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DMS-100 Family

Service Analysis

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Service Analysis

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Publication history

Release	Date	Revisions
CCM05	December 1995	Changed parameters for the ADDOFFIC and DELOFFICE commands in the LineSel MAP level to support variable-length directory numbers (VARDN). A hidden command, FULLOFC, was also added to the LineSel level.
BCS36	September 1993	Added a chapter describing a new BCS36 feature, Automatic Service Analysis for DMS-300 (AE1125).
BCS32	March 1993	Changed the names of two events “RCV” actually shown as “RCR,” and “SFU” actually shown as “SFW.” Per feature AE0669 (BCS31), added to the incoming and outgoing trunk types under the Itt xx and Ott xx, call events C7, TUP, and GW. Added the following call events to Table 10-1, ANN, CPU, CFX, DIG, INV, LCK, MUL, ORG, SFW, SPE, TON, and VFG.
BCS32	July 1992	Added information to the PRINT and SAEdit commands. Deleted reference to *Operational Measurements Reference Manual*, 297-1001-320.
BCS32	March 1991	Changed N6 to NO6 and added R2 to QUOTA status display commands, and removed an “n” from OUTASST and DDO display examples. Added four fields and four event blocks to the OutAsst service type of SASelect.. Added example of new OutAsst fields and event blocks on page 4-10. Added two hidden commands to the SASelect level of the MAP.
BCS31	August 1990	Changed the maximum length of the optional user comment in SA logs from 64 to 58 characters.

Release	Date	**Revisions**(continued)
BCS30	March 1990	Added SA dial-back monitor feature capability over ATC trunks in feature 2-1.
BCS27	December 1988	Added expanded call type and trunk group station class ranges for the outward and assistance (OUTASST) display command in SASelect status display commands on page 4-3 and in Table legend on page 10-1. Added enhancements for the distance dialing inward (DDDIN) display command.

Contents

About this guide ix
Applicability of this guide ix
How to identify the software in your office x
Where to find information x
NT and BNR trademarks and the products they represent x
How commands, parameters, and responses are represented xi

Display hierarchy 1-1

Monitoring facilities 2-1
Dial-back feature 2-1

SA levels of command 3-1
Login procedure 3-1
Entering commands 3-1

Service analysis selection level 4-1
SASelect status display 4-1
SASelect status display commands 4-3

Line selection level 5-1
LineSel status display 5-1
LINESEL status display commands 5-2

Service analysis level 6-1
SA status display 6-1
SA status display commands 6-2

Service analysis edit level 7-1
SAEdit status display 7-1
SAEDIT status display commands 7-1

AOSSsel level 8-1
AOSSsel status display 8-1
AOSSSEL status display commands 8-2

Printouts 9-1
Log examples 9-1
Call type examples 9-8

Displayed call event definition table **10-1**
Table legend 10-1

Automatic service analysis **11-1**
Introduction 11-1
SA functionality 11-1
SA user interface 11-2
Table SASPEC 11-2
Table SAAUTO 11-2
Command SACONTROL 11-3
SACONTROL status display commands 11-3

List of terms **12-1**

List of figures

Figure 1-1 Display levels for the service analysis subsystem 1-1
Figure 1-2 Service analysis MAP level menus 1-3
Figure 2-1 Service analysis link configuration 2-2
Figure 2-2 SA monitoring arrangement 2-3
Figure 4-1 SASelect level display format 4-2
Figure 4-2 OUTASST and DDO (operator handled) display format 4-7
Figure 4-3 Example of new OutAsst Fields 4-10
Figure 4-4 LNSMP display format 4-14
Figure 4-5 DDIN display format 4-15
Figure 4-6 TNSMP, RCAMA, and DDO (011+NCN ANI/ONI) display format 4-19
Figure 4-7 IBNTRK display format 4-20
Figure 4-8 ATTCON called and calling party on-hook display format 4-22
Figure 5-1 LineSel sample display format 5-2
Figure 8-1 AOSSsel display format 8-2
Figure 8-2 AOSS INCLCT or EXCLCT display format 8-5
Figure 9-1 Example outward and assistance log report format 9-2
Figure 9-2 Example local dial log report format 9-2
Figure 9-3 Example DDD incoming (ATC trunk) log report format 9-3
Figure 9-4 Example DDD outgoing log report format 9-3
Figure 9-5 Example GWSA log report format 9-4
Figure 9-6 Example ATTCON log report format 9-4
Figure 9-7 Example IBNTRK log report format 9-5
Figure 9-8 Example SA201 log - modified C number field - SP OGT key 9-6
Figure 9-9 Example SA201 log - modified C number field - MP OGT key 9-7
Figure 9-10 Example of automatic service analysis summary log 9-7
Figure 11-1 QUERYSA command 11-5
Figure 11-2 ACTSA command 11-6
Figure 11-3 ACTSA command 11-7
Figure 11-4 MANSA command 11-9
Figure 11-5 DATESA command 11-11

List of tables

Table 5-1 Classes of service 5-3
Table 10-1 Displayed call event definitions 10-2
Table 10-2 Operator-detected events 10-17
Table 10-3 Machine-detected events 10-18

About this guide

This guide describes the displays, commands and system responses associated with the DMS-100 Family Service Analysis (SA) system on the MAP workstation. The SA system is an observation system that is used to appraise the quality of service provided by the operating company. Service to be measured is based on call classifications, such as direct distance dialing (DDD) outgoing, and direct dial overseas (DDO). Within a given call classification, calls are selected on a random basis to obtain data that can be analyzed and evaluated. With the selected call data, an indication of the quality and the completeness of service offered to the subscribers is obtained.

Service analysis is initiated and carried out by a service analyst that performs the SA functions by listening to calls and noting the events in a call as they occur.

The events of interest in the analysis of a call fall into two categories:

- analyst detected events, subjective information pertaining to a call as contributed by the analyst
- machine detected events, non-subjective information, pertaining to a call, that is automatically contributed by the system.

Applicability of this guide

Northern Telecom (NT) software releases are referred to as batch change supplements (BCS) and are identified by a number, for example, BCS29.

This document applies to DMS-100 Family offices that have BCS36. Unless the document is revised, it also applies to offices that have software releases greater than BCS36.

To determine if this document has been revised, check the release information in the *Product Documentation Directory,* 297-8991-001.

How to identify the software in your office

The Service Analysis feature package, NTX065AA, is dependent upon feature packages NTX000AA (Bilge) and NTX001AA (Common Basic). These feature packages are provisioned as part of the office engineering process.

The Automatic Service Analysis on the DMS-300 feature package, NTXU18AA, is dependent upon feature packages NTX065AA (Service Analysis) and NTX300AA (International Switching Center Basic). These feature packages are provisioned as part of the office engineering process.

The *Office Feature Record D190* lists your current BCS and the NT feature packages which it comprises.

To view similar information on screen, enter the following command string at a MAP terminal:

```
>PATCHER;INFORM LIST;LEAVE
```

Where to find information

Documents that you require to understand the content of this document, or to perform the procedures it describes, are referred to in the appropriate places in the text.

These documents, and others that contain related information, are listed in this section.

> ***Note:*** More than one version of these documents may exist. To determine which version of a document applies to the BCS in your office, check the release information in the *Product Documentation Directory*, 297-8991-001.

Title
Product Documentation Directory
Input/Output System Reference Manual
Maintenace System Man-Machine Interface Description
Operational Measurements Reference Manual
Office Parameters Reference Manual
Log Report Reference Manual
SERVORD Reference Manual

NT and BNR trademarks and the products they represent

The following chart lists all NT and BNR trademarks that occur in this document, and associates them with the products they represent.

Trademark	Product
DMS	*Digital multiplex system* telephone switching equipment
DMS-100	*Digital multiplex system-100* local digital switch
DMS SuperNode	telecommunications switching equipment
MAP	*Maintenance and administration position* telephone communication equipment
TOPS	*Traffic Operator Position System* telephone communication equipment
BNR	*Bell-Northern Research* company involved in scientific research and development in the field of telecommunications
NT	*Northern Telecom* manufacturer of telecommunications equipment

How commands, parameters, and responses are represented

In this document, commands, parameters, and responses are represented according to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command.

Type the command that follows the input prompt and press the carriage return key.

Capital letters

Capital letters represent commands, fixed parameters, and responses that appear at a MAP workstation.

Enter the command or fixed parameter exactly as it appears on the page.

Lowercase letters

Lowercase letters represent variables.

For commands and parameters, enter the letters or numbers that the variable represents. In most instances, the name that is used for the variable indicates clearly what you must enter. Where it does not, further explanations are provided.

In responses (which are presented in capital letters), lowercase letters represent a range of values.

The following example illustrates the command syntax that is used in this document.

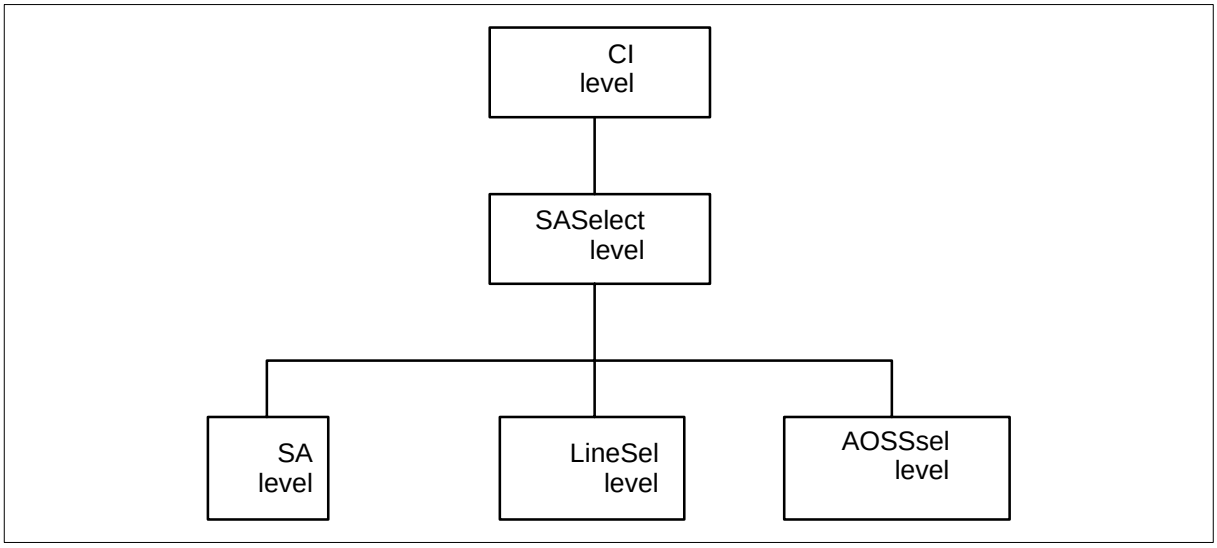
Examples of command syntax used in this document

Step	**Action**
1	Post the card in the inactive unit.
input>	**>POST unit_no card_no state**
parameters>	where unit_no is the number of the inactive unit (0 or 1) card_no is the number of the card you replaced (22-27) state is the state of the unit in which you wish to replace the card (Insv, SysB, ManB or Offl)
Example input>	For example: **>POST 7 1 INSV**
Example output>	CARD 7 IS POSTED IN UNIT 1 OF MSB16

Display hierarchy

Displays of service analysis (SA) information on the Maintenance and Administration Position (MAP) are organized into a series of levels that are accessed sequentially when appropriate commands are entered (see Figure 1-1). The top level is the command interpreter (CI) level from which access can be obtained to all the DMS-100 Family facilities. The CI level is accessed automatically when a user logs on at a MAP. The command MAPCI selects the MAP facility and gives the user access to its display and menu of commands. When the user quits from the SASelect level, the user returns to the CI level.

Figure 1-1
Display levels for the service analysis subsystem

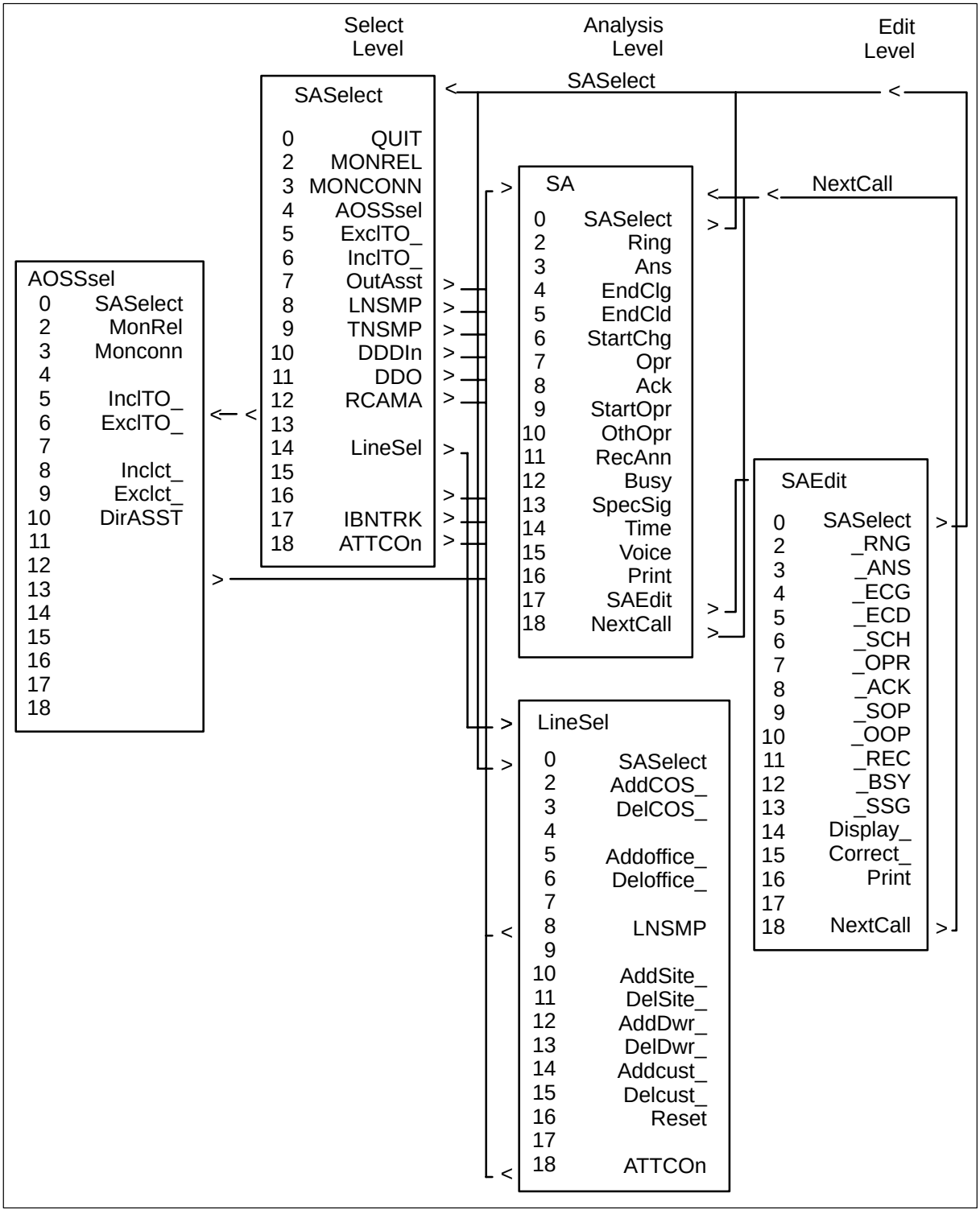


SA screens a maximum of ten calls to find an appropriate call for the analyst to view. The effectiveness depends on the call rate and mix of calls in a switch when analysis is performed. If the number of usable calls is infrequent, an analyst can expect to wait between displayed calls.

The functional division in the analysis of a call and the commands available at each level are shown in Figure 1-2 and consists of call selection, call analysis, and call recording. These translate into the following SA MAP levels, which are described in this guide:

- **service analysis selection (SASelect):** This level greets the analyst and permits the selection of the call classification to be analyzed.
- **line selection (LineSel):** Chosen at the SASelect level, this level enables the analyst to define particular line attributes as a screening base for all line originations and attendant console originations on a particular subscriber group presented for analysis when the local network service measurement plan (LNSMP) call selection command is invoked.
- **service analysis (SA):** Calls of the desired classification, as chosen at the SASelect or LineSel level, are presented to the analyst. This level is where machine- and analyst-detected events pertaining to the call are displayed. The information displayed for the call can be printed, if desired.
- **service analysis edit (SAEdit):** Call event details entered at the SA level can be checked and edited, if necessary, and also printed.
- **auxiliary operator services system selection (AOSSsel):** Chosen at the SASelect level, the analyst can invoke the system service analysis routines to begin service analysis of AOSS, Traffic Operator Position System (TOPS), and intertoll (IT) type incoming groups that route to an AOSS position for directory assistance.

Figure 1-2
Service analysis MAP level menus



Monitoring facilities

A monitor link, which is acquired automatically at login, provides the analyst with a listen-only channel to the call being analyzed in order to determine the following:

- quality of service provided by the operating company traffic personnel
- efficiency of the hardware from a switching and transmission viewpoint

An automatic voice exclusion feature is provided to limit the length of time the analyst is allowed to evaluate the voice transmission quality of the analyzed call. The allowed monitoring time can be from 1 to 120 seconds (default is 30) and is specified by the operating company in office parameter SAPARMS of Table OFCENG.

Timing is started by a machine-detected or analyst-keyed answer (ANS) event. If the call is presented to a TOPS operator, the start of timing is delayed until the call leaves the TOPS position.

The monitor link (see Figure 2-1) is released when the analyst leaves the SA MAP level; however, the analyst can release or reconnect the monitor circuit if desired by using the MONCONN and MONREL commands.

The basic SA software uses a three-port conference bridge and a trunk to allow for the monitor connection. The trunk termination is in the switch it serves and terminates at an analyst's headset or a logic set. The trunk and port number zero of the three-port conference bridge are joined as a two-way connection. The remaining ports on the bridge are attached in a listen-only mode to the other two parts of the monitor connection. See Figure 2-2 for applications.

Service analysis can also be carried out from a remote location using dedicated facilities, one each for voice, data, and teleprinter.

Dial-back feature

The dial-back feature extends the monitor facility to monitor positions that are not collocated in the host DMS switch. The dial-back feature is available only if feature package NTX065AA is present in the switch.

Whenever a service analyst at a remote location logs in to a DMS switch equipped with the monitor dial-back feature and successfully accesses the SASelect level, the SA system of the selected switch initiates a call to a telephone where the analyst is located, using the local/toll network. When the analyst answers, the monitor connection is established.

The dial-back monitor feature does not work over Access-To-Carrier (ATC) trunks prior to BCS30. For correct operation, use the facilities described in Figure 2-2. Digital Trunk Controllers (DTCs), Digital Carrier Modules (DCMs), and Line Trunk Controllers (LTCs) are not to be used for *monitor/headset* type connections. They should be used only for a dialback.

Feature group C (FGC) and feature group D (FGD) traffic between an interLATA or international carrier and a DMS-100 switch is carried by way of ATC trunks. Starting with BCS30, the SA dial-back feature capability is provided over ATC trunks.

Note: Refer to Figure 2-2 for applications.

Figure 2-1
Service analysis link configuration

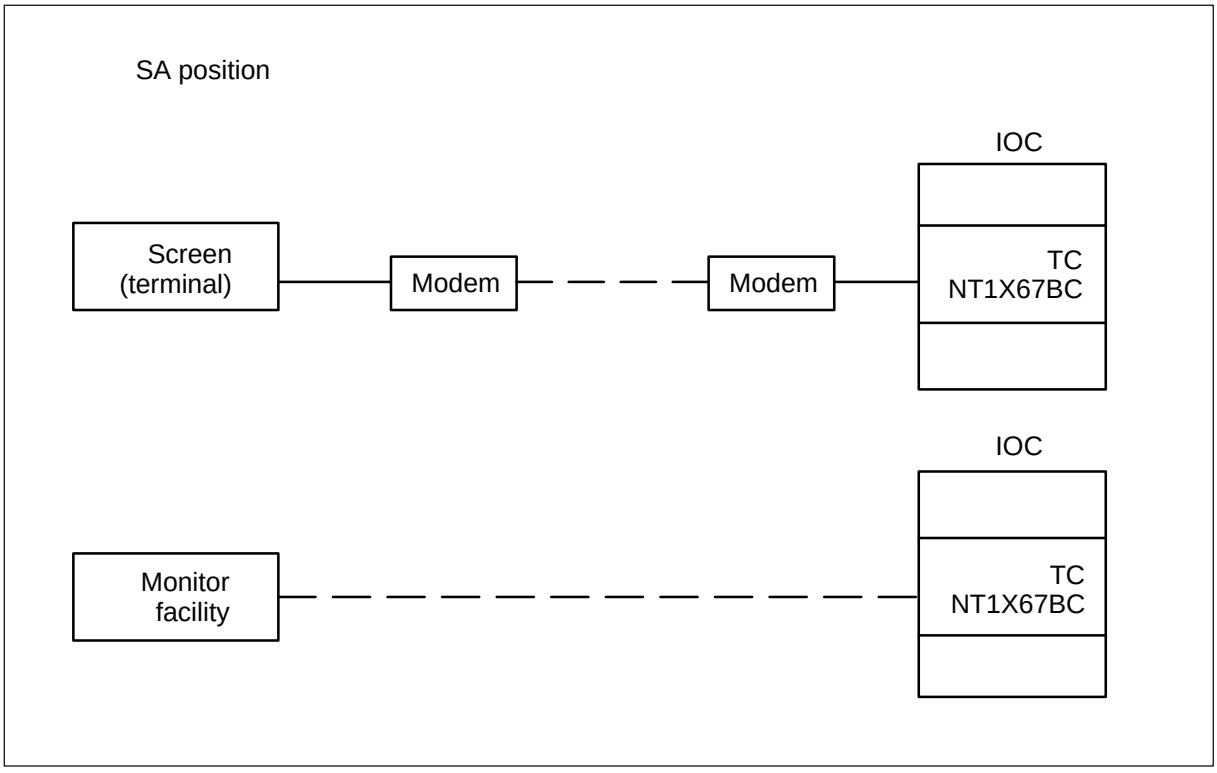
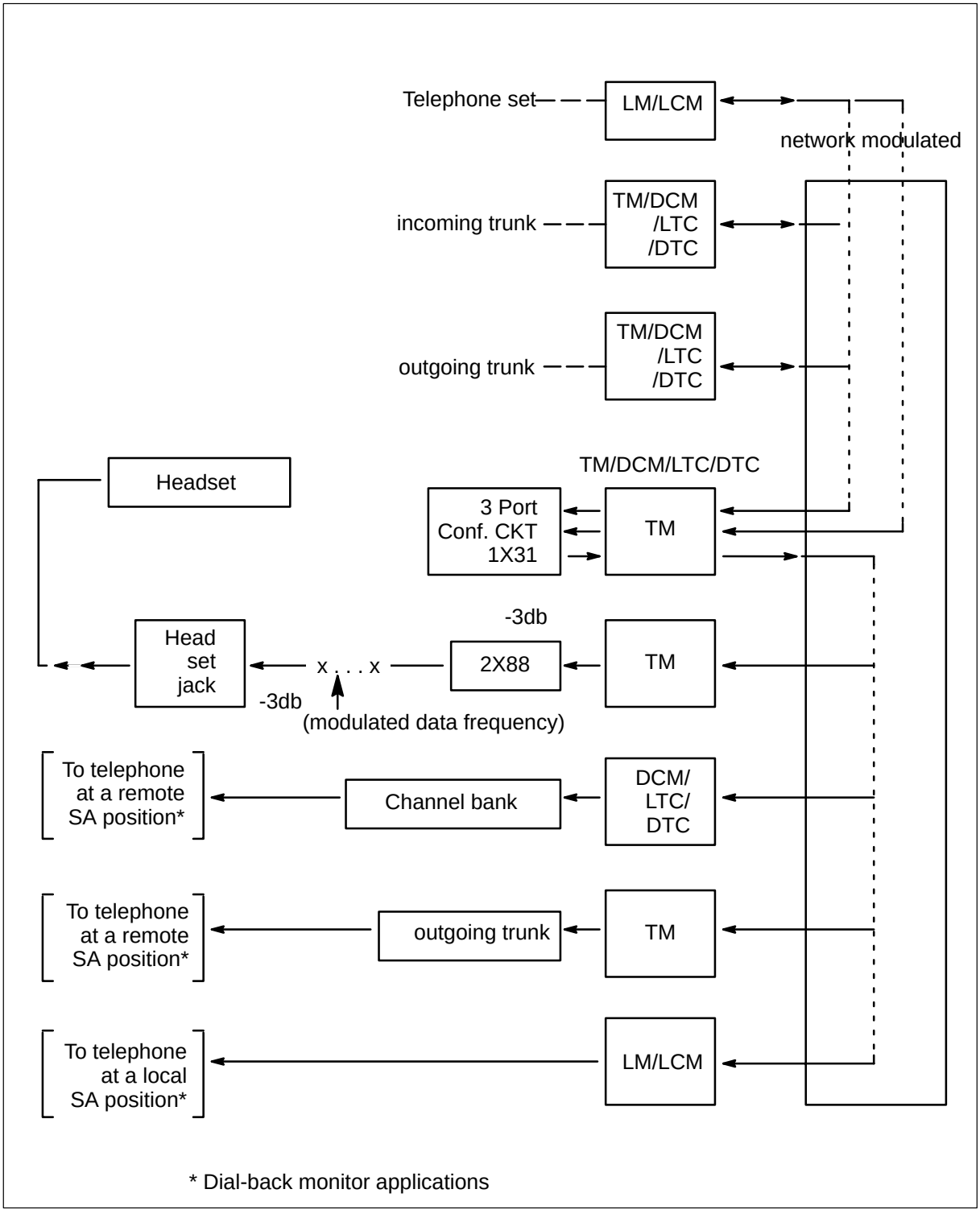


Figure 2-2
SA monitoring arrangement



SA levels of command

Login procedure

There is no special login procedure for a user of Service Analysis (SA) unless, for security reasons, the operating company requires the use of a userID and password. However, a user must be in Table SAUSERS to be allowed to access the SA system.

Two data tables are used to implement SA: engineered office parameter (OFCENG) and service analysis users (SAUSERS).

To access the SASelect level after a successful login, the analyst must enter the following command string:

>MAPCI;SASELECT

The levels of commands available to the analyst are shown in Figure 1-2 on page 1-3 along with their respective menus. Following is a detailed description of each of these commands.

Entering commands

The commands for each level of the SA system are presented to the analyst in menu form as follows:

```
xx aaaaaaaa
```

Where

xx — a command number that can be input instead of the command. This number forms part of the menu and always precedes the command.

value = 0 through 18

aaaaaaaa — the command

value = 1 to 8 characters

Invoke commands by entering either the command or the command number. Use of the number is more efficient. Refer to *Maintenance System Man-Machine Interface Description*, 297-1001-520, for more details on how to enter commands at the MAP workstation.

Service analysis selection level

SASelect status display

The service analysis select (SASelect) level is accessed by entering the command SASelect. This level permits the analyst to select the classification of calls to be presented for analysis, control the status of the monitor, and control the number of traffic offices included in the analysis. Refer to Figure 4-1 for an example.

Figure 4-1
SASelect level display format

```
Ofc      xxxxxxxxxxxx
  Mon   aaaaaaa  TOPS Traffic Offices
SASelect      /
 0 Quit       /  TOnn  TOnn                          TOnn  TOnn
 2 MONREL    /   nn    nn  :== Traffic Offices ==>  nn    nn>
 3 MONCONN    /  aaaa  aaaa                          aaaa  aaaa
 4 AOSSsel    /
 5 ExclTO_    /
 6 InclTO_    /
 7 OutAsst    /
 8 LNSMP      /
 9 TNSMP      /
10 DDDin      /
11 DDO        /
12 RCAMA      /
13 DMS250     / Service types: TA, DA, INT
14 Linesel    / Line Selection: COS OFC Site LM_Drawer Cust_Group
15            /                 xxx xxx aaa  xx x xx   aaaaaaa
16            /
17 IBNTRK     /
18 ATTCON     /
 UserIDnn
 Time HH:MM >-
   a    denotes alpha character from A to Z,
   n    denotes a decimal integer from 0 to 9
   x    denotes alphanumeric character, and
```

When appropriate, the system also presents a status display of the number of traffic offices assigned to TOPS that indicates the number of operators available to accept calls for the office, whether the office is included for or excluded from the analysis of calls, and the status of the line selection.

The SASelect display is static and is updated only on entry to the SASelect level, whether at the time of login or on returning to SASelect from one of the other analysis levels. This feature permits the display of up to thirty traffic offices, with all traffic offices being included for analysis whenever a session of analysis is initiated.

Definitions of displayed call events are presented in alphabetical order in Table 10-1 on page 10-2.

SASelect status display commands

The following commands and their associated parameters are available at the SASelect status display level.

QUIT	ALL

Causes a return from the current display level to the previous level, erases the part of the display associated with the current maintenance level, and presents the previous display level.

Where

ALL specifies a return to the command interpreter (CI) level.

Alone, the QUIT command from the SASelect level always returns the user to the CI level. QUIT ALL exits increments entered before entering the MAP, such as tables. QUIT does not exit to MAPCI because the SASelect level is not a true maintenance function; QUIT exits to the CI level.

MONREL	

Releases the voice monitor circuit.

At the start of an SA session, a voice monitor circuit is automatically connected.If, during the SA session, the analyst desires to disconnect the monitor circuit, MONREL is entered.

To reconnect a monitor circuit, see command MONCONN.

MONCONN	

Connects the voice monitor circuit.

AOSSSEL	

Advances to an AOSS service analysis selection MAP level.

EXCLTO	n ALL

Excludes one or more of the traffic offices being served by TOPS.

Where

n represents the numbers assigned to the traffic office served by TOPS that are to be excluded. Only those traffic offices being served in the switch and under analysis can be specified.

ALL specifies that all offices served by TOPS are excluded.

INCLTO	n ALL

Includes one or more previously excluded traffic offices being served by TOPS.

Where

n represents the numbers assigned to the traffic office served by TOPS that are to be included. Only those traffic offices being served in the switch and under analysis can be specified.

ALL specifies that all offices served by TOPS are included.

Hidden commands

BCS32 adds two hidden commands to the SASelect level of the MAP, InclST and ExclST, that are used to select which TOPS services, such as Toll & Assist, Directory Assistance, or Intercept, are analyzed.

These two commands do not appear on the SASelect display menu but may be accessed by typing the command name on the command line, followed by a space and the abbreviation of the service type being included or excluded.

INCLST	TA DA INT ALL

Includes one or more services types for monitoring by TOPS Service Analysis. Only one parameter can be entered each time the command is used.

Where

TA includes Toll & Assist in the analysis

Da includes Directory Assistance in the analysis

INT includes Intercept in the analysis

All includes all three services in the analysis.

EXCLST	TA DA INT

Excludes one or more services types for monitoring by TOPS Service Analysis. Only one parameter can be entered each time the command is used. More than one service type may be excluded by repeating the command.

Where

TA excludes Toll & Assist in the analysis

Da excludes Directory Assistance in the analysis

INT excludes Intercept in the analysis.

OUTASST	

Advances to the SA level and presents the following TOPS-handled call types.

CALL CLASS	CALL TYPE
noncoin	01+, 0+, 0-, 131, 411, 555, HOM555, FOR555, and Intercept
coin	1+, 01+, 011+, 0+, 0-, 411, 555, HOM555, FOR555, and Intercept
hotel	1+,01+,011+,0+, 0-, 411, 555, HOM555, FOR555, and Intercept

TOPS-handled calls are selected from incoming traffic on TOPS trunks with the following station class assignments:

- combined
- dedicated noncoin
- CAMA tributary
- class of service lookup
- dedicated hotel
- dedicated coin
- restricted sent-paid
- toll station
- toll subscriber
- attended pay station

- directory assistance
- dedicated intercept
- office identification code

TOPS-handled calls can also be selected from line originations (line to TOPS) such as those in a DMS-100/200 configuration. TOPS–handled calls are available only if feature package NTX065AA is installed.

Call selection is conducted in two stages as follows:

- All originations on TOPS trunks are monitored. If the call originates on a trunk with an acceptable station class, the call is followed by SA and may eventually be presented to the analyst. If the call is abandoned by SA, another call is selected.
- When a call is presented to the TOPS operator at initial position seizure, the call type is checked. If acceptable, the call is presented to the analyst; otherwise, the call is abandoned by SA and another call is selected.

  Note 1: Incoming calls on TOPS trunks with station class assignments of mobile or alarm are not presented to the analyst.

  Note 2: The basic call progression as presented to the analyst is a trunk to TOPS position and a TOPS position to trunk.

See Figure 4-2 for the display format.

Figure 4-2
OUTASST and DDO (operator handled) display format

```
Ofc  xxxxxxxxxxxx  CallType: xxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa        CaCall-sss    StTmg-sss    CaTmg-sss
 Mode aaaaaaa         SrvType aaa-sss           OH-sss
  /                                          or VQ
                                  Req or
S / Clg # nnnnnnnnnnnnnnnnn(sss)  Cld # nnnnnnnnnnnnnnnnn(sss)
A / Hotel Rm # nnnnnn  aaaa       Hotel  Con-sss  Ans-sss
  / Clg nnn-sss  RBK  RLB-sss     Cld nnn-sss  RFD
o /
r / aaa  aaa  aaa                             aaa  aaa  aaa
  / sss  sss  sss   :== Event Blocks ==>      sss  sss  sss
S /
A /
E / aaaaaaa-sss  Spl # nnnnnnnn-nnnnnnnn zzz  No AMA-sss  Nfy nn
D / RS nnn     ChgAdj n nn:nn  Cnnnnn(sss)      T&C Print PCB DR
I / Chg nnn.nn(sss)     nnn:nn Min(sss) OC nn Cal:nn I  Ret:nn I
T / AMA Sec nnn
  /
M / PRQ  RPR  PAT  TP  C Number  or  OGT  CON  ANS  RLF  TB  PRS
E / sss  aaa  sss  nn  a nnnnnnnnnnnnnnn  sss  sss  sss  nn  sss
N / sss  aaa  sss  nn  a nnnnnnnnnnnnnnn  sss  sss  sss  nn  sss
U / sss  aaa  sss  nn  a nnnnnnnnnnnnnnn  sss  sss  sss  nn  sss
  / Broadcast message aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
  /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

For BCS23, the C number field has been modified in the call information displayed when the OUTASST command is used. This modification changes the way outgoing trunk (OGT) keys are represented.

If an **OGT** key on a single-purpose (SP) position keyboard is pressed, that key is recorded as S##, where the octothorpe sign (#) represents a number from 01 to 07. If an **OGT** key on a multipurpose (MP) position keyboard is pressed, that key is recorded as M##, where the octothorpe sign represents a number from 00 to 99.

Prior to BCS23, an **OGT** key was always recorded as T#, where the octothorpe sign represented a number from 1 to 7.

New Fields and Event Blocks

BCS32 adds four new fields and four new event blocks to the OutAsst display.

Requested number field: The Req # field displays the requested number of a Directory Assistance call.

The Req # field is displayed at the same screen location as the Cld # field. The two fields are mutually exclusive. The field is updated when a requested number is returned from the DAS as part of a Directory Assistance or Intercept call.

Service type field: The SrvType field displays the service type of the current call, and the time the service type was last changed.

Three service types can be displayed: TA, DA, and INT.

OH field: An OH event block displays the time that a message transmission to DAS failure occurs. The time elapsed is displayed in seconds.

The OH and VQ fields are located in the same position. The two events are mutually exclusive.

VQ field: The VQ event occurs when no ARU channel is available to playback the VR announcement to the customer, even though one is required. The time elapsed is displayed in seconds.

The VQ and OH fields are located in the same position. The two events are mutually exclusive.

DA event block: The DA event block displays the time a DA VR unit is connected to a call.

A DA event occurs when a TOPS operator releases a DA call to a DA VR unit. For example, a DA event will occur when the listing number of a person is returned from the DAS during a 411 call. More than one DA event may occur during a call.

CCS event block: The CCS event block displays the time that an MCCS/ACCS DRAM is connected to a call.

A CCS event occurs when a 0+ call arrives at a TOPS office that contains the MCCS/ACCS package and the incoming trunk group is datafilled for MCCS/ACCS, or when the calling party requests a sequence call on a switch with the MCCS package and the incoming trunk group is datafilled for MCCS/ACCS. It also occurs when the calling party requests a sequence call on a switch with the MCCS package and the incoming trunk group is datafilled for MCCS/ACCS. More than one CCS event may occur during a call.

ACT event block: The ACT event block displays the time that an ACTS DRAM is connected to a call.

An ACT event occurs when a 1+ coin call coin call routed to a TOPS office with the ACTS package and the incoming trunk group is datafilled to receive ACTS service. It also occurs when a 1+ coin call is recalled to an ACTS office in order to receive more money. More than one CCS event may occur during a call.

ABS event block: The ABS event block records the time AABS is connected to a call.

An ABS event occurs when a 0+ collect, third number, or calling card call is routed to an office that has the AABS package and calls from the originating trunk group are datafilled to receive AABS service. More than one ABS event may occur during a call.

Figure 4-3
Example of new OutAsst Fields

```
 Ofc  Offic                CallType: NCN 0 ANI          11:34:06
 Mon  On
 Mode OutAsst               SrvType TA –003               OH–333
  /
S /                                  Req # 919-555-9823
A /
  /
o /
r / MCS ABS ACT DA
  / 294 222 089 024
S /
A /
E /
D /
I /
T /
  /
M /
E /
N /
U /
  /
  /

UserIDnn
Time 11:34 >-
```

LNSMP	

Advances to the SA level and enables the local network service measurement plan. Presents all Integrated Business Network (IBN) call forwarding, termination features, and IBN line originations.

Call selection is conducted in two stages prior to presentation to the analyst.

- The originating line class is checked to ensure that it is one of the following:
  - — individual
  - — multiparty

  - — INWATS
  - — two-party
  - — coin
  - — OUTWATS
  - — four-party
  - — private automatic branch exchange (PABX)
  - — IBN.
- The terminating class of the call is checked to ensure that it is also one of the line classes listed previously.

The following call types are abandoned by SA and another call is automatically selected:

- automatic
- revertive
- test line
- test clerk
- station ringer test
- silent switchman
- speed call updates
- call forwarding activation
- call forwarding deactivation
- third party calls to lines with call waiting option
- calls terminating to a TOPS position

Note 1: Calls that invoke subscriber calling features such as three-way calling, call waiting, and call transfer, are also abandoned by SA.

Calls can originate on a line or PABX trunk. The basic call progression presented to the analyst is

- line to line
- line to trunk
- line to CAMA position to trunk
- line to 3CL, RC and interLATA carrier (IC) operator positions
- line to ESB

Note 2: The default for subscriber group once IBN lines are selected is all subscriber groups.

The basic call progression presented to the analyst is as follows:

- IBN line to IBN line

- IBN line to POTS line
- IBN line to IBN trunk
- IBN line to POTS trunk

The analyst is also presented with POTS line to IBN line and POTS line to IBN trunk call progression.

IBN call forwarding is presented, informing the analyst that the call was forwarded. IBN call forwarding is shown in the machine event CFX on the MAP display.

If the calling or called party activates features by doing a flash while the call is being analyzed, the analyst is informed that the station is activating a flash feature and SA is unable to follow the call.

The flash features are as follows:

- calling line identification with flash
- call waiting origination
- call waiting
- call waiting dial
- three-way calling
- call transfer
- call park
- permanent hold
- malicious call hold
- conference - 6, 10, 14, 18, 22, 26, 30 ports
- executive busy override
- call back queuing
- call hold

Termination features are presented, informing the analyst that the termination feature is active and the new party called.

The following termination features are supported:

- call pickup
- trunk answer from any station (TAFAS)
- directed call pickup-nonbarge in
- line hunt overflow to a directory number (DN)
- virtual facility group
- line hunt overflow to a route

For speed calling and last number redial, the call is presented to the analyst as a basic call.

If the trunk flashes, the analyst is informed that this is a special feature and the analyst is unable to follow the call.

The following termination features are not supported:

- universal call distribution
- multiappearance DN
- programming custom calling features
- unparking a call
- off-hook queuing
- ring again/call back queue activation or recall
- direct inward system access (DISA)
- direct call pickup-barge in
- automatic line and automatic dial

See Figure 4-4 for the display format.

Figure 4-4
LNSMP display format

```
Ofc  xxxxxxxxxxxx  CallType: xxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa      PosReqd-sss        PosnAttd-sss   PosRls-sss
 Mode aaaaaaa      TO:nn                CaCall-sss   Coin
  /
S / Clg # nnnnnnnnnnnnnnnnn(sss)   Cld # nnnnnnnnnnnnnnnnn(sss)
A / DP   CVCOK  CVCER:nn  Reset:nn        nnnnnnnnnnnnnnnnn(sss)
  /                                       nnnnnnnnnnnnnnnnn(sss)
o /                                       nnnnnnnnnnnnnnnnn(sss)
r /
  / aaa  aaa  aaa                           aaa  aaa  aaa
S / sss  sss  sss   :== Event Blocks ==>    sss  sss  sss
A /
E / aaa  aaa  aaa                           aaa  aaa  aaa
D / sss  sss  sss   :== Event Blocks ==>    sss  sss  sss
I /
T / aaa  aaa  aaa                           aaa  aaa  aaa
  / sss  sss  sss   :== Event Blocks ==>    sss  sss  sss
M /
E / aaa  aaa  aaa                           aaa  aaa  aaa
N / sss  sss  sss   :== Event Blocks ==>    sss  sss  sss
U /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

DDDIN	

Advances to the SA level and presents incoming IT and ATC calls. See Figure 4-5 for the display format.

Calls are selected from originations on IT and ATC trunks and are presented by SA in the following progression:

- IT trunk to trunk
- IT trunk to line

- IT trunk to 3CL, RC, or IC operator positions
- ATC trunk to trunk
- ATC trunk to line
- ATC trunk to 3CL, RC, or IC operator positions

Note: IT and ATC operator codes routed to TOPS positions are abandoned by SA.

Figure 4-5
DDIN display format

```
 Ofc  xxxxxxxxxxxxx  CallType: xxxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa
 Mode aaaaaaa
  /
S /                                Cld # nnnnnnnnnnnnnnnnn(sss)
A /
  /
o /
r / aaa  aaa  aaa                            aaa  aaa  aaa
  / sss  sss  sss     == Event Blocks ==>    sss  sss  sss
S /
A /
E /
D /
I /
T /
  /
M /
E /
N /
U /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

DDO	

Advances to the SA level and presents subscriber-dialed DDO calls. See Figure 4-6 on page 4-19 for the display format.

The calls are selected by SA from DDO traffic on line originations and on superCAMA (SC) and TOPS trunks.

Call selection is in two stages:

- determine that the origination is of the correct trunk or line type.
- the call is verified to determine whether it is a subscriber-dialed DDO call. If the call is not subscriber-dialed, it is abandoned and another call is selected.

For SC and TOPS trunks, the call types presented to the analyst are as follows:

CALL TYPE	TRUNK TYPE SC	TOPS
011+ noncoin AAI/ONI	X	X
011+ coin		X
011+ hotel		X
01+ noncoin		X
01+ coin		X
01+ hotel		X

The preceding calls presented to the analyst for SC and TOPS trunks can originate from subscribers with the following station classes:

STATION CLASS	TRUNK TYPE SC	TOPS
combined	X	X
dedicated noncoin	X	X
CAMA tributary	X	X
class of service lookup	X	X
restricted sent paid		X
dedicated hotel		X
dedicated coin		X

toll station	X
toll subscriber	X
attended pay station	X

TNSMP	

Advances to the SA level and presents 1+ noncoin automatic number identification/operator number identification (ANI/ONI) calls and 011+ noncoin DDO ANI/ONI. See Figure 4-6 on page 4-19 for display format.

On SC trunks the following call progressions are presented:

- SC to trunk
- SC to line
- SC to CAMA position to trunk or line
- SC to TOPS position (for CAMA) to trunk or line
- SC to 3CL, RC, or IC operator positions

Note 1: No prefix type calls received on SC trunks are abandoned by SA.

On TOPS trunk groups, traffic is received from the following station classes:

- combined (hotel, coin, and noncoin)
- dedicated (hotel, coin, or noncoin)
- CAMA-tributary
- class of service lookup

Call progression for TOPS trunk groups is as follows:

- TOPS trunk to trunk or line
- TOPS trunk to TOPS position (for CAMA) to trunk or line

Call selection on TOPS trunks is conducted in two stages as follows:

- Station class is checked to ensure that it is from an allowed set as described previously. If not, SA abandons the call and selects another.
- The call type is checked to verify that the call is either 1+ noncoin ANI/ONI or 011+ noncoin DDO ANI/ONI.

Note 2: Calls requiring TOPS operators are abandoned.

RCAMA	

Remote operator number identification (RONI) trunk for operator number identification (from a distant originating toll office) is presented. See Figure 4-6 for display format.

RCAMA is not used in the analysis of TOPS calls. However, since the TOPS operator is presented with RONI calls for number identification, all operator services offices in the TOPS serving area are available for analysis unless they have been manually excluded.

RCAMA is available only if feature package NTX065AA is installed.

LINESEL	

Advances to the line selection level of SA. See Figure 5-1 on page 5-2 for display format.

The LineSel level, when used with LNSMP, is designed to permit the analyst to select line originations for analysis based on the following criteria:

- class of service (COS) code
- office code (OFC)
- line module (LM) site
- LM drawer number
- customer group for IBN

Figure 4-6
TNSMP, RCAMA, and DDO (011+NCN ANI/ONI) display format

```
Ofc  xxxxxxxxxxxx  CallType: xxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa  PosReqd-sss   PosnAttd-sss    PosRls-sss
 Mode aaaaaaa  TO:nn         CaCall-sss
  /
S / Clg # nnnnnnnnnnnnnnnnn(sss)  Cld # nnnnnnnnnnnnnnnnn(sss)
A / DP   CVCOK  CVCER:nn   Reset:nn
  /
o /
r / aaa  aaa  aaa                              aaa  aaa  aaa
  / sss  sss  sss   :== Event Blocks ==>       sss  sss  sss
S /
A /
E /
D /
I /
T /
  /
M /
E /
N /
U /
  /
  /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

IBNTRK	

Advances to the SA level and monitors Integrated Business Network (IBN) trunk origination calls. See Figure 4-7 for display format.

- Calls presented are basic calls incoming on an IBN trunk that terminate as lines or trunks in the office.
- Calls not presented are IBN trunks to an attendant console.

Figure 4-7
IBNTRK display format

```
 Ofc  xxxxxxxxxxxx  CallType: xxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa
 Mode aaaaaaa
  /                                Cld #nnnnn(sss)
S /
A / RCV CON DSG
  / sss sss sss
o /
r /
  /
S /
A /
E /
D /
I /
T /
  /
M /
E /
N /
U /
  /
  /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

ATTCON	

Advances to the SA level and monitors calls that terminate on an attendant console. ATTCON is also found at the lineSel MAP level. See Figure 4-8 for display format.

ATTCON can be entered with or without having selected an attendant console on a particular subscriber group by using the ADDCUST or DELCUST commands in the LineSel MAP level. If ADDCUST or DELCUST are not entered, the analysis process presents all calls that terminate on an attendant console.

The basic call progression presented to the analyst is as follows:

- IBN line to attendant console
- IBN trunk to attendant console
- POTS line to attendant console
- POTS trunk to attendant console
- virtual facility group (VFG) to attendant console
- attendant console extended calls

When the attendant presses the loop key or incoming call identification (ICI) key to answer a queued call, the call is presented for analysis if selected.

When the attendant console answers the call by pressing the **loop** key or the **ICI** key, the ICI number is displayed at the analysis position.

ICI calls presented to the analyst are as follows:

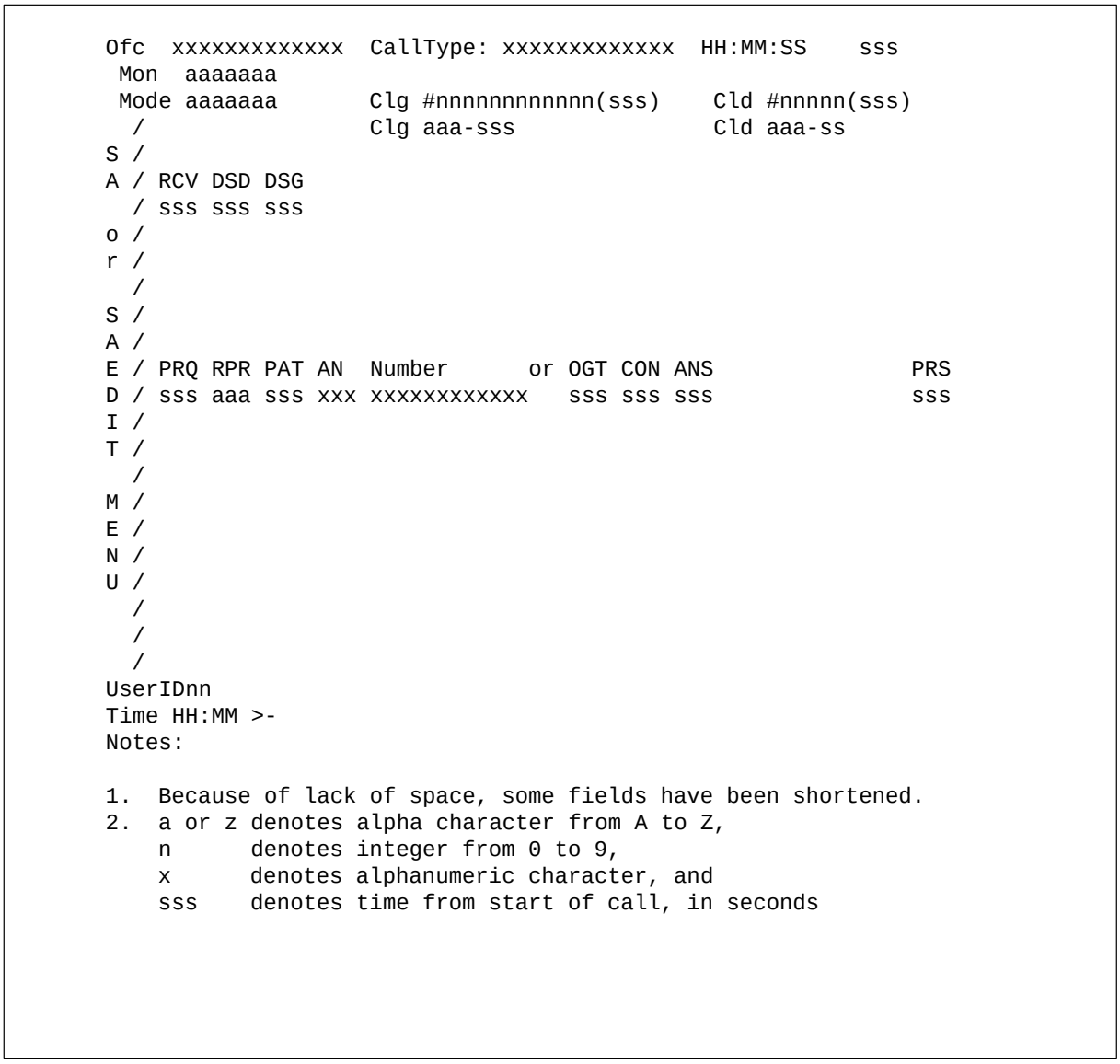
ICI NUMBER	TYPE OF CALL
1	attendant calls (typically dial 0)
5	call forward to attendant
6	call forward don't answer to attendant
7	call forward busy to attendant
8	intercept
13	do not disturb

ICI hard-coded calls that are not presented to analyst:

ICI NUMBER	TYPE OF CALL
2	don't answer recalls
3	camp on recall

ICI NUMBER	TYPE OF CALL
4	call waiting recall
12	conference call recall
14	direct inward system access
15 & 16	message waiting

Figure 4-8
ATTCON called and calling party on-hook display format



```
Ofc  xxxxxxxxxxxxx  CallType: xxxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa
 Mode aaaaaaa       Clg #nnnnnnnnnnn(sss)    Cld #nnnnn(sss)
  /                 Clg aaa-sss              Cld aaa-ss
S /
A / RCV DSD DSG
  / sss sss sss
o /
r /
  /
S /
A /
E / PRQ RPR PAT AN  Number      or OGT CON ANS              PRS
D / sss aaa sss xxx xxxxxxxxxxx   sss sss sss              sss
I /
T /
  /
M /
E /
N /
U /
  /
  /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes alpha character from A to Z,
    n      denotes integer from 0 to 9,
    x      denotes alphanumeric character, and
    sss    denotes time from start of call, in seconds
```

Line selection level

The Line Selection (LineSel) option is used in conjunction with the Local Network Service Measurement Plan (LNSMP) and Attendant Console (ATTCON) MAP levels to select line originations and attendant console terminations for service analysis. The analyst can use the following items as screening criteria:

- class of service (COS), line class code (LCC)
- office code (OFC)
- line module site
- line module and drawer number
- subscriber group

Only line originations are analyzed in the LineSel level. Private branch exchange (PBX) trunk originations are excluded.

The line selections can be used individually or together. For example, when service classes 1FR and 2FR are selected with office code 236, only the call originations from office 236 with a COS of 1FR or 2FR are eligible for presentation to the analyst.

Line directory number (DN) representation

With the introduction of variable-length directory numbers (VARDN), Service Analysis software allows selection of variable-length office codes as screening criteria for service analysis. The ADDOFFC and DELOFC commands in the LineSel MAP level can accept and display seven-digit office codes. The office codes selection range is also expanded to all 1024 entries in table TOFCNAME.

The LNSMP MAP level is used to analyze originating local calls. The DN format shown on the MAP display for national DNs is the Universal DN system, which is an area code of 1 to 7 digits, an office code of 0 to 7 digits, and a station code of 1 to 8 digits. Service analysis logs also support variable-length DNs.

The station code of the calling number is masked reliably in the Universal DN system to maintain the privacy of the calling party, as it is in the North American DN system.

LineSel status display

As each parameter is selected, the LineSel MAP display (see figure 5-1) is updated, keeping the analyst informed of the type of calls currently being analyzed at the LNSMP level. When line selection requirements have been met, the analyst can return to the SASelect level for call type selection or go directly to the LNSMP level.

Figure 5-1
LineSel MAP display example

```
Ofc   OFFICE
 Mon    ON

LineSel       / Service  Class  Office Code  Site  LM Drawer  Cust_Grp
 0 SASelect   /
 2 AddCos_    /    1FR                621    HOST  00  1  04  COMIBN2
 3 DelCos_    /    1MR                622          00  0  01  COMIBN3
 4                 PBX
 5 AddOfc_    /    2FR                       REM1
 6 DelOfc_    /    4FR                             02  0  07
 7                 8FR                       REM2
 8 LNSMP      /   10FR
 9                 CDF
10 AddSite_   /    INW
11 DelSite_   /    OWT                       REM4  01  0  12
12 AddDwr_    /    IBN                             06  1  05
13 DelDwr_    /
14 Addcust_   /
15 Delcust_   /
16 Reset      /
17            /
18 ATTCON     /

   TEAM0
   Time  11:15
```

LINESEL status display commands

The following commands and their associated parameters are available at the LineSel status display level.

SASELECT	

Retreat from the LineSel level and return to the SASelect level.

Responses All line selection options chosen are retained and implemented as call screening criteria if the LNSMP and ATTCON commands are subsequently enabled.

ADDCOS	cos

Add up to a maximum of ten COS options to the line selection list.

Where

cos represents any of the COS options listed in Table 5-1. For additional information on COS options or LCCs, refer to the *SERVORD Reference Manual*.

As each COS option is entered, the display is updated to reflect the change.

COS options defined by the ADDCOS command are used in the selection process of line originations to be presented for analysis when the LNSMP level is used.

Note: Only the COS options listed in Table 5-1 (a maximum of ten) can be used.

Refer to Table 5-1 for a list of the COS options.

Table 5-1
Classes of service

COS	Type of service
1FR	Individual flat rate, residence and business
1MR	Individual message rate
2FR	Two-party flat rate, residence and business
2WW	Two-way WATS
4FR	Four-party flat rate, residence and business
8FR	Eight-party flat rate, residence and business
10FR	Ten-party flat rate, residence and business
CCF	Coin, coin first (prepay)
CDF	Coin, dial tone first
CSP	Coin, semi-postpay
IBN	Integrated Business Network
INW	INWATS
OWT	OUTWATS
PBM	PBX message rate
PBX	PBX flat rate
ZMD	Zero minus denied
ZMZPA	Zero minus and zero plus allowed

DELCOS	cos

Delete a maximum of ten COS options.

Where

cos represents any of the COS options listed in Table 5-1. For additional information on COS options or LCCs, refer to the *SERVORD Reference Manual*.

ADDOFC	ofc

Add a maximum of ten office codes for line selection screening.

Where

ofc represents the office code of a local DN of up to seven digits

Note: Only those office codes being served in the switch under analysis are acceptable. The CI prompts the user to enter the area and office code (up to 14 digits) as a parameter in case of duplicate office codes.

Hidden command

A hidden command FULLOFC is provided at the LineSel MAP level. The office codes selected by the ADDOFC and DELOFC commands cannot be uniquely identified unless the area code is also displayed. The hidden command FULLOFC displays the area and office codes of all the selected offices.

This command does not appear on the LineSel display menu, but may be accessed by typing the command name on the command line anytime after the ADDOFC command has been entered.

The following figure shows an example of the MAP display after a FULLOFC command has been entered.

Figure 5-2
FULLOFC command

```
SERVICE CLASS   OFFICE CODE    SITE    LM_DRAWER    CUST_GROUP
                    569
                      $
                      $
                5555555
                    668

>fullofc
The following area-office codes have been selected:
075–569, 6-$, 5-$,
1-5555555, 020–668
```

DELOFC	ofc

Delete a maximum of ten previously selected office codes from the line selection screening list.

Where

ofc represents the office code of a local DN of up to seven digits

Note: Only those office codes being served in the switch under analysis are acceptable. The CI prompts the user to enter the area and office code (up to 14 digits) as a parameter in case of duplicate office codes.

LNSMP	

Present selected line card and PBX trunk originations as lines.

Note 1: When line selection options have been defined at the LineSel level and LNSMP is invoked at either the LineSel or the SASelect level, all line originations must pass the line selection level screening before being presented for analysis at the LNSMP level.

Note 2: Service analysis treats P2 trunks and private exchange (PX) trunk types as lines. No differentiation is made to identify the two types.

ADDSITE	aaaa

Add a maximum of four line module (LM) sites (host or remote) as line screening criteria.

Where

aaaa represents a four-character identification of the desired LM site.

Note: Only line modules served by the switch being analyzed are acceptable.

DELSITE	aaaa

Delete a maximum of four previously selected LM sites.

Where

aaaa represents a four-character identification of the desired LM site.

Note: Only line modules served by the switch being analyzed are acceptable.

ADDDWR	ff b dd

Add a maximum of two LM drawers for use as line screening criteria.

Where

ff b dd — represents a five-digit number defining the desired LM drawer, where

[<SITE> string]

ff = LM frame number (0 to 511)

b = unit

dd = LM drawer number (0 to 19)

ADDDWR is used following the ADDSITE command.

DELDWR	ff b dd

Delete a maximum of two LM drawers from the line screening list.

Where

ff b dd — represents a five-digit number defining the desired LM drawer, where

[<SITE> string]

ff = LM frame number (0 to 511)

b = unit

dd = LM drawer number (0 to 19)

DELDWR is used following the ADDSITE command.

ADDCUST	xxxxxxxxxxx

Add a maximum of ten subscriber groups for line and attendant console screening.

Where

xxxxxxxxxxx — represents an alphanumeric subscriber group name

After entering ADDCUST, a choice of LNSMP for line originating calls or ATTCON for attendant console terminating calls can be made.

If all subscriber groups are OFF, this indicates a default criteria. For example, while in the ATTCON level any call that terminates on an attendant console is screened and presented to the analyst.

Note: Only those subscriber groups being served in the switch under analysis are acceptable.

DELCUST	xxxxxxxxxxxx

Delete a maximum of ten subscriber groups for line and attendant console screening.

Where

xxxxxxxxxxxx represents an alphanumeric subscriber group name.

RESET	

Clear all line selection screening criteria at one time. Following RESET, all screening of line originations for analysis is as defined at the LNSMP level only.

ATTCON	

When a line selection option subscriber group has been defined at the LineSel level and ATTCON is invoked at either the LineSel or SASelect level, any call that terminates on an attendant console is screened before being presented for analysis at the ATTCON level.

Service analysis level

SA status display

All service analysis subsystem display level commands are shown in Figure 1-2 on page 1-3. The service analysis level can be accessed by entering one of the call selection commands at the SASelect or lineSel level. The service analysis level is the main working level of SA. In this level, calls are presented to the analyst, hard copy records of the analysis can be requested, and new calls can be selected.

All other menu commands at this level are event marking commands. The format of analyst-recognized events consists of a three-character event name and a one-, two-, or three-digit event time, which form an event block.

OPR	ECG	ACK	RNG	ANS	SOP	ECD	SCH
4	16	18	20	23	24	27	45
ANA	ANA	ANA	ANA		ANA	ANA	ANA

Example of analyst–recognized events on a typical person-to-person call.

Service analysis keeps up to twenty six event blocks. Additional machine- or analyst-detected events blocks are ignored.

Definitions of possible displayed call events are presented in alphabetical order in Table 10-1 on page 10-2.

Whenever SA is searching for a call, all line and trunk originations are screened, and a call of the chosen classification is selected at random for analysis. This screening is done on the basis of the analysis mode as specified at the SASelect or lineSel levels. As the call progresses, additional call details become available, primarily from the incoming digits. If this information indicates that the call no longer meets the chosen call classification (for example, it is a test line call), the call is abandoned and another call of the same classification is selected.

A call is not presented to the analyst until one of the following events occurs:

- call is connected through the switch to a trunk or line
- call is routed to tone
- call is routed to announcement
- call is routed to an operator (CAMA position, TOPS position, AOSS position, or 3CL, RC, or IC operator position)

When a call is routed to a CAMA or TOPS position, SA continues to follow the call after the position has been released. For a TOPS or an AOSS call, SA also follows the call to a TOPS position on recall seizures.

The monitor is always connected to a call when it is at a CAMA or TOPS position. When a connection is made to a line or trunk, the monitor interval is timed according to the value set in Table OFCENG. The timing is initiated by a machine-detected or an analyst-keyed ANS event. The start of timing is delayed if the call is at a TOPS position. The time interval is also reset if a new termination is set up at the TOPS position.

The monitor is always connected to a call when it is at an AOSS position unless the calling party is in a held state. In this case the service analyst can hear only the calling party.

Service analysis continues to update the status display of a selected call as long as successive events occur on the selected call within 3 minutes of each other. However, if there are over 3 minutes of inactivity on a selected call, SA discontinues updating the status display, which keeps the existing call details on the screen for editing and printing functions until the NEXTCALL command is issued. Exceptions to this procedure are calls routed to a TOPS position or originating from IBN attendant consoles that have a 20-minute time-out.

SA status display commands

The following commands and their associated parameters are available at the SA level.

The parameter sss represents the elapsed time, in seconds, from the start of the call until the event was entered by the analyst.

SASELECT	

Retreat from the SA level and return to the SASelect level.

RING	

Marking command indicating that a ringing tone was heard.

Responses: The event presented is as follows:

- RNG
- sss

ANS	

Marking command indicating that a verbal answer was made by the called party.

Responses: The event presented is as follows:

- ANS
- sss

ENDCLG	

Marking command indicating the end of the passing of reports, orders, requests, or directions by the calling party.

Responses: The event presented is as follows:

- ECG
- sss

ENDCLD	

Marking command indicating the end of the passing of reports, orders, requests, or directions by the called party.

Responses: The event presented is as follows:

- ECD
- sss

STARTCHG	

Marking command indicating the analyst’s judgment of the start of chargeable time.

Responses: The event presented is as follows:

- SCH
- sss

OPR	

Marking command indicating a verbal answer by an operator.

Responses: The event presented is as follows:

- OPR
- sss

ACK	

Marking command indicating an acknowledgment made by the operator.

Responses: The event presented is as follows:

- ACK
- sss

STARTOPR	

Marking command indicating the start of operator communication with the calling or called party or another operator.

Responses: The event presented is as follows:

- SOP
- sss

OTHOPR	

Marking command indicating that an operator, other than the operator of the analyzed call, has made a verbal answer.

Responses: The event presented is as follows:

- OOP
- sss

RECANN	

Marking command indicating that a recorded announcement has been received.

Responses: The event presented is as follows:

- REC
- sss

BUSY	

Marking command indicating that a busy tone was heard.

Responses: The event presented is as follows:

- BSY
- sss

SPECSIG	

Marking command indicating the receipt of a special signal. Typical special signals are as follows:

- RO = reorder
- NC = no circuits
- SIT = special information tone
- NSN = no such number tone

Responses: The event presented is as follows:

- SSG
- sss

TIME	

Update elapsed time, in seconds, from the seizure of the call by SA. Time is shown in the upper righthand corner of the display.

VOICE	

Turn voice monitoring ON or OFF.

PRINT	{comment}

Generate a hard-copy printout of the observed call. This command automatically turns off voice monitoring.

Where

comment represents the optional 64 character comment entered by the analyst.

SAEDIT	

Terminate the analysis process and enter the SAEdit level.

NEXTCALL	

Terminates analysis on the current call and selects a new call with the same classifications.

Service analysis edit level

The SAEdit level provides the analyst with a means of reviewing the data in the event blocks of the call analyzed at the SA level, making corrections if necessary, and obtaining a hard-copy printout of the call.

SAEdit status display

To assist the analyst in making any necessary corrections, the event marking commands described in the SA level form part of the SAEdit menu (see Figure 1-2 on page 1-3). The SAEdit level is accessed from the SA level by entering the command SAEDIT. Entering the SAEdit level automatically turns off voice monitoring.

Definitions of any displayed call events are presented in alphabetical order in Table 10-1 on page 10-2.

SAEDIT status display commands

The following commands and their associated parameters are available at the SAEdit level.

SASelect	

Return to the SASelect level.

DISPLAY	{block_no} {line-no}

Display a maximum of 13 consecutive event blocks.

Where

blockno — is an optional parameter representing the number of the first block of the 13 event blocks to be displayed.

value = 1 to 16
default = 1

line-no — is an optional parameter, used with blockno, and only required when LNSMP call types are being analyzed. With LNSMP up to four call attempts can be analyzed, each with

its own set of up to 16 event blocks. Each set is defined by a line number (L1 to L4), with the most recent call attempt event blocks in the last line.

value = L1, L2, L3, or L4
default = last, most recent line of event blocks.
examples: DISPLAY 1
DISPLAY 4 L3

CORRECT_	event_i event_c {time} {line_no}

Correct keying errors that have resulted in incorrect event marking in the analyst-identified event blocks.

Where

event_i — mnemonic of incorrect analyst-entered event identified by any one of the following:

RNG
ANS
ECG
ECD
SCH
OPR
ACK
SOP
OOP
REC
BSY
SSG

event_c — represents the correct mnemonic to be given to the event block identified in the preceding parameter (event_i). Can be any one of the events listed for event_i.

time — the event time that uniquely identifies the incorrect event block being corrected.

This is an optional parameter that identifies a specific event block when there is more than one event block with the same mnemonic appearing in the display.

If time is not entered and there are two or more event blocks with the same mnemonic, the system corrects the first event block defined by the event_i mnemonic.

line_no — optional parameter only required when LNSMP call types are being analyzed.

With LNSMP, up to four call attempts can be analyzed, each with its own set of from 1 to 16 event blocks.

Each set is defined by a line number (L1 to L4), with the most recent call attempt event blocks in the last line.

value = L1, L2, L3, or L4

default = last, most recent line of event blocks

Whenever the event block being edited is out of the display range (position 14 and beyond), it is automatically shifted to position 1 and the next 12 blocks are displayed.

example: Correct RNG ANS 42 L3

PRINT	{comment}

Generates a hard-copy printout of the observed call.

Where

comment — represents the optional 64 character comment entered by the analyst.

NEXTCALL	

Terminate analysis on the current call and have a new call of the same classification selected.

AOSSsel level

AOSSsel status display

The AOSSsel level allows the analyst to begin the selection and analysis of calls that originate on AOSS, TOPS, SC, or IT incoming trunks and require AOSS operator assistance. See Figure 8-1 for display format. The AOSSsel level is accessed from the SASelect level by entering the command AOSSSEL.

Figure 8-1
AOSSsel display format

```
Ofc   xxxxxxxxxxxxxxx Calltype:xxxxxxxxxxxxx      HH:MM:SS
  Mon   aaaaaaa      AOSS Traffic Offices
AOSSsel       /
 0 SASelect   /  TO01  TO02                              TO10
 2 MonRel     /   xx    xx ----------------------------->  xx
 3 MonConn    /  --c1  --c1                              --c1
 4            /
 5 InclTO_    /  TO11  TO12                              TO20
 6 ExclTO_    /   xx    xx ----------------------------->  xx
 7            /  --c1  --c1                              --c1
 8 InclCT_    /
 9 ExclCT_    /  TO21  TO22                              TO30
10            /   xx    xx ----------------------------->  xx
11            /  --c1  --c1                              --c1
12 DirAsst    /
13            /  Call Types:  DA, INT
14            /
15            /
16            /
17            /
18            /
 UserIDnn
 Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes an alpha character from A to Z
    n      denotes an integer from 0 to 9
    x      denotes an alphanumeric character
    sss    denotes time from start of call, in seconds
```

AOSSSEL status display commands

The following commands and their associated parameters are available at the AOSSsel status display level.

SASELECT	

Retreat from the AOSSsel level and return to the SASelect level.

MONREL	

Release the voice monitor circuit.

At the start of an SA session, a voice monitor circuit is automatically connected to the SA position.

During the SA session, if the analyst desires to disconnect the voice monitor circuit, MONREL is entered.

To reconnect a monitor circuit, use command MONCONN.

MONCONN	

Connect the voice monitor circuit.

INCLTO	n ALL

Include traffic offices being served by AOSS.

Where

n the number assigned to the traffic office served by AOSS to be included for analysis. The traffic office numbers must be in the range of valid traffic office numbers in use.

Maximum traffic office numbers that can be entered at one time should not exceed the total number of offices being served by AOSS.

ALL all offices assigned to the traffic offices served by AOSS are to be included for analysis.

EXCLTO	n ALL

Exclude traffic offices being served by AOSS.

Where

n the number assigned to the traffic office served by AOSS to be excluded for analysis. The traffic office numbers must be in the range of valid traffic office numbers in use.

The maximum traffic office numbers that can be entered at one time should not exceed the total number of offices being served by AOSS.

ALL all offices assigned to the traffic offices served by AOSS are excluded for analysis.

Calls that select AOSS positions in excluded traffic offices are not selected.

When the AOSSsel level is entered, all traffic offices are automatically included. These controls are retained until the SASelect is reaccessed, at which time all traffic offices are included again.

INCLCT	DA INT

Includes all AOSS call types. See Figure 8-2 for display format.

Where

DA represents calls that originate on AOSS, TOPS, SC, or IT trunks and complete to an AOSS position, regardless of call class as call type 411, HOM555, FOR555, 131, or 141.

INT represents calls that originate on AOSS, TOPS, SC, or IT trunks and complete to an AOSS position, regardless of call class as call type intercept.

EXCLCT	DA EXT

Excludes all AOSS call types. See Figure 8-2 for display format.

Where

DA represents calls that originate on AOSS, TOPS, SC, or IT trunks and complete to an AOSS position, regardless of call class as call type 411, HOM555, FOR555, 131, or 141.

EXT represents calls that originate on AOSS, TOPS, SC, or IT trunks and complete to an AOSS position, regardless of call class as call type intercept.

When the AOSSsel level is first accessed, all call types shown previously are included for service analysis.

Either general category can be included or excluded as required.

Control remains in effect until the SASelect level is reaccessed and a new call selection is made.

Figure 8-2
AOSS INCLCT or EXCLCT display format

```
Ofc  xxxxxxxxxxxx  CallType: xxxxxxxxxxxx  HH:MM:SS    sss
 Mon  aaaaaaa
 Mode aaaaaaa yyyyyyy
  / Clg # xxxxxxxxxxx(sss)
S / BK # xx xx   DirNPA xxx    NC-sss         CW
A / Clg xxx-sss  Cld xxx-sss
  /
o / :================                   ==================>
r / :================ Event Block Space ==================>
  / :================                   ==================>
S /
A / Req # xxxxxxxxxxx(sss)      AMA-sss
E /
D / PRQ RPR PAT TO C Number        CON ANS RLF TR PRS
I / sss  x  sss nn x nnnnnnnnnnn  sss sss sss xx sss
T /  :   :   :   : :      :         :   :   :   :  :
  /  :   :   :   : :      :         :   :   :   :  :
M /  :   :   :   : :      :         :   :   :   :  :
E /
N /
U /
  /
UserIDnn
Time HH:MM >-
Notes:

1.  Because of lack of space, some fields have been shortened.
2.  a or z denotes an alpha character from A to Z
    n      denotes an integer from 0 to 9
    x      denotes an alphanumeric character
    sss    denotes time from start of call, in seconds
```

DIRASST	

Advances to the SA level and waits for a call that fits the call type category in effect at that time either as set by the system or as specified by the analyst.

AOSS call types spare one to three are not in any of the call selection categories and are not followed for analysis.

Printouts

Log examples

A printout of any call that has been analyzed is obtained by using the PRINT command at either the SA or SAEdit level. The PRINT command generates a report containing the information gathered to be sent to the log system. From the log system the report is printed or sent to magnetic tape or disk.

This command has an optional comment parameter that allows a 58-character comment to be appended to any report.

The logs are numbered SA20X, where X ranges from one to five and refers to the service analysis position that generated the log. For examples of these log reports, refer to Figure 9-1 through Figure 9-10.

Service analysis logs also support variable-length directory numbers (VARDN). The format for the fields that show DNs, such as the calling number (Clg #) field and the call dialed (Cld #) field is the Universal DN system, which is an area code of 1 to 7 digits, an office code of 0 to 7 digits, and a station code of 1 to 8 digits.

Figure 9-1
Example outward and assistance log report format

```
SA201 JUN02 10:21:33 7818 INFO SA SUMMARY
  Analyst:OPERATOR  Office:OFFICE
  Date: 1984/06/02 10:19:41.385 TUE. Mode:OUTASST
                                          Calltype:0 Coin ANI*

-------- Incoming -------           -------- Outgoing -------
   CKT BLVLON249621   105             CKT TOROON1103T2    201
         StTmg- 22
Clg # 613-962-0130   (  3)
Clg Off- 0                           Cld Off- 36
OPR  ECG  ACK  ECG  ACK  RNG  ANS
 12   15   16   18   21   31   37
ANA  ANA  ANA  ANA  ANA  ANA  ANA
                                          LoopStatus ACS- 10
PRQ  RPR  PAT   TO   C Number    or    OGT  CON  ANS        PRS
  3  IPS   10    2   F 800-268-6028          20   36         22
```

Figure 9-2
Example local dial log report format

```
SA201 JUN05 14:57:04 8311 INFO SA SUMMARY
  Analyst:  OPERATOR  Office:  OFFICE
  Date: 1984/05/05 14:45:51,24: SAT.  Mode:LNSMP   CallType: NCn

-------- Incoming -------
LEN HOST LM 00 0 09 03 DN 62101
Clg # 61301 84122
DT
-------- Outgoing -------         -------- Receiver --------
           TONE         120T0               CKT      RCVRDGT   3
Cld # 85101 1234529      ( 9)
RCR  CON  BSY  DSG
  0    4   11   12
SYS  SYS  ANA  SYS
```

Figure 9-3
Example DDD incoming (ATC trunk) log report format

```
SA201 AUG23 09:44:49 3301 INFO SA SUMMARY
Analyst: A  Office: OFFICE
Date: 1988/08/23 09:43:09.451 TUE.  Mode:DDDIN  Calltype: DDDIN

------- Incoming --------          ------- Outgoing -------
   CKT       ICEACAR    1          LEN HOST 00 0 00 01
                                   CLD  # 621-1235(  2)
------- Receiver --------
   CKT       RCVRMF     1
RCR  CON  ANS
  0    3   11
SYS  SYS  SYS
```

Figure 9-4
Example DDD outgoing log report format

```
SA201 JUN24 10:50:03 5722 INFO SA SUMMARY
  Analyst:OPERATOR  Office:OFFICE
  Date: 1984/06/24 10:48:48.667 TUE. Mode:TNSMP  Calltype:1+ANI

-------- Incoming -------           -------- Outgoing -------
   CKT OTWAON52CG02   601             CKT CLBAON02MG04    501
Clg # 613-389-2195  (  4)            Cld # 850-1234(  2)
      CVCOK
-------- Receiver -------    PosReqd  PosAttd  PosRlsd  CVCER
  CKT     RCVRMF        7      000      000      000      2
RCR  CON  RNG  ANS  ANS
  0    4   16   25   25
SYS  SYS  ANA  SYS  ANA
```

Figure 9-5
Example GWSA log report format

```
SA201 SEP09 11:24:25.4925 INFO SA SUMMARY
Analyst: OPERATOR  Office: OFFICE
Date: 1984/06/04 10:56:23.421 MON.  Mode:GWSA   Calltype:

------- Incoming --------          ------- Outgoing -------
   CKT PRL01CANMTL      0             CKT R1LOOP11
        Itt PL                          Ott R1
                                        CLD# 57-157-5101  ( 4)
------- Receiver --------
   CKT       DGT300     0
RCR  CON  ANS  SSG  ECD  DSG
  0    4   12   28  170  171
SYS  SYS  SYS  ANA  ANA  SYS
```

Figure 9-6
Example ATTCON log report format

```
SA201 JUN05 19:12:28 5800 INFO SA SUMMARY
Analyst: OPERATOR  Office:  OFFICE
Date:1984/06/05 19:06/05 19:11:54.186 TUE Mode:ATTCON Ctype: ICI0

----------Incoming-----------     -------------Outgoing----------
LEN HOST 00 0 00 27    DN 621     LEN HOST 00 0 00 05      DN 722
Cls # 613-722-4111  ( 0)          Cld # 0             (  1)
Cls Off - 0                       Cld Off - 25
RCR
  0
SYS
                                  LoopStatus ACS- 1
PRQ RPR PAT AN Number  or OGT CON ANS                PRS
  1 IPS   1  0      24112 LOC  15  25                 31
Note:  Ctype=Calltype.
```

Figure 9-7
Example IBNTRK log report format

```
SA201  JAN03 10:50:01 0827 INFO SA SUMMARY
Analyst: C  Office:  OFFICE
Date: 1976/01/03 10:49:47.656 SUN  Mode:IBNTRK  Calltype:  IBNTRK

---------Incoming-----------   ----------Outgoing------------
        CKT    CARYIBNTI   1   LEN HOST 00 0 01 16 DN 6215000
                               Cld # 621-5000     (  4)
---------Receiver-----------
       CKT        RCVRMF   1
RCR  CON  DSG
  0    4   10
SYS  SYS  SYS
```

For BCS23, the C number field in the SA201 log has been modified to indicate whether an outgoing trunk (OGT) key is pressed on a TOPS single-purpose (SP) or on a TOPS multipurpose (MP) position keyboard. If an **OGT** key is pressed on an SP position keyboard, the C number field displays an S followed by the number of the key pressed, for example, S02. Conversely, if an **OGT** key is pressed on an MP position keyboard, the C number field displays an M followed by the number of the key pressed, for example, M15.

Figure 9-8
Example SA201 log - modified C number field - SP OGT key

```
SA201 JAN01 12:55:42 4301 INFO SA SUMMARY
  Analyst:J Office:OFFICE
  Date: 1987/03/13 12:52:42.799 FRI. Mode:OUTASST
                                          Calltype:0NC AN

-------- Incoming -------           -------- Outgoing -------
   CKT   TOPCOMAMF   1               CKT     TOPOGNY      0
-------- Receiver -------
   CKT   RCVRMF      3
Clg # 613-239-1111   (  4)
Clg On- 36                          Cld On-  34
RCR  RNG  ANS  ECG  ECD  OPR  DSG
  0    9   10   11   13   26   37
SYS  ANA  ANA  ANA  ANA  ANA  ANA
                                           NO AMA- 17
                                    OC **
                                          LoopStatus ACS- 10
PRQ  RPR  PAT   TO   C Number    or    OGT  CON  ANS        PRS
  4  IPS    4    1   S02                   17   22         37
```

Figure 9-9
Example SA201 log - modified C number field - MP OGT key

```
SA201 JAN01 12:55:42 4301 INFO SA SUMMARY
  Analyst:J Office:OFFICE
  Date: 1987/03/13 12:52:42.799 FRI. Mode:OUTASST
                                          Calltype:0NC AN

-------- Incoming -------           -------- Outgoing -------
   CKT    TOPCOMAMF   1              CKT     TOPOGNY      0
-------- Receiver -------
   CKT    RCVRMF      3
Clg # 613-239-1111   (  4)
Clg On- 36                          Cld On-  34
RCR  RNG  ANS  ECG  ECD  OPR  DSG
  0    9   10   11   13   26   37
SYS  ANA  ANA  ANA  ANA  ANA  SYS
                                          NO AMA- 17
                                    OC **
                                          LoopStatus ACS- 10
PRQ  RPR  PAT   TO   C Number    or    OGT  CON  ANS        PRS
  4  IPS    4    1   M15                   17   22         37
```

Figure 9-10
Example of automatic service analysis summary log

```
ASA211 FEB17 17:25:30 4925 INFO AUTOMATIC SA SUMMARY LOG
  Analyst:AUTO1 Office:OFFICE
  Date: 1992/02/17 17:25:30.134 MON. Mode:GWA Calltype:

GWmode ANY RecOff
Digsel# 44628770770              IC Cofftyp INTL     OG Cofftyp NATL
Userclass Selection: ANY Userclass of Call: ANY

Analyzed Calls:

1237 0657         44628770770 13:24:34 UNDT 00 RL32
R0000 C0002 A0045 Y0560 A0700 Y0680 A1000 Y1456 A3000 Y3056
0067 0657         44628770770 13:24:35 NONE 00 NONE
D0000 C0002 A0056 Z0567
0567 0004         44628770770 13:24:37 NONE 30 NONE
```

Call type examples

The following section summarizes different types of calls and the results of each as they apply to calling party disconnect (DSG) and called party disconnect (DSD). The time-out applies to the called party going on-hook and waiting for the calling party to go on-hook. If the calling party does not go on-hook in a timeframe, the time-out will occur.

Line-to-trunk call

- when the originating party goes on-hook first, both DSD and DSG result
- when the terminating party goes on-hook first without a time-out, both DSD and DSG result
- when the terminating party goes on-hook first with a time-out, only DSD results

Trunk-to-line call

- when the originating party goes on-hook first, only DSG results
- when the terminating party goes on-hook first without a time-out, only DSG results
- when the terminating party goes on-hook first with a time-out, only DSG results

Trunk-to-trunk call

- when the originating party goes on-hook first, only DSG results
- when the terminating party goes on-hook first without a time-out, only DSG results
- when the terminating party goes on-hook first with a time-out, only DSG results

Line-to-line call

- when the originating party goes on-hook first, only DSG results
- when the terminating party goes on-hook first without a time-out, only DSG results
- when the terminating party goes on-hook first with a time-out, only DSD results

Displayed call event definition table

Table legend

The displayed call event table provides descriptive information of the call event data that is presented to the analyst.

The display column shows actual SA system output; however, due to space limitations, two or more lines may be required. When this occurs, a ¢ sign is used to indicate that the display continues on the next line.

Descriptions for a given event display can vary depending on the analysis mode. In these cases the analysis mode mnemonic, such as OUTASST and LNSMP, precedes the descriptive paragraph. Lack of a mode mnemonic indicates that the description is valid for all modes creating the event display.

For selected OUTASST descriptions, a display storage code or a display code or both precedes the description and comprises the following:

- display code
  - — IPS call event is displayed on initial position seizure.
  - — RCL call event is displayed on recall seizure.
- storage code
  - — DS do not store previous displays if field overwritten.
  - — S2 store the first two occurrences for possible printout. The third occurrence is displayed on the VDU. A maximum of three occurrences can appear on the printout. Overflows are indicated by reverse video on the VDU.
  - — FF indicates that machine-generated or manually generated conditions may be present or absent. When present, there is a display; when absent, the display is erased.

Table 10-1
Displayed call event definitions

Displayed call event	Description and significance to the analyst
aaaaaaaaa-sss	(IPS,DS)(RCL,S2) - Cumulative number of seconds into analyzed call to operation of a class charge key. The class charge pressed is displayed as one of the following: StaPd-sss PerPd-sss StaCol-sss PerCol-sss StaSplClg-sss PerSplClg-sss StaSplCld-sss PerSplCld-sss AutoCol-sss If the class charge is changed prior to the start of conversation, the new information overwrites the previously displayed entry. Only the final entry appears on the printed copy. If the class charge is changed after the start of conversation, the display is overwritten, but a maximum of three entries appears on the printed copy.
aaa sss	(IPS,RCL) - Analyst-detected and machine-recognized event blocks. Each block consists of a three-character event name above an event time. A maximum of 13 consecutive blocks can be displayed at any given time, however a maximum of 26 are provided for (see DISPLAY command). (LNSMP only) - Up to four sets of event blocks, representing four call attempts, are provided for in the display. For a description of machine-recognized call events and a list of operator-detected call events, see Table 10-1 on page 10-2 and Table 10-2 on page 10-17.
ABS-sss	An event block that records the time elapsed between the time Service Analysis is informed of a call to the time ABS is connected to the call. This event occurs when a call is selected for AABS service, such as when a 0+ collect, third number, or calling card call is routed to an office that has the AABS package and calls from the originating trunk group are datafilled to receive AABS service.
ACT–sss	An event block that displays the time an ACTS DRAM is connected to a call. This event occurs when a 1+ coin call is routed to a TOPS office with the ACTS package and the incoming trunk group is datafilled to receive ACTS service. It also happens when a 1+ coin call is recalled to an ACTS office in order to receive more money.
AMA Sec nnn	(IPS,RCL) - The total number of seconds of chargeable conversation time as shown on the AMA record.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
AMA-sss	(IPS) - Indicates operation of the charge key by the operator and the cumulative time into the call at which it occurred. Capability for saving up to five such occurrences is provided with the display going to inverse video (dark characters on light background) if the storage capacity is exceeded and if the terminal has the capability.
AMA sss	(IPS) - Indicates operation of the charge key by the operator and the cumulative time into the call at which it occurred. Capability for saving up to five such occurrences is provided with the display going to inverse video if the storage capacity is exceeded and if the terminal has the capability.
AN xxx	Attendant console number
ANN	The analyzed call has been routed to an announcement.
Ans-sss	(IPS) - Cumulative number of seconds into analyzed call to called station answer on a subscriber-dialed call. Answer is the result of an off-hook condition on the called line.
ANS sss	(IPS,RCL) - Cumulative number of seconds into the analyzed call to the answer of the called station on an operator-dialed attempt. Answer is the result of an off-hook condition on the called line.
Broadcast Message aa..aa	(IPS,RCL)(DS) - The broadcast message is displayed as a result of force manager input. The operator service manager broadcast message appears in the absence of a force manager message. The broadcast message cannot be overwritten by displays of attempt data that would normally appear in this area. Therefore, subsequent displays of attempt data overwrite previous lines sequentially, beginning with the oldest. Any attempt data, overwritten by a message, appears on printout if normally stored. If a message occurs simultaneously with the attachment of a position, the position attachment information would normally appear on the message line. The message is written normally and the position attachment information overwrites a line three above the message.
Book # xx xx	Directory assistance book numbers that contain the NPA-NXX of the calling number. Displayed on call arrival or after a calling number is entered by the operator.
CAMA Suspension	(DDO,LNSMP,RCAMA,TNSMP) - CAMA billing has been suspended; no operator is required.
CaCall-sss	(IPS,RCL)(DS) - Cumulative number of seconds into the analyzed call to the operation of the **CANCEL CALL** key by the TOPS 04 and TOPS MP operator.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Call Type: xxxxxxxxxxxxx	(IPS) - Call origination type of call under analysis. Based on the measured service being analyzed. The codes displayed are as follows:

MODE	CALL TYPE		
OUTASST	1+ NCN	1+ Coin	1+ Htl
	0+ NCN	0+ Coin	0+ Htl
	0- NCN	0- Coin	0- Htl
	TS		
	01+ NCN	01+ Coin	01+ Htl
		011+ Coin	011+ Htl
	131 NCN		
	411 NCN	411 Coin	411 Htl
	555 NCN	555 Coin	555 Htl
	HOM555 NCN	HOM555 Coin	HOM555 Htl
	FOR555 NCN	FOR555 Coin	FOR555 Htl
	INT NCN	INT Coin	INT Htl
LNSMP	NCN CN	And all 1+ calls	
LNSMP	1+ ANI	1+ ONI	1+ ANIF
DDDIN	DDDIN		
IBNTRK	IBNTRK		
ATTCON	ICI n Where n = 0 to 256		
DDO	01+ NCN		011+ NCN ANI
	01+ Coin		011+ NCN ONI
	01+ Htl		011+ NCN ANIF
RCAMA	1+ ONI	1+ ANIF	
AOSS	411		
	HOM		
	FOR		
	131		
	INT		

CaTmg-sss	(IPS,RCL)(S2) - Cumulative number of seconds into the analyzed call when the **CANCEL TIMING** key was pressed by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 30 + **START.**

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
CaTmg-sss	Event block that displays the time that an MCCS/ACCS DRAM is connected to a call. This event occurs when a 0+ call arrives at a TOPS office that contains the MCCS/ACCS package and the incoming trunk group is datafilled for MCCS/ACCS. It also occurs when the calling party requests a sequence call on a switch with the MCCS package and the incoming trunk group is datafilled for MCCS/ACCS.
CFX	The analyzed call has been call-forwarded on from one terminating station to the next.
Chg nnn.nn(sss)	(IPS,RCL)(S2) - The initial period and overtime period charge, as identified by the system on a coin-paid call. The initial period charge on a coin-paid flash recall. This charge does not appear on the printed copy. The system-computed charge on calls held on loop. The cumulative number of seconds into the analyzed call to the occurrence of this display also appears.-
ChgAdj n nn.nn Cnnnnnnnnnnnnn nnnnn	(IPS)(S2) - Charge adjustment information displayed as a result of the TOPS 04 operator pressing **KP CHARGE ADJUST** or the TOPS MP operator pressing **{CHARGE ADJUST}** and: a. a one digit identity code b. the current time is displayed (no pressing required) c. a letter to indicate the type of adjustment d. digits to indicate the amount of the adjustment The **START** key (when required). The cumulative number of seconds into the analyzed call is also displayed. The display appears only after the operation of the **START** key.
Cld #nnnnn(sss)	(IPS) - Digits of the called number when dialed by the subscriber, and the total number of elapsed seconds into the call to receipt of the last digit. (LNSMP) - Customer-dialed called number. Four dialed attempts are provided for.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Cld aaa-sss	(IPS,RCL)(DS) - Current called supervision state, followed by the cumulative number of seconds into the call at which the status last changed. On = called party on-hook Off = called party off-hook HLD = calling party on hold as a result of either the **Hold/Access** key or a forward connection being made The display is cleared when the TOPS 04 operator presses **RELEASE FORWARD**. The TOPS MP equivalent is **RLS CLD.** However, if the operator subsequently presses **START** to recycle the call, the called supervision display reappears. Prior to a called party connection and after a release forward, the display is removed.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Clg #nnnnnnnnnnn (sss)	Digits of the calling number, and the cumulative number of seconds into the call to the receipt of the last digit. (OUTASST,IPS,DS)(DDO) - Displays calling NPA-NXX when automatically provided to the TOPS operator, or as a result of the operator pressing **KP BACK** 0 (zero) + **START**. The TOPS MP equivalent is **FNCTS** + 0 + **START.** (OUTASST,IPS,DS)(DDO) - Displays the digits of the calling number on ONI calls as a result of the TOPS operator pressing **KP BACK** + digits + **START**. The TOPS MP equivalent is **CLG** + digits + **START.** The number displays only after **START** is operated. (OUTASST,IPS,DS)(DDO)(TNSMP) - The digits of the calling number, and the cumulative number of seconds into the analyzed call to the receipt of the last digit. Displays the digits of the ANI calling number on calls with automatic number identification (ANI). (RCAMA) - Displays the digits of the calling number as a result of the operator pressing on an ONI or ANIF call. The time entry is updated each time the operator presses a complete number in an effort to input the correct number. (TNSMP only) - Displays the digits of the calling number as a result of the operator pressing an ONI or ANI fail call. The timing entry is updated each time the operator presses a complete number in an effort to input the correct number. (LNSMP) - Displays calling NPA-NXX.
Clg aaa-sss	(IPS,RCL)(DS) - Current calling party supervision state, followed by the cumulative number of seconds into the call at which the status last changed. On = calling party on-hook Off = calling party off-hook HLD = calling party on hold as a result of either the **Hold/Access** key or a forward connection being made.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
C Number or OGT a nnnnnnnnnnnnnnnn	(IPS,RCL) - The digits pressed by the TOPS 04 operator in an attempt to complete the call. The alpha code identifies the key used to enter the digits, as follows: F - **KP FORWARD** O - **KP OVERSEAS** V - **KP VERIFY** S - **Outgoing trunk** key (2 digits pressed for TOPS SP position) M - **Outgoing trunk** key (2 digits pressed for TOPS MP position) B - **KP BACK** (only when digits are followed by **NO CONNECT**) C - Forward called number (IPS,RCL) - The digits pressed by the TOPS MP operator in an attempt to complete the call. The alpha code identifies the key used to enter the digits, as follows: F - **CLD** O - **FNCTS** + 19 + **START** V - **FNCTS** + 10 + **START** or **FNCTS** + 34 S - **Outgoing trunk** key (2 digits pressed for TOPS SP position) M - **Outgoing trunk** key (2 digits pressed for TOPS MP position) B - **CLG** (only when digits are followed by **RLS CLD**) C - Forward called number Information is not displayed until the operation of the **START** key in the keying sequence (excluding outgoing trunk keys). Call attempts to the service assistance position and outgoing trunk keys are identified by the corresponding codes 0-7 in the number field. Reference must be made to the analyzed TOPS complex OGT assignment. Code LOC appears in the number field following the local number when a number is identified by the system as being local. Code VCA or UCA can also be displayed in addition to or instead of a recorded announcement.
CLLI	Trunk group identification in the form aaaa bb xx yyyy aaaa = CITY bb = province/state xx = trunk group identity yyyy = trunk number
Coin	(LNSMP) - Correct coin deposit has been made on a coin call.
Col : nn	(IPS,RCL)(DS) - The number of **COIN COLLECT** key depressions made by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 8 + **START.**

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Con-sss	(IPS)(DS) - Cumulative number of seconds into analyzed call when the subscriber-dialed call is connected through the switch to an outgoing trunk or line.
CON sss	(IPS)(DS) - Cumulative number of seconds into analyzed call when the subscriber-dialed call is connected through the switch to an outgoing trunk or line.
CPU	The analyzed call has either done a call-pickup or has been picked up.
Cust_Group aaaaaaa	Indicates subscriber group name under analysis.
CVCER : nn	The number of erroneous three-digit NXX codes submitted to the calling number verification check. An NXX code is submitted to the calling number verification check whenever a complete calling number is pressed.
CVCOK	Calling number validity check OK. The check passed.
CW	(IPS,RCL)(FF) - Indicates the system has reached a specific calls-waiting threshold. Displayed on call arrival at a position as either IPS or XFR.
DA-sss	An event block that displays the time a DA VR unit is connected to a call. This occurs when a TOPS operator releases a DA call to a DA VR unit., for example, when the listing number of a person is returned from the DAS during a 411 call.
DIG	This event occurs internally every time digits are received by the CM (i.e., on #7 trunks for each IAM and SAM, for CAS trunks there may be one or more depending upon the number of digits).
DirNPA xxx	The NPA code identifies the NPA for which the calling party is requesting information.
DP/DT	Calling origination that is either DP (dial pulse) or DT (Digitone).
DR	(IPS)(FF) - Indicates the operation of the **DIAL RATE** key by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 6 + **START.**
DSD DSG sss sss	Display of called party and calling party disconnected.
EXD	Indicates exclude destination.
EXS	Indicates exclude source.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
GWmode-aaaaa	Indicates the type of calls selected for analysis. The selected call type is represented by one of the following codes: In = incoming calls Out = outgoing calls Cross = combination of incoming and outgoing calls All = all call types
HH : MM : SS	(IPS) - Time of day in 24 hour format (hours, minutes and seconds), indicating service analysis call seizure time. Displayed with receipt of call arrival tone.
Hotel/Coin	(IPS)(FF) - Indicates that the TOPS 04 operator pressed the **HOTEL** or **COIN** key to identify the calling number as a hotel or coin telephone, respectively. The TOPS MP equivalent is **{HOTEL}** and **{COIN}**. The call type display also changes from NCP to Htl or Coin as appropriate.
Hotel/Coin	(IPS)(FF) - Indicates that the TOPS 04 operator pressed the **HOTEL** or **COIN** key to identify the called number as a hotel or coin telephone, respectively. The TOPS MP equivalents are **{HOTEL}** and **{COIN}**.
I	(IPS, RCL) (FF) - Indicates ineffective coin collect attempt by operator in end offices with line number method of coin control.
Inc xxxxxxxxxxxxxxxx xxxx	Indicates the CLLI of the incoming trunk group that was selected by the analyst. A four-digit external trunk number is included if the analyst selected a particular circuit rather than a group.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Itt xx	Indicates the incoming trunk type. Possible trunk types are as follows: R1 = R1 trunk R2 = R2 trunk N5 = N5 trunk NO6= NO6 trunk PL = private line IT = 101 test line C7 = ISUP trunk TUP= TUP trunk GW=Other trunk type (tone, announcement, test, etc.)
INV	SA unable to follow call, analysis terminated.
LCK	Incoming trunk/line has received a lock_out message indicating that it cannot be returned to idle (because of signalling failure, etc). Analysis of this call will terminate.
LM_Drawer xx x xx	Indicates LM drawer number.
LoopStatus aaa-sss	(IPS,RCL)(DS) - Current loop status of the position handling the analyzed call, followed by the cumulative number of seconds into the call at which the status last changed. The status of the loop is represented by one of the following codes: ACS - TOPS operator is in access. Attendant console handling the call. ATTCON level. HLD - the call has been placed on temporary hold. Call on hold for ATTCON level. FLS - the call has been placed on temporary hold. One of the parties has flashed while the call is on hold for ATTCON level.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Mode aaaaaaa	(DS) - Displayed as soon as the type of service is selected and remains until the SASelect level is reentered or logout occurs. Indicates the type of service selected for analysis by the analyst in the SASelect level. The codes displayed are OUTASST, DDDIN, DDO, LNSMP, RCAMA, DA, INT, TNSMP, DIRASST DA,INT n, DIRASST DA n, DIRASST INT, or GWSA.
Mon aaaaaaa	(DS) - Indicates the state of the monitor connection and is one of the following: On - A monitor connection has been established and the analyst can monitor prior to seizure of a call. After call seizure, on indicates the analyst can no longer monitor. The analyst must return to the SASelect level and press command 3 (monitor connect) to reconnect a monitor. Off - the monitor connection has been lost. Service analysis can no longer follow the call. The analyst must return to the SASelect level and press command 3' (monitor connect) to reconnect a monitor. Voice - A call has been seized for analysis and the analyst can actually hear conversation, and network tones and signals over the headset. NoVoice - A call has been seized for analysis and the analyst has been excluded from hearing conversation or network tones and signals but the monitor connection is still established for the call. This is done automatically by the system after a predetermined period of time. It may also be done by the analyst when command VOICE is pressed in the SASelect level.
MUL	An invalid (#7) or mutilated (CAS) digit has been received. Analysis of this call will terminate.
NC-sss	Indicates use of the **NO CHG** key by the AOSS operator and the cumulative time into the call when it occurs. Reflects the display of NC on the operator screen.
Nfy nn	(IPS,RCL)(DS) - The digits of the notification interval displayed as a result of the TOPS operator pressing **KP NOTIFY** + digits + **START**. The digits display only after the operation of the **START** key.
No AMA-sss	(IPS,RCL)(FF) - Cumulative number of seconds into the analyzed call to operation of the **NO AMA** key by the TOPS operator. Also displayed when the system determines that a no AMA condition exists. For example, when a call is advanced to a centralized rate and route.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
NoConn	(IPS,RCL) - Indicates the TOPS 04 operation of the **NO CONNECT** key on an operator-pressed attempt. The TOPS MP equivalent is **RLS CLD.**
Number xxxxxxxxxxx	Indicates the number string as pressed by the operator. The type of number is indicated in the C field.
OC nn	(IPS,RCL)(DS) - The amount of over-collection, in cents, as a result of the TOPS 04 operator pressing **DP OVERCOLLECT** + digits + **START**. The amount is not displayed until the operation of the **START** key. The TOPS MP equivalent is **{OVERCOLLECT}** or **FNCTS** + 9 + **START**.
Ofc xxxxxxxxxxxxxxx	Identification of the office being service analyzed. The actual character representation is contained in the OFCENG table.
OH-sss	Indicates a message transmission to DAS failure.
ORG	Origination of a subsequent event during local dial analysis.
Otg xxxxxxxxxxxxxxx xxxx	Indicates the CLLI of the outgoing trunk group that was selected by the analyst. A four-digit external trunk number is included if the analyst selected a particular circuit rather than a group.
Ott xx	Indicates the outgoing trunk type. Possible trunk types are as follows: R1 = R1 trunk R2 = R2 trunk N5 = N5 trunk NO6= NO6 trunk PL = private line IT = 101 test line C7 = ISUP trunk TUP= TUP trunk GW= Other trunk type (tone, announcement, test, etc.)
PAT sss	(IPS,RCL) - Cumulative number of seconds into the analyzed call to the attachment of an AOSS operator position.
PCB	(IPS)(FF) - Indicates the operation of the **PERSON CALL BACK** key by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 20 + **START.**
PosAttd-sss	Cumulative number of seconds into the analyzed call to the attachment of a TOPS position for ONI purposes.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
PosReqd-sss	Cumulative number of seconds into the analyzed call when an operator position is requested by the system.
PosRls-sss	Cumulative number of seconds into the analyzed call when the position is released, either automatically by the system or manually by the operator.
PRS sss	(IPS,RCL) - Cumulative number of seconds into the call to the release of the AOSS position as a result of the operator pressing **Pos Rls**.
Print	(RCL) - Indicates operation by the TOPS 04 operator of the time and charge (**T&C**) key upon call completion on a T&C call. The TOPS MP equivalent is **{T&C}** or **FNCTS** + 18 + **START.**
PRQ sss	(IPS,RCL) - Cumulative number of seconds into the analyzed call to the request of a AOSS position by the system.
RBK	(IPS,RCL) - Indicates operation of the **RING BACK** key by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 3 + **START.**
RCR sss	Display receiver attached for multifrequency.
Rec-aaa	Indicates if the call being analyzed is to be marked in the CDR record as being analyzed. Value is either ON for CDR record marked or OFF for CDR record not marked.
Req # xxxxxxxxxxxx (sss)	(RCL)(DS) - Identifies requested number entered by the operator. Only the most recent number is displayed. The cumulative time into the call is also shown and saved.
Reset : nn	(IPS,RCL)(FF) - Number of resets by an operator on an ONI call. This display does not appear if call is at TOPS position in end offices with line method of coin control.
Ret: : nn	(IPS,RCL)(DS) - Number of **COIN RETURN** key depressions made by the TOPS 04 operator. The TOPS MP equivalent is **{COIN RETURN}** or **FNCTS** + 7 + **START.**
RFD	(IPS,RCL)(DS) - Indicates operation of the **RING FORWARD** key by the TOPS operator.
RLB-sss	(IPS,RCL)(DS) - Cumulative number of seconds into the analyzed call to the operation of the **RELEASE BACK** key by the TOPS operator.
RLD	Indicates release destination.
RLF sss	(IPS,RCL) - The cumulative number of seconds into the call until the AOSS operator presses **RELEASE FORWARD**. The TOPS MP equivalent is **RLS CLD.**
RLS-ttt	Indicates release source key depression by attendant.

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Rm # nnnnnn aaaa	(IPS,RCL)(DS) - Digits of hotel guest's room number on calls from hotels or similar establishments, or file or extension number on requests for special T&C. Displayed as a result of the TOPS 04 operator pressing **KP ROOM** + digits + **START**. The TOPS MP equivalent is **MISC** + digits + **START**. The room number is followed by alpha characters representing the hotel guest's name in those offices where the name is also entered. Displayed as a result of the TOPS 04 operator pressing **KP NAME** + alpha characters + **START**. The TOPS MP equivalent is **MISC** + digits + **START**.
RPR aaa	(IPS,RCL) - Indicates reason position requests, as identified by the system. The recall type is represented by one of the following codes: IPS - initial position seizure Nfy - notify (TOPS only) Ovt - overtime (TOPS only) FLS - flash T&C - time and charge (TOPS only) Xfr - call transfer (TOPS only) RPS - recall position seizure The cumulative number of seconds into the analyzed call is also displayed.
RS nnn	(IPS,RCL)(DS) - The digits of the rate step displayed when calculated by the system or as a result of the TOPS operator pressing **KP RATE STEP** + digits + **START**. When pressed by the operator, the digits display only after the operation of the **START** key. The TOPS MP equivalent is **FNCTS** + 14 + **START**. Displayed on initial position and recall seizures.
SFW	This event occurs when the call_error procedure is called by call_processing software. This represents an unrecoverable error in the software – the call and analysis are terminated.
SrvType aaa-sss	Indicates the service type of the current call, and the time elapsed from the origination of the call. Call types are TA, DA, and INT.
SGD	Indicates signal destination.
SGS	Indicates signal source key depression by attendant.
SPE	A special feature has been activated on this call. Analysis is terminated (may be followed by the INV event to show that SA cannot continue to analyze the call).

—continued—

Table 10-1
Displayed call event definitions (continued)

Displayed call event	Description and significance to the analyst
Spl # xxxxxxxx-xxxxxxxx zzz	(IPS,RCL)(DS) - The digits of the special billing number, credit card or third number as a result of the TOPS 04 operator pressing **KP SPECIAL** + digits + **START**. The digits do not display until the operation of the **START** key. The TOPS MP equivalent is **SPL.** Where zzz represents one of the following: Hot - Identifies the current special billing number displayed as matching a number contained in the telephone company's fraudulent list. Vfy - Indicates to the TOPS operator that an American long distance card number has been identified by the system and that further verification is required. X - Indicates the number of times that **KP SPL** + **START** is pressed during the validation of an American long distance card. This keying sequence prevents the calling party from hearing the validation announcement. The TOPS MP equivalent is **SPL.**
StTmg-sss	(IPS,RCL)(S2) - Cumulative number of seconds into the analyzed call when the **START TIMING** key is pressed by the TOPS 04 operator. The TOPS MP equivalent is **FNCTS** + 29 + **START**.
sss	(IPS,RCL)(DS) - Cumulative number of seconds elapsed in the call under analysis since call seizure. Displayed whenever the analyst presses 14 (Time) in the service analysis level.
TB nn	(IPS,RCL) - Digits of the trouble report as a result of the TOPS operator pressing **KP TROUBLE** + digits + **START**. The digits do not display until the operation of the **START** key. The TOPS MP equivalent is **TRBL.**
T&C	(IPS)(FF) - Indicates the operation of the **T&C** is disallowed by the system; T&C is cleared. The TOPS MP equivalent is **{T&C}** or **FNCTS** + 18 + **START.**
TO nn	(IPS,RCL) - Traffic office number of the position handling the call.
TO : nn	Traffic office number of the position handling the call.
TON	The analyzed call has been routed to a tone.
TR xx	Digits of a trouble report as pressed by the AOSS operator.
VFG	The analyzed call has terminated on a "virtual facility group."
VQ-sss	Indicates no ARU channel is available to playback the VR announcement to the customer, even though one is required.

—continued—

Table 10-1
Displayed call event definitions

Displayed call event	Description and significance to the analyst
nnn.nn Min(sss)	(IPS,RCL)(S2) - The initial period and overtime elapsed conversation time, as identified by the system, on a coin-paid call. The initial period on a coin-paid initial period flash recall. The elapsed conversation time computed by the system on calls held on loop. The cumulative number of seconds into the analyzed call to the occurrence of this display also appears.
Xx	Indicates that X1 or X2 is displayed on the operator screen in conjunction with a call transferred.
zzz	Refer to - Spl # xxxxxxxx-xxxxxxxx zzz
	—end—

Table 10-2
Operator-detected events

Mnemonic	Description
ACK	acknowledgment by operator
ANS	verbal response by called party
BSY	busy tone heard
ECD	end of report passing, by called party
ECG	end of report passing, by calling party
OOP	answer received by another operator
OPR	verbal answer by initial operator
REC	recorded announcement heard
RNG	ringing tone heard
SCH	start of chargeable time
SOP	start of communication by operator with calling or called party
SSG	special signal received

Note: Refer to “SA status display commands” on page 6-2 for a more detailed description of operator-detected events.

Table 10-3
Machine-detected events

Mnemonic	Description
ANN	call routed to announcement
ANS	called party answered
CON	call connected through the switch
CPU	call pickup
CFX	call forwarding
DIG	called digits received
DSD	called party disconnect
DSG	calling party disconnect
FLS	flash for special feature
INV	SA system unable to follow call .. analysis terminated
LCK	calling party gone to lockout .. analysis terminated
MUL	digits have been mutilated .. call routed to recorded announcement
ORG	origination of a subsequent attempt during local dial analysis
RCR	receiver attached for line or MF trunk
SFW	software failure .. analysis terminated
SPE	special feature
TON	tone returned to calling party
VFG	virtual facility group

Automatic service analysis

Introduction

The Automatic Service Analysis (ASA) functionality is available on the DMS-300 system in BCS36. The system includes selection specification, control interface, sampling system, and output system.

The ASA functionality allows the user to monitor a selected sample of calls on the switch without needing a service analyst. Data produced by ASA allows a good representative of the quality of the call with internal and external failures readily identifiable. All results from ASA are generated in the form of logs that can be directed via LOGUTIL to various devices.

SA functionality

The Service Analysis (SA) system, as described in the rest of this document, is referred to as Manual Service Analysis (MSA) in this chapter.

The SA functionality allows the operating company to monitor and analyze traffic on the DMS system. The existing MSA functionality requires a dedicated MSA position, manned by a service analyst who monitors the call and inputs subjective data on the quality of service.

The additional functionality provided by ASA allows the system to monitor traffic quality without a dedicated position or analyst. Data gathered includes internal and external problems. The only disadvantage to ASA is the inability to monitor the speech path and enter analyst-observed events.

ASA is supported on the DMS-300 system for the following Gateway trunk types:

- IT (T101 Testline)
- PL (Private Line)
- CCITT Signaling System R1
- CCITT Signaling System R2 (Digital only)
- CCITT Signaling System Number 5
- CCITT Signaling System Number 6
- CCITT Signaling System Number 7—TUP (Blue Book)
- CCITT Signaling System Number 7—TOP (Red Book)

- CCITT Signaling System Number 7—TUP+
- CCITT Signaling System Number 7—ISUP (Blue Book)
- British Telecom National User Part—BTUP (BTNR167)

At any one time there can be a maximum of five SA sessions on the switch. Each session is defined as either Manual (MSA) or Automatic (ASA).

Each ASA session can have up to five slots defined. Each slot is a combination of a time period, target number of calls to be analyzed, and call selection criteria. No two slots of the same session can overlap, although they can be contiguous. For example, if a slot is defined to fun from 0500 to 1300, a slot may not be defined in the same session to run from 1230 to 1500. However, a slot could be defined to run from 1301 to 1500. A slot of a particular session is known as a session slot.

SA user interface

Each session may be assigned to a manual or automatic function. In Manual function, the operator controls the session. In Automatic function, the session is reserved for use by a automatically scheduled SA task.

The SA user may access any of five independent sessions. The sessions are numbered 1 to 5 and are defined in Table SAAUTO. Each session can be controlled in one of two ways:

- changing the datafill in Table SAAUTO
- using the new CI command SACONTROL

The following controls are added to the DMS-300 machine interface for ASA functionality:

- Table SASPEC
- Table SAAUTO
- CI command SACONTROL

Table SASPEC

Table SASPEC is used to define the selection criteria of the calls to be analyzed to the ASA system. Each session slot in Table SAAUTO has an index into a particular set of selection criteria in Table SASPEC.

Table SAAUTO

Table SAAUTO is used to define whether a particular session is to be used for MSA or ASA. If the session is ASA, the table defines the analysis time intervals, the frequency of the analysis, the target number of calls to be sampled, and the sampling criteria.

Table SAAUTO also allows the user to define how the output from the ASA session is presented. There are three options: PERCALL, SUMMARY, or FULL.

Once a PERCALL ASA session starts sampling calls, each call selected for analysis has a log generated for it. Per-call logs generated by ASA contain the same system information as MSA call logs. These logs also contain any treatment or backward signals applied or received during the call.

During a SUMMARY session, a summary log is generated after every one-hundred sampled calls, or at the end of the session slot, whichever comes first. This log summarizes all of the information gathered in a packed format, with up to 100 calls per log. The information is presented in a packed hex format intended for machine reading.

In FULL mode, both per-call and summary logs are generated.

Refer to *Log Report Reference Manual,* for more information on ASA logs.

Command SACONTROL

After a session is defined as Automatic in Table SAAUTO and the selection criteria defined in Table SASPEC, it must be activated by using commands in the CI increment SACONTROL. Once activated, a session samples and analyzes calls at the start time of the next slot.

A user enters the SACONTROL CI increment by typing SACONTROL from the command line. The user is then presented with commands allowing the user to query the status of any or all SA sessions, activate ASA sessions, deactivate sessions, and force a session from ASA to MSA.

SACONTROL status display commands

The following commands and their associated parameters are available at the SACONTROL status display level:

- QUERYSA
- ACTSA
- DEACTSA
- MANSA
- DATESA

QUERYSA command

The QUERYSA command is a non-menu command used to determine the current state of one or all of the SA sessions.

>QUERYSA { (session_number) | ALL }

Parameter	Definition
session_number	Session number to query. Value is 1–5.
ALL	Query all sessions.

For each session requested, the system returns a response indicating the state of that session:

Response
`<session_number> MANUAL` The session specified by <session_number> is in the Manual state and may be used by MSA.
`<session_number> AUTOMATIC INACTIVE` The session specified by <session_number> is in the Automatic Inactive state. The session is datafilled as AUTO in Table SAAUTO, but it has not been activated.
`<session_number> AUTOMATIC ACTIVE <slot start> <slot stop> <slot index>` The session specified by <session_number> is in the Automatic Active state. The session is datafilled as AUTO in Table SAAUTO and is active. The slot start and slot stop times are given for the next slot to become active (as datafilled in Table SASPEC). The slot index is also displayed.
`<session_number> AUTOMATIC SAMPLING <slot start> <slot stop> <slot index> <target calls> <number sampled>` The session specified by <session_number> is in the Automatic Sampling state. The session is datafilled as AUTO in Table SAAUTO, is active, and is currently performing service analysis. The slot start and slot stop times are given for the slot. The slot index is also displayed. The target number of sampled calls is given along with the number of calls sampled so far.

Figure 11-1 shows an example of the QUERYSA command.

Figure 11-1
QUERYSA command

```
>QUERYSA ALL

Session State               Start   Stop Slot Target Sampled
   1    MANUAL
   2    AUTOMATIC INACTIVE
   3    AUTOMATIC SAMPLING 162 10:00 13:40 23  1000    326
   4    AUTOMATIC ACTIVE   163 21:00 22:00 1
   5    MANUAL
```

ACTSA command

The ACTSA command is a non-menu command used to activate the specified session.

>ACTSA (session_number)

Parameter	Definition
session_number	Session number to activate. Value is 1–5.

For each session requested, the system returns a response indicating the state of that session:

Response
`Error – session is already ACTIVE` The session specified by <session_number> is already active and may not be activated again.
`Error – session is MANUAL` The session specified by <session_number> is in the Manual state and may not be activated.
`Session activated` The session specified by <session_number> is set to the Automatic Active state. This state can be verified by the QUERYSA command.

Figure 11-2 shows an example of the ACTSA command.

Figure 11-2
ACTSA command

```
>ACTSA 3

Session ACTIVATED
```

DEACTSA command

The DEACTSA command is a non-menu command used to deactivate the specified session.

>DEACTSA (session_number)

Parameter	Definition
session_number	Session number to deactivate. Value is 1–5.

A warning is given if the user attempts to deactivate a session that is currently sampling. The user is asked to conform their wish to go ahead.

```
Warning – Session <n> is currently sampling.
          Deactivating it will prematurely terminate the slot.
```

If the user does deactivate a session that is sampling, the data is output as though the end of the session had arrived.

For each session requested, the system returns a response indicating the state of that session:

Response
`Error – session is not ACTIVE` The session specified by <session_number> is not active and may not be deactivated.
`Error – session is MANUAL` The session specified by <session_number> is in the Manual state and may not be deactivated.
`Session deactivated` The session specified by <session_number> is set to the Automatic Inactive state. This state can be verified by the QUERYSA command.

Figure 11-3 shows an example of the DEACTSA command.

Figure 11-3
ACTSA command

```
>DEACTSA 3

Session DEACTIVATED
```

MANSA command

The MANSA command is a non-menu command used to force an Automatic session to the Manual state.

>MANSA (session_number)

Parameter	Definition
session_number	Session number to force manual. Value is 1–5.

A warning is given to inform the user that datafill from Table SAAUTO will be lost by using this command. The user is asked to confirm their wish to go ahead.

```
Warning – Datafill in Table SAAUTO for session <n> will
          be lost.
```

For each session requested, the system returns a response indicating the state of that session:

Response
`Error – session is not AUTOMATIC INACTIVE` The session specified by <session_number> is not in the Automatic Inactive state and may not be forced to manual. The user must deactivate an Active or Sampling session in order to force it manual.
`Error – session is MANUAL` The session specified by <session_number> is in the Manual state and may not be forced manual.
`Session forced to MANUAL` The session specified by <session_number> is set to the Manual state. The datafill for the session is changed to Manual in Table SAAUTO. This state can be verified by the QUERYSA command.

Figure 11-4 shows an example of the MANSA command.

Figure 11-4
MANSA command

```
>MANSA 5

WARNING – Datafill in Table SAAUTO for session 5 will
          be lost.
PLEASE CONFIRM (YES/NO)

>YES

Session forced to MANUAL.
```

DATESA command

The DATESA command is a non-menu command used to convert a calendar data into a Julian day or a Julian day into a calendar day.

>DATESA (type of date)
CALENDAR (day) (month) (year)
JULIAN (Julian day) (year)

Parameter	Definition
type of date	Enter either a calendar date or a julian date. · Calendar — Day (01–31) is entered in the format DD. — Month (01–12) is entered in the format MM. — Year (1976–2039)is entered in the format YYYY. · Julian — Julian day (001–366) is entered in the format DDD. — Year (1976–2039)is entered in the format YYYY.

For each session requested, the system returns a response indicating the state of that session:

Response
`The Julian day for that date is 121.` The equivalent Julian date for the calendar date entered is Julian day 121, for the same year.
`The date for that Julian day is 30/4/1992.` The equivalent calendar date for the Julian day and year entered is 30/4/1992 or April 30, 1992.
`Bad date – either the date is invalid, or date is before 1976.` The calendar date entered is invalid. For example, if the user receives this message if the calendar date April 31, 1992 is entered. (April only has 30 days.)
`Bad date – either the julian date is invalid, or date is before 1976.` Either the Julian day is invalid, or the year entered is before 1976. For example, the user may have typed the Julian day 366 and the year 1991, when 1991 only has 365 days in it.

Figure 11-5 shows an example of the DATESA command.

Figure 11-5
DATESA command

```
>DATESA CALENDAR 30 04 1‘992
The Julian day for that date is 121.


>DATESA JULIAN 121 1992
The date for that Julian day is 30/04/1992.


>DATESA CALENDAR 31 04 1992
Bad date –  either the date is invalid,
            or the date is before 1976.
```

List of terms

1FR

One–party Flat Rate Line

2FR

Two–party Flat Rate Line

AMA

Automatic message accounting

ANI

Automatic number identification

ANS

Advanced Network Systems

ASA

Automatic Service Analysis

AOSS

Auxiliary operator services system

ATC

Access to carrier

ATTCON

Attendant console

Automatic message accounting (AMA)

An automatic recording system that documents all the necessary billing data of subscriber–dialed long distance calls.

Automatic number identification (ANI)

The number identification of the calling station. This number is used for billing records generated by an interLATA/international carrier. ANI is used in the United States only.

Automatic Service Analysis (ASA)

The ASA functionality allows the user to monitor a selected sample of calls on the switch without needing a service analyst. Data produced by ASA allows a good representative of the quality of the call with internal and external failures readily identifiable.

Auxiliary operator services system (AOSS)

A service–related system in which operators provide subscribers with such services as directory assistance (local & long distance) and call intercept.

Batch change supplement (BCS)

A DMS–100 Family software release.

BCS

Batch change supplement

Call detail recording (CDR)

A system that collects and records data on all calls processed by the DMS–300 gateway international switching system. CDR data is stored on a recording device, and is used to compile studies on service (traffic and equipment), division of revenue, engineering, and fraud.

CAMA

Centralized automatic message accounting

CDR

Call detail recording

Centralized automatic message accounting (CAMA)

A system that produces itemized billing details for subscriber–dialed long distance calls. Details are recorded at a central facility serving a number of exchanges. In exchanges not equipped for automatic number identification, calls are routed to a CAMA operator who obtains the calling number and keys it into the computer for billing.

CI

Command interpreter

Class of service (COS)

The categorization of telephone subscribers according to the specific types of service extended. Telephone service distinctions include such items as rate differences between individual and party lines, flat rate and message rate, and restricted and extended area service.

CLLI

Common language location identifier

Command interpreter (CI)

A support operating system component that functions as the main interface between machine and user. Its principal roles are as follows;

1. To read lines entered by a terminal user.
2. To break each line into recognizable units.
3. To analyze the units.
4. To recognize command item–numbers on the input lines.
5. To invoke these commands.

Common language location identifier (CLLI)

A standard identification method for trunk groups in the form:
aaaa bb xx yyyy
where: aaaa = city code
bb = province/state code
xx = trunk group identity
yyyy = trunk number

CN

Coin

COS

Class of service

DCM

Digital carrier module

DDD

Direct distance dialing

DDDIN

Direct distance dialing incoming

DDO

Direct dialing overseas

Dial pulse (DP)

Method of transmitting signaling information from a telephone set or trunk circuit. Dial pulses are generated by alternately opening and closing a contact in the telephone through which the dc current flows.

Digital carrier module (DCM)

A peripheral module, located in a digital carrier equipment frame, that provides speech and signaling interfaces between a DS30 network port and digital trunks. A DCM is provisioned with up to five line cards.

Digital Multiplex System (DMS)

A central office switching system in which all external signals are converted to digital data and stored in assigned time slots. Switching is performed by reassigning the original time slots.

Digital trunk controller (DTC)

A peripheral module that interfaces DS30 links from the network with digital trunk circuits.

Digitone (DT)

A service–related telephony feature that provides for the generation of address information from a telephone set in the form of dual–tone multifrequency signals by the manual pressing of non–locking buttons.

Direct dialing overseas (DDO)

Dialing of calls to an overseas destination without the help of the operator. Usually accomplished by first dialing 011 followed by a country code and a national number.

Direct distance dialing (DDD)

A telephone exchange service that permits a subscriber to call a number outside his local area without operator assistance.

DISA

Direct inward system access

DMS

Digital Multiplex System

DP

Dial Pulse

DT

Digitone

DTC

Digital trunk controller

FGD

Feature group D

GWSA

Gateway service analysis

IBN

Integrated Business Network

IC

InterLATA carrier

ICI

Incoming call identification

ID

Identification

Input/output controller (IOC)

An equipment shelf that provides an interface between up to thirty–six input/output devices and the central message controller. The IOC contains a peripheral processor that independently performs local tasks, thus releiving the load on the central processing unit.

Integrated Business Network (IBN)

Also known as Meridian Digital Centrex. A special DMS business services that utilizes the data–handling capabilities of a DMS–100 Family office to provide a centralized telephone exchange service. Many optional features are also available.

InterLATA carrier (IC)

A carrier whose services originate and terminate in different local access and transport areas.

Inward wide area telephone service (INWATS)

A telephony service that allows a subscirber to receive telephone calls originated within specified service areas without a charge to the originating party.

INWATS

Inward wide area telephone service

IOC

Input/output controller

IT

Intertoll

LCC

Line class code

Line class code (LCC)

An alphanumeric code that identifies the class of service assigned to a line.

Line module (LM)

A peripheral module that provides speech and signaling interfaces for up to 640 subscriber lines. It consists of line drawers, a line module controller, and a frame supervisory panel.

Line trunk controller (LTC)

A peripheral module that is a combination of the line group controller and the digital trunk controller, and provides all of the services offered by both.

LM

Line module

LNSMP

Local network service measurement plan

LTC

Line trunk controller

Maintenance and administration position (MAP)

A group of components that provide a user interface between operating company personnel and the DMS–100 Family systems. A MAP consists of a visual display unit and keyboard, a voice communications module, test facilities, and MAP furniture. MAP is a trademark of Northern Telecom.

MAP

Maintenance and administration position

MDF

Modulated data frequency

MP

Multipurpose position

Multipurpose position (MP) terminal

An operator position that can be configured as toll and assist, in–charge, assistant, or force manager. The MP terminal consists of the base unit, headset, keyboard, and CRT.

NCN

Noncoin

Network module (NM)

The basic building–block of the DMS–100 Family switching network. The NM accepts incoming calls and, using connection instructions from the central control complex, connects them to the appropriate outgoing channels. Activities in the NM are controlled by the network message controllers.

NM

Network module

Northern Telecom (NT)

Part of the tricorporate structure consisting of Bell–Northern Research, Bell Canada, and Northern Telecom Ltd.

NPA

Numbering plan area

NT

Northern Telecom

Numbering plan area (NPA)

Any of the designated geographical divisions of the U.S., Canada, Bermuda, the Caribbean, Northwestern Mexico, and Hawaii within which no two telephones will have the same seven–digit number. Each NPA is assigned a unique three–digit aread code.

OGT

Outgoing trunk

ONI

Operator number identification

Operator number identification (ONI)

The equipment used to bring an operator into the circuit to check the calling number when a subscriber has direct–dialed a long distance call that is to be charged on an itemized bill basis by CAMA equipment.

Outgoing trunk (OGT)

A trunk used for calls going out to a distant toll center.

Outward wide area telephone service (OUTWATS)

A telephony service, provided over one or more dedicated access lines to the serving central office, that permits subscribers to make calls to specified service areas on a direct dialing basis for a flat monthly charge or for a charge based on accumulated usage. Outward WATS lines have special directory numbers.

OUTWATS

Outward wide area telephone service

PABX

Private automatic branch exchange

PBX

Private branch exchange

PEC

Product engineering codes

POTS

Plain ordinary telephone service

Private automatic branch exchange (PABX)

Local automatic telephone office serving extensions in an organization and providing access to the public network.

Private branch exchange (PBX)

A private telephone exchange, either automatic or attendant–operated, serving extensions in an organization and providing access to the public network.

Private exchange (PX)

A telephone exchange, either automatic or attendant–operated, that provides telephone service within an organization but does not provide connections to the public network.

Product engineering codes (PEC)

An eight–character code that provides a unique identification for each marketable product manufactured by Northern Telecom Ltd.

PX

Private exchange

RC

regional center

Receive only (RO)

Refers to a teleprinter or visual display unit that receives data via the input/output controller. This data consists of such items as operational measurements and maintenance output reports from the DMS–100 Family system. RO printers are located in maintenance and traffic–management areas.

Regional center (RC)

Class 1 office; the highest level toll office in the North American switching hierarchy. Regional centers form the basic upper–level network for long distance traffic.

RO

Receive only

RONI

Remote operator number identification

SA

Service analysis

Service analysis (SA)

A class of operating company personnel authorized to access the input/output system of the DMS–100 Family systems to obtain information concerning the quality of call completion activities. SA users may only effect changes to data associated with this class.

SC

SuperCAMA

Service position (SP)

A type of trunk circuit with the capability of interfacing with a traffic service position.

SP

Service position

TAFAS

Trunk answer from any station

TC

Time and charges

Time and charges (T&C)

A service provided by operators whereby the duration of and charges for a long distance call are quoted to a subscriber upon request.

TM

Trunk module

TNSMP

Toll network service measurement plan

Toll tandem (TT)

A type of trunk circuit used to interface with an intertoll or toll tandem trunk.

TOPS

Traffic Operator Position System

Traffic Operator Position System (TOPS)

A call processing system made up of a number of operator positions. Each operator position consists of a visual display unit (VDU), a controller, a keyboard, and a headset.

Trunk module (TM)

A peripheral module, in a trunk module equipment frame, that provides speech and signaling interfaces between a DS30 network port and analog trunks.

TT

Toll tandem

VFG

Virtual facility group

DMS-100 Family

Service Analysis

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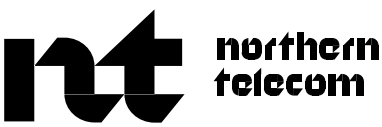
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