switching allows two lines on the same analog equipment bay to be directly connected together, bypassing the normal switching route to the DX Switching Matrix in the Main Control.

This increases the traffic capacity of the system.

Conditions   The following conditions apply to this feature:

● Local switching can only be achieved for 2-party calls; all conference type calls are routed through the DX Switching Matrix.

● Local switching applies only to analog bay line circuits.

- Local switching applies to outbound calls once dialing has been completed.

- The Traffic Measurement feature can be used to check the usage of local switching in analog bays.

Programming	None
Operation	None

Lockout Alarm

Description

3.59 When a set is locked out, if Lockout Alarm is enabled, all consoles warble with a long-short-long cadence. This cadence overrides all other cadences that might be active. The Attendant can display the time and date the lockout alarm occurred, the extension number of the device, and a message stating that the device has been off-hook too long.

The lockout alarm provides three major functions:

- audible alarm through the console

- activation of the alarm relays

- display of the location of the locked out device

The station or set that becomes locked out is then considered unavailable and the alarm totals are recalculated by the maintenance system.

Conditions

The following conditions apply to this feature:

- COS Option 227 (Lockout Alarm Applies) must be enabled for the stations or sets for this feature to operate.

- COS Option 102 (Attendant Display of System Alarms) must be enabled for the alarm icon to flash when a lockout alarm occurs.

- A lockout alarm occurs 45 seconds after the station or set goes off-hook.

- The alarm totals are updated when a lockout alarm occurs.

- There can be 32 Lockout Alarms active at any one time; further Lockout Alarm(s) are only recorded in the Maintenance logs.

- The Lockout Alarm cadence still rings if COS option 100 (Attendant Bell Off) is enabled.

- The Lockout Alarm feature operates with COS Option 701 (No Dial Tone) enabled.

- When a console is in restricted service, the Lockout Alarm cadence rings but the user is not able to read the alarm or turn the warbling off. The restricted access code must be re-dialed before the user can read the alarm.

● When no DTMF receivers are available, the 45 second time period before the Lockout Alarm occurs is increased by the time required to wait for an available receiver.

Programming   Enable COS Option 227 (Lockout Alarm Applies) in the Class of Service of the extensions for which the feature applies.

Enable COS Option 1 02 (Attendant Display of System Alarms) for those consoles which can read and cancel the Lockout Alarms.

Enable COS Option 108 (Attendant Audible Lockout Alarm) to cause the console to audibly ring for a Lockout Alarm.

Operation   Display a lockout alarm on a console by pressing the following:

FUNCTION hardkey – APPLICATION softkey – SHOW LOCKOUT softkey

Refer to Practice 9109-094-3 15–NA, Attendant Console Description, for further information.

Logical Lines

Description   3.60 A logical line is a line on a *SUPERSET* telephone that is not an appearance of any station or other *SUPERSET* telephone. Each logical line has its own extension number and exists solely on a single *SUPERSET* telephone. Logical line extension numbers can be used in many places where station or *SUPERSET* telephone lines can be programmed (CALL REROUTING, etc).

Conditions   The following conditions apply to this feature:

● Logical lines are either key or multicall type lines.

● The *SUPERSET* telephone where the first appearance of the logical line resides is used for COS, COR, and Tenant checks.

● Logical lines may be viewed by using CDE Form 09 (Station/*SUPERSET* Sets) review procedures.

● Logical lines are created implicitly when a vacant extension number is programmed in for a line key.

Programming   Refer to CDE Form 09 (Station/*SUPERSET* Sets).

Operation   None

Manual Line

Description   3.61 An extension with this feature in its COS is routed directly to the extension's Dial 0 routing point upon going off-hook. The extension can still receive calls.

Conditions   The following conditions apply to this feature:

- The extension does not receive dial tone, but does receive   ringback tone.

- If there is no Dial 0 routing point for the current night service then reorder tone is given to the extension.

- Priority Dial 0 applies.

- The call is made as a reroute to the Dial 0 point.

- **COS Option 228 (Manual Line) and COS Option 300 (Automatic Callback) .** are mutually exclusive.

Programming   Enable COS Option 228 (Manual Line) for the extension.

Enter appropriate answer point (e.g., an Attendant LDN) in Station Dial 0 Routing in CDE Form 19 (Call Rerouting Table) for the extension's tenant.

Operation   To originate a call, lift the handset; the dial 0 point rings

Meter Pulse Collection

Description   3.62 Meter pulses are often used to calculate the cost of outgoing trunk calls thus allowing the call to be charged back to the originator. The system can be set up to detect and collect certain types of meter pulses sent to a trunk circuit during outgoing calls; these are then recorded in the trunk's SMDR reports. Types of meter pulses which can be detected by the PABX without additional hardware include:

- **Tip-Ring reversals**

- **XT lead signaling (Analog CO Trunk)**

- **M&MM lead signaling (Digital LS/GS Trunk)**

Refer to Practice 9109–094–200–NA, Shipping, Receiving, and Installation Instructions, for location of correct leads and proper interface to the sending equipment.

Other types of meter pulses common in the telephone industry include 50Hz, 12 kHz, and 16 kHz type pulses. Detection of these types requires the addition of an external interface which converts these pulses to a ground signal which is then applied to the XT Lead for the analog CO Trunks, or to the M or MM lead for the Digital LS/GS trunks (for Digital LS/GS trunks, -48 Vdc must be applied to the other lead so that when the ground is applied to the M or MM lead, current flows through the circuit and gets detected as a pulse).

This feature is associated with the Message Registration feature. See **Section 5, Hotel/Motel Features for additional information.**

Conditions   The following conditions apply to this feature:

- The PABX can only detect and collect the types of meter pulses identified above.

- The trunk must provide answer supervision. This is counted as the first meter pulse.

- Meter pulses are not recorded for ACD agents if System Option 44 (ACD Reports) is enabled.

- The system can record a maximum of 65535 pulses.

- Pulses are always recorded regardless of what is happening to the trunk (hold, talking etc).

Programming   In the COS for the trunk, enable COS Option 247   (SMDR Record Meter Pulses) in CDE Form 3 (COS Define).

Enable System Option 23 (Message Register Count Additional Supervisions) in CDE Form 4 (System Options/System Timers).

Enable Option (Far-end Gives Answer Supervision) in CDE Form 13 (Trunk Circuit Descriptors).

Operation   As meter pulses are received, they are collected by the PABX and reported in the trunk's SMDR record.

Moving Stations and *SUPERSET* Telephones

Description   3.63 This feature allows easy moving of extensions from one circuit to another. Previous programming for the extension, such as name, COR, COS, etc. is preserved and moved with the extension.

Conditions   The device must be idle when the move is attempted and the new location must have nothing programmed.

Programming   Refer to Practice 9109-094-210-NA, Customer Data Entry (CDE), for full details of programming.

Operation   Refer to Practice 9109-094-210-NA, Customer Data Entry (CDE), for full details of operation.

Multi-Attendant Positions

Description   3.64 The system can handle multiple Attendant Consoles with unique Hold Slots for each Attendant. Incoming trunk calls can be programmed to appear

at all consoles, or specific console(s). Similarly, extension Dial 0 calls, Priority
Dial 0 calls, Intercept to Attendant calls, etc., can be programmed to appear at
all consoles, or at a specific console(s).

Any console in a particular tenant group can switch that tenant group to
Night Service or to Day Service; see ATTENDANT NIGHT/DAY SWITCHING.

See TENANTING, RECALL, and CONSOLE LDN KEYS; see also ATTENDANT
TRANSPARENT MULTI-CONSOLE OPERATION.

Conditions   The following conditions apply to this feature:

- When a call appears at more than one console, the first console to answer
  is connected to the call; other consoles stop being alerted for this call.

- There is a maximum of eleven consoles per system.

Programming   Assign consoles via CDE Form 07 (Console Assignments).

Operation   All operations are identical for all Attendant Consoles in the same COS and
                     Tenant group.

                     See ATTENDANT FEATURES.

Music on Hold (MOH)

Description   3.65 A customer-provided music source can be connected to the System via a
                    Music On Hold/Pager module on the Universal Card for use with   Campon,
                    Hold, UCD, ACD, and other features.

                    See CAMPON and HOLD.

                    Refer to Practice 9109--094--200--NA, Shipping, Receiving and Installation In-
                    formation for wiring details.

Conditions   The following conditions apply to this feature:

- The music source should be between 50 and 500   mV rms.

- Input to the system is 600 ohms ac transformer coupled. A dc voltage
   should not be applied to this input.

- Only one source of music may be programmed for the system.

Programming   Program a Music on Hold module into CDE Form 18 (Miscellaneous System
                    Ports).

Operation   None

Names

Description
3.66 The system programmer can assign names to Extensions, Classes of Service, Tenants, Trunks, Trunk Groups, ACD Paths, ACD Positions, ACD Agent Groups, and Hunt Groups.

With Generic 1002, names can only be assigned to *SUPERSET 4* and *SUPERSET 4*DN telephones.

A user of a *SUPERSET 4* or *SUPERSET 4*DN telephone can program a name at the telephone.

Conditions
The following conditions apply to this feature:

- Trunk, Trunk Group, ACD Path, Acd Agent Group, Tenant, and Class of Service names can be up to 8 characters long.

- Extension and ACD Position names can be up to 10 characters long.

- Hunt group names can be up to *12* characters long.

- Hunt groups must have an access code programmed before a hunt group name can be added.

- The programmer cannot enter names from the Attendant Console because it has no alphabetic keyboard.

- Tenant and COS names appear only on Consoles. Set and Trunk names appear on Consoles, *SUPERSET 4* and *SUPERSET 4*DN telephones.

- Mixed case is only allowed for hunt groups.

- Programming the name of a *SUPERSET* telephone in CDE overwrites the name programmed at the *SUPERSET* telephone. Also, programming the name at the *SUPERSET* telephone overwrites the name in CDE.

- The characters \, ˙, |, {, } are invalid except for hunt group names.

- Trunk groups cannot include single or double quotation marks.

- Hunt group names cannot start with a digit (0 through 9), # or * or have a blank or a -in them.

- Analog Networking information may replace trunk or trunk group names on displays; see ANALOG NETWORKING.

Programming
Refer to the following forms in Practice 9109–094–210–NA, Customer Data Entry (CDE) for further information:

Name Type	CDE Form
ACD Path Names	Form 41 (ACD Paths)
ACD Position Names	Form 39 (ACD Agent Groups) and Form 40 (ACD Supervisors)

Name Type	CDE Form
Class of Service Names	Form 03 (Class of Service Define)
Hunt Group Names	Form 17 (Hunt Groups)
Set Names	Form 09 (Station/*SUPERSET* Sets)
Trunk Names	Form 15 (Dial-In Trunks) or CDE Form 14 (Non–Dial-in Trunks)
Trunk Group Names	Form 16 (Trunk Groups)
Tenant Names	Form 19 (Call Rerouting Table)

Operation

Programming a name varies depending upon the type of telephone as described below.

SUPERSET 4 Telephone:

● Press the PROGRAM softkey.

● Press the NAME softkey; the display shows: DIAL IN NAME.

Enter the name using the telephone keypad. Above each key are printed its associated letters, e.g., the "2" key has the letters "abc" above it. To choose the first letter, press the key once; to choose the second letter, press the key twice, etc. When the last associated letter appears, a subsequent press displays the key number. Further key presses cycle through the letters again. When the desired letter is displayed, press the ➤ softkey to enter it. To correct an erroneous entry, use the ◀ softkey. The * key also gives the four special characters . Q Z and ' when pressed repeatedly. The #, 1 and 0 keys do not provide special characters.

When the name is complete:

● Press the SAVE softkey

SUPERSET 4DN Telephone:

To program a name:

● Press the SUPERKEY.

● Press the YOUR NAME softkey. The display changes to ENTER NAME:

Letters are displayed on the LCD as they are dialed on the telephone keypad. The first press of any of these keys displays the first letter that appears on its key cap. The second press of the same key changes the display to the second letter and so on. When all the letters associated with a key have been displayed, the number is displayed. Further presses cycle through the letters again. When the desired letter is displayed, enter it by pressing the ➤ softkey or by entering the next letter, if it is on a different key. (The ➤ key is

also used to enter spaces). Follow the same procedure to find and enter the other letters in the name. If an error is made, press the ◄— softkey to back up and change a letter.

Telephone keypad key caps 1, *, 0, and # are not marked with all the characters they can enter. They are as follows:

Key	Characters
I	! ? % 1
*	' _ *
0	@ & $ 0
#	. , / #

When the name is complete:

- Press the SAVE softkey.

Never a Consultee Extensions

Description   3.67 This feature protects an extension from being dialed or retrieved by extensions that have a consultation hold in progress.

Conditions   The following conditions apply to this feature:

- The feature is checked when a caller is retrieved from being held by an extension or by the console.

Programming   Enable COS Option 233 (Never a Consultee) for the extension.

Operation   An extension establishes a call. The extension flashes, putting the call on consultation hold, and dials a third party that has the feature enabled. The call to the third party is blocked and the calling extension receives'reorder tone.

Never a Forwardee

Description   3.68 This feature prevents an extension or console from having any calls forwarded to it by another extension. Extensions are prevented from setting up forwarding to extensions or consoles with the feature enabled.

Conditions   The following conditions apply to this feature:

- Calls directed to the extension by hunting are not affected by the selection of this feature.

● If an extension attempts to forward a call to an extension with this feature
enabled (the feature was enabled after the forwarding was setup), the for-
warding is ignored.

Programming   Enable COS Option 234 (Never a Forwardee) for the extension or console.

Operation   None

Night Bells

Description   3.69 This feature allows incoming and internal calls to be directed to common
alerting devices. The call can be answered from the Attendant Console or
from an extension with TAFAS Access; see TRUNK ANSWER FROM ANY STA-
TION (TAFAS).

The system provides a contact closure which operates the alerting device.

Night Bells are activated by relays on a Universal Card Receiver/Relay module;
refer to Practice 9109–094–200–NA, Shipping, Receiving and Installation In-
formation.

The extension number assigned to the Night Bell can be used as an answer
point or alternate answer point for most features in the system.

Conditions   The following conditions apply to this feature:

● Up to 25 night bells can be programmed.

● See ATTENDANT DEFAULT CALL POSITIONS for a description of the console
NIGHTBELL softkey.

● More than one caller can ring a Night Bell at a time – it is always available
to be called and no caller will find it busy.

● Extensions can dial a Night Bell directly.

● The Night Bell itself has no tenant. Tenant checks are done using the ten-
ant of the Night Bell's caller.

● Standard ringing cadence only is used for Night Bells.

● Calls can be transferred to Night Bells.

● Recall features do not operate when ringing a Night Bell.

Programming   Assign each Night Bell in CDE Form 18 (Miscellaneous System Ports).

Operation   See TRUNK ANSWER FROM ANY STATION (TAFAS).

Night/Day Switching – *SUPERSET 4* and *SUPERSET 4*DN Telephones

Description   3.70 A *SUPERSET 4* or *SUPERSET 4*DN telephone can put the system (or particu-
lar tenant group or groups) into DAY service or one of two different night

service modes, NIGHT1 or **NIGHT2.** In Night Service, *SUPERSET 4* and *SUPERSET 4*DN telephones display NIGHT 1 SERVICE or NIGHT 2 SERVICE as appropriate. Also see NIGHT SERVICES, TENANTING, and ATTENDANT NIGHT/ DAY SERVICE SWITCHING.

Conditions   The following conditions apply to this feature:

* This feature is available at *SUPERSET 4* and *SUPERSET 4*DN telephones only.

* Tenanting restrictions can be applied; see TENANTING. Refer to Practice 9 **109–094–230–NA,** Tenanting.

Programming   Enable COS Option 609 (Night Service Switching) in the set's Class of Service.

Operation   Operation varies depending upon the type of telephone as described below.

SUPERSET 4 Telephone

* Press the SELECT FEATURES key.

* Press the NIGHT ANS **softkey.** One of the two alternative modes is displayed, followed by a question mark, e.g., "NIGHT 1 **?".** The YES, NO and EXIT **softkeys** appear.

* If the mode shown is the one desired, press YES. If not, press NO and the other alternative is displayed; then press YES. To leave the system in its UNIVERSAL current mode, press EXIT.

SUPERSET 4DN Telephone

* Press the SUPERKEY.

* Press the MORE **softkey** until the NIGHT ANSWER **softkey** appears.

* Press the Night Answer **softkey.** The top display line indicates which mode is currently active (e.g. CURRENTLY DAY SERVICE). **Softkeys** appear for the two alternatives.

* Press the **softkey** for the desired mode; or, to leave the system in the current mode, press the BACKUP **softkey** or the SUPERKEY.

Night Services

Description   3.71 The PABX has three different service modes: DAY, **NIGHT1,** or **NIGHT2.** When the PABX or tenant group is in night service mode, incoming trunk calls and calls to the Attendant may be rerouted to specified extensions or be caused to activate common alerting devices (Night Bells).

Conditions   The following conditions apply to this feature:

* This feature is available on a per tenant basis.

● Some features, such as Alternate Recall Point, Attendant Call Forward- No Answer, and Call Rerouting, operate differently under NIGHT1 and NIGHT2.

Programming CDE Form 14 (Non-Dial-In Trunks) and CDE Form 19 (Call Rerouting Table) programming is directly affected by Night Services.

Operation See ATTENDANT NIGHT/DAY SWITCHING, NIGHT/DAY SWITCHING — *SUPERSET 4* AND *SUPERSET 4*DN TELEPHONES, CALL REROUTING, TRUNK OPERATION — NON-DIAL-IN CO, ATTENDANT ACCESS (DIAL 0).

Node identification

Description **3.72 The feature provides node identification for the Analog Networking feature and provides for consistent dialing of extension numbers throughout a network of SX-200 DIGITAL PABXs.**

For the use of the Node Identification code in Analog Networking, see ANALOG NETWORKING.

To call an extension within the same node of a network, the user can dial the node identification code followed by the digits to identify the called extension. This can be the same total string of digits that an extension in another node in the network would dial to reach the same extension so that a user can reach any extension in the network by dialing the same digits at any node.

Conditions The following conditions apply to this feature:

● The node identification code must match the ARS leading digits specified in the other nodes in the network to reach that node.

● Dial tone is not returned after the node identification code is dialed.

● Any device may access the node identification code.

● Within any node, it is not necessary to dial the Node Identification digits to access extensions within that node.

Programming In CDE Form 02 (Feature Access Codes) assign an access code to Feature Number 34 (Node ID).

Operation Dial the Node Identification code and then the extension number.

Non-Busy Extensions

Description 3.73 When an extension has this feature enabled, the system causes any call dialing the extension directly to override the current call automatically. After a warning tone, the new caller joins the conversation.

Conditions   The following conditions apply to this feature:

- The Override Security and Data Security features are ignored for the parties in the established call.

- The feature does not work for members of recording hunt groups.

- The feature is ignored when the console calls the set.

- The same conditions for override and key lines apply.

- This feature conflicts with any feature requiring a switchhook flash.

- The Non-Busy Extension can be in conversation with no more than four other parties. Additional callers receive busy tone.

- Only calls dialed directly to the set override; Recalls, Call Reroutes, Callbacks, ignore the feature.

- A call transferred to a Non-Busy Extension does not override a conversation in progress.

The override is disallowed under the following conditions:

- if the caller has a consultation hold in progress and any party in the call has a consultation hold in progress.

- if a console is in the call already.

- if the established call is a three party call that is on consultation hold.

- if one of the parties in the call has the call on hold.

- **if the set is overriding another extension or had called another non-busy extension.**

- The feature is not available to CO trunks when they originate.

- If the override is not permitted, then normal busy destination processing results.

- The Call Announce feature takes precedence over this feature.

- No connection checks are done when the caller is added into the call.

- Once on a call with a non-busy extension, regardiess of how the call was established, no party in the call except the non-busy extension can flash out of the call or put it on hold.

Programming   Enable COS Option 243 (Non-Busy Extension) for the extension.

Operation   A new incoming call joins in to an established call automatically (with a burst of warning tone).

Off-Premise Extension (OPS)

Description   3.74 Industry-standard telephones not in the immediate vicinity of the PABX can be directly connected to the PABX without the use of special trunks. The

6–circuit OPS Line Card (Off-Premises) is only available in Digital bays. Refer to Practice 9109–094–125–NA, Circuit Card Descriptions.

Conditions   The following conditions apply to this feature:

- The 6–Circuit OPS Line Card is used in Digital bays, the 8-Station Line Card in Analog bays.

- If the extension is located more than 2 kilometers away, it may be necessary to add a compromise balance network into the circuit. COS Option 402 (Long Loop – Off-Premises Extension Only) does this.

- **An** adjustment is made to the Loss/Gain settings for the line using COS Option 402 (Long Loop – Off-Premises Extension Only).

- There is no equivalent feature for *SUPERSET* telephones.

- Circuits on OPS Line cards may be used for the Call Announce feature.

- COS Option 402 (Long Loop -Off-Premises Extension Only) applies to OPS Line Card circuits only.

Programming   Program the OPS Line Card in CDE Form 01 (System Configuration).

If necessary, enable COS Option 402 (Long Loop – Off-Premises Extension Only) for the extension.

Operation   None

Originate Only Extensions

Description   3.75 This feature allows an extension or dataset to originate calls, but not to receive any calls dialed to its number unless they are forwarded from another extension. The system treats calls dialed to Originate Only Extensions as illegal numbers.

Conditions   The following conditions apply to this feature:

- An extension with this COS option may receive calls via Call Forwarding (unless COS Option 234 (Never a Forwardee) is selected in its COS).

- Only calls directly dialed to an Originate Only extension are invalid.

- COS Option 235 (Originate Only) is mutually exclusive with COS Option 300 (Automatic Callback), COS Option 241 (Receive Only), and COS Option 243 (Non-busy Extension).

Programming   Enable COS Option 235 (Originate Only) for the extension.

Operation   None

Overlap Outpulsing

Description   3.76 By default, the ARS package outpuises digits as soon as the trunk seizure is acknowledged. This provides a shorter total dialing time, especially on non-DTMF trunks. This feature can be turned off, forcing the ARS package to collect all dialed digits before outpulsing the resulting digit string on the outgoing trunk. Refer to Practice 9109–094–220–NA, Automatic Route Selection and Toil Control, for more information.

Conditions   None

Programming   Enable System Option 26 (No Overlap Outpulsing) to disable the feature.

Operation   None

Override Security

Description   3.77 This option provides an extension, DISA trunk, or Dial-in Tie trunk with security against being involved with Override; see ATTENDANT BUSY OVERRIDE and OVERRIDE (INTRUDE).

Conditions   The following conditions apply to this feature:

● The feature is ignored by the non-busy extension feature.

● The feature also provides an extension with security against having Do Not Disturb overridden; see DO NOT DISTURB.

Programming   Enable COS Option 238 (Override Security) for the extension or trunk.

Operation   None

Paging

Description   3.78 An extension, Tie trunk, or DISA trunk can be permitted to access the paging equipment by dialing the required access code. Access may be restricted to any of the nine zones depending upon the access code dialed. If an extension tries to access busy paging equipment, busy tone is returned.

Paging equipment may be connected to the SX-200 DIGITAL PABX via a Paging/Music-on-Hold module on the Universal Card. Up to nine paging zones, with separate or simultaneous access, can be provided. Refer to Practice 9109–094–125–NA, Circuit Card Descriptions, for additional information.

Also see ATTENDANT PAGING ACCESS.

Conditions   The following conditions apply to this feature:

- **A** short burst of tone is provided when paging equipment is successfully accessed.

- **Campon** or Callback may not be activated on busy paging equipment.

- Paging amplifiers and loudspeakers are customer-provided equipment.

- The Attendant can override any extension using paging equipment to make an announcement. The extension receives busy tone when it is removed from the pager.

- If System Option 03 (Single Paging Amplifier) is enabled, only one user at a time can access all paging in the system and the Attendant cannot override the parties on the pager.

- Accessing the pager operates a relay on the pager module which may be used for controlling an external paging amplifier.

- *SUPERSET* telephone users cannot access Paging while in Handsfree mode.

- If access to all zones is attempted and at least 1 zone is busy then no paging is done and busy tone is returned.

- Access is to a single zone or simultaneously to all zones programmed in the device's COS.

- The PAGE softkey is not available to *SUPERSET* 4DN telephones with the HEADSET OPERATION feature unless there is a consultation hold in progress.

Programming   Specify the paging equipment in use in CDE Form 18 (Miscellaneous System Ports).

Enable System Option 03, Single Paging Amplifier, if the PABX has only one paging amplifier output.

Enabie one or more of the following COS Options for the extension in CDE Form 3 (COS Options) as shown in the following table.

COS Option Number	Description
303	Paging Zone 1 Access
304	Paging Zone 2 Access
305	Paging Zone 3 Access
306	Paging Zone 4 Access
307	Paging Zone 5 Access
308	Paging Zone 6 Access
309	Paging Zone 7 Access

COS Option Number	Description
310	Paging Zone 8 Access
311	Paging Zone 9 Access
312	Paging Default (0 to 9) (0 Gives All Enabled Zones)

For access to the default zone, assign an access code to Feature12 (Paging Access to Default Zone) in CDE Form 02 (Feature Access Codes).

Assign an access code to Feature 13 (Paging Access to Specific Zones) for access to zones other than the default zones.

To provide convenient access from *SUPERSET 3*DN teiephones, program a Paging feature key in the subform of CDE Form 09 (Station/*SUPERSET* Sets).

Operation   Operation varies depending upon the device as described below.

Industry-Standard Telephones

- Lift handset.

- Dial the appropriate Paging access code.

- If access code is for specific zone paging, dial the zone number **(0 through 9).**

- A tone is returned. Make announcement.

- **Hang up.**

SUPERSET 3DN Telephone

NOTE: If there is no Paging feature key programmed, follow *SUPERSET 3* telephone operation.

- **Go off-hook.**

- Press and hold down the Paging feature key for default zone access.

- Wait for a short burst of tone.

- Make the required announcement.

SUPERSET 4 Telephone

- **Go off-hook**

- Press and hold down the **PAGE** softkey for default zone access.

- Wait for a short burst of tone.

- Make the required announcement.

SUPERSET 4DN Telephone

. **Go off-hook.**

- **Press and hold down the PAGER** softkey **for default zone access.**

- '**Wait for a short burst of tone.**

- **Make the required announcement.**

Parallel Connection of Industry-Standard Telephones

Description	**3.79 A maximum of three industry-standard telephones equipped with bells may be connected (hard-wired) together on one ONS line of the** *SX-200* **DIGITAL PABX.**
Conditions	The following conditions apply to this feature:

- When one industry-standard telephone is in use, if any other of the industry-standard telephones goes offhook, **it then joins in the call (without proper conferencing facilities).**

- All of the industry-standard telephones ring when the extension number is called.

- If the telephones are equipped with Message Waiting lamps, further restrictions may apply.

&Programming	None
Operation	None

Pickup Groups

Description	**3.80 Extensions may be entered into pickup groups, permitting them to answer calls to any other extension within their particular group; see** PICKUP — LOCAL AND DIRECTED.
Conditions	The following conditions apply to this feature:

- A maximum of 50 Pickup groups are permitted per system, with a maximum of 50 extensions permitted per group.

- Calls are picked up in the group in order of the extensions in the pickup group. The search for a ringing extension starts with the first extension in the group and ends with the last in the group.

● An extension can only be in one pickup group at a time.

Programming   Assign the desired extensions to the appropriate pickup groups via CDE Form 10 (Pickup Groups).

Operation   See PICKUP ━ LOCAL AND DIRECTED.

Power Fail Transfer (PFT)

Description   3. 81 In the event of a common control or power failure which would cause a major loss of call processing, preselected CO trunks are automatically switched to designated extensions. Failure transfer may be selected automatically under control of the system, or manually by setting the maintenance panel transfer switches to TRANSFER. When normal system operation is restored, calls on the transfer circuits remain in effect until they are terminated.

Generally, the circumstances which cause a power fail transfer are:

● The main control card stops functioning (all bays are cut over into PFT mode).

● The link between the main controller and one of the analog equipment bays stops functioning (the affected bay is cut over into PFT mode).

● On power-up, one of the analog bays fails to initialize properly (the affected bay is cut over into PFT mode). PFT follows a Critical Alarm.

● Commercial power failure with no PABX backup power source (UPS).

● Bay Power Supply or rear door power supply failure.

Conditions   The following conditions apply to this feature:

● If a transfer takes place, any existing calls on the transferred trunks are **dropped.**

● **Ground start trunks require a Ground-to-Loop converter (S-circuit PFT cards only).**

● If trunks are rotary dial only, DTMF sets may not be used for dialing.

● *SUPERSET* telephones and consoles cannot be Power Fail Transfer extensions.

Programming   None

Operation   To manually activate PFT, set the maintenance panel Master Transfer Switches to TRANSFER, as required.

Priority Dial 0

Description   3.82 Priority Dial 0 is a second class of Dial 0 call, with its own separate DAY/NIGHT routing points. This feature can be used to provide an alternate Dial 0 routing for extensions in the system.

Conditions	The following conditions apply to this feature:

- Priority Dial 0 calls can be routed to the same type of answering points as Dial 0 calls.

- Wherever Dial 0 routing is used in the system, Priority Dial 0 is checked:

- Priority Dial 0 calls may be routed to the same point as Dial 0 calls or they may be routed to an LDN key which distinguishes Dial 0 and Priority Dial 0 calls.

Programming	Enable COS Option 239 (Priority Dial 0) for the required extension.

Program an Access Code (usually 0) in CDE Form 02 (Feature Access Codes) for Feature 11 (Extension General Attendant Access).

Operation	None

Programmable Feature Keys – Digital *SUPERSET* Telephones

Description	3.83 *SUPERSET 3*DN and *SUPERSET 4*DN line appearance keys can be programmed as Feature Access keys during Customer Data Entry.

The Feature Keys available on *SUPERSET 3*DN telephones include:

- Auto Answer
- Call/Attn
- Call Forward
- Campon (I Will Wait)
- Data Disc
- Do Not Disturb
- Music
- Night Answer
- Override (Intrude)
- Paging
- Privacy Release
- Swap (Trade Calls)

Except for Callback, Call Pickup, Night Answer and Swap, the above keys provide an indication on the adjacent LCD indicator when they are active.

Fewer features are available as Feature Keys on the *SUPERSET 4*DN telephones because most features are provided via softkeys.

The Feature Keys available on *SUPERSET 4*DN telephones are:

- Auto Answer
- Call/Attn
- Data Disc
- Do Not Disturb

The above keys provide an indication on the adjacent LCD indicator when they are active.

Conditions   The following conditions apply to this feature:

- If a Feature Access key applicable only to *SUPERSET 3*DN telephones is programmed for a *SUPERSET 4*DN telephone, the key is ignored when the user presses that key. The Display Keys feature also indicates that the key is not applicable.

- The keys are valid whenever the corresponding softkeys on the *SUPERSET 4*DN telephone would be shown or if the same operation can be done at the *SUPERSET* telephone using feature access codes.

- The Data Disc, Call/Attn, Auto-Answer, Call Forward, and Do Not Disturb feature keys are valid at any time.

- The feature keys do not preclude the use of feature access codes.

Programming   Feature Access Keys are programmed in the set's Expand Set (nested) of CDE Form 09 (Station/*SUPERSET* Sets). Select FEATURE as the line type and then select the desired feature.

Range Programming of Stations and *SUPERSET* Telephones

Description   3.84 This feature allows range programming for blocks of extensions. By entering a range of equipment numbers, one may assign extension numbers, COR, tenant, and COS to a selected block of equipment numbers. The start extension number and defaults for the other values are entered by the programmer. The extensions are assigned sequentially starting at the entered value, and the COS, tenant and COR are assigned to the entire group.

Conditions   Refer to Practice 9109-094-210-NA, Customer Data Entry (CDE).

Programming   Refer to Practice 9 109-094-21 O-NA, Customer Data Entry (CDE).

Operation   None

Recall

Description   3.85 There are numerous features supporting the recall of a party back to the console or other device in the system after certain time-out periods and after certain events.

The basic recall feature works on the principle that each device has a recall point to refer to in the system. At various times this recall point is set up or altered to affect where the recall, if it occurs, is to go. The feature primarily applies to external calls.

Setting Up the Recall Point

When a console answers a call, regardless of where the call came from, that caller's recall point is always set to be that console. The call recalls back to the console (at the Recall call position) unless some other recall feature has been added. Performing an unsupervised transfer of a call to another party in the system does not change the recall point of the transferred party. For a supervised transfer, the recall point of the.transferred party (if it is an internal party) is cleared, which prevents any recall back to the console. If the console is transferring a non-serial trunk to a Subattendant extension, the recall point is set to be the Subattendant.

Extensions only affect the recall point of trunk calls when the trunk is answered (this includes answering calls via features such as Auto-Answer, directed pickup or TAFAS). The recall point is only set to the answering extension if the trunk call is not a serial trunk and the trunk has not   had a recall point set up already. If the extension is a Subattendant, and the trunk is not a serial call trunk, then the trunk recall point is changed even if it is already   set-up.

The recall feature works for outgoing external calls as well. When a trunk is seized, the recall·point is set to be the calling party. If the trunk is transferred somewhere in the system, recall is by default back to the party that made the call unless the recall point is altered.

When A Recall Is Done

Recall is done when ringing a device, camping on to a device or being held by a device.

When ringing another device in the system and forwarding is done, then the Recall No Answer Timer is started for the device and when the timer expires, a recall is attempted. If calling an LDN and the Attendant Calls Forwarded On No Answer feature is active then the timer for that feature is started instead; see ATTENDANT CALLS FORWARDED ON NO ANSWER.

When camping on to another device, the attendant   campon recall timer is started. When the timer expires, a recall is attempted.

When a call is held by an industry-standard telephone after the hold timeout, a recall is attempted if the industry-standard telephone is not idle.

Recall   Processing

When a recall is attempted, the following decisions are made:

- if ringing a console, LDN, or Night Bell, then no recall at all is done.

- if the caller is a CO or DISA trunk and the Non Dial-in Alternate Recall Point is defined and the trunk is not already calling that point then a reroute is done to that point; see ALTERNATE TRUNK RECALL.

- if a DID or Tie trunk is ringing a party, then DID/Tie Trunk Routing On No Answer is checked. This is only done if the recall point is not set up for the caller; see DID/DIAL-IN/Tie INTERCEPTS.

- if the recall point has not been set up, then the Final Ringback Timer is started if the caller is recalling from ringing. Otherwise recall is attempted again after 10 seconds.

- if the recall point is set up and is not busy, then that point is called.

- if the recall point is set up and is busy, and if recalling from ringing, then the Recall No Answer Timer is started again. Otherwise, recall is attempted again after 10 seconds.

Conditions   The following conditions apply to this feature:

- Ringing an extension from a hold timeout for SUPERSET telephones or industry-standard telephones that are idle or have Do Not Disturb activated is handled as a recall after a ring no-answer timeout.

- Unlike a reroute point, a busy recall point does not have Recalls camp onto it. If the recall point has Do Not Disturb activated then no recalls to the point are done.

- A SUPERSET telephone with the Subattendant feature has less stringent tests for being available to handle a recall; see SUBATTENDANT.

- The serial call feature is similar to the basic recall in that it sets up the recall point for the serial trunk; see ATTENDANT SERIAL CALL.

- Recall occurs from campon after the Attendant-Timed Recall (CAMPON) time. The timer value is taken from the caller's recall point's COS. If no recall point has been setup then the timer value is taken from the caller's COS. If the timer value is 0 in the caller's COS then the final ringback timer is started and no recall is done.

- For a recall from campon to the console or an LDN key, the recalling party is not removed from campon. If the busy destination becomes available before the recall is answered at the console then the recall stops and the recalling party rings the now available party.

- For recall from ringing, the Attendant-Timed Recall (NO ANSWER) timer value is taken from the caller's recall point's COS. If no recall point has been set up then the timer value is taken from the caller's COS. If the timer value is 0 in the caller's COS then the Final Ringback Timer is started and no recall is done.

- When a recall timer is needed for the recall point, if the recall point is an LDN key then the COS of the console with the lowest Bay/Slot/Circuit PLID where the LDN is programmed is used.

- No recall is done when a device is receiving busy tone and it does not camp on to the busy device.

- No recall of any kind is done for Direct Trunk Select and private trunks that are ringing in.

- Listening to recordings has no effect on recall for Uniform Call Distribution, Automated Attendant, Attendant Automatic Overflow, and Automatic Call Distribution callers.

- When a reroute is performed for UCD Busy Agent timeout, the recall point; for the waiting caller is cleared.

- Whenever an internal caller talks to another device, the recall point of the internal caller is cleared.

- Enabling repeated campon beeps for a trunk prevents recall from campon; see CAMPON **WARNING TONE**.

- The Auto-Answer feature is ignored for recalls directly back to a *SUPERSET* telephone.

- See ATTENDANT HOLD POSITIONS and HOLD for details on Hold Time Out handling.

- A console never recalls to any other device.

- A call recalls to extensions and consoles through a recall point. Recall to other device types must use features available through the Call Rerouting table:

- When a *SUPERSET* telephone answers a call on a non-prime line, the recall point for the caller, if it is altered, is set to the answering *SUPERSET* telephone and not to the line that was answered.

- Recalls to a console recall call position are directed to the Recall call position of a group of consoles if the Transparent Multi-Console Operation feature is used.

Programming   Select values for COS Options 117 (Attendant-Timed Recall — CAMPON), 115 (Attendant-Timed Recall (NO ANSWER) and System Option 51 (Final Ring Timeout) for the recall point, console, or extension, or in the caller's COS (see Conditions determine which COS is used); see ATTENDANT-TIMED RECALL.

Operation   None

Receive Only Extensions

Description   3.86 An industry-standard telephone with this COS option may receive calls but cannot originate calls. The industry-standard telephone may, however, originate calls and select features specified in its COS after having received a call, and placed the call on hold by flashing.

Conditions   The following conditions apply to this feature:

- If the station tries to originate a call, the attempted call is ignored.

- If used in conjunction with the Flash Disable feature, ALL types of call origination are blocked.

- See NEVER A FORWARDEE and CALLBACKS.

- COS Options 241 (Receive Only) and 400 (Contact Monitor) are mutually exclusive.

Programming   Enable COS Option 241 (Receive Only) for the extension.

Operation   None

Recording Support

Description   3.87 Recording devices are supported in the system as recording hunt groups. These special hunt groups have features and restrictions on them that allow efficient use of the recording resources. Recording hunt groups are used in ACD, UCD, Hotel/Motel Wakeup, Automatic Attendant Overflow, and Automated Attendant.

For ACD, Automatic Attendant Overflow, and Automated Attendant, more than one caller at a time (a listen only conference) can listen to a recording in the recording hunt group. For UCD and Hotel/Motel Wakeup, only one caller at a time can listen to a recording in the recording hunt group.

For some applications, there is support for various kinds of recording devices and support for various recording device failures. These features only apply when the members of the group are accessed through the group-they do not operate when an individual member of the recording hunt group is called directly by dialing its individual extension number.

When a recording is playing for ACD, Automatic Attendant Overflow, and Automated Attendant, the Recording Message Length Timer (programmed on the recording group) applies. When the timer expires and the recording is still playing, the system terminates the recording. For some devices this acts as a safety timer for recording devices that fail to terminate their recording. For tape based recording devices, this allows the system to not play the dead time at the end of the tape.

When an error occurs, a maintenance log is created and the failed recording device is put into the Do Not Disturb state. There are two error conditions handled for members of recording groups:

- When a recording is rung, if the recording does not answer within 20 seconds, the ringing is canceled and the recording is put into Do Not Disturb.

- When the system ends the recording, due to the message length timer or the caller hanging up, then the Recording Failure To Hangup Timer (in the

recording device's COS) is started (not for UCD or Hotel/Motel Wakeup). If the recording fails to hang up during this time then the recording is put **into Do Not Disturb.**

See ATTENDANT AUTOMATIC OVERFLOW, AUTOMATED ATTENDANT, UNI-FORM CALL DISTRIBUTION (UCD), and AUTOMATIC WAKEUP. Also see AUTO-MATIC CALL DISTRIBUTION and refer to Practice 9109-094-620-NA, ACD TELEMARKETER Application Package.

Conditions   The following conditions apply to this feature:

- Hunt group overflow does not apply to recording hunt groups.

- Industry-standard telephones only can be members of recording hunt groups.

- There is no limit to the number of simultaneous listeners to a recording

- Recalls never occur to recordings that are not directly dialed.

- Trunks (all types) are answered before listening to a recording.

- Local switching is not used when recording devices are accessed from one of the features using the recording hunt group.

The following restrictions apply to members of recording hunt groups:

- they cannot have line appearances of them programmed on any *SUPERSET* telephone in the system

- they cannot originate calls (regardless of any options in the system)

- a flash is always ignored

- they cannot have call me back messages left at them

- they cannot be overridden

- campon warning tone is never applied

- they cannot be an alternate music source port in ACD

- calls ringing them cannot be picked up using the Directed Pickup feature

- the Last Party Clear Dial Tone feature does not operate for recording devices

- standard ringing is always applied when ringing

Programming   **For recording hunt groups used in Automatic Call Distribution, Attendant Automatic Overflow, and Automated Attendant, select a time for COS Option 404 (Recording Failure to Hangup Timer) in the COS of the recording hunt group members.**

See CDE Form 17 (Hunt Groups) for details on programming the hunt group itself.

Operation   Not applicable.

Resale Package

Description   3.88 The Resale Package is a method of offering the system's ARS "Least Cost
Routing" facilities to external users requiring low cost Long Distance calling,
much like the offerings of other Common Carriers.

DISA trunks are installed for external access to the system. The external user
dials up one of the DISA trunks, enters a verified account code, and dials the
desired external number. The Direct to ARS feature can be used to route the
caller directly to ARS.

This feature is actually a specialized application of the *SX-200* DIGITAL PABX
Automatic Route Selection, Toll Control, and Verified Account Code features.

Conditions   The following conditions apply to this feature:

● Verified Account Codes can be activated and/or deactivated for problem
accounts.

● See AUTOMATIC ROUTE SELECTION and VERIFIED ACCOUNT CODES.

Programming   Program DISA trunks in CDE Forms 01 (System Configuration), 13 (Trunk Cir-
cuit Descriptors), and 15 (Dial-In Trunks) -see TRUNK OPERATION ━ DIRECT
INWARD SYSTEM ACCESS (DISA).

Program verified account codes in CDE Form 33 (Account Code Entry); also see
VERIFIED ACCOUNT CODES (SPECIAL DISA).

Operation   Dial into system via DISA trunk.

Enter a verified account code.

Make call as required.

Ringing Plan

Description   3.89 The SX-200 DIGITAL PABX provides the North American ringing plan,
used with the tone plan and rotary dial pulse-to-digit conversion features to
enable the system to be used in the North American marketplace. The ringing
plan is stored in the database on the system floppy disk. Refer to Practice
9109-094-180-NA, Engineering Information, for ringing plan information.

Conditions   None

Programming   None

Operation   None

Ringing Time-Out (Final Ringback)

Description   3.90 A call to an extension can ring for 1 to 30 minutes before the call is dropped (default ringing time is 1 minute).

Conditions   This is only done when forwarding and all recall possibilities have been exhausted; see FORWARDING and RECALL.

Programming   Enable System Option 51 (Final Ring Timeout), and set it to the desired time-out period.

Operation   None

Satellite PABX

Description   3.91 The SX-200 DIGITAL PABX can be applied as a satellite PABX. In this configuration, the *SX-200* DIGITAL PABX has no direct connection to the serving central office for incoming traffic. It has no directory number and receives all its incoming calls from another PABX via tie trunks. Some gain settings for the loss and level plan must be adjusted before the SX-200 DIGITAL PABX can operate as a satellite PABX. Once the Satellite PABX System Option is enabled, these gain adjustments are done automatically.

Conditions   None

Programming   Enable System Option 31 (Satellite PBX).

Refer to Practice 9109–094–180–NA, Engineering Information, for loss and level plans.

Operation   None

Station Message Detail Recording (SMDR)

Description   3.92 Station Message Detail Recording (SMDR) allows data to be collected for each outgoing and incoming trunk call. This data can be output to a printer or a data recording device for subsequent processing.

Refer to Practice 9109-094-221-NA, Station Message Detail Recording.

Conditions   None

Programming   Refer to Practice 9109-094-221-NA, Station Message Detail Recording.

Operation   None

Station Transfer Security (Recall)

Description   3.93 This feature is designed to prevent the dropping of mishandled calls. If an extension, during transfer, hangs up before completing dialing, or if the transfer is not allowed, the call that was placed on hold by the original extension flashing, automatically calls back to that extension. This also applies to conference calls.

Conditions   The following conditions apply to this feature:

- See INHIBIT TRUNK **RING-ME-BACK DURING DIALING for an exception for this feature.**

- *SUPERSET* telephones with displays indicate the special ring-me-back calls.

- The ring back only affects the party being rung back -other appearances of the line do not ring.

- The features available to extensions ringing an extension (callback, messaging) are available to the extension ringing back.

- The parties in a conference ringing back do not hear any tones.

- There is no time limit on the conference ringing back.

- Forwarding -no answer and recall operate for a single caller ringing back. All types of forwarding, and recall are ignored for a conference ringing back.

- The Trunk Recall Partial Inhibit feature blocks this feature in a particular **situation.**

- The Directed Call Pickup feature has no effect on calls ringing back.

- Other appearances of the extension being rung back cannot answer the call.

- An attempted flash to go back to a consultation hold could be interpreted by the system (if it is too long) as a hang up attempt. The industry-standard **telephone user could then** possibly find itself reconnected **to the** held party with no ringing heard at the station.

- If an illegal transfer is attempted then the transferring extension is rung back.

Programming   None

Operation   None

Su battendant

Description   3.94 A *SUPERSET* telephone can be used as a Subattendant position, providing enhanced call queuing and recall capabilities.

The enhanced recall allows the Subattendant to have calls handled by it recall to it, instead of to an Attendant.

Normally, a *SUPERSET* telephone is considered to be busy when the set and/or the prime line appearances are busy. For a Subattendant, the set is busy only if the prime and all of the appearances of the prime line are busy. The state of the *SUPERSET* telephone itself is not checked. This allows as many callers as there are appearances to call the SUPERSET telephone under some circumstances.

The Night/Day Switching −*SUPERSET 4* and *SUPERSET 4*DN Telephones feature can be used to allow the Subattendant to select DAY, NIGHT 1, or NIGHT 2 service for the system. See NIGHT/DAY SWITCHING − *SUPERSET 4* AND *SUPERSET 4*DN TELEPHONES.

The Subattendant telephone can also be used as the Alternate Trunk Recall Point; see ALTERNATE TRUNK RECALL.

Conditions   The following conditions apply to this feature:

- The set to be used as a Subattendant position should be programmed in its own COS.

- The *SUPERSET* telephone should have at least one multicall line appearance of its prime.

- The special line appearance checking is done for reroutes, forwarding, and recalls.

- The special line appearance checking makes the set a better backup position. Calls are forwarded to it more often as it will not be busy to callers as often.

- There can be as many calls ringing at the Subattendant set as there are multicall appearances of its prime line on the telephone.

Programming   Enable COS Option 606 (*SUPERSET* Subattendant) in the Subattendant set's Class of Service.

Program the Subattendant set's unused line appearance keys as Multicall appearances of its prime line. Incoming calls waiting to be answered queue upon these keys.

Operation   None

SUPERSET 3 Telephone

Description   3.95 The *SX–200* DIGITAL PABX system supports *SUPERSET 3* electronic telephone sets. The *SUPERSET 3* telephone has 12 keys designed for use as Speed Call numbers and 3 keys with LED indicators that are also available as line appearances. The first (leftmost) one of the 3 keys must be the Prime Line appearance. In addition to these 15 keys, there is one red key (hold) and seven feature keys.

Refer to Practice 9109-094-l 06-NA, *SUPERSET 3* Telephone Description.

Conditions   **None**

Programming   Refer to Practice **9109–094–210–NA,** Customer Data Entry (CDE); program
· *SUPERSET 3* telephones in CDE Form 09 (Station/*SUPERSET* Sets); select their COS Options in CDE Form 03 (COS Define).

Operation   Refer to the specific feature in TELEPHONE FEATURES.

SUPERSET 4 Telephone

Description   3.96 The SX-200 DIGITAL PABX system supports *SUPERSET 4* electronic telephone sets. The *SUPERSET 4* telephone has one line appearance (Prime Line). Fourteen keys may be programmed as Speed Call numbers, line appearance keys, or feature access keys. In addition to these 15 keys, there is one red key (hold), four feature keys and six softkeys. The *SUPERSET 4* telephone incorporates a Liquid Crystal Display (LCD) for line status indication, user prompting and displays such as message waiting, time and date.

Refer to Practice 9109-095-l 07-NA, *SUPERSET 4* Telephone Description.

Conditions   **None**

Programming   Refer to Practice **9109–094–210–NA,** Customer Data Entry (CDE); program
SUPERSET 4 telephones in CDE Form 09 (Station/*SUPERSET* Sets); select their COS Options in CDE Form 03 (COS Define).

Program an access code for Feature 26 (*SUPERSET 4* Telephones Loopback Test) to be **able to perform** a local test on *SUPERSET 4* telephones.

Operation   Refer to the specific feature in TELEPHONE FEATURES.

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*SUPERSET 3*DN Telephone

Description   3.97 The SX-200 DIGITAL PABX system supports *SUPERSET 3*DN electronic tele-
phone sets. The *SUPERSET 3*DN telephone has l2 keys with LCD indicators
available as Speed Call keys, Feature Access keys or Line Appearances. The
lowest key must be the Prime Line appearance.In addition to these l2 keys,
there is one red key (hold) and 9 fixed function keys.

Refer to Practice 9109-095-l 08-NA, *SUPERSET 3*DN Telephone Description.

Conditions   None

Programming   Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE); program
*SUPERSET 3*DN telephones in CDE Form 09 (Station/*SUPERSET* Sets); select
their COS Options in CDE Form 03 (COS Define).

Operation   Refer to the specific feature in TELEPHONE FEATURES.

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*SUPERSET 4*DN Telephone

Description   3.98 The *SX–200* DIGITAL PABX system supports *SUPERSET 4*DN electronic tele-
phone sets. The *SUPERSET 4*DN telephone can have up to 11 Speed Call num-
bers and one line appearance (Prime Line). The set can alternately have up to
l2 line appearances (including Prime Line) and no Speed Dial numbers. In ad-
dition to these l2 keys, there is one red key (hold), the SUPERKEY, four fea-
ture keys and six softkeys. The *SUPERSET 4*DN telephone incorporates a Liquid
Crystal Display (LCD) for line status indication, user prompting and displays
such as message waiting, time and date.

Refer to Practice 9109-095-l 09–NA, *SUPERSET 4*DN Telephone Description.

Conditions   None

Programming   Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE); program
*SUPERSET 4*DN telephones in CDE Form 09 (Station/*SUPERSET* Sets); select
their COS Options in CDE Form 03 (COS Define).

Operation   Refer to the specific feature in TELEPHONE FEATURES.

System identifier

Description   3.99 A unique I- to 3–digit identifier may be assigned to the system. It ap-
pears on traffic measurement and SMDR reports to identify the system when

central polling equipment is used for Traffic Measurement, Trunk SMDR, ACD, DATA SMDR, ACD SMDR, and Analog Networking.

Conditions   The System identifier is programmed only from the Attendant Console.

Programming   Refer to Practice 9109–094–315–NA, Attendant Console Description.

Operation   None

Tandem Operation

Description   3.100 The 5X-200 DIGITAL PABX can support a tandem operation arrangement, using Tie trunks to connect two systems together. See ANALOG NETWORKING, SATELLITE PABX, and RESALE PACKAGE.

For all trunks routed to ARS, the incoming trunk is given answer supervision when ARS dialing ends (automatic supervision).

Automatic supervision may be prevented in the case where the incoming trunk is a DID or Tie trunk and the outgoing trunk is a CO trunk that supplies answer supervision (the CO trunk has the "Far-end Gives Answer Supervision"circuit descriptor option enabled). The incoming DID or Tie trunk may be forced to only be answered when the far end gives supervision. This is done if **the outgoing trunk is a CO type trunk with the "Inhibit Automatic Supervision"**circuit descriptor option enabled.

Conditions   The following conditions apply to this feature:

*   Appropriate Automatic Route Selection (ARS) must be provided.

*   When a supervision is received from an outgoing trunk, if the calling party on the trunk is an incoming DID or Tie trunk then the supervision is passed on to the incoming DID or Tie trunk (the incoming trunk is given another answer supervision).

*   Device interconnection must be set up appropriately to ensure that valid trunk connections are allowed. Device interconnection must be checked carefully when using loop start CO or DISA trunks to make outbound calls; see DEVICE INTERCONNECTION CONTROL.

Programming   None

Operation   None

Tenanting

Description   3.101 Tenanting is a feature of the *SX–200* DIGITAL PABX which allows several customers, possibly each with independent Attendant Consoles, to share the

same system. It is also used as a means of selecting reroute points for various features.

The system can be programmed to enable each tenant's section of the system to be completely independent of other tenants; calls between tenants, including data calls, can be made only through CO trunks.

Tenanting can also be used to segregate different departments of the same company. In this case, all departments can have access to all telephones, services, and special trunks associated with the system. Each department may have its own dedicated Attendant and Attendant Console. If there is centralized attendant service, night service switching can be controlled for each tenant combination.

Data calls may be assigned to separate tenants, as required, to control access to data devices.

Refer to Practice 9109-094-230-NA, Tenanting.

Conditions   The following conditions apply to this feature:

● A maximum of 25 Tenant groups may be programmed.

● If tenanting is used to segregate departments, CDE Form 06 (Tenant Night Switching Assignment) must be programmed accordingly.

● Tenants may have names associated with them; tenant names are not available in Generic 1002.

Programming   Assign consoles to the desired tenant groups via CDE Form 07 (Console Assignments).

Assign extensions and *SUPERSET* telephones to the desired tenant groups via **CDE Form 09** (Station/*SUPERSET* Sets).

Assign trunks to the desired tenant groups via CDE Forms 14 (Non-Dial-In Trunks) and 15 (Dial-In Trunks).

Assign the desired tenant name, day and night service numbers in CDE Form19 (Call Rerouting Table).

Program CDE Form 06 (Tenant Night Switching Control) if tenanting is used to segregate departments.

Operation   None

Toll Control

Description   3.102 The Toll Control feature forms part of the Automatic Route Selection (ARS) feature. It allows the PABX to restrict the calls that certain groups of ex-

tensions may place. This may mean denying all outside calls, denying calls to specific locations, denying calls over expensive routes, or any combination of these.

See AUTOMATIC ROUTE SELECTION (ARS) and CLASS OF RESTRICTION (COR).

Conditions   Refer to Practice 9109-094-220-NA, Automatic Route Selection and Toll Control.

Programming   ; Refer to Practice 9109-094-220-NA, Automatic Route Selection and Toll Control.

Operation   None

Tone Plans

Description   3.103 To accommodate the numerous tones which can be generated when dialing telephone numbers in the North American region, the system loads the North American tone plan from floppy disk.

Separate software loads containing non-North American tone plans are available; the PABX can be operated successfully in countries using these tone plans when it is programmed with the appropriate software load.

Refer to Call Progress Tones in Practice 9109-094-180-NA, Engineering Information, for details of North American tone plans.

Conditions   None

Programming   None

Operation   None

Traffic Measurement

Description   3.404 Traffic measurements can be made on SX-200 DIGITAL PABX systems, and the results printed through a printer port (see DIRECTED INPUT/OUTPUT). The types of measurements made include the following:

● BTMF Receiver activity

● DTRX Calls

● Console activity

- Feature activity

- Guest Room activity

● **Hunt group activity**

- Line and Trunk activity

- PCM Channel activity

- Trunk activity

- Trunk group activity

Information is accumulated during a user-programmed time period, and is then available for output. Programming is done from the Maintenance Terminal or from the Attendant Console.

Refer to Practice 9 109-094-450-NA, Traffic Measurement.

Conditions   **None**

Programming   Refer to Practice 9109-094-450-NA, Traffic Measurement.

Operation   **None**

Transfer Dial Tone

Description   **3.105 This feature provides an audible indication that an extension has a call on consultation hold; transfer dial tone is returned when an extension places an established call on Hold in order to Consult or Transfer the call. Transfer Dial tone is 350/440 Hz, three bursts of 100 ms on, 100 ms off, followed by continuous tone. Regular dial tone is 350/440 Hz continuous tone.**

Conditions   The following conditions apply to this feature:

- The console is not affected.

- COS Option 701 (No Dial Tone) must be disabled.

- The *SUPERSET 4* and the *SUPERSET 4*DN telephones have indicators on the display to show that there is a consultation hold in progress.

● This is the same tone used for Discriminating Dial Tone.

Programming   Enable COS Option 251 (Transfer Dial Tone) for the extension.

Operation   Establish a call.

Place call on consultation hold. Transfer dial tone is returned to indicate consultation hold.

Trunk Answer From Any Station (TAFAS)

Description
3. 106 This feature allows the user to answer incoming calls appearing at common alerting devices (Night Bells). The calls answered can be for a single tenant or for all tenants in the system. The answering extension may then exercise any feature associated with the incoming call that is normally available at that extension. TAFAS may also be used to answer certain calls which are ringing at the console during the day.

Conditions
The following conditions apply to this feature:

- Tie trunks, industry-standard telephones, *SUPERSET* telephones, and consoles can access the feature.

- The NIGHT BELL softkey appears at the console only if the appropriate COS options are enabled for the console and a call of the correct tenant is ringing the Night Bell.

- Extensions cannot have a consultation hold in progress when attempting to answer the TAFAS call.

- Night Bells have no tenant assignment; the tenant used is always that of the caller.

- Device Interconnection Control checks must pass between the caller and the device answering the call.

- Only calls dialed to a console directory number, LDN key, or Night Bell may be answered during Day Service.

- All calls ringing all consoles, LDN keys, or Night Bells in the system are available, depending upon the tenant checks made.

- Recall is handled as if the caller had directly dialed or originated to the extension and the extension had answered; see RECALL.

Programming
To restrict access to the device's tenant only, assign an Access Code to Feature 15 (TAFAS - Local Tenant) and enable COS Option 249 (TAFAS Access -Tenant) for this device.

To allow access to all tenants, assign an Access Code to Feature 14 (TAFAS - Any) and enable COS Option 248 (TAFAS Access -Any) for this device.

If desired, enable COS Option 250 (TAFAS Access During Day Service); this permits set users to answer calls ringing the console during the day.

Operation
Operation varies depending upon the device type as described below.

All Devices

To answer a TAFAS call:

- When the alerting device is heard, go off-hook.

- When dial tone is heard, dial the appropriate TAFAS code.

The incoming call is now connected to the answering device.

*SUPERSET 3*DN Telephone

To answer a TAFAS call (in the local Tenant group) or any TAFAS call:

- When the alerting device is heard, go off-hook.

- Press the NIGHT ANS feature access key.

The incoming call is now connected to the extension.

SUPERSET 4 and *SUPERSET 4*DN Telephones

To answer a TAFAS call (in the local Tenant group) or any TAFAS call:

- When the alerting device is heard, go off-hook.

- Press the NIGHT ANS softkey.

The incoming call is now connected to the extension.

Attendant Consoie

To answer a TAFAS call at the console:

- When the alerting device is heard,

- Press the NIGHT BELL softkey.

The incoming call is now connected to the console.

Trunk Circuit Descriptor Options

Description   3.107 Trunk circuit descriptors specify the programmable hardware parame-
ters of each trunk circuit in the SX-200 DIGITAL PABX. These are complem-
ented by the switch settings on the SX-200 analog trunk card types. The sys-
tem supports a maximum of 25 different trunk circuit descriptors. All trunks in
the system must have a trunk circuit descriptor number with an associated set
of selected options. The following tables list the trunk descriptor options
available for each of the trunk types. The descriptor options are described
under the heading Operation following the tables.

Table 3-4 4-Circuit CO & 4-Circuit DISA Trunk Hardware Options

Trunk Hardware Option
Reverse to Idle
Far-End Gives Answer Supervision
Inhibit Automatic Supervision
No Seize Alarm
No Release Alarm
Toll Office
Is this a CO
DTMF
Impedance (600 Ohms or Complex)
Dictation Trunk
Page 1 of 1

Table 3-5 6-Circuit CO Trunk And 6-Circuit DISA Trunk Hardware Options

Trunk Hardware Option	
Reverse to idle	
Far-End Gives Answer Supervision	
inhibit Automatic Supervision	
No Seize Alarm	
No Release Alarm	
Toll Office	
Is this a CO	
DTMF	
Impedance (600 Ohms or Complex)	
Post Call Metering (0 to 15 s) x (1 s increments)	
Calling Party Disconnect Timer (1 to 12 min) x (1 min inc)	
	Page 1 of 2

Table 3-5 6-Circuit CO Trunk And 6-Circuit DISA Trunk Hardware Options (continued)

Trunk   Hardware   Option
Dictation   Trunk
Ignore Remote Disconnect
Disconnect Timer (100 to 9900 ms) x (100 ms increments)
Supervision Direction: Incoming Trunk Calls Also
Guard Timer (0 to 3000 ms) x (100 ms increments)
Ring Cycle Timer (6 to 10 s) x (1 s increments)
Ignore Line Reversal During Seizure
Ringing Expected
Ringing Debounce Timer (5 to 12 s) x (1 s increments)
Seize Timer (10 to 60 s) x (10 s increments)
Flash Timer (200 to 700 ms) x (100 ms increments)
Interdigit Timer (300 to 800 ms) x (100 ms increments)
Digit Outpulsing Ratio (60/40, 30/20, 66/33)
Page 2 of 2

Table 3-6 E&M Module and E&M Module DISA Trunk Hardware Options

Trunk   Hardware   Option
Reverse to Idle
Far-End Gives Answer Supervision
Inhibit   Automatic   Supervision
No Seize Alarm
No Release Alarm
Toll   Office
Is this a CO
DTMF
Page 1 of 2

Table 3-6 E&M Module and E&M Module DISA Trunk Hardware Options (continued)
Trunk Hardware Option
Impedance   ** Use DIP Switch on the Module to Program **   (600 Ohms or Complex)
E Lead Invert
M Lead Invert ** required for type 5 operation **
Disconnect Timer (150 to 300 ms) x (50 ms increments)
Release Acknowledge Timer (2000 to 9900 ms) x (100 ms inc)
Guard Timer (200 to 1000 ms) x (100 ms increments)
Dictation Trunk
Incoming Start Type (Immed, Wink, Delay)
Debounce Timer (20 to 150 ms) x (10 ms increments)
Wink Timer (150 to 300 ms) x (50 ms increments)
Outgoing Start Type (Immed, Wink, Delay or Delay Integ)
Digit Outpulsing Ratio (60/40, 30/20, 66/33)
Outpulse Delay Timer (100 to 2000 ms) x (100 ms increments)
Flash Timer (200 to 700 ms) x (100 ms increments)
Interdigit Timer (300 to 800 ms) x (100 ms increments)
Wait for Delay Timer (300 to 5000 ms) x   (100 ms inc)
Remote End is a Satellite
Remote End is a Satellite with OPS Lines
Page 2 of 2

Table 3-7 E&M Trunk Card Hardware Options
Trunk Hardware Option
Reverse to Idle
Far-End Gives Answer Supervision
Page 1 of 2

Table 3-7 E&M Trunk Card Hardware Options
Trunk Hardware Option
Inhibit Automatic Supervision
No Seize Alarm
No Release Alarm
Toll Office
Is this a CO
DTMF
impedance (600 Ohms or Complex)
Remote End is a Satellite
Remote End is a Satellite with OPS Lines
Dictation Trunk
Page 2 of 2

Table 3-8 2—CCT DID/Tie and Tie DISA

Trunk Hardware Option	
Reverse to Idle	**1**
Far-End Gives Answer Supervision	
Inhibit Automatic Supervision	
No Seize Alarm	
No Release Alarm	
Toll Office	
Is this a CO	
DTMF	
Impedance (600 Ohms or Complex)	
Remote End is a Satellite	
Remote End is a Satellite with OPS Lines	
	Page 1 of 1

Table 3-9 6—CCT DID

Trunk Hardware Option
Reverse to Idle
Far-End Gives Answer Supervision
Inhibit Automatic Supervision
No Seize Alarm
No Release Alarm
Toll Office
Is this a CO
DTMF
Impedance (600 Ohms or Complex)
Disconnect Timer (150 to 300 ms) x (50 ms increments)
Page 1 of 2

Table 3-9 6–CCT DID (continued)
Trunk Hardware Option
Release Acknowledge Timer (2 to 120 seconds)
Guard Timer (ZOO -1000 ms) x (100 ms increments)
Start Type (Immed, Wink, Delay)
Debounce Timer (20 to 150 ms) x (10 ms increments)
Wink Timer (150 to 300 ms) x (50 ms increments)
Remote End is a Satellite
Remote End is a Satellite with OPS Lines
Page 2 of 2

Table 3-10 T1 E&M and T1 E&M DISA
Trunk Hardware Option
Reverse to Idle
Far-End Gives Answer Supervision
Inhibit Automatic Supervision
No Seize Alarm
No Release Alarm
Tol I Office
Is this a CO
DTMF
Disconnect Timer (150 to 300 ms) (50 ms inc)
Release Acknowledge Timer (2 to 240 seconds) (2   sec increments)
Guard Timer (200 to 1000) (100 ms inc)
Incoming Start Type (Immed, Wink or Delay)
Debounce Timer (20 to 150 ms) (10 ms inc)
Wink Timer (150 to 300 ms) (50 ms inc)
Page 1 of 2

Table 3-10 T1 E&M and T1 E&M DISA (continued)
Trunk Hardware Option
Outgoing Start Type (Immed, Wink, Delay or Delay Integ)
Digit Outpulsing Ratio (60/40, 30/20, 66/33)
Outpulse Delay Timer (100 to 2000 ms) (100 ms inc)
Flash Timer (200 to 700 ms) (100 ms inc)
Interdigit Timer (300 to 800 ms) (100 ms inc)
Wait for Delay Timer (300 to 5000 ms) (100 ms inc)
Remote end is a satellite
Remote end is a satellite with OPS Lines
Page 2 of 2

Table 3-I 1 T1 DID/Tie and T1 Tie DISA
Trunk Hardware Option
Reverse to Idle
Far-End Gives Answer Supervision
Inhibit Automatic Supervision
No Seize Alarm
No Release Alarm
Toll Office
Is this a CO
DTMF
Disconnect Timer (150 to 300 ms) (50 ms inc)
Release Acknowledge Timer (2 to 120 s)
Guard Timer (200 to 1000) (100 ms inc)
Start Type (Immed, Wink or Delay)
Debounce Timer (20 to 150 ms) (10 ms inc)
Page 1 of 2

Table 3-11 T1 DID/Tie and T1 Tie DISA (continued)
Trunk Hardware Option
Wink Timer (150 to 300 ms) (50 ms inc)
Outgoing Start Type (Immed, Wink, Delay or Delay Integ)
Digit Outpulsing Ratio (60/40, 30/20, 66/33)
Outpulse Delay Timer (100 to 2000 ms) (100 ms inc)
Flash Timer (200 to 700 ms) (100 ms inc)
Interdigit Timer (300 to 800 ms) (100 ms inc)
Wait for Delay Timer (300 to 5000 ms) (100 ms inc)
Remote End is a Satellite
Remote End is a Satellite With OPS Lines
Page 2 of 2

Table 3-12 T1 LS/GS and T1 CO DISA
Trunk Hardware Option
No Seize Alarm
No Release Alarm
Toll Office
Is this a CO
DTMF
Dictation Trunk
Loop Start or Ground Start
Calling Party Disconnect Timer (1 to 12 minutes)
Disconnect Timer (100-9900 ms) (100 ms increments)
Guard Timer (0 to 3000 ms) (100 ms inc)
Ring Cycle Timer (6 to 10 s)
Ringing Expected
Page 1 of 2

Table 3-12 T1 LS/GS and T1 CO DISA (continued)
Trunk Hardware Option
Ringing Debounce Timer (5 to 12 seconds)
Seize Timer (10 to 60 s) (10 s increments)
Flash Timer (200 to 700 ms) (100 ms inc)
Interdigit Timer (300 to 800 ms) (100 ms inc)
Page 2 of 2

Programming   Select Trunk Circuit Descriptors in CDE Form 13 (Trunk Circuit Descriptors). If the system is to provide pseudo answer supervision, set an appropriate time for the time-out period via System Option 43 (Pseudo Answer Supervision Timer = 10 through 60 Seconds).

Operation   The following paragraphs describe the Trunk Hardware Options. Options are listed in alphabetic order.

Calling Party Disconnect Timer: This defines how long the system will wait for the far-end, a ground start trunk; to acknowledge a trunk release.

Debounce Timer: This timer specifies the period for which an incoming seizure is to be debounced before being recognized as a valid incoming seizure.

Dictation Trunk: If selected, this maintains trunk dialing for the duration of the call. See DICTATION TRUNK.

Digit Outpulsing Ratio: This field specifies the break/make ratio during outpulsing. It can be set to 60/40, 66/33, or 30/20.

Disconnect Timer: This defines the time a release signal must be continuously present before a call is disconnected. Note: For digital DID trunks, the range is 150-300 ms.

DTMF: DTMF, if selected, forces DTMF digits to be transmitted on the trunk when dialing. if not selected, digits are pulsed onto the trunk.

E Lead Invert/M Lead Invert: These two fields provide the flexibility to specify the polarity of the E and M leads to match the far end connection. M Lead Invert must be enabled for type 5 operation.

Far-End Gives Answer Supervision: If selected, answer signals are expected, and acted upon when received on the trunk; answer signals are not generated internally. If not selected, answer signals received are ignored.

Flash Timer: This defines the duration of a flash transmitted onto a trunk in a digital bay; for analog trunks it is 200 ms.

Guard Timer: This defines how long the system will wait after releasing the trunk before seizing it again for an outgoing call.

Ignore Line Reversal During Seizure: If selected, line reversal is not recognized as an incoming seizure.

Ignore Remote Disconnect: If selected, release signals from the far-end are ignored. If not selected, release signals cause disconnection of the call.

Impedance: "600" should be selected if the trunk is to be connected to a carrier facility, or the cable is short. This setting provides a 600 ohm + $2\mu F$ termination impedance match for the incoming line. "Complex" should be selected if the trunk is to be connected directly to cable facilities. This setting provides the standard AT&T complex balance network as a termination impedance for the incoming line.

Incoming start type: This field specifies the incoming type of the trunk, which can be set to immediate incoming, wink start incoming, or delay dial incoming.

Inhibit Automatic Supervision: If selected, the system waits for the far-end to provide answer supervision before providing answer supervision to an incoming Tie or DID trunk.

Is this a CO?: Select if trunk is to terminate at the Central Office. If NO, a 2dB pad is added in the circuit. Refer to Practice 9109–095–180, Engineering Information.

Interdigit Timer: This defines the time gap inserted between outpulsed digits.

Loop Start or Ground Start: This defines trunk signaling type (T1 only).

No Release Alarm: If selected, a trunk failing to release is removed from service and maintenance is notified. The trunk can only be returned to service manually. If not selected, the trunk remains in service.

No Seize Alarm: If selected, a trunk failing to return a seize acknowledgement on three successive occasions is removed from service; maintenance is not notified. If not selected, the trunk remains in service. If the trunk originates, the no seize count is reset. As well, if the trunk had been removed from service due to a no seize count, the trunk is returned to service and the incoming call on the trunk is processed.

Outgoing Start Type: This field specifies the outgoing type of the trunk, which can be set to immediate outgoing, wink start outgoing, delay dial outgoing or delay dial with integrity.

Outpulse Delay Timer: This timer specifies the pause between seizing and the start of dialing, applicable to immediate outgoing trunks only. This value should be specified after determining the far end characteristics.

Post Call Metering: This defines how long the system will wait for and record meter pulses after the release signal is received.

Release Acknowledge timer: This specifies the time-out period to wait for a release acknowledge signal from the far end.

Remote End is a Satellite: Select if the trunk is to terminate at a satellite PABX. **Refer to Practice** 9109–094–180–NA, **Engineering Information for details of loss/gain.**

Remote End is a Satellite with OPS lines: Select if the trunk is to terminate at a satellite PABX with OPS lines. Refer to Practice 9109–094–180–NA, Engineering Information for details of loss/gain.

Reverse to Idle: In some central offices, upon seizure, the CO reverses the polarity on the trunk. When the call ends, the CO again reverses the polarity, returning the trunk to its normal idle state. When the Reverse to Idle option is enabled, the PABX treats the reversal to idle condition as a disconnect signal from the CO. The Far-End Gives Answer Supervision option has no effect.

Ring Cycle Timer: This defines a period during which a minimum ring burst (250 ms) must be present before the system will recognize it as an incoming call.

Ringing Debounce Timer: This defines the duration during which the system tries to detect the minimum ring burst, indicating the persistence of an incoming call.

Ringing Expected: If selected, incoming calls are not reported unless ringing is recognized. If other seize signals are received before ringing, the trunk is **busied-out for outgoing calls, but the incoming call is not reported until** ringing is received.

Seize Timer: This defines the time the system will wait for a seize acknowledge from a ground start trunk. Also see Option "No Seize Alarm" in this list.

Toil Office: Select if the CO trunk is to be connected to a Toll Office. This option is applicable to systems using the North American loss plan. It provides a **3 dB loss for trunk-to-OPS line connections, and a 6 dB loss for trunk-to-ONS** line connections. If not selected, "normal" through switch loss is provided. **Refer to Practice 9109–094–180–NA, Engineering Information.**

Wait For Delay Timer: This timer specifies the period to wait for the delay signal from the far end. It is only applicable if the trunk is of type delay dial outgoing **(without integrity).**

Wink Timer: This timer specifies the duration of the wink signal sent to the far end if the trunk is programmed as a Wink Start Incoming or Delay Start incoming.

Trunk Dial Tone Detection

Description   3.108 After a trunk has been accessed, the system tries to detect dial tone on **the trunk. If dial tone is detected before time-out, the system begins sending digits. Should no dial tone be present after the time-out period, if limited** wait is specified, the system automatically begins sending digits. Otherwise it removes the trunk from service and raises an alarm.

Dial tone detection, without the alarm, can also occur in the middle of trunk dialing; see **AUTOMATIC ROUTE SELECTION.**

Conditions   The following conditions apply to this feature:

- Enabling Limited Wait For Dial Tone disables the No Dial Tone Alarm.

- The no dial tone alarm time is set at 10 seconds.

- When the trunk is removed from service, the party dialing on the trunk ends dialing and is given busy tone.

- 50 simultaneous dial tone detections can occur in the system at any one-time.

- If dial tone detection resources are not available and the alarm is enabled then the trunk is removed from service. If the alarm is not enabled then dial tone is assumed to have been supplied and dialing commences after a short pause.

Programming   Set System Option 48 (Limited Wait for Dial Tone) for l-l 5 seconds.

To program a trunk to wait the limited time for dial tone, select COS Option 802 (Limited Wait for Dial Tone) for the trunk.

To enable the no dial tone alarm for a trunk, enable COS Option 805 (Trunk No Dial Tone Alarm).

Operation   None

Trunk Groups

Description   3.109 Trunk groups are defined and used in the ARS forms in CDE to control extension access to trunks, to define trunk options, and to apply features to trunk groups, For further information, refer to Practice 9109–094–220–NA, Automatic Route Selection and Toll Control, and to Practice 9109–094–210–NA, Customer Data Entry (CDE).

Conditions   The following conditions apply to this feature:

- SMDR is applied to trunks on a per trunk group basis; refer to Practice 9109–094–221–NA, Station Message Detail Recording.

- A maximum of 50 individual trunk groups are available.

- A maximum of 50 trunks are permitted in an individual trunk group.

- A trunk may be a member of only one trunk group.

- Individual trunks must be programmed before they are entered into trunk groups.

- Direct Trunk Select and Private Trunk line trunks must be in trunk groups before outgoing calls can be made on the trunk lines.

- Direct Trunk Select and Private Trunk Line trunks are never hunted from a trunk group.

- A trunk is selected from a trunk group if it is idle, if it is not being seized by another party, if a no seize alarm is not pending and if the caller and the trunk can connect together.

- A trunk does not need to be in a trunk group to originate a call.

- Trunk groups can have circular or terminal hunting.

Programming   Program trunks into Trunk Groups via CDE Form 16 (Trunk Groups).

Each trunk group may also be given a unique name via CDE Form 16 (Trunk Groups).

Refer to Practice 9109–094–220–NA, Automatic Route Selection.

Operation   None

Trunk Operation – Direct Inward Dial (DID)

Description   **3.110 The DID trunk type is one of the four trunk types, independent of the** hardware actually used to support the types, used in the system.

DID trunks allow incoming trunk calls (DID) to reach extensions directly, without Attendant intervention or assistance. The length of the incoming number, the number of digits to be absorbed, and a prefix digit, if required, may also be specified.

Calls coming into the PABX on DID type trunks are assumed to be callers from outside the company, similar to CO trunk type calls. The callers therefore receive different call progress tones and are handled differently than Tie and DISA trunk type calls, which are assumed to be internal calls.

For the hardware that supports the DID trunk type operation, see TRUNK SUPPORT-DIRECTINWARD DIAL (DID), TRUNK SUPPORT – T1, and TRUNK SUPPORT -E&M.

Also see DID/DIAL-IN/Tie INTERCEPTS.

Conditions   The following conditions apply to this feature:

- If the DID trunk sends less digits than expected, the trunk receives reorder tone from the PABX system after the inter digit time-out (15 s).

- DID trunks can dial any access code for any type of device.

- An extension with Option 226 (Inward Restriction DID) in its COS cannot receive a call directly from a DID trunk. It is treated by the system as an illegal number.

- Calls attempted using vacant or illegal numbers can be routed to answering points for completion; see ILLEGAL ACCESS INTERCEPT and VACANT NUMBER INTERCEPT.

- DID trunks receive ringback tone when calling and camping onto a busy device. They receive busy tone if they reach a busy device and no busy intercept occurs (see DID/DIAL-IN/Tie INTERCEPTS) and the trunk cannot camp on (see CAMPON).

- DID trunks ignore the DND feature if enabled on the called extension if there is no Do Not Disturb Routing for the called extension's tenant; also see DID/DIAL-IN/Tie INTERCEPTS.

- DID trunks are answered before being connected to a recording device.

- If there is no DID rerouting, DID trunks ignore the DND that is enabled on the called party, .

- The attempt to call the destination is done only when the specified number of digits to to be received on the trunk have been received. Extra digits are ignored and no matches are done for access codes that contain less than the specified number of digits.

- Digits are absorbed before the prefix digits are inserted.

- The trunk may be programmed to ignore incoming DTMF digits, and recognize only rotary digits.

- A DTMF receiver is needed when a DID trunk originates. If there is no receiver available then the trunk waits indefinitely until a receiver is available. Digits received on the trunk are stored and processed when a receiver is available. The Traffic Measurement feature can be used to track the wait for receiver.

- If a seize error occurs on a DID trunk then the trunk is given reorder tone.

- Prefix digits are used for matching access codes only after the DID trunk has dialed at least one digit that is not absorbed and the expected number of digits have been received. The prefix digits by themselves cannot be used to match an access code.

Programming   To program a trunk to ignore incoming DTMF digits during origination of the call, enable COS Option 801 (Incoming Trunk Call Rotary) for the trunk.

Program a DID trunk in CDE Form 15 (Dial-in Trunks).

Operation   None

Trunk Operation — Direct Inward System Access (DISA)

Description   3.111 This feature allows an external caller to access the system by dialing the directory number of a special DISA trunk and then dialing a security code. Af-

ter the code is dialed, the system returns dial tone to the caller, who may then access features in the DISA trunk's COS except those which require a switch-hook flash.

Optionally, the external caller can be forced to enter a special account code rather than the standard DISA access code.; see VERIFIED ACCOUNT CODES (SPECIAL DISA).

DISA trunks can be supported on many different hardware types. See TRUNK SUPPORT-TI,TRUNKSUPPORT-Tie,TRUNKSUPPORT-E&M.

A trunk can optionally be DISA during night service only.

Conditions   The following conditions apply to this feature:

- After the trunk originates, the system waits a programmable time, and then answers the trunk; then dial tone is returned.

- After the preprogrammed wait, the system answers the trunk before dialing begins.

- The outside caller must use a DTMF telephone.

- The security code may be one to five digits in length.

- The same security code applies to all DISA calls.

- If a caller dials an invalid code, the call is dropped only after three digits have been dialed. This makes it a bit more difficult for unwanted callers to determine what the security code is. This does not apply when a verified account code is used.

- Reorder tone is not returned to the caller when an invalid security code is dialed.

- Switchhook flash is not possible on a DISA trunk.

- DISA trunks follow the illegal, do not disturb and vacant number routing as an internal industry-standard telephone would.

- A DISA trunk is given the same call progress tones as an internal extension.

- The Alternate Trunk Recall feature applies to DISA trunks.

- If a loop start CO trunk is the hardware supporting the trunk then loop start interconnection rules apply and the restrictions on loop start CO trunks applies; see DEVICE INTERCONNECTION CONTROL and TRUNK OPERATION – NON-DIAL-IN.

- If the DISA trunk caller cannot complete a call then the caller must hang up and try again.

- If there is no DTMF receiver available for dialing when the DISA trunk originates a call, the initial answer delay period is extended indefinitely until a DTMF receiver is available.

- **No call progress tone is provided by the** PABX to the trunk in the initial answer delay period.

- **Up** to seven digits can be absorbed from the trunk.

- Access to the allowed features is controlled by the COS assigned to the trunk.

- The features available to DISA trunks include:

  - account codes

  - ARS

  - console hold slot retrieve

  - paging

  - system abbreviated dial

Programming   If the trunk is to be a DISA trunk during Night Service only, enable COS Option 810 (DISA During Night Service Only) for the trunk, and set the DISA trunk DAY service routing in CDE Form 19 (Call Rerouting Table) for the trunk's   tenant.

Select options for the DISA trunk type via CDE Form 13 (Trunk Circuit Descriptors).

Select options for the specific DISA trunk via CDE Form 15 (Dial-In Trunks). Assignment of a DISA circuit descriptor to a trunk changes the trunk to a DISA trunk.

Assign a DISA access code to Feature 19 (Direct Inward System Access); see ATTENDANT DISA CODE SETUP.

Select the DISA answer timer via System Option 54 (DISA Answer Timer: 1-8 Seconds).

Enable COS Option 812 (Loop Start Trunk to ACD Path Connect) to allow loop start DISA trunks to access the ACD feature.

Operation   To access the System:

Dial the required directory number from a DTMF telephone.

The system waits the DISA answer time before answering the trunk and supplying dial tone.

Dial the DISA security code -dial tone is returned again.

Dial the required feature access code or extension.

Trunk Operation – Non-Dial-in CO

Description   **3. 112**   CO trunks are assumed to be external callers to the system. As such, the audio given and how they are handled is different than for some other trunk types.

CO trunks are assigned an origination point for DAY, NIGHT 1, and NIGHT 2 service. They can optionally be assigned as a dedicated line on a *SUPERSET* telephone.

For the hardware that supports CO trunk type operation, see TRUNK SUPPORT -CO(LS/GS),TRUNKSUPPORT-Tie,TRUNKSUPPORT-DID,TRUNKSUPPORT -E&M, and TRUNK SUPPORT – T1.

The NIGHT1 or NIGHT2 service for CO trunks can be changed directly from the Attendant console; see FLEXIBLE NIGHT SERVICE.

Also see DIRECT-IN LINES.

Conditions   The following conditions apply to this feature:

- A DISA trunk may be programmed to be a CO trunk type during day service. See TRUNK OPERATION – DIRECT INWARD SYSTEM ACCESS (DISA).

- Connection checking is done between the trunk and the destination point when the trunk originates.

- If the trunk origination is blocked then the trunk stays idle and the PABX does no further processing of the call.

- Trunks are always answered before listening to a recording device.

- The processing of the origination follows the operation of call rerouting; see CALL REROUTING.

- For trunks assigned to DTS or Private Trunk lines, the trunk originates to the line and ignores the NIGHT/DAY points programmed.

- The audio heard by the caller before answer depends upon the hardware/ circuit descriptor connected to that trunk. For CO trunks, CO tones provided by the Central Office are heard; for trunks, based on dial-in hardware circuits, PABX call progress tones provided by the PABX are heard.

- The trunk receives ringback tone when it camps on to a device.

- The Device Interconnection feature can be used to prevent loop start trunk **interconnection.**

- If a CO trunk in a bay fails to get resources required for a call when it originates, the trunk will wait for resources to become available.

- If the trunk is routed out to an external trunk call and the CO trunk has not been answered yet, the CO trunk is answered when dialing is finished on **the outgoing trunk.**

- CO trunks cannot dial ARS directly; however, ARS can be accessed via System Abbreviated Dial.

Programming   Select options for the specific trunk circuits via CDE Form 14 (Non-Dial-In Trunks) for incoming calls.

Enable COS Option 812 (Loop Start Trunk to ACD Path Connect) to allow loop start trunks to access the ACD feature.

Refer to Practice 9109–094–220–NA, Automatic Route Selection for the selection of options for outgoing calls.

Operation   None

Trunk Operation -Tie

Description   3.113 The Tie trunk type is one of the four trunk types, independent of the hardware actually used to support the types, used in the system.

Tie trunks allow incoming trunk calls to reach extensions directly, without Attendant intervention or assistance. The number of digits expected from the trunk is unknown. Digit absorption and adding prefix digits can be done.

Calls coming into the PABX on Tie type trunks are assumed to-be callers from inside the company, similar to DISA trunk type calls. The callers therefore receive the same call progress tones that internal callers hear and may have access to many extension features.

For the hardware that supports the Tie trunk type operation, see TRUNK SUP-PORT – E&M, TRUNK SUPPORT – T1, and TRUNK SUPPORT – DIRECT INWARD DIAL (DID).

See DIAL TONE DISABLE for dial tone control for the Tie trunk.

Conditions   The following conditions apply to this feature:

- Tie trunks have access to the following extension features:
    - account code
    - ARS
    - console hold slot retrieve
    - directed pickup
    - hold retrieve
    - paging
    - system abbreviated dial
- For Tie intercept handling, see DID/DIAL-IN/Tie INTERCEPTS.
- Tie trunks dialing extensions with Do Not Disturb enabled are handled in the same way as extensions.
- Tie trunk dialing follows the same rules as for extensions.
- Up to 7 digits can be absorbed and 2 digits can be prefixed.
- The prefix digits are used for matching access codes only after the Tie trunk has dialed at least one digit that is not absorbed. The prefix digits by themselves cannot be used to match an access code.

- The limit to the number of digits that a Tie trunk can dial is the same as for an internal extension (25). This includes the prefix digits but not the absorbed digits.

- The trunk may be programmed to ignore incoming DTMF digits, and to recognize only rotary digits.

- A DTMF receiver is needed when a Tie trunk originates. If there is no receiver available then the trunk waits indefinitely until a receiver is available. Digits received on the trunk are stored and processed when a receiver is available. The Traffic Measurement feature can be used to track the wait for a receiver.

- For incoming answer supervision when directed to ARS, see TANDEM OP-ERATION.

Programming   To program a trunk to ignore incoming DTMF digits, enable COS Option   **801** (Incoming Trunk Call Rotary) for the trunk.

Operation   None

Trunk Support-CO (LS/GS)

Description   3.914 CO (LS/GS) trunks are supported with the CO Trunk card (in the analog Peripheral bays) and the LS/GS Trunk card (in the digital bays) in the *SX-200* DIGITAL PABX.

For loop start CO trunks that do not provide release supervision, take caution when routing to Auto-Answer telephones or to UCD/ACD applications that do not provide termination for a music/recording sequence. In these cases,since the system does not disconnect the trunk, the call may stay up indefinitely.

Conditions   None

Programming   Enter the trunk into the system's physical configuration table via CDE Form 01 (System Configuration).

Select options for the CO trunk type via CDE Form 13 (Trunk Circuit Descriptors).

Select options for the specific trunk circuits via CDE Form14 (Non-Dial-In Trunks) for incoming calls.

Refer to Practice 9109-094-220-NA, Automatic Route Selection for the selection of options for outgoing calls.

Operation   None

Trunk Support - Direct Inward Dial (DID)

Description   3.115 DID Trunks are supported in the *SX-200* DIGITAL PABX. The following types of DID trunks are supported:

- Wink Start

- Delay Dial

- Immediate Dial

DID trunks support Tie, CO, DID, and DISA operation.

Conditions   The following conditions apply to this feature:

- Analog Bay DID trunks can be used outgoing.

- Digital DID trunk cards are incoming only.

- Digital DID trunk cards do not support DISA type operation.

Programming   Enter the trunk into the system's physical configuration table via CDE Form 01 (System Configuration).

Select options for the DID trunk type via CDE Form 13 (Trunk Circuit Descriptors).

Select options for the specific trunk circuits via CDE Form 15 (Dial-In Trunks).

Operation   None

Trunk   Support-E&M

Description   3.116 E&M trunks are supported with the E&M Trunk card (in the analog Peripheral bays) and the E&M Trunk module (on the Universal card, in the digital Peripheral bays).

The signaling schemes supported include: Type I and Type V, 2-wire or 4-wire.

E&M trunks support Tie, CO, DID, and DISA operation.

Conditions   None

Programming   Enter the trunk into the system's physical configuration table via CDE Form 01 (System Configuration).

Select options for the E&M trunk type via CDE Form 13 (Trunk Circuit Descriptors).

Select options for the specific trunk circuits via CDE Forms 14 (Non-Dial-In Trunks) and 15 (Dial-In Trunks).

Operation   **None**

Trunk Support - T1

Description   3.117 The *SX-200* DIGITAL PABX supports TI trunks. The link signaling used is T1 D4 Channel Associated Signaling (CAS), also referred to as DS-1.

The PABX can be provided with a T1 clock module, that the system can adjust to keep the system in phase with the incoming frame clock rate. This prevents data losses due to clock rate differences. Refer to Practice 9109-094-125-NA for information on the TI Clock Module.

TI trunks support DID, Tie, CO and DISA type operation, on a per circuit basis.

TI trunk circuits can be programmed to use various signaling schemes, based upon the circuit descriptor, to provide various basic trunk types. Available signaling schemes include: E&M, DID Loop-Tie, CO (loop and ground start), DISA E&M, DISA DID Loop-Tie, DISA CO (loop or ground start):

The PABX automatically monitors various errors on a link and maintains a 24-hour sliding window for each link. Thresholds are programmable on a link basis for these errors. When the thresholds are exceeded, based upon the threshold type (maintenance, service, or network synchronization), the PABX generates maintenance logs, removes the link from service, or causes the link to not be used as a network synchronization source. Once the link is removed from service or is removed from network synchronization, a programmable timer starts. When this time is elapsed, if the link does not exceed a specified number of errors, the link is again **made** available for use. All of this activity is logged in maintenance and the cumulative error counts (24-hour basis) are available in Maintenance error reports (refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal).

The PABX provides for Stratum 3 or 4 clock source, and can be used in master or slave mode. There is a programmable list of links to be used in network synchronization, with each link backing up the other links, should the previous link exceed the error thresholds (Slip Rates, Bit Error Rates (BER), and Framing Losses) programmed in the link descriptors. There are three network synchronization modes in the PABX: Auto, Manual, and Freerun. Auto mode is when the PABX chooses the network synchronization source automatically. Manual mode is when a link is specifically selected as the network synchronization source (this only lasts for 24 hours, at which point the system reverts to auto or freerun mode). Freerun mode is when there is no clock source or no link to be used as a network synchronization source. The PABX changes modes based on user actions, thresholds, and events on the TI links. Maintenance logs notify the installer of these changes.

There are two different states for a T1 trunk that is out of service, a yellow or red alarm. A yellow alarm is the result of a link-based event. The link transmits a yellow alarm condition on the link, which signals the far end that the link is out of service. This is the action taken on the service threshold limits or the reception of a yellow alarm condition from the far end.

A red alarm is based upon loss of synchronization on the link. Maintenance logs are generated for any change in alarm status, and can be seen by using the Maintenance SHOW STATUS command.

For information on T1 Link Descriptor options, refer to CDE Form 42 (T1 Link Descriptors).

A link monitoring tool is available for troubleshooting T1 links, and for specifying a manual network synchronization source. Refer to Practice 9109–094–351–NA, **RS-232 Maintenance Terminal.**

Refer to Practice 9109–094–125–NA, Circuit Card Descriptions for information on T1 trunks.

T1 trunks are not available with Generic 1002.

Conditions

The following conditions apply to this feature:

- There are 12 link descriptors available.

- There can be up to 8 network synchronization sources for network synchronization.

- One link provides 24 trunks.

- If a link descriptor is not assigned (it is recommended that one is assigned) then the default values in the link descriptors will apply. A link cannot be a network synchronization source without a link descriptor.

- If the last available network synchronization source specified is removed from service then the PABX is put into free-run mode.

- When a network source link is returned to service or is again ready for use as a network synchronization source, then the system will review the list of network synchronization sources and possibly select the returned link (depending upon the current network synchronization source and the order of the links in the list).

- A link is removed from service immediately, regardless of activity on the link, when its service threshold limits are exceeded.

- The T1 Link Monitor feature is not available in maintenance until at least one circuit is programmed (CDE forms 14 or 15) on a link in the PABX.

- The T1 Clock Module clock rate is adjusted by the system if there are entries made in CDE Form 44 (Network Synchronization) and one of the links there is available. If no network synchronization source is available, then the clock rate will not be adjusted by the PABX.

- The threshold error counts are cleared when the T1 card is plugged in or any of the values in the link descriptor assigned to the link are changed in CDE Form 42 (T1 Link Descriptors). A change in link status has no effect.

● Changing the entries in CDE Form 44 (T1 Network Synchronization) will override manual mode and change the PABX mode to freerun or auto.

● The term link is synonymous with a T1 trunk card.

● The normal maintenance busy-out feature applies to a circuit on a link and not the link itself. The link remains active but the circuit(s) are disabled.

Programming   Enter the trunk into the system's physical configuration table via CDE Form 01 (System Configuration).

Specify options for the T1 link descriptors via CDE Form 42 (T1 Link Descriptors).

Specify options for the T1 trunk types via CDE Form 13 (Trunk Circuit Descriptors).

Specify options for specific trunk circuits via CDE Forms 14 (Non-dial-in Trunks) and 15 (Dial-in Trunks).

Assign link descriptors to the various TI links via CDE Form 43 (T1 Link Assignment).

If the T1 clock module is used, assign the primary and backup T1 links to be used as sources for network synchronization via CDE Form 44 (T1 Network Synchronization). The order that the links are programmed in the form gives the order in which the links are used as sources.

Operation   None

Uniform Call Distribution (UCD)

Description   **3.118 Uniform Call Distribution (UCD) concentrates incoming trunk traffic** onto one or more special agent hunt groups. Trained operators (Agents) answer the calls. If ail Agents are busy, the caller camps on and may be connected to a recording hunt group, where the caller hears recorded announcements. The caller retains his position in the queue. If the Agents are still busy when the recording ends, the system connects the call to Music On Hold (if provided). After a pre-determined time, the unanswered call is rerouted to a designated answering point.

The call rings an agent immediately when one is available.

Agents can log in and out of the agent hunt group to control the arrival of calls from the agent hunt group (except with Generic 1002).

See RECORDING SUPPORT for details on recording devices.

For night service handling, trunk calls can be routed to a recording device directly; see INTERCEPT TO RECORDED ANNOUNCEMENT.

Conditions   The following conditions apply to this feature:

- If there is no hold timeout point and recordings are given, then for loop start trunks that do not provide release supervision, the system does not disconnect the trunk; the trunk remains on music on hold. It is important to provide a routing point for these unanswered calls to ensure that the loop start trunk is either answered, or timed out for no answer and then released.

- Agent Hunt Groups are special hunt groups; hunt group conditions plus some additional features apply to them.

- Circular hunting is advised for the agent hunt group to distribute the calls in the group. There is no distribution of calls based on workload or waiting time; see AUTOMATIC CALL DISTRIBUTION   (ACD).

- Campon to agent hunt groups follows the normal campon to hunt groups. The recording and reroute features are available once a caller has camped on to the agent hunt group.

- Features available for hunt groups, such as Trunk   Campon Warning Tone and Swap Campon, are available to agent hunt groups.

- The recording hunt group is selected from the tenant of the first programmed member of the hunt group.

- If there is no recording programmed, then no music is provided; it is only provided after the recording.

- The system provides a recording for the caller as soon as a recording device is available.

- At least one hunt of the agent hunt group is done before the waiting timeout is done (regardless of the waiting timeout length).

- If the waiting timeout time is set to 0 seconds then the timeout effectively is an overflow busy point for the agent hunt group.

- A reroute is done for the waiting timeout.

- If the caller is listening to a recording at the time of the waiting timeout, the recording is terminated before the reroute is done. If the waiting timeout occurs while listening to music and if a   campon is done on the reroute point then music is maintained while waiting for the busy reroute point. Otherwise it is removed and normal call progress tones provided.

- The waiting timeout is ignored if the caller is ringing an agent at the time.

- If the waiting timeout occurs while ringing a recording device then the ringing recording device stops ringing and the caller is rerouted to the timeout point.

- By default all agents are logged into an agent hunt group.

- Logging out of an agent hunt group only prevents calls from being presented to the agent set from the agent hunt group. Other features are not affected. This is in addition to the effects of Do Not Disturb and Forwarding on hunt group members.

- An agent that is logged out will not be selected to receive campon beeps and the Swap Campon capability for the hunt group; see SWAP CAMPON and CAMPON **WARNING TONE.**

- When an agent becomes available and is rung by a waiting caller, the recording or music is removed and the caller hears ringback tone.

- UCD agent hunt groups and ACD agent groups are completely separate and different entities. The first is a collection of devices, and the second is a collection of agent id codes.

- The Campon Warning tone can be turned off for members of the agent hunt group; see CAMPON **WARNING TONE.**

Programming   Enter a series of extension numbers into a hunt group in CDE Form 17 (Hunt Groups). Press the GROUP TYPE softkey, followed by the AGENT softkey.

Program a recording hunt group in CDE Form 17 (Hunt Groups); see RECORDING SUPPORT.

Enter the extension of the recording device hunt group into CDE Form 19 (Call Rerouting Table), under "UCD Recording Routing For This Tenant". The Tenant number is that of the first programmed member of the Agent hunt group.

Enter an On Hold Time-out period via COS Option 256 (UCD Music On Hold Timer), for each incoming trunk.

Enter an On Hold Time-out answering point extension into CDE Form 19 (Call Rerouting Table), under "UCD Time-Out Routing For This Tenant". The tenant number is that of the first programmed member of the Agent hunt group.

Assign an access code to Feature 38 (UCD Login/Logout Code) in CDE Form 02 (Feature Access Codes); this feature is not available with Generic 1002.

Enable COS Option 301 (Campon) for the incoming trunk to camp onto the UCD group.

Operation   To log in at an Agent Set:

- Dial the UCD Login/Logout Code, followed by 1.

To log out at an Agent Set:

- Dial the UCD Login/Logout Code, followed by 2.

Vacant Number intercept

Description   3.119 Calls to unassigned (vacant) access codes can be routed to a given answering point for completion. This point can be an LDN position on the Attendant Console (see CONSOLE LDN KEYS) or any valid routing point. Vacant

number intercept points can be programmed to be different or the same for **DAY**, **NIGHT1,** and **NIGHT2** modes of system operation.

See DID/DIAL—IN/Tie **INTERCEPTS** for the same feature for DID and Tie trunks.

Conditions   The following conditions apply to this feature:

*   **If the required programming is not done, such calls receive reorder tone**

*   **Telephones,** DISA **trunks, and CO trunks only are routed to the** answer-**point.**

*   **See DID/DIAL-IN/Tie INTERCEPTS for vacant number handling for DID and Tie trunks.**

*   **If the call is routed to a console, the call is shown as an intercept call at the console.**

Programming   **To cause all calls to vacant numbers to be routed to a specific answering point, program CDE Form 19 (Call Rerouting Table) with the desired answering point access code, in the appropriate column for the "Station Vacant Number Routing For This Tenant" call type.**

Operation   None

Verified Account Codes

Description   **3. 120   Verified account codes control access to trunks and external (DISA) access to the system by requiring that specific account codes be entered. Normally account codes are only recorded and not checked to see if they match pre-programmed codes. This feature helps ensure accuracy for accounting purposes, and helps inhibit fraudulent use of** DISA **lines, outgoing trunks, etc. See also VERIFIED ACCOUNT CODES (SPECIAL DISA), RESALE** PACKAGE, **TRUNK OPERATION (DISA).**

The caller's COS and COR can be changed (Travelling **Class Of Service) when a valid account code is entered to provide different features and external call privileges.**

If the caller's COS is changed and the Direct To ARS feature is enabled in the COS, the feature will operate immediately; see DIRECT TO ARS.

Verified Account Codes have an active/inactive status associated with each Account Code. This allows accounts to be denied access when problems are encountered (such as billings, non-payment).

See ANALOG NETWORKING for the use of Verified Account Codes in networking.

Conditions   **The following conditions** apply to this feature:

- When there is a COR and COS associated with an account code, the COS and COR apply to the device for the duration of the call. Once the device has completed the call (goes on-hook), the old COS and COR are restored.

- The match for account code is attempted when the account code is completely entered. For fixed length account codes this is the account code length and for variable length account codes this is when the *"#"* is entered.

- The caller is given reorder tone if there is no exact match for the account code entered.

- By default, all Account Codes are active.

Programming   Enable System Option 05 (Verified Account Codes).

Select the number of account code digits (VARIABLE or 4 — 12 digits) via System Option 55 (Account Code Length).

Enter the Verified Account Codes, COS, and COR into CDE Form 33 (Account Code Entry) as required.

Activate or deactivate Verified Account Codes in CDE Form 33 (Account Code Entry) as required.

Operation   See ACCOUNT CODES.

Verified Account Codes (Special DISA)

Description   3.121 Verified Account Codes can be used to replace the DISA Access Code. A caller who accesses a Special DISA trunk must dial an Account Code rather than the DISA Code. By using a Verified Account Code, each DISA trunk can have access to its own COS options through the COS and COR associated with the account code. SMDR records each of these calls.

Conditions   The following conditions apply to this feature:

- There is no minimum digits dialed before the trunk is given reorder tone as is the case with regular DISA. The rules for dialing invalid verified account codes apply.

- The use of a Verified Account Code rather than the DISA Code for entry in to the system applies on an individual trunk basis. DISA trunks not selected to use the Verified Account Code still use the DISA Code.

Programming   See programming under TRUNK OPERATION -DIRECT INWARD SYSTEM ACCESS (DISA) and VERIFIED ACCOUNT CODES.

Enable COS Option 808 (Special DISA) for the DISA trunk(s).

Operation
To access the feature from an external line:

- Access the PABX on a specified DISA trunk — ringback is heard, followed by dial tone.

- Dial the DISA Account Code — if the system verifies the account code, dial tone is returned; if not, the trunk is dropped.

- Dial the required number.

4. TELEPHONE FEATURES

4.1 This Fart provides a description of the telephone features (rotary, DTMF, and *SUPERSET* telephones) available for the *SX–200* DIGITAL PABX.

Add Held

Description   4.2 Add Held allows a user engaged in an active call on a *SUPERSET 4* or *SUPERSET 4*DN telephone to add a call which is on hold on another line to the line currently accessed.

Conditions   **The following conditions apply to this feature:**

- This feature is applicable to *SUPERSET 4* and *SUPERSET 4*DN telephones only.

- The set must have, in addition to its prime line, an appearance of another line.

- A private trunk line cannot be added into an established call.

- The feature can be used to add parties into conference calls or to transfer calls in progress to continue on another line.

- A conference on hold on a line cannot be added.

- The party doing the add held must not have a consultation hold in progress and must not be talking to a third party.

- The console cannot be involved in the call being added to.

- The line being added to can be a private trunk line only if dialing on the line (there can be no established call on the line).

- There must be less than 5 parties in the current call.

- The current call must not be on consultation hold.

- There must be no other parties in the current call performing an add held at the same time.

Programming   Enable COS Option 302 (Flash in Conference) in the set's COS to allow it to add a held line while talking to another party.

Operation   *SUPERSET 4* and *SUPERSET 4*DN Telephones

Establish a call.

Press the ADD HELD softkey to add a call on a previously held line into the current call. The LCD display prompts the user to press the line select key associated with the call on hold, and the call on the line is added into the current call.

Auto-Answer

Description   **4.3 When the Auto-Answer feature is active, incoming calls ring briefly, then** the set answers the call in Handsfree mode; see HANDSFREE OPERATION.
When the caller hangs up, a short burst of tone is heard over the *SUPERSET* telephone's speaker and the set goes idle. Call origination is not affected.

Conditions   **The following conditions apply to this feature:** '

- There are no restrictions on the connection of Auto-Answer *SUPERSET* telephones and loop start CO and DISA trunks. '

- This feature is available at *SUPERSET* telephones only.

- The set does not actually warble; instead an alerting tone is heard through the speaker. Call end tone is heard when the call is completed.

- If Auto-Answer is used with the headset feature then the tones are heard in the headset and not through the speaker.

- The feature prevents calls directed at the prime line of the *SUPERSET* telephone from ringing other appearances of the.prime line because the call is automatically answered. If the call is not automatically answered (the prime appearance or the *SUPERSET* telephone is busy) then the other appearances ring if possible.

- The feature only operates for calls directed at the prime line of a *SUPERSET* telephone.

- The feature prevents any other line appearances on the set from causing the set to ring. Instead, the new call ring is used to notify the set user of new calls on other lines.

- In some cases wher'e the *SUPERSET* telephone would be put suspended at the end of a call, a set with Auto-Answer enabled goes idle immediately.

- Auto-Answer is ignored when callbacks, recalls and hold timeout recalls ring the *SUPERSET* telephone. '

- **In ACD, agents can be forced into Auto-Answer mode upon login; refer to Practice 9109–094–620–NA,** *ACD TELEMARKETER* **Application Package.**

Programming   **Enable COS Option** *600 SUPERSET* **(Auto-Answer) in the telephone's COS.**

To provide feature key activation of Auto-Answer at a *SUPERSET* 3DN or *SUPERSET* 4DN telephone, program an Auto-Answer feature key in the sub-form of CDE Form 09 (Station/*SUPERSET* Sets).

To provide access code activation of Auto-Answer, program a Feature 02 (Auto-Answer) access code in CDE Form 02 (Feature Access Codes).

Operation   Operation varies depending on the type of *SUPERSET* telephone as described below.

SUPERSET 3 Telephones

To activate Auto-Answer:

● Dial the Auto-Answer feature access code, followed by the digit "1".

To deactivate Auto-Answer:

● Dial the Auto-Answer feature access code, followed by the digit "2".

SUPERSET 4 Telephones

To activate Auto-Answer:

● Press the SELECT FEATURES key.

● Dial 3. (Feature 3 is Auto-Answer (3:AUT0 ANS)).

● Press the ON softkey.

To deactivate Auto-Answer:

● Press the SELECT FEATURES key.

● Dial 3. (Feature 3 is Auto-Answer (3:AUT0 AN'S)).

● Press the OFF softkey.

*SUPERSET 3*DN and *SUPERSET* 4DN Telephones

To activate Auto-Answer:

● Press the Auto-Answer feature key. The adjacent LCD indicator darkens, or,

● Dial the Auto-Answer feature access code, followed by the digit "1". If a feature key has been programmed, the adjacent LCD indicator darkens.

To deactivate Auto-Answer:

● Press the Auto–Answer feature key. The adjacent LCD indicator, which was dark, clears, or,

● Dial the Auto-Answer feature access code, followed by the digit "2". If a feature key has been programmed, the adjacent LCD indicator, which was dark, clears.

Auto-Hold

Description   4.4 A *SUPERSET* telephone user automatically places a call on hold when another Line Select or Speedcall key on the set is pressed. When this is not de-

sirable, a COS option can be programmed which allows a call to be placed on hold only by pressing the HOLD key.

Conditions   The following conditions apply to this feature:

● This feature applies to *SUPERSET* telephones only.

● When the feature is disabied, calls can only be placed on hold by pressing the HOLD key.

● See HOLD for conditions on putting a call on hold. If the hold is not allowed then the Line Select or Speedcall key is ignored.

● If the feature is disabled, then, when another line is selected the call on the.current line is cleared down and the system always prompts for a line to select.

● The auto-hold only occurs when a Line Select key is pressed while dialing or talking, or when a Speedcall key is pressed while talking.

● If a Line Select key is pressed when dialing, if there is a consultation hold in progress then that party is automatically placed on hold.

Programming   **Enable COS Option 601 (*SUPERSET* – Auto-Hold Disable) to disable the Auto-Hold feature.**

Operation   **Establish a call**

Press any Speedcall key or Line Select key; the call is placed on hold. If a Speedcall key is pressed, the system prompts for a line to use to start the Speedcall call.

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Background Music

Description   4.5 This feature permits the user of a *SUPERSET 4*, *SUPERSET 3*DN, or *SUPERSET 4*DN telephone to have background music played through the set's speaker while the set is idle. The Music On Hold source provides the music; see MUSIC ON HOLD.

Conditions   **The following conditions apply to this feature:**

● This feature applies only to *SUPERSET 3*DN, *SUPERSET 4*, and *SUPERSET 4*DN telephones.

● Background music is automatically temporarily suspended when a call is placed or received; it is restored after the *SUPERSET* telephone is returned to idle.

Programming   Enable COS Option 602, Background Music in the set's COS.

For access from a *SUPERSET 3*DN telephone, program a MUSIC feature key in the appropriate subform of CDE Form 09 (Stations/*SUPERSET* Sets).

Operation

Operation varies depending on the type of *SUPERSET* telephone as described below.

SUPERSET 4 Telephone

* Press the softkey under the musical note appearing on the LCD display.

* Adjust the set's speaker volume control as necessary (this adjustment also affects Handsfree volume).

* To turn off the music, press the musical note softkey again.

SUPERSET 3DN Telephone

To receive background music:

* Press the MUSIC feature key. The adjacent LCD indicator darkens. Music is heard through the set's speaker. Adjust the set's speaker volume as desired. This adjustment does not affect the Handsfree speaker volume.

To cancel background music:

* Press the MUSIC feature key. The adjacent LCD indicator, which was dark, clears.

SUPERSET 4DN Telephone

To receive background music:

* Press the MUSIC ON softkey. Music is heard through the set's speaker. Adjust the set's speaker volume as desired. This adjustment does not affect the Handsfree speaker volume.

To cancel background music: Press the MUSIC OFF softkey.

Broker's Call (Station Swap)

Description

4.6 The Broker's Call feature allows a user of an industry-standard telephone to alternate private conversations with two parties.

While the set user converses with the first party, the second party is on consultation hold. When the user flashes the switchhook, the first party is put on consultation hold and the user converses with the second party. The user can alternate between the two calls indefinitely using the switchhook flash. This differs from the more usual mode of operation in which the first switchhook

flash permits the user to consult another party and the second switchhook flash forms a conference.

A variant on Broker's Call is the Transfer With Privacy feature. This provides the SWAP functionality without the restrictions on transfers; see Transfer With Privacy.

Conditions   The following conditions apply to this feature:

- With COS Option 203 (Broker's Call) enabled in its COS, the industry-standard telephone cannot set up a conference call or transfer calls.

- **The feature prevents the industry-standard telephone from putting a conference on consultation hold; reorder tone is returned if it is attempted.**

- If the extension originating the Broker's Call hangs up with a party on hold, the held party recalls to the extension instead of being transferred to a third party (see STATION TRANSFER SECURITY). COS Option 403 (Trunk Recall Partial Inhibit) is an exception to this.

- An extension with the Broker's Call feature may access the Call Hold, Call Hold and Retrieve, and Paging features after flashing on a call.

- COS Option 203 (Broker's Call) and the following COS Options are mutually exclusive:

    302 (Flash-In Conference)

    252 (Transfer With Privacy)

    223 (Flash Disable)

    224 (Flash for Attendant)

- The following COS Options do not apply to an extension with Broker's Call enabled:

    214 (Cannot Dial a Trunk after Flashing)

    215 (Cannot Dial a Trunk if Holding or Conf With One)

Programming   Enable COS Option 203 (Broker's Call) for the extension.

Operation   Operation varies depending on the type of telephone as described below.

Industry-standard Telephones

A normal 2-party call is established, and the extension user requires to consult a third party.

Flash the switchhook – dial tone is heard, and the second party is placed in consultation hold.

Dial the number of the third party and establish a private 2-party conversation.

To alternate between calls, flash the switchhook.

SUPERSET Telephones

See SWAP (TRADE CALLS).

Calculator

Description   4.7 The *SUPERSET 4*DN telephone provides a basic four function calculator using the telephone keypad, display, and softkeys.

Conditions   This feature is available only on *SUPERSET 4*DN telephones.

Programming   None

Operation   The calculator feature operates as follows:

● Press SUPERKEY.

● Press CALCULATOR softkey.

The telephone-keypad is used as the numeric keypad; the * key is used as the decimal point key. Arithmetic operators (x, ÷, −, + / =), clear entry/clear (CE/CLR) and another decimal point key appear on the softkeys. The display is on the top line of the LCD.

● Press SUPERKEY when completed.

Call Announce

Description   4.8 This feature allows a caller to announce a call through a *SUPERSET 4* telephone's Handsfree speaker (Call Announce Port) prior to transferring it. When the held party is released to the *SUPERSET* telephone the transfer is made to the *SUPERSET* telephone itself-if the set is idle, it rings; if it is busy, the call camps on. Also see CALL ANNOUNCE PORT.

Conditions   The following conditions apply to this feature:

● Call Announce operates only on *SUPERSET 4* telephones.

● The *SUPERSET 4* telephone can be on a call at the time.

● Call Announce operates on a *SUPERSET 4* telephone regardless of the type of device originating the call.

● The user can perform a Call Announce via a Speedcall key or Abbreviated Dial number only.

- The *SUPERSET 4* telephone must not be Handsfree (using the speaker) at the time.

- The Call Announce Port can only handle one caller at a time.

- if the Call Announce Port is busy then the call continues as usual as if the *SUPERSET 4* telephone had been dialed directly.

- The feature is ignored if the *SUPERSET 4* telephone has the Non-busy Extension feature enabled.

- The call announce cannot be put on hold or consultation hold or confer-enced with a party on consultation hold.

Programming

Program the set's extension number followed by *5 into a Speed Call number or Abbreviated Dial number, as required.

Enable COS Option 501 (Override Announce) in the caller's COS.

Program the Call Announce Port for the *SUPERSET 4* telephone in CDE Form 09 (Station/*SUPERSET* Sets).

Operation

if a call is to be transferred, place it on Consultation Hold (flash switchhook or press TRANS/CONF key, as appropriate for type of set).

Press the SPEED CALL key or dial the Abbreviated Dial number of the set with the Call Announce Port.

The CAP answers automatically; make the announcement.

Hang up; if there is a call on hold, it rings or camps on to the destination.

Call Announce Port

Description

4.9 The Call Announce Port is an auxiliary port that allows a caller to commu-nicate through the Handsfree speaker of a *SUPERSET 4* telephone under vari-ous circumstances. This is possible while there is a call in progress at the tele-phone on the telephone's handset.

The Call Announce Port itself occupies a separate line circuit and is connected to the second pair on the *SUPERSET 4* telephone.

See CALL ANNOUNCE, OVERRIDE ANNOUNCE, and INTERCOM for details on the uses of a Call Announce Port.

Conditions

The following conditions apply to this feature:

- A Call Announce Port is available only on a *SUPERSET 4* telephone.

- The *SUPERSET 4* telephone can be busy or idle, but cannot be operating in Handsfree mode, when the Call Announce Port is accessed.

- The Call Announce Port must be programmed for and connected to the black/yellow (auxiliary) pair of its associated *SUPERSET 4* telephone.

- The Call Announce Port (CAP) must be connected to a COV card, a digital OPS card or an analog Line Circuit card; hardware restrictions prevent an ONS port being used for a CAP.

- The Call Announce Port can accept only one caller at a time.

- A Call Announce Port cannot be put on hold or consultation hold or conferenced with a party on consultation hold.

- The *SUPERSET 4* telephone must not be Handsfree (using the speaker) at the time that the call to the Call Announce Port is made. The CAP is considered busy if this is the case.

- If the *SUPERSET 4* telephone changes its current call to Handsfree while the Call Announce Port is in use then both the current call and the call announce call is on the handsfree part of the telephone.

- No device connection checking is done between a Call Announce Port and calling devices.

Programming   Program the Call Announce Port for the *SUPERSET 4* telephone in CDE Form 09 (Stations/*SUPERSET* Sets).

Operation   See the features which access a Call Announce Port.

Callback -Busy

Description   4.10 The Callback - Busy feature allows a user who has encountered a busy set, hunt group, or trunk group to have the call completed when the required set, hunt group, or trunk group becomes idle.

See CALLBACKS for details on Callbacks.

See EXPENSIVE ROUTE WARNING for Callbacks to less expensive ARS routes.

Conditions   Originate Only extensions do not have access to this feature.

Programming   Enable COS Option 300 (Automatic Callback) in the set's COS.

Assign an access code to Feature 20 (Callback-Busy).

If desired, *SUPERSET 3*DN telephones can access Callback via a feature key. Program a CALLBACK feature key in the set's subform of CDE Form 09 (Stations/*SUPERSET* Sets).

If Callback - Busy is to be permitted on outgoing trunks, also enable COS Option 236 (Outgoing Trunk Callback) in the set's COS.

Operation

Operation varies depending on the type of telephone as described below.

Industry-standard Telephones and *SUPERSET 3* Telephones

The called extension, hunt group, or Trunk Group is busy. To set a callback:

- Dial the Callback – Busy access code within 10 seconds. Dial tone is returned.

The extension is now ready for normal use. When the busy party becomes idle, the set rings:

- Lift the handset – ringback or audio for ARS dialing is heard.

- The required extension rings or the trunk is seized.

SUPERSET 4 Telephone

The called extension, hunt group, or Trunk Group is busy.

To set a callback:

- Press the CALLBACK softkey – dial tone is returned.

The *SUPERSET 4* telephone is available for normal use.

To Answer a Callback – Busy:

- The *SUPERSET 4* telephone rings. The LCD reads "CALLBACK".

- Go offhook – ringback or audio for ARS dialing is heard.

SUPERSET 3DN Telephone

The called extension or Trunk Group is busy, or the called extension does not answer. To set a callback:

- Press the CALLBACK feature key-dial tone is returned.

The *SUPERSET 3*DN telephone is available for normal use.

NOTE: The *SUPERSET 3*DN telephone can also dial the Callback access code.

To Answer a Call back – Busy:

- The *SUPERSET 3*DN telephone rings.

- Go offhook – ringback or audio for ARS dialing is heard.

SUPERSET 4DN Telephone

The called extension or Trunk Group is busy, or the called extension does not answer. To set a callback:

- Press the Call Me Back softkey -dial tone is returned if offhook or the set goes idle.

The *SUPERSET 4*DN telephone is available for normal use.

NOTE: The *SUPERSET 4*DN telephone can also dial the Callback access code.

To Answer a Cal l back - Busy:

- The *SUPERSET 4*DN telephone rings. The LCD indicates that a callback is calling.
- Go offhook - ringback or audio for ARS dialing is heard.

Callback - No Answer

Description

4.11 Callback - No Answer allows a user, after dialing an extension which does not answer, to have the call completed after the called party uses the telephone later. The system continuously monitors the originating set and the called set. When the called set goes off-hook, the callback is handled in the same way as Callback - Busy.

See CALLBACKS for details on Callbacks.

Conditions

The following conditions apply to this feature:

- Callback - No Answer cannot be activated by access code while listening to ringback; see Operation.
- Callback - No Answer can be activated on extension numbers only.
- Originate Only extensions do not have access to this feature.

Programming

Enable COS Option 300 (Automatic Callback) in the set's COS.

Assign an access code to Feature 43 (Callback - No Answer).

If desired, *SUPERSET 3*DN telephones can access Callback via a feature key. Program a Callback feature key in the set's subform of CDE Form 09 (Station/ *SUPERSET* Sets).

Operation

Operation varies depending upon the type of telephone as described below.

Industry-standard Telephones and *SUPERSET* Telephones

The called extension does not answer. To set a callback:

- Hang up.

- Go off-hook again.

- Dial the Callback ⸺ No Answer access code.

- Dial the unanswered set's extension number. Dial tone is returned. The set is available for normal use.

When the called (unanswered) set is used and returned on-hook, the set that activated the callback gives regular ringing. To answer:

- Lift the handset ⸺ ringback is heard.

- The required extension rings.

SUPERSET 3DN Telephone

The called extension does not answer. To set a callback, follow the steps given for industry-standard telephones, above, or:

- Press the CALLBACK feature key -dial tone is returned.

The **SUPERSET** 3DN telephone is available for normal use.

To Answer a Callback ⸺ Busy:

- The **SUPERSET** 3DN telephone rings.

- Go off-hook ⸺ ringback is heard.

SUPERSET 4 Telephone

The called extension does not answer. To set a callback:

- Press the CALLBACK softkey -dial tone is returned. The set is available for normal use.

NOTE: The **SUPERSET 4** telephone can also follow the steps given for industry-standard telephones above.

When the called (unanswered) set is used and returned on-hook, the set that activated the callback gives regular ringing; its LCD reads CALLBACK. To answer:

- Go off-hook. Ringback is heard.

- The required extension rings.

SUPERSET 4DN Telephone

The called extension does not answer. To set a callback:

- Press the Call Me Back softkey — dial tone is returned. The set is available for normal use.

NOTE: The SUPERSET 4DN telephone can also follow the steps given for industry-standard telephones, above.

When the called (unanswered) set is used and returned on-hook, the set that activated the callback gives regular ringing to indicate that a callback is calling.

To answer:

- Go off-hook. Ringback is heard.

- The required extension rings.

Call Duration Display

Description | **4. 12** When a SUPERSET 4 or SUPERSET 4DN telephone accesses a trunk and establishes a call, the duration of the call is displayed on the set's LCD.

Conditions | The following conditions apply to this feature:

- This feature is only available on SUPERSET 4 or SUPERSET 4DN telephones.

- The feature applies to incoming and outgoing trunk calls, whenever a trunk of any type is the second party in a call.

- The duration shown is the time that all parties in the PABX spend talking on the trunk call. If a trunk is transferred from extension to extension, the time is not restarted.

- The duration display does not indicate the complete time that the trunk has been answered where recordings are involved. The recording answers the trunk but the call duration counting does not start until the trunk is answered by an extension.

- If Analog Networking is enabled then the extension number of the party calling from the other node is displayed.

- If the trunk has a name then the trunk name is displayed as well. If the trunk has no name programmed then the trunk's trunk group name is displayed. For SUPERSET 4DN telephones, the digits dialed are displayed instead of the name for outgoing trunk calls.

- The duration has a maximum of 10 hours (9:59) and starts back at 0 after that time.

Programming | None

Operation   Establish a call on a trunk; the LCD displays the duration of the call.

Call Park

Description   **4.13** This feature allows an industry-standard telephone user to park an active call and replace the handset. The call may be retrieved at the extension at which the call was parked, or from any other extension in the system. If Music On Hold is available, the parked party hears music. The parking extension may not originate or receive new calls until the parked call is retrieved; however, paging equipment may be accessed.

Conditions   The following conditions apply to this feature:

- This feature is available only at industry-standard telephones.

- If there is no system music then silence is heard.

- COS Options **401** (Call Park) and 403 (Trunk Recall Partial Inhibit) are mutually exclusive.

- The paging and call park feature access codes are the only access codes that the parking industry-standard telephone-can dial after the park is done.

- The industry-standard telephone is considered busy by the **Campon** and Callback features until the parked party is retrieved.

- The parked call can only be picked up from another extension once the parking extension has gone on-hook.

- When the call is parked, the timer for COS Option 254 (Call Hold Recall Timer) is started.

- When the Call Hold Recall timer times out, the industry-standard telephone audibly starts to ring. Forwarding on the extension is ignored and the timer for COS Option 115 (Attendant Timed Recall — NO ANSWER) is started. Music or silence continues for the parked party. When the Recall No Answer timer expires, recall handling is done; see RECALL.

Programming   Assign an access code to Feature 33 (Call Park).

Enable COS Option 254 (Call Hold Recall Timer) for the extension, to set the Call Park recall time.

Enable COS Option 401 (Call Park) for the extension that parks the call and for extensions using the Call Park access code to pick up the parked call.

Enable COS Option 218 (Directed Call Pickup) for others to pick up the parked call.

Operation   To park a call:

- **Flash the switchhook -wait for dial tone.**

- **Dial the Call Park access code-wait for dial tone.**

- **Replace the handset, or access paging equipment; see PAGING.**

To retrieve a parked call from the original extension:

- **Lift the handset-connection is made.**

To retrieve a parked call from another extension:

- **Dial the Call Park or the Directed Call Pickup access code.**

- **Dial the number of the extension where the call was parked.**

- **The call is connected to the remote extension.**

Clear All Features

Description	4.14 An extension user may cancel all Call Forwarding, Do Not Disturb, **and** Callbacks active at that extension.
Conditions	None
Programming	Enable COS Option 221 (Clear All Features) for the extension. Assign an Access Code to Feature 25 (Clear All Features).
Operation	To cancel all Call Forwardings, Callbacks, and Do Not Disturb:

- **Lift the handset-dial tone is returned.**

- **Dial the Clear All Features feature Access Code**

- **Dial tone is returned.**

- **Replace the handset.**

Conference

Description	4.15 This feature allows a set user to establish a conference of up to five parties (including the originating extension), without the assistance of the Attendant.
	See DEVICE INTERCONNECTION CONTROL for information on controlling trunk conferencing.
Conditions	The following conditions apply to this feature:

- A maximum of six conferences may take place at one time; the maximum number of conferees permitted at one time is 18; the maximum number of conferees permitted in one conference is 5.

- An Attendant console cannot be a member of a set-initiated conference.

- Only one party may flash out of the conference at a time.

- An extension with COS Option 203 (Broker's Call) or 252 (Transfer Call With Transfer) enabled cannot set up a conference. The switchhook flash is interpreted as a SWAP and not as a conference attempt.

- A non-busy extension forms conferences automatically.

- The Override feature forms a conference call.

- If an industry-standard telephone attempts to conference with a trunk that gives answer supervision and the trunk has not given answer supervision yet then the trunk is dropped.

- Two conference calls cannot be confetenced together.

- All *SUPERSET* telephones in the conference can put the conference on hold.

- Another method of creating conferences is through key line privacy; see PRIVACY ENABLE/PRIVACY RELEASE.

- See FLASH CONTROL for controlling flashing on an extension.

Programming	Enable COS Option 302 (Flash-in Conference) for the extension. This prevents the extension from creating conferences of greater than three.
Operation	Operation depends upon the type of device as described below.

Industry-Standard Telephone

To establish a conference:

- Establish a 2-party call.

- Flash the switchhook.

- Transfer dial tone is returned (if programmed).

- Dial the number of the next conferee.

- When the conferee answers, flash the switchhook -a conference is established.

Any extension in the conference may add additional conferees to the conference by repeating the above steps.

SUPERSET Telephone

To establish a conference:

● **Establish a 2-party call.**

● Press the TRANSFER key.

● Transfer dial tone is returned (if programmed).

● Dial the number of the next conferee.

● When the conferee answers, press the TRANSFER key — a conference is established.

Any extension in the conference may add additional conferees to the conference by repeating the above steps.

Direct Trunk Select

Description   4.16 This feature allows the user to directly access an outside trunk for both incoming and outgoing calls without the need of trunk access codes. The trunk is assigned to a line appearance of the telephone through system programing. Telephones having the Direct Trunk Select feature can be programmed for ring, delayed ring, or no ring.

Direct Trunk Select calls bypass the system's Automatic Route Selection feature and are therefore unaffected by COR (Toll Control). An Account Code can be entered while established in a call.

Conditions   The following conditions apply to this feature:

● Only CO type trunks can be programmed in a Direct Trunk Select configuration. **Incoming-only trunks are not compatible.**

● Incoming Direct Trunk Select calls do not follow Call Forwarding as programmed on the set.

● Do Not Disturb is overridden by an incoming Direct Trunk Select call.

● Direct Trunk Select trunks which are shared by a key system group can only be accessed by one member of the group at any one time, except in a conference application. The latter is permissible through the Privacy Release feature.

● DTS trunks are not selected from ARS, even though they are programmed in ARS.

Programming   Program trunks that are to be selected directly, instead of through ARS, in the *SUPERSET* Set Lines subform of Form 09 (Station/*SUPERSET* Sets).

Operation   To access Direct Trunk Select:

- Lift the handset. PABX dial tone is heard.

- Press a Direct Trunk Select line key. Central Office dial tone is returned.

- Dial the external number.

To answer an incoming Direct Trunk Select call:

- Lift the handset and press the Direct Trunk Select line key, when the set rings and/or the line appearance flashes.

Disconnect Alarm

Description   4.17 This feature provides an alarm indication when a *SUPERSET* telephone is unplugged.

Conditions   The alarm is not cleared by the *SUPERSET* telephone being plugged back in.

Programming   Enable COS Option 603 (*SUPERSET* Disconnect Alarm) in the *SUPERSET* telephone's COS.

Operation   Unplug the *SUPERSET* telephone — an alarm is generated; see ATTENDANT ALARM READOUT for reading alarms.

Do Not Disturb

Description   4.18 This feature enables a telephone user to prevent incoming calls from ringing the telephone. Outgoing calls are unaffected.

Callers to a telephone with Do Not Disturb active receive reorder tone; the message DO NOT DISTURB appears on display sets. The alternative is to program the system to reroute such calls to a predetermined answering point; see CALL REROUTING.

The console and *SUPERSET* 4DN telephones may override Do Not Disturb.

Conditions   The following conditions apply to this feature:

- Either the set user or the Attendant can set up or cancel Do Not Disturb.

- The console or a *SUPERSET* 4DN telephone can override Do Not Disturb as long as COS Option 500 (Override) is enabled in the console's or the *SUPERSET* 4DN telephone's COS, and COS Option 238 (Override Security) is disabled in the called extension's COS.

- When overriding Do Not Disturb, the Auto-Answer feature is ignored.

- When overriding Do Not Disturb, if the device becomes busy in the meantime, a busy override is attempted and the the overriding console or *SUPERSET 4*DN telephone attempts to enter the call; see OVERRIDE (INTRUDE).

- A Hunt Group member that activates Do Not Disturb is treated as busy during hunting.

- While Do Not Disturb is active, Forwarding works as if the extension were busy.

- If the set user activates a callback, the callback is honored, even if Do Not Disturb is active.

- When a Reminder expires, it ignores Do Not Disturb.

- Call Rerouting ignores Do Not Disturb.

- If Discriminating Dial Tone is enabled then discriminating dial tone is heard at an extension when it has Do Not Disturb activated; see DISCRIMINATING DIAL TONE.

- DID trunks ignore DND if there is no Do Not Disturb routing point for the extension's tenant.

- If a call is placed on hold by the telephone with Do Not Disturb set, is not retrieved, and recalls when the hold times out, the telephone with Do Not Disturb set does not ring and does not see the recalling call.

- If there are multiple call line appearances of the Do Not Disturb station or *SUPERSET* telephone then the behavior of the feature changes. If the extension is dialed, busy tone is heard if there are no free appearances to ring and at least one *SUPERSET* telephone where the line appears does not have Do Not Disturb activated. If all *SUPERSET* telephones where the line appears have Do Not Disturb activated, then the caller gets Do Not Disturb Reorder Tone. If at least one appearance is free then the call to the extension proceeds as if the Do Not Disturb was not activated. If the prime appearance is free then the appearance silently rings.

- Consoles are never directed to the Do Not Disturb reroute point.

Programming To permit the set user to activate Do Not Disturb, enable COS Option 220 (Do Not Disturb) in the set's COS.

To enable telephones to activate Do Not Disturb, assign an access code to Feature 10 (Do Not Disturb). *SUPERSET 3*DN and *SUPERSET 4*DN telephones can also use this method of activation.

To enable a *SUPERSET 3*DN or *SUPERSET 4*DN telephone to selectively activate Do Not Disturb, program a DO NOT DISTURB feature key in the appropriate subform of CDE Form 09 (Station/*SUPERSET* Sets).

To intercept calls dialed to a Do Not Disturb extension, program CDE Form 19 (Call Rerouting Table) for the extension's tenant.

Operation Operation varies depending upon the type of device as described below.

industry-standard Telephones and *SUPERSET 3* Telephones

To activate Do Not Disturb:

- Dial the Do Not Disturb access code followed by the digit 1.
- Dial tone is heard.
- Hang up.

To remove Do Not Disturb from the extension:

- Dial the Do Not Disturb access code followed by the digit 2.
- Dial tone is returned.
- Hang up.

SUPERSET 3DN and *SUPERSET* 4DN Telephones

As above, or:

To activate Do Not Disturb:

- Press the DO NOT DISTURB feature key. The adjacent LCD indicator darkens.

To remove Do Not Disturb from the extension:

- Press the DO NOT DISTURB feature key. The adjacent LCD indicator, which was dark, clears.

SUPERSET 4 Telephones

To Set Do Not Disturb:

- Press the SELECT FEATURES key.
- Dial '2' (feature number 2 is Do Not Disturb (2:N0 DIST'B))
- Press the ON feature key. The words NO DIST'B are displayed in the upper left corner of the LCD as a reminder while Do Not Disturb is in effect.

To Cancel Do Not Disturb:

- Press the SELECT FEATURES key.
- Dial '2'.
- Press the OFF feature key.

Forward Campon

Description   4.19 Calls that camp on to a *SUPERSET 4* or *SUPERSET 4*DN telephone can be selectively forwarded to the telephone's call forwarding destination. When a

party camps on, the waiting party is identified on the telephone display. If the busy telephone has call forwarding programmed (it may be active or inactive), then a softkey can be used to forward that waiting party to the call forwarding destination.

See FORWARDING for selecting a call forwarding destination.

See CAMPON and SWAP CAMPON also.

Conditions   The following conditions apply to this feature:

●   The softkey on the *SUPERSET 4* telephone is only displayed for the first 10 seconds after a new caller camps on. After that time the   softkey is removed.

●   The feature forwards the first waiting caller. See CAMPON for information on the ordering of waiting callers.

●   The feature is only available if the forwarding destination is idle; see FOR-WARDING.

●   The feature is not available if the forwarding destination is a Speedcall key or System Abbreviated Dial number.

Programming   **Program a forwarding destination for the *SUPERSET* telephone.**

Operation   Operation varies depending upon the type of device as described below.

SUPERSET 4 Telephone

●   A new caller camps on to the telephone while the telephone is talking to another party.

●   Press the GALL FWD softkey. The waiting caller is forwarded to the forward **destination.**

*SUPERSET 4*DN Telephone

●   A new caller camps on to the telephone while the telephone is talking to another party.

●   Press the GALL WAITING softkey.

●   Press the FWD WAITING softkey. The waiting caller is forwarded to the forward destination.

Forwarding

Description   4.20 This feature allows the set user to redirect calls placed to the set's extension number. The calls can be redirected to many types of devices and   exter-

nal numbers. The type of forwarding selected determines under what conditions the call is redirected. The types are:

Forwarding — Busy (When Set's Busy)

This feature forwards all calls when the extension is busy. While the extension is idle, calls may be made and received normally.

Forwarding — **Busy/Don't Answer (Busy/No Answer)**

This feature forwards all calls received when the extension is busy or that are not answered within a selected time-out period. While the extension is idle, calls may be made and received normally.

Forwarding — Follow Me (Always Forward)

This type of forwarding is unconditional. All calls are forwarded to the programmed destination. The number to which the calls are forwarded is the only party that may call the forwarding extension while Forwarding — Follow Me is active. The extension may originate calls in the normal manner.

Forwarding — I'm Here

This type of forwarding operates the same as Forwarding — Follow Me, but it is activated from another extension. All calls are forwarded to the new location. The forwarded extension can originate calls in the normal manner.

Forwarding — Don't Answer (When No Answer)

This feature forwards all calls that are not answered within a selected time-out period. Calls may be made and received normally.

Forwarding — External

This feature forwards all calls received based on one of the conditions selected from above, to a Speed Call or system Abbreviated Dial number (which is an external number).

Conditions   The following conditions apply to this feature:

Forwarding — General

- Valid call forwarding destinations are: Dial 0 access code, hunt groups (not data type), industry-standard telephones, *SUPERSET* telephones, consoles, ACD Paths, personal Speedcall keys, system Abbreviated Dial numbers.

- An extension is considered BUSY for forwarding busy if the extension has Do Not Disturb activated, is not idle, or has its prime line appearance busy.

- Forwarding is operational for logical lines **if** the line is a single appearance line. The forwarding setting of the *SUPERSET* telephone where the line is programmed is used to forward calls.

- Forwarding can be set up to the Dial 0 access code. The destination is translated from the access code to the routing point based upon the current

NIGHT/DAY service at the time of forwarding (giving NIGHT/DAY based forwarding). Priority Dial 0 can be used as well, with the feature being checked for on the forwarding extension.

- Forwarding does not apply if the calling extension is the party to which the call would be forwarded.

- Forwarding does not apply if the forwardee has COS Option 234 (Never a Forwardee) in its COS.

- Forwarding directly to an LDN can only be set up by an Attendant. An extension can set up forwarding to an LDN indirectly by using the Dial0 code.

- Forwarding cannot be programmed from an extension to itself.

- Forwarding is ignored when callbacks are honored.

- No forwarding is done if the caller is the Attendant, and the forwarding destination is the Dial 0 Access Code.

- If the extension is a member of a Hunt Group and has forwarding enabled, the system excludes it from hunting.

- Only one type of forwarding may be active at an extension at any time: if an extension has one type of forwarding active and the user enters a new forwarding type, the first type of forwarding is canceled.

- Forwarding must be enabled in the set's COS. The different types of forwarding are enabled separately; see Programming.

- A call may be forwarded twice if the first forward is of the "Follow Me" or "Busy" type, and the second is of the "Don't Answer" type. Otherwise a call can be forwarded only once.

- An extension must have COS Option 245 (Abbreviated Dial Access) in its COS to be able to program call forwarding to system Abbreviated Dial numbers. The option is not needed for callers which are forwarded to abbreviated dial numbers.

- When forwarding to a speedcall or abbreviated dial number, the forwarding always occurs regardless of the outcome of the call, unless to a vacant number, in which case forwarding is ignored. For example, if Toll Control denies access to an external number or the forwarding is to an invalid number then the caller receives reorder tone.

- SUPERSET telephone key or multicall line appearances of extension numbers do not ring or provide visual indication of incoming calls if the extension has activated Forwarding ➥ Follow Me, Forwarding ➥ Busy, or Forwarding ➥ I'm Here.

- Forwarding is not done if the forward destination is busy (it is busy if: Do Not Disturb is activated, it is not idle, or its prime line appearance is not idle). An exception is for Subattendant SUPERSET telephones. For Subattendants, the SUPERSET telephone is considered busy if there are no idle appearances of its prime line; see SUBATTENDANT.

- If the SUPERSET telephone being forwarded to has the Auto-Answer feature activated then the caller is answered with that feature; see Auto-Answer.

- Connection checking is done between the calling party and the party being forwarded to; see **DEVICE INTERCONNECTION CONTROL**.

- If forwarding is activated but for some reason the forwarding is not done, the call continues as if forwarding was not active. If the call forward -don't answer timer expires and no forwarding is performed, the recall no answer timer is started; see **RECALL**.

- For display *SUPERSET* telephones and the console, the forwarding party's identity are displayed when the forwarded party rings the *SUPERSET* telephone or is answered at the console.

- If a console or extension is externally call forwarded, the forwarding continues only if System Option **21** (Incoming to Outgoing Call Forward) is enabled.

- Forwarding — I'm here can only be changed from the forwarding set, not from the other extension.

Forwarding — No Answer

- For forwarding — Don't Answer, a caller camps on to the forwarding destination if allowed to campon; see **CAMPON** for audio details.

- **Forwarding** — Don't Answer has no effect when a *SUPERSET* telephone answers the call using the Auto-Answer feature.

- *SUPERSET* telephone key or multicall DELAY RING line appearances of extension numbers do not ring if the extension has activated Forwarding — Don't Answer and the call is forwarded. The delay ring timer is the same as **the call forward -don't answer timer. However, the** *SUPERSET* telephone provides visual indication of the incoming call. The *SUPERSET* telephone user can answer the call before the forwarding occurs.

Forwarding — External

- Forwarding — External requires a receiver for dialing. If one is not available then forwarding is ignored in Call Forward — Don't Answer. If it is done during a reroute, the caller is dropped or given reorder tone.

- An extension with COS Option 200 (Account Code, Forced Entry — External Calls) or COS Option 201 (Account Code, Forced Entry — Long Distance Calls) in its COS cannot set up the External Forwarding feature.

- **Toll Control applies to the calling party for External Call Forwarding to** personal speed call keys.

- Toll Control is not done for forwarding to external numbers using the system Abbreviated Dial feature.

- No Toll Control checking is done for CO trunks which are externally call **forwarded.**

- A trunk can only be forwarded externally if System Option 21 (Incoming to Outgoing Call Forward) is enabled.

- An extension is not forwarded to an external number unless it has COS Option 208 (Call Forwarding – External) in its COS.

- **Campon** to busy trunk groups after forwarding external is possible if the caller is allowed to **campon** to trunk groups; see **CAMPON.**

- When the Attendant or a *SUPERSET 4* or *SUPERSET 4*DN telephone calls an extension that is forwarded to an external number, the display shows the external number and indicates the extension which forwarded the call. If the Speed Call or Abbreviated Dial number is private, text indicating a private number appears on the display instead of the external number. The Console can display the number if it has COS Option 110 (Attendant Abbr. Dial Confidential Number Display) enabled in its COS.

- Consoles and extensions can transfer a party on consultation hold as soon as forwarding to an external number starts, at any point in dialing the external number.

- The reference is to the stored Speedcall key number or the Abbreviated Dial number. If this stored number is changed, then the forwarding destination changes also.

Programming   Enable COS Option 219 (Discriminating Dial Tone) if discriminating dial tone is desired; it will then be heard by any extension which has Call Forward – Follow Me set.

Enable the desired Forwarding types in the extension's COS:

- COS Option 206 (Call Forwarding-Busy)

- COS Option 207 (Call Forwarding – Don't Answer)

- COS Option 208 (Call Forwarding – External)

- COS Option 209 (Call Forwarding – Follow Me)

Enable COS Option 245 (Abbreviated Dial Access) for the extension to allow forwarding to system Abbreviated Dial numbers.

Enable System Option 21 (Incoming to Outgoing Call Forward) to allow trunks to be externally call forwarded.

For Call Forward -Busy/Don't Answer, Enable COS Options 206 (Call Forwarding – Busy), and 207 (Call Forwarding – Don't Answer).

Assign an access code to the desired type of Forwarding in CDE Form 02 (Feature Access Codes): '

- Feature Access Code 03 (Call Forwarding – Busy)

- Feature Access Code 04 (Call Forwarding – Don't Answer)

- Feature Access Code 05 (Call Forwarding -Busy/Don't Answer)

- Feature Access Code 06 (Call Forwarding – Follow Me)

- Feature Access Code 07 (Call Forwarding – I'm Here)

Set COS Option 253 (Call Forward — Don't Answer Timer) for two to six rings.

Operation   Operation varies depending upon the device type as described below.

industry-standard Telephones

To set up Forwarding **(all** internal types except I'm Here):

● Lift the handset -wait for dial tone.

● Dial the access code for the desired type of forwarding.

● Dial the number to which calls are to be forwarded.

● Dial tone returns.

● Hang up-the extension is available for normal use.

To cancel Forwarding (all types):

● Lift the handset-wait for dial tone.

● Dial any forwarding access code.

● Hang up-the forwarding is canceled, or,

● Lift the handset-wait for dial tone.

● Dial the Clear All Features access code (see CLEAR ALL FEATURES). This also cancels all forwarding at the telephone.

To select Forwarding — I'm Here:

● At another extension, lift the handset -wait for dial tone.

● Dial the Forwarding — I'm Here **access code.**

● Dial your own extension number-dial tone returns.

● Hang up-the extension is available for normal use.

To set up External Forwarding at an Extension:

● Lift the handset-dial tone is heard.

● Dial the desired Call Forward **Access Code.**

● Dial the Abbreviated Dial Access Code.

● Dial the Abbreviated Dial Index Number, which contains the external telephone number to which calls are to be forwarded. Dial tone is returned if the above codes are valid; reorder tone is returned if the codes are invalid.

● Replace the handset — External Forwarding is now active.

To cancel External Forwarding at an Extension:

● Lift the handset-dial tone is returned.

- Dial any Call Forward access code.

- Replace the handset – External Forwarding is now inactive.

SUPERSET 3 **Telephones**

To select Forwarding (all types except I'm Here):

- Follow the same procedure as for industry-standard telephones. Remember it is also possible to go off-hook using the SPEAKER ON/OFF key.

SUPERSET 3DN Teiephones

To set up Forwarding (all types except I'm Here):

- Follow the same procedure as for industry-standard telephones. Remember it is also possible to go off-hook using the SPEAKER ON/OFF key.

To activate or deactivate Forwarding already programmed:

- Press the CALL FORWARD feature access key, if programmed. The LCD indicator is dark to indicate forwarding active, clear to indicate not active.

SUPERSET 4 **Telephones**

To display the current Forwarding type and destination:

- Press the DISPLAY key.

- Press the CALL FWD softkey – read the display.

- Press the EXIT softkey.

To activate Forwarding already programmed:

- Press the SELECT FEATURES key.

- Dial 1 (feature number 1 is Forwarding (1: FWD)) -the current type and destination are displayed.

- Press the ON softkey to activate forwarding; if activation is not desired, press the EXIT softkey.

Forwarding is now active; the word FWD is displayed in the top left corner of the LCD as a reminder.

To deactivate Forwarding:

- Press the SELECT FEATURES key

- Dial 1 (feature number 1 is Forwarding (1 :FWD)) -the current type and destination are displayed.

- Press the OFF softkey to deactivate forwarding; if deactivation is not desired, press the EXIT softkey.

To Set Up or Modify Forwarding:

- With the handset on-hook, press the PROGRAM feature key.

- Press the CALL FWD feature key.

The alphanumeric display shows a Forwarding type. If the displayed type is not the one required, press the NO softkey; another type is displayed. Repeat until the desired type is displayed. When the displayed type appears, press the YES softkey.

If the call is to be forwarded within the PABX, dial the forwarding destination. If the call is to be forwarded to an outside number, press.the SPEED CALL key associated with that number or dial the Abbreviated Dial number, if available.

Check the number on the LCD. To correct an error:

- Use the ◄ key.

- When the set receives a forwarded call, the display shows FROM xxxx, where xxxx is the number or name of the set that forwarded the call.

SUPERSET 4DN Telephone

To display the current forwarding type and destination:

- Press SUPERKEY.

- Find the Forwarding softkey. (Use the More softkey).

- Press the Forwarding softkey. The display shows the current forwarding type and destination, if programmed.

- Press SUPERKEY to return to normal display.

To activate Forwarding already programmed:

- Press the Turn FWD On softkey. < FWD ON > appears in the upper right corner of the LCD.

To deactivate Forwarding:

- Press the Turn FWD Off softkey. < FWD ON > disappears from the display.

To Set Up Forwarding:

- Press SUPERKEY.

- Find the Forwarding softkey. (Use the More softkey).

- Press the Forwarding softkey. The display shows the current forwarding type and destination, if programmed.

- Press the Change softkey. Softkeys appear for the types of forwarding enabled in the set's COS.

- Select the desired forwarding type. The display requests the destination number.

- Enter the destination number. If an invalid number is entered, the display shows INVALID NUMBER. Use the ◄── softkey to back space and erase the entry. Enter the correct number (can be a speedcall key, if programmed) or press the Current No. softkey to restore the previously programmed destination, (if available).

- Press the Save/On softkey. The display returns to normal. C FWD ON > appears in the top right corner.

When the set receives a forwarded call, the display shows Forwarded from xxxx, where xxxx is the number or name of the set that forwarded the call.

Handsfree Operation

Description
4.21 This feature enables the set user to use the *SUPERSET* telephones without using a handset.

Conditions
The following conditions apply to this feature:

- The MUTE or MIC key can be used to turn off the microphone on *SUPERSET* telephones. Refer to the MITEL Practice for the individual *SUPERSET* telephone.

- Calls can be changed from Handsfree to the handset by lifting the handset from the set and pressing the speaker key. The call can be changed back to Handsfree by pressing the speaker key and then putting the handset back into the handset cradle.

- Handsfree cannot be used. while the *SUPERSET* telephone is using the pager.

- Calls can be ended by using the speaker or cancel key or the hangup prompt.

- COS Option 604 (*SUPERSET* – Immediate Line Select) affects Handsfree dialing; see LINE SELECTION.

Programming
None

Operation
To initiate handsfree dialing:

- Press a dial pad key or a SPEEDCALL key; the system selects a line to dial on, or,

- Press a Line Select key; the system selects a line to dial on, or,

●   Press the SPEAKER key; the system selects a line to dial on.

Headset   Operation

Description	4.22 *SUPERSET* telephones can be equipped with headsets instead of hand-sets. The set user answers incoming calls by pressing the Line Select key or the SPEAKER ON/OFF key and hangs up by pressing the HANGUP softkey. The user can also use the Auto-Answer feature with this feature to provide complete handsfree operation.

Conditions   The following conditions apply to this feature:

●   Sets with Headset Operation enabled must be operated only with head-sets.

●   *SUPERSET* telephone compatible headsets must be supplied by the user.

●   The handset must be out of its cradle for the headset to operate.

Programming   Enable COS Option 612 (*SUPERSET –* Headset Operation) in the set's COS.

Operation   A call is ringing at the set:

●   Press the appropriate Line Select key, or,

●   Press the SPEAKER ON/OFF key, or,

●   With Auto-Answer, the telephone answers automatically.

To terminate the call:

●   Press the HANGUP softkey.

Hold

Description   4.23 This feature enables the set user to place the current call on hold, then replace the handset or use the set for other calls. While the call is held, the user can select all features normally available on the set. The held call can be retrieved at the set that placed it on hold or at another set.

Do not confuse the Call Hold feature described here with the temporary Con-sultation Hold that occurs during a call transfer; see TRANSFER.

See ADD HELD and AUTO-HOLD for set Hold features.

See ATTENDANT HOLD POSITIONS for Attendant Hold features.

Conditions   The following conditions apply to this feature:

- When the hold is done, the *SUPERSET* telephone user enters the select line feature to choose another line; see LINE SELECTION.

- System music is heard if it is available and continues even if the held party starts recalling to the *SUPERSET* telephone. If music is not programmed, silence is provided until the Hold Timeout period, when ringback is provided.

- All *SUPERSET* telephones in a conference call can put the conference call on hold.

- The HOLD button is only available when talking to another party or when in a conference call. A hold can be done implicitly at other times through **AUTO-HOLD.**

- For industry-standard telephones, COS Option 211 (Call Hold and Retrieve Access) must be enabled in the set's COS.

- At industry-standard telephones, the Call Hold feature does not operate if COS Option 223 (Flash Disable) or COS Option 224 (Flash For Attendant) is enabled in the set's COS.

- An industry-standard telephone can have only one extension or trunk on hold at a time. It cannot put a conference call on hold.

- When an industry-standard telephone puts a call on hold it is free to make and receive other calls.

- When an industry-standard telephone puts a call on hold (when a call is already on hold) it swaps the party on hold with the party it is attempting **to hold. The industry-standard telephone is then talking to the first party** that had been put on hold and the second party is now on hold.

- When an industry-standard telephone puts a call on hold, the call is not occupying the station's key line if it has one programmed. A *SUPERSET* telephone with an appearance of the line can put a call on hold on the industry-standard telephone's key line as well.

- The Call Hold Access Code does not apply to *SUPERSET* telephones; they have a HOLD key.

- If a call is on hold at a *SUPERSET* telephone's prime line, other calls can be made only if the set has other line appearances programmed.

- Calls can be retrieved remotely when calls are held on industry-standard telephone key lines or *SUPERSET* telephone prime line (key or multicall) appearances.

- Calls cannot be retrieved from Logical Lines, Direct Trunk Select, Private Trunk and Private Outgoing lines or from Multicall Line appearances that are not a *SUPERSET* telephone Prime Line appearance.

- Calls held on key line appearances on a *SUPERSET* telephone can be retrieved by retrieving the call at the industry-standard telephone or *SUPERSET* telephone whose key line it is.

- A held call cannot be retrieved if the retrieving party has a consultation hold in progress and the held party is an industry-standard telephone or

SUPERSET telephone with COS Option 233 (Never A Consultee) enabled, or if the held party is a trunk and the retrieving party is not an industry-standard telephone or is an industry-standard telephone with COS Option 203 (Broker's Call) disabled and COS Option 214 (Cannot Dial A Trunk After Flashing) or COS Option 215 (Cannot Dial A Trunk While Holding Or in Conference With One) is enabled and the retrieving extension has a trunk in the call on consultation hold.

- When ☎ two party call on a key, Private Trunk or Direct Trunk Select line is put on hold, other *SUPERSET* telephones where the line appears can select the held line to connect to the held party.

- Conference calls on hold cannot be retrieved from other sets. They can be taken from hold through other appearances of the line only if the line was put on hold at those appearances as well.

- When a call is retrieved from an industry-standard telephone, the first check is for a call held by the telephone itself. If no call is being held, and if the industry-standard telephone has a key line appearance, then the line is checked for a held call.

- The activity of the holding set does not affect the ability of other devices to retrieve held calls.

- There is no time limit on holding conference calls on a line.

- There is no time limit on holding calls on a personal outgoing line.

- When the held party starts ringing the holding set, the ringing is done as if the held party had just called the holding line. That is, all appearances of the line ring, with delay ring etc. operational.

- **If Auto-Answer is activated on the holding *SUPERSET* telephone then it is** ignored when the held party rings the set.

- If call forward -don't answer is activated on the holding set, the forwarding is done unless COS Option 222 (Call Forwarding Inhibit on Hold Time-out) is in the holding set's COS. Other types of call forwarding are ignored.

- Once the held party starts ringing the holding set, the Call Hold Retrieve feature access code no longer picks up the held party because it is ringing the holding party. The Directed Call Pickup feature can then be used.

- Recall no answer is operational when the held party rings the holding set.

- When a party held by an industry-standard telephone attempts to ring the **holding industry-standard telephone, if the industry-standard telephone** is busy then a recall is performed. See RECALL.

- The Do Not Disturb feature is ignored when a held party rings an industry-standard telephone.

- Industry-standard telephones, *SUPERSET* telephones, and TIE trunks can retrieve remotely-held calls.

- The party is held on the line for the time in COS Option 254 (Call Hold Recall Timer) in the holding extension's COS. After that time, the held party starts ringing the line it is held on.

A call cannot be put on hold:

- if an Attendant is in the call

- when a party in the call is being rung back (Station Transfer Security)

- if there is a party in the call with the Non-Busy Extension feature enabled

- if there is a Call Announce Port in the call

- if a party in the call has the call on Consultation Hold

- if there is an Override in progress and the set is not the party being overridden

- if the set is a *SUPERSET 4*DN telephone using the Call Waiting feature

- if there is a Direct Trunk Select trunk in the call

- if the call is on Consultation Hold

- if the trunk in a two party call is still dialing digitsout

Programming   Assign an access code to Feature 21 (Call Hold) for industry-standard telephones to put a call on hold.

Assign access codes to Feature 22 (Call Hold Retrieve — Local) for industry–standard telephones to retrieve calls on hold at the industry-standard telephone and 23 (Call Hold Retrieve — Remote) to allow devices to retrieve calls at other extensions.

Enable COS Option 211 (Call Hold and Retrieve Access) for the station set to put a call on hold, and for all devices to retrieve a call.

Set COS Option 254 (Call Hold Recall Timer) in the holding extension's COS to the desired Call Hold recall time (1 to 10 minutes).

Enable COS Option 222 (Call Forwarding Inhibit On Hold Timeout) in the extension's COS, if forwarding is not desired on a hold time-out.

Operation   Operation varies depending upon the type of device as described below.

Industry-standard Telephones

To place a call on hold:

- Flash the switchhook — transfer dial tone is returned.

- Dial the Call Hold code.

- **Dial tone is returned.**

The caller is held and hears music, if provided. The extension may make or receive calls or access features in the normal manner.

To retrieve the call locally:

- Obtain dial tone.

- Dial the Call Hold Retrieve – Local access code.

- The set is reconnected to the held call.

To retrieve the call remotely (from another extension):

- Obtain dial tone.

- Dial the Call Hold Retrieve – Remote access code.

- Dial the number of the extension holding the call.

- The call is connected to the remote extension.

SUPERSET Telephones

To Place a Call on Hold:

- Inform the caller, then press the red HOLD key. The call is held and the caller hears music, if provided.

- The line status display associated with the call on hold flashes as a reminder.

- The set may select another line to make calls or to access features in the normal manner, or hang up.

To Retrieve the Call at a SUPERSET telephone that has an appearance of the held line:

- Press the Line Select key associated with the call on hold. The call is connected to the remote set.

The set user can add a call on hold to another line to form a conference or to move an established call from one line to another; see ADD HELD.

To Retrieve the Call at a SUPERSET telephone that does not have an appearance of the held line:

- Obtain dial tone.

- Dial the Call Hold Retrieve – Remote access code.

- Dial the number of the extension holding the call.

- The call is connected to the SUPERSET telephone.

Holiday Messages

Description   4.24 SUPERSET telephones can display a holiday message at Christmas and New Year's

Every minute, the holiday messages alternate with the usual time and date message that appear on the *SUPERSET* telephone display.

Conditions The Christmas message is displayed from December 23 to December 27 and the New Year's message from January 1 to January 4.

Programming Enable System Option 20 (Holiday Messages) to show holiday messages.

Operation The regular message and the holiday message alternate every minute.

Intercom

Description 4.25 Line Select keys on a *SUPERSET 4* telephone that are not used for lines or Speed calls may be used as intercom connections. Whenever a *SUPERSET 4* telephone user presses an intercom key, the system accesses the *SUPERSET 4* telephone programmed to that intercom key and the caller is connected to the called *SUPERSET 4* telephone's Call Announce Port.

Conditions The *SUPERSET 4* telephone receiving the intercom call must be equipped with a Call Announce Port. (See CALL ANNOUNCE.-)

Programming See CALL ANNOUNCE.

Operation To access an intercom number from a *SUPERSET 4* telephone:

- Press the appropriate key -the calling *SUPERSET 4* telephone is connected as an intercom call to the called *SUPERSET 4* telephone's Call Announce Port.   .

The caller hears only one short ringback tone and the called party receives only a short warning tone before the connection is made. If the called *SUPERSET 4* telephone does not have a Call Announce Port, or has one that is busy, or is busy itself, the caller receives busy tone.

Last Number Redial

Description 4.26 This feature allows *SUPERSET* telephone users to redial the last manually-dialed internal or external number with a single key operation.

Conditions The following conditions apply to this feature:

- The redial feature is not available when a consultation hold is in progress.

- The redial number is changed when an internal destination is successfully dialed or a trunk group is dialed and found busy or an external number is successfully   dialed.

- The REDIAL softkey appears when the conditions mentioned immediately above are met.

- The feature applies to consoles also; see ATTENDANT LAST NUMBER RE-DIAL.

- The number is not updated when dialing on Direct Trunk Select or Private Trunk lines.

- The number is not updated after a call is made using Speedcall or System Abbreviated Dial.

- When the REDIAL softkey is pressed, the rules for initiating dialing and selecting a line apply as if the user had selected a Speedcall key; see LINE SELECTION.

- The Redial number contains only the digits dialed until ARS dialing is completed, and the two parties are talking without further ARS processing. Digits dialed during the established call are not stored in the Redial number.

- The Forced Account codes feature disables Last Number Redial.

- Hotel/Motel internal only call restrictions applied to this extension disables Last **Number Redial.**

Programming   Enable System Option 29 (*SUPERSET* Telephone Last Number Redial).

Operation   Operation varies depending upon the device as described below.

SUPERSET 3 and *SUPERSET 3*DN Telephones

- Press the REDIAL key.

SUPERSET 4 and *SUPERSET* 4DN Telephones

- Press the REDIAL softkey.

Line Privacy

Description   4.27 This feature ensures that conversations on Key, Direct Trunk Select, and Private Trunk Lines are private if so desired. When such a line is in use at one set, other appearances of the line cannot join the conversation.

Conditions   The following conditions apply to this feature:

- By default, Line Privacy is enabled for every line.

- *SUPERSET 3*DN, *SUPERSET 4* and *SUPERSET 4*DN telephones can use the Privacy Release feature to disable privacy during a call.

- A maximum of five patties can be on the line at a time (including the industry-standard telephone, *SUPERSET* telephone, or trunk).

- Line Privacy cannot be programmed to be disabled on key lines of logical lines.

- Direct line selection by the user is the only way to join a call in progress on a line. The system does not choose an occupied line automatically; see **LINE SELECTION.**

Programming   To disable line privacy, disable COS Option 240 (Line Privacy) in the COS of the **industry-standard telephone,** *SUPERSET* telephone, **or trunk of the line.**

Operation   The two modes of operation are described below.

Line Privacy Enabled

When the line is in use, attempts by other *SUPERSET* telephones with appearances to access the line are ignored. If it is a key line of an industry-standard telephone, and the telephone goes offhook then it receives busy tone.

Line Privacy Disabled

When the line is in use, any other appearance that accesses the line joins the conversation, preceded by the override warning tone. For key lines of industry-standard telephones this includes the station when it goes offhook.

iine Selection

Description   4.28 The *SUPERSET* telephones are equipped to have many line appearances programmed on them. When the user of the set initiates dialing, the system selects a line for dialing. When the set is ringing and the user goes offhook, the system selects the line to answer. The user can also select a specific line to place or answer a call.

When the user goes offhook, the system checks for an available line appearance. The system looks at the prime line first. If it is idle then it is selected. Otherwise the rest of the lines on the set are scanned for the first personal line that is idle or a single appearance key or multicall line that is idle and is not an in-only line. If such a line is found then it is selected for dialing. Direct Trunk Select and Private Trunk lines are never automatically selected and key and multicall lines that have more than one appearance (in the system) are never selected. If a line is selected then the user is put dialing on that line. If there are no available lines then the user is prompted to select a line to dial on.

If the user initiated dialing by dialing a digit or pressing a Speedcall key, the same line selection process is done as with going offhook. When the system or the user selects a line, the system then automatically initiates Speedcall dialing for the SPEEDCALL key initially pressed.

When a user goes offhook to answer a call, the system scans the set from the prime line up the set, to find a line that is actually ringing the set. The system selects the first line found and answers the call on that line.

Conditions   The following conditions apply to this feature:

- The line selection mode is entered when a line is put on hold on a *SUPERSET* telephone; see HOLD.

- If the user presses a Speedcall key and has to select a line to use, if a Direct Trunk Select or Private Trunk line is selected then the Speedcall key is ignored.

- Line selection after pressing the REDIAL softkey is treated the same as pressing a Speedcall key.

- COS Option 604 (immediate Line Select) alters the implicit dialing on the keypad and through Speedcall keys (it has no effect on the selection of a line). If disabled, the user must go offhook or select a line to start dialing immediately (if the user goes offhook, the line selection mentioned previously is done). If a Speedcall key is pressed, and a line is available then the user must go offhook within a preset time or the system ignores the Speedcall attempt. If there is no line available then when the user selects a line the user must go offhook within a preset time.

Programming   Enable COS Option 604 (Immediate Line Select) for *SUPERSET* telephones.

Operation   None

Messaging -Advisory

Description   4.29 This feature allows a *SUPERSET 4* or *SUPERSET 4*DN user to provide a short message to be displayed on a *SUPERSET 4*DN telephone, *SUPERSET 4* telephone or Attendant Console that calls the set. The message replaces the time and date display on the sets where it is activated; see ATTENDANT SETUP OF SET ADVISORY MESSAGES.

The system provides the following system-wide messages:

Message Number	Default Message
01	IN A MEETING
02	OUT OF TOWN
03	ON VACATION
04	OUT ON A CALL
05	OUT TO LUNCH
06	GONE FOR DAY
07	GONE HOME
08	IN TOMORROW
09 through 15	(BLANK)

Optionally, set users can be permitted to change these messages.

NOTE: Any changes to a message apply system-wide; the system has only one set of 15 messages.

Conditions   The following conditions apply to this feature:

- This feature applies only to *SUPERSET 4* and *SUPERSET 4*DN telephones.

- A message currently in use cannot be altered.

- The message is not displayed by the telephone that set it when it is in Night Service; however, another telephone (or console) calling that telephone receives the message on its display.

Programming   To permit set users to create or change messages, enable COS Option 605 (*SUPERSET –* Message Program) in the set's COS.

Operation   Operation varies depending upon the type of set as described below.

SUPERSET 4 Telephone

To Activate an Advisory Message:

- Press the MSG **softkey** (and SEND MSG **softkey,** if required). If displayed message is inappropriate, press the NEXT **softkey** repeatedly to cycle through the messages, or dial the message number (01 to **15),** if known.

- When the desired message appears, press the ON **softkey.** The selected message is now active and displayed on the LCD. Any *SUPERSET 4*DN telephone, *SUPERSET 4* telephone or console calling the set receives the message on its display.

To Deactivate an Advisory Message:

- Repeat procedure for activating a message, except press the OFF **softkey.**

To Program Advisory Messages:

- Press the PROGRAM **softkey.**

- Press the MSG **softkey.**

- If required, press the SEND MSG **softkey.**

- In response to display DIAL IN MSG. NUM., dial message number (01 through1 5).

Messages 01 through 08 are preprogrammed as described. Selecting a message number in this group causes the existing message to be overwritten.

- The display shows NOW ENTER MSG. Dial in the message as follows:

Both numeric and alpha characters can be used in a message.

Keys 2 through 9 and *on the keypad are identified with alpha characters. Press the key associated with the first character in the message, and a character is displayed in the alphanumeric display. If this character is not correct, repeated presses on the key cycle the display through all the characters for that key. When the displayed character is correct, press the NEXT softkey. The * key also gives four special characters (. Q Z ') when pressed repeatedly; the #, 1, and 0 keys provide no special characters.

Repeat the above step for remaining characters in the message. For spaces, press the NEXT softkey again.

There are two ways to correct a programming error:

1. Use the ◄— softkey to backspace and clear an incorrect entry.

2. To cancel the entire procedure before the message has been saved, press the EXIT softkey.

When the message is complete, press the SAVE softkey.

SUPERSET 4DN Telephone

To Activate an Advisory Message:

● Press the MESSAGING softkey.

● Press the ADVISORY softkey.

● If displayed message is inappropriate, press the NEXT MSG softkey repeatedly to cycle through the repertoire of messages. If the message number is known, press the SHOW MSG NO. softkey, dial the message number (01 through 15) and press the ENTER softkey.

● Press the TURN MSG ON softkey. The selected message is now displayed on the LCD. Any *SUPERSET 4*DN telephone, *SUPERSET 4* telephone or console calling the set receives the message on its display.

To Deactivate an Advisory Message:

● Press the MESSAGING softkey.

● Press the ADVISORY softkey.

● Press the TURN MSG OFF softkey.

To Program an Advisory Message:

● Press the MESSAGING softkey.

● Press the ADVISORY softkey.

● Press the SHOW MSG NO. softkey or the NEXT softkey. Dial an unused message number, unless an existing message is to be changed.

● Press the CREATE softkey. Dial in the message as follows:

Letters are displayed on the LCD as they are dialed on the telephone keypad. The first press of any of these keys displays the first letter that appears on its key cap. The second press of the same key changes the display to the second letter and so on. When all the letters associated with a key have been displayed, the number is displayed. Further presses cycle through the letters again. When the desired letter is displayed, enter it by pressing the ➤ softkey or by entering the next letter, if it is on a different key. (The ➤ key is also used to enter spaces). Follow the same procedure to find and enter the other letters in the name. If an error is made, press the

Telephone keypad key caps 1, *, 0, and # are not marked with all the characters they can enter. They are as follows:

Key	Characters
¦	! ? % 1
*	' _ *
0	@ & $ 0
#	. , / #

When the message is complete, press the SAVE softkey. The message is now saved.

Messaging -Call Me Back

Description

4.30 A set user calling a busy or unanswered set can leave a message for the party to return the call. The Message Waiting indication can be:

● A flashing lamp on the set at 0.5 seconds on, 3.5 seconds off (if equipped),

● An indication on the set's display (if equipped),

● Ringing at the set with a distinctive ringing pattern.

Message Waiting indication continues until the set user reads the message.

Messages can be read at any time (i.e., when the set is idle or during a call).

On *SUPERSET 4* and *SUPERSET 4*DN telephones, the display shows the time of the call, and the caller's extension number and name (if programmed).

Optionally, the system can be programmed to record each occurrence of Message Waiting on the system printer. See ATTENDANT MESSAGE REGISTER AUDIT.

Conditions

The following conditions apply to this feature:

● Messages can be left at industry-standard and *SUPERSET* telephones.

● Only one message exists between any two parties in the system at anytime. Leaving a message from A to B cancels the message left from B to A.

● The message waiting indication is not active while the set is in use.

● When sending a message using a feature access code, if the destination set cannot receive messages, re-order tone is returned.

● Messages cannot be left for members of a recording group, an Automated Attendant recording group, or a COV voice mail port.

● A message is canceled automatically if the sender and receiver have a telephone conversation before the message is read or the receiver leaves a message for the sender. Note that this does not apply to messages from the console. These must be canceled at the Console.

● The system cancels the message automatically after 24 hours if System Option 7 (Cancel 24-hour Message Waiting) is enabled; otherwise, it is not canceled by the system.

● 100 messages can be active at a time.

● If COS Option 231 – Message Waiting Setup – Bell is enabled in the industry-standard or *SUPERSET* telephone's COS:

  – Message Waiting indication is three cycles of 3.5 impulse per second (ips) ringing. This is in addition to the visual indicators on *SUPERSET* telephones.

  – The set receives ringing each time it returns to idle (10 seconds after) and every 20 minutes while the set is idle until the message is read, canceled or acted upon.

Programming   To allow industry-standard and *SUPERSET 3* telephones in a COS to receive messages, enable COS Option 23 1, Message Waiting Setup – Bell or COS Option 232, Message Waiting Setup – Lamp if the industry-standard telephone is equipped with a message waiting lamp.

NOTE: These two COS Options are mutually exclusive. Neither of them is required for messaging on other *SUPERSET* telephones.

To allow industry-standard and *SUPERSET 3* telephones in a COS to send messages, enable COS Option 259 (Message Sending) in that COS. This feature is not available with Generic 1002.

Industry-standard and *SUPERSET 3* telephones need access codes to send or answer messages. In CDE Form 02 (Feature Access Codes), assign access codes to Feature 41 (Send Message) and Feature 42 (Call Message Sender of Oldest Message). This feature is not available with Generic 1002.

Enable COS Option 231 (Message Waiting Setup-Bell) to allow *SUPERSET 4, SUPERSET 3*DN, and *SUPERSET 4*DN telephones to warble when a message is sent.

In CDE form 04 (System Options/System Timers), enable System Option 07 (Cancel 24-hour Message Waiting) if messages are to be canceled by the system.

Operation   Operation varies depending upon the type of device as described below.

Industry-standard and *SUPERSET* 3 Telephones

To send a message to a busy or unanswered set:

- Dial the Send Message access code.

- Dial the extension number.

- Dial tone is returned. Re-order tone is returned if the other telephone cannot receive messages.

To answer a message:

- Go off-hook.

- Dial the Call Message Sender of Oldest Message access code.

- Message sender is called. Re-order tone is returned if there are no messages waiting.

SUPERSET 4 Telephones

To Send a Message:

- Dial the Extension number.

- Press the SEND MSG softkey. This softkey appears only if the called telephone is able to receive messages, or,

- Follow the procedure given for industry-standard telephones.

To Cancel a Message:

- Call the extension.

- Press the MSG softkey. The message is canceled and the call is terminated.

Message waiting isjndicated on the receiving *SUPERSET 4* telephone by the word MSG flashing on and off. In addition, the LCD shows the number of messages waiting when new messages arrive.

To read messages while the telephone is idle:

- Press the MSG softkey. The display indicates the number of messages to be read.

- Press the READ MSG softkey. The message is displayed.

- To call the message sender, press the CALL softkey, or,

- To clear the message, press the CANCEL softkey.

If there are more messages to be read, the NEXT softkey appears. To read additional messages:

- Press the NEXT softkey. Follow the procedure above for each message.

To read messages during a call, proceed as follows:

- Press the SELECT FEATURES key.

- Dial '4' (feature 4 is message (4:MSG)).

- Press the READ MSG softkey. The message is displayed. To cancel a message once it has been read, press the CANCEL softkey.

If there are more messages to be read, the NEXT softkey appears. To read additional messages:

- Press the NEXT feature key. Follow the procedure above for each message.

SUPERSET 3DN Telephone

To send a message:

- While receiving busy tone or ringback, press the MESSAGE key if the MESSAGE LED is lit steadily.

- Dial tone is returned, or,

- Follow the procedure given for industry-standard telephones. This is convenient when leaving a message without calling the message recipient.

The MESSAGE LED flashes whenever the telephone is idle and has a message waiting for it.

To answer a message:

- Press the MESSAGE key while receiving dial tone or while on-hook (if Immediate Line Select is enabled).

- Message sender is called. Nothing happens if there are no messages waiting.

SUPERSET 4DN Telephone

To send a message:

- While receiving busy tone or ringback, press the LEAVE A MSG softkey. This softkey appears only if the other telephone is able to receive messages.

- The top line of the display briefly shows a confirmation and the call is terminated, or,

- Follow the procedure given for industry-standard telephones.

The MESSAGE LED flashes whenever the telephone is idle and has a message waiting for it. Also, the second line of the LCD shows on the right the number of messages waiting; e.g., < 1 MSG >.

To read the messages:

- If engaged in a call, press the SUPERKEY.

- Press the MESSAGING softkey; the top line of the LCD shows the number of messages waiting.

- Press the READ MSG softkey. The LCD second line shows the extension number and the time of the call.

- Press the CALL softkeyto call the party that left the message. This softkey appears only when the telephone can dial the call (e.g., idle or listening to dial tone), or,

- Press the ERASE softkey to cancel the message.

If there are more messages, the NEXT MSG softkey appears. To read these messages:

- Press the NEXT MSG softkey; the next message is displayed. Follow the procedure above for each message.

- When there are no more messages, press the SUPERKEY to exit.

To view messages sent:

The *SUPERSET 4DN* telephone also has a feature to view messages that it has sent. To view the messages:

- Press MESSAGING softkey.

- Press MSGS I SENT softkey.

  - For each message, the set displays the name, extension number, time and date that the message was sent.

  - A softkey also appears that allows message to be canceled.

Override (Intrude)

Description 4.31 This feature allows a user who encounters a busy extension to enter the conversation. Before override voice contact is established, the overriding party and both patties in the original conversation receive a warning tone. The tone is repeated at regular intervals while the overriding party is connected to the existing call. Display *SUPERSET* telephones are informed who is overriding the call.

An override can be done to the Call Announce Port of a *SUPERSET 4* telephone; see OVERRIDE ANNOUNCE.

For override of a telephone with Do Not Disturb set; see DO NOT DISTURB.

Conditions The following conditions apply to this feature:

- If there is a call-me-back message outstanding between the overriding party and the overridden party, it is canceled. This is not done if the console overrides.

- The overriding party cannot manipulate the original connection in any way.

- If the overridden extension puts the call on consultation hold or goes on-hook, the intruding extension is dropped and receives reorder tone.

- If *SUPERSET* telephones involved in a conversation have multicall appearances, an override only occurs if all appearances are busy. Otherwise, the calling extension receives ringing and the idle multicall appearance rings if programmed to do so.

- The warning tone is given to all internal parties in the call being overridden.

- If the overridden call collapses to a two party call with just the overriding and the overridden party, then the override condition is cleared and a normal two-party call continues.

- If a key line is overridden, if the root extension of the line is in the call on the line then that telephone is overridden. If the extension is not in the call **on the line then the first "i-busy"** *SUPERSET* telephone **using one of the** key line appearances is overridden.

- If a logical key line is overridden then the first "I-busy" *SUPERSET* telephone using one of the line appearances is overridden.

- An extension can only be overridden when talking to a party or in a conference call.

- If the caller is prevented from overriding when the override is attempted, the caller receives reorder tone.

- If the extension called becomes idle while the caller is listening to busy tone, when the caller attempts to override, an override is not done. Instead, a new call attempt is made to the extension as if the extension was dialed again.

The user cannot override:

- a telephone on hold,

- **an industry-standard telephone,** *SUPERSET* telephone, DISA **trunk, or TIE** trunk, with COS Option.216, Data Security or COS Option 238, Override Security in its COS,

- an extension with a call on consultation hold and the extension does not have the non-busy extension feature enabled (see NON-BUSY EXTENSIONS),

- **a consultee,**

- a busy hunt group,

- a logical multicall line,

- an industry-standard telephone key line that is holding a party (but is not holding the party on the key line),

- a conference call on consultation hold,

- a 4 party call with one party flashed out of the conference,

- a call with a Call Announce Port in it,

- a call that has another party in the call with the Non-busy Extension feature enabled,

- a call with the attendant in it,

- a call with 5 parties in it,

- an extension that is overriding another extension,

- a member of a recording hunt group.

Programming

To allow extensions in a CO5 to override, enable COS Option 500 (Override) in that COS.

Industry-standard telephones, *SUPERSET 3* **and** *SUPERSET 3*DN **telephones** need an access code to perform Override. Assign an access code to Feature 31 (Executive Busy Override). This access code must be a single digit.

*SUPERSET 3*DN telephones can be programmed with an Override feature key. This is done in the nested Expand Set form of CDE Form 09, (Station/*SUPERSET* Sets).

Operation

Operation varies depending upon the type of set as described below.

Industry-standard and *SUPERSET* 3 **Telephones**

- While receiving busy tone, dial the Executive Busy Override Access Code. After the warning tone, the telephone is connected to the call.

SUPERSET 3DN Telephone

- While receiving busy tone, press the Override feature key. After the warning tone, the telephone is connected to the call.

SUPERSET 4 Teiephone

- While receiving busy tone, press the OVERRIDE softkey; this softkey appears only when override is permitted.

- After a warning tone, the *SUPERSET 4* telephone is connected to the call.

SUPERSET 4DN Telephone

- While receiving busy tone, press the INTRUDE softkey; this softkey appears only when override is permitted.

- After a warning tone, the *SUPERSET 4*DN telephone is connected to the call.

Override Announce

Description 4.32 This feature allows a caller reaching a busy *SUPERSET 4* telephone to override to the called set's Call Announce Port. This operation takes precedence over normal override.

Conditions The following conditions apply to this feature:

- The *SUPERSET 4* telephone must be on a call.

- If the *SUPERSET 4* telephone being called does not have a Call Announce. Port, or is in Handsfree mode (the speaker is turned on), a normal Override occurs; see OVERRIDE (INTRUDE).

- If the *SUPERSET 4* telephone has the Non-busy Extension feature enabled then a normal override is performed.

- If the Call Announce Port is busy or there are not enough resources to complete the override to the Call Announce Port, reorder tone is returned.

- The *SUPERSET 4* telephone being called cannot:

    - itself be overriding another party

    - have a conference on consultation hold

    - be in a 4 party call that has been put on consultation hold by one of the parties in the call.

- If a key line is called and if the root of the key line is the first party in the call, then an Override Announce is done if the party picked to be overridden has a Call Announce Port programmed; otherwise a normal override is done.

Programming Enable COS option 501 (Override Announce) in the overriding set's COS.

Program an Executive Busy Override access code (Option 31) in CDE Form 02 (Feature Access Codes).

Operation Same as Override; see OVERRIDE (INTRUDE).

Pickup – Local and Directed

Description 4.33 A telephone can be assigned to a pickup group, and can answer any ringing telephone within that group. This is Local Pickup.

Directed Call Pickup allows an extension user to answer any ringing telephone within the system.

See PICKUP GROUPS.

Conditions   The following conditions apply to this feature:

●   Local Pickup operates only for extensions within the same Pickup Group.

●   For ringing *SUPERSET* telephones, the ringing line is scanned for from the prime line up the *SUPERSET* telephone until a line that can be picked up is found.

●   For Directed Call Pickup, the scan is done on the extension specified and not on the line appearances of that extension (unless the *SUPERSET* telephone has multicall line appearances of itself).

●   For pickup groups, the scan for a ringing extension always starts with the first pickup group member (terminal scanning) each time a pickup is attempted. A ringing extension is determined to be ringing based on the scan on the extension for a ringing line that can be picked up.

●   Reorder tone is returned if there is no call to pick up (or it is already picked up).

●   The following call types cannot be picked up:

-   — cal I backs,

    — wakeup/reminders,

    — calls to members of recording hunt groups,

    — calls ringing back an extension (Station Transfer Security),

    — Direct Trunk Select or Private Trunk lines,

    — silently ringing line appearances or delay ring line appearances that have not begun to ring,

    — console calls when a consultation hold is in progress,

    — callers that cannot connect to the party picking up the call (see DEVICE INTERCONNECTION CONTROL),

    — the party picking up the call and the ringing extension cannot connect,

    — the *SUPERSET* telephone is Auto-Answering the call.

Programming   Program Pickup Groups in CDE Form 10 (Pickup Groups).

Assign an access code to Feature 08 (Dial Call Pickup).

Assign an access code to Feature 09 (Directed Call Pickup).

If desired, assign a Call Pickup feature access key to *SUPERSET 3*DN telephones. This is done in the nested Expand Set form of CDE Form 09 (Station/ *SUPERSET* Sets).

To permit sets in a COS to pick up calls outside their Pickup Group, enable COS Option 218 (Directed Call Pickup) in that COS.

Operation   Operation varies depending upon the type of set as described below.

Local Pickup — Industry-standard, *SUPERSET 3* and *SUPERSET 3*DN Telephones

When a telephone in the same Pickup Group rings:

* **Lift the handset-dial tone is returned.**

* Dial the Call Pickup code-the call is connected.

Local Pickup — *SUPERSET 4* Telephones

When a telephone in the same Pickup Group rings:

* **Lift the handset-dial tone returned.**

* Press the PICKUP softkey -the call is connected.

Local Pickup — *SUPERSET* 4DN Telephones

When a telephone in the same Pickup Group rings:

* **Lift the handset-dial tone returned.**

* Press the PICKUP CALL softkey -the call is connected

Directed Pickup -All Telephone Types

When a telephone outside the Pickup Group rings:

* **Go off-hook** — dial tone is returned.

* Dial the Directed Call Pickup code.

* Dial the number of the ringing telephone -the call is connected.

Privacy   Enable/Privacy   Release

Description   *4.34* **A** *SUPERSET 4, SUPERSET 3*DN **or** *SUPERSET 4*DN **telephone may have appearances of Key, Direct Trunk Select and Private Trunk lines that are shared with other sets. When Privacy is enabled, while a conversation is in progress on a line, other sets with an appearance of that line are denied access. See LINE PRIVACY. The user of the line can, however, use the Privacy Release feature to allow the other sets to join the conversation.**

Conditions   The following conditions apply to this feature:

- Privacy is effective only against other appearances of the line; it has no effect on Override.

- Privacy Release is available only on *SUPERSET 4, SUPERSET 3*DN or *SUPERSET* 4DN telephones.

Programming   To permit Privacy Release operation at a *SUPERSET 3*DN telephone, program a PRIVACY RELEASE Feature Access Key in the appropriate Expand Set (nested) form of CDE Form 09 (Station/*SUPERSET* Sets).

Operation   Operation varies depending upon the type of set as described below.

SUPERSET 3DN Telephone

- During an established call, press the PRIVACY RELEASE feature access key. The LCD shows the status of privacy on the line as follows:

  - LCD clear indicates Private.

  - LCD dark indicates Not Private.

- Another telephone user with an appearance of the same line can now enter the conversation by pressing the appropriate Line Appearance key.

- Reestablish privacy by pressing the key again.

SUPERSET 4 Telephone

- During an established call, press the PRIVACY REL softkey. Another telephone user with an appearance of the same line can now enter the conversation by pressing the appropriate Line Select key.

- Reestablish privacy by pressing the PRIVACY softkey.

SUPERSET 4DN Telephone

- During an established call, press the REL PRIVACY softkey. Another telephone user with an appearance of the same line can now enter the conversation by pressing the appropriate Line Select key.

- Reestablish privacy by pressing the MAKE PRIVATE softkey.

Reminder

Description   4.35 This feature allows an extension user to program the telephone to ring at a particular time. This can be used, for example, as an appointment reminder. **Also** see AUTOMATIC WAKEUP (Hotel/Motel feature).

Conditions   Do Not Disturb has no effect on Reminder.

Programming   Enable COS Option 202 (Alarm Call) in the extension's COS.

To enable industry-standard telephones, *SUPERSET* 3 telephones, and *SUPERSET 3*DN telephones to use this feature, enable System Option 11 (Automatic Wakeup), and assign an access code to Feature 32 (Automatic Wakeup).

Operation   Operation varies depending upon the type of set as described below.

Industry-standard, *SUPERSET* *3* and *SUPERSET* 3DN Telephones

To set or modify the Current Reminder Setting:

● Obtain dial tone.

● Dial the Automatic Wakeup code.

● Dial in the wakeup time. The time is specified by dialing the hour and minutes in 24-hour time format.

● Reorder tone is returned for an invalid time; dial tone is returned for a valid time.

To cancel a reminder:

● Obtain dial tone.

● Dial the Automatic Wakeup code, followed by four 9's.

● Replace the handset. The reminder is canceled.

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***SUPERSET* 4 Telephone**

To Display the Current Reminder Setting:

● Press the DISPLAY key.

● Press the REMINDER softkey.

● The LCD displays an acknowledgement if the reminder has expired.

To Set or Modify a Timed Reminder:

● With the handset on-hook, press the PROGRAM softkey.

● Press the REMINDER softkey.

● **Dial the desired time in 24-hour format. In case of error, use the ◄ softkey to back space and clear the incorrect entry. To cancel the entire entry, press the EXIT key. If there was a reminder already programmed, it remains in effect.**

To Acknowledge a Timed Reminder:

● Press the SAVE softkey.

At the programmed time, the telephone rings once and the LCD shows DIS-PLAY REMINDER. The reminder sof-tkey prompt flashes.

To acknowledge a timed reminder:

● If idle, press the REMINDER softkey; the word ACKNOWLEDGED appears on the LCD.

● If on a call when the reminder expires, the REMINDER softkey begins flash-ing, but pressing it does nothing. Press the DISPLAY key and then the RE-MINDER softkey to acknowledge it.

To Cancel a Timed Reminder:

● With the handset on-hook, press the PROGRAM softkey.

● Press the REMINDER softkey.

● Press the CANCEL sof-tkey.

SUPERSET 4DN Telephone

To Display the Current Reminder Setting:

● Press the SUPERKEY.

● Find and press the REMINDER softkey; the current reminder time is dis-played.

● Press the SUPERKEY to return to normal display.

To Set Up a Reminder:

● Press the SUPERKEY.

● Find and press the REMINDER softkey.

● Dial the desired time in 24-hour format. In case of error, use the ◄─ key.

● When the telephone is idle, a flashing ACKNOWLEDGE softkey appears. The softkey disappears when pressed and the LCD second line shows AC-KNOWLEDGED for about 2 seconds.

To Cancel a Reminder before it is honored:

● Press the SUPERKEY.

● Press the REMINDER softkey. The current Reminder time is displayed.

● Press the CANCEL softkey.

Second Language

Description   4.36 This feature allows *SUPERSET 4* and *SUPERSET 4*DN telephones to be used with a second language. The display text and softkey text are in the sec-ond language.

Conditions   The following conditions apply to this feature:

- The second language for the *SUPERSET 4* telephone is based upon the telephone itself.

- The language for the *SUPERSET 4*DN telephone is selected by a softkey. The language chosen stays with the Digital Line Card port if the telephone itself is changed.

Programming   None

Operation   Operation varies depending upon the type of set as described below.

SUPERSET 4DN Telephone

- Press the SUPERKEY.

- Find and press the Language softkey.

- Choose the desired language.

SUPERSET 4 Telephone

- Plug in the telephone with the appropriate language. The system responds with the appropriate language.

Secretarial Line

Description   4.37 A *SUPERSET* telephone programmed with a secretarial Multicall appearance of another extension can override the Do Not Disturb feature on the second set. The second telephone has Do Not Disturb active and the first telephone answers the calls. The secretary can override the second telephone's Do Not Disturb at any time by making the call on one of the Multicall appearances of the second telephone's Prime Line. If it is important to contact the second telephone, the first telephone can ring the second telephone, despite the Do Not Disturb feature.

See LINE APPEARANCES for information on Multicall appearances.

Conditions   The following conditions apply to this feature:

- The calling *SUPERSET* telephone has to make the call on the line appearance for the feature to operate.

- See DO NOT DISTURB for the interaction of Do Not Disturb with multicall line appearances.

- Only *SUPERSET* telephones can be secretarial sets; the other telephone can be of any type.

Programming   Program the secretarial set with at least one Multicall appearance, Secretarial variant, of the other extension, in the secretarial set's subform of CDE Form 09 (Station/*SUPERSET* Sets).

Operation   The other extension has Do Not Disturb enabled and there is an incoming call. At the secretarial set:

● **The multicall appearance rings.**

● Answer the call; the call needs to be transferred to the other extension.

● Press TRANS/CONF and dial the other extension's number.

● The other extension rings. Consult privately and/or hang up to transfer the call.

Speedcall

Description   4.38 This feature allows a *SUPERSET* telephone user to save frequently dialed telephone numbers and to access these numbers by pressing a single key. The quantity of Speedcall numbers available to a *SUPERSET* telephone user is dependent on the number of lines programmed to appear at the set. Only unassigned Line Select keys can be used to save Speedcall numbers.

Access codes for features such as Directed Call Pickup, Remote Call Hold Retrieve, and Call Forwarding may be programmed into Speedcall numbers. Forwarding to a Speedcall number can be programmed; see FORWARDING.

Conditions   The following conditions apply to this feature:

● Speedcall numbers can be made private so that they are not displayed when reviewed or used (similar to private Abbreviated Dial numbers).

● Only unassigned Line Select keys may be programmed with Speedcall numbers.

● Except for in the *3 and *S codes described below, the digit * may not appear in Speedcall numbers; *S must be the last digit in the string.

● *3 and *5 are ignored in the digit string if ARS leading digits were dialed manually before the Speedcall was selected.

● The same set of Speedcall numbers can be programmed for multiple extensions by using key templates; see GUEST ROOM *SUPERSET* KEY PROGRAMMING.

● COS Option 610 (*SUPERSET* 3DN/*SUPERSET* 4DN Guest Room Template) and Speedcall are mutually exclusive on a *SUPERSET* 3DN or *SUPERSET* 4DN telephone.

● A Speedcall key can be used whenever the *SUPERSET* telephone is idle or when dialing if the manually dialed digits are ARS leading digits. The

Speedcall digits will be appended to the ARS digit string; otherwise, the manually dialed digits will be replaced by the Speedcall digits).

- If ARS leading digits appear in the Speedcall string, a   *3nn is interpreted as insert manual digits.

- When Speedcalls are used in ARS, there is a minimum display update of 5 seconds to allow the user to view the number.

- See LINE SELECTION for operation when the prime line is not free for the call and another line has not been selected.

- Private numbers are not displayed in SMDR reports.

- A Speedcall number may contain an Abbreviated Dial number.

- Personal Speedcall numbers cannot be saved if a Copy Database or Verify Database operation is in progress.

Programming   All programming is done at the telephone.

Operation   The following codes can be inserted into a stored number:

*3nn -wait for nn manually dialed digits

nn can range from 01 to 14

e.g., the general number for external directory assistance is 9 + 1 + (area code) + 555-1212; the area code is to be dialed manually. The number to be stored would be 91*3035551212.

*5 — call to Call Announce Port. This code must be at the end of the number. See CALLANNOUNCE.

Operation varies depending upon the type of set as described below.

SUPERSET 3 Telephone

To Set Up or modify a Speed Call Number:

- If a call is received or originated at any time during the programming of a Speedcall, the Speedcall activity is immediately exited.

- While the set is idle and the handset is on-hook, press the PROGRAM/SAVE feature key.

- Choose and press an unused Speedcall key.

- Dial the number to be stored or dial a Feature Access Code followed by the applicable digits.

- Press the PROGRAM/SAVE key; the Speedcall number is now saved.

To dial a call using Speedcall:

* Press the programmed Speedcall key with the telephone on-hook (If Immediate Line Select is enabled), or,

* Pick up the handset or press the SPEAKER ON/OFF key, then press the Speedcal I key.

To access a feature assigned to a Speed Call key:

* Press the programmed Speedcall key with the telephone on-hook, or,

* Pick up the handset or press the SPEAKER ON/OFF key, then press the Speedcall key.

SUPERSET 4 Telephone

To check saved numbers:

* Press the DISPLAY key

* Press the required Line Select key. The currently saved Speedcall number is displayed on the LCD. If the saved number is more than 16 digits long, the ➤ softkey appears. Press the ➤ softkey to view the remaining characters.

To Set Up or Modify a Speedcall Number:

* With the handset on-hook, press the PROGRAM softkey.

* The telephone prompts SELECT A S/C KEY.

* Press an unused Speedcall key.

* If desired, press the PRIVATE softkey so that the telephone does not display the digits when dialing a Speedcall. This also prevents the Display feature from revealing the number.

* The set prompts: ENTER NUMBER

* Dial the number to be stored or dial a Feature Access Code followed by the applicable digits.

* Check the entry on the LCD. If correct, press the SAVE softkey.

* The set responds with THANK YOU. There is a two second delay and then the telephone runs through the Speedcall programming sequence again, allowing the user to continue storing Speedcall numbers. Press the EXIT softkey at anytime to quit the programming mode.

* To correct an error before saving the entry, use the EXIT softkey to cancel the entire entry, and then re-enter the digits.

To Use a Speedcall key as a Feature Access Code:

* Press the programmed Speedcall key with the telephone on-hook.

* Press the HANG UP softkey or the SPEAKER ON/OFF key.

SUPERSET 3DN Telephone

To Enter or Change a Speedcall Number:

- With the handset on-hook, press the PROGRAM **softkey.**

- Press an unused Speedcall key.

- Dial the number to be stored or press the **REDIAL** key to save the last number dialed. If no entry is made, the current entry is cleared.

- Press the PROGRAM **softkey;** the Speedcall number is now saved.

To dial a call using Speedcall:

- Press the programmed Speedcall key with the telephone on-hook; if Immediate Line Select is enabled, or,

- Pick up the handset or press the SPEAKER ON/OFF key, then press the Speedcail key.

To Set Up a Speedcall key as a Feature Access Code:

- With the handset on-hook press the PROGRAM **softkey.**

- Press an unassigned Speedcall key.

- Dial the **Feature Access** code and the extension number of the applicable set. To correct an entry, press the CANCEL feature key, then press the PROGRAM **softkey,** and restart the sequence.

- Press the PROGRAM **softkey.**

SUPERSET 4DN Telephone

To check saved numbers:

- Press the SUPERKEY.

- Find and press the DISPLAY KEYS **softkey** (use the MORE softkey).

- Press the required Line Appearance key. The Speedcall number currently saved is displayed on the LCD.

To program a Speedcall number:

- Press the SUPERKEY.

- Press the MORE **softkey** until the SPEED CALL **softkey** appears.

- Press the SPEED CALL **softkey.**

- Press a Line Appearance key not assigned as a line appearance.

- Dial the number to be stored. (If the redial number is to be saved, press the REDIAL softkey).

- If desired, press the MAKE PRIVATE softkey to prevent the DISPLAY KEYS function from revealing the number.

- Check the entry on the LCD. If correct, press the SAVE softkey. To correct an error before saving the entry, use the ◀— softkey to backspace and clear the incorrect entry, or press the BACKUP softkey to cancel the entire entry. Then re-enter the correct digits.

Split

Description

4.39 Split allows a *SUPERSET* telephone user, engaged in a conference call, to split the call between the conferees. Once active, swapping can take place between the calls, or the conference can be re-established.

Conditions

The following conditions apply to this feature:

- This feature is available only on *SUPERSET 3, SUPERSET 4,* and *SUPERSET 4DN* telephones.

- A 3-party conference must be active.

- Any one of the three parties may initiate Split.

- The party initiating Split must press the CONF feature key to re-establish 3-way conversation.

- There cannot be a console in the call.

- There can be no parties in the call holding the call.

- The call cannot be on consultation hold.

- **There cannot be an extension with the Non-Busy Extension feature enabled.**

- The other two parties cannot be Direct Trunk Select Line trunks.

- There cannot be a *SUPERSET* telephone in the call using the Add Held feature at the time.

- There can be no industry-standard telephone in the call with the Broker's Call feature enabled.

Programming

None

Operation

SUPERSET 4 and *SUPERSET* 4DN Telephones

- **A three-party conference is established.**

- Press the SPLIT softkey. The LCD indicates which party is connected. The other party is on hold.

- To converse with the other party press the SWAP softkey.

● To re-establish the conference, press the CONF   softkey.

Swap (Trade Calls)

Description   4.40 This feature permits a *SUPERSET* telephone user to alternate conversation between two calls. Call Swap places one call on hold while conversation continues with the other call. This feature is similar to the Broker's Call feature available on industry-standard telephones.

Conditions   The following conditions apply to this feature:

● Swap operates only on *SUPERSET* telephones.

● There must be a party in conversation and a party on consultation hold for Swap to operate.

● For a *SUPERSET 3*DN telephone to access this feature, a Swap feature access key must be programmed in the set's subform of CDE Form 09 (Station/ *SUPERSET* Sets).

● A swap cannot be done when talking to the console, a Call Announce Port, or a non-busy extension.

● The SWAP key on a *SUPERSET 3* or a *SUPERSET 3*DN telephone does a Swap Campon if a camped on caller is present and may be swapped in. Only one of the Swap or Swap Campon functions is available at the telephone at one time; see SWAP CAMPON.

● If there is another party in the call with a consultation hold then the Swap cannot be done.

Programming   None

Dperation   Operation varies depending upon the type of set as described below.

SUPERSET 3 and *SUPERSET* 3DN Telephones

There is a party on consultation hold and a party in conversation (e.g.,   TRANS/ CONF has been pressed and a new party called); proceed as follows:

● Press the SWAP key. The party in conversation is held, the held party is connected to the set.

● Pressing SWAP repeatedly alternately places one call on hold and connects the other call to the set.

SUPERSET 4 Telephone

There is a party on consultation hold and a party in conversation (e.g.,   TRANS/ CONF has been pressed and a new party called, or a conference has been split). Proceed as follows:

- Press the SPLIT softkey to break up the three party conference. The party in conversation is held, the held party is connected to the set.

- Press the SWAP softkey repeatedly to alternately place one call on hold and connect to the other call.

SUPERSET 4DN Telephone

There is a party on consultation hold and a party in conversation (e.g., TRANS/ CONF has been pressed and a new party called, or a conference has been split). Proceed as follows:

- Press the SPLIT softkey to break up the three party conference. The party in conversation is held, the held party is connected to the set.

- Press the TRADE CALLS softkey repeatedly to alternately place one call on hold and connect to the other call.

Swap Campon

4.41 This feature allows the user of a SUPERSET telephone to place the current call on hold and converse with a camped-on party. The telephone user can alternate between the two calls as required, form a 3-party conference, or release the telephone from the call, leaving the other two parties connected.

This also applies to members of hunt groups. The first extension in the hunt group that does not have Do Not Disturb activated and is logged in (UCD agent hunt groups) is able to swap in the first waiting caller on.the hunt group.

Normally the SUPERSET 3 and SUPERSET 3DN Swap operation is a "swap calls" operation; but it becomes a "swap campon" operation when there is a party camped on, and a Swap Campon is possible.

Conditions   The following conditions apply to this feature:

- For a SUPERSET 3DN telephone, this feature is accessed by a feature key.

- The feature is only available when talking in a call.

- When a call camps on to a key line then all SUPERSET telephones using an appearance of the line are able to use the feature.

- The caller that is swapped in is the first waiting caller; see CAMPON.

- The feature is unavailable when:

    - overriding a call or another party in the call is being overridden,
    - a console is in the current call,
    - a party has the current call on consultation hold,
    - a party has the call on hold,
    - the call is ringing back a party in the call (Station Transfer Security),
    - a Non-busy Extension is in the call.

Programming   None

Operation   Operation varies depending upon the type of set as described below.

SUPERSET 4 Telephone

A call is in progress at the set; a second caller camps on; the SWAP   CAMPON softkey appears:

- Press the SWAP CAMPON softkey; the current call is put on hold and the telephone is connected to the second caller.

- To return to the original conversation, press the SWAP   softkey, or,

- To form a conference, press the CONF   softkey, or,

- To release the telephone from the call, leaving the two other parties connected, press the RELEASE softkey.

*SUPERSET 4*DN Telephone

A call is in progress at the set; a second caller camps on; the CALL WAITING softkey appears:

- Press the CALL WAITING softkey. The current call is put on hold; the telephone is connected to the second caller.

- To return to the original conversation, press the TRADE CALLS   softkey, or,

- To form a conference, press the CONFERENCE   softkey, or,

- To release the telephone from the call, leaving the two other par-ties connected, press the Release Me softkey.

Tone   Demonstration

Description   4.42 This is a special facility to train the user to recognize the various tones the system generates. It also allows *SUPERSET 3*DN and *SUPERSET 4* DN users to adjust the ringer volume and pitch

Conditions   The following conditions apply to this feature:

- The *SUPERSET 4*DN telephone also has a special feature RING ADJUST to adjust the ringer volume and pitch.

- If no new tone is selected after a while then the tone demonstration feature is canceled and regular dial tone to allow normal dialing is returned to the extension.

Programming   Assign an access code to Feature 27 (Tone Demonstration).

Operation

Dial the Tone Demonstration feature access code plus the code for the tone to be played. The codes, the tones, and the main uses of each tone in the system are as follows:

I-l 0, 16, 22, 25 – Code is Unassigned

11 – Dial Tone

This tone is heard when dialing can start, for internal callers as well as for external callers. ARS dial tone, Interrupted dial tone and Transfer dial tone use this basic tone.

12 – Transfer Dial Tone

This tone is heard when dialing can start and the extension has a party on consultation hold; see TRANSFER DIAL TONE. The tone is the same as Interrupted dial tone.

13 – Busy Tone

This tone is heard when:

- a busy device is reached and campon to the device is not allowed (device type, COS options, etc.)

- during campon to a busy device

- devices are busy when a feature is accessed such as paging

14 – Special Busy Tone

This tone is heard by the calling party when a busy device is reached and campon to the device is allowed. Only some types of external callers receive this tone; see CAMPON.

15 – Standard Ringback Tone

This tone is heard by the calling party when a device is being rung. This is supplied to internal and external callers.

17 – Reorder Tone

This tone is heard when an illegal operation is attempted or when an invalid number is dialed (or no number is dialed at all); see ILLEGAL NUMBER INTERCEPT and VACANT NUMBER INTERCEPT also. This is the same tone as Busy tone; however, the cadence is different.

18 – Conference Tone

This tone can be heard when the attendant is in a conference; see ATTENDANT CONFERENCE.

19 -Call Waiting (Campon) Tone

This tone is heard by a busy extension when another extension camps onto the busy extension; see CAMPON WARNING TONE.

20 — Intrusion (Override) Tone

This tone is heard by a device overriding a call; see OVERRIDE (INTRUDE).

21 — Interrupted Dial Tone

See DISCRIMINATING DIAL TONE.

23 -Waiting Tone (Silence or Music on Hold)

This is the tone supplied to devices on hold or consultation hold and to devices camped on to busy devices, see MUSIC ON HOLD and CAMPON. Industry-standard telephones do not hear this tone.

24 -Paging Tone

This tone is heard when the pager is successfully accessed; see PAGING.

26 -Trunk Camp-on Double Beep Tone

This tone is heard by an extension when an external call or the attendant camps onto the extension; see CAMPON WARNING TONE.

27 — ARS Warning Tone

This tone is heard when an expensive route is accessed in ARS; see EXPENSIVE ROUTE WARNING.

28 — ARS Dial Tone

This tone is heard if dial tone is supplied from ARS during an outbound call. Refer to Practice 9109–094–220–NA, Automatic Route Selection and Toll Control.

29 — Override Warning Tone

This tone is heard by parties in a call while a conversation is being overridden; see OVERRIDE (INTRUDE).

30 — Privacy Release Tone

This tone is heard when an extension enters an existing call on a key, Direct Trunk Select, or Private trunk line; see PRIVACY/PRIVACY RELEASE.

31 -Auto-Answer Call End Tone

This tone is heard when a *SUPERSET* telephone that has the Auto-Answer feature enabled ends a call; see AUTO-ANSWER.

32 -Attendant Error Tone

This tone is heard when the attendant attempts an illegal operation.

33 — Ringer Pitch Adjust

Dialing this code starts the *SUPERSET 3*DN or *SUPERSET 4*DN telephone ringing and enables the ringer pitch adjust mode for the volume keys on the tele-

phone. Refer to Practice 9109-095-I 08-NA *SUPERSET* 3DN Telephone Description, and to Practice 9109-095-I 09-NA *SUPERSET 4*DN Telephone Description.

Transfer

Description   4.43 This feature allows a telephone user, on an established call, to put the call on consultation hold, dial a third party, and transfer the second party to the third party. The transfer can be done before the third party answers, after the third party answers, or if the third party is busy (Transfer Into Campon).

A *SUPERSET* telephone can consult privately with each party using the Swap feature (see SWAP) and then form a conference or perform a transfer.

An industry-standard telephone can consult privately only with the third party once prior to transferring or conferencing. For a description of Conferencing operation, see CONFERENCE. If COS Option 203 (Broker's Call) is enabled, the call cannot be transferred or conferenced.

Conditions   The following conditions apply to this feature:

- When an extension with a consultation hold in progress calls the console and the console answers, the console has the caller as the DEST party and the party held by the caller as the SOURCE party. The calling party no longer has the third party on consultation hold – it is on hold by the console.

- When a party is transferred to a third party while the third party is ringing, the display of the third party is updated to show the identity of the new caller.

- The *SUPERSET 4* and *SUPERSET 4*DN telephones provide visual indications on the the display that a consultation hold is in progress. The *SUPERSET 4*DN telephone identifies the call on consultation hold.

- For transfers to campon, see CAMPON.

- Device Interconnection checking is done between the party being transferred and the party being transferred to. An exception is when a Direct Trunk Select Trunk line is being transferred.

- See STATION TRANSFER SECURITY for situations where the transferring party accidentally hangs-up or attempts an illegal transfer.

- Private trunk lines cannot be transferred.

- Conferences can be put on consultation hold.

- Single parties on consultation hold receive system music.

- Calls may not be transferred to the paging circuit, to a conference, or to a Call Announce Port.

- COS Options 223 (Flash Disable), 400 (Contact Monitor), 228 (Manual Line), 224 (Flash for Attendant) prevent an extension from putting a party on consultation hold.

- COS Option 214 (Cannot Dial a Trunk After Flashing) and COS Option 215 (Cannot Dial a Trunk if Holding or Conf with One) prevent trunks from being accessed as the third party under certain circumstances.

- An extension with COS Option 233 (Never a Consultee) may not be consulted.

- See TRANSFER DIAL TONE for special dial tone on transfer.

- A call cannot be put on consultation hold if:

  - the party is an attendant
  - the party is a Call Announce Port,
  - the call has an incoming trunk in it and the Flash on incoming trunk feature is enabled. The same applies for outgoing trunks.
  - the call is on a private trunk line,
  - there is a party in the call using the ADD HELD feature enabled,
  - a party in the call is holding the call,
  - an extension in the call has the Non Busy Extension feature,
  - the call is ringing back one of the parties in the call (Station Transfer Security),
  - another party in the call is being overridden,
  - the extension is overriding a party in the call,
  - there are 5 parties in the call,
  - the call is already on consultation hold,
  - the call is a conference and the extension has the Broker's Call or Transfer With Privacy feature,
  - the call is a conference and the Flash In Conference option is disabled.

Programming   See FLASH CONTROL for restrictions on consultation hold.

See CONFERENCE for programming to allow conferences of more than three parties.

Operation   Operation varies depending upon the type of set as described below.

Industry-standard Telephones

On an established call:

- Flash the switchhook — dial tone is returned; the current party (second party) is on Consultation Hold and hears music, if provided.

- Dial the number of the third party.

- If desired, wait for the third party to answer (if the number is busy or does not answer, flash the switchhook to return to the held call).

● If desired, consult privately with the third party.

SUPERSET 3, *SUPERSET* 3DN and *SUPERSET* 4 **Telephones**

On an Established Call:

● Press the TRANS/CONF key -transfer dial tone is returned, the current
party (second party) is on Consultation Hold and hears music, if provided.

● Dial the number of the third party.

● If desired, wait for the third party to answer. (If the number is busy or does
not answer, press the CANCEL key to return to the held call).

● If desired, consult privately with this party

● If desired, switch between parties by pressing the SWAP key. The conversa-
tion with each party is private.

● To connect both parties, hang up, or press RELEASE softkey (if provided).

SUPERSET 4DN Telephone

On an Established Call:

● Press the TRANS/CONF softkey — transfer dial tone is returned. The current
party (second party) is on Consultation Hold and hears music, if provided.

● Dial the number of the third party.

● If desired, wait for the third party to answer. (If the number is busy or does
not answer, press the BACK TO HELD softkey to return to the held party. If
another call is desired without returning to the held party (e.g., wrong
number), use the NEW CALL softkey).

● If desired, consult privately with this party.

● If desired, switch between parties by pressing the Trade Calls softkey. The
conversation with each party is private.

● To connect both parties, hang up, or press RELEASE ME softkey.

Transfer With Privacy

Description   4.44 The Transfer With Privacy feature is like the Broker's Call feature but it
allows transfers to be done. A flash is interpreted as a Swap instead of an at-
tempt to conference, as with Broker's Call and a conference cannot be formed
by an extension with the feature enabled. However, unlike Broker's Call,
when the extension goes on-hook to transfer an extension, the transfer is not
prevented. As well, some consultation COS option checks are not done with
the Broker's Call feature but they are done for Broker's Call With Transfer.

Also see BROKER'S CALL (TRADE CALLS) for general information about Broker's Calls.

Conditions   The following conditions apply to this feature:

- COS Option 252 (Transfer With Privacy) is mutually exclusive with the following options:
    - 302 (Flash-in Conference)
    - 224 (Flash for Attendant)
    - 223 (Flash Disable)
    - 203 (Broker's Call)

- An extension with COS Option 233 (Never a Consultee) may not be consulted.

- COS Options 214 (Cannot Dial a Trunk After Flashing) and 215 (Cannot Dial a Trunk After Flashing If Holding or in Conference With One), do not apply to an extension with COS Option 252 (Transfer With Privacy) enabled.

Programming   If desired for extensions enable ipq
COS Option 252 (Transfer With Privacy).

Operation   **Industry-standard Telephones**

If Transfer With Privacy is enabled:

- If desired, switch between parties by flashing the switchhook.

- Hang up to connect both parties.

5. HOTEL/MOTEL FEATURES

GENERAL

5.1 This section describes the hotel/motel features supported by the SX-200 DIGITAL PABX for Generic 1002 and Generic 1003 software.

5.2 The SX-200 DIGITAL PABX Hotel/Motel feature package integrates standard PABX features with custom Hotel/Motel features. It is also possible to use the SX-200 DIGITAL PABX in conjunction with a Property Management System.

Hotel/Motel features available from the Attendant console include:

- **check current room status**
- modify room status (assign guest rooms)
- set automatic Wake-Ups for guests (Alarm Call)
- request reports of all current wake-ups
- inhibit room to room calling (Call Blocking)
- assign outgoing call privilege on a room by room basis (Call Restriction)
- request a message register audit
- request a room status audit
- request a wake-up audit

In addition the 5X-200 DIGITAL system provides :

- automatic message register for guest rooms
- **automatic room status conversion**
- wake-up calls to be set up by guest
- **automatic Wake-Ups (Alarm Call)**
- guest room *SUPERSET* key setup
- maid in room / room status updates from guest room
- maid status display from *SUPERSET* telephone
- **property management system interface (PMSI)**
- room status display from *SUPERSET* telephone
- generate single line printouts for events such as unanswered wake-up calls, set up or canceled wake-ups, message register overflow.
- generate console alarms and maintenance logs

Detailed information on the Attendant Console may be found in Practice 9 109-094-3 15–NA, Attendant Console Description.

Attendant Guest Room Softkey

Description 5.3 This feature gives access to the hotel/motel features available at the attendant console.

The GUEST ROOM softkey provides access to the-following features when pressed :

- room number selection

- audit printouts

- room status summary displays

From this level, individual rooms can be selected. After selecting a room, the features available are:

- message waiting setup, cancel and view

- do not disturb setup and cancel

- message register clear

- automatic wake-up setup and clear

- room status change

- call restriction change

- room number selection

On the display, the following information appears for the selected room:

- room number, COS, COR, and name

- room status

- maid in room status

- room call restriction status

- room do not disturb status

- room message waiting status

Conditions The GUEST ROOM softkey is available when on a call. In this mode, pressing it automatically bypasses the top level of softkeys and enters the next level of softkeys as if the Room Number **had already** been selected from the top level.

Programming Enable COS option 105 (Attendant Guest Room Key) for the console. This option is required for most hotel/motel features.

Operation   Refer to Practice 9109—094—315—NA, Attendant Console Description.

Attendant Message Register Audit

Description   5.4 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; see MESSAGE REGISTER.

Conditions   The following conditions apply to this feature:

- Console cannot request an audit if it is active in a call.

- The maximum number of audits that can be requested at one time is 3; all further requests will be lost. All audit requests are processed in a first requested -first printed sequence.

- If System Option 25 (Message Register Zero After Audit) is enabled all message registers will be 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.   ·

- All rooms with a non zero message register will be listed in the audit report in order of room number (highest to lowest).

- Single line reports can also be enabled when the message register for a room is cleared. See MESSAGE REGISTER.

Programming   Select System Option 24 (Message Register Audit)

Select System Option 25 (Message Register Zero After Audit) to reset all message registers to 0 after an audit request.

Assign a printer to the "Hotel/Motel Audit" printout type in CDE Form 34 (Directed I/O). See DIRECTED I/O for details on system printers.

Operation   Refer to Practice 9109—094—315—NA, Attendant Console Description for details on issuing a message register audit and for a detailed description of the format of the resulting printout.

Attendant Message Waiting Setup and Cancel -Guest Room

Description   5.5 A message waiting indication can be left for a guest room. This is the message waiting feature in the hotel/motel application. The setting and clearing of a message waiting for a room can be recorded on a system printer. A single line printout is generated, giving the room number, date, time and status change.

See **MESSAGING** for information on the message waiting feature and **ATTEN-DANT MESSAGE WAITING SETUP AND CANCEL** for message waiting changes from the console.

Conditions   **The single line printout appears on the Hotel/Motel Wake-up printer.**

Programming   See **ATTENDANT MESSAGE WAITING SETUP AND CANCEL** for basic programming to be able to setup message waiting at an extension.

Enable COS option 105 (Attendant Guest Room Key) for the console to access message waiting from the Guest Room softkey.

Select System Option 04 (Message Waiting and Message Register Clear Print). This also enables printing of single line printouts for Message Register changes. See **MESSAGE REGISTER**.

Operation   Refer to Practice 9109–094–315–NA, Attendant Console Description.

Automatic Wakeup

Description   **5.6** This feature allows either the Attendant or a guest to set up a wake-up alarm call that will ring the guest room at a prearranged time. It i's also possible to modify or cancel an existing wake-up call.

After answering a wake-up alarm call, the extension user receives either a special tone, music, or a recorded announcement. The recorded announcement can be changed with the night service.

If the wake-up call is not answered within six rings, or if the extension is busy, an attempt is made to ring the extension two more times, at 5 minute intervals. If the wake-up call is to a *SUPERSET 4* or *SUPERSET 4*DN telephone it is treated as a timed reminder (see **REMINDERS**) and rings once and sets a reminder prompt. Each of these attempts can generate a single line report on a system printer. if the call is still unanswered, the wake-up is canceled and the **attendant can be notified that the wake-up was not honored.**

The attendant can print a list of all of the current wake-ups.

Conditions   The following conditions apply to this feature:

● **The Do Not Disturb will be ignored on extensions when the wake-up is honored.**

● In the event of a power failure, all expired wake-ups will be honored within 5 minutes of a system reset.

● **If a guest room telephone is programmed for Automatic Wake-Up Routing, the Automatic Wake-Up Music option has no effect.**

- The tone used for wake-up calls will be one of 100 ms ON, 400 ms OFF, (repeated).

- **System options 12 (Automatic Wake-up Alarm) and 13 (Automatic Wake-up Print) have no effect on** *SUPERSET 4* **and** *SUPERSET 4*DN **telephone operation of the feature.**

- Recorded announcements are provided through recording hunt groups.

- If recorded announcement is used, a wake-up will only be honored when there is a free recording announcement device available. When an extension answers the wake-up, the recording device is rung. The extension hears silence until the recording device answers.

- If a recording hunt group is used for wake-ups there can only be one wake-up call per recording announcement device at any given time. This means that if multiple wake-ups have been set for the same time only one can proceed. All the others will be shifted. The amount of this shift will be variable depending on:

  - the time it takes for each preceding extension to answer/acknowledge the wake-up, and

  - the 1 minute period between wake-ups being scanned.

- System Option 56 (Room Status Conversion/Auto Wake-up Print Timer) only applies if System Option 34 (Auto Room Status Conversion/Auto Wake-Up Print) is enabled.

- **A maintenance log is created if the Hotel/Motel Wake-up printer fails.**

Programming   In order for a guest room to set/cancel wake-ups, assign an Access Code to Feature 32 (Automatic Wake-Up) and enable COS Option 202 (Alarm Call) and COS Option 244 (Room Status Applies) for the extension.

In order for an attendant to set/cancel wake-ups for a guest room, the following options must be turned on:

- System Option 1 l. (Automatic Wake-Up Enable)

- COS option 105 (Attendant Guest Room Key) for the console

- COS Option 101 (Attendant O/G Restriction/Room Status Setup) for the console

- COS Option 202 (Alarm Call) and COS Option 244 (Room Status Applies) for all extensions which are to use Automatic Wake-Up

Optional Wake-up Features

Select System Option 12 (Automatic Wake-Up Alarm) to allow the console alarm icon to be flashed, in the event that a wake-up call is not answered within three attempts. This will also generate a maintenance log.

Select System Option 13 (Automatic Wake-Up Print) to allow wake-up audit printouts and one line messages to be printed on the system printer whenever a wake-up call is set up, canceled, answered, or an attempt is made to hon-

or the wake-up. Refer to Practice 9109–094–315–NA, Attendant Console Description, for a detailed description of the format of the resulting printout.

Assign a printer to the "Hotel/Motel Wake-up" printout type in CDE Form 34 (Directed IO) for the status messages for wake-up activity. Audits of wake-ups from the console are directed to the Hotel/Motel Audit printer; see DI-RECTED I/O for details on system printers.

Select System Option 34 (Auto Room Status Conversion/Auto Wake-Up Print)to have an automatic audit of all wake-ups 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 Wake-Up Print Timer). The default is 00:00 (midnight).

Select System Option 14 (Automatic Wake-Up Music) to allow music to be heard by an extension upon answering a wake-up call (see Music On Hold).

Refer to RECORDING DEVICE SUPPORT for information on how to set up a recording hunt group.

Enter the extension of the recording hunt group into CDE Form 19 (Call Rerouting Table), under "Automatic Wake-up routing For This Tenant". The tenant number is that of the extension using the wake-up feature.

Operation   Operation varies depending upon the type of device as described below.

Console

Refer to Practice 9109–094–315–NA Attendant Console Description for details on issuing wakeup audits, setting up and clearing wake-ups from the console. and for a detailed description of the format of the resulting printouts.

Industry Standard Telephones, *SUPERSET* 3 and *SUPERSET* 3DN Telephones

To set Wake up time

- dial the automatic wake-up access code

- enter the desired wake-up time (use 24 hour format)

- listen for dial tone indicating wake-up time is set

NOTE: Reorder tone indicates wake-up was not set

To cancel a wake-up time

- dial the automatic wake-up access code

- enter four 9s

- listen for dial tone indicating wake-up has been canceled

Acknowledging a Wake-up call also cancels it.

Call Blocking

Description   5.7 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 normally. Attempted calls between restricted extensions will be treated as illegal numbers and the calling party will hear reorder tone. Alternatively Call Rerouting can be used to intercept blocked calls to an appropriate destination such as the attendant console; see CALL REROUTING.

Conditions   The following conditions apply to this feature:

- 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.

- The LED associated with the Block hardkey for all Consoles with the feature enabled will be updated each time call blocking is turned on or off. When the LED is on call blocking is enabled. For consoles without the feature enabled, the key and the LED will not be operational.

- If CALL REROUTING is to be used, blocked calls will be treated as Station Illegal Number Routing; see CALL REROUTING.

Programming   Select COS Option 113 (Attendant Call Block Key) for the Attendant console which can apply call block.

Select COS Option 204 (Call Block Applies) for the extensions to which call block will apply.

Select System Option 09 (Attendant Call Block).

Operation   To enable Call Blocking:

- Press the BLOCK hardkey on the console, the associated LED will be lit. All calls are blocked between all extensions with the call block option enabled in their COS.

To remove Call Blocking:

- Press the BLOCK hardkey on the console, the associated LED will be turned off. Call Blocking is removed.

Call Restriction

Description   5.8 This feature is used to assign each guest room with a level of calling privilege. The three levels are:

- internal

- local

- long distance

The Attendant can assign any of the levels to a particular room. In addition, the system will automatically set the call restriction for a room (to a programmable value) when an occupancy change to either vacant or occupied occurs.

Conditions   The following conditions apply to this feature:

- System Features 32 (Outgoing Call Restriction) and 33 (Room Status) are mutually exclusive.

- 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. Typically when a room becomes occupied, the guest is provided with a less restrictive setting.

Programming   System Option 33 (Room Status) for the COS of the sets in the rooms is enabled.

Select COS Option 101 (Attendant O/G Restriction/Room Status Setup) for the Attendant Console,

Set a default Vacant Room Status Call Restriction type via System Option 57 (Vacant Room Default Call Restriction).

Set a default Occupied Room Status Call Restriction type via System Option 58 (Occupied Room Default Call Restriction).

Set the long distance option for ARS Digit Strings for which long distance charges apply. See Practice 9109–094–220–NA, Automatic Route Selection and Toll Control, for details.

Operation   A typical sequence of events is as follows:

- Check In

  - as a guest is being checked in the attendant assigns a room

  - the attendant modifies the room occupancy status to Occupied

  - this action causes the value of System Option 58 to be assigned to the guest room telephone.

  - if for some reason this setting is not appropriate the attendant can change it.

- Check Out

  - as part of the check out procedure the attendant changes the room occupancy status to Vacant

  - the operation of changing the room occupancy to vacant will assign the value of System Option 57 to the guest room telephone.

The attendant can view the current setting for any room by pressing the guest room softkey and specifying the desired room number. The call restriction

information is provided on the second line of the LCD display in the STATUS section.

Guest Room *SUPERSET* Key Programming

Description

5.9 A block of guest room *SUPERSET 3*DN or *SUPERSET 4*DN telephones can be programmed with Speed Dial and Feature Access keys. This can only be done from CDE. It is possible to program up to 3 separate blocks of telephones with unique Speed dial and Feature Access keys.

This feature is not available with Generic 1002

Conditions

● Guest Room set users cannot program speed dial keys when a guest room template is enabled for the extension.

● Keys programmed as Speed Dial keys or Feature Access keys in a Guest Room *SUPERSET* Keys Template cannot be programmed as Line Appearances in CDE Form 09 (Station/*SUPERSET* Sets).

● A maximum of three templates can be programmed in the system.

Programming

Select template 1, 2, or 3 for COS Option 610 (*SUPERSET 3*DN/*SUPERSET4*DN Guest Room Template) in the set's Class of Service. This assigns a particular template to the telephones with this COS. This option is not available with Generic 1002.

Enable COS Option 244 (Room Status Applies) in the set's Class of Service.

Enter the desired Speed Dial numbers and Feature Access Keys in CDE Form 37 (Guest Room *SUPERSET* Keys Template) for the appropriate template.

Operation

None

Maid in Room Status

Description

5.10 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. The attendant console or a *SUPERSET* telephone with the proper COS option can display this information.

Conditions

The following conditions apply to this feature:

● 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.

Programming   Assign an access code to Feature 35 (Maid In Room).

Enable COS Option 244 (Room Status Applies) for the extension.

Operation   To change room status or maid in room status from the room/extension:

Dial the 'Maid In Room' access code.

Dial one of 1, 2, 3 or 4:

-1   ▬   maid is in room

-2   ▬   no maid in room

-3   ▬   room clean, maid not in room

-4   ▬   room to be inspected, maid not in room

A typical sequence of events follows (assume the maid access code is 111):

- On entering a guest room that is to be cleaned the maid picks up the telephone handset and dials 1111 (access code + maid in room status on)

- When finished in the room the maid picks up the handset and dials 1114 (access code + to be inspected)

- The inspector then enters the room, checks it, and upon leaving the room picks up the handset and dials 1113 (access code + room clean)

At any time the current room status can be displayed on the console or on a *SUPERSET 4* or *SUPERSET 4*DN telephone; see MAID IN ROOM STATUS DISPLAY- *SUPERSET* and *SUPERSET 4*DN Telephone.

Maid in Room Status Display ▬ *SUPERSET 4* and *SUPERSET 4*DN Telephone

Description   5.11 This feature allows an authorized *SUPERSET 4* or *SUPERSET 4*DN telephone to determine which guest rooms have maids in them.

This feature is not available with Generic 1002.

Conditions   The following conditions apply to this feature:

- This feature is available at *SUPERSET 4* and *SUPERSET 4*DN telephones only.

- Rooms are displayed in sequence from highest to lowest room number.

Programming   Enable COS Option *608 (SUPERSET-* Room Status Display) in the set's Class of Service.

Assign an access code to Feature 40 (*SUPERSET 4* Set Maid In Room Status Display).

Operation   Operation varies depending upon the type of *SUPERSET* telephone as described below.

SUPERSET 4 Telephone

To display a list of guest rooms with maids in them:

- Dial the access code for *SUPERSET 4* Set Maid In Room Status Display.

- The LCD displays the extension numbers of the first two rooms that have maids in them.

- If there are more rooms being cleaned, the.* softkey appears. Press this softkey to display these other guest room extension numbers, two at a time. When tre last room number is displayed, the ◄ softkey no longer appears.

- Press the HANG UP softkey.

SUPERSET *4DN* Telephone

To display a list of guest rooms with maids in them:

- Dial the access code for *SUPERSET 4* Maid In Room Status Display.

- The LCD displays the extension numbers of up to 12 rooms that have maids in them.

- If there are more rooms being cleaned, the ➤ softkey appears. Press this softkey to display these other guest room extension numbers, up to 12 at a time. When the last room number is displayed, the ➤ softkey no longer appears.

- Press the HANGUP softkey.

Message Lamp Test

Description   5.12 Message Lamp Test allows the attendant to select whether or not a lamp test should be performed automatically on telephones that have message waiting lamps. The Attendant console ALARM ICON flashes whenever there is a failure.

Conditions   The following conditions apply to this feature:

- COS Option 232 (Message Waiting Lamp) and System Option 02 (Message Lamp Test Enable) must be enabled.

- Lamp Test only applies to telephones connected to ONS cards in digital bays.

Programming	Enable COS Option 232 (Message Waiting Lamp) for the telephones to be tested, and enable System Option 2 (Message Lamp Test Enable).
Operation	The message waiting lamp is tested whenever the room status changes from occupied to vacant and there are no messages waiting; the test verifies lamp operation and confirms that the telephone is still connected in the room.

Message Register

Description	5.13 The message register provides the ability to keep track of the number of completed external calls or call units for each extension. 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 will display 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 automatically upon requesting an audit; see ATTENDANT MESSAGE REGISTER AUDIT. Clearing of the message register can be recorded on a system printout.

It is also possible to flash the alarm icon on the console in the event the message register overflows.

Meter pulses are recorded in SMDR; see STATION MESSAGE DETAIL RECORDING (SMDR). Also see METER PULSE COLLECTION for more details on meter pulses in the PABX.

Conditions   The following conditions apply to this feature:

- Supervision on an outgoing trunk is counted as one message register count.

- The maximum message register count is 50,000. The counter resets to when this count is reached (an alarm can also be generated).

- If an extension with Message Registration connects to an outgoing trunk which does not have Message Registration, Message Registration will not apply to the extension.

- In cases where 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.

- 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.

Programming

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.

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.

Optional Message Register Features Programming

Select System Option 04 (Message Waiting and Message Register Clear Print) to print a single line printout to the default printer each time the message register changes. This includes the case when a message register is cleared by the console.

Assign a printer to the "Hotel/Motel Audit" printout type in CDE Form 34 (Di- rected I/O). This defines where the single line printouts are printed; see DI-RECTED I/O for details on system printers.

Select System Option 23 (Message Reg. Count Additional Supervisions) to count meter pulses after supervision is received on an outgoing trunk.

Select System Option 40 (Message Register Follows Talker) to charge the extension or console last talking to a trunk with the message register count.

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. The alarm icon flashes and a maintenance log is generated.

Operation

Refer to Practice 9109–094–315–NA, Attendant Console Description.

Also see ATTENDANT MESSAGE REGISTER AUDIT.

Property Management System (PMS)

Description

5.14 The *SX–200* DIGITAL can be interfaced to a Property Management System (PMS) to provide integration of PABX and PMS functions. A PMS provides a **computerized method of controlling and monitoring hotel/motel functions.**

The PABX interfaces to IBM compatible Personal Computers with the Lodgis-tix 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
Message Register	Room Status
Message Waiting	Message Register
Do Not Disturb	
Automatic Wake-up	

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 Wake-up from the guest room database.

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.

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.

Conditions   The following conditions apply to this feature:

- All Room Status updates are applied against the PMS database, therefore 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 Wake-up 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, and SMDR.

- Because PMS has exclusive use of the port assigned to it, it is recommended that a dataset be used as the port, allowing the system printer port to be used for other printouts.

- Maintenance logs record any errors found in the PMS interface. Refer to Practice 9109–094–350–NA, Troubleshooting, for details.

Programming   Enable System Option 35 (Property Management System) in CDE Form 4 (System Options/System Timers).

Define a data circuit descriptor to match the RS-232 interface of the PMS in CDE Form 11 (Data Circuit Descriptors). See the PMS documentation for specific details. A typical RS-232 interface for the PMS port is:

- 7 ASCII data bits

- No parity

- One stop bit

- 1200 baud.

Define the dataset's data circuit used for connection to the PMS in CDE Form 12 (Data Assignment).

Configure the dataset port for PMS application in CDE Form 34 (Directed I/O).

To prevent unauthorized trunk calls after a guest has checked out, enable System Option 32 (Outgoing Call Restriction).

To charge guests for outgoing trunk calls, enable COS 703 (Message Register Applies).

The message register is cleared in the PABX at check out. For a record of this occurrence, enable System Option 4 (Message Waiting and Message Register Clear Print).

To allow room status to be changed from room telephones, assign an access code to feature 35 (Maid in Room) in CDE Form 02 (Feature Access Codes).

To allow the attendant to set automatic wake-ups:

● Enable System Option 11, Automatic Wake-up

and

● Enable COS option 105 Attendant Guest Room Key.

To allow stations to set automatic wake-ups:

● Assign access code to Feature 32 Automatic Wake-up

and

● Enable COS option 202, Alarm Call.

For a record of wake-up cancellations at checkout time, enable System Option 13, Automatic Wake-up Print.

To allow the attendant to set-up or cancel Do Not Disturb, enable COS option 105, Attendant Guest Room Key.

To allow a station to set-up or cancel DND:

● Assign an access code to System Feature 10, Do Not Disturb

and

● Enable option 220 in the station's COS.

A "Do Not Disturb" still in effect at checkout time is canceled automatically (no report is generated).

To allow the attendant to set-up or cancel Message Waiting for a station:

● Enable COS option 105, Attendant Guest Room Key

and

● Enable either COS option 231 Bell, or 232 Lamp.

Messages still waiting at checkout time are canceled. For a record of this, enable System Option 4 (Message Waiting and Message Register Clear Print).

Operation   **None**

Room Status -Attendant Console

Description   **5.15** This feature allows the attendant to display and change the status of a room(s). Room Status can be divided into two parts: Room Occupancy and

Room Condition. Each field can be set independently of the other. The choice of settings for each are:

OCCUPANCY	CONDITION
vacant	clean
occupied	dirty
reserved	out of service
	to be inspected

When a room number is selected, the status from the above list is displayed. The Maid in Room status, the current Call Restriction status and the current Message Register count are also displayed at the same time. All of this information is displayed on the second line of the attendant console LCD display. For example, the second line may look like this:

Reg = 00012 Wake-up = 08:00 Status= Vac/Dirty/Int/Maid

The above example shows, in order, that the room has 12 message register counts, that a wake-up is set for 8 AM, the room is vacant, is dirty, has only internal telephone privileges and has a maid in it. The last field is blank if the Maid is not present. The first field only appears if the Message Register feature is enabled and the second only appears if a wake-up has been setup for the room.

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 wake-ups will be generated.

The console can also display all rooms that have certain status combinations as follows:

● a maid is in the room

● the room is vacant and clean

● the room is reserved and clean

● the room is out of service

The following abbreviations are used in the displayed status:

Status	Abbreviation
Vacant	Vac
Occupied	occ
Reserved	Res
Out of Service	Serv.
Clean	Clean

Status	Abbreviation
Dirty	Dirty
To be Inspected	Insp.
Internal	Int
Local	Loc
Long Distance	L D
Maid in Room	Maid

Conditions   The following conditions apply to this feature:

- 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.

- The Maid in Room status can be changed only from the room telephone; see MAID IN ROOM STATUS.

- System Option 56 (Room Status Conversion/Auto Wake-up Print Timer) only applies if System Option 34 (Auto Room Status Conversion/Auto Wake-Up Print) is enabled.

- When displaying all rooms with a particular status, as selected by softkeys, the LCD will display the numbers of up to 10 rooms that have the selected status. If there are more rooms, the MORE softkey appears. Press it to view the next group of room numbers. Rooms are displayed in order from highest to lowest room number.

Programming   Select COS Option 105 (Attendant Guest Room Key) for the Attendant Console.

Select COS Option 244 (Room Status Applies) for all extensions for which room status is to apply.

Enable System Option 33 (Room Status).

Select System Option 34 (Auto Room Status Conversion/Auto Wake-Up Print). Set the time of day for the conversion in System Option 56 (Auto Room Status Conversion/Auto Wake-Up Print Timer). The default is 00:00 (midnight).

Enable System Option 2 (Message Lamp Test Enable) to allow message lamp testing.

Operation   Refer to Practice 9109–094–315–NA, Attendant Console Description.

Room Status Audit

Description   5.16   This feature allows the attendant to request a report of the current status of all guest rooms. The report is divided into three sections vacant, occupied

and reserved rooms. Each of these sections is further divided by room condition.

Conditions   Only rooms with COS Option 244, Room Status Applies, enabled will be displayed by the audit

Programming   Enable System Option 27 (Room Status Audit) to allow room status printouts.

Assign a printer to the "Hotel/Motel Audit" printout type in CDE Form 34 (Directed IO); see DIRECTED INPUT/OUTPUT for details on system printers.

Operation   A complete description of generating a room status report from the console along with examples of the report format is provided in Practice 9109–094–315–NA, **Attendant Console Description.**

Room Status Display – SUPERSET 4 and SUPERSET 4DN Telephones

Description   5.17 This feature allows an authorized SUPERSET 4 or SUPERSET 4DN 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

Conditions   This feature is available at SUPERSET 4 or SUPERSET 4DN telephones only.

Programming   Enable COS Option 608 (SUPERSET – Room Status Display) in the set's Class of Service.

Assign an access code to Feature 36 (SUPERSET 4 Room Status Display).

Operation   From either a SUPERSET 4 or a SUPERSET 4DN Telephone

● Dial the access code for SUPERSET 4 Room Status Display.

● Dial the extension number of the required guest room's telephone. The LCD displays the room's status (e.g. VAC/CLEAN).

● If desired, press the arrow softkey to view the status of the next room (in order of extension number). When the last room is displayed, the arrow softkey no longer appears.

● Press the HANGUP softkey.

6. DATA FEATURES

GENERAL

6.1 This part describes the data features supported by the SX-200 DIGITAL PABX with Generic 1002 and Generic 1003 software. Turn to Appendix C for a glossary of data terms.

Associated Data Line (ADL)

Description

6.2 The Associated Data Line feature provides a telephone with the capability of originating and disconnecting a data call. The "association" is between a telephone (used for dialing or disconnecting the call), and a dataset to which the call is switched once the setup is complete. The telephone is an Associated Voice Line (AVL) for the dataset; the dataset is an Associated Data Line (ADL) for the telephone. To originate a data call the user dials the ADL access code followed by the number of the data destination. The data destination of any data call can be predetermined via the HOTLINE feature (see ADL HOTLINE). Industry Standard DTMF and rotary telephones, *SUPERSET* telephones, and Digital *SUPERSET* telephones can be used in ADL calls. Either the originator or destination can terminate the data call.

This feature allows the user to establish a basic ADL call by dialing an access code and the number of the destination from an industry-standard telephone or a *SUPERSET* telephone.

Data destinations include:

● data station extension number

● data hunt group access code

● modem hunt group access code followed by ARS digit string

Included with originate/disconnect capabilities of ADL are the following:

● Data call originate using SPEED CALL key or Abbreviated Dial

● ADL queuing

● Data call disconnect using SPEED CALL key or Abbreviated Dial, or the Disconnect or CALL/ATTN key.

The Associated Data Line can be used to originate or disconnect a data call, operating in either asynchronous or synchronous mode.

Conditions

The following conditions apply to this feature:

● The attendant console cannot use the ADL feature.

- Program the associated voice line (AVL) in CDE Form 12 (Data Assignment).

- Ensure that both the originating and destination datasets are both in the same Operating Mode (asynchronous or synchronous), as programmed in CDE Form 11 (Data Circuit Descriptors).

Programming Assign Feature Access Code 28 (ADL Call Setup) and Feature Access Code 29 (ADL Disconnect) in CDE Form 02 (Feature Access Codes).

Enable COS Option 900 (Data Station Queuing). When COS 900 is enabled on a voice telephone, queuing to a busy data destination is allowed on an ADL call.

Program ADL Auto Baud, and Operating Mode (Synchronous or Asynchronous) in the subform of CDE Form 11 (Data Circuit Descriptor Options). Operating Mode applies only to DATASET 2100 Series datasets.

To associate a voice telephone with a dataset, enter a valid extension number for the voice telephone in the AVL field of CDE Form 12 (Data Assignment).

Operation The following paragraphs describe how to originate and disconnect calls using the ADL feature.

ADL Call Originate

If the Originating dataset does not have ADL Autobaud:

- Dial the ADL access code (if the associated dataset is not idle; reorder tone is heard and the *SUPERSET* telephone displays the message "PLEASE TRY LATER").

- Dial the digits of the destination.

- A high pitched connect tone is heard (if the destination is busy, then busy tone is heard).

- The originating party hangs up the voice telephone and the call is switched to the associated dataset ("HANG UP" or "NEW CALL" prompt can also be used).

- If the *SUPERSET* telephone has a voice party on Hold, the CANCEL key establishes the data call and transfers the voice call to the party on hold.

When Originating dataset has ADL Autobaud:

- Dial the ADL access code (if the associated dataset is not idle; reorder tone is heard and the *SUPERSET* telephone displays the message "PLEASE TRY LATER").

- Dial the digits of the destination (busy tone is heard if the destination is busy).

- When ringback tone is heard, the originator must enter the autobaud character (usually carriage return) so that the dataset can determine the

baud rate (this character must be entered within 30 seconds or the call is released; otherwise reorder tone is heard and PLEASE TRY LATER is displayed).

- Connect tone is returned to the originator.

- Hang up the voice telephone.

- Call is switched to the associated dataset.

NOTE: Once the ADL call has been established, the telephone is free to be used. If a voice call had been established, the other party can be placed on hold by the TRANS/CONF key, and the ADL call can be established. Pressing the CANCEL or BACK TO HELD softkey reconnects the telephone to the party on hold.

When an ADL Call Origination is unsuccessful, reorder tone is returned and one of the following messages is displayed on the display SUPERSET telephone:

- The voice telephone has not been programmed as an AVL to an associated dataset. The set displays " NO ACCESS".

- The associated dataset is not idle. The set displays "PLEASE TRY LATER".

- The user dials the number of a device which cannot handle data. The set displays "INVALID #".

- The baud rates of the source and destination are not compatible and neither have Flow Control programmed. The call is barred. The calling set receives reorder tone and displays " NO ACCESS".

- The associated terminal is not asserting DTR and is NOT programmed for auto-answer. The set displays " NO ACCESS".

ADL Call Disconnect

The source or destination can disconnect an ADL call by:

- dialing the ADL disconnect access code

- pressing a pre-programmed attention or break key on the terminal

- pressing the DISCONNECT key or the CALL/ATTN key on the dataset

- by either dataset dropping DTR for the preprogrammed time

If the call is not set up via the ADL feature, doing an ADL disconnect causes the set to display " INVALID #".

ADL Hotline

Description 6.3 This feature establishes a data call between two preassigned DTEs by dialing the ADL access code from the associated telephone.

Conditions   Refer to Associated Data Line.

Programming   Assign the hotline number in CDE Form 12 (Data Assignment).

Operation   To originate an ADL hotline call:

- Dial the ADL access code. The call is automatically connected to the preas-signed destination. Also, a carriage return <CR> may be required de-pending upon the programmed ADL Autobaud option. See ASSOCIATED DATA LINE – "Operation: ADL Gall Originate".

- If the destination is busy and queuing is enabled, the originating station is queued.

- If the destination is not a valid data device, the message "INVALID #"and reorder tone is returned.

ADL Speed Call Originate

Description   6.4 An ADL user can originate an ADL call via a personal Speed Call number.

Conditions   None

Programming   Programming varied depending upon the type of telephone as described be-low.

SUPERSET 3 Telephone

At the user's telephone:

- Press the PROGRAM/SAVE feature key while the set is idle (if a call is re-ceived or originated, the telephone immediately exits from the speedcall activity).

- Press an unused SPEED CALL key (if a previously defined key is selected,the previously stored number is erased).

- Dial the ADL access code

- If required, dial the Account Code access code and the Account Code

- Dial the number of the data destination

- Press the PROGRAM/SAVE feature key to save the number

SUPERSET 4 Telephone

At the user's telephone:

- **With the handset on-hook, press the PROGRAM** softkey

- Press the SPEED CALL softkey

- Press an unused SPEED CALL key

- Dial the ADL access code

- If required, dial the Account Code access code and the Account Code

- Dial the number of the data destination

- Check the number to be saved, if correct press the SAVE softkey

SUPERSET 3DN Telephone

At the user's telephone:

- With the handset on-hook, press the PROGRAM feature key

- Press an unused SPEED CALL Key

- Dial the ADL access code

- If required, dial the Account Code access code and the Account Code

- Dial the number of the data destination

- Press the PROGRAM feature key; the speed call number is now saved

SUPERSET 4DN Telephone

At the user's telephone:

- With the handset on-hook, press the SUPERKEY

- Find and press the SPEED CALL softkey

- Press an unused Line Appearance key

- Dial the ADL access code

- If required, dial the Account Code access code and the Account Code

- Dial the number of the data destination

- Check the number to be saved, if correct press the SAVE softkey

Operation Operation varies depending upon the type of telephone as described below.

SUPERSET 3 Telephone

To originate a data speed call:

- Press the programmed speed call key

- Go on-hook when connect tone is heard

- Call is transferred to the associated dataset

To originate a data speed call with voice party on hold:

- Press the programmed Speedcall key

- If ADL Autobaud is programmed, press CARRIAGE RETURN key

- When the connect tone is heard, press the CANCEL key to establish the data call and transfer the voice call back to the party on hold

SUPERSET 4 Telephone

To originate a data speed call:

- Press the programmed SPEED CALL key

- Go on-hook when connect tone is heard

- Call is transferred to the associated dataset

To originate a data speed call with voice party on hold:

- Press the programmed SPEED CALL key

- If ADL Autobaud is programmed, press CARRIAGE RETURN key

- When the connect tone is heard, press the CANCEL softkey to establish the data call and transfer the voice call back to the party on hold

SUPERSET 3DN Telephone

To originate a data speed call:

- Press the programmed SPEED CALL key

- Go on-hook when connect tone is heard

- Call is transferred to the associated dataset

To originate a data speed call with voice party on hold:

- Press the programmed SPEED CALL key

- If ADL Autobaud is programmed, press CARRIAGE RETURN key

- When the connect tone is heard, press the CANCEL key to establish the data call and transfer the voice call back to the party on hold

SUPERSET **4DN** Telephone

To originate a data speed call:

- Press the programmed SPEED CALL key

- Go on-hook when connect tone is heard

- Call is transferred to the associated **dataset**

To originate a data speed call with voice party on hold:

- Press the programmed SPEED CALL key

- If ADL **Autobaud** is programmed, press CARRIAGE RETURN key

- When the connect tone is heard, press the BACK TO HELD **softkey** to establish the data call and transfer the voice call back to the party on hold, or press NEW CALL to establish the data call and make a new voice call.

Abbreviated Dial For ADL Calls

Description
6.5 An ADL user can originate an ADL call via a System Abbreviated Dial number.

Conditions
Reorder tone is returned if the user enters **an.invalid** Abbreviated Dial number.

Programming
Enable COS Option 245 (Abbreviated Dialing Access) in the associated voice **line's Class** of Service.

Assign an access code to Feature 24 (Abbreviated Dial Access) in CDE Form 02 (Feature Access Codes).

Enter the desired abbreviated dial numbers into CDE Form **31** (System Abbreviated Dial Entry), or enter them from the Attendant Console. See ATTENDANT ABBREVIATED DIAL NUMBER ENTRY.

Operation
To originate an Abbreviated Dial call:

- If the Abbreviated Dial number entry does not include the ADL access code, dial the ADL access code.

- Dial the Abbreviated Dial access code.

- Dial the desired Abbreviated Dial number (one to three digits).

- Hang up when connect tone is heard. The call is transferred to the associated **dataset.**

See also ADL Call Originate in this Section.

Associated Modem Line (AML)

Description
6.6 This feature provides a simple way to switch data through the SX-200 DIGITAL PABX. The operation involves the association of a standard

ONS voice port and one or more *SUPERSET 4* or *SUPERSET 4*DN telephones. The ONS port is connected to Data Terminal Equipment (DTE) via a modem. Voice only calls, data only calls, simultaneous voice/data calls, and alternating voice/data calls are permitted.

Conditions   The following conditions apply to this feature:

● This feature is available only-on *SUPERSET 4* and *SUPERSET 4*DN telephones.

● In a data call; both modems must operate at the same baud rate; one modem must be in Originate mode, the other in Answer mode.

● The only effect of AML on voice calls is that the SWAP (Trade Calls) softkey appears on calls to a station which has an Associated Modem Line or on trunk calls.

● When two telephones assigned the same modem port converse, the SWAP (Trade Calls) softkey does not appear; data communication between these telephones is not possible.

● If the set user presses the SWAP (Trade Calls) sof-tkey when the data port is already in use, the message DATA BUSY appears on the display. Hang up or press the CANCEL softkey.

● An AML data device may be associated with more than one telephone (only one can use it at a time); however, a telephone may be associated with only one AML data device.

Programming   Enable COS Option 607 (*SUPERSET* – Associated Modem Line) in the set's Class of Service.

Enter the modem's ONS port extension number in the ASSOC field of the set's entry in CDE Form 09 (Station/*SUPERSET* Sets).

Enter the set's extension number in the ASSOC field of the modem's port entry in CDE Form 09 (Station/*SUPERSET* Sets), if the terminal is to be able to dial a call on behalf of the associated telephone.

Operation   To make a Data Call from the *SUPERSET* telephone:

● Dial the destination's modem number; when the destination modem answers, it returns modem answer tone.

● Press the SWAP (Trade Calls) sof-tkey.

NOTE: If the modem line is already connected to a call, or the modem is attempting to make a data connection, the message "DATA BUSY" appears. The CANCEL softkey is then the only key available.

● Put the modem on-line; the data call is now established.

- Press the HANG UP (or New Call) softkey.

The *SUPERSET* telephone is now available for voice calls. In this way, it is possible to have simultaneous voice and data calls. The data call terminates when **the modem goes on-hook.**

To make an alternating voice/data call:

- At the *SUPERSET* telephone, establish a normal voice call with the destination set.

- At both telephones, press the SWAP (Trade Calls) softkey to switch to data communication and put the modem on-line.

- When data communication is complete, press the SWAP (Trade Calls) softkey at both telephones to return to voice communications.

To make a Data Call from the Modem port:

- Following the modem manufacturer's instructions, have the modem go **off-hook and dial the destination modem number.**

To make a voice call on behalf of the associated voice line:

- Following the modem manufacturer's instructions of how to dial a call from the attached DTE, have the modem go off-hook and dial the destination telephone number, followed by #. The call is transferred to the *SUPERSET* telephone. The modem is available for data calls.

Auto-Answer

Description   6.7 The feature enables the system to support destination data devices that provide Auto-Answer. Upon receipt of an appropriate signal from the system, the destination data device prepares to receive data and raises its DTR signal.

Conditions   The destination data device must have its DTR signal low when idle.

Programming   In the destination data device's CDE Form 11 (Data Circuit Descriptors) subform (Data Circuit Descriptor Options), set Action Taken If the Idle DTE Has DTR Low (Auto Answer) to one of the following:

- RI -the system toggles RI high 2.5 seconds then low 2.5 seconds until the dataset responds with DTR high.

- DSR — the system raises DSR. The dataset responds with DTR high.

- DCD — the system raises DCD. The dataset responds with DTR high.

Operation   The destination data device must respond with DTR high within 1 minute of receiving the Auto-Answer signal.

Automatic Data Route Selection (ADRS)

Description
6.8 Outgoing trunk Data calls are processed by the same Automatic Route Selection (ARS) system as voice trunk calls; see AUTOMATIC ROUTE SELECTION.

Automatic Data Route Selection is not available with Generic 1002.

Conditions
None

Programming
Trunks should be grouped into Trunk Groups according to the maximum data rate they can support. For more information, refer to Practice 9109-094-220-NA, Automatic Route Selection and Toll Control.

Operation
None

Data Account Codes

Description
6.9 Verified and Non-verified Account Codes can be applied to Data Calls, internal, external or long distance. The Account Code appears in the DATA SMDR and TRUNK SMDR records.

Internal data calls generate a DATA SMDR record only; external data calls generate both a DATA SMDR and a TRUNK SMDR record.

Conditions
The following conditions apply to this feature:

● For Data or Modem Pooling calls, the user can enter an Account Code only during call setup. Only the last account code entered is stored in DATA SMDR and TRUNK SMDR records.

● If variable length account codes are enabled, a user dialing an Account Code must follow it with #. This is not necessary if the entered account code is 12 digits long. Thus, rotary dial telephones cannot have access to variable length account codes of less than 12 digits.

● Account Code entry for incoming callers is permitted only on DISA or Tie trunks. When PABX dial tone is returned, a Special DISA caller can enter another account code during call setup. Only this second code appears in the TRUNK SMDR and DATA SMDR reports.

● The user can include Account Codes in Speed Call numbers.

Programming
If Verified Account Codes are to be used, enable System Option 05 (Verified Account Codes) in CDE Form 04 (System Options/System Timers); enter the required Account Codes into CDE Form 33 (Account Code Entry).

Set System Option 55, Account Code Length in CDE Form 04 (System Options/
System Timers) to a value between 4 and 12, or to VARIABLE.

To require account code entry on internal ADL or DTRX data calls, enable COS
Option 326 (Account Code Forced Entry — Data Internal Calls) for the originat-
ing dataset.

To require account code entry for incoming or internal modem pooling calls,
enable COS Option 326 (Account Code Forced Entry — Data Internal Calls) in
the Pooled Modem's COS.

Enable one of the following options in the originating data device's COS, as
required, for outgoing calls:

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

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

Disable COS Option 700 (SMDR — Does Not Apply) in the data device's Class of
Service.

Enable COS Option 808 (Special DISA) in the COS for the data device

Disable COS Option 906 (DATA SMDR — Does Not Apply) in the originating
data device's Class of Service for ADL or DTRX calls.

To record incoming calls, enable COS Option 806 (SMDR — Record Incoming
Calls).

For incoming and internal modem pooling calls, disable COS Option 906
(DATA SMDR — Does Not Apply) in the originator's pooled modem's Class of
Service.

Operation   Operation varies depending upon the call type and/or the type of originating
device.

ADL

From the set:

● Dial the ADL access code.

● Dial the Account Code access code.

● Dial the Account Code.

● Dial the destination.

DTRX

From the terminal, at the * prompt, enter:

CALL destination ACCOUNT account code

DISA (Incoming)

When the PABX answers:

- Dial the DISA access code -the system returns dial tone.

- Dial the Account Code access code.

- **Dial the Account Code.**

- Dial the destination number.

Special DISA (Incoming)

When the PABX answers:

- Enter the Account Code — if it is valid, the PABX returns dial tone.

- Dial the destination number.

Incoming Tie Trunk or Internal Modem Pooling Caller

- Dial the Account Code access code.

- Dial the Account Code.

- Dial the destination number.

Direct-In-Line (to an Attendant)

When the Attendant answers:

- Have the Attendant dial the Account Code access code.

- Have the Attendant dial the Account Code.

- Have the Attendant dial the destination number.

Data Hunt Groups

Description 6.10 Datasets can be assigned to a Data Hunt Group. The system supports both Terminal and Circular hunting; see HUNT GROUPS.

Conditions **The following conditions apply to this feature:**

- Only datasets can be assigned to a Data Hunt Group.

- The system can support a total of 50 hunt groups; a hunt group may have a maximum of 50 members.

Programming
Enter the dataset extension numbers into CDE Form 17 (Hunt Groups). When the first dataset is entered, the system sets the hunt group type to Data. The system then accepts only datasets as subsequent entries.

Specify TERMINAL or CIRCULAR hunting as desired.

Program an access code for the Hunt Group.

If desired, program a name for the Data Hunt Group. This is useful for DTRX calls. See DTRX CALL BY NAME. If desired, program an overflow point for the Data Hunt Group.

Operation
Call the data hunt group using its access code or name. See ADL CALL ORIGINATION, DTRX CALL ORIGINATION, and MODEM POOLING.

Data Peripherals

Description
6.11 The SX-200 DIGITAL PABX supports several different data devices; MITEL also provides several data support devices for use with MITEL data devices.

The data devices supported are from the DATASET 1100 and 2100 series.

The DATASET 1100 Series of asynchronous data devices comes in'three variants; details are in Practice 9141–753–503–NA, DATASET 1100 Series.

- DATASET **1101 Cartridge for** *SUPERSET 4*DN **and** *SUPERSET 3*DN **telephones**

- DATASET **1102 Dual Rack Mount card for the DATACABINET 9000**

- DATASET **1103 Standalone unit**

The DATASET 2 100 Series of asynchronous/synchronous data devices comes in two variants; details are in Practice 9141–753–5Q6, DATASET 2100 Series.

- DATASET **2102 Single Rack Mount card for the DATACABINET 9000 cabinet**

- DATASET 2103 Standalone unit

Refer to Practice 9141–753–526–NA, DATACABINET 9000, and to Practice 9141–753–526–NA, DATASHELF 9100, for information on the cabinet and shelf that is available for rack mounted data devices.

A Modem Interconnect Panel is available for installation within the DATACABINET 9000 cabinet; refer to Practice 9141–753–528–NA, Modem Interconnect Panel. The Modem Interconnect Panel is required for Modem Pooling.

For information on using data devices as printer ports, see DIRECTED INPUT/OUTPUT.

For details on the the *SUPERCONSOLE* 7000" printer port, see DIRECTED IN-PUT/OUTPUT.

For details on data circuit descriptor options, refer to Practice 9109–094–210–NA, Customer Data Entry (CDE).

Refer to Practice 9109–094–125–NA, Circuit Card Descriptions, for a description of the Digital Line Card.

Conditions   Refer to the following Practices:

- 9141–753–503–NA, DATASET 1100 Series, and

- 9141–753–506–NA, DATASET 2100 Series.

Programming   Program a Digital Line Card card into the system's physical configuration table via CDE Form 01 (System Configuration),

Select options for the data circuit descriptors via CDE Form 11 (Data Circuit Descriptors).

Assign a circuit descriptor and select options for specific data circuits via CDE Form 12 (Data Assignment).

Operation   None

Data Security

Description   6.12 Data Security protects an established data call from receiving any intrusion or warning tones (for example, Campon or Override) which would interfere with the tone signals present on the line. Any extension with Data Security in its COS cannot be overridden or receive Campon tone; it may be camped on to, but is secure against any form of audio intrusion.

Conditions   The following COS Options must be disabled to permit correct operation of Data Security:

- COS Option 242 (Repeated Campon Beeps)

- **COS Option 607 (Associated Modem Line).**

Programming   Enable COS Option 2 16 (Data Security) for the extension.

Operation   None

Data Station Message Detail Recording (DATA SMDR)

Description   6.13 The DATA SMDR feature produces a detailed recording of all internal and external data calls. The printout format is similar to that of the existing

trunk call SMDR record and includes "Data Call Indicator", "Type of Data Call" and "Reason for Disconnect" fields. A dash (-) rather than a slash (/) separator between the month and day gives a distinctive appearance to the printed data records, and allows a call costing device to maintain separate totals for data and voice calls.

The "External Data Call Indicator" field shows EX if the data call used a pooled modem and a trunk.

The "Associated SMDR Record Indicator" field shows an asterisk when the data call has an associated "Trunk SMDR" record.

Refer to Practice 9109-094-221-NA, Station Message Detail Recording for detai ls.

| Programming | The following COS options and System Options/Timers can be selected: |

COS Option	COS Option Number
DATA SMDR-Does Not Apply	**906**
DATA SMDR-Extended Record	907
DATA SMDR-Overwrite Buffer	**908**

System Option	System Option Number
DATA SMDR Indicate Long Calls	39

Specify a port for printing DATA SMDR records in CDE Form 34 (Directed IO).

| Operation | None |

Data Station Queuing

| Description | 6.14 Data Station Queuing is similar to the Campon feature provided for telephones. An extension user encountering a busy dataset or Data Hunt Group can camp on to the destination and remain in the queue until a destination becomes available or terminate the call at any time. |

| Conditions | The following conditions apply to this feature: |

- The user can camp on to datasets, Data Hunt Groups, Trunk Groups, or Modem Pool Hunt Groups only.

- The destination cannot be camped onto if it is busied out or in Do Not Disturb.

| Programming | Enable COS Option 900 (Data Station Queuing) in the originating device's Class of Service. |

ADL from Industry-standard Telephone, *SUPERSET 3* and *SUPERSET 3DN*
Telephones

The telephone calls a busy data device:

- the telephone receives Special Busy tone for 2 seconds, then the telephone receives Busy tone while it is queued.

ADL from *SUPERSET* 4 Telephones

The set calls a busy data device:

- The set receives Special Busy tone. The display shows "BUSY". The CAMP ON softkey appears.

- Press the CAMP ON softkey within 10 seconds. The display shows "CAMP-ING ON" while the set is queued.

ADL from *SUPERSET 4DN Telephones*

The set calls a busy data device:

- The set receives Special Busy tone. The display shows "BUSY". The I WILL WAIT softkey appears.

- Press the I WILL WAIT softkey within 10 seconds. The display shows "WAIT-ING FOR" and the extension number while the set is queued.

DTRX

Queuing is automatic. The originator receives the message "Call is Queued".

Data Transceiver (DTRX)

Description   **6.15** The Data Transceiver (DTRX) allows the data user to set up a data call from a data terminal (DTE). The system has four DTRX channels; four users can communicate with the DTRX simultaneously. When the requested call is established, the DTRX is dropped, making it available for other data callers.

Users requesting a busy destination are queued until the destination is available. Up to 20 callers can queue. Subsequent callers requesting busy destinations are sent the message "System Busy, Try Again Later".

When all DTRX channels are busy, callers queue for DTRX service. Up to 28 callers can queue, including those queued for destinations. Subsequent callers are prompted to try again later.

Conditions   The following conditions apply to this feature:

- A dataset connects each Data Terminal (DTE) to the system on a   DNIC circuit.

- The DTE connected to the dataset must be an ASCII data device using an RS-232C interface.

- All DTRX commands (except ACCOUNT) may be abbreviated to its minimum unique character string.

- To connect to a Data Transceiver, a data device must have a DTE Profile number programmed in CDE Form 12 (Data Assignment).

Programming   The DTRX feature is associated with the DTE Profile and Data Circuit Descriptor options. Refer to CDE Form 29 (DTE Profile) and CDE Form 11 (Data Circuit Descriptor Options).

Enable or disable COS Option 900 (Data Station Queuing) as desired. This option, when enabled, allows automatic queuing to the destination when the originator encounters a busy data device.

Enable or disable COS Option 901 (DTRX Herald Display) as desired. When an

sage category is not displayed. The text also displays a user action if appropriate (e.g. System Busy, Please Wait). If the Message Code option is also enabled, the complete message is displayed.

Enable or disable COS 904 (DTRX Complete Message Text) as desired. This option displays the message code, the message category, and the text (e.g. D0207 Call Failure ~ Destination Not Ready).

Operation   See DTRX CALL ORIGINATE/DISCONNECT.

DTRX Call by Name

Description   6.16 This feature allows the user to call a data hunt group or modem pool hunt group by name instead of number.

Conditions   The hunt group must have a name programmed.

Programming   Assign names to data and modem pool hunt groups in CDE Form 17 (Hunt Groups).

Operation   At the DTE, in response to the * prompt:

1. enter CALL or C.

2. enter the name. (Example: C SYS)

        or,

1. enter CALL

2. enter the modem pool hunt group name,

3. enter the destination number. (Example: C MODEMS 5551234)

DTRX Call Originate/Disconnect

Description   6.17 The DTRX call is initiated and controlled from a terminal keyboard.

Conditions   The following conditions apply to this feature:

- Unless the user originates the call from the keyboard, the device is assigned the last baud rate used. (The default baud rate is used if Always Use Default Baud Rate When Called is enabled in the device's Data Circuit Descriptors).

- Autobaud is invoked when keyboard origination is used. (Keyboard Origination (Autobaud) must be enabled in the device's Data Circuit Descriptors) .

• Heralds and call progress messages are only displayed if programmed; see DATA TRANSCEIVER (DTRX).

Programming   Assign the originating dataset a DTE Profile number in CDE Form 12 (Data Assignment).

Program the Data Circuit Descriptor Options in CDE Form 11 (Data Circuit Descriptors) subform.

Program the DTE Profile in CDE Form 29 (DTE Profile).

Operation   DTRX operation is described below.

DTRX Originate

• Press the RETURN or ENTER key on the DTE keyboard. (Keyboard Origination must be enabled in the Data Circuit Descriptors).

> OR

• Press the ATTENTION key on the dataset.

> OR

• Switch power ON at the data device (i.e. raise DTR). (The option, "Originate a DTRX Call With Low to High Transition of DTR" must be enabled in the Data Circuit Descriptors).

> OR

• Press the CALUATTN key on a dataset equipped Digital *SUPERSET* telephone.
> •

The system attempts to seize DTRX. If DTRX is available, the *prompt is displayed.

• Enter CALL (or C)

• Enter the destination's directory number at the keyboard, followed by RETURN or ENTER.

• DTRX sends the digits to system's main control for call processing.

• Call progress messages are supplied, if programmed.

DTRX Disconnect

The DTRX is dropped when the originator is connected to the destination. To disconnect the current DTRX–originated data call and reconnect to DTRX:

• Switch the DTE off and on. (The option "Originate a DTRX Call With Low to High Transition Of DTR" must be enabled in the Data Circuit Descrip-

tors). It must remain off for longer than the duration of the DTR OFF Disconnect timer duration.

OR

● Press the BREAK key (if enabled).

OR

● Press the PBX Attention Character key (if programmed).

OR

● Press the ATTENTION key on the dataset.

OR

● Press the DATA CALL ORIGINATE/ATTENTION key on the Digital *SUPERSET* telephone.

To disconnect from DTRX and return to idle state:

● At the * prompt, enter BYE or <CTRL E>. "Goodbye" message is displayed.

● While connected to DTRX, wait for the DTRX inactivity time out. (This is programmed in the DTE Profile).-

● Turn off the data terminal (DTR dropped).

● Press the DISCONNECT key on the dataset.

● Press the DATA CALL DISCONNECT key on the Digital *SUPERSET* telephone.

The first two disconnect methods are possible only while communicating with the DTRX, i.e. no call in progress. The other methods can be used at anytime and also disconnect the current call. Also, the system can automatically disconnect users who remain inactive too long while connected to a destination. If programmed, the Session Inactivity Disconnect Timer controls the time-out period.

DTRX Help

Description 6.18 The Data Transceiver (DTRX) provides on-line help. The topics covered include:

● CALL

● HELP

● ACCOUNT

● MONITOR (ACD only)

● BYE

Conditions	**None**
Programming	**None**
Operation	**At the * prompt, type HELP and the topic name, followed by <RETURN>.**
	DTRX responds with the required information and returns to the * prompt.
	If the topic is not known, just type HELP followed by <RETURN >.
	DTRX responds with a list of topics and the ? prompt. Type the required topic name, followed by <RETURN >.
	To exit from Help, type <RETURN > at the ? prompt.

DTRX Hotline

Description	**6.19 A dataset can be programmed to connect automatically to a predetermined destination when a user originates a DTRX data call.**
Conditions	**Unlike normal DTRX call origination, if the user presses ATTENTION, BREAK, or CALL/ATTN while the dataset is queued or connected to its hotline destination, the system drops the call and does not reconnect the user to DTRX.**
Programming	**Assign the Hotline number in CDE Form 12 (Data Assignment).**
Operation	**See DTRX CALL ORIGINATE/DISCONNECT.**

DTRX Messages

Description	**6.20 The Data Transceiver (DTRX) provides several messages to inform the user of call progress and error conditions.**

<table>
<tr><td colspan="2" align="center">Table 6-1 DTRX Messages</td></tr>
<tr><td align="center">Message</td><td align="center">Meaning</td></tr>
<tr><td>DO101 Information — Ringing</td><td>The destination is available and is now ringing.</td></tr>
<tr><td>DO102 Information — Connected</td><td>The user is now connected to the destination. This is the last message displayed in a successful call. The DTRX is now dropped.</td></tr>
<tr><td colspan="2" align="right">Page 1of 4</td></tr>
</table>

Table 6-1 DTRX Messages (continued)	
Message	**Meaning**
DO201 Call Failure-Busy	The destination is busy and queuing is not enabled. The user is then returned to the DTRX * prompt.
DO203 Call Failure — Invalid Number, Check Directory	The directory number does not exist. The user is returned to the DTRX * prompt.
DO204 Call Failure -Out of Order, Call Communications Department	The destination data device has been busied out. This can indicate a fault in the destination data device.
DO205 Call Failure-No Answer	The destination auto answer dataset did not respond. The user is returned to the DTRX * prompt.
DO207 Call Failure — Destination Not Ready	The DTR signal of the destination device (non auto answer) indicates it is not ready. The user is returned to the DTRX * prompt.
DO208 Call Failure — Destination Powered Off, Try Again Later	The destination dataset has no power or is not connected to the PABX.
DO209 Call Failure — Destination Not Compatible	The destination is a voice device and thus incompatible.
DO21 0 Call Failure — Address Incomplete, Check Directory	Further addressing information is required to complete the call. The user is returned to the DTRX * prompt.
DO21 1 Call Failure- Modem Failure, Try Again	The setup to the Pooled Modem has failed. The user is returned to the DTRX * prompt.
DO212 Call Failure — No Modem Available, Try Again Later	There are no idle members in the Modem Pool Hunt Group and queuing is not enabled. The user is returned to the DTRX * prompt.
DO218 Call Failure — Destination Not Compatible	The destination device's data rate is not compatible with that of the source device. (Speed conversion is allowed if XON/XOFF Flow Control is enabled). The user is returned to the DTRX * prom pt.
DO301 Call Not Allowed — No Access, Call Communications Department	Access to the destination device is not allowed. This can be due to tenanting, because the data station is programmed as Receive Only, or because the destination is not accessible by the caller. The user is returned to the DTRX* prompt.

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Table 6-1 DTRX Messages
(continued)

Message	Meaning
D0503 Facility -Call is Queued	The destination is busy and queuing is enabled. The "Queue Position" message follows if the destination is a dataset. The DTRX is dropped until it is needed to display the call progress messages, or the next queue position. When the destination device becomes free, the "Ringing" and "Connected" messages follow.
D057204 Facility- Queue Position nn .	This message occurs after every system clock minute. It indicates the user's new queue position, if changed. If the position has not changed, "." is appended to the displayed position number. (e.g. Queue Position 02..). The DTRX is obtained for this write operation and is dropped after it is completed.
D0506 Facility – Destination Queue Full	There is no room in the queue. The user is returned to the DTRX * prompt.
D0507 Facility- invalid Account, Check Account Code	The entered account code is programmed as inactive (Verified Account Code), is invalid or is not the length specified in CDE Form 04 (System Options/System Timers).
D0512 Facility- Facility Not Available	For ACD only, when "MONITOR ACD" is selected. This message is displayed if the user enters MONITOR ACD in an ACD software load and System Option 41 (Automatic Call Distribution) is disabled.
D0517 Facility- Change Your Speed to [xxxxx]	The system has changed the data rate of the dataset to be compatible with the destination. The user must change the terminal's data rate as indicated. The DTRX is dropped at this point.
G0101 Information-Welcome to MITEL Data Switching	If DTRX Herald is not enabled, only the "*" prompt appears.
G0104 information – Goodbye	DTRX dropped due to timeout or user request ("BYE" command or <CTRL E> at DTRX * prompt).
G0105 Information – System Busy, Please Wait	There are no DTRX links currently available.
G0108 Information – Call Disconnected	The system has disconnected the call. This could be due to a link failure. Check the DATA SMDR reports for more information.
G0109 Information – Call Disconnected By User	The user disconnected the call using the Disconnect key.

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Table 6–1 DTRX Messages (continued)	
Message	**Meaning**
GO1 10 Information – Call Disconnected By Destination	The destination data station disconnected the call.
GO201 System Error-System Busy, Try Again Later	There are no free DTRX work areas in system memory.
GO301 User Error – User Has been inactive for too Long	DTRX or data call dropped due to inactivity timer expiry. If in DTRX, "Goodbye" message follows.
GO302 User Error – Unrecognized Command, Check User Manual	The system could not understand some part of the input command string. Consult the HELP facility.
GO303 User Error -Ambiguous Command, Check User Manual	The command the user entered was too abbreviated. The system could not determine which command was intended.
GO307 User Error – No Help Information Available	The help facility has no information on the command specified.
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Modem Pooling

Description   6.21 Modem Pooling is a data application feature using voice communication lines. Modem pooling permits communication between modems and DATASET 2100 Series datasets. Each pooled modem consists of a modem and a dataset. The dataset connects to a Digital Line Circuit, and communicates with datasets within the PABX. The pooled modem connects to an ONS or OPS Line Circuit, which communicates directly with internal modems, or with external modems via trunks.

A collection of pooled modems organized into a hunt group is called a Modem Pool Hunt Group.

A dataset user can access a modem pool hunt group to obtain a pooled modem for data transmission to a modem user over the Public Network. If the modem pool hunt group or the trunk group is busy, the user can queue for it; see MODEM POOLING QUEUING.

A modem user, internal or external, can access a modem pool hunt group to obtain a pooled modem for communication with a dataset within the PABX. If the modem pool hunt group or the destination dataset is busy, the user can queue for it; see MODEM POOLING QUEUING.

Modem Pooling calls may also be made by using System Abbreviated Dial numbers, or by using Speedcall from a *SUPERSET 4* or *SUPERSET 4*DN telephone.

Modem Pooling is not available with Generic 1002.

Conditions   The following conditions apply to this feature:

- COS Option 217 (Direct to ARS) is ignored for outgoing data calls.

- If the originator does not dial a specific Modem Pool Hunt Group access code, a pooled modem is selected from the default modem pool hunt group, if programmed.

- On incoming or internal calls, the system prints TRUNK SMDR reports for the trunk and DATA SMDR reports for the pooled modem if they are enabled in the respective COS. The reports can be correlated by the originating device's identity and the time the call was started. COS Option 806 (SMDR — Record Incoming Calls) must be enabled to generate SMDR records for incoming calls. COS Option 906 (DATA SMDR — Does Not Apply) must be disabled for pooled modems to generate SMDR records for incoming calls.

- On external ADL or DTRX—originated calls, the system generates a TRUNK SMDR report for the pooled modem and a DATA SMDR report for the originating data station.

- Only DATASET 2102 and 2103 datasets can be used as modem pool devices.

- All pooled modems in the Modem Pool Hunt Group must have the same Operating Mode (all Originate or all Answer or all Both).

- The pooled modems in the default modem pool hunt group can'only be programmed for Both (Answer and Originate) mode.

- A direct-connect modem cannot be connected to a COV line; an acoustically-coupled modem must be used.

Programming   Programming varies depending upon the modem configuration as described below.

Internal/Incoming Modem Users

Modem users can be a: trunk, station (ONS/OPS), SUPERSET telephone (with acoustically-coupled modem), or a console (can only transfer a modem.

To permit a modem user to make calls to datasets, enable COS Option 704 (Incoming/Internal Modem Pooling Access) in its COS. This is required because the system normally bars calls between voice and data devices. Modems of pooled modems within the modem pool hunt group should be in auto—answer mode.

If desired, Enable Option 900 (Data Station Queuing) in the modem user's COS; see MODEM POOLING QUEUING.

Pooled Modem

Pooled modems are programmed in CDE Form 36 (Modem Assignment); for each pooled modem, assign:

- Bay/Slot/Circuit location of its ONS (or OPS) Line (system-supplied),

- Data Circuit Descriptor Number (CDN) that applies to its dataset,

- Bay/Slot/Circuit location of its dataset's Digital Line,

- extension number

- **tenant (default is** 1),

- DTE Profile Number (optional),

- Class of Service (COS) (default is 1) and Class of Restriction (COR) (default is 1),

- **mode: Answer, Originate, or Both (default is Both).**

- autodial **capability: Auto dial or Non Auto dial (default is Non Auto dial).**

Modem Pool Hunt Group

- Program the extension numbers of the required pooled modems to a Hunt Group in CDE Form 17 (Hunt Groups).

- Assign an access code to the Modem Pool Hunt Group.

- If desired, make this the Default modem pool hunt group. Users do not need to dial the Modem Pool access code. Only one Default modem pool hunt group can be programmed in the system.

- Only pooled modems of the same Operating Mode can be assigned to the same modem, pool hunt group.

- Assign a Hunt Group Name to allow access via the DTRX Call by Name feature.

- To provide immediate DTRX access for incoming or internal modem pooling callers, enable DTRX for the Modem Pool Hunt Group in the Options subform of CDE Form 17 (Hunt Groups). If DTRX is disabled, DTRX callers must wait for the interdigit time-out (up to 15 seconds) before receiving a response. The DTRX option does not affect outgoing modem pooling calls. The DTRX option can only be enabled if DTE is programmed in the pooled modem and the mode of the hunt group is Answer or Both.

Operation   Operation of the various modem configurations is described below.

Internal Modem User (Station, *SUPERSET* Telephone, or Console)

- **Dial:**

    - Data Station or Data Hunt Group access code(where default modem pool hunt group is selected, if programmed)

        or,

    - Modem Pool Hunt Group access code for DTRX access

        or,

    - Modem Pool Hunt Group access code plus Data Station or Data Hunt Group access code

- When answer tone is heard, the modem pooling call is established. Put the modem on line.

Incoming DISA Trunk Modem Call

- From the Public Network, using a DTMF telephone, dial the DISA telephone number. The PABX answers and returns dial tone.

- Dial the DISA Access Code (normal DISA trunk) or Account Code (if a Special DISA trunk). Once access is allowed, the system returns dial tone.

- **Dial:**

  - Data Station or Data Hunt Group access code (where default modem pool hunt group is selected, if programmed)

    or,

  - Modem Pool Hunt Group access code for DTRX access

    or,

  - Modem Pool Hunt Group access code plus Data Station or Data Hunt Group access code

- When answer tone is heard, the modem pooling call is established. Put the modem on line.

- If DTRX access is used, enter CALL followed by the destination data number or name at the DTRX prompt.

Incoming Tie Trunk Modem Call

- Dial the TIE number to reach the remote PABX.

- **Dial:**

  - Data Station of Data Hunt Group access code (where default modem pool hunt group is selected, if programmed)

    or,

  - Modem Pool Hunt Group access code for DTRX access

    or,

  - Modem Pool Hunt Group access code plus Data Station or Data Hunt Group access code

- When answer tone is heard, the modem pooling call is established; put the modem on line

- If DTRX access is used, enter CALL followed by the destination data number or name at the DTRX prompt.

Incoming DID Trunk Modem Call

The Central Office passes on to the PABX a pre-arranged number of the caller's dialed digits. The resulting digit string formed is one of the following:

- Data Station or Data Hunt Group access code where default modem pool hunt group is selected, if programmed

- Modem Pool Hunt Group access code for DTRX access

- Modem Pool Hunt Group access code plus Data Station or Data Hunt Group access code

- When answer tone is heard, the modem pooling call is established; put the modem on line

- If DTRX access is used, enter CALL followed by the destination data number or name at the DTRX prompt.

Incoming Direct-In-Line (DIL) Modem Call

- From the public network, dial the DIL telephone number.

- The call is directed to the programmed Answer Point,

  - a data station or a data hunt group where the programmed default modem pool hunt group is selected

    or,

  - a modem pool hunt group access code for DTRX access

Transferring a Modem Pooling Call (Incoming/Internal Call On Hold)

- The transferrer must have COS Option 704 (Incoming/internal Modem PoolingAccess) enabled; the transferrer can be a station, SUPERSET telephone, or a console.

- Dial:

  - Data Station or Data Hunt Group access code (where default modem pool hunt group is selected, if programmed)

    or,

  - Modem Pool Hunt Group access code for DTRX access

    or,

  - Modem Pool Hunt Group access code plus Data Station or Data Hunt Group access code

- Once the call is set up successfully, the pooled modem returns answer tone

- When answer tone is heard, transfer the call as follows:

  - press RELEASE key at console

    or,

  - press RELEASE softkey or hang up at a SUPERSET 4 telephone

    or,

  - press RELEASE ME softkey or hang up at a SUPERSET 4DN telephone

    or,

  - hang up at a SUPERSET 3 telephone, a SUPERSET 3DN telephone, or an industry-standard telephone

- To cancel the modem pooling call setup, proceed as follows:

- press CANCEL key at console

  or,

- press CANCEL softkey at a *SUPERSET 4* telephone

  or,

- press BACK TO HELD softkey at a *SUPERSET 4*DN telephone

  or,

- flash the hook switch at a *SUPERSET 3* telephone, a *SUPERSET 3*DN telephone, or an industry-standard telephone

External ADL Modem Pooling Call

- Dial the ADL access code

- Dial the Modem Pool access code, unless the default modem pool is to be used.

- Dial the external destination (dial the ARS leading digit string and the destination number). Re-order tone is returned if the data connection cannot be made.

- When answer tone is heard, hang up the voice telephone. The data call is established.

External DTRX Modem Pooling Call

- Originate a DTRX session (see DTRX CALL ORIGINATE/DISCONNECT)

- Enter "CALL" followed by the Modem Pool Hunt Group access code, (omit the Modem Pool Hunt Group access code if the default modem pool hunt group is to be used),

- Enter the destination name or number. (For external calls, dial the ARS leading digit string and the destination number).

- Press RETURN.

- The DTE displays RINGING while the destination is ringing and CONNECTED when the data connection is established.

Modem Pooling Queuing

Description   6.22 Modem Pooling callers who encounter a busy Modem Pool Hunt Group, destination dataset, Data Hunt Group, or Trunk Group can queue for it.

Modem Pooling Queuing is not available with Generic 1002.

Conditions   The following conditions apply to this feature:

- DID trunk callers cannot queue. They receive busy tone unless an **answer-**point is programmed in the Call Rerouting table for DID Recall Points on Busy.

- DIL trunks can queue for a modem pool hunt group, **dataset,** or Data Hunt Group, but they receive **ringback** tone, not busy.

- Trunk callers have higher priority than internal callers for queuing.

Programming   Enable COS Option 900 (Data Station Queuing) in the caller's Class **of Service.**

Operation   Operation varies depending **upon** the modem configuration as described be-low.

Incoming Modem Pool Queuing

The modem pool hunt group or destination is busy. Special busy tone is re-turned for 2 seconds, followed by Busy tone when the **campon** occurs. *SUPERSET 4* telephone users receive Busy tone but must press the **CAMPON softkey** within 10 seconds.

ADL Outgoing Modem Pool Queuing

The modem pool hunt group or trunk group is busy. Special busy tone is re-turned for 2 seconds, followed by Busy tone when the **campon** occurs. *SUPERSET 4* telephone users receive Busy tone but must press the **CAMPON softkey** within **10** seconds.

DTRX Outgoing Modem Pool Queuing

The originator receives the message "Call is Queued".

7. MAINTENANCE FEATURES

7.1 All features provided by the 5X-200 DIGITAL PABX which apply to Maintenance are described in the following paragraphs. Maintenance functions are performed at the RS-232 Maintenance Terminal, which can be any RS-232 80-character terminal. It is recommended that a terminal capable of interpreting the ANSI special character set be used.

Information presented on the maintenance terminal CRT includes:

● system date, system time

● current system alarm level

● system identification number

● maintenance data display area

● command entry line

● softkey labels (softkeys 1 to 5)

● softkey labels (softkeys 6 to 0)

Maintenance functions may also be accessed from the Attendant Console; information presented on the 4-line console LCD display includes:

● system date, system time

● command entry line

● softkey labels (F1–F5)

● softkey labels (F6–F0).

When the console is used for Maintenance, the maintenance output data is displayed on the LCD.

For further information on the Maintenance Terminal, refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Alarm Indication

Description . 7.2 There are four alarm levels: NO ALARM, MINOR, MAJOR and CRITICAL. Minor alarms indicate problems affecting the system in a small proportion. Major Alarms indicate problems causing a serious system wide degradation of service. Critical alarms indicate problems of such severity that they warrant automatic activation of System Fail Transfer.

Alarm status is indicated on the upper right corner of the maintenance terminal, and on the top line of the attendant console LCD display.

Refer to Practice 9109–094–353–NA, General Maintenance Information for a complete description of alarms.

Conditions	None
Programming	None
Operation	None

Alarm LEDs

Description	7.3 All SX-200 DIGITAL PABX peripheral cards (lines, trunks, receivers, etc.) have one red alarm LED, which is illuminated if a diagnostic test fails on the card, or if the card is installed in a wrong or non-programmed card slot.
Conditions	None
Programming	None
Operation	None

Alarm Status Display

Description	7.4 The maintainer can display the system alarm levels either in their entirety, or divided into their separate categories. The categories are:

- **Lines**
- **Trunks**
- **DTMF Receivers**
- **PCM Channels.**

Conditions	The following conditions apply to this feature:

- **Refer to Practice 9109–094–353–NA, General Maintenance Information.**

Programming	None
Operation	Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Configuration Report

Description	7.5 The maintainer can display the system configuration (physical location of major devices) to the level of modules installed on cards in the peripheral bays.

Conditions	None
Programming	Program the system configuration in CDE Form 01 (System Configuration).
Operation	Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Copy Database.

Description	7.6 The maintainer can make a backup copy of the system database diskettes using the system's floppy disk drives.
Conditions	The new diskette must already contain the system software.
	If the system software on the new diskette is of a different version than that on the original diskette, the system must be reset using the new diskette before it can be used.
	The card to which the Console is connected must not be removed during the Copy Database process.
Programming	None
Operation	Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Customer Data Entry (CDE) Backup and Restore

Description	7.7 This feature allows Customer Data to be dumped onto a second floppy disk, and also allows new generic software to be loaded jnto the system from disk.
Conditions	None
Programming	None
Operation	Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE).

Device Error Analysis Statistics

Description	7.8 The 5X-200 DIGITAL system records data about errors that occur during operation of datasets, disk drives, HDLC links, and T1 trunks. System Maintenance personnel can obtain statistical reports based on this data.

Conditions	None

Programming	None

Operation	Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Device Status Report

Description 7.9 The maintainer can display the status of any peripheral circuit or circuits by entering a command at the maintenance terminal. The information displayed includes: circuit location, circuit type, call processing state and maintenance state.

Conditions None

Programming None

Operation Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Diagnostics

Description 7.10 The SX-200 DIGITAL PABX has a complete, comprehensive diagnostic package. The diagnostic set can be divided into three distinct categories: power-up diagnostics, background diagnostics, and directed diagnostics.

Power-up diagnostics test virtually all of the system's hardware, and are run only when the system is powered up or reset. '

Background diagnostics are run continuously in the on-line environment, and cover all of the digital peripheral cards in the system, and all of the analog junctors.

Directed diagnostics are run on command from the maintenance terminal or console in the on-line environment, and cover most of the peripheral cards in the system.

Conditions Refer to Practice 9109–094–353–NA, General Maintenance Information.

Programming None

Operation Refer to Practice 9109–094–351–NA, RS-232 Maintenance Terminal.

Remote Maintenance Administration and Test (RMATS) Access

Description	7.11 The RMAT System allows personnel at maintenance centers (off-user premises) to access the *SX-200* DIGITAL PABX to obtain maintenance data or to make programming changes. It provides a means to identify alarm conditions and to perform Customer Data Entry without visiting the user's premises. Refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal for information on setting up a remote terminal.
Conditions	None
Programming	None
Operation	Ail of the maintenance functionality is available at the remote site.

Remove from Service, Return to Service

Description	7.12 The maintainer can remove a line, trunk, receiver circuit or analog junctor circuit from service to perform maintenance functions on it. Removing a circuit from service makes it inaccessible to call processing; it remains so until the maintainer returns it to service.
Conditions	None
Programming	None
Operation	Refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal

Show, Set Date

Description	7.13 The maintainer can show and set the system date from the maintenance terminal.
Conditions	None
Programming	None
Operation	Refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal.

Show, Set System Time

Description   7.14 The maintainer can show and set the system time from the maintenance
                      terminal.

Conditions   Changing the system time can affect ACD timing for calls currently in an ACD
                      path.

Programming   In CDE Form 04 (System Options/System Timers) program System Feature 01
                      (24-Hour Clock) to select either a 12-hour and a 24-hour clock.

Operation   Refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal.

System Logging Facility

Description   7.15 The SX-200 DIGITAL PABX keeps a system event log on the system floppy
                      disk. Each time the "maintenance state" (i.e., faulty, suspect, available) of a
                      device changes, or a major event occurs (i.e., a card installed in the wrong
                      slot), a log report is generated. These log reports are accessible from the
                      maintenance terminal or console, where they can be read, printed, or de-
                      leted.

Conditions   None

Programming   None

Operation   Refer to Practice 9109-094-351-NA, RS-232 Maintenance Terminal.

Test Line Function

Description   7.16   The Test Line, in addition to normal extension facilities, has access to
                      maintenance and testing features which allow service personnel to perform
                      some maintenance functions by entering DTMF digits. The functions possible
                      are:

Function	Access Code
Busy-Out Device	26 (BO)
Return Device To Service	77 (RS)
Test Device	83 (TD)

Function	Access Code
Test Junctor (PCM Path)	85 (TJ)
Direct Trunk Select	38 (DT)
Test Printer	87 (TP)
Dump Logs	35 (DL)
Copy Data base	23 (CD)

Refer to Practice 9109–094–353–NA, Maintenance Information for additional information.

Conditions   There must be a line card in Bay 2, Slot 1. Circuit 1 is the Test Line.

Programming   Assign an access code to Feature 18 (Maintenance Functions -Test Line).

Operation   Practice 9109–094–353–NA, General Maintenance Information, details the operation of the Test Line.

APPENDIX A. GLOSSARY OF *SX–200* DIGITAL TERMS

A.1 This glossary is intended to assist personnel in becoming familiar with the terms used in the *SX–200* DIGITAL PABX. It is not a complete listing, as many of the more well known terms already exist in various specifications, MITEL Practices, and similar documents.

ABH

See Average Busy Hour

ABSBH

See Average Busy Season Busy Hour

A/D

See Analog/Digital

ADL

Associated Data Line

AIOD

Automatic Identified Outward Dialing

ASCII

American Standard Code for Information Interchange. A code in common use, which was developed by the American Standards Association, for both synchronous and non-synchronous data transmission between DTEs. Characters consist of an B-bit binary code and incorporate parity bits.

Abbreviated Dialing

The Abbreviated Dial facility is provided to give users the ability to dial abbreviated speed call codes, which substitute for a system wide list of frequently-called numbers. These numbers can be displayed or programmed, when required, at the attendant console or the Maintenance terminal.

Absorbed Digits

In certain call processing functions performed by the SX-200 DIGITAL PABX, it may be necessary to suppress the onward transmission of certain digits received in a dialed sequence of digits. This digit absorption is required for applications such as DID calls and ARS purposes; see also Digit Modification.

Account Codes

Account codes are used with the SMDR facility of the SX-200 DIGITAL PABX in order to record trunk call details (for example, time and date of call, its duration, and the calling and called numbers involved), against a

particular user or group of similar users of the system. Verified Account Codes can provide restricted access to the system.

A/D Converter

See Analog/Digital

Analog/Digital (A/D)

A term frequently used in transmission technology which implies the transformation of analog signals (such as normal telephone speech signals) into their equivalent digital data signals. The device in general use that performs this transformation is termed an A/D Converter. The device that converts digital signals into their analog form (if required), is termed a D/A Converter.

Analog Transmission

Analog transmission is the transmission of a continuously varying signal. For example in the transmission of speech, where the magnitude of the signal at any instant in the transmission path is proportional to the magnitude of the original input. This type of transmission is distinct from digital transmission in which the original input is encoded (see CODEC, for example), and the resulting line signal is in digital form.

Answering Point

An Answering Point is a device to which an incoming call is directed. It normally consists of an industry-standard telephone or an attendant console; and under certain conditions an Answering Point may be a hunt group, a trunk, an ACD Path or a device such as a night bell, an answering machine or a recorder/announcer machine.

Application Processor

This is a processor containing one or more application programs which meet a customer's particular needs, for example to meet the needs of a hospital, a governmental agency or a university environment. The processor is usually arranged to be accessed directly by an input/output device; but it may, for example, by means of suitable interface arrangements, be connected to the SX-200 DIGITAL PABX and be thus capable of access by suitable input/output devices which are also connected to the SX-200 DIGITAL PABX.

Application Program

See Application Processor.

Associated Data Line

An Associated Data Line (ADL) is a DTE connection to an SX-200 DIGITAL PABX by means of a dataset which has an associated telephone set. The user sets up a data call by dialing an access code and destination dataset number.

Associated Modem Line

An Associated Modem Line is a DTE connection to an 5X-200 DIGITAL PABX by means of a modem which has an associated *SUPERSET 4* or *SUPERSET 4DN* telephone. The *SUPERSET* telephone and the modem can dial calls independently and can dial calls for each other. The user can conduct voice and data calls simultaneously or alternate voice and data on a trunk call.

Asynchronous Mode

In asynchronous data transmission the time between bytes (characters) is indeterminate and depends upon external factors. The transmitted data has its own start and stop elements, and thus controls the receiving device; see also Synchronous Mode.

Attendant

The term applied to the person assigned to handle calls which appear at the Attendant Console.

Authorized Access Codes

Access to the SX-200 DIGITAL PABX for programming, maintenance or administration purposes can be obtained only by first entering an authorized access code (user name and password).

Autobaud Detection

Some data communication equipment can determine, on receipt of one or more characters, the baud rate of the transmitting source. It then sets its own receive circuits to accommodate this baud rate. In the SX-200 DIGITAL PABX this feature is applicable to datasets and to the Maintenance/CDE port which, during the initial setting up procedure, automatically adjusts its baud rate to match that of the terminal.

Automatic Route Selection

Automatic Route Selection selects the optimum trunk route automatically when a call is made by a user. This selection is based on many factors, including cost, user priority, the day, and time of day.

Average Busy Hour (ABH)

This term is used in traffic analysis and is used to calculate ABSBH.

Average Busy Season Busy Hour (ABSBH)

This is the hour calculated to have the highest average business day traffic load during the busy season.

Battery and Ground Pulsing

This is a method of signaling used on long lines, in which both wires use battery and ground at each end of the circuit. When signaling to the re-

mote end of the trunk, the battery and ground connections are reversed, opposing the potentials at the remote end and increasing the current supply to the trunk.

Battery Tone

See Side Tone.

B Channel

The B Channel is the 64K bit channel of a DNIC device. It can carry digitized voice or ASCII characters at a maximum rate of 19.2 Kb/s.

Blocking

This term describes the condition existing in a switching system when the immediate establishment of a call is impossible due to insufficient switching connections being available in the system at that time.

CCS

This unit is used in Traffic Analysis to denote the traffic occupancy of a switched circuit in a PABX exchange. One CCS represents 100 call-seconds.

CDE

See Customer Data Entry (CDE).

COV

See Control Over Voice.

CP

Call Processing.

CPU

Central Processing Unit.

Call Processing

This is the software package which handles all aspects of the setting up of connections within the PABX.

Circuit Switch (CS)

The SX–200 DIGITAL PABX Circuit Switch provides a matrix of bi-directional switch links. Each circuit switch link accommodates 32 channels. Each channel can be used for a voice or data transmission. Through the circuit switch, any device may be connected to any other device in the system. It is located on the DX Module on the Main Control card.

The number of links in the matrix depends upon the system configuration: The 336–, 456–, and 480–port configurations use a 16 X 16 matrix; the 672 port configuration uses a 24 X 24 matrix.

Circular Hunting

See Group Hunting.

Class of Restriction (COR)

A Class of Restriction controls station and trunk access to trunk circuits. It performs functions similar to toll control and is programmable on a station (or trunk) basis.

Class of Service (COS)

A Class of Service has a number of different feature options assigned to it. This Class of Service may be allotted to one or many stations, and enables these stations to have, or be denied, features which are available within the *SX-200* DIGITAL PABX. Up to 50 Classes of Service are available which allow a large number of different groups of station users to be programmed, each with differing feature characteristics.

CODEC

The COder-DECoder is a device used in digital switching and transmission systems, for coding analog signals (e.g., voice signals) into a digital format for onward transmission; and decoding a digital transmission to recover the original analog signal.

CODEC/Filter

The CODEC/Filter chip used in the SX-200 DIGITAL PABX consists of a CODEC, a filter and other elements. It forms part of the peripheral card, with the CODEC portion performing the necessary A/D and D/A functions and the filter portion providing low-pass filtering for the line transmission.

Connection Memory '

The Connection Memory is the part of the DX chip which stores the digital voice (or data) samples. These samples are stored and forwarded under the control of the MCC.

Consultation Hold (Soft Hold)

This type of call hold facility is also termed soft hold and is a form of temporary hold. It is used to place a second party on hold, while the first party is speaking (consulting) with a third party, or otherwise wishes to temporarily isolate the second party from conversation.

Control Over Voice

This facility is used by the *SUPERSET 4* telephone to perform most of the signaling functions of the set. A 32 kHz carrier signal is modulated according to the control function, and is transmitted to or from the set on the same pair of wires used for the audio connection. The carrier frequency lies above the normal audio range of the set, and is therefore inaudible to the user.

Critical Alarm

See Major Alarm.

Cross-Connect Field

See Main Distribution Frame.

Customer Data Entry (CDE)   •

Customer Data Entry (CDE) is the process employed when data, particular to a specific customer installation, is entered into the *SX–200* DIGITAL PABX System. This data includes such things as numbering plan, ARS routings, trunk descriptors, etc. CDE is entered into the SX-200 DIGITAL PABX via the Maintenance/CDE terminal.

DCE

See Data Communication Equipment.

DIC

See Digital Interface Card.

D Channel

The D Channel is the 16 K bit/s control channel of a DNIC device.

DID

Direct Inward Dialing.

DIL

Direct-In Line.

DLIC

See Digital Line Interface Circuit.

DOD

Direct Outward Dialing.

DSP

See Digital Signal Processor.

DTE

See Data Terminal Equipment.

DTMF

Dual Tone Multifrequency Signaling.

DTR

Data Terminal ready RS-232 pin.

DTRX

Data Transceiver.

DX

This is an abbreviation of the term Digital Crosspoint, the fundamental switching element of the SX-200 DIGITAL PABX Circuit Switch. The Circuit Switch is composed of a large number of digital crosspoint switch elements in the form of DX chips, assembled on a plug-in Circuit Switch module.

Data Communication Equipment

Data Communication Equipment (DCE) interfaces a communications line or data device to Data Terminal Equipment (DTE) over an RS-232 line. Examples of a DCE are a modem and the local Maintenance Port on the SX-200 DIGITAL.

Data Terminal Equipment

Data Terminal Equipment (DTE) is terminal equipment usually consisting of a keyboard and video screen or printer, which is used to communicate with a variety of other equipment (i.e., another DTE or a computer).

DCD

Data Carrier Detect.

Default

This term refers to the value assigned to a particular function, which most nearly represents the normal or standard value of the function. A typical default value used in the 5X-200 DIGITAL PABX for example is a value of 1 minute allowed before an unanswered ringing extension times out. However this value may be changed from the default value, during CDE programming, to a value which lies between land 5 minutes.

Digit Modification

This expression refers to the process of restructuring a dialed sequence of digits received by the 5X-200 DIGITAL PABX which effectively results in the production of a different sequence of digits. The revised sequence may have new digits added and/or digits deleted (absorbed), or certain digits in the original sequence may be repeated. This process is performed automatically by the SX-200 DIGITAL PABX and is thus transparent to the user. Digit Modification is used in Speed Calling operation, tandeming of trunk circuits, in processing incoming DID calls, in processing calls in ARS and other applications.

Digital/Analog

A term used in connection with the conversion of digital signals to equivalent analog signals. The original signals are usually in analog form and are

converted from analog to digital signals for transmission (see also Analog/ Digital).

Digital Interface Card

This card interfaces the analog cards in the analog bays to the digital switching network (the Circuit Switch), and the rest of the system.

Digital Line Interface Circuit

The Digital Line Interface Circuit (DLIC) is a MITEL chip, which is designed to handle 256 kbits/s data transmitted between the *SX-200* DIGITAL PABX and high-speed digital synchronous DTEs (i.e., the Attendant Console).

Digital Signal Processor (DSP)

This is a single chip processor capable of both tone detection and tone generation. Located on the Main Control card, the DSP generates and detects all of the call progress and DTMF tones used by the SX-200 DIGITAL PABX.

DTRX Messages

DTRX message code used to standardize messages between MITEL PABXs as well as different language text. Intelligent devices can interpret these codes.

Eand M

The term applied to a type of tie trunk, and also to the signaling method used for this and for other types of trunks. The term is derived from the use of the E and M leads, forming part of the trunk equipment, and taken respectively to denote the receive and transmit leads; the two leads being used to pass supervisory conditions over the trunk.

End Node

A network node that supplies information to the network but does not receive information from the network.

Forced Account Code

The Forced Account Code feature requires that when it appears in a particular station's COS, the user at that station must dial a valid account code each time that an outgoing trunk call is made. If it is not entered the user is denied access to the trunk. The account code appears as part of the SMDR record.

Full Duplex

A method of operation which allows simultaneous transmission from both ends of a communications link.

Ground Button

See Recall Button.

Ground Start

The term used to designate a particular type of trunk circuit, on which a ground condition is applied to the ring lead of the trunk when an outgoing call seizes the trunk.

Hard Hold

Hard Hold is the term used when a station user, or an attendant, places another party on hold, and can then perform any of the functions which are normally available at the station (as opposed to Consultation Hold, which restricts the functions which can be performed).

Hot Repair

This term is applied, when a system has the ability of allowing maintenance or repair action to be performed, without first removing power from the system.

Hunt Group

A Hunt Group is a group of stations to which incoming calls are directed to the group by dialing a master number. A group can be arranged as either a:

- Circular group, in which case the stations are searched in a circular manner commencing with the called station.

- Terminal group, in which case the stations are searched starting at the first station and ending with the last station in the group.

intelligent Terminal

An Input/Output device, usually with a keyboard for input and a VDU for output, which has local storage and a processor enabling it to perform certain tasks independently.

Interconnection Restrictions

Certain interconnections between stations and trunks, and between trunk and trunk circuits are not allowed for various reasons. These interconnections are prevented by setting appropriate parameters in the Device Interconnection Table which is programmed as part of the 5X-200 DIGITAL PABX CDE procedures. Calls made with trunk circuits are thus subject to the parameters in the Table. For more information, refer to Device Interconnection Control described in the System Features section of this practice.

Least Cost Routing

Least Cost Routing is one of the functions of Automatic Route Selection and refers to the economical aspects of the ARS facility. In Least Cost Routing, the trunk circuits are programmed, with regard to the effects of the costs of the possible alternative trunk routings. In practice the customer

may require the economical aspects to be subordinate to the overall traffic efficiency requirements of the System; for example, less costly trunk routes may be available, but offer too low a traffic grade of service for the customer's needs. Actual requirements may be subject to Traffic Analysis of the customer's needs.

Loop Start

A form of signaling used by a certain type of CO trunk, which designates that type of trunk. It denotes an outgoing trunk circuit which is seized by the system placing a "loop" condition on the trunk.

Loop Tie Trunk

The term applied to a tie trunk between PABXs, which is seized by the application of a "loop" condition on the trunk. Subsequent supervisory conditions may be determined by the presence/absence of the loop or by battery-reversal conditions.

MCC

See Main Control Card.

MDF

See Main Distribution Frame.

MODEM

A MOdulator–DEModulator is a piece of Data Communications Equipment (DCE) that accepts data signals from a piece of Data Terminal Equipment (DTE) and transforms them into modulated tone signals suitable for transmission over telephone lines. The DCE at the far end reconverts the tone signals into data signals and sends them to its DTE. The data circuit is commonly a duplex circuit; i.e., capable of operation in both directions simultaneously.

MPU

Main Processing Unit- in the case of the SX-200 DIGITAL PABX, this refers to the 68000 CPU on the Main Control card.

Main Control Card (MCC)

The Main Control Card is the main hierarchical intelligence of the 5X-200 DIGITAL PABX. It contains the CPU (Central Processing Unit), DRAM (Dynamic Random Access Memory), disk interface elements, and is responsible for the overall operation of the machine (including call processing, record keeping, maintenance functions and system control functions).

Main Distribution Frame

The Main Distribution frame (MDF) forms the interconnection point between the in-house PABX (for example the SX-200 DIGITAL PABX), and

the internal and external cabling to the PABX. The MDF provides a convenient and flexible means of interfacing the cabling to the system.The MDF is also known as the Cross-Connect Field.

Maintenance Panel

The Maintenance Panel of the SX-200 DIGITAL PABX allows access to the maintenance facilities via an RS-232 port and an RJ-11 jack.

Major Aiarm

One of three possible types of alarm priorities, which are the Minor, Major and Critical Alarms. As the names imply, fault conditions which may arise on the SX-200 DIGITAL PABX can be segregated into different categories of urgency, which are then subsequently handled according to the degree of urgency.

Message Subsystem

The Message Subsystem is one of the subsystem blocks of the *SX–200* DIGITAL PABX. Its function is to act as the main message collection and distribution facility for the system, and links the Main Controller with the intelligent entities at the peripheral level or below. In effect it is the "nervous" system of the SX-200 DIGITAL PABX, in that it passes messages and commands between the lowest and highest levels of the system.

Minor Alarm

See Major Alarm.

Mixed Station Dialing

The SX-200 DIGITAL PABX caters to the use of both rotary dial and/or DTMF types of industry-standard telephones installed on the system.

Modem Pool

A modem pool is a hunt group of pooled modems. It permits communications between dataset users and modem—equipped data devices.

Multiple Consoles

More than one attendant console may be installed on an SX-200 DIGITAL PABX System. The trunk groups can be arranged to terminate such that they can be accessed from all of the consoles, and any call can be answered from any console.

Null Modem

This item can take various forms, but its function is always the same; it enables connections to be made between two "modems" on a back-to-back basis. The main characteristic of the Null modem is to transpose the RS-232C S and R leads which interconnect the "modems"; otherwise the send (S) leads of the two "modems" are connected together, as are the

two receive (R) leads. A typical example of the use of a Null Modem is its employment, in the form of an adapter added to the RS-232C cable, when connecting a dataset to a modem to form a Modem Element which is used in a Modem Hunt Group.

ONS

See On-Premises Stations.

OPS

See Off-Premises Stations.

Off-Premises Stations

Stations which are located at a considerable distance from the parent communication system, and require special circuit terminating arrangements at the PABX, are referred to as Off-Premises (OPS) stations.

On-Premises Stations

Stations which are installed on the same premises as the PABX, or which can operate satisfactorily with the PABX, when installed in adjacent premises without special circuit arrangements, are known as On-Premises (ONS) Stations.

Overlap Outpulsing

Overlap Outpulsing is a feature used in the 5X-200 DIGITAL PABX when making trunk calls. It results in dial pulses (or tones) being outpulsed prior to the receipt of all required digits from the user, the purpose being to reduce the time needed to process the call.

PCB

Printed Circuit Board.

PCC

See Peripheral Control Card.   .

PCM

Pulse Code Modulation.

PLID

Physical Location IDentity -the bay number, slot number, circuit number and sub-circuit number of a device; e.g., a DTMF Receiver circuit 'plid' might be: Bay 2, Slot 3, Circuit 2, Sub-circuit 1.

Peripheral Control Card

This card controls the operations within the analog peripheral bays, and is under control of the Main Control card.

Peripheral Equipment

Peripheral Equipment, with regard to the SX-200 DIGITAL PABX, is understood to be all those external equipments which are connected to the *SX–200* DIGITAL PABX, such as stations, telephones, trunks, attendant consoles, and maintenance terminals.

Peripheral Interface

Peripheral Interface cards are cards which provide the interface facilities between the external peripheral equipments, such as stations; trunks and attendant consoles. One of their prime functions is to convert the external analog inputs to the internal digital PCM signals (and conversely convert digital PCM to analog output).

Pooled Modem

A pooled modem consists of a dataset connected to a modem. The dataset connects to a Digital Line Circuit. The modem connects to an ONS or OPS Line Circuit. CDE programming associates the two circuits in the system database. Pooled Modems are grouped into hunt groups called modem pools; see Modem Pool in this Glossary.

Power Fail Transfer

The System Fail Transfer feature allows selected stations of the System (or portions of the System, according to the type of outage), to be transferred to certain trunks. Such transfer action is accomplished automatically in the event of a failure of the main power supply. Transfer action is also accomplished on a "zone" basis in the event of power failure occurring, for example, on a peripheral shelf.

RS-232C

A North American data interchange standard, issued by the Electronics Industries Association (EIA). The equivalent European standard is the V.24 specification.

Recall Button

This refers to the push-button installed on certain types of industry-standard telephones, for the purpose of providing a ground condition to the line when the button is pressed. When used in conjunction with the SX-200 DIGITAL PABX, pressing the Recall button corresponds to a switch-hook flash; for example, when a party is being placed on hold. The button is sometimes referred to as the Ground button.

Ring Lead

The second wire of a telephone pair (the first being the Tip Lead), so named because it was originally connected to the "ring" of a telephone plug.

SMDR

See Station Message Detail Recording

Scanner Card

This card continuously scans all of the analog ports in the analog bays to detect signals which require processor action.

Second Dial Tone

A user making a trunk call through a PABX System normally receives dial tone after the handset is removed, and then dial tone from the CO after the trunk access code has been dialed. The 5X-200 DIGITAL PABX, however, with its ARS feature would mask the CO dial tone, because the outpulsing sequences are isolated from the user. To prevent confusion a second dial tone can be provided to the user (as a programmable option) by the SX-200 DIGITAL PABX, at the appropriate point in the outpulsing sequence.

Side Tone

This is the portion of the transmitted voice signal that is returned to the receiver of the transmitting extension.

Slip Rate

On a T1 Trunk, slip is the deletion or repetition of a single frame of information in a digital bit stream. The slip rate is the number of such slips over a 24-hour period.

Soft Hold

See Consultation Hold.

Station Message Detail Recording (SMDR)

Station Message Detail Recording (SMDR) is a facility which records and prints out the details of incoming and outgoing trunk calls in the SX-200 DIGITAL PABX. Such details include the numbers of all parties involved in the call, the time and duration of each call, account codes and other pertinent details. Practice 9109-094-221-NA, Station Message Detail Recording should be consulted for details of SMDR.

Stop Dial

In tandem trunk operations it may be necessary, during the course of establishing a call, to suspend the dialing of dial train sequences. This is to ensure that no digits are lost, due to the next link in the tandem connection not being ready to receive the digits. The Stop Dial feature is employed to stop the outpulsing of further digits, by sending an on-hook condition to the originating end of the circuit.

Store arid Forward Dialing

See Overlap Outpulsing.

Synchronous Mode

This term is associated with data which is transmitted in a continuous stream at a fixed rate, with the receiving terminal synchronized to the

transmitting terminal by means of sync elements transmitted on a regular basis; see also Asynchronous Mode.

System Configuration

The term System Configuration has a specific meaning for the SX-200 DIGITAL PABX, in that it refers to the particular hardware and software initially installed for the System. Any subsequent additions, deletions and any other changes which occur result in a new System Configuration being created. The listing of hardware and software items which comprise the current System Configuration can be obtained on command from the maintenance terminal.

System Fail Transfer

See Power Fail Transfer.

TCM

Transition Code Modulation.

TTY

This abbreviation is in common use to denote a teletypewriter machine.

Tandem Trunking

Tandem Trunking describes the facility of transparently switching CO-located trunks together at the 5X-200 DIGITAL PABX. This type of switching is subject to Digit Modification, and the parameters programmed during CDE for the Interconnection Restrictions table.

Telco

The abbreviation used to denote Telephone Company.

Tie Trunks

Tie Trunks directly interconnect two PABX systems together. This enables a station, terminated on one of the systems, to be interconnected to any other station, terminated on the other system. With **Tandem Trunking the calling party can be extended through more than one node (PABX) of the network.**

Tip Lead

The first wire of a telephone pair, originally named because it was the lead connected to the "tip" of a telephone plug; the second wire of the pair being called the Ring Lead, as it was connected to the ring of the plug.

Toll Control

Toll Control, as applied in the SX-200 DIGITAL PABX, restricts the users to the use of certain trunk routes and denies the use of specific directory

numbers. It forms part of the ARS feature, and each user is assigned a COR which, being associated with the trunk route tables in ARS, determines what degree of access the particular station has to the trunk network.

Tone Detector

Tone detection is a function provided by the Digital Signal Processor (DSP) to detect and analyze call progress and DTMF tones.

Travelling Class Marks

In a private network, the caller's Class of Service can be passed to the destination node to control access to services.

UPS

Uninterruptable Power Supply.

VNL

See Via Net Loss.

Via Net Loss (VNL)

This term is used in the transmission loss and level plans which are employed within the North American public and private telephone networks. The VNL plan automatically applies gain or attenuation (loss), at the switching node points, in a predetermined manner, to trunk and toll connections in the network. This has the result of providing an acceptable transmission grade of service to subscribers. See Practice 9109-094-180-NA, **Engineering Information.**

Wink Start

The Wink Start feature applies generally to tie trunk circuit operation. When an incoming trunk is seized it may be necessary to prevent the transmission of any digit sequences, until the incoming trunk equipment is ready to receive these digits. When the incoming trunk equipment is ready to receive the digits, a Wink Start condition is sent from the incoming end to the originating end of the trunk. The distant termination can now send digit sequences over the trunk.

APPENDIX B. SUMMARY OF CALL TYPES FOR CALL REROUTING

B.l This Appendix describes all of the call types found in the call rerouting table. Unless otherwise noted, the CDE programmer can specify rerouting destinations for Day, Night1 and Night2 service; see CALL REROUTING. Refer also to Practice 9109–094–210–NA, Customer Data Entry (CDE).

Station Dial 0 Routing

Any extension which dials the extension general attendant access code (typically 0) is routed here. This is based on the caller's tenant. See ATTENDANT ACCESS (DIAL 0).

Priority Dial 0 Routing

Any extension which dials the extension general attendant access code (usually 0) and has Priority Dial 0 in its COS is routed here. This is based on the caller's tenant. See PRIORITY DIAL 0.

DID Recall Points on Busy

A DID call reaching a busy destination is routed here, based on the destination tenant, See DID/DIAL-IN/TIE INTERCEPTS.

DID Recall Points on No Answer

A DID call reaching an extension which does not answer is routed here. This is based on the destination tenant.

DID Routing for Calls into this Tenant

All DID calls are routed here to allow screening of DID calls. This is based on the destination tenant. See DID/DIAL–IN/TIE INTERCEPTS.

DID Intercept Routing for **Calls** into this **Tenant**

A DID call to an illegal number is routed here. This is based on the DID's tenant. See DID/DIAL-IN/TIE INTERCEPTS.

DID Vacant Number Routing for this Tenant

A DID call to a vacant number is routed here. This is based on the DID's tenant. See DID/DIAL–IN/TIE INTERCEPTS.

DID Attendant Access Night Points

A DID call to the attendant while the system is in NIGHT service is routed here. No destination can be specified for DAY Service. This is based on the DID's tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Non-Dial-In Trunks Alternate Recall Points

Non-Dial-In trunks and DISA trunks that have waited for a busy or non–answering extension for the pre-determined recall time are routed here, **based on the destination tenant. See DID/DIAL–IN/TIE** INTERCEPTS.

Dial-In Tie Recall Points on Busy

A Dial-In Tie call reaching a busy extension is routed here, based on the destination tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Dial-In Tie Recall Points on No Answer

A Dial-In Tie call reaching an extension which does not answer is routed here, based on the destination tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Dial-In Tie Routing for All Calls into this Tenant

All Dial-in Tie calls are routed here to allow screening of Dial-In Tie calls, based on the destination tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Dial-In Tie Intercept for Calls into this Tenant

A Dial-In Tie call to an illegal number is routed here, based on the TIE trunk's tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Dial-In Tie Vacant Number Routing for this Tenant

A Dial-In Tie call to a vacant number is routed here. This is based on the TIE trunk's tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Dial-In Tie Attendant Access Night Points

A Dial-In Tie call to the attendant while this system is in NIGHT service is routed here. No destination can be specified for DAY Service. This is based on the Tie trunk's tenant. See DID/DIAL-IN/TIE INTERCEPTS.

Do Not Disturb Intercept Routing for this Tenant

An extension with Do Not Disturb activated has its incoming calls routed here. This is based on the extension's tenant.

Automatic Wake-up Routing for this Tenant

All extensions (not *SUPERSET 4* or *SUPERSET 4*DN telephones) answering a wakeup call are routed here. Normally this is a recording group, based on the extension's tenant. See Hotel/Motel features.

UCD Recording Routing for this Tenant

Incoming calls destined for UCD Agents are routed here when all of the Agents are busy. This must be a recording group. See UNIFORM CALL DISTRIBUTION and ATTENDANT AUTOMATIC OVERFLOW.

UCD on Hold Time-out Routing for this Tenant

Incoming calls to busy UCD hunt groups which are not answered after a pre-determined time-out period are routed here; see UNIFORM CALL DISTRIBUTION.

DISA Day Service Routing for this Tenant

Direct Inward System Access (DISA) calls are routed here during DAY service. No destination can be specified for NIGHT1 or NIGHT2 service, based on the DISA trunk's tenant; see TRUNK OPERATION — DISA.

Station Vacant **Number Routing for this Tenant**

Any industry-standard telephone dialing a vacant number is routed here, based on the extension's tenant; see VACANT NUMBER INTERCEPT.

Station Illegal Number Routing for this Tenant

Any industry-standard telephone dialing an illegal number is routed here, based on the extension's tenant; see ILLEGAL NUMBER INTERCEPT.

APPENDIX C. DATA GLOSSARY

C.I This glossary defines data terminology and abbreviations used in the Data Features description and in the Customer Data Entry forms.

Auto Answer

A data device can keep its DTR "low" (not ready) until alerted. Auto Answer causes the dataset to "wake up" in answer mode when a call comes in on the data line.

Autobaud To Host Character 1

In some cases the host computer is capable of adjusting itself to the baud rate of the transmitting dataset. The autobaud character programmed for the SX-200 DIGITAL is dependant on the requirements of the host computer.This is usually a carriage return entered from the terminal keyboard.

Autobaud To Host Character 2

This parameter has the same function and purpose of Autobaud to Host Character 1. The second character is used to confirm the baud rate setting.

Autobaud Detection

This feature enables the dataset to detect the baud rate of the attached DTE (terminal, PC, etc.). When the RETURN or ENTER key is pressed from the terminal keyboard the dataset detects the character and sends a baud rate report to the system before the data call is processed. When the data call originates from the dataset using the CALUATTN key, the previous baud rate of the last session or the default baud rate is used.

Break Key Function

This parameter identifies whether the break key on the terminal keyboard is used as a PABX Attention key or ignored by the system.

DTR Off Disconnect Timer

Certain functions such as screen refresh, terminal reset, etc. can cause a temporary DTR low. This timer specifies the length of time a "low" level has to be present before the session is terminated.

DTR To CTS Delay Timer

This timer specifies the amount of time before the system asserts the CTS (clear to send) signal after it has detected DTR (data terminal ready).

DTRX Echoplex

Enabled, this parameter causes each character transmitted from the data device to be echoed back to the terminal.

Flow Control

This parameter identifies the signaling method used by the attached data device to control the flow of information to and from the dataset. The

XON/OFF characters used to turn OFF and turn ON the transmission are a common means of flow control. CTS indicates that pin 5 of the RS-232 connector is used to control the transmission (CTS "low" = no data flow; "high" = data flow).

Guard Timer

This timer specifies the amount of time the data circuit is unavailable following a disconnection (allowing time for the far end to perform the clear down sequence)

Hotline

This feature allows a user automatic connection to a predetermined destination.

Originate A DTRX Call With A Low To High Transition Of DTR

This parameter defines DTR "high" as indicating the origination of a data call. It is typically enabled for HOTLINE services.

Parity

Parity is a means of determining if an error has occurred during the transmission of a message. It involves the addition of error checking information to the data which allows the receive end to perform a calculation verifying that the information was received correctly. In the *SX-200* DIGITAL PABX, parity is used between the dataset and attached device; it is not used to communicate between the two parties of a data call.

Session Inactivity Disconnect Timer

This timer monitors the length of time elapsed from the last key stroke. When it times-out the data call is terminated.

DATASET 1100 SERIES RS-232C PIN CONNECTIONS

Table C-l lists the RS-232C pin connectors used on the DATASET 1100 Series datasets.

Table C-l DATASET 1100 Series RS-232C Pin Connections			
Pin	Signal	Designation	Direction
2	TX	transmit	to dataset
3	Rx	receive	from dataset
4	RTS	request to send	to dataset
			Page 1 of 2

Table C-I **DATASET** 1100 Series RS-232C Pin Connections (continued)			
Pin	Signal	Designation	Direction
5	CTS	clear to send	from dataset
6	DSR	data set ready	from dataset
8	DCD	data carrier detect	from dataset
20	DTR	data terminal ready	to dataset
22	RI	ring indicator	from dataset
			Page 2 of 2

DATASET 2100 SERIES RS-232C PIN CONNECTIONS

Table C-2 lists the RS-232C pin connectors used on the DATASET 2100 Series datasets.

Table C-2 **DATASET** 2100 Series RS-232C Pin Connections			
Pin	Signal	Designation	Direction
2	TXD	transmit	to dataset
3	RXD	receive	from dataset
4	RTS	request to send	to dataset
5	CTS	clear to send	from dataset
6	DSR	data set ready	from dataset
8	DCD	data carrier detect	from dataset
15	SCT	sync clock transmit	from dataset
17	SCR	sync clock receive	from dataset
20	DTR	data terminal ready	to dataset
22	RI	ring indicator	from dataset
24	XCLK	external clock	to dataset
			Page 1 of 1

INDEX

D

SX-200" DIGITAL

PRIVATE AUTOMATIC BRANCH EXCHANGE (PABX)

AUTOMATIC ROUTE SELECTION AND TOLL CONTROL

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CONTENTS   (CONT'D)   PAGE

LIST OF TABLES

TABLE	TITLE	PAGE

LIST OF ILLUSTRATIONS

1. GENERAL

introduction

1.01   This Section contains a comprehensive description of the Auto-
matic Route Selection (ARS) feature of the SX-200® DIGITAL
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 under-
standing of these parts 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 com-
pany.

Reason for Reissue

1.02   This Section is reissued, to provide a description of the opera-
tion and available features of the SX-200 DIGITAL PABX Generic
1002 and Generic 1003. Changes from the previous issue are identified
by change bars.

ARS: General Description

1.03   Within this practice references are made to "the customer", "the
installation company", and "the user". These are defined as
follows:

- **The customer** is the owner of the SX-200 DIGITAL PABX.

- **The installation company** is a company which is authorized by
  Mitel to sell and install SX-200 DIGITAL PABX. This company
  works closely with the customers to determine their require-
  ments 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).

1.04   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; and (c) caller's toll restriction (i.e., whether the caller is
allowed to make such a call, and if so, on what routes).

1.05   ARS is a standard feature of the SX-200 DIGITAL PABX, deriving
the answers to these questions automatically every time a
trunk call is initiated, and routing 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

2.01 The ARS feature is universal, insofar as it 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 application of the ARS feature.

North American Numbering Plan

2.02 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 10 digits, compiled as follows:

613 ▪ 592-2122

Area Code _____

Office Code _____
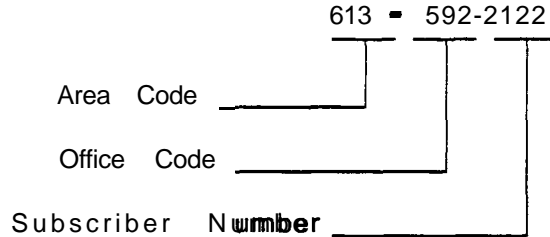
Subscriber Number _____

2.03 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.

2.04 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, a conflict which was resolved by the introduction of the digit 1 as prefix to all area codes (e.g., 1-6 13-592-2 122).

2.05 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., l-256-2122).

2.06 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.

2.07 The present North American numbering plan therefore comprises digit strings of one, three, seven, eight, and 11 digits.

Some examples are:

Operator	0
Service Number	411
Local Call	5 9 2 - 1 1 1 1
Toll Call Within an Area	I-256-2222
Toll Call to Another Area	1-416-486-3333
Toll Call Within an Area (NO 1 prefix)	256-2222

3. CALL ROUTING OPTIONS

General

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

3.02 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 SX-200 DIGITAL PABX allow usage of these routes to be monitored once the system is installed, in order that their order of selection may be modified as traffic demands change. This provides the user with the optimum least cost choices at any time.

3.03   The SX-200 DIGITAL PABX supports the following long distance services:

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

Direct Distance Dialing

3.04   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 contact the local Telephone Company for rate information not listed in the directory.

Tie Line Service

3.05 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-l shows a typical tie line connection between an SX-200 DIGITAL PABX in Ottawa, and an SX-200 DIGITAL PABX in Toronto.

Foreign Exchange Service (FX)

3.06   A Foreign Exchange (FX) Line can be thought of as a tie line between a PABX and a CO which is located in a telephone area other than that designated for the PABX. Via an FX Line, the PABX appears to the distant CO as a local subscriber 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 cost in business situations where many toll calls are made to destinations
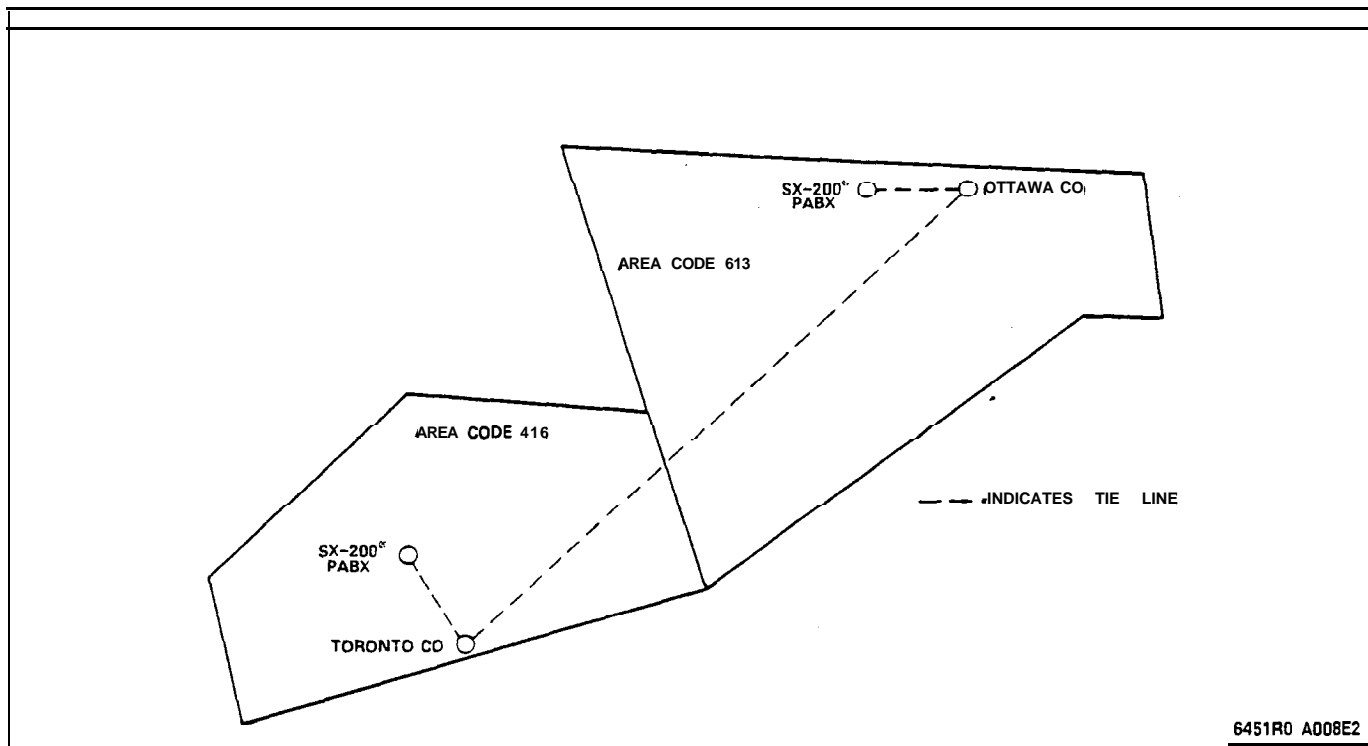
Figure 3-l Typical Tie Line

which are within close proximity to one another. For example, a com-
pany located in Ottawa which does much of its business with com-
panies 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
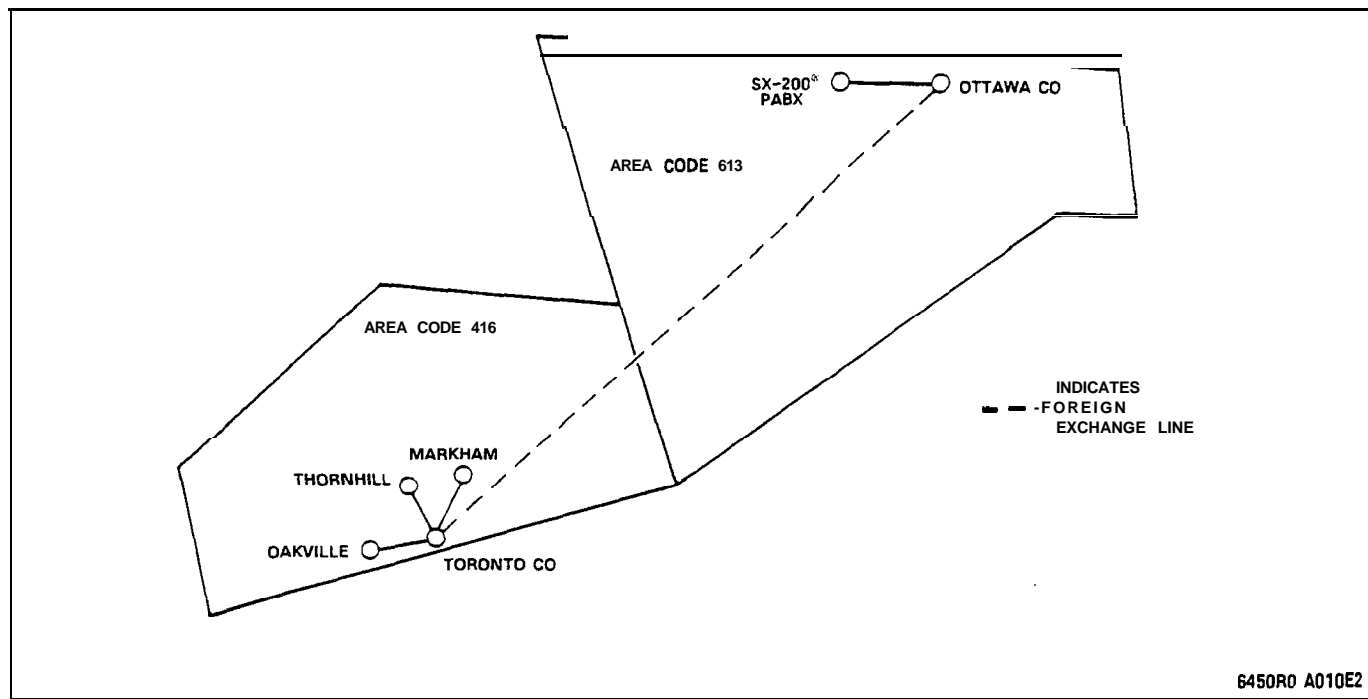
Figure 3-2 Typical Foreign Exchange Line

the use of the FX to its customers so as to permit them to call the company office (the PABX) without incurring toll charges.

Wide Area Telephone Service (WATS)

3.07 The Wide Area Telephone Service 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 such line is arranged to provide either inward or outward service, but not both.

3.08 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, 1-6, and the zone numbering which is unique to WATS subscribers with Area Code 613, where MITEL Corporation headquarters is located.

3.09 The rates for both Outward and Inward WATS are based on the zone and the hours of service subscribed to by the customer.
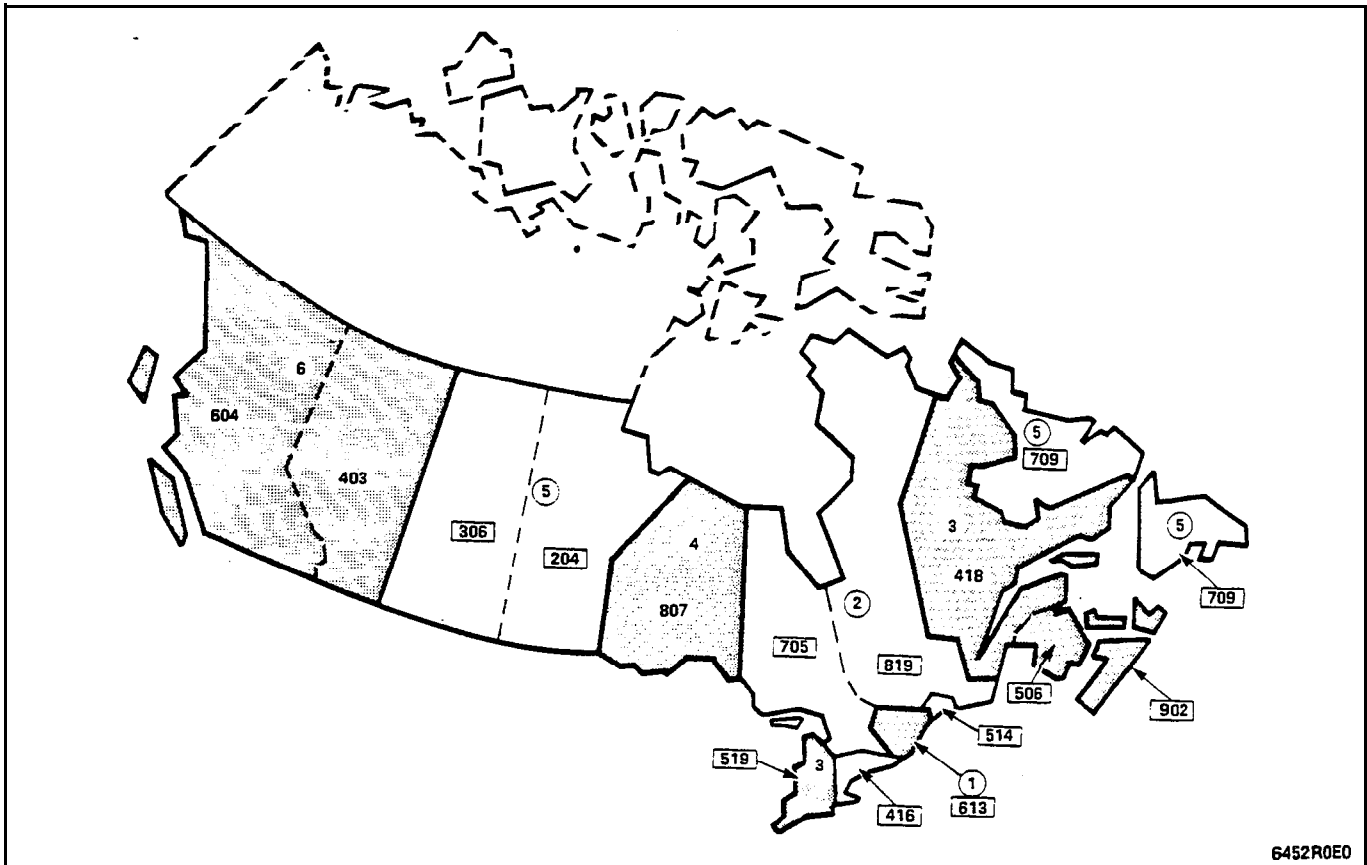
6452R0E0

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

Specialized Common Carrier Service (SCC)

3.10   Specialized Common Carrier Service, offered by private com-
              panies, provides telephone service between major locations at
a rate which may be less than that charged by the telephone com-
panies. The rate is based on monthly subscription plus a usage charge.
Specialized Common Carriers must be approved by local Communica-
tions Regulations, and may not be universally available. Currently, SCC
services are not available in Canada.

3.11   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 dis-
tance. A typical SCC arrangement is shown in Figure 3-4.

3.12 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:

9 -   745-1234 wait for dial tone, 1234567 305-994-1234

Trunk   **Account**
Access   Code
Code
                                                                                                     Long
                                                                                                     Distance
                                                                                                     Number
              SCC
        Company's
          Office

HOME AREA CODE

SX-200* PABX

CO

SPECIALIZED COMMON CARRIER OFFICE

DISTANT CO's

— — — INDICATES SPECIALIZED COMMON CARRIER COMPANY LINES
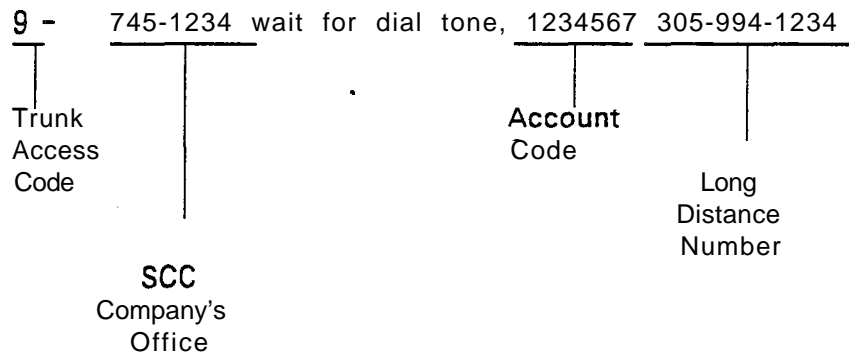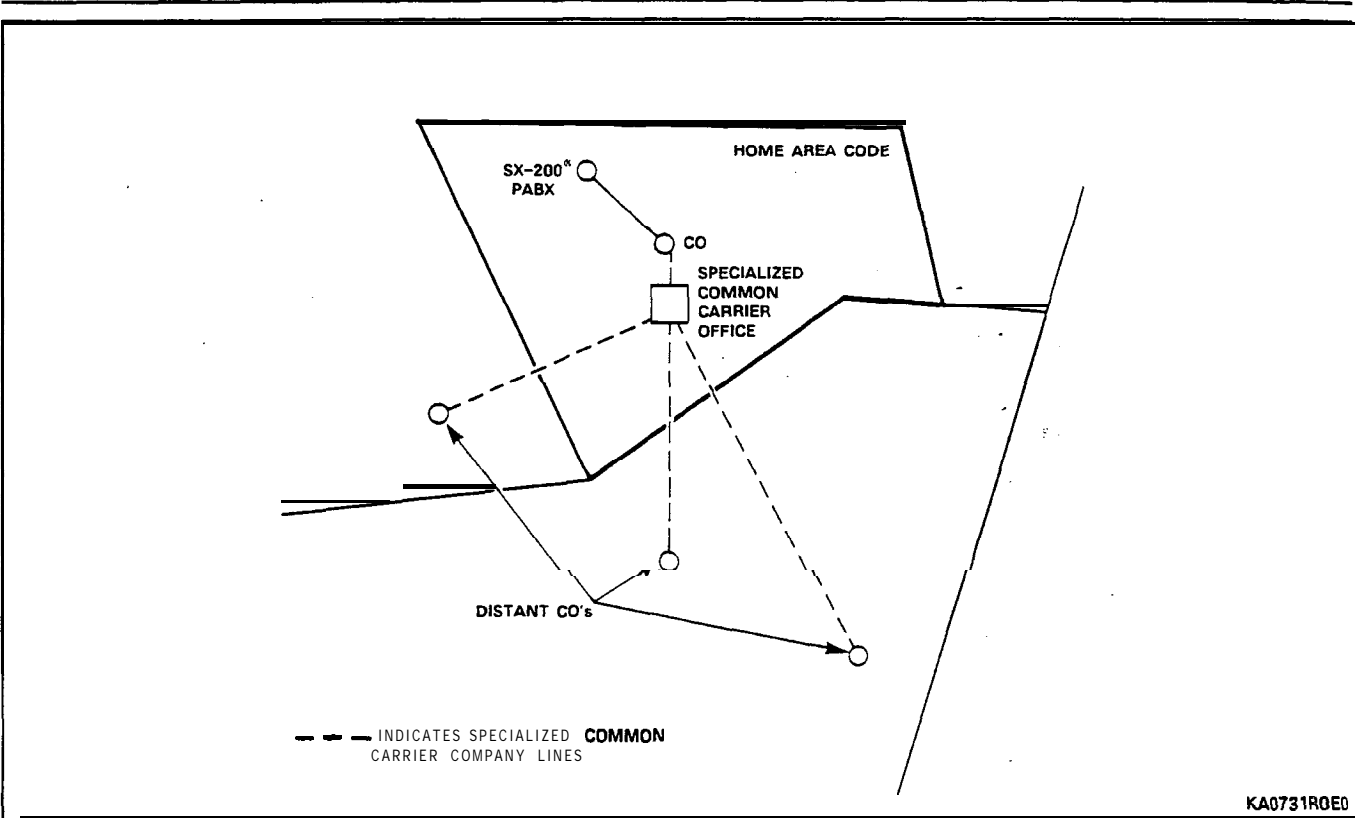
KA0731ROE0

Figure 3-4 Typical SCC Arrangement

4. DETAILED DESCRIPTION

Introduction

4.01   The ARS feature is part of the Generic 1003 software packages of the SX-200 DIGITAL PABX, which automatically selects one of a preprogrammed list of Trunk Routes every time an outgoing call is made. The routes are selected via 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, thus 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.

4.02   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

4.03   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 order within the Route List Definition Table as described in paragraph 5.16.

Least Cost Routing

4.04   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 Day Zones and Route Plans Tables, described in paragraphs 5.11 and 5.07.

Toll Control

4.05   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.

4.06   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:(l) a trunk group, (2) how the digits dialed are to be modified, and (3) 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.

4.07   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, thus verifying that the call is toll allowed (that is, the user is authorized to make the call).

4.08   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 telephone manager).

Overlap   Outpulsing

4.09   The basic principle of overlap outpulsing is to seize a trunk and commence outpulsing 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 outpulsing. The number of digits collected prior to outpulsing can be programmed by the customer during Customer Data Entry (CDE). These digits may be subject to digit modification prior to being passed to the appropriate sender (dial pulse or DTMF) for outpulsing. Subsequent digits are collected by the system and are outpulsed. 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 Outpulsing) inhibits overlap outpulsing for all calls.

When overlap outpulsing is used, ARS destinations must not have conflicting length differences. Such conflicts will cause the first match to be used, not the best or specified match. If the following ARS example is used with overlap outpulsing, 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

4.10   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 IO-digit number). If no overlap outpulsing is enabled, the delay for a lo-digit number outpulsed over a dial pulse trunk would be approximately 16 seconds at 10 PPS.

4.11   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

4.12   The Expensive Route Warning Tone is a programmable option which presents a tone to the user during call setup, and, if a *SUPERSET 4*™ or *SUPERSET 4*™DN 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 may be programmed to deliver an Expensive Route Warning Tone. When alerted by the warning, the user then has the option of deciding whether or not to continue the call.

Callback Queueing

4.13   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* 4 or *SUPERSET* 4DN 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

4.14   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* 4 or *SUPERSET* 4DN telephone is used, to select CAMP ON, and remain off-hook until a trunk becomes free. (When a set other than a *SUPERSET* 4 or *SUPERSET* 4DN 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

4.15   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 Part 5, ARS Tables, paragraph 5.04.

Maximum Digits Dialed

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

5. ARS TABLES

General

5.01   The ARS package is a network of tables, each of which contains 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 Table
- ARS Nested Digit Strings Table
- ARS Maximum Number of Dialed Digits.
- Route Plans Table
- Day Zone Definition Table
- Route Lists Table
- Route Definition Table
- Modified Digit Table
- COR Group Definition Table

5.02   The hierarchy for the tables is shown in Figure 5-l. This hierarchy is followed by the system 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 also to Section MITL9109-094-206-NA, Installation Forms and Section MITL9109-094-210-NA, Customer Data Entry (CDE), 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.

ARS Digit Strings Tables (CDE Form 26)

5.03   The ARS Digit Strings tables consist of one primary table and one nested table for each digit string in the primary 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.

5.04   The primary table is shown in Table 5-1, and the nested table in Table 5-2. The primary (leading digits) table is comprised of three fields, as follows:

Leading Digits: This is essentially the same as a Trunk Group" access code, such as the number "g", but may be any digit combination up to five digits in length, the customer desires to be analyzed. 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
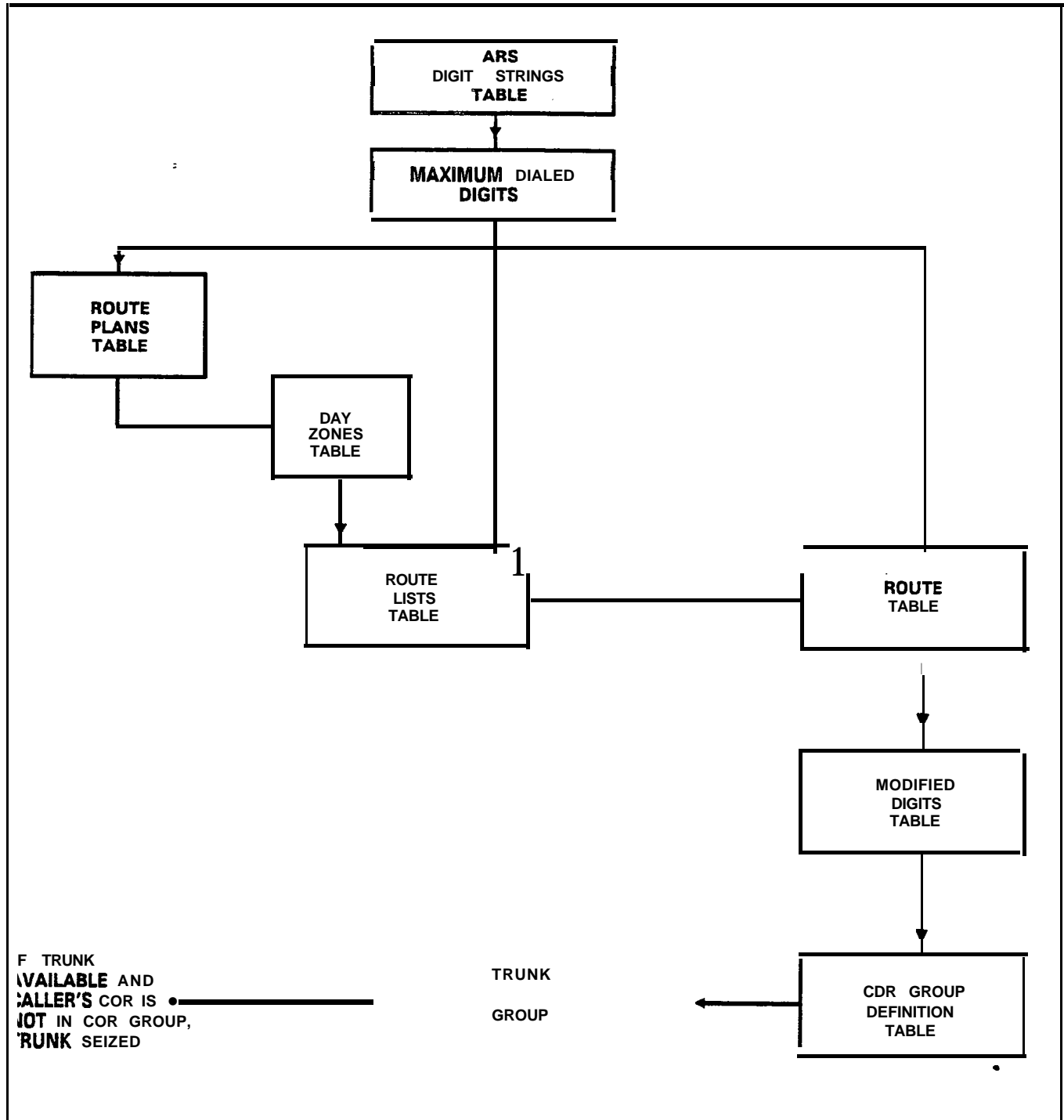
Figure 5-1 ARS Table Hierarchy

7853R1E1

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; if no entry is made, it defaults to a blank field. 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.

5.05   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:

- ⬚⬚⬚
- N1X
- X,

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

NOX and N1X 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: (1) To cover routing for any area code NOT SPECIFICALLY ROUTED, NOX and N1X followed by seven digits would cover all unspecified area codes. (2) NOX-555-1212 and N1X-555-1212 covers routing for all free directory assistance calls. (3) If routes are to be selected based on office codes, blocks of office codes can be specified, as, for example, 82X, 83X, etc. 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. Up to 25 digits may be entered as digits to be analyzed; however, the total of leading digits, digits to be analyzed, and quantity to follow must not

exceed 26 digits in length. If no digits are to be entered in the "Digits to be Analyzed" field, the TAB key may be pressed to permit entering information into the next field; when the line is entered into CDE, the words "no digits to analyze" will appear by default.

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 + 4 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, thus tying up PABX resources for a longer time than necessary on each call. The total number of digits specified by this field, plus the digits to be analyzed field, plus the leading digits (from the primary table), must be no greater than 26 digits in length. If the quantity to follow is not fixed or known, the TAB key may be pressed to permit entering information into the next field; when the line is entered into CDE, the word "unknown" will appear 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 the COS option "FORCED ACCOUNT CODE ON LONG DISTANCE CALLS". In Generic 1003, this field is also for Room Status Restriction in Hotel/Motel applications, to restrict long distance calls. A caller with this COS option must have entered an account code prior to dialing one of the designated digit strings. A YES or NO value may be specified. If no entry is specified, NO will be chosen as the default value.

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 the 555-1212 directory assistance case (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.

TABLE 5-1
FORM 26 = ARS DIGIT STRINGS TABLE = LEADING DIGITS

CDE TERMINAL DISPLAY

LEADING DIGITS	RETURN DIAL TONE	RESTRICTED COR GROUP
	NO	
	NO	-

1-	2 -	3-INSERT	4-	5-
6-QUIT	7-LEADING DIG	8-DELETE	9-SHOW STRINGS	O-ENTER

ATTENDANT CONSOLE DISPLAY

LEADING DIGITS	RETURN DIAL TONE	RESTRICTED COR GROUP
	NO	

❏ ☞◗◔   ▨ F2>   ❏ F3>INSERT   ❏ F4>   ❏ F5>
❏ F6>QUIT   ❏ F7>LEADINGDIG   ❏ F8>DELETE   ❏ F9>SHOW STRINGS ▨ F0>ENTER

TABLE 5-2
ARS DIGIT STRINGS - NESTED TABLE

CDE TERMINAL DISPLAY

DIGITS TO BE ANALYZED	QTY TO FOLLOW	LONG DISTANCE	TERM TYPE AND NUM	
1-	2 -	3-INSERT	4-N0X	5 - x
6-QUIT	7-FIND STRING	8-DELETE	9-N1X	O-ENTER

ATTENDANT CONSOLE DISPLAY

DIGITS TO BE ANALYZED	QTY TO FOLLOW	ACC CODE REQD	TERM TYPE AND NUM
▨F1>	❏ F2>	▨F3>INSERT	❏F4>N0X
❏F6 >QUIT	❏ F7>FIND STRING	❏F8>DELETE	❏F9>N1X

(continued)

❏ F5>x	
❏ F0 >ENTER	

ARS Maximum Dialed Digits (CDE Form 27)

> **5.06** Countries with open numbering plans require an ARS package that will restrict the user based on the number of digits dialed. In association with Each Class of Restriction there will be a maximum number of digits which can be dialed. If the maximum is exceeded, the call will follow intercept handling for Illegal Number Routing. Form 27 is shown in Table 5-3 and is comprised of two fields as follows:

> **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 1 - 26 digits plus the default value of "Unlimited". If a COR group has limited access, then 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 41, 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 then 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.

TABLE 5-3
FORM 27 - ARS MAXIMUM DIALED DIGITS

CDE TERMINAL DISPLAY

COR	MAXIMUM NUMBER OF DIALED DIGITS
1	Unlimited
2	12
3	9
4	8
5	Unlimited
6	Unlimited
7	Unlimited
8	Unlimited
9	Unlimited
10	Unlimited
11	Unlimited
12	Unlimited'
1	Unlimited

1 -UNLIMITED	2-	3-	4-TOP	5 - B O T T O M
6-QUIT	7-	8-COR	9-	0-

ATTENDANT CONSOLE DISPLAY

COR			MAXIMUM NUMBER OF DIALED DIGITS	
1			UNLIMITED	
❏ F1>UNLIMITED	▨ F2>	❏ F3>	❏ F4>TOP	❏ F5>BOTTOM
❏ F6>QUIT	❏ F7>	▨ F8>COR	▨ F9>	❏

ARS Route Plans Table (CDE Form 25)

5.07　The SX-200 DIGITAL PABX 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.

5.08　This table defines which list of Routes (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, thus creating a Time Zone loop for each Day Zone. If no Route List is specified for a given START HOUR entry, then all calls accessing the Route Plan containing this omission WILL BE DENIED.

5.09　The Route Plans table is referenced from the ARS Digit String table. The layout of the table is shown in Table 5-4.

5.10　The Route Plans table contains four fields:

Time Zone: This nonprogrammabie field lists the six Time Zone numbers associated with the currently accessed Route Plan.

Day Zone 1: This programmable field consists of two subfields, 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.) Thus, 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 Zone 2, and Day Zone 3: These programmable fields are identical to Day Zone 1.

TABLE 5-4
FORM 25 - ARS ROUTE PLANS TABLE

CDE TERMINAL DISPLAY

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 NUM	8-DELETE	9-	O-ENTER

ATTENDANT CONSOLE DISPLAY

TIME ZONE	DAY ZONE 1		DAY ZONE 2		DAY ZONE 3	
	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST
01						

F6>QUIT   F7>COR GROUP   F8>DELETE   ☞⌐₯ⓐ   F0 >ENTER

ARS Day Zone Definition Table (CDE Form 21)

5.11   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 Table 5-5.

5.12   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 nonprogrammable 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.

TABLE 5-5
FORM 21 ▪ ARS DAY ZONE DEFINITION

CDE TERMINAL DISPLAY

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

ATTENDANT   CONSOLE   DISPLAY

DAY ZONE 01	MON. *	TUE. *	WED. *	THU. *	FRI. *	SAT. *	SUN. *
❏ F1▷DISABLE	❏	F2>	❏ F3>	▦F4>		❏ F5>	
❏ F6>QUIT	❏ F7>		❏ F8>	❏ ☞◖◍◭		❏F0>ENTER	

ARS Route Lists Table (CDE Form 24)

5.13 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, then two Lists must be programmed to reflect this.

5.14 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.

5.15 Layout of the table is shown in Table 5-6. The seven fields which comprise the table are described below:

List Number: This nonprogrammable 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 I-, 2-, or 3-digit number in the range of 1 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 I-, 2-, or 3-digit number in the range of 1 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.

TABLE 5-6
FORM 24 - ARS ROUTE LISTS TABLE

CDE TERMINAL DISPLAY

LIST NUM	FIRST	SECOND	WT	THIRD	WT	FOURTH	NT	FIFTH	N-r	SIXTH	WT
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
01											

1-	2-	3-	4-TOP	5-BOTTOM
6-QUIT	7-LIST NUM	8-DELETE	9-	O-ENTER

ATTENDANT CONSOLE DISPLAY

LIST NUM	FIRST	SECOND WT	THIRD WT	FOURTH WT	FIFTH	WT SIXTH WT
01						

▩F1>   ❑F2>   ▩F3>   ❑F4>TOP   ❑F5>BOTTOM
▩F6>QUIT   ❑ F7>LIST NUM   ❑F8>DELETE   ❑ ⌐▯⊘▯   ❑F0>ENTER

Note: DELETE and ENTER are present only when there is data on the display.

ARS Route Definition Table (CDE Form 23)

> 5.16   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 Table 5-7.

> 5.17   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 SX-200 DIGITAL PABX therefore allows for programming of up to 200 Routes, thus allowing for a worst-case situation of the assignment of four Routes to each of the 50 Trunk Groups.

> 5.18   The Route Definition table contains five fields, as described below:

> **Route Number:** This nonprogrammable 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 1- or 2-digit numbers in the range of 1 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 1- or 2-digit numbers in the range of 1 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 1- to 3-digit numbers in the range of 1 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.

TABLE 5-7
FORM 23 - ARS ROUTE DEFINITION TABLE

CDE TERMINAL DISPLAY

ROUTE NUM	TRUNK GROUP	COR GROUP	MOD DIGIT ENTRY	COMMENTS
01				
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
01				

1-	2-	3-	4-TOP	5-BOTTOM
6-QUIT	7-ROUTE NUM	8-DELETE	9-	O-ENTER

ATTENDANT CONSOLE DISPLAY

ROUTE NUM	TRUNKGROUP	COR GROUP	MOD DIGIT ENTRY	COMMENTS
01				
☐ ☞⊙ⓐ	☐ F2>	☐ P3>	▨ F4>TOP	▨ F5>BOTTOM
☐ F6>QUIT	☐ F7>ROUTE NUM	☐ F8>DELETE	☐ ☞⅚ⓐ	☐ F0>ENTER

ARS Modified Digit Table (CDE Form 22)

5.19 The Modified Digit Table contains a maximum of one hundred l-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 Table 5-8.

5.20 The purpose of Digit Modification is to allow the station user to dial calls in a consistent pattern, regardless of the destination of the call, or how it is routed. This table, then, 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 will automatically select the FX routing. for the call. The Modified Digits Table would therefore instruct the system to delete the dialed area code from the dialing sequence when the FX route was 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 specified by the CDE programmer.

5.21   The Modified Digit table contains four fields:

Entry Number: This nonprogrammable field lists the entry numbers 1 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 outpulsing. 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 therefore prefixed to the modified valid digit string, and outpulsed over the trunk. The digits may be telephony digits 0 through 9, and for DTMF trunks 0 through 9, $*$ and #. The field can be programmed with up to 38 characters (i.e., combinations of digits and special markers, where a special marker represents one character, such as $*1$). The following dial tone markers may be inserted:

> $*1$ = Pause for five seconds
> $*2$ = Wait for dial tone
> $*3$ = Switch to DTMF for all further dialing on this call
> $*4$ = Do not display further modified digits on sets or SMDR
> $*5$ = Pause 10 seconds
> $*6$ = Insert calling party identity
> $*7$ = Insert dialed account code
> $*8$ = Insert node ID

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

Note: Analog Networking special markers ($*6$, $*7$, $*8$) are not available with Generic 1002.

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.

TABLE 5-8
FORM 22 - ARS MODIFIED DIGIT TABLE

CDE TERMINAL DISPLAY

ENTRY NUM	QTY TO DELETE	DIGITS TO BE INSERTED	COMMENTS
01 02 03 04 05 06 07 08 09 10 11 12			
01			

1-	2-	3 -	4-TOP	5-BOTTOM
6-QUIT	7-ENTRY NUM	8-DELETE	9-	O-ENTER

ATTENDANT CONSOLE DISPLAY

ENTRY NUM 01	QTY TO DELETE	DIGITS TO BE INSERTED		COMMENTS
▨F1>	❑ F2>	❑ F3>	❑F4>TOP	❑F5>BOTTOM
❑F6>QUIT	❑ F7>ENTRY NUM	❑F8>DELETE	❑ ☞♦◌◌	❑F0 >ENTER

ARS COR Group Definition Table (CDE Form 20)

5.22 The CORs of the peripheral devices are grouped within the Class of Restriction Group Definition Table. These COR Groups are referenced from the Route Assignment 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 1 through 25; COR Groups are numbered in the range 1 through 50. Refer to Table 5-9.

5.23 The COR Group Definition Table has three fields:

COR Group: This is a nonprogrammable field which lists the COR Group numbers 1 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 1 to 25 and may be entered in any order (member numbers must, however, be separated with spaces) or, where entries are consecutive, in the format, for example: 1-13.

TABLE 5-9
FORM 20 - COR GROUP DEFINITION TABLE

CDE TERMINAL DISPLAY

COR GROUP	COR GROUP MEMBERS (SEPARATE WITH SPACES)	COMMENTS
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
11		
12		
01		

1-	2-	3-	4-TOP	5-BOTTOM
6-QUIT	7-COR GROUP 8-DELETE		9-	O-ENTER

ATTENDANT CONSOLE DISPLAY

COR GROUP	COR GROUP MEMBERS (SEPARATE WITH SPACES)			COMMENTS
01				
☐ ☞●⊛	☐ ☞⌘⊛	▦F3>	▦F4>TOP	☐F5>BOTTOM
☐ F6 >QUIT	☐ F7>COR GROUP	☐ F8>DELETE	☐ F9>	☐F0 >ENTER

Comments: This programmable field is used by the program-mer to enter any 20-character-long reminder against each Group Number.

6. ARS OPERATION: GENERAL APPROACH

General

6.01   The object of ARS is to choose one route a call may take from one location to another, when several routes are available. The ARS package, then, 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 SX-200 DIGITAL PABX.

6.02   Programming the ARS features properly therefore 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 the route selection takes place.

Programming Process - General

6.03   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 (CDE Form 9).

2.   Determine the customer's facilities. The ARS programmer must know with what types of trunks the customer is equipped (CDE Forms 14 and 15) and the relative cost of each to the customer.

3.   Define CORs and COR Groups (CDE Form 20) 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 (that is, 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; UNLIMITED (no further programming required).

6.04   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" of each user in importance 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.

7. APPLICATION

General

7.01   The implementation of ARS on the SX-200 DIGITAL PABX is a 2-stage process. First, data must be collected concerning the customer's needs and the facilities he possesses, such as trunk groups. 'From this data, the ARS plan can be formulated on paper (refer to Section MITL9109-094-206-NA, Installation Forms). Second, the plan must be transferred from paper to the system memory, through the Attendant Console or CDE terminal (refer to Section MITL9109-094-2 1 0-NA).

Scenario

7.02   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.

7.03   The company has two Canadian locations: its headquarters in Ottawa, and a service office in Winnipeg. The company also has (1) a plant in Boca Raton, Florida, (2) major accounts and suppliers in the Toronto area, and (3) must be able to make international telephone calls. The SX-200 DIGITAL PABX located in Ottawa is to be programmed.

Trunk Groups

7.04   In consulting the traffic studies performed by the SX-200 DIGITAL 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

7.05   The cost guidelines which apply to these groups are:

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

2. 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:OO hours Saturday.

3. SCC is less expensive than Direct Distance Dialing during the hours of 8:00 through 18:OO Monday through Friday, and 08:00 through 12:00 hours Saturday.

7.06 The following office codes are to be allowed:

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

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

COR Assignments

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

7.08 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 the FX, Tie, and local trunks, and can access the SCC office, and free calls to any area.

COR 4: Technical Staff. This level can access the FX, Tie, and Local Trunks.

COR 5: Administrative Staff. This level can access the Tie, and Local Trunks.

7.09 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 Filling

7.10 Because ARS involves trunks and trunk groups (both incoming and outgoing), the SX-200 DIGITAL PABX forms concerning trunks and trunk groups must first be completed before starting the ARS tables.
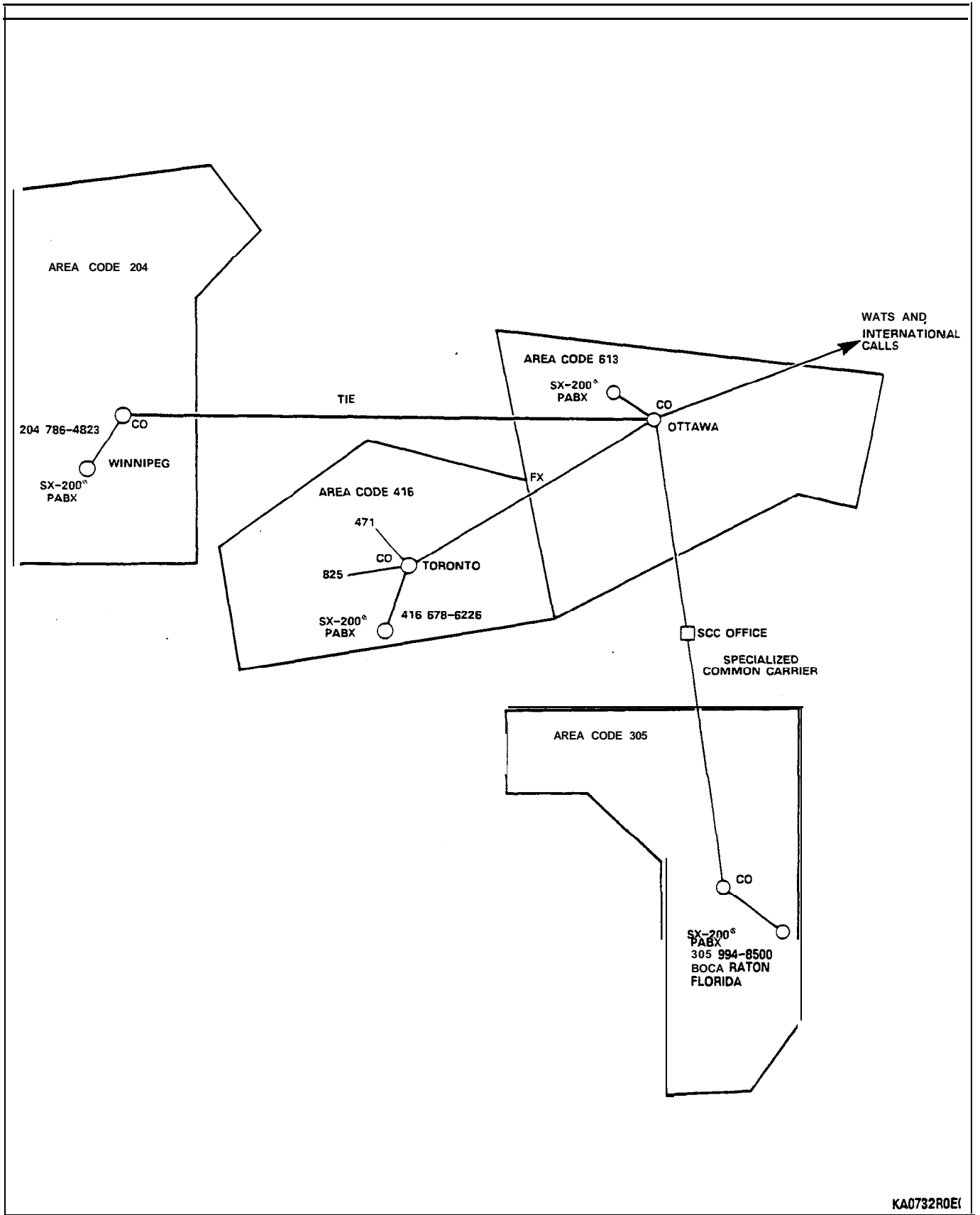
Figure 7-I Trunking Network

7.11   The ARS tables in Figures 7-2(a) and 7-2(b) have been com-
        pleted using the raw data produced in this scenario. The order
in which they were completed is the order in which they would nor-
mally be programmed. A detailed description of the contents of the
tables is given in the paragraphs immediately following Steps 1
through 3.

Step 1

7.12   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.

7.13   Complete the Day Zone table to provide day zones which sat-
        isfy the effect of changing rates for the trunk groups involved.

Step 2

7.14   Complete the Modified Digits table. This table instructs the
        system as to which digits should be outpulsed, and which
should be absorbed by the system. Therefore, 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 sys-
tem could be instructed to insert the digit 1 into the digit string, after 9
had 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 modi-
fication need not consider specific user-dialed digit strings, but the
various dialing possibilities MUST be considered.

7.15   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.

7.16   Complete the Route List Definition 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.

7.17   Complete the Route Plan Definition 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.

Step 3

7.18   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.

7.19   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 (route, list, or plan).

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

ARS Digit Strings

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

7.22   The leading digit has been specified as 9, which, in this scenario, represents the trunk access code of the PABX. Return dial tone is not required, therefore NO is specified in the "RETURN DIAL TONE" field.

7.23   Entries 1 and 2 contain digit strings which define free service calls to any area code, using the wildcard digits NOX and N1X. These calls are completed over local trunks, and so only one Route is required (Route 9).

7.24   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 I), in the Route Definition table.

7.25   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 "TERM TYPE AND NUM" column of these entries.

7.26   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.

7.27   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, ROUTE 2 exists, and satisfies the COR and digit modification requirements for entries 14 and 15. ROUTE 2 is therefore entered in the 'TERM TYPE AND NUM" column of these entries.

7.28   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 "TERM TYPE AND NUM" column.

7.29   Entry 17 is an example of a toll number within the home area, and 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 it is referenced from a newly defined route within the Route Definition table (Route 3).

7.30   Entry 18 contains the digit string which defines the number of the plant in Boca Raton. Calls to this destination can be completed over two routes: 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 16 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 route plan 1.

7.31   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, namely, FX, WATS, or DDD. These routes are time-dependent (Le., 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 "TERM TYPE AND NUM" column.

7.32   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. Con-

sequently, 'additional Route Lists are required to list the new routes, and hence an additional Route Plan is required to associate the new route lists with day and time zones. PLAN 3 is therefore entered in the "TERM TYPE AND NUM" column.

7.33 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 routes: WATS, or DDD. These two routes are time-dependent and are therefore indexed to PLAN 3 in the 'TERM TYPE AND NUM" column.

Route Definition Table

7.34 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 2. 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

7.35 List number 1 is referenced from the AR'S Digit Strings table. It provides alternate routing by listing two routes: Route 4 and Route 5. The routes are listed in order of cost (i.e., route 4 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 5.

7.36 List numbers 2 and 3 are referenced from the 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).

7.37 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.

7.38 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

7.39 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.

AUTOMATIC ROUTE SELECTION DIGIT STRINGS TABLE

LEADING DIGITS: 9   RETURN DIAL TONE (YES/NO): Y   COR GROUP:

	DIGITS TO BE ANALYSED	QTY TO FOLLOW	TERMINATION TYPE AND NUMBER	
1	N0x5551212	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	416878	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

MAXIMUM NUMBER OF DIALED DIGITS

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
13	Unlimited
14	Unlimited
15	Unlimited
16	Unlimited
17	Unlimited
18	Unlimited
19	Unlimited
20	Unlimited
21	Unlimited
22	Unlimited
23	Unlimited
24	Unlimited
25	Unlimited

CALL 1

CALL 2

CALL 3

TRUNK GROUPS: 1 - LOCAL TRUNKS
                2 - ZONE 2 WATS
                3 - FX LINE
                4 - TIE LINE

COR ASSIGNMENT:

COR 1 - ALL TRUNKS
COR 2 - WATS, FX, TIE. SCC. LOCAL
COR 3 - FX, TIE, SCC. LOCAL
COR 4 - FX, TIE, LOCAL
COR 5 - TIE, LOCAL
COR 6 - INTERNAL CALLS ONLY

ROUTE PLAN TABLE

PLAN 01	DAY ZONE 1		DAY ZONE 2		DAY ZONE 3	
T/ZONE	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST
01	8	2	8	2	8	7
02	12	2	12	3	12	3
03	18	3	18	3	18	3
04						
05						
06						

ROUTE PLAN TABLE

PLAN 02	DAY ZONE 1		DAY ZONE 2		DAY ZONE 3	
T/ZONE	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST
01	8	4	8	4	8	5
02	12	4	12	5	12	5
03	18	5	18	5	18	5
04						
06						
06						

ROUTE PLAN TABLE

PLAN 03	DAY ZONE 1		DAY ZONE 2		DAY ZONE 3	
T/ZONE	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST	START HOUR	ROUTE LIST
01	8	7	8	7	8	6
02	12	7	12	6	12	6
03	18	6	18	6	18	6
04						
05						
06						

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

ROUTE TABLE

Route Number	Trunk Group Number	COR Group Number	Digit Modification Number
1	1	1	1
2	1	3	
3	1	3	2
4	1	2	1
5	4	4	3
6	1	5	4
7	3	1	5
8	2	2	1
9	1	1	2

ROUTE LIST TABLE

List Number	1st Choice Route	2nd Choice Route	wt	3rd Choice Route	wt	4th Choice Routs	wt	5th Choice Routs	wt	6th Choice Route	wt
1	5	4	N								
2	6	9	N								
3	3	6	Y								
4	7	8	Y	2	Y						
5	7	2	Y	8	Y						
6	8	2	N								
7	2	8	Y								

COR GROUP TABLE

COR Group Number	COR MEMBERS
1	6-25
2	3-25
3	2-25
4	5-25
5	A-25

DAY ZONE TABLE

Day Zone	MON	TUE	WED	THURS	FRI	SAT	SUN
1	*	*	*	.	.		
2					•		
3	.						*

MODIFIED DIGIT TABLE

Entry Number	Qty. to Delete	Digits To Be Inserted	Comments
1	1	NONE	
2	1	1	
3	11	1D	
4	1	56789311234567	
5	4	*1	

T O   S E N D E R

7858R3

Figure 7-2(b) Table Network (Part 2)

Day Zone Table

7.40   The Day Zone Table defines three day zones and three time zones. These are combined in the route plan table to form nine day and time zones.

7.41   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:oo.

COR Group Definition Table

7.42 All entries in the COR Group Definition table are referenced from the Route Definition table. Group 1 contains CORs 6, through 25. Thus, 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

7.43   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.

7.44   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.

7.45   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.

7.46   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.

7.47   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.

8. SYSTEM PROGRAMMING

General

8.01   When the paper fdrms 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 Section MITL9109-094-210-NA, Customer Data Entry (CDE).

9.   AUTOMATIC   DATA   ROUTE   SELECTION   (ADRS)

General

9.01   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 as to 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 Generic 1002.

Application

9.02   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, five of which are 600 baud lines, two are 1200 baud and the remaining line has a 4800 baud data rate.

2.   There is a 1200 baud TIE line to Florida.

Trunk   Groups

9.03   The CO trunks are defined in the Non Dial-In Trunk Form (Form #14) and the TIE trunk is defined in the Dial-In Trunk Form (Form #15). The following lists trunks that are grouped according to their common characteristics (Trunk Groups Form #16). In this example all trunks of the same type and speed are considered to form a group.

TABLE 9-l
TRUNK GROUPS

Trk Grp #	Trunk Type	Group Members
1	600 baud CO	1, 2, 3, 4, 5
2	1200 baud CO	6, 9
3	4800 baud CO	8
4	1200 baud TIE	9

COR Groups

9.04 The Cor Group Definition Form (Form #20) is set-up to create all necessary COR groupings. These are as follows:

TABLE 9-2
COR GROUPS

COR Group	COR Group Members	Comments
1	1	President
2	l-3	Pres & Upper Mgr
3	1-6	Pres & Managers
4	l-9	All but Admin
5	l-15	All

Toll Control Requirements

Voice Station Requirements

9.05 The following restrictions are imposed for outgoing voice calls:

1. Everyone is allowed to call Florida using the TIE trunk.

2. Technical staff, management and the president are allowed to call anywhere in north America usng any trunks.

3. Middle management is allowed to call the England office only during evening hours (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-O) any time.

6. Administration staff are NOT allowed any long distance calls.

Data Station Requirements

9.06 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 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, 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 same baud rates during the day.

7. Administration staff are NOT allowed outgoing calls originating at a data station.

TABLE 9-3
CUSTOMER REQUIREMENTS TABLE

Digit String	Route Type	Time	COR's
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
S-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
S-O (operator Long Distance)	600 Baud CO		1
	1200 Baud CO		1
	4800 Baud CO		1
S-Else (Local)	600 Baud CO		1..9
	1200 Baud CO		1..9
	4800 Baud CO	Day	1..6
	4800 Baud CO	Night	1..9
S-I -Else (Long Distance)	600 Baud CO		1..9
	1200 Baud CO		1..9
	4800 Baud CO		1..6

Day Zones

9.07 In this example Day Zones (Form #21) are as follows:

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

Modified Digits

9.98 The Modified Digit table (Form #22) 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 follows:

TABLE 9-4
DIGIT MODIFICATION

Entry	QTY to DEL	Digits to Be Inserted
1	4	011-44-62872821
2	4	None
3	4	l-305-994-8500
4	1	1
5	1	None

Route Definition

999 The Route Definition Table (Form #23) is derived from the Customer requirements table. 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.

TABLE 9-5
ROUTE DEFINITION

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
1 1	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

9.10 If a call can use more than one route, Digit Translation produces a Route List (Form #24) 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. The following route list table defines the route lists for this example.

TABLE 9-6
ROUTE LIST TABLE

List Num	First	Second	WT	Third	WT	Fourth
1	I	3		5		
2	2	4		6		
3	7	8		9		I0
4	8	9		10		7
5	11	I2		13		I4
6	12	13		11		I4
7	15	I6		17		
8	18	19		20		
9	18	I9		21		
IO	22	23		24		

Route Plan

9.11 **A Route Plan (Form #25) is used when time of day depen-
dencies exist for a given digit string. Each entry in the route
plan identifies either a route or route list from which a trunk group is
selected. For this example the three time zones are:**

Time Zone 1 (TZ1) = (08 . . I7)
Time Zone 2 (TZ2) = (18 . . 22)
. Time Zone 3 (TZ3) = (23, 0..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	I8	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	I8	4	18	4	I8	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 by the Digits Strings Form (Form #26). This trunk is programmed as shown below:

Leading Digits	Return Dial Tone	Restricted COR Group
89	NO	Unrestricted

In the System Abbreviated Dial Entry Form (Form #31), 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).

Location	Directory Number	Speed Call Number
Florida	305-994-8500	8822
Florida	89 (TIE Trunk)	8823
England	011-44-62872821	8830

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

> **9.12** **The following illustrates how the ADRS/ARS system uses the tables in the above application. Each example assumes a** [Monday..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..9], **barring their use since administration staff COR is** [10..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-O 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..3], **barring their use, since a middle manager's COR is** [4..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-O to select RP3.**
>
> **9:00 PM represents** IZ2 **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..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.

   Note the order in which the trunk groups are selected. All CO trunks of baud rate 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 ▪ 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 IZ2, RP2 [DZ1, TZ2] selects RL4.

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

R7 allows 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 technical staff COR, the call is barred on R10.

The call cannot be completed.

Example 5

At 9:00 AM a member of the administration dials the digit string 8822 from 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 is already in use, the call does not complete since no other route in the route list allows administration COR [10..15].

SX-200" DIGITAL

PRIVATE AUTOMATIC BRANCH EXCHANGE (PABX)

STATION MESSAGE DETAIL RECORDING

i

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LIST OF TABLES

LIST OF CHARTS

1. INTRODUCTION

General

1.01   This document describes the Station Message Detail Recording (SMDR) feature of the *SX-200*® DIGITAL Private Automatic Branch Exchange (PABX). The document includes a detailed description of the feature, and its operational parameters. The installation of external devices (e.g., printer) should be obtained from the product-related documentation.

Reason for Reissue

1.02   This Section is reissued to describe the SMDR.feature of the SX-200 DIGITAL PABX with Generic 1002 and Generic 1003 software and its associated options.   I

Brief   Description

1.03   The Station Message Detail. Recording, or "call detail recording", feature of the SX-200 DIGITAL PABX, is an integral part of the system which 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 hence 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.

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

1.05   ACD SMDR provides a record of each ACD call made, so that ACD activity can be analyzed. The ACD *TELEMARKETER*™ Reporting System and its associated ACD SMDR are not available with Generic 1002.   I

2. DETAILED DESCRIPTION - TRUNK SMDR

General

2.01   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 an RS-232 output port. The records can be routed directly to the output port as described in Part 4 of this Practice.

2.02   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, thus 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.

2.03   An SMDR record is not generated for: (1) calls which encounter busy trunks; (2) internal calls between stations or between a station and the Attendant; or (3) calls made from stations or going to trunks whose class of service includes SMDR disable.

Trunk Call Record Buffers

2.04   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

2.05   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
- 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
- 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 identity (optional).

2.06 The definition of the data and its position in the record is given in Table 2-l. 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.

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

Long Call Indicator (z). This optional field contains a dash (–) for calls of duration 5 to 9 minutes 59 seconds, a percent symbol (%) for calls of duration 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; 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 (O-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 record trunks. The "T" or "X" ensures that this number and 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 l-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 (O-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 (O-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; 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 is 0 to 65535, with leading zeroes being output. The trunk must be programmed for "Answer Supervision". Meter pulses are not recorded for other trunks. 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.

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 thus, can provide a comprehensive report on the calls 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, the number. Recall no answer is indicated by an N or an R; an "N"

indicates that a transferer did not answer a recall, and an "R" indicates that the transferer 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 - 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 for outgoing calls, the number of the trunk. 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 printed only if the COS Option 246 (SMDR - Extended Record) is enabled.

TABLE 2-I
SUMMARY OF FIELDS IN TRUNK SMDR RECORDS

Name	Columns	Format	Definition	Notes
Long Call	1	i!	– = 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 = o-9, *, # nnn = 001-200 m = o-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 = o-9, *, #, left-justified
Time to answer (Alternate)	30-32	ttt	ttt = time in seconds *** = Call unanswered	leading zeroes output, incoming calls only ttt = 000 – 255
Digits dialed on the trunk	34-59	xx....x	Up to 26 (20 if metering) digits dialed on the trunk	x = o-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 outputted

TABLE   2-I   (CONT'D)
SUMMARY OF FIELDS IN TRUNK SMDR RECORDS

Name	Columns	Format	Definition	Notes
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 transferer N = Incoming call recalled and was not answered by transferer	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 = o-9, *, # nnn = 001-200 m = O-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 = o-9, *, # n = 001 – 200 m = 0 – 9, *, #
Spacer	72			
Account Code (Optional)	73-84	aa .... a	length of 1 to 12 digits	a = O-9 space-filled
Spacer (Optional)	85			
System Identifier (Optional)	86-88	iii	Entered by System ID	i = O-9 lll = 000-999 000 = "No Code entered"

Trunk SMDR Call Record Examples

2.08   Examples of typical trunk SMDR call records are shown in Chart 2-I. The column indication included with each example is not repeated for each message in a regular printout.

Call Timing

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

Incoming Call - Three aspects, related to the timing of an incoming call,- are recorded on a SMDR call record; i.e., the date, the time taken for the called patty 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 cleardown.

Outgoing Call - Three aspects, related to the timing of an outgoing call, are recorded on an SMDR call record; i.e., the date, the call start time and the call duration. The latter is only recorded for calls which are answered. 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 is answered. 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 cleardown.

CHART 2-I
TRUNK SMDR PRINTOUTS

P-PAR-R OUTGOING CALL

```
0            1         2          3          4          5          6          7          8          9
123456789012345678901234567890723456789012345678901234567890~234567~90123456789012345678 90
```

-06/13 11:42   00:08:29 214   9   16135922122   ART054   000

On June 13th at 11:42 AM, Extension 214 obtained Trunk Number 54 and dialed "1-613-592-2122".
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
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678 90
```

 05/17 10:51 00:01:52 2   1   3   9   201   ARX082   000

On May 17 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.

CHART 2-I (CONT'D)
TRUNK SMDR PRINTOUTS

2-PARTY INCOMING CALL

```
0          1          2          3          4          5          6          7          8          9
123456789012345678901234567890123~567890123456789012345678901234567890123456789012345678901234567890

 01/30 15:10 00:02:22 T102 008 201                                 201                              000
```

On January 30 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
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 03/12 09:11  00:01:12 X116   007 63                               224                              000
```

On March 12 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
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

+01/30 15:27 00:35:11 2 0 1    "9  16545996951                     ART052                           000
```

On January 30, Extension 201 dialed the Attendant and asked for an outside line. The Attendant dialed 1-654-599-6951. At 3:27 FM, 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
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 04/05 13:42 00:00:31 T O 9 0  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
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 04/02 09:36 00:04:55 1 0 3  9   5922122                    RT162T 100                              000
```

On April 2nd at 9:36 AM, Extension 103 dialed ARS leading digit code followed by 592-2122. 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.

CHART 2-1 (CONT'D)
TRUNK SMDR PRINTOUTS

CALLED EXTENSION TRANSFER CALL

```
0          1         2         3         4         5         6         7         8         9
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 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
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 01/16 09:52 00:02:21 2 6 6 4  9    7082664#95921022          RX124
```

On January 16th. at 09:52 AM, extension 2664 accessed a tie trunk and dialed 95921022. 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
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 01/13 15:26 00:01:18 4 3 0 0   0 0 4  *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 and 18 seconds.

3. **DETAILED DESCRIPTION - DATA SMDR**

General

3.01 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.

3.02 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.

3.03 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 the Directed I/O Form 34. 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

3.04 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
- 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

3.05 A summary of the fields printed in a DATA SMDR record is shown in Table 3-I; many of these fields are the same as in a TRUNK SMDR report.

3.06 A description of fields of the DATA SMDR record as listed in Table 3-1 follows:

Long Call Indicator (z). This optional field contains a dash (-) for calls of duration 5 to 9 minutes 59 seconds, a percent symbol (%) for calls of duration 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; 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 99 hours, 59 minutes, 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. Only the last four digits will be used by SMDR to identify the calling party. It may be a station or an incoming trunk, as described below:

- **Station Number as Calling Party (cccc).** A station number may be one to four digits (O-9, *, #) which 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 record trunks. The "T" or "X" ensures that this number and 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 - field has three possible values; either DTRX, ADL, or ACD. 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 — has two values; 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 dataset. 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-dataset

- 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 — 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.

TABLE 3-1
SUMMARY OF FIELDS IN A DATA SMDR RECORD

FIELD	COLUMN	FORMAT	DEFINITION
Long Call	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	1.5-22	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		l'
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 blank (blank only for incoming or internal modem pooling call)
Spaces	43-44		
Reason for Disconnect	45-58	14 char's	14 character explanation
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	ˆ	Indicates that the called party caused the disconnect.

TABLE 3-I (CONT'D)
SUMMARY OF FIELDS IN A DATA SMDR RECORD

FIELD	COLUMN	FORMAT	DEFINITION
Spacer	68		
External Indicator	69-70	EX	Indicates that this was an external data call.
Trunk SMDR Indicator	71	*	Indicates that there is an associated SMDR report.
Spacer	72		
Account Code	73-84	aa...a	a = O-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"

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 BUT-TON	Call/attn button on the dataset or call/attn key on digital SUPERSET telephone 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 then 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.
DISC BUTTON	Disconnect button on the dataset or data disconnect key on digital SUPERSET telephone was pressed.

TABLE 3-2 (CONT'D)
DATA CALL DISCONNECT REASONS

Reason	Explanation
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.
INCOMPATIBLE	The two data devices are not compatible; one is synchronous, the other asynchronous.
INITIAL SETUP	The call-setup to the data device has failed in the initial stage. This is an unexpected event and indicates that the PBX and the dataset disagree as to the state of the device. To recover from this situation, the dataset must be reset.
INTERCONNECT	The two data parties are prevented from being connected by the interconnection table.
INVALID ACCOUNT	The originator used an invalid account code when making a data call.
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 SUPERSET telephone. 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 a valid access code.
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.

TABLE   3-2   (CONT'D)
DATA   CALL   DISCONNECT   REASONS

Reason	Explanation
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 after 15 seconds from the offhook.
PM: DSR LO	The Pooled Modem is programmed to have DSR as "Communication Established indicator" and DSR has NOT come HIGH after 15 seconds from the offhook.
PM: NO OFFHOOK	The Pooled Modem has not gone offhook after 10 seconds of waiting.
	Outgoing - DTR has been raised and the MI/MIC leads have been toggled with a 2.5 sec ON, 2.5 sec OFF cycle.
	Incoming - 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 data set went through a power up sequence. This occurs if there is a power supply problem to the dataset.
SET UNPLUGGED	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 data set 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.

TABLE 3-2 (CONT'D)
DATA CALL DISCONNECT REASONS

Reason	Explanation
SYSTEM DISC	The system has disconnected for one of several reasons, none of which is a trouble.
	The destination is busy and the originator cannot (or did not) queue.
	The connection is not allowed due to invalid tenant interconnection.
	The connection is not allowed due to type of devices involved.
TENANTING	The two data parties are in different tenant groups.
UNDECODABLE	Reason unknown.

DATA SMDR Call Record Examples

3.07   Examples of typical DATA SMDR call records are shown in Table 3-3. The column indication included with each example is not repeated for each message in a regular printout.

TABLE 3-3
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND SYSTEM ID)

DTRX Call From Another Set Which Pressed BREAK Key

```
0          1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

 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
1234567890123456789012345678901234567890123456789012345678901234567890123456789

 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).

TABLE 3-3 (CONT'D)
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND SYSTEM ID)

DTRX Call to a Wrong or invalid Number

```
0          1          2          3          4         '5          6          7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

  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 3 seconds.

DTRX Call Times Out After Being Established

```
0          1          2          3          4          5          6          7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

  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
12345678901234567890123456789012345678901 2345678901234567890 1234567890123456789

  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 30 seconds.

DTRX Ca I I Drops DTR

```
0          1          2          3          4          5          6          7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

  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.

TABLE 3-3 (CONT'D)
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND SYSTEM ID)

Call Another Set and Press the ATTN Key

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789
```

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
and 24 seconds.

During a DTRX Call, the **Calling Set Pressed the** DISC Key

```
0         1         2         3         4         5         6         7
12345678901234   5678901234567890123456789012345678901234567890123456789012345678901234456789
```

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 Disconnects

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789
```

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
has its digital line disconnected.

During a DTRX Cal I, the Called Extension Presses the DISC Key

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789
```

03-13 11:25 00:01:24 **1411**   **DATA DTRX** DISC BUTTON   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.

TABLE 3-3 (CONT'D)
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND **SYSTEM ID)**

During a DTRX Cal l, **the Called Extension Presses the BREAK Key**

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

 03-13 11:25 00:01:24 1 4 1 1       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
1234567890123456789012345678901234567890123456789012345678901234567890123456789

+03-13 11:25 02:14:46 1  4  1  0   DATA DTRX MODEM HUNGUP      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
1234567890123456789012345678901234567890123456789012345678901234567890123456789

 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 cal l was completed, the **ADL** originator hung up. The call lasted 17 seconds.

Associated Data Line Call Disconnected by Cal l ing Party

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890123456789

 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.

TABLE 3-3 (CONT'D)
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND SYSTEM ID)

Associated Data Line Call and Called Party Presses ATTN Key

```
cl        1         2         3         4         5         6         7
12345678901234567890    123456789012345678901234567890~345678901234567890123456789

   03-13 11:25 00:01:24 1410        DATA ADL    ATTN BUTTON        1411 ^
```

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.

Associated Data Line Call Dialed an Invalid Number

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789

   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.

Associated Data Line Call Camps On But Called Terminal Is Turned Off

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901~345678901234567890123456789012345678901234567890123456789

   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.

Associated Data Line Call and Called Party Unplugged Dataset Line

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789

   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:

TABLE 3-3 (CONT'D)
TYPICAL DATA SMDR CALL RECORDS (EXCLUDING ACCOUNT CODES AND SYSTEM ID)

Associated Data Line Call to Another Dataset, Then Dropped by Pressing Disconnect Button

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789

  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.

Associated Data Line Call - No Hangup After Pressing <CR>

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789

  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

3.08 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.

3.09 If the port to which the DATA SMDR records are directed is not guaranteed to print, and no DATA SMDR buffers are available, the oldest records are automatically overwritten, irrespective of the state of the "DATA SMDR • Overwrite Buffer" COS.

3.10 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 the "DATA SMDR-Overwrite Buffer" COS 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.

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

4. DETAILED DESCRIPTION - ACD TELEMARKETER REPORTING SYSTEM SMDR

General

4.01   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. This record contains the details about how the call progressed through. the ACD path. This information is required by the ACD TELEMARKETER Reporting System.

4.02   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 which shows the call being transferred to the ACD path. The second record contains the details about how the call progressed through the ACD path.

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

4.04   Two System options must be enabled when SMDR reports are being prepared: System Option "Automatic Call Distribution" must be enabled; System Option "ACD Reports" must be enabled to generate the SMDR reports for the repotting system. System Option "ACD Reports" requires that System Option "Automatic Call Distribution" also be enabled.

Recorded   Information

4.05   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
- Calling   party
- Called   party
- Call   duration
- Call completion status (e.g., called number busy)
- Long calls
- Time to answer incoming calls
- Conferences   and   transfers
- Second station in a transfer or a conference
- Attendant involvement in a call.

4.06   The definition of the data and its position in the record is given in Table 4-l. 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.

4.07   A description of the call record fields detailed in Table 4-l is as follows:

Long Call Indicator (z). This optional field contains a dash (-) for calls of duration 5 to 9 minutes 59 seconds, a percent symbol (%) for calls

of duration 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. P indicates pm when 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.

Attendant (f). This I-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 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.

Digits **Dialed on the Trunk** (PXXXX G1 01 02 03 Al or PXXXX 01 02 03 IYYYY). 01, 02, or 03 only appear if they are programmed and the call overflows to these groups. If the Inter-flow point is not an ACD path access code, only "I" appears after the third 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 party to whom the call is directed. It may be a station number, the Attendant or for outgoing calls, the number of the trunk. 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. 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.

TABLE 4-l
SUMMARY OF FIELDS IN SMDR RECORDS

Name	Columns	Format	Definition	Notes
Long Call	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	75-22	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 = O-9, *, # nnn = 001-200 m = O-9, *, # a = o-9, *, #
Spacer	28			
Attendant	29	f	* = Attendant	Attendant answered or initiated the call, then transferred it to an extension.
rime to answer	30-32	ttt	ttt = time in seconds (000-255) *** = Call unanswered	Leading zeroes output, incoming calls only

TABLE 4-1 (CONT'D)
SUMMARY OF FIELDS IN SMDR RECORDS

Name	Columns	Format	Definition	Notes
Digits Dialed on Trunk	34-59	xxx...x	Incoming ACD Calls:. P = path identifier XXXX = ACD path G1 = primary agent group number 01 = first overflow group number 02 = second overflow group number 03 = third overflow group number AI = agent group number that answered call I = call inter-flowed YYYY = ACD path number to which call inter-flowed	Displays path of call in the ACD system (ACD path followed by agent group numbers).
Call Completion	60	h	A = Answer Supervision B = Called party busy E = Caller Error T = TAFAS Answered R = Recall answered N = Recall not answered	Outgoing Incoming Direct/Dial-in Incoming Dial-in Incoming Incoming incoming
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 = o-9, *, # nnn = 001-200 m = O-9, *, # a = o-9, *, # P = o-9, *, #
Transfer / Conference Call	66	K	T = Supervised Transfer X = Unsupervised Transfer C = 3-Way or Conference	
Spacer	67			
Third Party	68-7 1	rrrr	cccc = Extension Number Tnnn = CO Trunk Number Xnnn = Non-CO Trunk Number mmmm = Attendant aaaa = Agent ID Number PPPP = ACD Path Number	c = o-9, *, # nnn = 001-200 m = O-9, *, # a = o-9, *, # P = 0-9, *, #
System Identifier (Optional)	86-88	iii	Entered by System ID	i = O-9 lll = 000-999 000 = "No Code entered"

ACD Call Record Examples

4.08   Examples of typical SMDR call records are shown following. The column indication included with each example is not repeated for each message in a regular printout. System identifiers are not shown in the examples.

ACD calls answered by Agents

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1

 07/01 08:41 00:00:08 TOO1  002  P2123  01  01                     1101
```

CO Trunk 1 comes in on path 2123 and rings Agent Group 1. Call answered by Agent 1101 of Agent Group 1.

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1

 07/01 08:44 00:00:14 TOO2  009  PO456  05  06  05                 1515
```

CO Trunk 2 comes in on path 456 and rings Agent Group 5 and overflows to Agent Group 6.   Call answered by Agent 1515 of Agent Group 5.

```
0         1 '       2         3         4         5 ·       6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1

 07/01 08:50 00:00:22 TOO3  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 answered by Agent 1205 of Agent Group 2.

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1

 07/01 08:52 00:00:05 TOO1  006  P2123  01  07                     1703
```

CO Trunk 1 comes in on path 2123 and rings Agent Group 1. Call answered by Agent 1703 of Agent Group 7 (via call pickup).

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1

 07/01 09:53 00:00:18 TOO3  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 answeredby Agent 1202 of Agent Group 2. Call transferred (unsupervised) by 1202 to 1861 (non-Agent).

```
       0          1          2          3          4          5          6          7
       12345678901234567890123456789012345678901234567890123456789012345678901
```

       07/01 09:53 00:00:12 **TOO1 006 P2123 01 01**   1103T 1515

CO Trunk 1 comes in on path 2123 and rings Agent Group 1. Call answered by
Agent 1103 of Agent Group I.   1103 transferred (supervised) call to Agent 1515.

```
       0          1          2          3          4          5          6          7
       12345678901234567890123456789012345678901234567890123456789012345678901
```

       07/01 09:54 00:00:10 **TOO1 006** P2123 **01 01**   1101T **1512**

CO Trunk 1 comes in on path 2123 and rings Agent Group I. Call answered by .
Agent 1101 of Agent Group 1.   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
       12345678901234567890123456789012345678901234567890123456789012345678901
```

       07/01 09:01 00:00:03 **TOO1 004** P2123 **01 00**   2101

CO Trunk 1 comes in on path 2123 and rings Agent Group 1. Call answered by
extension 2101 (via call pickup).

```
       0          1          2          3          4          5          6          7
       12345678901234567890123456789012345678901234567890123456789012345678901
```

       07/01 09:02 00:00:10 **TOO3 004 P2324 01 02 00**   2678

CO Trunk 3 comes in on path 2324 and rings Agent Group I. Call overflowed to
Agent Group 2.   Call answered by extension 2678.

ACD calls abandoned

```
       0          1          2          3          4          5          6          7
       12345678901234567890123456789012345678901234567890123456789012345678901
```

       07/01 09:11 00:00:10 **TOO2 *** PO456 02**

CO Trunk 2 comes in on path 456 and rings Agent Group 2. Call abandoned.

```
  0         1         2         3         4         5         6         7
  12345678901234567890123456789012345678901234567890123456789012345678901
```

    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   abandoned.

```
  0         1         2         3         4         5         6         7
  12345678901234567890123456789012345678901234567890123456789012345678901
```

    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.

ACD calls interflowed

```
  0         1         2         3         4         5         6         7
  12345678901234567890123456789012345678901234567890123456789012345678901
```

     07/01 **09: 04 00: 00: 14** **T002** *** **P0456 05 06 07 08 I**

CO Trunk 2 comes in on path 456 and rings Agent Group 5. Cal I overflows to
Agent Groups 6, 7, 8 and 'is interflowed. Call dropped.


```
  0         1         2         3         4         5         6         7
  12345678901234567890123456789012345678901234567890123456789012345678901
```

    07/01 09:05   00:00:16 T001   *** **P2324 01 02 04 10** I
    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.

CC Trunk 1 rings 2311.   Cal I answered by 2311.


```
  0         1         2         3         4         5         6         7
  12345678901234567890123456789012345678901234567890123456789012345678901
```

    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 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
     1234567890123456789012345678901234567890123456789012345678901234567890123456789 01

     07/01 09:20  00:00:22 T003    012 P2324 01 02 02                  1201X 456
     07/01 09:20  00:00:10 T003    004 P0456 05 05                     1501
```

CO Trunk 3 comes in on path 2324 and rings Agent Group I. Call overflowed to
Agent Group 2 and answeredby 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 answered by Agent
1501 of Agent Group 5.

```
     0          1          2          3          4          5          6          7
     1234567890123456789012345678901234567890123456789012345678901234567890123456789 01

     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 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 abandoned.

```
     0          1          2          3          4          5          6          7
     1234567890123456789012345678901234567890123456789012345678901234567890123456789 01

     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 answered by Agent
1104 of Agent Group 1.

```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1
```

```
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 answered by 5220 and is transferred to path 2324.

Trunk 8 comes in on path 2324 and rings Agent Group 1. Call answered by Agent 1102 of Agent Group 1.

Supervised transfer of calls to the ACD system

```
0         1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123~5678901234567890123456789012345678901
```

```
07/01 09:51  00:00:10 T013  015                              3201T 1201
```

CC Trunk 13 rings extension 3201. Call answered by 3201 (non-Agent).   3201 dialed path 456.   Agent 1201 answered call.   3201 transferred CO Trunk 13 to 1201.


```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1
```

```
07/01 09:54  00:00:14 T008  *009                             1104
```

CC Trunk 8 rings an attendant.   Call answered by the attendant. The attendant dialed path 456.   Call answered by Agent 1104.   Attendant transferred CO Trunk 8 to 1104.


```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1
```

```
07/01 09:57  00:00:15 T003  010  P2324 01 01                 1107T 1502
```

CO Trunk 3 comes in on path 2324 and rings Agent Group 1. Call answered by Agent 1107 of Agent Group 1.   1107 dialed path 456.   Agent 1502 answered call. 1107 transferred CC Trunk 3 to 1502.


```
0         1         2         3         4         5         6         7
1234567890123456789012345678901234567890123456789012345678901234567890 1
```

```
07/01 09:58  00:00:12 T001  012  P2324 01 01                 1101T 1606
```

CC Trunk 1 comes in on path 2324 and rings Agent Group 1. Call answered by Agent 1101 of Agent Group 1.   1101 dialed Agent 1606.   Agent 1606 answered call and 1101 transferred CC Trunk 1 to 1606.

5. EXTERNAL DEVICES

General

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

5.02   SMDR records are output from the SX-200 DIGITAL PABX in the standard RS-232 format. Any RS-232 compatible device can be connected directly to the system for the storage of records.

Printer

5.03   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 SX-200 DIGITAL printer port is selectable from the Maintenance Terminal (refer to Section MITL9109-094-351-NA, RS-232 Maintenance Terminal). Ensure the baud rate of the printer matches that selected at the Maintenance Terminal.

Tape Machine

5.04   Any tape machine which is capable of operating over an RS-232 interface can be connected to the SMDR output port of the SX-200 DIGITAL PABX.

Cabling

5.05   The printer or terminal should be located within 15.2 m (50 ft) of the SX-200 DIGITAL PABX. Failure to observe this precaution may cause the SMDR record to be corrupted. The printer or terminal can be connected directly to the RS-232 port. SMDR data is automatically routed to this port.

6. SMDR PROGRAMMING AND CONTROL

General

6.01 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 modi- fied at any time by the maintenance person from the CDE terminal. Table 6-l 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 Section MITL9109-094-210-NA, Customer Data Entry (CDE). For a record of an outgoing call 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 the COS option "SMDR Does Not Apply" is enabled in that device's Class of Service.

TRUNK SMDR Programming Options

6.02 The TRUNK SMDR programming options are as follows:

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

- **Record Meter Pulses:** This COS option causes meter pulses generated by the Central Office to be counted and then re- ported in the SMDR record.

- **Drop Calls Less Than n Digits:** When this COS option is en- abled, outgoing calls of less than n digits are not reported (where n is programmed to be between 0 and 11; 0 disables the option).

- **Drop Incomplete Outgoing Calls:** When this COS option is enabled, incomplete outgoing calls are not recorded. Note: If the call duration is less than the programmed value of the system timer, Psuedo Answer Supervision Timer, it shall be considered as an incomplete call.

- **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.

- **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.

- **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.

Notes: 1. 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.

2. For Modem Fooling, 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.

TABLE 6-1
CDE-SELECTED SMDR CLASS OF SERVICE AND SYSTEM OPTIONS

Option	Type	Number
SMDR - SMDR Record Incoming Calls	c o s	806
SMDR - Extended Record	c o s	246
SMDR - Record Meter Pulses	c o s	247
SMDR - Overwrite Buffer	c o s	702
SMDR - Drop Calls <n Digits (n = 0...11, disable = 0)	c o s	803
SMDR - Drop Incomplete Outgoing Calls	c o s	804
SMDR - Does Not Apply	c o s	700
SMDR - Indicate Long Calls	System	28
ACD Reports	S y s t e m	4 4

DATA SMDR Programming Options

6.03 Three Class of Service (COS) options and one System Timer option are available with DATA SMDR, as follows:

- **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.

- **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 CLASS OF SERVICE 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

7.01 The SMDR feature is transparent to the end user; hence there are no operational procedures to be employed by the Attendant or station user. The following provides a summary of the operational parameters which are described earlier in this document.

Non-Recording Conditions

7.02 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

7.03 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

7.04   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 "Attendant was Involved".

- 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 S'MDR

7.05   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

AI.01 This   Appendix   provides   a   general   description   of   account   codes   and   operation.

Description

AI.02 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 must be terminated by a terminator digit as described in the following paragraph. When no account code length is specified during CDE programming, the default length is six digits.

AI.03 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.

Account   Code   Terminator

AI.04 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 it is impossible to dial the terminator 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

AI.05 The Forced Account Code — External Calls feature is a COS option which is assigned to stations in order to bar trunk access from those stations, unless the access attempt is preceded by a valid account code. The Forced Account Code — Long Distance Calls feature is a COS option 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.

AI.06 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 when fixed length account codes are used.

• Dial trunk access code (usually 9).

• Dial the outgoing number.

Account code entry during an incoming or outgoing call on a SUPERSET 4™ **telephone:**

• Press SELECT FEATURES key.

• Dial feature "5" (Account Codes).

• Enter Account Code number.

• Press SAVE softkey.

Account code entry during an incoming or outgoing call on a SUPERSET 4™**DN telephone:**

• Press ACCOUNT CODE softkey.

• Enter Account Code number.

• Press SAVE softkey.

APPENDIX B

DATA ACCOUNT CODES

General

B1.O1   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   Section   MITL9109-094-105-NA,   Features   Description   (Data   Features   section).   Data   Account   Codes   are   not   available   with   Generic   1002.

Description

B1.02   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   truhk.

Incoming, Outgoing and Internal Data Calls

B1.03   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

B1.04 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 1234-9-5925678-ACCOUNT-2222

  OR

- CALL 1234 9 5925678 ACCOUNT 2222

  OR

- CALL 1862-ACCOUNT-2222 (internal DTRX call with account code)

  OR

- CALL 1862 ACCOUNT 2222

(prompt)

CALL

1 2 3 4	– modem pool access code
9	– ARS access code
5925678	– 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

B1.05 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:

87-75-2222-1234-9-5925678 (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

5925678   – 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.

B1.06 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

B1.07 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 digits 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

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

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.

B1.09 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 pro-grammed)

Forced Account Codes

B1.10 The COS of the caller is checked to determine if any of the following options apply; if so, an account code must be en-tered:

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)

SX-200" DIGITAL

PRIVATE AUTOMATIC BRANCH EXCHANGE (PABX)

TENANTING

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1. INTRODUCTION

1.01   Tenanting is a feature which allows up to 25 tenants to share features and capabilities of the *SX-200*® DIGITAL PABX. Some PABX features are enabled for each tenant through CDE, while other features are shared by all tenants.

Reason for Reissue

. **1.02**   This Section is reissued to describe tenanting and to explain how to use and program tenanting in an SX-200 DIGITAL PABX with Generic 1002 and Generic 1003 software.

2. GENERAL DESCRIPTION

Overview

2.01   Tenanting is a very powerful and flexible feature available with the SX-200 DIGITAL PABX. Up to 25 tenants (or customers) may be defined. 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. Station Message Detail Recording (SMDR), described in Section MITL9109-094-221-NA, allows equitable assessment of costs among all users.

2.02   A typical multiple tenant application is a company which occupies a large building and has attendants and/or sub-attendants 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.

2.03   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 customer's listed directory number; the call will go through the CO and then appear as an incoming CO call at the called customer.

Tenanting for Data Users

2.04   The SX-200 DIGITAL PABX tenanting features are available for data users also; 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, Trunks, and Stations

2.05   The PABX is divided into distinct tenants; all stations, SUPERSET™ Telephones, trunks, and attendant consoles are assigned to a tenant as they are programmed into the PABX. The PABX can have a maximum of 11 consoles. Trunks and "Dial 0" calls are programmed to ring to only their associated attendant position. Outgoing calls will seize only trunks within their same tenant, as shown in Figure 2-l.

Tenant Interconnection

2.06 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.

2.07 Each tenant may be allowed or not 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.

2.08 Note the special case when tenant 1 can call tenant 2 but tenant 2 cannot call tenant 1. If *SUPERSET* 4^{TM} telephone A in tenant 1 calls *SUPERSET* 4 telephone B in tenant 2, and upon receiving no answer, sends the message to call Set A, Set B can return the call to Set A (by pressing its MSG, READ MSG, and CALL softkeys) even though tenant 2 is normally restricted from calling tenant 1.

Identifying Tenants on Consoles and *SUPERSET* Teiephones

2.09 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
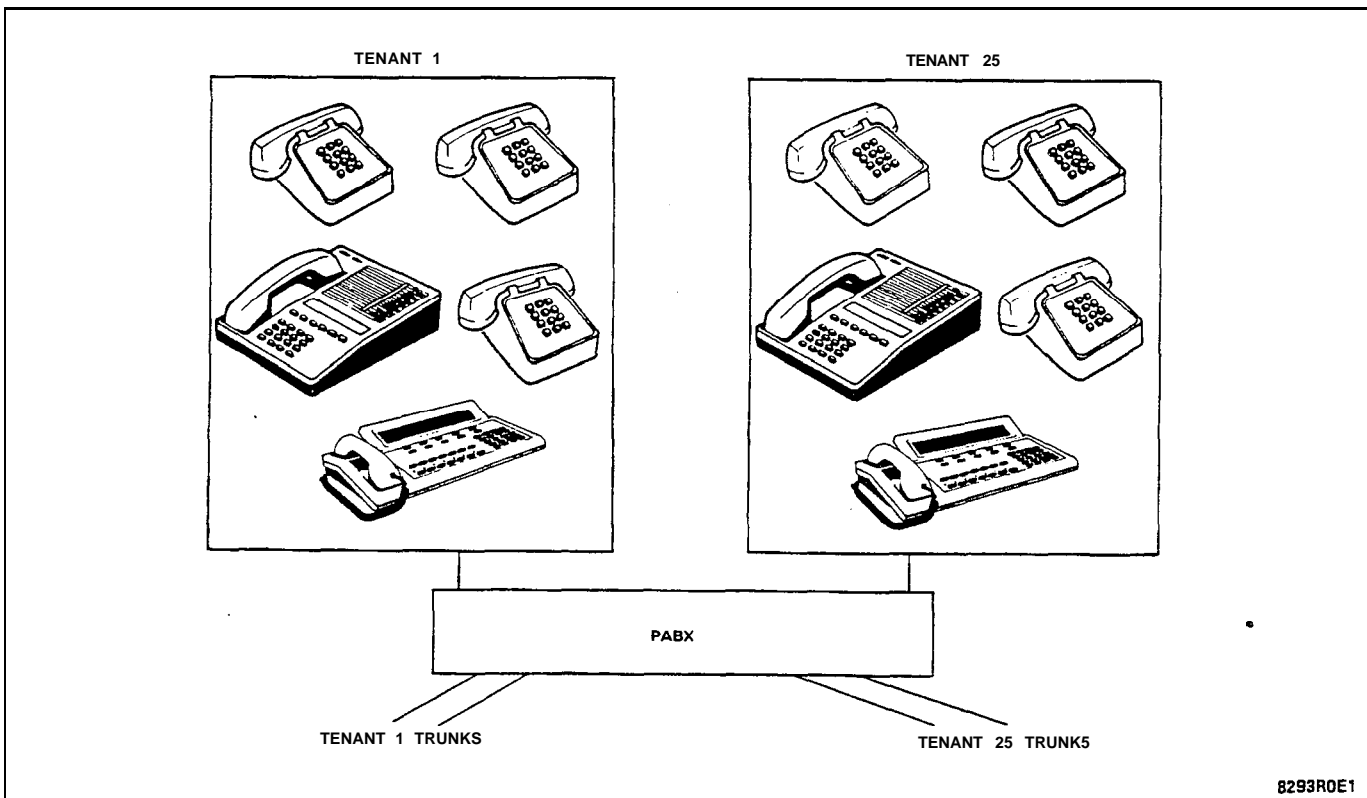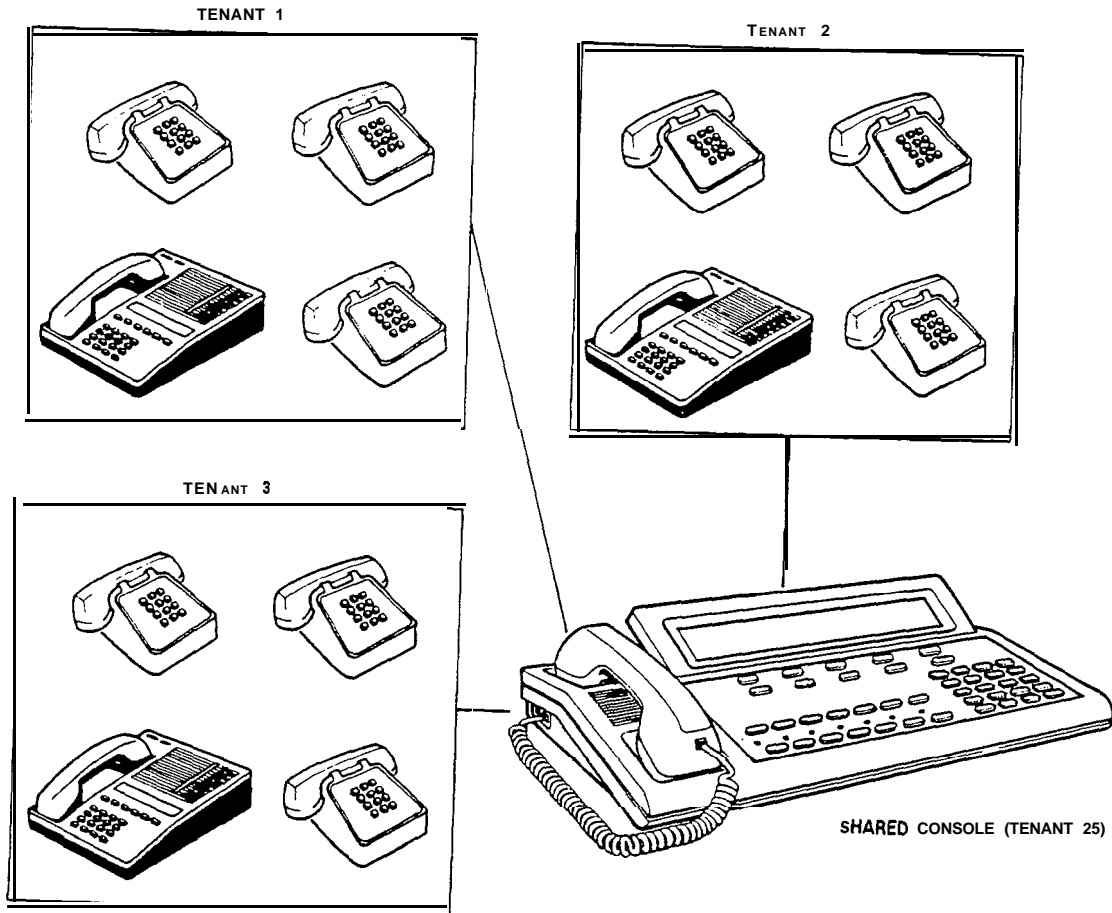

Figure 2-I Tenant Connections to PABX

TENANT 1

TENANT 2

TENANT 3

SHARED CONSOLE (TENANT 25)

8294R0E0

Figure 2-2 Tenant Interconnection with Shared Console

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.

2.10   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* 4 or a *SUPERSET* 4™DN telephone, that party's name is displayed instead; however, the trunk group may be programmed to display the company name on the *SUPERSET* 4 telephone. Generic 1002 does not support tenant names.

2.11   The call rerouting point for all tenants may be two *SUPERSET* 4 or *SUPERSET* 4DN 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.

Local Night Switching

2.12   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.

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

2.14   A tenant with a *SUPERSET* 4 telephone programmed as having night switching ability may press the SELECT FEATURES key and the NIGHT ANS softkey to switch between NIGHT 1 ?, NIGHT 2 ?, or DAY ? service. The display shows NIGHT 1 SERVICE, NIGHT 2 SERVICE, or DAY SERVICE, according to the mode-which is currently active; each time that the NIGHT ANS softkey is pressed, the display toggles between the two inactive modes. A tenant with a *SUPERSET* 4™DN telephone switches into night service by pressing the SUPERKEY, the MORE softkey twice, and the NIGHT ANSWER softkey. Press the softkey to select the new mode of operation; if the EXIT softkey is pressed, the current mode is retained, and no change occurs. The display either shows NIGHTx SERVICE or flashes DAY SERVICE and then reverts to time and date display.

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 Form 6, Tenant Night Switching Control.

2.15   It may be desirable to have a console or a *SUPERSET* 4 or a *SUPERSET* 4DN 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 comes on duty and 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 will be

TENANTS

ABC   SAM'S   OCTEL   BLACK'S   JONES'S

ABC COMPANY
SAM'S
OCTEL
BLACK'S
JONES'S
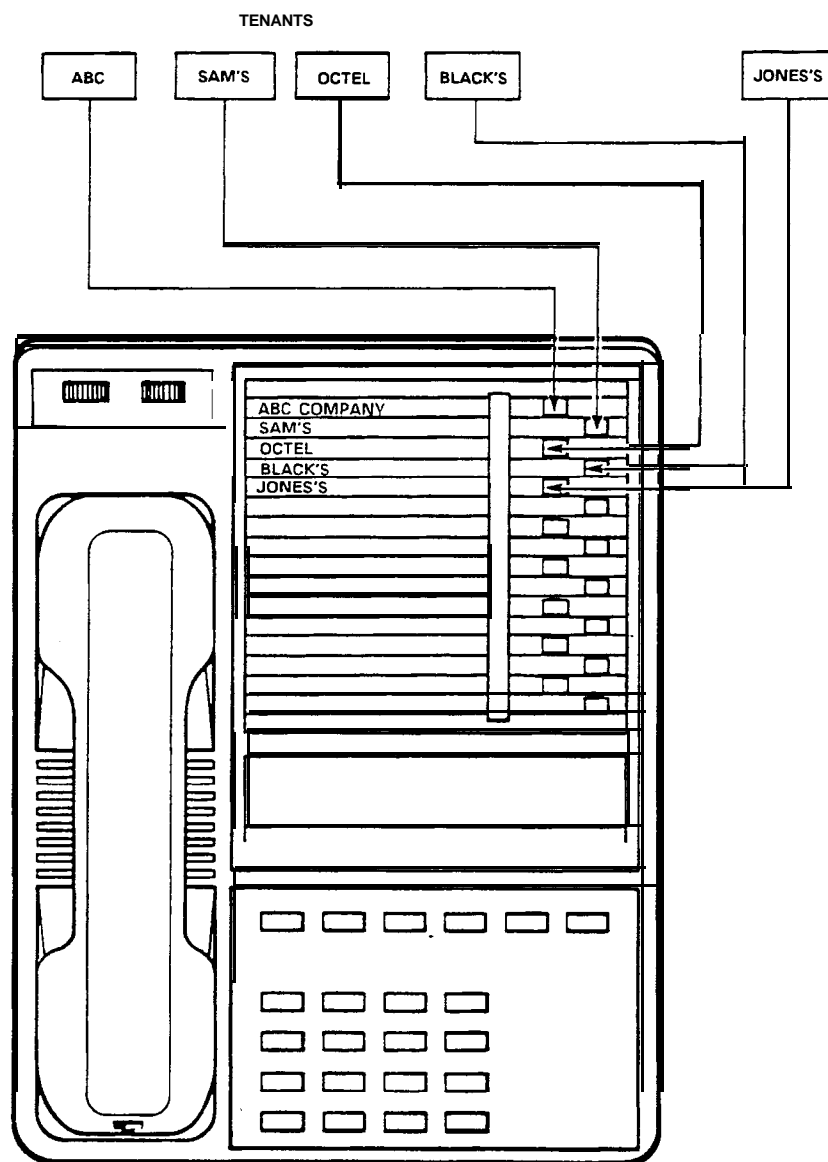
8295R0E0

Figure 2-3 SUPERSET 4 Telephone Serving Several Tenants

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

2.16   The system allows incoming calls to be redirected to a Night bell. A station in that tenant may dial the "TAFAS ACCESS - LOCAL TENANT" feature access. code to answer the first call in that tenant's queue. Similarly, the SUPERSET 4 or SUPERSET 4DN telephone prompt "NIGHT ANS" will light if there is a call in its tenant queue. 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.

"Dial 0" Routing

2.17   Any tenant group may operate with a central attendant 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.

2.18   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.
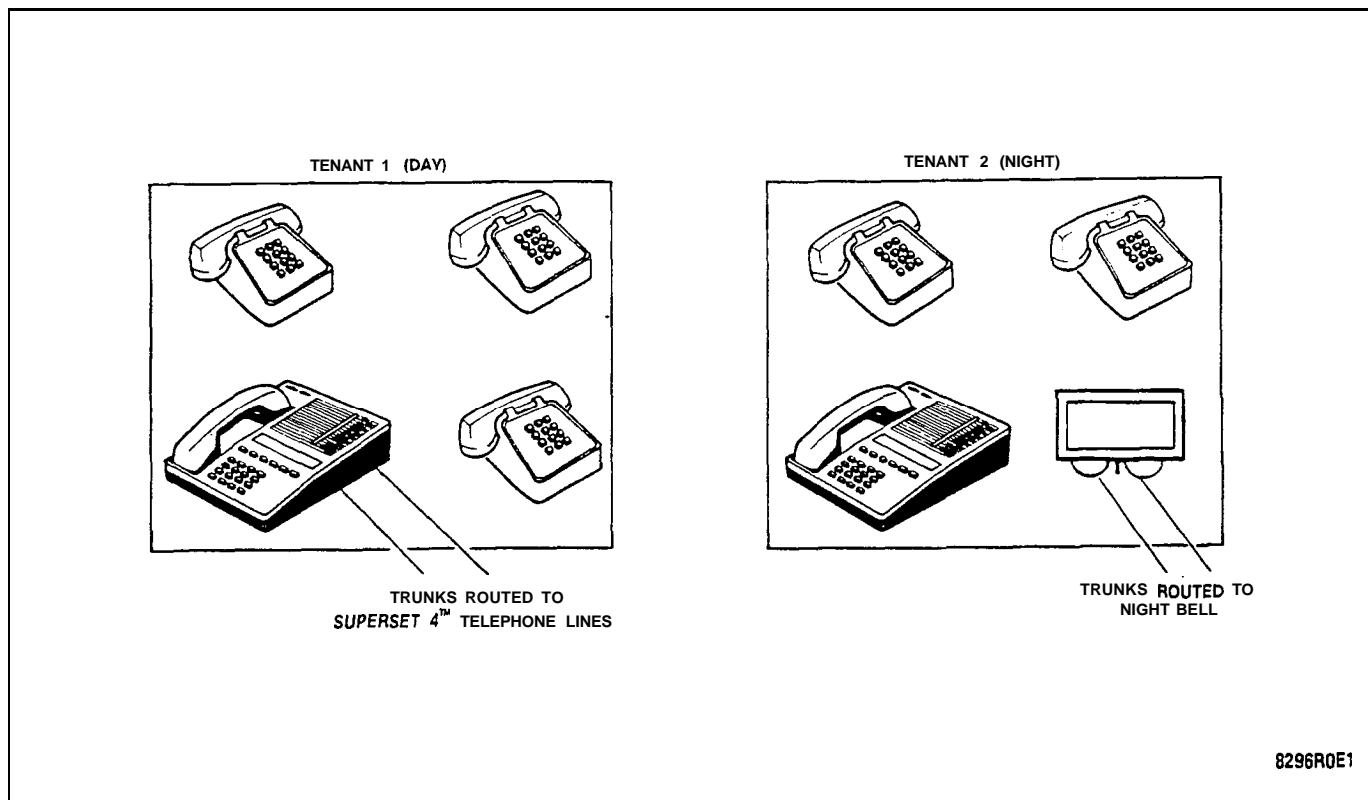

TENANT 1 (DAY)

TENANT 2 (NIGHT)

TRUNKS ROUTED TO
SUPERSET 4™ TELEPHONE LINES

TRUNKS ROUTED TO
NIGHT BELL

8296R0E1

Figure   2-4   Night   Switching   Options

Call Rerouting Features and Answer Point

2.19 Each tenant may determine its method of rerouting "Dial 0" calls, intercepts for illegal access, or calls that are not answered, or reach busy parties. The answer point may be an Attendant console, *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.

2.20 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.

2.21 Several examples of Call Rerouting follow; a complete list is given in the CDE Section.

Direct Inward Dial Rerouting

2.22 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
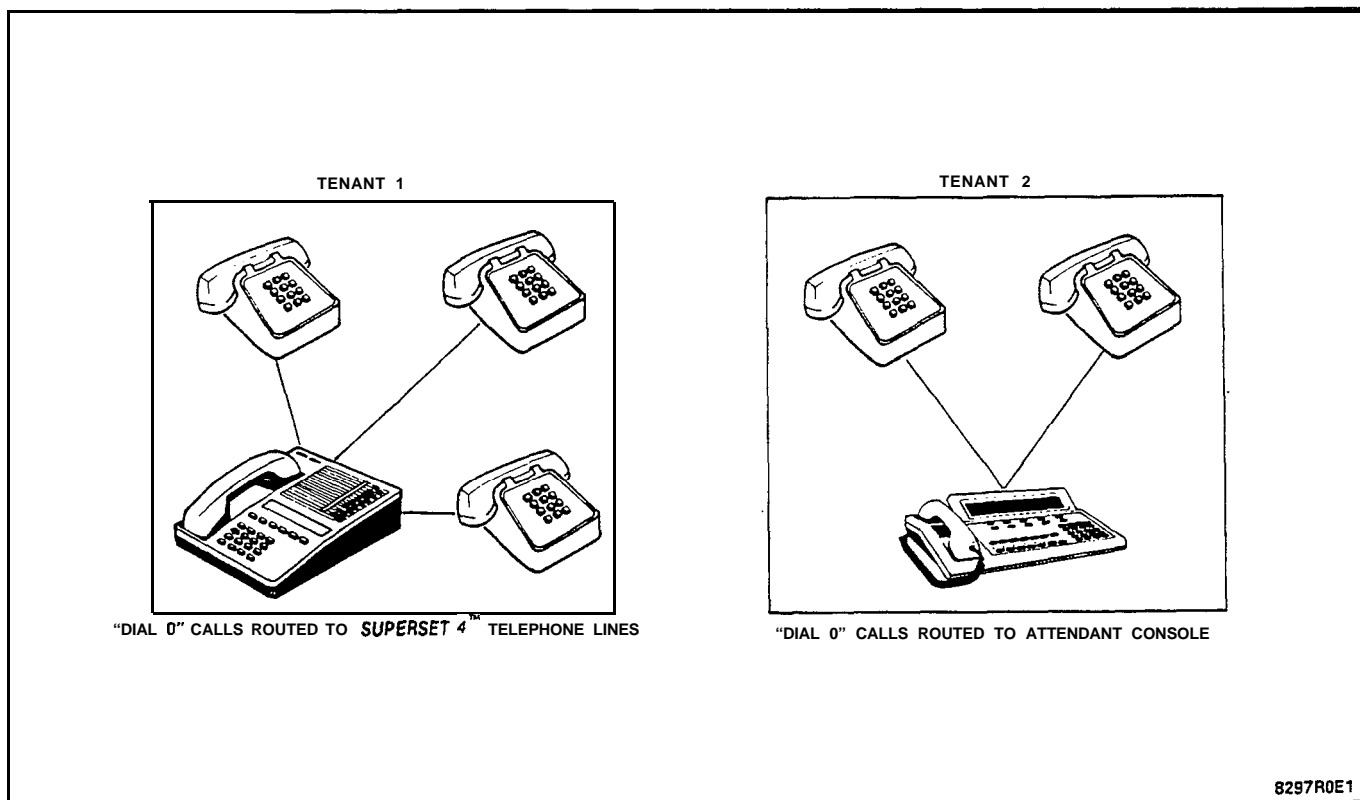

TENANT 1

TENANT 2

"DIAL 0" CALLS ROUTED TO *SUPERSET 4*™ TELEPHONE LINES

"DIAL 0" CALLS ROUTED TO ATTENDANT CONSOLE

8297R0E1

Figure 2-5 "Dial 0" Call Routing

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

2.23   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.

Numbering Plan

2.24   Since tenants are allowed to connect to each other, extension numbers must be unique and nonconflicting 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 its unique extension numbers.

Automatic Route Selection with Multiple Tenants

2.25   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.

2.26   Route definition is based on trunk groups, each of which is listed as first to sixth choice to some destinations. 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.

2.27   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.

Sub-Attendants and Message Centers

2.28   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.

2.29   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 don't have to remember how to call their message desk. They can call another department's message desk by dialing its extension number.

3. PROGRAMMING AND CUSTOMER DATA ENTRY FOR TENANTING ·

3.01   This Part describes how the Customer Data Entry (CDE) package handles setting up the various functions described earlier. The forms are more fully explained in Section MITL9109-094-210-NA, Customer Data Entry (CDE).

CDE Access Restrictions

3.02   There are five levels of access to Customer Data Entry; Installer, Maintenance 1, Maintenance 2, Supervisor, and Attendant; access by each level is restricted during initial Customer Data Entry to prevent unauthorized database modifications.

Tenant Assignments

3.03   Stations, sets, data sets, consoles, and trunks are assigned to a tenant when they are programmed into the system during CDE. The field labeled 'TEN" is the tenant assignment field. Enter the tenant number (1-25) to which the station or SUPERSET telephone belongs. The Station/SUPERSET telephones programming form (Form 3-I) shows extension 311 in tenant 1 and extension 312 in tenant 2.

FORM 09 - STATION/SUPERSET TELEPHONES

CDE TERMINAL DISPLAY

10:15 PM   15-JAN-88   alarm status = NO ALARM

BAY	SLT	CCT	TEN	EXTN	COS	COR	TYP	ANNOUNCE		NAME	ASSOC	COMMENTS
1	1	01	1	311	1	1	Set			SUE C.		
1	1	02	2	312	1	1	Set			T. HILL		
1	1	03	1	313	1	1	Set			NANCY M.		
1	1	04	1	314	1	1	Set			PETER S.		
1	1	05	1	315	1	1	Set			J. BARKER		
1	1	06	1	316	1	1	Set			NORM MCM.		
1	1	07	1	317	1	1 .	Set			S. KRITSCH		
1	1	08	1	318	1	1	Set			KEITH A		
1	2	01	1	301	1	1	Stn			J. COLES		
1	2	02	1	302	1	1	Stn			S. DUNCAN		
1	2	03	1	303	1	1	Stn			M. HENDREN		
1	2	04	1	304	1	1	Stn			P. TINSLEY		
1	1	01	1	311	1	1	S e t			SUE C.		

1-MOVE	2-FIND EXT	3-EXPAND SET	4-	B-RANGE
6-QUIT	7-BAY/SLT/CCT	8-DELETE	9-REVIEW	0-

Form 3-I Stations/SUPERSET Telephone Programming Form

Interconnections   Between   Tenants

3.04   Each tenant may be allowed or not allowed to call any other tenant, by programming the TENANT INTERCONNECTION TABLE. On each horizontal line, an "*" indicates tenants that may be called, and a "." indicates tenants that may not be called from that identified tenant.

3.05   The diagonal of the matrix is labeled "0" because a tenant may not be prohibited from calling within itself. Note that the con- nection control is unidirectional; if tenant 1 may call into tenant 2, tenant 2 may not necessarily be able to call into tenant 1. This allows for a master tenant who could call everyone, but not be called.

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

3.07   The Tenant Interconnection Table provides 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 re- stricted by programming Form 05, Tenant Interconnection Table.

FORM 05 - TENANT INTERCONNECTION TABLE

CDE TERMINAL DISPLAY

4:26 1 -JAN-f36   alarm status = NO ALARM

	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-	O-ENTER

Form 3-2 Tenant Interconnection Table

Call Rerouting

3.08 The CALL REROUTING TABLE (Form 3-3) specifies where each tenant is to route different types of calls in Day, Night 1, or Night 2. If no number is specified, the caller receives reorder tone.

3.09 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.

3.10 Night bells and Attendant LDN keys are programmed into the system with directory numbers for reference, and may be specified here along with stations, *SUPERSET* telephones, and *SUPER-SET* telephone lines.

Notes for programming Form 19, Call Rerouting Table.

DID and Dial-In Tie Trunk Attendant Night Access Points only work when the tie trunks are sent to the Attendant's extension number, and not to a softkey 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 Intercept Routing for Calls into this Tenant	Calling Trunk
DID Vacant Number Routing for this Tenant	Calling Trunk
DID Attendant Night Access Points	Calling Trunk **Note:** 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

FORM 19 - CALL REROUTING TABLE

CDE TERMINAL DISPLAY

7:50 A M 15-JAN-88   alarm status = NO ALARM

[TENANT : 1	TYPE OF CALL	DAY	N1	N2
Station Dial 0 Routing		1821	1821	
Priority Dial 0 Routing				
DID Recall Points On Busy				
DID Recall Points On No Answer				
DID Routing For Calls Into This Tenant				
DID Intercept Routing For Calls Into This Tenant				
DID Vacant Number Routing For This Tenant				
DID Attendant Night Access 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				
Station Dial 0 Routing		1821	1821	

1-	2-TENANT NAME	3-	4-TOP	5-BOTTOM
6-QUIT	7-TENANT	8-DELETE	9-	0-

Form 3-3 Call Rerouting Table

Night Switching

3.11   A TENANT NIGHT SWITCHING CONTROL matrix allows one or more tenants (such as a night security desk console or SUPER-SET telephone) to switch all tenants into Night service. This matrix is similar to the TENANT INTERCONNECTION TABLE.

3.12 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. Form 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.

FORM   06 - TENANT NIGHT SWITCHING CONTROL

CDE   TERMINAL   DISPLAY

4:26 1 -JAN-85   alarm status = NO ALARM

```
      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	-/-TENANT NUM	8-SWITCHED	9-	0-

Form   3-4   Tenant   Night   Switching   Control

SX-200" DIGITAL

PRIVATE AUTOMATIC BRANCH EXCHANGE (PABX)

TRAFFIC MEASUREMENT

i

<div align="center">**CONTENTS**</div>   **PAGE**

1. GENERAL

Introduction

1.01   This Section describes principles of telephone traffic measure-
ment for an $SX-200^®$ DIGITAL PABX, including programming **and**
operating procedures for obtaining Traffic Measurement data.

Reason for Reissue

1.02   This Section is re issued to provide information about Traffic
Measurement for the SX-200 DIGITAL PABX with Generic 1002
or Generic 1003 software. Note that 672-port reports and Automated
Attendant reports are not available with Generic 1002.   I

Traffic   Analysis

1.03   Traffic Analysis consists of two activities; the first is to collect
data about the system (measurement), and the second is to
interpret this data (analysis) to optimize performance. Once traffic
measurement has been started in the PABX it continues automatically
until changed or stopped. Traffic measurement produces only one
report for the system, even if tenant service is provided.

1.04 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 irrespective of the length of each access; usage is the length
of time or duration for which each facility is used. In certain applica-
tions the peak value of facility usage during the period is also re-
corded. Call holding time is the average length of each call.

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

$$\text{usage (CCS)} = \frac{\text{peg counts (per hour) X call holding time (in seconds)}}{100 \text{ (seconds per CCS period)}}$$

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

1.05   Traffic measurement results may be examined to determine the
adequacy of equipment provisioning, and the effectiveness of
programmed options and features. Analyzing the results will identify
changes which can be implemented by reprogramming and/or reprovi-
sioning to improve system performance.

2. TRAFFIC   MEASUREMENT   METHODS

General

2.01   Traffic measurement data is accumulated in periods of from 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 three parameters are entered from the console or maintenance terminal. Once set, traffic measurement will begin at the same time each day, and 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 does. This 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.

2.02   Data is accumulated into active registers during each period; at the end of each period data is transferred to storage registers and the active registers are zeroed in preparation for receiving data from the next traffic measurement period. The data is held in these storage registers from which it may 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   Accumulated

2.03   Two basic types of data are accumulated in the registers: peg counts and usage counts. Usage counts may be further divided into normal usage and maximum value counts, as outlined following:

Peg   Counts. 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. The amount of time for which a facility is used may 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 Report. The maximum usage is 6553.50 ccs or 182.04 Erlangs; this could only occur if 182 devices in a facility are all busy for 1 hour. The consoles are scanned every second for accuracy in the average waiting time for an answered call.

Maximum Value Count. This type of count is obtained similar to that above, except that the value obtained at each scan does not increment the register; instead it is compared with the register's value and up-

dates 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 may exist without the maximum count reaching the number available.

Number Of Dynamic Records **for Hunt Groups, Trunk Groups and Trunk.** 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 112 records is allocated.

Example: .

> For Generic 1003 the following traffic would be recorded:
> - **4** consoles
> - 8 hunt groups
> - 15 trunk groups
> - <u>70</u> trunks numbered 1 to 70
>   97 records (total)
>
> 15 records still available (112 - 97)

2.04 The following data is accumulated during traffic measurement:

System Activity - indicates the extent of activity on the basic system
- maximum peg count = 65535

1 S Dial Tone:	This is incremented every time that 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 every time that 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:	This is incremented every time that 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:	Count of all calls directed to any console including calls that hang up before they are answered.
Console orig.:	Count of all console originations.
Dataset orig.:	Each time a data call is originated either by ADL or DTRX this peg is incremented.
Dial 0 Calls:	Count of all dial 0 calls that are answered at any console. This includes internal calls as well as priority dial 0 calls.

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:	Count of all intercepted calls that are answered at all consoles.
Recall:	Count of all console-answered recalls.
Activity:	Each time a device has activity, this count is incremented.
Illegal Calls:	Whenever an extension, console or dial-in trunk dials a vacant or illegal number.

Features – indicates the activity of those features which have been
programmed for the installation.
– maximum peg count = 65535

ADL Access:	Count of sucessful ADL feature accesses.
Callback:	Count of callbacks that have been setup.
Call forward:	Count of all call forwarding setups at any extension or console.
Call hold:	Count of number of hard holds by an extension.
Call park:	Count of number of call parks.
Call pickup:	Count of legally dialed call pickups, includes local pickups or directed pickups from extensions.
Camp-on:	Count of camp-ons for extension-to-trunk, extension-to-extension, and trunk-to-extension.
Console conf.:	Count of the number of times consoles use the conference softkey.
Console hold:	Count of the number of all console call holds.
DND:	Count of do not disturb setups.
DTRX Session:	Count of successful DTRX session accesses.
Ext. conf.:	Count of extension conferences.
Flash Hold:	Count of transfers or flash and holds from an extension or console.
Guest Room:	Count of Guest Room softkey depressions.
Hold pickup:	Count of successful hold pickups (calls held at the console in a hold slot and picked up using the dialed console and hold slot number).
Maid in Room	Count of number of accesses to Feature Access Code 35.
Msg Waiting:	Count of applied message waiting.
Override:	Count of completed busy overrides.

Paging:	Count of successful pager accesses.
Serial Call:	Count of console serial calls.
TAFAS:	Count of TAFAS (night answer) answered from dialed feature access code or Set softkey.
Wake-Up:	Count of call wake-up setups.
UCD Login/out	Count of UCD Agent logins and logouts.

DTMF Receivers - records activity on receivers within system
- maximum peg = 65535

Peg:	Represents the total number of times that the DTMF receivers were accessed during the measurement period.
Usage:	Represents the total usage (Erlangs or CCS) for the DTMF receivers during the measurement period. Does not include busied-out receivers (maximum = 6553.5 ccs).
Busy Peg:	Represents the number of times a call could not be allocated a DTMF receiver immediately 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 - records activity between Bays and within each Peripheral Bay

Bay Number:	Identifies 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.

Console - records activity of each console on the system

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 had 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 when calls cannot be immediately answered (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 to the console to be answered.

Hunt Groups - records activity of each hunt group

Hunt Group Number: Programmed hunt group number.

Peg: Number of accesses to hunt group, including busy attempts (maximum = 65535).

Skip Peg: Number of failures to get a receiver, which resulted in shipping 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 busy.

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.   l'

Trunk Groups - records activity of each trunk group

Trunk Group Number: Programmed trunk group number.

Peg: Number of accesses to 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 report and is not in the storage registers.

Trunks - records activity of each trunk during the measurement period

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

2.05 A call which lasts for 100 seconds has a value of 1 ccs (one hundred-call-seconds). One Erlang equals 36 ccs (3600 call seconds). Usage is measured in lo-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 658, 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 70 = 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 cs or 0.00028 Erlang).

Power Failure

2.06 If power fails to the system, 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. This period's start time will be the time of the power-up.

3. TRAFFIC   MEASUREMENT   COMMANDS

Maintenance   Terminal   and   Console

3.01   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 Section MITL9 109-094-35 1 -NA, RS-232 Maintenance Terminal, 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   Commands

SET	SHOW	PRINT	READ	
QUIT			STOP	

SET	▬	Set traffic report information
SHOW	▬	Status of current traffic report, contains information defined by the SET command.
PRINT	▬	Print the latest traffic report
READ	▬	Read latest traffic report
STOP	▬	Stop current traffic measurements or stop printing report

SET   Command

UNITS	PERIOD	DURATION	AUTOPRINT	CANCEL
	START TIME	CONDENSED		

UNITS	▬	CCS or ERLANGS
PERIOD	▬	1 to 60 minutes
DURATION	▬	number of periods
CONDENSED	▬	Condensed report ON or OFF
CANCEL	▬	Quit SET commands
START TIME	▬	hh:mm
AUTOPRINT	▬	Automatically print after each period

Use the SET command to enter or change any traffic measurement parameters; use the prompts to change the required data and then exit from the TRAFFIC MEAS function. Once the START command is issued, the PERIOD and DURATION cannot be changed for the current traffic measurements. The AUTOPRINT, and CONDENSED parameters can be changed while it is running. At the beginning of each period of current traffic measurement, the pegs and the 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. The START command cannot be

issued while traffic measurement is on; it must be STOPped and then restarted.

STOP Command	— This command causes two softkeys to become active, and pressing either selects. what is to be stopped.
TRAFFRPT	— stops the traffic measurement currently active. No report will be made of the incomplete collected data.
PRINT	— stops a printout 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 print-outs to stop printouts.

SHOW STATUS Command Contains a summary report on the current traffic measurement   parameters.

STATUS	: Activated/OFF
START TIME	: hh:mm
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 OFF.

SET STATUS OFF

— press STOP
— press TRAFFRPT
— press ENTER
STATUS is set to OFF

DATA COLLECTION	This indicates that data is currently being collected (if it is running). When it is OFF, either the daily start time has not been reached, or, it has finished the required number of periods since the start time; in either case, no data is currently being collected.
PRINT	This softkey command causes the latest traffic report held in the system to be immediately printed.
READ	This softkey command causes the latest traffic report in the system to be displayed on the maintenance terminal, where it may 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	This softkey command allows the user to exit from Traffic Measurement mode at the console or terminal.

4. INSTALLATION

General

4.01   Installation to meet the Traffic Measurement requirements con-
sists of the following steps:

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 in-
stallation.

Connection   Requirements, Local   Printer

4.02   Section MITL9109-094-200-NA, Shipping, Receiving and Instal-
lation Information, details the installation of SX-200 DIGITAL
PABX systems; also refer to Section MITL9109-094-351-NA, RS-232
Maintenance Terminal, and reference System Set Commands which
assign printers during installation and initial maintenance program-
ming. The Traffic Measurement data may be output to a printer, mag-
netic 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.

4.03   When a local printer 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.

4.04   A Printer may be specified in Form 34 - Directed IO which will
allow all Traffic Measurement printouts to be sent to this print-
er which is connected to a port equipped with an asynchronous data
set. Refer to Section MITL9109-094-210-NA, Customer Data Entry
(CDE), 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

5.01   The standard report provides a printed report 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. Three typical reports are printed following:

5.02   Port size and system number are unique to each system; they are entered when the system is initally configured. The CHAN-NELS part of the printout is associated with the maximum port configuration. Three different examples are given in the typical printout; in an actual system printout, only the data for the associated port configuration is given.

SX-200 DIGITAL Generic 100X XXXP TRAFFIC REPORT
SYSTEM   nnn
27-NOV-87
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
118	4.20 ccs	0	2/ 8

CHANNELS:

Bay	Usage	Max/Avl	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		

336-port

CHANNELS:

Bay	Usage	Max/Avl	Local Usage	Max local
1	2.20 ccs	2/124		
2	9.60 ccs	4/ 62		
3	33.00 ccs	6/ 94		
4	1.20 ccs	3/ 31	0.00 ccs	0
5	18.10 ccs	6/ 31	1.80 ccs	2

456-port

SX-200 DIGITAL Generic 100X XXXP TRAFFIC REPORT
SYSTEM nnn (CONT'D)
27-NOV-86
9:oo to lo:oo

CHANNELS:

Bay	Usage	Max/Avl	Local Usage	Max local
1	2.20 ccs	2/124		
2	9.60 ccs	4/ 62		
3	3.00 ccs	1/ 31	0.00 ccs	0
4	1.20 ccs	3/ 31		
5	18.10 ccs	6/ 31	1.80 ccs	2
			0.00 ccs	0

480-
port

-CHANNELS:

Bay	Usage	Max/Avl	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		
5	456.40 ccs	18/ 94		
6	43.60 ccs	4/ 94		
7	421.30 ccs	17/ 94		

672-
port

CONSOLE:

Directory Number	Usage	Calls Answered	Calls Waiting Usage	Avg. Waiting Time (sec)
4 9 0 0	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

5.03   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

5.04   From reading the Traffic Report, the following total traffic values can be determined.

<u>Total Traffic</u>   = Sum of channel usage ▪ Receiver usage
<u>Number of Calls</u>   = Extension Originations + Console Originations + sum of incoming trunk pegs

5.05   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.c	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

SX–200® DIGITAL PABX

ACD TELEMARKETER™ Application Package

This practice describes the features, operation, and programming of the *ACD TELEMARKETER*™ Application Package for the *SX–200*® Digital Private Automatic Branch Exchange (PABX).

Practice: 9 109–094–620–NA
Issue: 3
Revision: |
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1. GENERAL

1.1   This practice describes the features, operation, and programming of the ACD *TELEMARKETER*™ Applications Package for the *SX–200*ᴿ DIGITAL Private Automatic Branch Exchange (PABX).

REASON FOR REISSUE

1.2   This practice is reissued to include revisions and additions to the information contained in the previous issue. As the manual is completely rewritten, no change bars are used.

INTENDED AUDIENCE

1.3   This practice is for those involved in the marketing, installation, programming, and operation of the *SX–200* DIGITAL ACD *TELEMARKETER* feature.

MANUAL STRUCTURE .

1.4   This practice is divided into sections with each section covering a specific area of the *ACD TELEMARKETER* feature.

- General describes the structure and content of the practice.

- 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.

- Sets – General introduces the *SUPERSET 4*™ telephones used by ACD agents and supervisors.

- ACD Agent Sets describes the features and operation of the *SUPERSET 4* telephones used by ACD agents.

- ACD Supervisor Sets describes the features and operation of the *SUPERSET 4* telephones used by ACD supervisors.

- ACD Senior Supervisor Sets describes the features and operation of the *SUPERSET 4* telephones used by ACD 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

1.5   To simplify the descriptions in this practice, the following **conven-** tions have been followed.

Key Names

1.6 Names of keys on a keyboard are shown in bold.

Example: **Return**

Data Entry

1.7 Data to be entered by the user is shown in bold uppercase.

Example: **EXIT**

Data Entry Instructions

1.8   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

1.9   Refer to the following practices for additional information:

- Features and Services (9109-094-I OS-NA)

- Programming **(9109-094-210-NA)**

2. ACD OVERVIEW

2.1   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 DIGITAL PABX.

AUTOMATIC CALL DISTRIBUTION

2.2   **Automatic Call Distribution (ACD) offers uniform distribution of in-**coming calls to station users (agents). Calls are routed to groups of agents according to the type of information or service required by the caller. The agents are trained and equipped to provide the particular information or service the caller is requesting. If calls cannot be handled immediately, the caller is usually entertained 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

2.3   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 QUEUEING

2.4   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 that ensure 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 waiting in the queue, the ACD system can be programmed to give the caller 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 workload by directing the next incoming call to the agent who has been idle the longest.

STAFFING AN ACD SYSTEM

2.5   In most ACD applications, the individual handling ACD calls is referred to as an agent. Agents are often specially 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 that may arise.

REPORTS

2.6   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.

MONITORS

2.7   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

3.1   This section of the practice introduces the *ACD TELEMARKETER* fea-
ture for the **SX-200 DIGITAL PABX**, and describes the following components
of the *ACD TELEMARKETER* system:

- **ACD Call Flow**

- **ACD Positions**

- **ACD Path**

- **Recorded Announcements**

- **Realtime Displays**

- **Summary Reports**

- *ACD TELEMARKETER* **Reporting System**

ACD TELEMARKETER OVERVIEW

3.2   The *ACD TELEMARKETER* Application Package is an advanced Auto-
matic Call Distribution (ACD) system that is fully integrated with the   MITEL
SX-200 DIGITAL **PABX,** and designed with the power and performance need-
ed to ensure satisfaction in the the most demanding telemarketing environ-
ments. For maximum efficiency, all ACD personnel use *SUPERSET 4*™ tele-
phones programmed with special displays and softkeys. The displays provide
call status and progress messages; the   softkeys give single button selection of
ACD features.

ACD Path

3.3   The heat-t of the *ACD TELEMARKETER* feature is the **ACD Path,** an in-
novative call routing design that guides incoming calls through the system.
The path defines all information required for each type of call including how
the system is to handle callers placed in a queue to wait for an agent.

With 99 ACD Paths in the system, customized routing is available to every con-
ceivable type of incoming call. This centralization of routing parameters gives
users unmatched flexibility when programming and adding new features.

Priority designations of 1 to 99 may be assigned to each Path, allowing calls
arriving on high priority paths to move directly to the front of the call queues.
Higher priority paths are also given special treatment when placed in over-
flow queues. Lower priority calls in the same overflow queue maintain their
position in relation to each other, but the system places them behind priority
calls.

**Predicitve
Overflow**

3.4   A key element of the **ACD TELEMARKETER** feature is the Predictive
Overflow used by the system 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 imme-
diate overflow.

Displays

3. 5 The ACD TELEMARKETER feature includes realtime displays via stan-
dard async datasets and ASCII terminals. Thirteen displays encompass every
area of the ACD operation. Path, group, and agent information is displayed in
three categories; statistical analysis, current activity, and programming infor-
mation. A system activity display provides a general overview of the status of
the ACD system, including the number of agents logged in, the number of
calls in the system, and general statistics on agent performance. Multiple us-
ers may simultaneously access the password protected information. Softkeys
are provided for easy access to specific displays or for requesting printouts.

Printed Reports

3. 6 Printers are also implemented for summary reports of paths, groups,
and agents. Printed reports record times to the second for all categories, thus
highlighting call handling efficiency and agent performance problems.

An Agent Shift record, if desired, is automatically printed whenever an agent
logout occurs. This report summarizes the agent's performance for the shift
**duration. A Path report provides total counts for traffic entering the path
during any specified period, including totals for the number of calls an-
swered, interflowed and abandoned. Similarly, group reports tally calls of-**
fered and answered, and supply a record of non-ACD calls placed and re-
ceived by agents.

Mobility

3. 7 The ACD Agents and Supervisors are completely mobile with the Mitel
ACD TELEMARKETER **feature. All ACD positions are linked to software rather**
than hardware. This means that the system recognizes a login from any *SU-
PERSET 4* telephone within the PBX, and immediately transforms the set to
the users' preprogrammed specifications.

Sets

3. 8 The *SUPERSET 4* telephones used by ACD positions provide interactive
displays and information regarding Agent groups and individual agents. A
Supervisor's set provides 10 reports covering the Agents and the Queues that
the Supervisor is responsible for. The Agent's set displays the queue load of
that agent's group.

SUMMARY

3.9 **The** *ACD TELEMARKETER* **Application Package offers:**

● **Equal workload -calls are presented to the longest idle agent**

● **A programmable wrap up timer for individual groups**

● **Four recordings for each Path**

● **Three overflow groups and an interflow point per path**

● **System messages to simplify programming and eliminate errors**

In addition, callers never experience ring no answer; after three rings the sys-
tem places a set in Make Busy mode and delivers the call to the next available
agent.

3.10   The *SUPERSET 4* telephone offers:

● **Single key feature activation**

● Supervisor monitoring of agent calls with or without agent notification

● Agent help requests during a conversation -transparent to ACD callers

● Handset/handsfree/headphone **operation**

● LCDs load status indication

● **Auto answer**

● Time and date display

● Path name display when calls are presented to the agent

● Make Busy keys to temporarily block ACD calls from agents sets

● A **programmable name for every ACD entity; paths, RADs, Groups, Agents and Supervisors**

ACD TELEMARKETER REPORTING SYSTEM

3.11   **To complement the built-in monitoring capabilities of the** *ACD TELEMARKETER* **feature package, MITEL has introduced the ACD** *TELEMARKETER* **Reporting System, a PC-based software package for collecting ACD data generated by the** *SX-200* **DIGITAL PABX, and producing a series of daily, weekly and monthly historical reports.**

The *ACD TELEMARKETER* **Reporting System runs on an IBM AT or compatible connected to the** *SX-200* **DIGITAL PABX through an RS-232C interface. The system is easy to learn, using 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 containing all agent, path, and trunk information. Once operational, the PC collects data from the SMDR information generated by the PABX, analyses the information using the Reporting System database, and generates a series of detailed reports covering agents, groups, paths and trunks.

The daily reports can be printed automatically at predetermined times, and can include daily, weekly and monthly summaries.

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 Summayr Report with daily totals of calls carried by a particular trunk.

● Path Activity Report listing daily totals by path.

ACD CALL FLOW

3.12   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-l shows the system action in determining what the caller hears while in the queue.
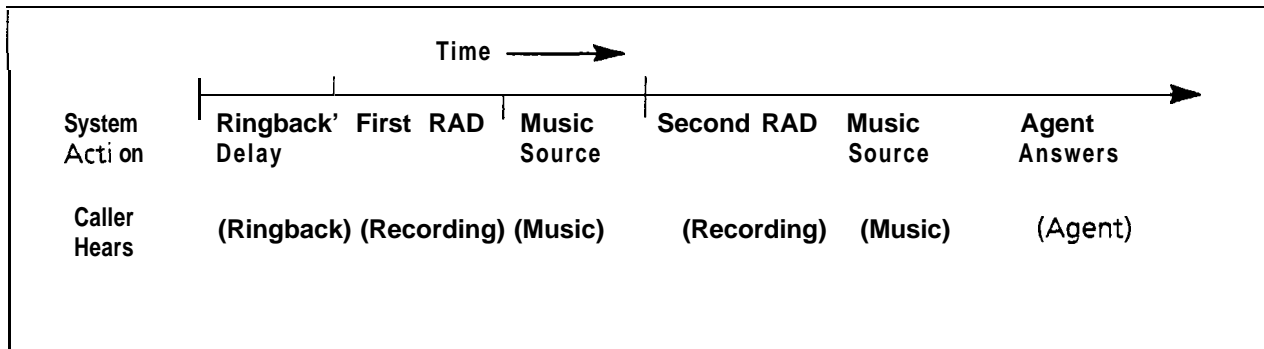
	Time ⟶					
System Action	Ringback' Delay	First RAD	Music Source	Second RAD	Music Source	Agent Answers
Caller Hears	(Ringback)	(Recording)	(Music)	(Recording)	(Music)	(Agent)

Figure 3-l ACD Call Progress -All Agents Busy

1. ACD Call arrives at system.

   ● As shown in Figure 3-l the caller hears ringback until the Ringback Delay timer expires. This timer ensures the caller hears at least one ringback before an agent answers.

2. System transfers the incoming call to the path specified as the answer point for the trunk, and queues the call on the primary agent group for the path.

   ● If agent is available, call rings agent, (See Note).

   ● If multiple agents are available, the call rings the longest idle agent,

   else,

   ● Caller waits for first recorded announcement.

Note: Once the agent set begins ringing, 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. **System connects caller to the first available RAD in the first recording group defined for the path.**

  - Caller listens to first recording. Call remains queued on first agent group.

4. **When RAD message ends, system connects call to music-on-hold (MOH) source or first alternate source as defined for the path.**

  - Caller hears music or alternate source.

5. **After time interval programmed in the path for Recording 2 start, system connects call to first available RAD in second recording group defined for the path.**

  - Caller listens to second recording. Call remains queued on first agent group.

6. **System connects call to MOH source or second alternate source as defined for the path.**

  - Caller hears music or alternate source.

  - 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.**

  - Caller is now queued on two groups.

  - Caller continues listening to music and recorded announcements until an agent is available.

  - 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. In addition, the customer can program the system to force an immediate inter-flow as soon as the system determines that the call is unlikely to be answered at the primary agent group, or at any of the overflow groups.
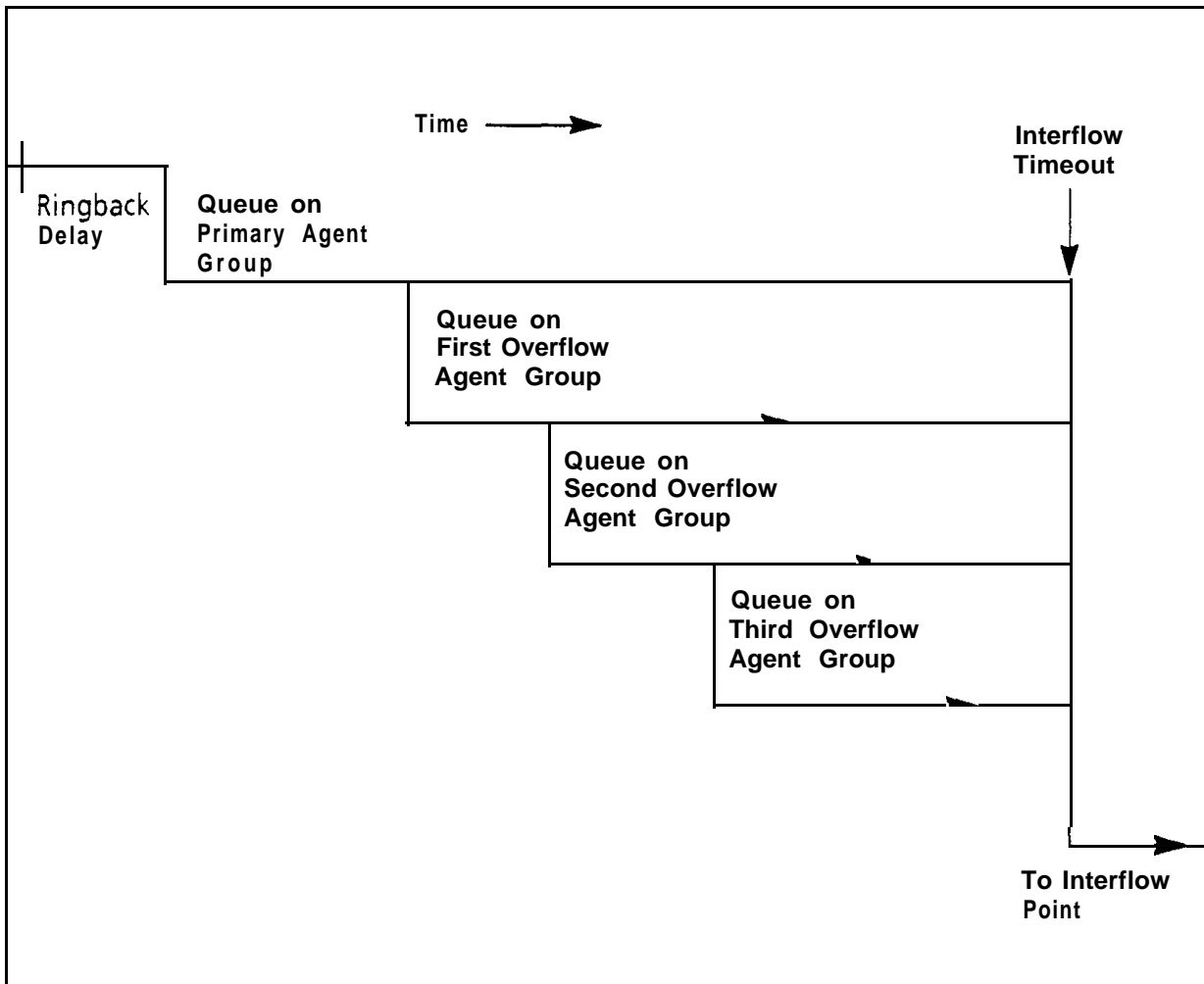
Figure 3-2 Overflow/Inter-flow

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 inter-flow point which can be an internal or external destination. If the interflow device is busy, the call is handled as a call reroute.

ACDCALLER

3.13 The system considers an ACD caller 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 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 unsuper-

vised 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.

LONGEST IDLE AGENT

3.14 **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 to finish 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.**

This ordering does not depend upon the agent being idle. Only ACD calls affect an agent's number. The number does not change if the agent makes a non-ACD call. During the non-ACD call the system does not present ACD calls to the agent. The agent, however, may be next in line for an ACD call when the non-ACD call terminates.

ACD POSITIONS

3.15 **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. Figure 3-3 shows an example of the ACD hierarchy.**

ACD calls entering the system normally terminate on an agent position. Agents handling similar types of calls are arranged in Agent Groups. Supervisors and Senior Supervisors monitor agent and system performance, but do not handle ACD calls.

As shown in Figure 3-3, every Supervisor, Senior Supervisor, and Agent has an ID number. This is a I-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 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.
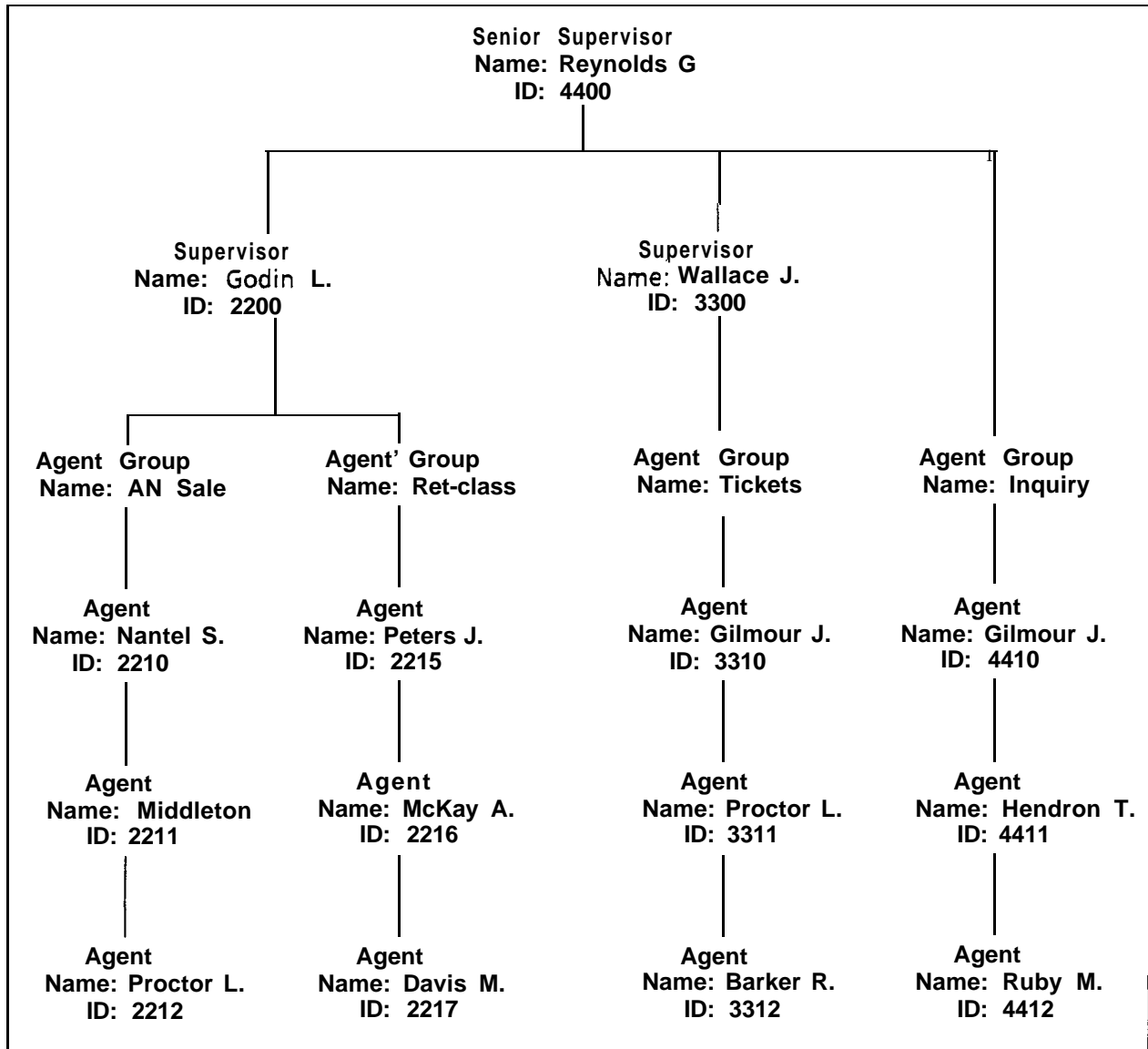
```
                            Senior  Supervisor
                            Name: Reynolds G
                                 ID: 4400


              Supervisor                      Supervisor
           Name: Godin  L.                  Name: Wallace J.
               ID: 2200                        ID: 3300


      Agent  Group        Agent' Group      Agent  Group      Agent  Group
      Name:  AN Sale      Name:  Ret-class  Name:  Tickets    Name:  Inquiry


         Agent               Agent             Agent             Agent
    Name: Nantel  S.     Name: Peters J.   Name: Gilmour J.  Name: Gilmour J.
        ID: 2210            ID: 2215          ID: 3310          ID: 4410


         Agent               Agent             Agent             Agent
    Name:  Middleton     Name: McKay  A.   Name: Proctor L.  Name: Hendron T.
        ID: 2211            ID: 2216          ID: 3311          ID: 4411


         Agent               Agent             Agent             Agent
    Name: Proctor L.     Name: Davis  M.   Name: Barker  R.  Name: Ruby  M.
        ID: 2212            ID: 2217          ID: 3312          ID: 4412
```

Figure 3-3 Hierarchy of ACD Positions

Agent Group   *3.16*   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 agents in a group is 50. The ACD system accepts up to 50 Agent Groups.

As shown in Figure 3-3, 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 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 I-to 5–digit ID number and optional name for each agent.**

Each agent group has four 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 over-flowing, and

- turning on and off visual indicators that show 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.

Agents

3.17   The ACD JELEMARKEJER 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 *SUPERSET 4* telephone used by the Agent is equipped with special feature keys to display the current status of the Agent's group, and to temporarily block ACD calls from ringing the set. Refer to Section 5, Sets Description — General, and Section 6, Agent Sets for details of the Agent's *SUPERSET 4* telephone. 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 being a member of a specific 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.

As the ACD system uses the ID number to determine the members of an Agent Group, giving 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 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

3.18   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 4* telephone used by the Supervisor is equipped with special feature keys that allow the Supervisor to view Agent activities individually or as a group. These reports are an effective instrument in performance measurement. Refer to Section 5, Sets Description — General, and Section 7, Supervisor Sets for details of the Supervisor's *SUPERSET 4* telephone.

Senior Supervisor

3.19   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 4* telephone used by the Senior Supervisor is equipped with special feature keys, similar to the Supervisor set, with emphasis on queue activity. Refer to Section 5, Sets Description ⬤ General, and Section 8, Senior Supervisor Sets for details of the Senior Supervisor's *SUPERSET 4* telephone.

ACD PATH

3.20 The *ACD TELEMARKETER* **feature is built around the "ACD Path" that contains all information for handling an ACD call including:**

- when the call will be answered

- who will answer the call

- how the system will handle queued callers

By using Paths to centralize routing parameters, the *ACD TELEMARKETER* feature gives users unmatched flexibility during initial programming and when adding new features. The paths specify the resources to be used, the order in which they are encountered and the timing of the steps through the path. Upon entering the ACD system, a call is allocated a path, and assigned the parameters of that path. These parameters remain with the call for its duration.

The *ACD TELEMARKETER* **feature supplies 99 ACD Paths to allow customized** routing for a wide variety of incoming calls. Each Path is given a unique access code. A path may also be given a descriptive name, and assigned a priority.

Path Access Code　　**3.21**　　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　　**3.22**　　Each Path is assigned a priority level in the range 1 to 99, with 1 being highest priority. Calls arriving on high priority paths move directly to the front of the call queues for servicing before calls that entered on a lower priority path.

Higher priority paths are also given special treatment when placed in overflow queues. Priority calls entering the 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.

Path priority can be an effective tool for reducing communications costs. 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.

Path priority can also be used to increase customer satisfaction. A marketing department, for example, could assign a high priority to paths receiving orders from customers, thus ensuring prompt servicing of the call.

Path Access　　**3.23**　　All devices have unrestricted access to ACD Paths except loop start CO **and loop start** DISA **trunks. The 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

3.24   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 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 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

3.25   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 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, or

- greater than the Service Level time.

This information is stored for statistical analysis; it can be seen from the ACD Path Monitors and Group/Path Summary Reports.

Overflow

3.26   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. Each overflow adds another group. The call, however, remains queued on the previous groups, and retains its position in each queue relative to other calls with the same priority.

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 without waiting for the timer to expire.

Interflow

3.27   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 for a station, console, nightbell, ACD path, station/set hunt group, UCD agent group.

- **logical line,**

- system speedcall number.

To limit the time that a caller remains on the line waiting for an agent, the system can also be programmed to drop interflowed calls.

In addition, the customer can program the system to force an immediate in-terflow as soon as the system determines that the call is unlikely to be an-swered at the primary agent group, or at any of the overflow groups.

Calls interflowed to a system speedcall are treated by the system as an exter-nal call forward. This means that the interflow requires a receiver. If a receiver is unavailable when the inter-flow occurs, the call is dropped. The only indica-tion 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 speedcall, the system attempts a campon to ARS.

Unlike overflowed calls, interflowed calls are removed from ACD. When the interflow point is an internal device, such as a *SUPERSET 4* telephone, the dis-play indicates the call is being forwarded from a path.

Music Between Recordings

3.28 Between each recording on an ACD path, the incoming caller, by de-fault, 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

3.29 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 mu-sic and no alternate music source, the caller hears silence between RAD mes-sages.

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 DOC approved voice coupler, or voice connecting arrangement to an ONS circuit.

RECORDED ANNOUNCEMENTS

3.30 The *ACD TELEMARKETER* feature uses recorded announcements to tell callers about the progress of their call while waiting in the queue for the first available agent. Recorded announcement devices (RADs) and recording groups are described below.

RADs

3.31 A recorded announcement device (RAD) is a digital or endless-loop tape unit that can store one or more prerecorded messages. The required RADs are designed for connection to ONS circuits, and appear *as* a standard

telephone to the PABX. The RAD's message is played when the unit is trig-
gered 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 DIGITAL system supports both intelligent and dumb RADs. An in-
telligent device hangs up when the message is finished. A dumb device pro-
vides 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   *3.32*   The recorded announcement feature is implemented 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 using hunt groups of regular ONS ports and are
defined during CDE in Form 17 — Hunt Groups. Refer to the Programming sec-
tion of this Practice for details.

Recording Group   *3.33*   When a call rings a recording group the first available idle RAD an-
Operation   swers 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   lis-
ten-only conference with the recording. (The listen-only conference does
not use any PABX conference resources.) When the recording finishes, the
callers are removed from the conference and are connected to music or si-
lence as defined in the ACD Path programming form (Form 41).

Notes:

1. The system does not use a special CODEC gain setting for listening to a re-
   cording. 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   *3.34*   The ACD system handles four types of RAD failures:

● **failure to answer**

● **failure to hang-up**

● **false origination**

● **card failure**

In any situation where the RAD goes into lockout, the normal lockout alarm
feature applies. The four types of RAD failures are described below.

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 DND, turns on the console alarm icon, and creates   a mainte-
nance log entry as shown in the following example.

> 1989–FEB–15 12:47:04 Recordingdevtest failed at 0101 0100   Failure to answer
>   Alarmcode = 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 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.

> 1989–FEB–15 12:47:04   Recordingdevtest failed at 01 0101 00   Fail to hang-up.
> Alarmcode = 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

3.35   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.

> 1989–FEB–15 12:47:04 Ons Card   passed at 01010100 ext 1101 Recording device test
> Alarmcode 123

4. CONFIGURING AN ACD SYSTEM

4.1   The communications manager planning the installation of an ACD *TELEMARKETER* **system may find the information in this section of the** practice can help in determining the final system configuration. Since thorough planning can ensure maximum performance from the ACD system, the following guidelines have been developed to help define the customer requirements.

INCOMING CALLS

4.2   As 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 be receiving. 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 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

4.3   Using the caller information collected above, 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

4.4   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. As out of town callers would be frustrated by local promotions, tailor your recorded message to the caller's needs.

- Is there any information the agent will require from the caller? Recordings can be used to eliminate time wasted with an agent if callers have prior notice of any information they should have ready; account numbers, credit cards, or postal codes.

In addition, the Automated Attendant feature can be used to pre-screen ACD calls into the system.

PLANNER SHEETS

4.5   The Agent Group Planner and the Path Planner sheets illustrated on the following pages can aid the ACD system designer in 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, and 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 including the primary agent group, recorded announcements, overflow groups and inter-flow conditions.

AGENT GROUP PLANNER

4.6   The Agent Group Planner shown in Figure 4-l serves as an aid in planning the distribution of work load 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 PLANNER

ACD TELEMARKETER™

INSTRUCTIONS

Use this planner as an aid in distributing the work-load of the agent groups. Complete this form before the Path Plan-ner.Oncecompleted,transferthe Agent Group Number to the appropriate group (Primary, 1st, 2nd, or 3rd) on Line3 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 beforeoverflowing. Prediction mayallowtheoverflowbefore thetimerexprres. Istthreshold default is3 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 timerdefault is 0 minutes (maxi-mum 15 minutes). This is the amount of time an agent has after completing a call before recervingthenextcall.

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). Transferthe Agent Group Num berto the Path Planner (one for each Path indi-cated in the box).

Figure 4-l Agent Group Planner

Agent Group #   4.7   The top field in each box, labeled Agent Group #, specifies the number of the agent group. This information will be used later when assigning primary and overflow agent groups to the ACD paths.

Name   4.8   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   *4.9*   **The Overflow Time specifies the maximum length of time a waiting** ACD call remains at this group before overflowing. The timer range is 0   seconds to 54 minutes. 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 field on the ACD Agent Groups Subform (Subform 39).

1st Threshold   4.10   The 1st Threshold field specifies the time period in which calls can be waiting in the queue for a free agent. If calls remain unanswered when the timer expires, the LCD symbol indicating Calls Waiting Beyond   1st Threshold starts blinking on the agent's and supervisor's *SUPERSET 4* telephones. 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   4.11   The 2nd Threshold field specifies the time period during which calls can be waiting in the queue for a free agent. If calls remain unanswered when the timer expires, the LCD symbol indicating Calls Waiting Beyond 2nd Threshold starts blinking on the agent's and supervisor's *SUPERSET 4* telephones. 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   4.12   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.

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   4.13   This box allows the system planner to note the paths using this group.
Group   Use this as a reference when transferring Agent Group information to the Path Planner sheets.

PATH PLANNER

4.14   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 pertaining to the ACD *TELEMARKETER* feature are described in Section 11 of this practice. For a description of all system CDE forms, refer to Customer Data Entry (CDE), Practice 9109-094-2 1 0-NA. 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.
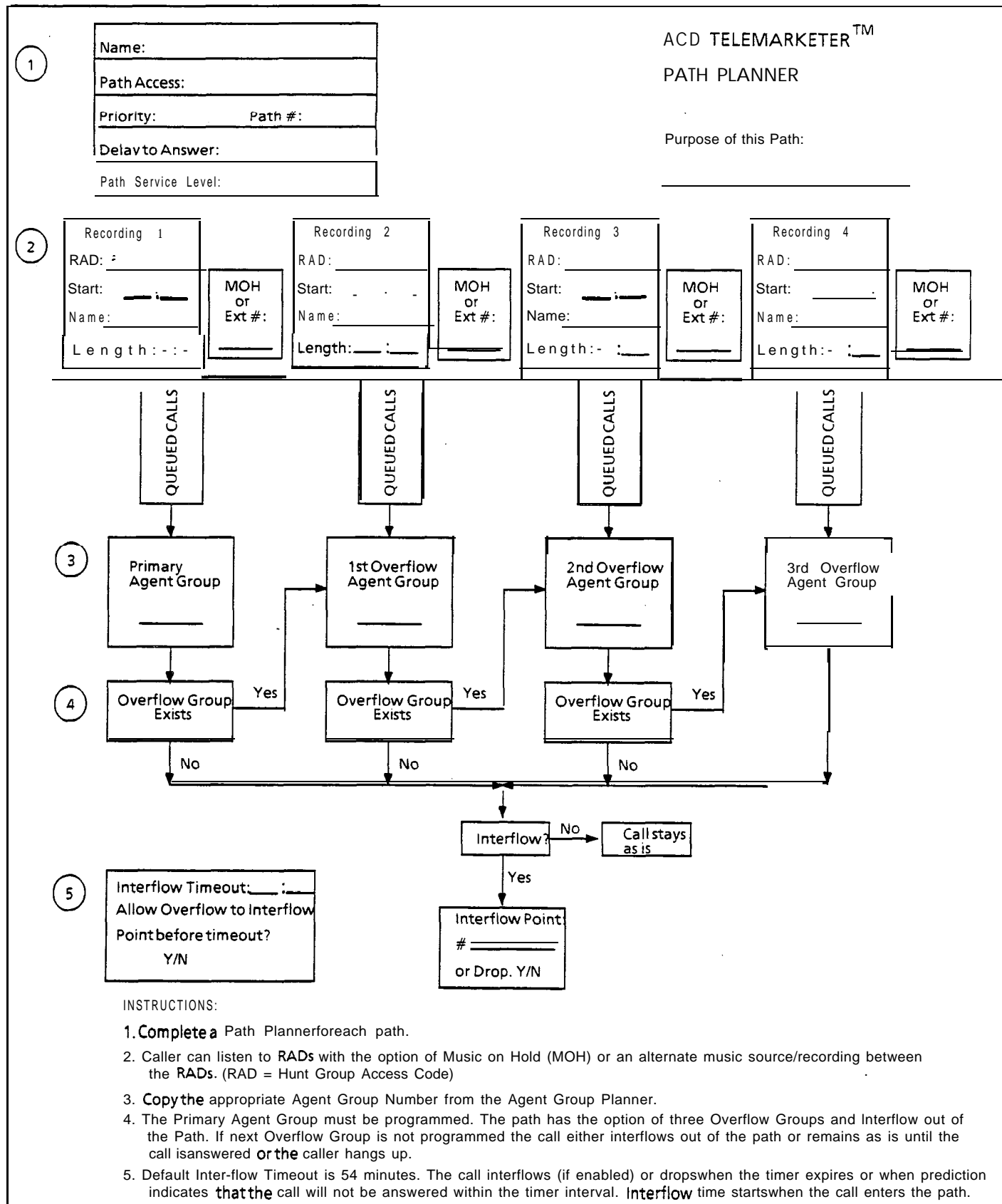
① Name: _____

Path Access: _____

Priority: _____ Path #: _____

Delay to Answer: _____

Path Service Level: _____

ACD TELEMARKETER™

PATH PLANNER

Purpose of this Path:

_____

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 #: _____

QUEUED CALLS | QUEUED CALLS | QUEUED CALLS | QUEUED CALLS

③ Primary Agent Group _____

1st Overflow Agent Group _____

2nd Overflow Agent Group _____

3rd Overflow Agent Group _____

④ Overflow Group Exists — Yes

Overflow Group Exists — Yes

Overflow Group Exists — Yes

No | No | No

Interflow? — No → Call stays as is

Yes

⑤ Interflow Timeout:___:___
Allow Overflow to Interflow Point before timeout?
Y/N

Interflow Point
_____
or Drop. Y/N

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. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. Default Inter-flow 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.

Figure 4-2 Path Planner

Purpose of this Path

4.15 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

4.16 The Name field contains a descriptive name identifying the function of the path. This name appears in the ACD Path monitor displays, and on the Agent's *SUPERSET 4* telephone when the set is presented with a call. This allows agents handling calls for more than one path to 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

4.17 The Path Access Code field identifies the path to the rest of the system. The Path Access Code can be used as a destination in the Non-Dial-in Trunks form, and the Call Rerouting Table. The access code can also be entered in another path planner as an overflow or interflow point, and can be programmed as a forwarding destination for a *SUPERSET 4* station.

During CDE, transfer the information in this field of the Path Planner sheet to the Access Code for the "This ACD Path" field on the ACD Path form (Form 41).

Priority .

4.18 The Priority field sets the relative priority for all calls arriving on this path. The priority remains with the call for its duration, regardless of the **overflow handling programmed for the path. Priorities range from I 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

4.19 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.

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

4.20 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 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 I 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

4.21 The Recording I box contains three fields to capture the parameters **for the first recording group.**

Rad: The RAD field contains the access code of the RAD group containing **Recording I. During CDE, transfer this information from the Path Planner sheet to the Recording I : Access Code field on the ACD Path form (Form 41).**

Start: The Start field specifies the time between the end of the Delay for Ring-back 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 #

4.22   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 supplying 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 as the system connects to the default music source.

Recording 2 through 4

4.23   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 also 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

4.24   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

4.25   Transfer the number from the Agent Group Planner of the Agent Group designated as Primary for this path.

Overflow Group Exists

4.26 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

4.27   Beside 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.

Inter-flow Point

4.28   The Interflow Point # field specifies the access code for the interflow device. This can be a listed directory number for a station, console, nightbell, ACD path, station/set hunt group, UCD agent group, or system speedcall number.

Select Drop (Y) if the system is to drop the call rather than allow the call to **interflow. If interflow is allowed for this path, enter the directory number of the inter-flow point.**

During CDE, transfer this information from the Path Planner sheet to the In-terflow Point Access Code field on the ACD Path form.

Interflow iimeout
4.29   The Interflow Timeout field specifies the waiting time for an ACD call before the system routes the call to an interflow point outside the system. The timer range is 1 second to 54 minutes.

During CDE, transfer this information from the Path Planner sheet to the In-terflow Timeout field on the ACD Path form (Form 41).

Allow Overflow to Interflow
4.30   The Allow Overflow to Interflow Point Before Timeout field specifies whether the system can force calls to the interflow point as soon as the sys-tem 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 Al-low Overflow to Interflow Point Before Timeout field on the ACD Path form (Form 41).

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5. ACD SET DESCRIPTION -GENERAL

5.1 **This section of the practice describes the** *ACD TELEMARKETER* features on *SUPERSET 4* telephones used by all ACD positions, and includes descriptions of position login, headset operation, and line select keys.

Refer to the following sections for specific information about the sets used by each ACD position:

- Section 6: ACD Agent Sets

- Section 7: ACD Supervisor Sets

- Section 8: ACD Senior Supervisor Sets

SUPERSET 4 TELEPHONES

5.2 **All** *ACD TELEMARKETER* **positions** *use* *SUPERSET 4* **telephones. The** three ACD positions; Agent, Supervisor, and Senior Supervisor perform specific duties during ACD operation and, to assist them, each set is assigned special feature keys during Customer Data Entry (CDE).

- Figure 5-I shows the *SUPERSET* 4 telephone. The function of any or all of the following *SUPERSET 4* keys and displays may change after an ACD position logs in to the system:

- Line select/speed call buttons

- Line status displays

- Softkeys softkeys **and** softkey **prompts**

Some ACD positions also provide reports in the main display,

For details on these feature keys and displays, turn to the section of this practice that covers the specific ACD position.
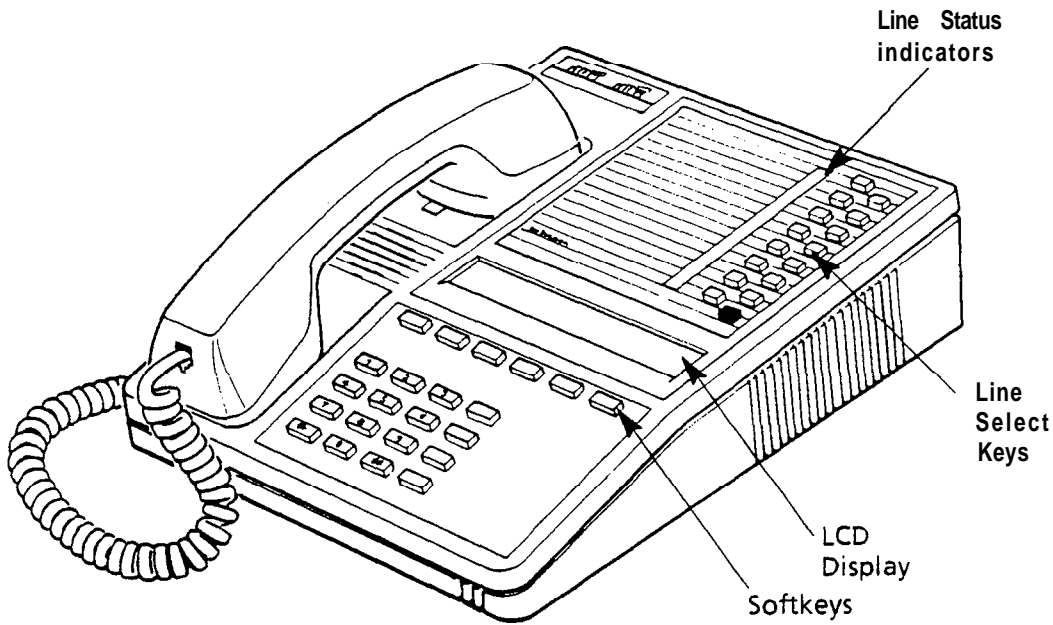
Figure *5-l SUPERSET* **4 Telephone**

POSITION LOGIN/LOGOUT

5.3 The ACD Agents and Supervisors are completely mobile with the Mitel ACD *TELEMARKETER* package. All ACD positions are linked to software, not hardware, so the system recognizes a login from any *SUPERSET 4* telephone within the PBX, and immediately transforms the set to the users' preprogrammed specifications. The following topics discuss the login conditions, the changes that occur to the set on login, and the logout procedure.

Conditions

5.4 The following conditions must be met before an ACD position can login.

● The position must not be logged in already.

● The position must be logging in to a *SUPERSET 4* telephone.

● The position must have an ACD template enabled in its Class of Service (COS).

● The *SUPERSET 4* telephone must have no appearances of its prime line anywhere in the system.

Login

5.5 To login, the position dials an access code followed by the ID number assigned through CDE. The system interprets the login ID to determine the level of the position (Senior Supervisor, Supervisor, or Agent), the COS assigned to the individual, the login name, and the group. When a position logs in, the following changes take place at the set:

● The set's name is replaced by the name assigned to the position in CDE.

- The set's COS is replaced by the position's COS.

- The speedcall and feature keys on the set are replaced by the speedcall and feature keys of the position template.

- The set has two access codes attached to it — the set access code and the position ID code.

The following are unaffected by the position login:

- forwarding,

. **DND,**

- messages (left or received by the set),

- redial,

- reminders, and

- callbacks.

Once a position has logged in, the name and speedcall keys cannot be programmed at the set.

Logout   5.6   To logout, the agent dials the login/logout access code. To login to another group, the agent dials the access code again followed by the ID number for the second group. Except for agents on an ACD call, a position may logout at any time, even with a soft hold. If an agent on an ACD call attempts to logout, the agent receives reorder tone.

HEADSET OPERATION

5.7   All *SUPERSET 4* telephones are headset compatible. 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.

LINE SELECT KEYS

5.8   Figure 5-I shows the line select keys that are programmed to provide the required features. When assigning ACD features to line select keys on *SUPERSET 4* telephones, assign each feature to the same key on all sets. All Agent sets, for example, can be programmed with the Make Busy key on key 15. This ensures that feature key and set line key locations do not conflict. When a position logs in, any line keys programmed for the set override conflicting speedcall and feature keys in the position's template. For each key, the LCD status shows the line status. Pressing   the key button always operates the line key.

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6. ACD AGENT SETS

6.1 This section of the practice describes the ACD *TELEMARKETER* features on *SUPERSET 4* telephones used by ACD agents, and includes descriptions of:

- special feature keys,

- set displays,

- reports, and

- set operation.

The information in this section is aimed at those planning an ACD installation, setting up an ACD system, and operating the sets in an existing system.

FUNCTIONS

6.2 Each logged in agent uses a *SUPERSET 4* telephone that is normally programmed with one line select key assigned as a MAKE BUSY key, and a second as a QUEUE STATUS key. The agent set is also equipped with a HELP softkey. The following subsections describe the functions of these keys and their operation.

LOGIN/LOGOUT

6.3 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 being a member of a specific Agent Group. Refer to topics Login and Logout in Section 5 for details and conditions.

Login

6.4 To login, the agent dials an access code followed by the ID number assigned through the Agent Group Form in CDE. ACD LOGIN appears briefly in the display and the agent hears dial tone.

Logout

6.5 To logout, the agent dials the access code again. ACD LOGOUT appears briefly in the display, and the agent hears dial tone.

MAKE BUSY KEY

Purpose

6.6 Every Agent set should be preprogrammed with one line select key allocated as a MAKE BUSY feature key. Turning on 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 when Make Busy is activated. An

Agent handling an ACD call can turn on Make Busy, and end the call. The set remains in the Make Busy state until canceled by the Agent.

LCD Indicator   6.7   The LCD indicator beside the Make Busy key remains lit when the set is in the Make Busy state. Figure 6–1 shows examples of all the LCD indicators associated with the ACD feature.

Key	Status	LCD Symbol
Prime Line	Idle	
	Busy	
Queue Status	No Calls in Queue	
	Calls Waiting Before First Threshold Period	
	Calls Waiting Between First and Second Threshold Periods	
	Calls Waiting Longer Than Second Threshold Period	
Queue Status	Calls Have Overflowed	Alternating
Agent Status	Agent Logged Out	
	Agent Logged In – No Calls Waiting	
	Agent Set In Make Busy Status	Flashing
	Agent on ACD Call	
	Agent on Non-ACD Call	
	ACD Call on Hold	Flashing
	After-Call Work Timer	Flashing
Shift Key	Shift Not Activated	
	Shift Activated	

Figure 6-I LCD Status indicators on *SUPERSET 4* Telephone

Key	Status	LCD Symbol
Make Busy	In Make Busy	■
	Not in Make Busy	c l

Figure 6-l LCD Status indicators on *SUPERSET 4* Telephone
(continued)

Operation   6.8   To turn on Make Busy, press the Make Busy key. To cancel Make Busy, press the Make Busy key again. The LCD beside the Make Busy key remains lit while the set is in a Make Busy state. 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 lights the LCD beside the Make Busy key to advise the Agent of the Make Busy state. The agent must press the Make Busy key to cancel the Make Busy state.

QUEUE STATUS KEY

Purpose   6.9   The QUEUE STATUS key, and the LCD beside the key, serve two functions in showing the agent the current status of the call waiting queue, and the load condition of the queue.

6.10 The LCD beside the QUEUE STATUS key continuously shows the load condition of the agent queue. 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 based on predefined threshold levels defined for the agent's group.

LCD Indicator   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 6–1 shows each of the LCD symbols.

Operation   6.11   To display queue information, press the QUEUE STATUS key. 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. The example below shows group number 1, with 10 calls in the queue waiting to be answered. The oldest call has been waiting for 3 minutes and 16 seconds.

Q:0 1	**10** **cw**	0 3 : 1 6
EXIT	NAME		HELP		➤

EXIT **softkey:** Pressing the EXIT softkey terminates the QUEUE STATUS display.

Name **softkey:** The NAME softkey appears if the group was assigned a name during CDE. Pressing the NAME softkey displays the group name.

HELP **SOFTKEY**

6.12 During an ACD call all 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 **soft-**key and dialing the directory number of a recording device.

Monitoring

6.13 While monitoring, the supervisor cannot be heard by either the ACD caller or by the Agent. If the Silent Monitor Beeps option is enabled, a message is displayed on the Agent's set and the Agent hears a short beep when the supervisor has answered the help request. If Silent Monitor Beeps is disabled, the agent does not hear the beeps and no message appears on the agent's set. In either case, the monitoring is transparent to external ACD callers.

Operation

6.14 To request help while involved in an ACD call, the Agent presses the HELP **softkey.** The display changes to CALL SUPERVISOR. If the Agent is reporting directly to a Senior Supervisor the display shows CALL SENIOR S. **Softkey** prompts are provided for confirmation.

The Agent responds by pressing one of the softkeys: YES, NO, or EXIT.

* Press the YES **softkey** to complete the help request call to the Supervisor,

* Press the NO **softkey** to select another Help destination, or

* Press the EXIT **softkey** to terminate the request for help.

When the Agent presses the NO **softkey,** the set display prompts ENTER NUMBER. The Agent must dial a valid destination number or press a programmed speedcall key. The only valid destinations are IDs for supervisors or senior supervisors, and access codes for recording hunt groups. Once a valid number has been entered the set displays the CALL prompt, and the agent presses the CALL **softkey** to complete the call.

When the destination begins ringing, the Agent set displays HELP REQUESTED. When the help request is answered the agent set display changes to 'XXXXX MONITORING', where 'XXXXX' is the helper's extension number.

The person or recording device responding 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 CONF (conference) **softkey.**

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 agent must enter the number of a **Supervisor** or a **Senior Supervisor**, or the access code for a recording group. Entering any other number results in a set display of INVALID.

When an unprogrammed speed call key is used to place a help call, the set responds with INVALID.

AUTO ANSWER

6.15   The agent's set can be programmed with a COS option to auto-answer when a call arrives at the set. The auto-answer process is described below.

 1. **Call arrives at free agent.**

 2. The agent's *SUPERSET 4* station gives a burst of ringing.

 3. The Agent's *SUPERSET 4* telephone answers the call, and the two parties are connected.

 4. At the completion of the call, the external party hangs up.

 5. Agent *SUPERSET 4* 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 *SUPERSET 4* telephone gives a burst of ringing.

 9. Agent *SUPERSET 4* telephone answers the new call, and the two parties are connected.

This 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 indicating a new call. This can lead to confusion as the agent is actually on the After Work Timer rather than answering a new call.

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7. ACD SUPERVISOR SET

7.1 This section of the practice describes the ACD TELEMARKETER features on *SUPERSET 4* telephones used by ACD Supervisors, and includes descriptions of:

- special feature keys,

- set displays,

- reports, and

- set operation.

The information in this section is aimed at those planning an ACD installation, setting up an ACD system, and operating the sets in an existing system. Refer to Section 5, ACD Set Description — General, for descriptions of *ACD TELEMARKETER* **features common to all positions.**

FUNCTIONS

7.2 Once logged in to the ACD system, the supervisor set may establish a call monitor on an agent, respond to a help request from an agent, and display status reports for both agent queues and individual agents. The following subsections describe login/logout sequences, as well as supervisor set functions and operation.

LOGIN/LOGOUT

7.3 The system recognizes a supervisor only after the supervisor logs in to the ACD system. Once logged in, the set takes on the proper-ties assigned to the supervisor through CDE. Refer to Login/Logout in Section 5 for details and conditions.

Login　　　　**7.4** To login, 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.

Logout　　　　**7.5** To log out, dial the access code again. ACD LOGOUT appears briefly in the display, and the supervisor hears dial tone.

CALL MONITORING

7.6 The Call Monitoring feature allows the 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   **7.7**   The monitoring can be performed on any line and on any agent conversation that can be overridden. Monitoring is not permitted, for example,. on S-party calls, held calls and conferences. Keyline privacy is ignored for the Call Monitor.

Enable Monitoring   **7.8**   To enable monitoring;

* assign an ACD Silent Monitoring access code in the Feature Access Code CDE form, and

* turn on 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 "MONITORING".

Operation   **7.9**   The 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, the supervisor's set displays the message "XXXXX IS IDLE", where "XXXXX" is the extension number of the agent's set.

* If the agent is in a call, and call monitor begins, the supervisor's set displays "XXXXX MONITORING", where "XXXXX" is the extension number of the agent's set

* An agent may be monitored by only one supervisor at a time. A supervisor attempting to monitor an agent who is already being monitored receives busy tone and the set displays "XXXXX BUSY".

* An illegal user attempting to set up a monitor results in a set display of " NO ACCESS".

* An attempt to monitor an agent who is not logged in results in a set display of "INVALID # ".

* **Attempting to monitor an agent who has Do Not Disturb activated and is** idle, results in the supervisor's set displaying "DND".

At any time while monitoring, the supervisor may enter the conversation by pressing the CONF softkey. The monitoring session is ended by pressing the HANG UP softkey. If the agent interrupts the conversation by placing the caller on hold, or terminating or transferring the call, the supervisor's set displays "KICKED OFF", and the system gives re-order tone.

HELP CALL FEATURE

7.10   The Help Call feature is similar to the Call Monitor, except that it is initiated by the agent. Supervisors receiving a Help   request get an   audible and visual indication on their *SUPERSET 4* telephone.

Operation: When an agent initiates a Help request, the Supervisor's set rings and the display changes to 'HELP' followed by the agent's name and ID number. When the Supervisor lifts the handset a monitor begins. To form a conference with the Agent and ACD caller, the Supervisor must press CONF.

If a Help request is sent to a busy supervisor set, the set rings and displays 'HELP' with the agent's name and ID. The supervisor, however, can only handle the request after terminating the current call.

SUPERVISOR SET KEYS

7.11   The requirements for the keys on a Supervisor's set are determined by the number of Agent Groups being supervised, and the number of Agents in each group. The feature keys for the Supervisor position are QUEUE STATUS, AGENT STATUS, and SHIFT.

The function of the feature keys depends on the number of Agent Groups reporting to the Supervisor. The following descriptions are divided into two scenarios; Supervisors with only one Agent Group, and Supervisors with more than one group.

SUPERVISOR SET WITH ONE AGENT GROUP

7.12   If the Supervisor is responsible for only one agent group, the set requires one QUEUE STATUS key. The remaining keys on the *SUPERSET 4* telephone can be assigned as AGENT STATUS keys, one for each agent in the group.

If a Supervisor has more agents than available keys, the system provides a SHIFT key. This may also be the case should a Supervisor prefer to use the keys for speedcall. The SHIFT key, described below, works in conjunction with the AGENT STATUS key.

Queue Status Key   7.13   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.

LCD indicator: 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 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 7-l shows each of the LCD symbols for Queue Status.

| Key	Status	LCD Symbol
Queue Status	No Calls in Queue	▢
	Calls Waiting Before First Threshold	⊡
	Calls Waiting Between First and Second Thresholds	◪
	Calls Waiting Beyond Second Threshold	◼
	Calls Have Overflowed to Next Group	▯ ●◼✍● **Alternating**

Figure 7-I LCD Queue Status Indicators on *SUPERSET 4* Telephone

Operation: The QUEUE STATUS key displays the current status of the Agent Group reporting to the Supervisor.

Press the key to display a summary of queue activity.

The set displays the queue number, the number of ACD calls in the queue waiting to be answered, and the length of time the oldest call has been waiting. ‹

The following example shows Queue number 1, with 10 calls in the queue waiting to be answered, and the longest waiting call has been in the queue for 3 minutes and 16 seconds.

```
          Q : 0 1    1 0   C W   0 3 : 1 6


   EXIT    |        |  NAME  |  HELP  |        |      ➤
```
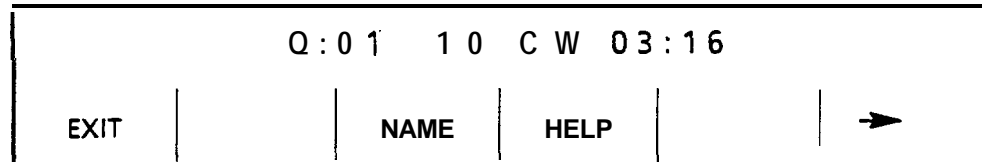
7.14   At this point, the following softkeys are available:

- **EXIT:** terminates the QUEUE STATUS display.

- **NAME:** displays the name of the Agent Group, if a name was assigned during CDE.

- **HELP:** Displays information to remind the supervisor which dial pad key generates each supervisor report. Refer to Help   softkey below.

- ➤ : **Move forward to next report**

Press the forward arrow softkey to scroll through the remaining queue reports, or dial a number to select specific data. Table 7-I shows the dial pad keys with examples and explanations of the reports available. The three softkeys described at the bottom of the table remain on the set during the QUEUE STATUS application.

Help **Softkey**   7.15   The HELP **softkey** displays a prompt PRESS KEY O-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. For example, by dialing the digit   1, the set displays 1 = WAIT TIME. Table 7-I lists the supervisor queue status reports, and the key that displays each report.

The CANCEL **softkey** is also available. Pressing CANCEL returns the supervisor set to the Queue Status mode.

Table 7-I Supervisor Reports -Queue Status		
Key Number	Sample Set Display	Meaning
0	2 1 2 1 0 2 8	Condensed queue status report: -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	W A I T T I M E 10:23	The average time, in minutes and seconds, that an ACD call waits to be answered.
2	# A C D C A L L S 21	Number of ACD calls the group has answered
3	A C D C A L L 02:23	Average duration of ACD calls
4	# N O N A C D 8	Number of non-ACD calls made/answered by the group
5	N O N A C D 01:23	Average duration of non-ACD calls
6	# M A D E B U S Y 2	Number of times agents made busy
7 .	A V C B U S Y 01:03	Average duration of make busy
8	# ON HOLD 2	Number of ACD calls put on hard hold
9	A V G H O L D 00:55	Average duration of ACD calls on hard hold
EXIT		Exit the Queue Status display'
REMINDER		Displays the agent group number and name you are presently looking at.
➤		Move forward to the next report
◄		Move back to the previous report

Agent Status Key . **7.16**   The AGENT STATUS key and the LCD beside the key, serve two func-
tions in showing the supervisor the current status of an individual agent, and
reporting on the performance of the agent. Supervisors responsible for only
one agent group may have a *SUPERSET 4* telephone programmed with an
AGENT STATUS key for each agent in the group.

When the Supervisor has more agents than available keys, or wishes to use
the keys for other functions, the system provides a SHIFT key. This enables the
set to accommodate more than one agent on a single AGENT STATUS key. The
SHIFT key is described in paragraph 7.17.

LCD indicator: The LCD beside the AGENT STATUS key continuously shows the
call-status of the agent assigned to the key. The LCD is off if the agent is
logged out. The display changes to show the various conditions including
logged in, calls waiting, and After Call Work Timer. Figure 7-2 shows the
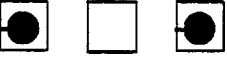Agent Status LCD symbols on a *SUPERSET 4* telephone.

Key	Status	LCD Symbol
Agent Status	**Agent Logged Out**	
	Agent Logged In ⊂ No Calls Waiting	
	Agent In Make Busy Status	Flashing'
	Agent on ACD Call	
	Agent on Non-ACD Call	
	ACD Call on Hold	Flashing
	'After-Cal I Work Timer'	Flashing

Figure 7–2 LCD Agent Status Indicators

Operation: Pressing the AGENT STATUS key starts the report displays, begin-
ning with the name and ID number of the agent. Ten reports are available,
accessed via the keys on the dial pad or through the forward arrow   softkey.

Pressing the AGENT STATUS key displays the ID number and the name of the
agent, as shown in the example below. Available   softkeys are EXIT, CALL,
HELP, and the forward arrow (➤).

1 2 1 2 0 S M I T H D				
EXIT	CALL		HELP	➤
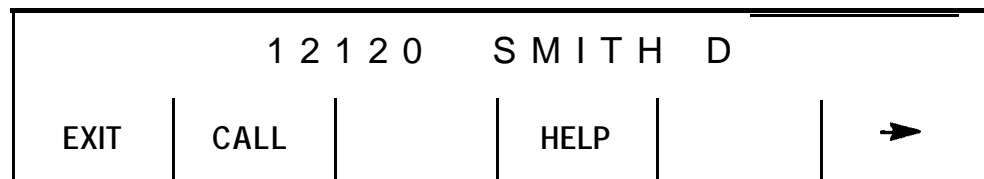
- EXIT softkey exits the agent status display.

- HELP softkey prompts the user to 'PRESS KEY O-9'. Pressing a a dial pad key displays a help message to remind the user which report is associated with the dial pad key. For example, dialing the digit 1 displays '1 ⊆ WAIT TIME' on the set.

See Table 7-2 for a list of dial pad keys and examples and explanations of the reports available. The six softkeys described at the.bottom of Table 7-2 remain on the set during the AGENT STATUS application.

When the supervisor is viewing the status of a logged-in agent, the supervisor's set displays the CALL softkey. Pressing the CALL softkey allows the supervisor to call the agent without dialing the Agent ID number or the extension number of the agents' set. When a call is made with the CALL softkey, the supervisor set display exits the Agent Status display and changes to the normal call processing display.

	Table 7-2 Supervisor Reports ▬ Agent Status	
Key Number	Sample Set Display	Meaning
0	LOG OUT	Agent state; one of the following: LOG OUT WAITING , ACD CALL ACD WORK NON ACD ACD HOLD MAKE BUSY
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
EXIT		Exit the Queue Status display
		Page 1 of 2

	Table 7-2 Supervisor Reports -Agent Status (continued)	
Key Number	**Sample Set Display**	**Meaning**
REMINDER		Displays the agent group number and name you are presently looking at.
➡		**Move forward to the next report**
⬅		**Move back to the previous report**
		Page 2 of 2

Shift Key

7.17 The SHIFT key is required when the number of Agents a Supervisor controls is greater than the number of AGENT STATUS keys available on the Supervisor's set. This key allows one AGENT STATUS key to address several Agents. The key has no effect if the number of AGENT STATUS keys on the set is greater than the number of agents.

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 and followed by the AGENT STATUS key. At this point the name and ID of agent 03 is displayed, and the LCD indicator shows the status of the third agent.

Figure 7-3 shows 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 the Agent 4. Agents 2 and 3 reside 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 7-3 Agent Status Key Operation

SUPERVISORS WITH MORE THAN ONE AGENT GROUP

7.18 Supervisors controlling more than one agent group have a *SUPERSET 4* telephone preprogrammed with a QUEUE STATUS key for each

agent group. When the Supervisor has more Agent Groups than available QUEUE STATUS keys, the system provides a SHIFT key that allows the set to accommodate more than one agent group on a single QUEUE STATUS key.

The Supervisors of multiple groups have no AGENT STATUS keys appearing on their sets, but may access the Agent Status reports by using the READ softkey as described in paragraph 7.20 .

Queue Status Key   **7.19**   The QUEUE STATUS key displays the current status reports for the Supervisor's Agent Group. This feature key is described in paragraph 7.13 with two methods of operation; visual status indication shown by the LCD beside the QUEUE STATUS key, and Queue Status Reports which are accessed through the feature key. An example of the Queue Status Reports is shown in Figure 7–4 .

When the Supervisor is involved in the QUEUE STATUS application, the READ softkey is presented. This softkey provides access to the Agent Status reports.

Read Key   **7.20**   Supervisors with multiple agent groups do not have AGENT STATUS keys on their sets. To provide entry to the Agent Status reports, the Supervisor's *SUPERSET 4* telephone is equipped with a READ softkey. The softkey appears on the *SUPERSET 4* telephone when the QUEUE STATUS key is pressed.

Operation: Press the QUEUE STATUS key of the desired Agent Group. The READ softkey is displayed at this point. After pressing the READ softkey, the Agent Status reports are displayed, beginning with the name and ID of the first agent in the group.

Selecting individual reports and the softkeys, EXIT, CALL HELP, and ➤ , operate as described in paragraph 7.16 , Agent Status Key Operation .

Shift Key   **7.21**   The SHIFT feature key is assigned during Customer Data Entry. It is required when the number of agent groups a Supervisor controls is greater than the number of QUEUE STATUS keys on the Supervisor's set.

The SHIFT key allows one QUEUE STATUS key to address more than one Agent Group. This key has no effect if 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 and accessed by pressing the SHIFT key and then the QUEUE STATUS key. At this point the name and ID of agent group 03 is displayed, and the LCD indicator reflects the status of the third agent group.

Example: The example in NO TAGbelow shows a configuration with three QUEUE STATUS keys and seven agent groups. The first press of the QUEUE STATUS key displays the status of Agent Group 1. Pressing the SHIFT key at this point displays the Agent Group 4. Agent Groups 2 and 3 are assigned to QUEUE STATUS keys 2 and 3 respectively.

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 7–4 Queue Status Key Operation

8. ACD SENIOR SUPERVISOR SET

8.1 This section of the practice describes the *ACD TELEMARKETER* features on *SUPERSET 4* telephones used by ACD Supervisors, and includes descriptions of:

- special feature keys,

- set displays,

- reports, and

- set operation.

The information in this section is aimed at those planning an ACD installation, setting up an ACD system, and operating the sets in an existing system. Refer to Section 5, ACD Set Description – General, for descriptions of *ACD TELEMARKETER* features common to all positions.

FUNCTIONS

8.2 Once logged in to the ACD system, the *SUPERSET 4* telephone used by the Senior Supervisor is provided with QUEUE STATUS keys and a SHIFT key. The following subsections describe login/logout sequences, as well as senior supervisor set functions and operation.

LOGIN/LOGOUT

8.3 The system recognizes a senior supervisor only after the senior supervisor logs in to the ACD system. Once logged in, the set takes on the properties assigned to the senior supervisor through CDE. Refer to Login/Logout in Section 5 for details and conditions.

Login   **8.4** To login, the senior 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 agent hears dial tone.

Logout   **8.5** To log out, dial the access code again. ACD LOGOUT appears briefly in the display, and the supervisor hears dial tone.
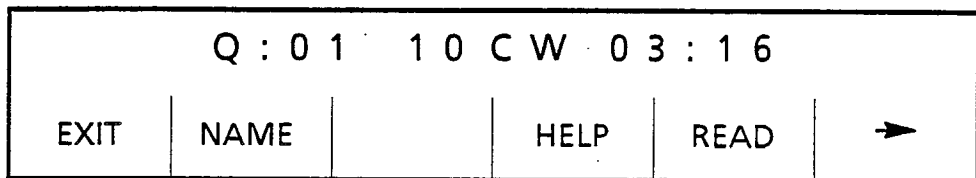
QUEUE STATUS KEY

8.6 The QUEUE STATUS key serves two functions that give the Senior Supervisor information about agent queue activity. The first requires no operation of the key. The LCD beside this key indicates the load condition of the

agent queue on an ongoing basis. Further details of the LCD indications are provided in paragraph 7.13 .

The QUEUE STATUS key also provides current status reports for the Agent Groups who report to the Senior Supervisor. When the key is first pressed, the set displays a summary of the queue activity. It presents the queue number, the number of ACD calls in the queue waiting to be answered, and the length of time the oldest call has been waiting. The Senior Supervisor can then scroll through the rest of the queue reports with the forward arrow key, or select specific reports using the dial pad keys.

Operation

8.7   After pressing the QUEUE STATUS key the display is similar to the example shown below. This sample of the Queue Status display reflects the activity in queue 01. There are 10 calls in the queue waiting to be answered, and the oldest call has been waiting for three minutes and sixteen seconds. .

Q : 0 1 1 0 C W 0 3 : 1 6				
EXIT	NAME		HELP	READ	➤

8.8   The softkeys are EXIT, NAME, HELP, READ, and ➤. The EXIT softkey terminates the QUEUE STATUS display. The NAME softkey presents the name of the Agent Group, if a name was assigned during CDE. If the group was not assigned a name during CDE, this softkey does not appear. The READ key, used to access Agent Status reports, operates as described in paragraph 7.19 .

The HELP softkey reminds the Senior Supervisor of which dial pad key produces each report. When HELP is first selected, the display prompts the user to '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. For example, dialing the digit 1 results in a set display of 1 = WAIT TIME.

See Table 8–3 for a list of the dial pad keys and examples and explanations of the reports available. The softkeys described at the bottom of the table remain on the set during the QUEUE STATUS application.

Table 8–3 Senior Supervisor Reports – Queue Status

Key Number	Sample Set Display	Meaning
0	#AGT LOGIN 6	Number of agents logged in
1	WAIT TIME 01:55	Average waiting time for the agents in group
2	# ACD CALLS 25	Number of ACD calls answered by the group

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	Table 8–3 Senior Supervisor Reports – Queue Status (continued)	
Key Number	Sample Set Display	Meaning
3	A C D C A L L 0 2 : 2 5	Average duration of ACD calls
4	# N O N A C D 2	Number of non–ACD calls made/answered by the group
5	N O N A C D 0 1 : 4 6	Average duration of non–ACD calls
6	# M A D E B U S Y 2	Number of times the agents entered make busy
7	A V G B U S Y 0 2 : 5 8	Average duration of make busy
8	# O N H O L D 2	Number of ACD calls put on hard hold
9	A V G H O L D 0 0 : 4 7	Average duration of ACD calls on hard hold
EXIT		Exit the Queue Status display
REMINDER		Displays the agent group number and name you are presently looking at
→		Move forward to the next report
←		Move back to the previous report
		Page 2of 2

SHIFT KEY

8.9   The SHIFT key is used to display the next set of agent groups when the number of QUEUE STATUS keys on the Senior Supervisor's set is not sufficient for all the agent groups. This key has no effect if the number of QUEUE STATUS keys programmed is greater than the number of agent groups.

SHIFT key operation on the Senior Supervisor's set is similar to its operation on a Supervisor's set. Refer to paragraph 7.17 for a description of the operation of the Shift Key in conjunction with the Queue Status.

CALL MONITORING

8.10 Call Monitoring feature operation is identical on both the Senior Supervisor set and the Supervisor set. Refer to paragraph 7.6 for details.

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9. REPORTS

9.1 The *ACD TELEMARKETER* package generates a series of printer directed reports listing 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 reports present information collected over a pre–defined period.

The reporting parameters may be selected through the maintenance terminal or the console. Refer to paragraph 9.12 for descriptions of the parameters and how they are selected.

AGENT SHIFT SUMMARY RECORD

9.2 An Agent Shift Summary Record prints automatically whenever an agent logs out. Once enabled, this report requires no predefined time parameters. Refer to paragraph 9.13 , SET Command, for instructions on enabling the Agent Shift Summary Record.

Headers on the Agent Shift Summary Record identify the fields. Table 9–4 defines these headers.

Table 9–4 Agent Shift Summary Record Fields

Softkey Label	Function
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:ss)
SHIFT	Agents' shift length (hh:mm:ss)
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)

Two examples of the agent records are provided below, with an explanation of the printed data.

Agent Shift Records – Example 1

9.3   The following example shows an Agent Shift record. The fields in the record are described below the example.

```
DATE  GROUP AGENT EXTN  LOGIN   SHIFT  CALLS TIME  EXT-OUT TIME
01/27/88  0018   00349  01432  13:28:16  06:35:04 0485 03:34:51 0016   01:25:26
```

On January 27, 1988 agent 349 of agent group 18 at extension 1432 logged on at 13:28:16 for a period of 6 hours, 35 minutes, and 4 seconds. 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.

Agent Shift Records – Example 2

9.4   The following shows another example Agent Shift record. The fields in the record are described below.

```
DATE  GROUP AGENT EXTN  LOGIN   SHIFT  CALLS TIME  EXT-OUT TIME
11/12/88 0001   24157  05211  08:26:54  07:45:12 0036 07:01:23 0008  00:31:52
```

On November 12, 1988 agent 24157 of agent group one, at extension 5211 logged on at 08:26:54 for a period of 07:45:12. 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.

PATH REPORTS

9.5   A summary record for the Path lists:

● total counts for traffic entering the path during the specified time period,

● the number of those calls that were answered, abandoned, and inter-flowed

The summary report is printed only for programmed entities.

Report Headers

9.6   Headers on the Path Summary Report identify the date and time of the report and identify each field on the report. Table 9–5 defines these fields.

Table 9–5 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 which were answered and the average time to answer
	Page 1 of 2

Table 9–5 Path Summary Report Fields (continued)	
Softkey Label	**Function**
ABANDONED	Number of calls which entered this path that abandoned and the 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.
	Page 2 of 2

Path Summary Report Example

9.7   The following example shows a typical Path Summary report.

Period: 7–JAN–88 8:30 to 4:30

PATH	ENTERED	ANSWERED	ABANDONED	INTERFLOWED	SERVICE
23	1732	1578 000:15	0020 003:08	0134 003:27	0

Path number 23 received 1732 calls and of these, 1578 were answered within an average of 15 seconds. Twenty callers 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.

GROUP SUMMARY REPORT

9.8   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, and

- the average number of agents logged in during the period.

Report Headers   **9.9**   Headers on the Group Summary Report identify the date and time of the report and identify each field on the report. Table 9–6 defines these fields.

Table 9–6 Group Summary Report Fields	
Softkey Label	**Function**
GROUP	Group number being summarized
OFFERED	Total number of calls offered to the group during the reporting period
ANSWERED	Total number of above 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 each call
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 each call
AVERAGE LOGGED IN	Average number of agents logged in during the period.

Group Summary   **9.10**   The following shows an example Group Summary Report. The fields
Report Example   in the report are described below.

GROUP	OFFERED	ANSWERED		NON–ACD EXTERNAL		NON–ACD OTHER		AVERAGE LOGGED IN
12	0174	0131	2:21	0015	4:09	0021	1:57	7

This example 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.

PRINTING REPORTS

9.11   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 Customer Data Entry (CDE), Practice 9109–094–210–NA, for programming details.

Report Commands 9.12 Either the maintenance terminal or console can be used to enter the commands and parameters needed to start the ACD Reports. Refer to RS–232 Maintenance Terminal, Practice 9109–094–351–NA, for instructions on using the terminal. The following subsection describes the report commands.

To access the reports, login to the console or maintenance terminal using the correct USERNAME and PASSWORD. After login, the softkey labels change to:

1–SYSTEM	2–	3–DIAGNOSTICS	4–	5–TRAFFIC_MEAS
6–QUIT	7–LOGS	8–ACD_REPORTS	9–REPORTS	0–

To access the ACD Reports subform, press the ACD_REPORTS softkey. The softkey labels change to:

1–SET	2–SHOW	3–	4–	5–
6–QUIT	7–	8–	9–	0–

The softkey functions are as follows:

Softkey Label	Function
SET	Sets up various parameters for the summary reports
SHOW	Shows the current setup of the ACD printouts
QUIT	Exits the user from the ACD Report mode.

The following subsections describe the reporting parameters available for each of these softkeys.

SET Command 9.13 Use the SET command to enter or change any ACD Report parameters. After pressing the SET softkey, the prompts change as shown below.

1–AGENT_SHIFT	2–PERIOD	3–DURATION	4–AUTOPRINT	5–CANCEL
6–	7–START_TIME	8–GRP_SUMMARY	9–	0–

Use the softkeys to enter the required data and to exit from the ACD REPORT function. The softkey functions are as follows:

Softkey Label	Function
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 a "last hour" 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.

The DURATION, PERIOD, GRP_SUMMARY, and the START_TIME can not be changed once the report is running. Stop the report before attempting to change these parameters.

SHOW Command **9.14** Use the SHOW command to display the status of the ACD reports. After pressing the SHOW softkey, the labels change as shown below.

1–	2–	3–STATUS	4–	5–CANCEL
6–	7–	8–	9–	0–

Softkey Label	Function
STATUS	The STATUS softkey displays the following information in the screen window: STATUS : Active/Inactive GROUP SUMMARY : ON/OFF AUTO PRINT : ON/OF
STATUS	The STATUS softkey displays the following information in the screen window: GROUP SUMMARY : ON/OFF STATUS : Active/Inactive START TIME : HH:mm PERIOD : nn minutes DURATION : nn periods AGENT SHIFT : ON/OFF
CANCEL	Cancels the show command

QUIT Command   **9.15**   This softkey command allows the user to exit from the ACD REPORT mode at the console or terminal.

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10. ACD MONITORS

10.1 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.

HIERARCHY OF MONITOR DISPLAYS

10.2 The Monitors allow access to four areas of the *ACD TELEMARKETER* system. The user may view the current activity for:

- the overall system,

- paths,

- agents, and

- agent groups.

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 10–1 .

Monitor ACD System

Paths Summary   Agent Groups Summary   Agents Summary

Prog   Stats   Activity   Prog   Stats   Activity   Prog   Stats   Activity
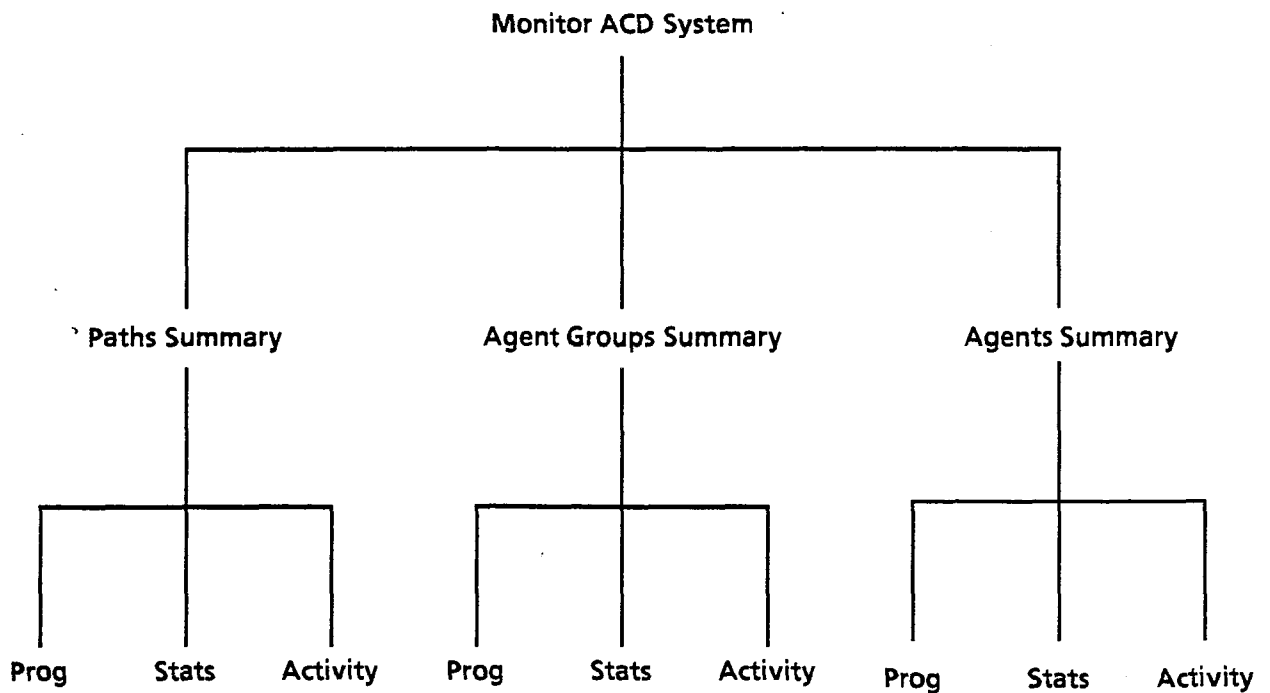
Figure 10–1 Monitor Hierarchy

The following subsections provide an overview of the upper levels of monitor hierarchy.

10.3   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.

10.4   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.

10.5   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.

10.6   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.

ACCESSING MONITORS

10.7   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 PABX. The DTE connected to the dataset must be an ASCII data device using an RS–232C interface. As many as four users can access the Monitors simultaneously. Most displays are updated every 5 seconds. This update rate may vary depending on the number of users currently requesting monitor displays. The following subsections describe how to access the ACD monitors.

10.8   Perform the following steps to gain access to the monitors through a VT100–type terminal.

> Press <Return> key
> System Response: (See Note)

Welcome to Mitel SX–200 DIGITAL Data Switching
*

Note: The system response is a programmable herald that is selected during the programming of the Data Transceiver's Class–Of–Service. Refer to Practice 9109–094–210–NA, Customer Data Entry (CDE), for details.

To request the monitors, enter:

MONITOR ACD or M ACD

The display shows call progress as follows;

Type the monitor password, and press the RETURN key. The default password is 1000.

This completes the entry procedure. 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

Once logged in to the system, the user is presented with the SYSTEM ACTIV-ITY screen, described later in this section. Refer to the applicable subsection of this document for detailed descriptions of the functions and softkeys available at each monitor level.

Setting the Password

10.9   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.

Monitoring the ACD System

10.10   After selecting MONITOR ACD the user is presented with the SYSTEM ACTIVITY monitor. This display contains a summary of the entire ACD system showing all current call activity and agent activity, and a synopsis of system performance over the past hour.

The System Activity monitor is accompanied by softkeys used to enter the second level of monitors shown in Figure 10–1 . The user may select Paths, Agent Groups, or Agents. At this point the system prompts for a path ID, group number or agent ID, thus allowing the user to directly access the desired path, agent group or agent.

For each path, agent group or agent, the Summary display gives an overview of current activity as well as a synopsis of statistics collected over the past hour. From this level the user may access additional, lower–level displays showing programming, statistics, and activity information.

The Programming display contains all the information assigned to the Path, Agent Group, or Agent, during Customer Data Entry.

The Statistics display shows a statistical overview of the performance of the related Path, Agent Group, or Agent as follows:

● Paths Statistics shows path performance for the current instant, and   a summary of activity over the past hour

● Group statistics provide a group summary for the last hour, and the shift total.

● Agent Statistics cover the last hour's performance.

The Activity displays present a continuously updated picture of the path, agent group or agent. The Path Activity shows callers queued for the path, and any idle agents waiting for calls from the path. Agent Activity provides status information about the agent state and the current call in progress. The Group Activity is continuously updating caller and agent activity within the selected group.

SYSTEM ACTIVITY

10.11   Figure 10–2 shows an example of the System Activity monitor. The softkeys presented with this display provide access to detailed displays of performance of specific Paths, Agent Groups or Agents. Table 10–7 explains the various softkeys and their purpose. Table 10–8 describes each field within the display.

13:23 23–APR–89		SYSTEM ACTIVITY	MITEL ACD TELEMARKETER
CALLER ACTIVITY		**AGENT ACTIVITY**	**SUMMARY – LAST HOUR**

CALLER ACTIVITY		AGENT ACTIVITY		SUMMARY – LAST HOUR		
CALLERS :	14	ON ACD :	11	ENTERED :	257	
CALLS WTG :	3	READY :	1	TIMEtoANS :	00:54	
LONGEST WTG:	00:56			SVC LEVEL< :	200	78%
				SVC LEVEL > :	54	22%
				ANS by AGT :	254	03:02
UNDER 1ST :	28 %	MAKE BUSY :	2	ANS by AGT :	99 %	
BETWEEN :	56 %	DND	–			
AFTER 2ND :	16 %					
		ON non ACD :	–	ON non ACD :	4	01:23
ON RECRDING :	2					
HELD CALLS :	–	LOGGED ON :	14	ABANDONED:	3	01:35
		LOGGED OFF :	63			

1– PATHS	2– AGENT GROUPS	3– AGENTS	4–	5–
6– QUIT	7– PRINT	8–	9–	0–

Figure 10–2 System Activity Display

Table 10–7 System Activity Display Softkeys.	
Softkey Label	**Function**
PATHS	Prompts the user to specify a path ID. Displays the Path Monitors for the selected Path. Refer to paragraph 10.12 for details.
AGENT GROUPS	Prompts user to specify an Agent group. Displays the Agent Groups monitors for the selected group. Refer to paragraph 10.17 for details.
AGENTS	AGENTS Prompts for an Agent Id number. Displays the Agent Monitors showing current agent activity and last hour statistics. Refer to paragraph 10.25 for details.
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Table 10–7 System Activity Display Softkeys (continued)	
Softkey Label	Function
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.
	Page 2 of 2

Table 10–8 Terms Used In System Activity Display	
Term	Meaning
Caller Activity	
Callers	The number of callers within the ACD system. This includes callers talking to agents and callers waiting for agents, but does not include callers in the delay for ringback.
Calls Wtg	The number of callers queued up waiting for an agent to become available. Includes 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 waiting in the queues that are listening to a recorded announcement.
	Page 1 of 3

Table 10-8 Terms Used In System Activity Display (continued)	
Term	**Meaning**
Held Calls	Indicates the number of ACD callers that have been placed on hold.
Agent Activity	
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.
Summary – Last Hour	
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 within 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 time before a call is answered by an agent, computed over the past hour.
	Page 2 of 3

Table 10–8 Terms Used In System Activity Display
(continued)

Term	Meaning
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 3 of 3

MONITORING PATHS

10.12   The system displays path information on four forms. Entry into Path monitor sub–level begins with the Path Summary display showing activity on the requested path. From this point, the user may access detailed information in three categories; CDE programmed data, statistics gathered on the path over the past hour, and current path activity.

Path Summary Display

10.13   The first Path Monitor display is the Path Summary shown in Figure 10–3 . This displays an overview of current activity, and a synopsis of statistical data collected over the past hour.

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 10–3 . 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, and the system offers the CANCEL softkey. The RETURN hard–key also cancels the error message.

PATH NUM	PATH NAME	ACCESS CODE	NUM CALLS WTG	CONN TO AGTS	SUMMARY – LAST HOUR								
					ENTERED	ANSWERED		ABANDONED			INTERFLOWED		
1	TV SALES	666	4	7	122	101	00:54	19	15%	01:49	9	01:58
2	REC SALES	667	–	2	34	34	00:14	–	–	:	–	:
3	NEWS MAG	668	23	11	439	202	01:34	31	7%	02:13	4	02:12
4	SERVICE	669	1	2	13	13	00:40	–	–	:	–	:
5	SUBSCRIPT	662	–	–	5	–	–	5	100%	1:01	–	:

1– PROGRAMMING	2– STATISTICS	3– ACTIVITY	4–	5– CANCEL
6–	7– PRINT	8– PAGE UP	9–	0–

Figure 10–3 Path Summary Display

The softkeys for the Path Summary monitor are described in Table 10–9 below. Table 10–10 defines each field on the Path Summary monitor.

Table 10–9 Path Summary Display Softkeys	
Softkey Label	**Function**
PROGRAMMING	Displays the Path Programmed Data form that shows information programmed in CDE for the path currently bracketed by the work–line arrows. Refer to paragraph 10.14 for a description of the Path Programmed Data form.
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. Refer to paragraph 10.15 for a description of the Path Statistics form.
	Page 1 of 2

Table 10–9 Path Summary Display Softkeys (continued)

Softkey Label	Function
ACTIVITY	Accesses the Path Activity display that contains a frequently updated view of current traffic on the selected path including callers waiting and idle agents. Refer to paragraph 10.16 for a description of the Path Activity form.
CANCEL	Returns the user to the System level display. Refer to paragraph 10.11 for a description of 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 the first path 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, then this key accesses paths with higher Path numbers than the first path on the screen. This key only appears when a downward scroll can occur.

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Table 10–10 Terms Used In Path Summary Display

Term	Meaning
Current Information	
Path Num	The path number. Paths are displayed in ascending order by path numbers.
Path Name	The name of the path as programmed in CDE.
Access Code	The access code of the path.
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.

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Table 10–10 Terms Used In Path Summary Display (continued)	
Term	**Meaning**
Conn To Agts	The number of callers from this path currently talking to agents of any of the groups programmed in this path.
Summary – Last Hour	
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.
	Page 2 of 2

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 Programmed Data Display

10.14   Figure 10–4 shows the Path Programmed Data form that displays the data entered during CDE for the selected path.

PATH PROGRAMMED DATA

PRIMARY :	1 TV SALES	RAD 1 ID:	1123 ALL AGTS BSY
OVERFLOW 1:	13 COOKBOOK	MUSIC:	system
OVERFLOW 2:	4 RECORDS	START:	00:12
OVERFLOW 3:	7 BULLET 1		
INTERFLOW :	8834	RAD 2 ID:	1124 STILL BSY
		MUSIC:	1170
		START:	00:45
I/F ENABLD:	yes	RAD 3 ID:	1126 PLS HOLD ON
O/F to I/F:	yes	MUSIC:	1170
I/F TIME :	03:30	START:	01:30
SVC TIME :	00:13	RAD 4 ID:	1124 STILL BUSY
ANS DELAY:	00:12	MUSIC:	1170
PRIORITY :	20	START:	02:15

PATH   1   666   TV SALES

1–	2–	3–	4–	5– CANCEL
6–	7–	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–4 Path Programmed Data Display

Table 10–11 describes the softkeys presented with the Path Programmed Data display. Table 10–12 describes the fields in the display.

Table 10–11 Path Programmed Data Softkeys	
Softkey Label	Function
CANCEL	Returns the user to the System level display. See paragraph 10.11 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.
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Table 10–11 Path Programmed Data Softkeys (continued)

Softkey Label	Function
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 10.13 for details of the Path Summary form.

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Table 10–12 Terms Used In Path Programmed Data Display

Term	Meaning
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 Enabld	Yes in this field indicates interflow is activated.
O/F to I/F	Yes in this field indicates the call can flow from the last programmed overflow to the Interflow point before the Interflow Timeout occurs. This applies only if the flag I/F ENABLD is '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 this time and the results are shown as the service level data in the monitors.

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Table 10–12 Terms Used In Path Programmed Data Display (continued)	
Term	**Meaning**
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.
RADs 1 through 4	
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.
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Path Statistics Display

10.15 The Path Statistics display in Figure 10–5 displays a statistical overview of the path's performance for the current instant, as well as a summary of activity over the past hour.

14:26 23–APR–89			PATH STATISTICS				MITEL ACD TELEMARKETER	

	GRP NUM	GROUP NAME	NUM AGT /REC	NUM CALLS WTG	CONN AGT /REC	SUMMARY – LAST HOUR		
						OFFERED	ANSWERED	OVERFLOWED
PRIMARY :	1	A/V SALE	7	4	7	122 98 %	97 78 %	53 43 %
OVERFLOW 1:	13	COOKBOOK	3	6	2	53 43 %	17 14 %	26 21 %
OVERFLOW 2:	4	RECORDS	8	2	5	26 21 %	6 5 %	9 7 %
OVERFLOW 3:	7	BULLET 1	6	–	–	9 7 %	1 1 %	
RECORDING 1:	2	TV REC 1	3	2	7	SVC LEVEL < :	90 79 %	
RECORDING 2:	17	GENERAL	3	–	2	SVC LEVEL > :	31 20 %	
RECORDING 3:	9	TV REC 3	2	–	1			
RECORDING 4:	9	TV REC 3	2	–	1			

PATH 1 666 TV SALES				
1–	2–	3–	4–	5– CANCEL
6–	7– PRINT	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–5 Path Statistics Display

Table 10–13 describes the softkeys that are presented with the Path Statistics Display. Table 10–14 describes the fields on the form.

Table 10–13 Path Statistics Display Softkeys	
Softkey Label	**Function**
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11 .
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.
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Table 10–13 Path Statistics Display Softkeys (continued)	
Softkey Label	Function
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 paragraph 10.13 for a description of the Path Summary form.
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Table 10–14 Terms Used In Path Statistics Display	
Term	Meaning
Programmed Information And Current Summary	
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 for the recording group.
Conn Agt/Rec	The number of callers from this path currently talking to agents in the group, or listening to RADs.
Summary – Last Hour	
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 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 represents.
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Table 10–14 Terms Used In Path Statistics Display (continued)	
Term	**Meaning**
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 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 represents.
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Path Activity

10.16 The Path Activity display shown in Figure 10–6 gives 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.

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 and 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 is blank.

14:26 23–APR–89		PATH ACTIVITY			MITEL ACD TELEMARKETER
PRIMARY A/V SALE Caller No. Wtg	0/F1 COOKBOOK Caller No. Wtg	0/F2 RECORDS		0/F3 BULLET 1 Agent Ready	

```
PRIMARY  A/V SALE    0/F1   COOKBOOK   0/F2     RECORDS     0/F3          BULLET 1
Caller   No.  Wtg    Caller  No.  Wtg                       Agent           Ready

T 101    6   00:03   2614    6   01:05
T  21    4   00:24   ─────────────────                      ─────────────────────
T  82    3   00:49                                          MCGRATH M.      17:17
2614     1   01:08                                          FAGAN J.L.      16:21
─────────────────                                           DOYLEND C.      14:58
                                                            THOMPSON B.     14:39
                                                            CHENG J.        02:31
                                                            LAVALLEE P.     02:28
                                                            FARROW MOE      02:01
                                                            CHANG BILL      01:55
                                                            REHDER M.       01:31
                                                            WEATHERSPOON 01:04

                        PATH    1    666   . TV SALES
```

1–	2–	3–	4–	5– CANCEL
6–	7–	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–6 Path Activity Display

Table 10–15 describes the softkeys presented with the Path Activity Display. The fields on the display are defined in Table 10–16 .

Table 10–15 Path Activity Display Softkeys	
Softkey Label	**Function**
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11 .
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.
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Table 10–15 Path Activity Display Softkeys (continued)

Softkey Label	Function
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 paragraph 10.13 for a description of the Path Summary form.

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Table 10–16 Terms Used In The Path Activity Display

Term	Meaning
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 ACD.
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, ready to accept an ACD call.

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MONITORING GROUPS

10.17 Four forms provide information about the agent groups programmed in the ACD system as follows:

● Group Summary form displays important information about each agent group.

- the 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.

The purpose and contents of each form is described in the following subsections.

Group Summary Form

10.18　The primary form available within the agent group sub–level is the Group Summary form. This form gives a brief overview of current activity as well as a synopsis of statistical data collected over the past hour. The user is presented with a set of softkeys, which when accessed display more detailed information related to the group and the group's performance.

10.19　While at the System level, pressing the AGENT GROUPS softkey prompts the user to enter an agent group number. After entering a valid agent group number, the user is presented with the screen shown in Figure 10–7 . The chosen group is at the top of the screen.

10.20　Pressing the RETURN key without first entering a group number also produces the display shown in Figure 10–7 . In this case, however, groups are listed in ascending order by group number.

10.21　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.

10:04 23–APR–89		**GROUP SUMMARY**				MITEL ACD TELEMARKETER	
GRP NUM	GROUP NAME	AGENTS LOGGED ON	NUM CALLS WTG	ON ACD CALLS	SUMMARY – LAST HOUR		
					OFFERED	ANSWERED	OVERFLOWED
1	A/V SALE	7	4	7	122	97	23
4	RECORDS	8	2	5	142	138	4
7	BULLET 1	6	–	–	37	37	–
11	POP	2	1	1	13	12	–
12	JAZZ	1	–	–	3	2	–
18	COOKBOOK	3	2	3	73	43	22
35	TRINKETS	–	–	–	–	–	–
38	JOKELINE	37	101	33	835	561	274

PATH 1 666 TV SALES				
1– PROGRAMMING	2– STATISTICS	3– ACTIVITY	4–	5– CANCEL
6–	7– PRINT	8– PAGE UP	9– PAGE DOWN	0–

Figure 10–7 Group Summary Display

Table 10–17 describes the softkeys presented with the Group Summary Display. The fields on the display are defined in Table 10–18 .

Table 10–17 Group Summary Form Softkey Labels	
Softkey Label	**Function**
PROGRAMMING	Displays the Group Programmed Data form that shows the programmed CDE entries for the agent group currently bracketed by the work line arrows. Refer to paragraph 10.22 for a description of the Group Programmed Data form.
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 paragraph 10.23 for details.
ACTIVITY	Accesses the Group Activity display that shows a frequently updated view of current status of the agent group. See paragraph 10.24 .
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Table 10–17 Group Summary Form Softkey Labels (continued)	
Softkey Label	Function
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11.
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 only appears 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 only appears when an downward scroll can occur.

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Table 10–18 Terms Used In Group Summary Display	
Term	Meaning
Grp Num	The agent group's number.
Group Name	The agent group's name as programmed in CDE.
Current State	
AGENTS LOGGED ON	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.
Summary – Last Hour	
OFFERED	The number of incoming ACD calls offered to the group from all paths.

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	Table 10–18 Terms Used In Group Summary Display (continued)
Term	**Meaning**
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.
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Group Programmed Data

10.22 The Group Programmed Data form shown in Figure 10–8 displays the data programmed during CDE for the agent group.

10:04 23–APR–89   **GROUP PROGRAMMED DATA**   MITEL ACD TELEMARKETER

```
   SUPER  NAME  :  ADAMSON  T.          THRESHOLD 1 :  00:45
   SUPER  ID    :    102                THRESHOLD 2 :  01:20

                                        O/F TIMER    :  02:00
   SEN'R  NAME  :  ELKS HARRY           AFTER WORK   :  00:20
   SEN'R  ID    :  100

   PROG  AGTS   :   12
```

GROUP 1 A/V SALE				
1–	2–	3–	4–	5– CANCEL
6–	7–	8–	9– NEXT	0– RETURN

Figure 10–8 Group Programmed Data Display

Table 10–19 describes the softkeys presented with the Group Programmed Data Display. The fields on the display are defined in Table 10–20 .

Table 10–19 Group Programmed Data Softkey Labels	
Softkey Label	Function
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11 .
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 10.18 for details
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Table 10–20 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 using this time.
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Table 10–20 Terms Used In Group Programmed Data Display (continued)	
Term	**Meaning**
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.
O/F Timer	The setting of the 'overflow' timer for the group
After Work	The setting of the after work timer for the group.
	Page 2 of 2

Group Statistics

10.23 The Group Statistics form in Figure 10–9 shows a summary of statistics collected over the past hour, and shift totals for the group.

14:26 23–APR–89	GROUP STATISTICS	MITEL ACD TELEMARKETER

LAST HOUR		SHIFT TOTAL from 08:00	
ANS by GRP :	43 03:11	ANS by GRP :	397. 02:58
OFFERED :	63	OFFERED :.	487
OVERFLOWED :	17	OVERFLOWED :	83
LOGINS :	–	LOGINS :	13
AVG AGENTS :	3.4	AVG AGENTS :	6.8
MAKE BUSY :	12 00:49	MAKE BUSY :	62 01:46
OUTGOING :	– :	OUTGOING :	3 02:01
NON ACD :	1 01:43	NON ACD :	2 02:12

GROUP 1 A/V SALE				
1–	2–	3–	4–	5– CANCEL
6–	7– PRINT	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–9 Group Statistics Display

Table 10–21 describes the softkeys presented with the Group Statistics display. Table 10–22 defines the fields on the display.

The field definitions in Table 10–22 apply to the LAST HOUR field and the SHIFT TOTAL field. The shift start time is programmed from the System level in Maintenance via the ACD͟ REPORTS softkey. The group shift buffers are cleared at that time.

Table 10–21 Path Programmed Data Softkey Labels	
Softkey Label	**Function**
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11 .
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 paragraph 10.18 for details
	Page 1 of 1

Table 10–22 Terms Used In Path Programmed Data Display	
Term	**Meaning**
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 over the time interval from all paths.
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: total agent login time / total duration
	Page 1 of 2

Table 10–22 Terms Used In Path Programmed Data Display (continued)	
Term	**Meaning**
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.
	Page 2 of 2

Group Activity

10.24 The Group Activity form shown in Figure 10–10 provides a continuously updated display of the activity of callers and agents within the group.

14:26 23–APR–89   **GROUP ACTIVITY**   MITEL ACD TELEMARKETER

CALLER ACTIVITY			AGENT ACTIVITY		
CALLS WTG : 12			LOGGED ON : 10		
LONGST WTG: 01:38			READY : –		
UNDER 1ST : 7			AFTER WORK: 1		
BETWEEN : 3			ON ACD : 7		
AFTER 2ND : 2			MAKE BUSY : 1		
OVERFLOWED: 6			DND : –		
			ON non ACD: 1		
HELD CALLS : 1					
GROUP 1 A/V SALE					
1–	2–	3–	4–	5– CANCEL	
6–	7–	8– PREVIOUS	9– NEXT	0– RETURN	

Figure 10–10 Group Activity Display

Table 10–23 describes the softkeys presented with the Group Activity display. Table 10–24 defines the fields on the display.

Table 10-23 Group Activity Softkey Labels	
Softkey Label	Function
CANCEL	Returns the user to the System level. Details of the System level are in paragraph 10.11 .
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 10.18 for details.

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Table 10-24 Terms Used In Group Activity Display	
Term	Meaning
Caller Activity	
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.
Between	The number of callers queued for this group who have been waiting for longer than the first threshold timer but less than the second threshold timer.
After 2nd	The number of callers queued for this group who have been waiting for longer than the second threshold timer.
Overflowed	The number of callers queued for this group who have overflowed to the next group in the path, if programmed to do so.

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Table 10-24 Terms Used In Group Activity Display (continued)	
Term	**Meaning**
Held Calls	The number of callers on hard hold by agents in this group.
Agent Activity	
Logged On	The number of agents currently logged on in this group.
Ready	The number of agents 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.
	Page 2 of 2

MONITORING AGENTS

10.25 The following forms provide information about the agents programmed in the ACD system and currently logged in. The primary form within the agent sub-level is the Agent Summary that provides an overview of current activity as well as a synopsis of statistical data collected over the past hour. The user is presented with a set of softkeys to access additional forms supplying detailed information about the agent and the agent's performance.

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 the entire group.

● Agent Activity display showing the current status of any specified agent,.

These forms are described in detail below.

Agent Summary   **10.26**   The Agent Summary form provides a snapshot view of an agent's current state and a summary of one or more agents' performance over the last hour.

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 10–11 . Information about the chosen agent appears at the top.

Pressing the RETURN key without first entering an agent ID number also displays the screen shown in Figure 10–11 , 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.

10.27   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 the RETURN hardkey and re–enter an agent number.

15:23 23–APR–89				**AGENT SUMMARY**						MITEL ACD TELEMARKETER	
GRP NUM	AGENT NAME	AGENT ID	ACD STATE	SUMMARY – LAST HOUR							
				ANSWERED		CMP to GRP	AV	NONACD		MAKE BUSY	
2	JACOBSON K	2390	ready	27	02:28	97	96	–	:	3	01:28
2	OLIVETTI S	2750	acd	23	03:01	86	105	1	02:27	–	:
2	ANDERS BOB	3215	nonacd	13	03:45	102	103	–	:	5	01:13
2	KING SUSAN	3310	makeb	4	01:58	80	93	–	:	–	:
5	BRUCE ALAN	1540	acd	12	02:35	10	98	2	00:47	4	00:29
33	LIKOUDIS J	3250	acd	13	02:21	100	100	0	:	2	00:47
42	ISKOVITCH	4100	ready	–	–	–	–	–	:	–	:
42	CUOMO MARY	73550	makeb	11	04:27	67	132	–	:	1	60:00
49	LAM JSOEPH	2210	acd	19	02:39	100	102	–	:	–	:

1– PROGRAMMING	2– STATISTICS	3– ACTIVITY	4–	5– CANCEL
6–	7– PRINT	8– PAGE UP	9– PAGE DOWN	0– RETURN

Figure 10–11 Agent Summary Form Display

Table 10–25 describes the softkeys presented with the Agent Summary display. Table 10–26 defines the fields on the display.

Table 10–25 Agent Summary Form Softkey Labels

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 paragraph 10.28 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. Paragraph 10.29 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 paragraph 10.30 for a description of this form.
CANCEL	Returns the user to the System level. Refer to paragraph 10.11 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 only appears 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 only appears when a downward scroll can occur.

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Table 10–26 Terms Used In Agent Summary Display

Term	Meaning
Agent Name And Current State	
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.

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Table 10–26 Terms Used In Agent Summary Display (continued)	
Term	**Meaning**
ACD State	The current state of the agent as one of the following; 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 ready to accept an ACD call
Summary – Last Hour	
Answered	The number and average duration of incoming ACD calls answered by this agent.
Cmp To Grp Av	The first percentage is the ratio of the number of incoming ACD calls answered by this agent compared to the average number answered by the rest of the agents in the group over the same period. Agents logging on and off during the period affect the numbers. The second percentage is the ratio of the average call duration of incoming ACD calls answered by this agent compared to the average duration answered by the rest of the agents in the group over the same period.
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.
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Agent Programmed Data

10.28   The Agent Programmed Data form displays the data programmed for the agent by the installer during Customer Data Entry. Figure 10–12 shows the form. The softkeys and fields on the form are described in Table 10–27 and Table 10–28 .

GROUP NAME : NEWSROOM **GROUP NUM** : 33	**SUPER NAME** : SOBRAN JOE **SUPER ID** : 3800 **SEN'R NAME** : MORRISS F **SEN'R ID** : 3900	**AGENT COS** : 12

AGENT 3250 LIKOUDIS J				
1–	2–	3–	4–	5– CANCEL
6–	7–	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–12 Agent Programmed Data Display

Table 10–27 describes the softkeys presented with the Agent Programmed Data display. Table 10–28 defines the fields on the display.

Table 10–27 Agent Programmed Data Softkey Labels	
Softkey Label	**Function**
CANCEL	Returns the user to the System level. Refer to paragraph 10.11 for details.
PREVIOUS	Displays the previous agent, sorted by group number and agent ID. The softkey only appears when there is a preceding agent.
NEXT	Displays the next agent, sorted by group number and agent ID. The softkey only appears when there is another agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Agent Summary form described in paragraph 10.26 .
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Table 10–28 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.
	Page 1 of 1

Agent Statistics

10.29 The Agent Statistics display shown in Figure 10–13 provides a summary of agent performance statistics collected over the past hour.

AGENT DATA	LAST HOUR	SHIFT TOTAL
GROUP NAME : NEWSROOM GROUP NUM : 33 LOGIN TIME : 08:27 LOGIN DATE : 23–APR–89 SHIFT DUR : 07:36	ANS by AGT : 13 02:21 READY : 15 00:56 MAKE BUSY 2 00:47 OUTGOING : – : ON non ACD : – :	ANS by AGT. 49 1:46

AGENT 3250 LIKOUDIS J				
1–	2–	3–	4–	5– CANCEL
6–	7– PRINT	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–13 Agent Statistics Display

Table 10–29 describes the softkeys presented with the Agent Statistics display. Table 10–30 defines the fields on the display.

<table>
<tr><td colspan="2" align="center">Table 10–29 Agent Statistics Form Softkey Labels</td></tr>
<tr><td>Softkey Label</td><td>Function</td></tr>
<tr><td>CANCEL</td><td>Returns the user to the System level. Refer to paragraph 10.11 for details.</td></tr>
<tr><td>PRINT</td><td>Prints this form to the printer used for the ACD Monitor print.</td></tr>
<tr><td>PREVIOUS</td><td>Displays the statistics for the previous agent, sorted by group number and agent ID. The softkey only appears when there is a preceding agent.</td></tr>
<tr><td colspan="2" align="right">Page 1 of 2</td></tr>
</table>

Table 10–29 Agent Statistics Form Softkey Labels (continued)	
Softkey Label	**Function**
NEXT	Displays the statistics for the next agent, sorted by group number and agent ID. The softkey only appears when there is an additional agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the AGENT SUMMARY form described in paragraph 10.26 .
	Page 2 of 2

Table 10–30 Terms Used In Agent Statistics Display	
Term	**Meaning**
Agent Data	
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.
Last Hour	
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. Includes both incoming and outgoing external calls, and all internal calls.
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Table 10–30 Terms Used In Agent Statistics Display (continued)	
Term	Meaning
Shift Total	
Ans By Agt	The number and average duration of incoming ACD calls answered by the agent since login.
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Agent Activity

10.30 The Agent Activity form shown in Figure 10–14 provides a continuously updated display of ACD information for the agent, plus status for the agent's set and the current call.

```
15:53  23–APR–89              AGENT  ACTIVITY          MITEL ACD TELEMARKETER
```

GROUP NAME : NEWSROOM GROUP NUM : 33 SET EXT : 1250 SET LOC'N : 1 2 5 0	SET STATE : idle CALL TYPE : 2 party DND : yes AUTO ANSWR: no ENGLISH : yes	ACD STATE : acd MAKE BUSY : yes 00:20 ON ACD : yes TIMEonACD : 03:03 ACD ONHOLD : yes CALLER : T 32 ORIG PATH : 5400 PRIME GRP : yes
AGENT 3250 LIKOUDIS J		

1–	2–	3–	4–	5– CANCEL
6–	7–	8– PREVIOUS	9– NEXT	0– RETURN

Figure 10–14 Agent Activity Display

Table 10–31 describes the softkeys presented with the Agent Activity display. Table 10–32 defines the fields on the display.

Table 10-31 Agent Activity Form Softkey Labels

Softkey Label	Function
CANCEL	Returns the user to the System level. Refer to paragraph 10.11 for details.
PREVIOUS	Displays the statistics for the previous agent, sorted by group number and agent ID. The softkey only appears when there is a preceding agent.
NEXT	Displays the statistics for the next agent, sorted by group number and agent ID. The softkey only appears when there is an additional agent.
RETURN	The RETURN key (either hardkey or softkey) returns the user to the Agent Summary form described in paragraph 10.26 .

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Table 10-32 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 *SUPERSET* telephone where the agent is logged in.
Set Loc'n	The physical location (bay, slot, circuit, and sub circuit) of the *SUPERSET* telephone where the agent is logged in.
Set State	The software state of the set where the agents logged in. The state will be one of the following; busy busyout campon dialing dnd held idle intoACD locked talking paging reorder ringbak ringing select suspend
Call Type	The type of call the agent is on, either two-party or conference.

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Table 10–32 Terms Used In Agent Activity Display (continued)	
Term	**Meaning**
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 from the following list: acd — on an ACD call dnd — the agent's set has Do Not Disturb active help — the agent has requested help. hold — agent has an ACD caller on hold makeb — agent has entered the make busy state nonACD — agent is on a non–ACD call outgo — agent is on an outgoing external call rdy — agent ready to accept an ACD call
Make Busy	Indicates whether 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.
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11. PROGRAMMING

GENERAL

11.1 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 (Form 04)

- ACD Agent Groups (Form 39)

- Agent Group Subform (Subform of 39)

- ACD Keys Template (Form 38)

- COS Define (Form 03)

- ACD Supervisors (Form 40)

- ACD Paths (Form 41)

- Hunt Groups (Form 17)

SYSTEM OPTIONS FORM

11.2 Figure 11-1 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 FORM

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

Figure 11-1 System Options Form (Form 04)

Four fields on the System Options form control operation of the *ACD TELEMARKETER* feature. Table 11-1 defines the function of each field.

Table 11–1 System Option Form Fields	
Option	**Function**
AUTOMATIC CALL DISTRIBUTION (Option 41)	Setting this option to ENABLED allows access to the programming forms related to ACD.
ACD SILENT MONITORING (Option 42)	Setting this option to ENABLED allows a supervisor to monitor ACD calls by dialing a programmed feature access code.
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 *ACD TELEMARKETER* Reporting Package. For additional information refer to Practice 9109–094–221–NA, Station Message Detail Recording (SMDR).
Page 1 of 1	

System Option 41 (Automatic Call Distribution) must be set to ENABLED before programming the remaining CDE forms related to ACD.

ACD AGENT GROUPS FORM

11.3   Figure 11–2 shows a blank ACD Agent Groups Form (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 50. 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 any *SUPERSET 4* telephone 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. For a description of this selection, see Longest Idle Agent in Section 3.

ACD AGENT GROUPS FORM

[ACD GRP.]	AGENT ID	AGENT NAME	COS

Figure 11–2 ACD Agent Groups Form (Form 39)

The fields on the ACD Agent Group form contain customer–defined data. Table 11–2 defines the contents of each field .

Table 11–2 ACD Agent Group Fields	
Field	**Meaning**
ACD GRP	A field containing the group number and the group 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.
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<table>
<tr><th colspan="2">Table 11–2 ACD Agent Group Fields
(continued)</th></tr>
<tr><th>Field</th><th>Meaning</th></tr>
<tr><td>AGENT NAME</td><td>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 can not begin with * .</td></tr>
<tr><td>COS</td><td>A 2–digit field specifying the Class–Of–Service number of this agent. Range is 1 to 50.</td></tr>
<tr><td colspan="2" align="right">Page 2 of 2</td></tr>
</table>

AGENT GROUPS SUBFORM

11.4   The Agent Groups subform (Subform 39) shown in Figure 11–3 is accessed through the OPTIONS key. This form can be accessed only if there is at least one agent in the agent group. Entries are changed by editing the status column. The purpose of each of the fields is described in Table 11–3 .

ACD AGENT GROUPS SUBFORM

[ACD GRP.]	OPTIONS	STATUS
Afterwork Timer (MM:SS) Overflow Timer (MM:SS) First Status Threshold (MM:SS) Second Status Threshold (MM:SS)		

Figure 11–3 ACD Agent Groups Subform (Subform 39)

Four fields on the ACD Agent Group subform contain customer–defined data. The contents of each field is defined in Table 11–3 .

Table 11-3 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 paragraph 11.5 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 (Form 41).The value entered can range from zero seconds to 54 minutes. Default value is 9 minutes. Refer to paragraph 11.6 for additional information.
FIRST STATUS THRESHOLD	The range of this timer is 0 seconds to 54 minutes (MM:SS). The field defaults to 3 minutes. The time entered in this field must be less than the time specified in the Second Status Threshold. Refer to paragraph 11.7 for additional information.
SECOND STATUS THRESHOLD	This timer range is 0 seconds to 54 minutes (MM:SS). The time specified must be greater than the time specified in the First Status Threshold field. The field defaults to 6 minutes. Refer to paragraph 11.7 for additional information.
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Afterwork Timer

11.5 In many ACD situations the Agent may require some time following an 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 time specified has expired.

Overflow Timer

11.6 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. This increases 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, for example, 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   **11.7**   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

11.8   The ACD Keys Template Form (Form 38) allows global programming for all *SUPERSET 4* telephones that require common ACD feature keys. Only ACD feature keys and speed dial numbers can be programmed in this form. Line appearances that have been assigned to *SUPERSET 4* keys take precedence over ACD feature keys when a position logs in.

Nine *SUPERSET 4* telephone key templates are provided: three templates each for the Agents, the Supervisors and the Senior Supervisors. The key templates are defined using COS options that must be defined in the user's COS.

The template assigned to an Agent is portable to any *SUPERSET 4* telephone the agent logs in at. When the agent logs out, the previous template is restored on the set.

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.

AGENT KEYS TEMPLATE

AGENT[ ]	KEY	TYPE	SPEED DIAL NUMBER	PRIVATE
	02	Speed Dial		
	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		

Figure 11–4 Agent Keys Template (Form 38)

Three fields on the Keys Template forms contain customer–defined data. Table 11–4 defines the contents of each field .

Field	Meaning
	Table 11–4 ACD Keys Template Fields
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. Options vary depending on the template form as follows: **Agent** – Speed Dial, Make Busy and Queue Status. **Supervisor** – Speed Dial, Queue Status, Agent Status and Shift. **Senior Supervisor** – Speed Dial, Queue Status and Shift.
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.
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COS DEFINE

11.9   The COS options shown in on the COS Define form in Figure 11–5 apply to the ACD feature. These ACD options are explained below.

COS DEFINE FORM

[COS: 1] OPTION . (DISPLAYING ENABLED)	STATUS	OPTION NUM
Recording Failure to Hangup Timer 1–255 seconds	30	404
SUPERSET – Auto Answer	ENABLED	600
SUPERSET – Headset Operation	ENABLED	612
ACD – Agent Template (0–3, 0 = disable)	0	650
ACD – Supervisor Template (0–3, 0 = disable)	0	651
ACD – Senior Supervisor Template (0–3, 0 = disable)	0	652
ACD – Agent Always Auto–Answer	ENABLED	653

Figure 11–5 COS Define Form (Form 03)

The COS options for ACD are described below in Table 11–5 .

Table 11–5 COS Options Fields	
Field	**Meaning**
Recording Failure To Hangup Timer (COS Number 404)	The values 1 – 255 are valid. Default is 30 seconds. Set this timer to a value greater than the MSG LENGTH of the recording groups whose members have this COS. Assigning this COS timer to a recording group ensures that, in the case of a RAD failure, the caller is not continuously connected to a recording. (Recommended value is 3 seconds greater than message length.)
SUPERSET– Auto Answer (COS Number 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 ENABLED.
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Table 11–5 COS Options Fields (continued)	
Field	**Meaning**
SUPERSET – Headset Operation (COS Number 612)	Set to ENABLED if the agent's *SUPERSET* 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 ENABLED.
ACD – Template (Agent, Supervisor, and Senior Supervisor) (COS Numbers 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 Number 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. This option resides in the DISPLAYING DISABLED COS display until enabled.
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ACD SUPERVISORS

11.10 The ACD Supervisors form shown in Figure 11–6 records the ID number, name, and COS of each ACD Supervisor. System option 41, "Automatic Call Distribution" 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.

ACD SUPERVISOR FORM

ACD SENIOR SUPERVISOR ID CODES	NAME	COS

Figure 11–6 ACD Supervisor Form (Form 40)

The ACD Supervisor form contains three programmable fields which must be defined by the customer. Table 11–6 defines each field.

Table 11–6 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 *SUPERSET 4* telephone the user logs onto.
COS	A 2–digit field specifying the Class–Of–Service number of this Senior Supervisor. The range is 1 to 50.
	Page 1 of 1

11.11 Pressing the EXPAND softkey displays the subform shown in Figure 11–7 . This form lists all groups reporting to the supervisor.

ACD SUPERVISOR SUBFORM

This subform is sorted by SUPER ID. If the entry has no Supervisor assigned the field is sorted by Group number. When there is more than one group assigned

to the same supervisor, the entries reporting to the supervisor are sorted by group number.

ACD SUPERVISOR SUBFORM

GRPS OF	SUPER ID	SUPER NAME	COS

Figure 11–7 ACD Supervisor Subform (Subform 40)

Table 11–7 defines the fields of the ACD Supervisor Subform.

Table 11–7 ACD Supervisor Subform Fields	
Field	**Meaning**
Heading	A system generated field listing 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 three 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 10 characters. The entry cannot begin with * .
COS	A two digit field that specifies the Class–Of–Service number of this Supervisor. The range is 1 to 50.
	Page 1 of 1

ACD PATHS

11.12 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 11–8 contains the ACD Path form.

ACD PATH

[ACD PATH:]	OPTIONS	STATUS

Access Code For This ACD Path
Primary ACD Agent Group
Delay for Ringback (MM:SS)
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
Recording 4 : Start Time (MM:SS)
         Access Code
         Music Source Following
Overflow 1 Agent Group
Overflow 2 Agent Group
Overflow 3 Agent Group
Interflow Enabled
Interflow Timeout (MM:SS)
Interflow Point Access Code (Default = DROP CALL
Allow Overflow to Interflow Point Before Timeout
Priority
Service Time		

Figure 11–8 ACD Path Form (Form 41)

Table 11–8 describes the fields on the ACD Path form.

Table 11–8 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 to 99.
ACD Path Name	Programmable field identifying the path by name. This field can not 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 * .
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 (Form 14), and the Call Rerouting Table (Form 19). The access code can also be programmed as an interflow or overflow point in another path definition. A path access code can also be programmed as a call forwarding point for a *SUPERSET* telephone or station. This 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. No device or tenant interconnection checking is performed between the caller and any recording, music or agent devices after the caller has entered a path.
Primary ACD Agent Group	A programmable field containing a one or two digit number in the range of 1 to 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 to 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.
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Table 11–8 ACD Path Form Fields (continued)	
Field	**Meaning**
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 to 54:00. A 3–second minimum delay exists between recordings. During this time the caller listens to the system or 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 following 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 either an FCC Part 68 and DOC approved Recorded Announcement Device which is connected to an ONS circuit, or to another source that is connected through an FCC Part 68 and DOC approved "voice coupler" or "voice connecting arrangement" to an ONS circuit.
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.
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Table 11-8 ACD Path Form Fields (continued)	
Field	**Meaning**
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 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	Programmable field specifying when the waiting ACD call should leave the ACD system and be routed to the interflow point. The timer range is 00:01 to 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 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	Programmable field containing 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, system speed call numbers or DROP CALL. If an access code is programmed, the DROP CALL softkey is provided.
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Table 11–8 ACD Path Form Fields (continued)	
Field	**Meaning**
Allow Overflow to Interflow Point before Timeout	Enter 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 to 99 (1 is 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.
Service Time	A programmable field used to establish a standard time to answer that the supervisor can use to monitor the performance of agents answering calls on the path. The service time is programmable in the range 00:00 to 54:00. The path level of service is calculated by comparing the actual time to answer against the programmed service level.
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ACD Path Programming

11.13   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.

11.14   Each path is given a priority ranging from 1 to 99 (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, such as long distance calls or WATS

11.15   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.

ACD RECORDING HUNT GROUPS

11.16 Recorded announcements are given to ACD callers while waiting for an idle agent. ACD callers entering the PBX 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.

11.17 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. Callers select an idle RAD based on the hunting type of the group. When all of the 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.

11.18 The ONS ports must be specified as Call Announce ports in the STATION/*SUPERSET* Telephones Form (Form 09) before entering the extension numbers in the Hunt Group form. The ONS ports cannot have keyline or multi–call line appearances. After changing the Hunt Groups form to a Recording Hunt Group, the Hunt Group form changes to that shown in Figure 11–9. Fields described below but not shown in Figure 11–9 are accessed through the OPTIONS softkey.

HUNT GROUPS FORM

[GRP 01:200] [TERM] [RECORD]	EXT NUM	BAY	SLT	CCT	COMMENTS

Figure 11–9 Hunt Groups Form (Form 17)

Table 11–9 describes the fields on the Hunt Groups form.

Table 11-9 Hunt Groups Form Fields	
Field	**Meaning**
HUNT GROUP NUM-BER	A programmable two digit field in the range of 1 to 50.
ACCESS CODE	A programmable field containing 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 is copied to the Path form as an access code to the recordings
TYPE OF SEARCH	Enter one of the following to specify the desired method of hunting: **CIRCULAR:** 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. **TERMINAL:** Hunting always starts at the first extension programmed in the hunt group and terminates at the first idle extension. Figure 11-9 shows an entry of TERM in this field.
GROUP TYPE	Softkey that allows the user to specify a RECORDING group type. Figure 11-9 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 fifty.
BAY/SLOT/CIRCUIT	System generated field that is displayed after entering the extension number of the ONS port.
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Table 11–9 Hunt Groups Form Fields (continued)	
Field	**Meaning**
MESSAGE LENGTH	Programmable field defining the length of the recorded announcement. The range is 1 second to 4 minutes. Default entry is 10 seconds. This timer value determines whether the PABX or the RAD ends the recording. If the RAD is to hang up, set the Message Length at least 3 seconds longer than the actual recording length. This allows for inaccurate RAD timers 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	Programmable field that identifies the hunt group by name. This field cannot be accessed before the Hunt Group Access code has been assigned. The name field allows 12 characters to be entered, but cannot begin with the digits 0 to 9, # or *. Blanks and dashes within the name are also disallowed.
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A. PROGRAMMING ERROR MESSAGES

A.1   The error messages that may appear during programming of the ACD forms are listed, and explained, in the following Table.

Table A–1 Programming Error Messages	
Error Message	**Meaning**
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 been assigned to a supervisor yet.
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 ACD keys template disabled, or assigned to another ACD position.
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 who 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 there is an acd position logged in. The ACD position must log out first
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Table A–1 Programming Error Messages
(continued)

Error Message	Meaning
An agent's set's prime line cannot have any appearances on other sets	There is an ACD agent logged in at the given *SUPERSET* and so line appearances of that *SUPERSET* cannot be programmed into the data base.
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 recording that the music source is in, 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	The speed dial number entered is too long (maximum 25 digits).
Beeping	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 the agent name or COS at the same time. These two steps (reassign and changing) 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 using the set. To change the COS, the ACD position must be logged off or else 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, thereby deleting group XX itself. There are 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 there is ACD programming present in one or all of CDE forms 38, 39, 40 and 41.

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Table A–1 Programming Error Messages (continued)	
Error Message	**Meaning**
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 have the effect of deleting 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 have the effect of deleting 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.
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 41 (Automatic Call Distribution) 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 only have one-QUEUE STATUS key programmed; or 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 only have one SHIFT key programmed.
Maximum Afterwork Timer is 15:00	The user entered a timer out of range.
Maximum Time is 54:00	The user entered a timer out of range for Start Time or 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.
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Table A–1 Programming Error Messages (continued)	
Error Message	**Meaning**
Must delete all appearances of XX from CALL RE-ROUTING 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).
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–existant 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 41 must be enabled	Option 41 (Automatic Call Distribution) must be enabled before this option can be enabled.
Option 44 must be disabled	The user is attempting to disable Option 41 (Automatic Call Distribution)
Recording access code XXXXX does not exist	The access code entered for a recording is non–existant 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 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.
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Table A-1 Programming Error Messages (continued)	
Error Message	**Meaning**
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 is 1000, which includes all position types.
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.
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B. PLANNER SHEETS

B.1 This appendix contains additional blank copies of the Agent Group Planner and the Path Planner sheets. Each sheet contains instructions on its use. Turn to Section 4 of this practice for additional information on configuring an ACD system.

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AGENT GROUP PLANNER

ACD TELEMARKETER™

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).

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

① Agent Group #: _____   Name: _____

Overflow Time ____ : ____
1st Threshold ____ : ____
2nd Threshold ____ : ____
After Work ____ : ____

② Paths using this group:

Path #	Overflow # (P, 1, 2, 3)

This page intentionally blank.

AGENT GROUP PLANNER

ACD TELEMARKETER™

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).

(1)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

(2)

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

(1)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

(2)

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

| Agent Group #: _____ |
| Name: _____ |
| Overflow Time____ : ___ |
| 1st Threshold ____ : ___ |
| 2nd Threshold ____ : ___ |
| After Work ____ : ___ |

Paths using this group:	
Path #	Overflow # (P, 1, 2, 3)

This page intentionally blank.

(1)

Name:
Path Access:
Priority: Path #:
Delay to Answer:
Path Service Level:

Purpose of this Path:

_____

(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 #:

_____

QUEUED CALLS   QUEUED CALLS   QUEUED CALLS   QUEUED CALLS

(3)

Primary Agent Group	1st Overflow Agent Group	2nd Overflow Agent Group	3rd Overflow Agent Group
_____	_____	_____	_____

(4)

Overflow Group Exists — Yes →   Overflow Group Exists — Yes →   Overflow Group Exists — Yes →

No   No   No

Interflow? — No → Call stays as is

Yes

Interflow Point:
_____
or Drop. Y/N

(5)

| Interflow Timeout: ___ : ___ |
| Allow Overflow to Interflow Point before timeout? |
| Y/N |

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. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. 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.

This page intentionally blank.

Purpose of this Path:

_____

① Name: ___
Path Access: ___
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 #: ___

QUEUED CALLS

③ Primary Agent Group ___ → 1st Overflow Agent Group ___ → 2nd Overflow Agent Group ___ → 3rd Overflow Agent Group ___

④ Overflow Group Exists — Yes / No (each)

Interflow? — No → Call stays as is
Yes → Interflow Point: # ___ or Drop. Y/N

⑤ Interflow Timeout: ___ : ___
Allow Overflow to Interflow Point before timeout? Y/N

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. Copy the appropriate Agent Group Number from the Agent Group Planner.
4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.
5. 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.

This page intentionally blank.

①
Name:
Path Access:
Priority: _____ Path #:
Delay to Answer:
Path Service Level:

Purpose of this Path:

_____

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: ___ : ___	

QUEUED CALLS | QUEUED CALLS | QUEUED CALLS | QUEUED CALLS

③

| Primary Agent Group _____ | 1st Overflow Agent Group _____ | 2nd Overflow Agent Group _____ | 3rd Overflow Agent Group _____ |

④

Overflow Group Exists — Yes → | Overflow Group Exists — Yes → | Overflow Group Exists — Yes →

No | No | No

Interflow? — No → Call stays as is

Yes

⑤

Interflow Point:
_____
or Drop. Y/N

| Interflow Timeout: ___ : ___ |
| Allow Overflow to Interflow Point before timeout? |
| Y/N |

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 RAD (RAD = Hunt Group Access Code)

3. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. 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.

This page intentionally blank.

PATH PLANNER

① Name: _____

Path Access: _____

Priority: _____ Path #: _____

Delay to Answer: _____

Path Service Level: _____

Purpose of this Path:

_____

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 #:
_____

QUEUED CALLS   QUEUED CALLS   QUEUED CALLS   QUEUED CALLS

③
Primary
Agent Group
_____

1st Overflow
Agent Group
_____

2nd Overflow
Agent Group
_____

3rd Overflow
Agent Group
_____

④
Overflow Group
Exists — Yes

Overflow Group
Exists — Yes

Overflow Group
Exists — Yes

No   No   No

Interflow? — No → Call stays as is

Yes

Interflow Point:
_____
or Drop. Y/N

⑤
Interflow Timeout: ____ : ____
Allow Overflow to Interflow
Point before timeout?
Y/N

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. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. 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.

This page intentionally blank.

①
| Name: |
| Path Access: |
| Priority: Path #: |
| Delay to Answer: |
| Path Service Level: |

Purpose of this Path:

_____

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 #:
_____

QUEUED CALLS | QUEUED CALLS | QUEUED CALLS | QUEUED CALLS

③

| Primary Agent Group _____ | 1st Overflow Agent Group _____ | 2nd Overflow Agent Group _____ | 3rd Overflow Agent Group _____ |

④

| Overflow Group Exists | Yes | Overflow Group Exists | Yes | Overflow Group Exists | Yes |

No   No   No

Interflow? No → Call stays as is

Yes

⑤

| Interflow Timeout: ___ : ___
Allow Overflow to Interflow
Point before timeout?
        Y/N |

Interflow Point:
_____
or Drop. Y/N

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. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. 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.

This page intentionally blank.

(1)

Name:

Path Access:

Priority: Path #:

Delay to Answer:

Path Service Level:

Purpose of this Path:

_____

(2)

Recording 1		Recording 2		Recording 3		Recording 4	
RAD: _____		RAD: _____		RAD: _____		RAD: _____	
Start: ___:___	MOH or Ext #:	Start: ___:___	MOH or Ext #:	Start: ___:___	MOH or Ext #:	Start: ___:___	MOH or Ext #:
Name: _____		Name: _____		Name: _____		Name: _____	
Length: ___:___	_____	Length: ___:___	_____	Length: ___:___	_____	Length: ___:___	_____

QUEUED CALLS   QUEUED CALLS   QUEUED CALLS   QUEUED CALLS

(3)

Primary Agent Group _____	1st Overflow Agent Group _____	2nd Overflow Agent Group _____	3rd Overflow Agent Group _____

(4)

Overflow Group Exists	Yes	Overflow Group Exists	Yes	Overflow Group Exists	Yes

No   No   No

Interflow? →No→ Call stays as is

Yes

Interflow Point
_____
or Drop. Y/N

(5)

Interflow Timeout: ___:___
Allow Overflow to Interflow
Point before timeout?
Y/N

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. Copy the appropriate Agent Group Number from the Agent Group Planner.

4. The Primary Agent Group must be programmed. The path has the option of three Overflow Groups and Interflow out of the Path. If 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.

5. 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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Italicized numbers refer to pages with figures.

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P

SX–200® DIGITAL PABX

Automated Attendant Application Package

This practice describes the features, operation, and programming of the
Automated Attendant Application Package for the *SX–200®* Digital Private
Automatic Branch Exchange (PABX).

Practice:	9109–094–625–NA
Issue:	1
Revision:	1
Date:	September, 1989
Software Version:	G1003 MR3

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1. INTRODUCTION

1.1 This practice describes the features, operation and programming of the Automated Attendant option for the *SX-200®* DIGITAL PABX. The Automated Attendant feature is available only on systems that have the *ACD TELEMARKETER™* application installed.

REASON FOR ISSUE

1.2 This is the first issue of this practice.

INTENDED AUDIENCE

1.3 This practice is for those involved in the marketing, installation, programming, and operation of the *SX-200* DIGITAL Automated Attendant Feature.

PRACTICE STRUCTURE

1.4 This practice contains six sections covering 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 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, including provisioning of DTMF receivers.

ASSOCIATED DOCUMENTS

1.5 Refer to the documents listed below for additional information:

- 9109–094–105–NA   Features and Services

- 9109–094–620–NA   *ACD TELEMARKETER* Application Package

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2. FUNCTIONAL DESCRIPTION

2.1 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 an overview of the feature and descriptions of Auto–Attendant groups, handling of illegal calls, default destinations, DTMF receiver requirements, and resource allocation.

OVERVIEW

2.2 As shown in Figure 2–1 , the *SX–200* DIGITAL PABX Automated Attendant feature directs incoming calls to a recorded announcement device (RAD). The RAD message instructs callers that by dialing over the message they can access a directory number on the system. Callers choosing not to dial during the message are routed to a default answering point, such as an attendant, when the message is finished.
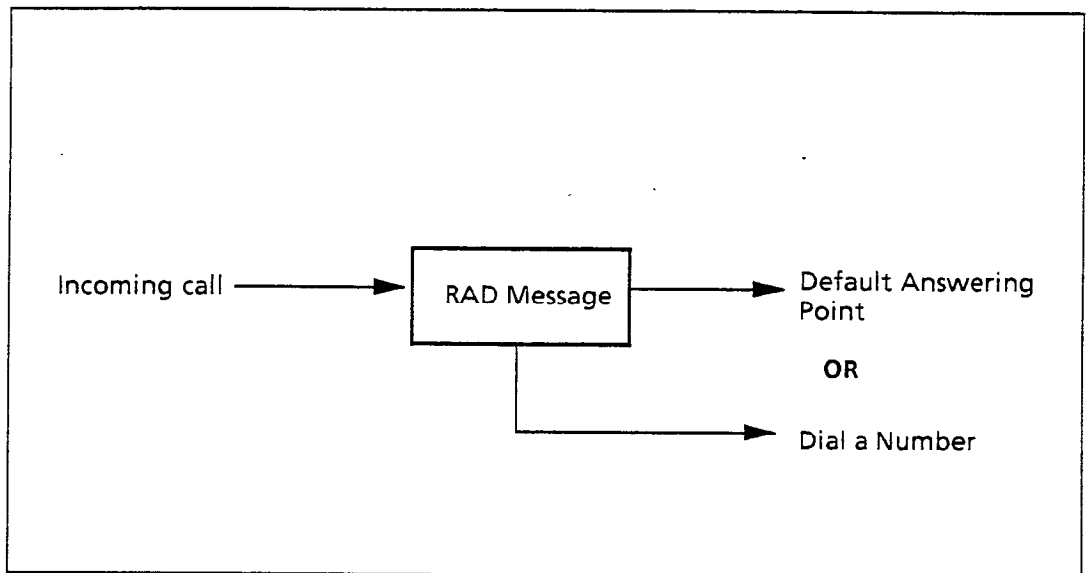

Figure 2–1 Automated Attendant Call Handling

AUTO–ATTENDANT GROUPS

2.3 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 only contain stations, and has the main features of any hunt group such as:

- hunt group number,

- access code, and

- circular or terminal hunting.

Auto–Attendant Groups also have several options programmable through customer data entry (CDE) including:

- name,

- message length,

- default destination,

- prefix digits,

- dialing enabled, and

- wait for resources time.

2.4 The Auto–Attendant group access code can be dialed by any device. This access code can be programmed as a destination in the following forms:

- 19 (call rerouting),

- 14 (non dial–in trunk),

- 17 (hunt group overflow),

- 41 (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 UCD, ACD, and Automatic Wakeup.

BASIC OPERATION

2.5 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 customer data entry (CDE). The following subsections describe basic call handling for calls to the automated attendant.

Digit Handling **2.6** 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 **2.7** 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 and Services Practice, 9109–094–105.

Valid Destinations　　**2.8**　　The valid destinations available to a caller depend upon what the originating device (trunk or telephone) is allowed to dial during 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, and

- Class of Service (COS) options for system speedcall.

Dialing capability ends as soon as the recording ends. Once a destination is attempted, the automated feature ends and regular call features such as campon are available.

CO Trunk Dialing　　**2.9**　　The Automated Attendant feature allows CO trunks to access several features that are normally inaccessible. A CO trunk can dial:

- account code

- 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 in that a CO trunk can only access ARS through a system speedcall number.

PREFIX DIGITS

2.10　　Each Automated Attendant group can be programmed in CDE with a string of prefix digits. The prefix can contain from 0 to 4 digits, and is inserted in front of the digits dialed by the caller. This 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

2.11   The prefix can be used to:

● provide single digit menus,

● reduce digit dialing,

● restrict dialing to numbers that start with the prefix, and

● provide entry into other features that require digits (such as ARS and feature access codes).

Prefix Processing

2.12   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.

2.13   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 there are still digits 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 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 of any digits. The first digit dialed by the caller is the start of the account code.

ILLEGAL NUMBER HANDLING

2.14   If the dialed number is illegal, the system checks for Illegal Number Routing. If the tenant group of the first member of the Automated Attendant group has Illegal Number Routing programmed, the system redirects the caller to the routing point, which could be another group. If there is no Illegal Number Routing programmed the caller is given reorder tone and put into suspended state.

Examples of illegal number conditions include:

● device interconnection,

● tenant interconnection,

● not valid for caller type, and

● feature restricted.

Using the tenant of the first member of the auto attendant group ensures that the routing is based on the group called, thus ensuring that illegal number routing can be set up for each group.

VACANT NUMBER ROUTING

2.15 Handling of callers dialing 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 is checked rather than Illegal Number Routing.

FRONT END RECORDING

2.16 Front end recordings present a message to the caller as soon as the call enters the system. For each recording group, dialing can be 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

2.17 When a recording ends, callers who have not dialed at least one digit during the recording are routed to the default destination. Failing to program a default destination means that, when the recording ends, the caller is given reorder tone and placed in a suspended state.

Default Answering Points

2.18 The following are valid default points for the Automated Attendant feature:

- console,
- LDN,
- night bell,
- station,
- SUPERSET telephone,
- logical line,
- ACD path,
- hunt group,
- ACD positions (agent, supervisor and senior supervisor), and system abbreviated dial.

Routing to Default Destination

2.19 When the caller is routed to the default destination, the system handles the call as a call reroute. Device and tenant interconnection are bypassed, DND is ignored and the caller automatically camps on to the destination if it is busy.

RAD OPERATION

2.20 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 the basic recording group features apply. Refer to practice 9109–094–620–NA, *SX–200* DIGITAL *ACD TELEMAR-KETER* Applications Package, 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. This creates a silent period at the end of the recording, resulting in a delay between the end of the message and the rerouting to the default destination. This gives the caller time to think about the message and start dialing. Complex instructions in the message may require a longer delay at the end of the message.

RESOURCE ALLOCATION

2.21   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 below.

In the case of RADs, every 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 thus becomes the primary resource limitation for the Automated Attendant feature.

DTMF Receiver Requirements

2.22   In addition to the number of receivers needed for normal PBX operation, the number of extra receivers needed for the Auto–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 is an estimate for a single group. Additional groups require additional receivers.

As an example for a single group, assume 100 callers per hour are accessing the group and 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.

Receiver Allocation Control

2.23   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 thus block dialing for extended periods.

The limit is specified by programming System Option 59, "Receivers reserved for Non—Auto—Attendant use". The Auto—Attendant feature uses as many receivers as possible but will always leave at least this number of receivers available for the rest of the system.

2.24 Receivers going out of service (diagnostics, etc.) have no effect on this number. Reducing the number of available receivers impacts 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 automated attendant groups ending up at the default destination.

Busy recordings

2.25 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 through CDE. Unless all of the RADs fail, the caller wait time should be no longer than the RAD cycle time. Normal campon audio is returned to callers thus altering the handling for TIE, DISA and internal calls which would normally get busy tone.

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 Automated Attendant group. The callers are retrieved using the normal camp on priority scheme. Callers will be retrieved until either there are no more waiting callers or 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 waiting callers continue to wait for resources to become free.

Busy receivers

2.26 If no receivers are available when a RAD becomes free the system camps on the caller to the Automated 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 Automated Attendant group. These callers are allocated another receiver based upon the receiver allocation system option.

**Busy RAD or
Receiver Timeout**

2.27 The wait for resources timer on the group controls how long a caller is allowed to wait for a RAD or 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. Skipping a recording due to a waiting timeout is pegged in Traffic Measurement. If no default destination is specified, the caller is given reorder tone and eventually put into suspended state.

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3. OPERATION

3.1   The Automated Attendant feature requires no special operating instructions as calls are routed to the Automated Attendant by the system. This section describes the displays appearing 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 PABX features.

CALLER DISPLAYS

3.2   Displays for the *SUPERSET 4*, *SUPERSET 4DN*, and the attendant console follow the normal ringback, busy and talking state displays when calling a hunt group. When the group is called and the resources for the call are available (there is a DTMF receiver if needed and a RAD is free), the display appears as:

"XXXXX RINGING"

where:

XXXXX is the extension number of the RAD.

When the recording starts the display changes to show the identity of the individual recording:

"YYYYY"

where:

YYYYY is the extension number of the recording being listened to.

When there is no receiver or RAD available, the display indicates the following:

"CAMPING ON XXXXX"

or

"WAITING FOR XXXXX"

where:

XXXXX is the extension number of the group

CALLED PARTY DISPLAYS

3.3   The display of a party called from a group is the normal call processing display for the given caller and called party. No special indication is given that the call came from a group.

TRANSFERS

3.4   Callers are unable to transfer the other party to a group. If a transfer is attempted during any stage of the feature, the caller will terminate the feature and be recalled by the held party. For the console, a RELEASE is disallowed; for *SUPERSET* telephones, the RELEASE prompt does not appear.

Calls can be transferred indirectly to groups by calling an extension that has Call Forwarding No Answer to a group and releasing the held caller to the forwarded extension before the call forward no answer timeout.

INTERACTION WITH OTHER FEATURES

3.5   The Automated Attendant feature can affect the operation of certain features in the system. The following subsections outline the interaction. Features are arranged in alphabetic order.

ACD

3.6   The Automatic Attendant feature has no special call handling features built in for compatibility with ACD. A caller using the Automatic 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 Automatic Attendant feature, however, does close off and print the current SMDR buffer before entering ACD. This preserves the Automatic Attendant feature information in the SMDR record and prevents 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, thus preserving the ACD information.

Account codes

3.7   Previous software releases for the *SX–200* DIGITAL prevented CO trunks from accessing account codes. Beginning with the current software release, CO trunks can dial the account code access code. No checks are made to see if the access is from the Automated Attendant feature.

DID trunks, however, 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. Since 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

3.8 A CO trunk normally cannot dial ARS directly and must use one of three ways to access ARS: forwarding, transfer or ACD Interflow. Since a CO trunk has no Class of Restriction (COR) number, forwarding and transfer therefore use the COR number of the forwarder or transferer.

For the Automated Attendant feature, as with ACD interflow, no COR number is provided for the CO trunk during dialing. This means toll control is unrestricted. 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 speedcall number.

Callbacks

3.9 Callbacks to a group are not allowed to Auto–Attendant groups.

Call Duration Display

3.10 When a *SUPERSET 4* or *SUPERSET 4DN* telephone answers a trunk routed from an Auto–Attendant group, the call duration display shows the time starting when a non–recording answers the trunk. This 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

3.11 When a caller reaches an Automated Attendant group the caller's current call forwarding history is cleared. The caller can be forwarded again to the maximum number of forwarding steps. This prevents problems with forwarding hop limits when a group is a forwarding destination.

Campon

3.12 When all RADs are unavailable, the system camps on the caller to the Automated Attendant group. All device types except the console can be camped on to the group. Since the console is not permitted to campon to anything it is given busy tone and must try dialing the group again.

DID/Dial–in Trunk Busy Rerouting

3.13 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

3.14 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

3.15 No recall point can be set up by the Automated Attendant feature. Recall on busy and no answer operate as if the feature had not been accessed, thus acting as if the default or dialed destination had been reached directly. The answer supervision given to the trunk has no effect on recall.

System Abbreviated Dial

3.16 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. This limits the caller to dialing only a limited set of numbers, such as those beginning with the digits 12.

Tenanting

3.17   Tenanting can be used to restrict the dialing ability of callers using 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

3.18   Incoming SMDR records indicate that the Automated Attendant feature has been used. Table 3-1 below defines the significant fields.

Table 3-1 SMDR Fields

SMDR Field	Purpose
Called Party	Contains the extension number of the party that answered the caller.
Call Completion Status	Indicates call completion with regards 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 answer by the RAD. This 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, the time to answer is the time to answer by a device other than the recording.
Call Duration Time	Shows the elapsed time from the when the RAD answers the call, not when a party in the PBX answers the call (unlike ACD, UCD and AAO).

Sample SMDR Record

3.19   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 and 12 seconds.

```
1234567890123456789012345678901234567890123456789012345678901 23456
 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

3.20   Analog networking information in the SMDR records is overwritten when a trunk using analog networking accesses the Automated Attendant feature and dials a number. The Automated Attendant feature information replaces the digits already stored.

TRAFFIC MEASUREMENT

3.21   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 since 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 times failure to get a receiver resulted in skipping the recording and routing to the default destination. A non– zero value in this field indicates receiver shortage problems.

```
HUNT GROUPS:
   Number     Peg   SkipPeg    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.

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4. PROGRAMMING

4.1　　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

4.2　　The following fields on the System Option form affect the Auto Attendant feature.

System Option 16 – 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. By default the option is enabled.

System Option 59 – Receivers Reserved For Non–Auto–Attendant Use: A numeric field defining 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

4.3　　The COS options that apply are those for members of recording hunt groups. Refer to the Programming section of practice 9109–094–620–NA, ACD TELEMARKETER Application Package, for details in setting the recording group COS options.

CALL REROUTING FORM

4.4　　The UCD Recording routing and Automatic Wakeup routing entries in the call rerouting table cannot include an Automated Attendant group.

HUNT GROUP FORM

4.5　　The programming of the Automated Attendant group type follows the programming for all other hunt group types. The distinction is in the

group type and options. The new 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 the System Option 59 'Receivers Reserved For Non–Auto–Attendant Feature Use', the user is not be 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 the option.

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 Auto–Attendant groups only appear if 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 be already 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

4.6   Callers are routed to a group with a typical message:

"Thank–you for calling the ABC company automatic attendant number. If you know the extension number of the person you are trying to reach, and if

you have a touch–dial phone, 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 Automatic Attendant group. The LDN is assigned the name 'ABC', thus showing the attendant the name of the company that 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 would 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 would be an LDN indicating a caller that had already misdialed 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 was dialed.

ACD Front–end Message

4.7   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 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

4.8   Using aided external dialing, callers are routed to a group with the a message such as:

"Thank–you for calling. Please dial 1 for the Atlanta office, 2 for Halifax and 3 for Boca Raton. 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, and a prefix of 80.

Assuming the access code for system speed dial is 80, the caller is selecting system speed abbreviated dial numbers. Index 1 is Atlanta, 2 is Halifax and 3 is Boca Raton.

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5. MAINTENANCE

RAD FAILURE HANDLING

5.1   The RAD failure handling for the Automated Attendant feature is as described in practice MITL9109–094–620–NA, ACD TELEMARKETER Application Package.

RADs in DND   **5.2**   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   **5.3**   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: Call is never answered by RAD. The call always routes to the default .

Action:

- Check that RAD is functioning (not all DND or busy–out)

- Check that the RAD message length is not too short

- Check traffic measurement for skip pegs for the group

- Check wait for resources time for group

Call Dropped   Problem: Call is dropped after no number is dialed

Action:

- Check that default destination is programmed.

- Check that connection is allowed from possible callers to default destination.

RAD Fails to Drop   Problem: Recording does not end even though digits are dialed

Action: Insure that the option 'Dialing Over Recording' is enabled for that hunt group.

Wrong Message   Problem: Caller receives the wrong message

Action:

- Check that message was recorded correctly

- Check that RAD is programmed correctly

- Check that RAD is connected at correct line circuit

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6. INSTALLATION

6.1   The Automated Attendant feature may require additional receivers to prevent complaints from users about a delay to dial tone. The following sub-sections describe the installation requirements for the Automated Attendant feature.

RECEIVERS

6.2   Ensure system is provisioned with sufficient DTMF receivers. Traffic measurement can be used to monitor receiver usage and failure to get a receiver.

UNIVERSAL CARDS

6.3   Each universal card can contain up to 16 receivers, and universal cards can only be installed in high-powered slots. This may present a problem for a 480 port machine that is limited to six high-powered slots.

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Italicized numbers refer to pages with figures.