SS#7 MONITOR
User Manual

November 1990
Version 2.0

PREFACE

This manual is intended to provide a quick and easy-to-use instruction guide to the basic operation of the SS#7 Monitor. It should be used along with the basic User Manual.

This manual is not intended to provide information concerning protocol specifications, nor is it intended as a programmer's manual. Refer to the SS#7 Programmer's Manual for programming information.

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PREFACE

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LIST OF FIGURES

1. INTRODUCTION

SS#7 (Signalling System #7) is a specialized network designed for the purpose of operating a public telecommunications network. SS#7 differs from previously used signalling systems in that the signalling path:

- Is physically separate from the data/voice path;
- can serve a very large number of circuits simultaneously as well as non-circuit related signalling or information retrieval functions; and
- can employ physical diversity and automatic rerouting in case of failures.

This version of the SS#7 Monitor fully supports the protocols defined by CCITT Blue Book Q Series Recommendations. National or network specific variations are also supported on a customized basis. The relationship of the various functional levels of the SS#7 protocol is shown in Figure 1-1.

OSI Layers · Network Application Processes e.g. SMAP, CALL control · SS#7 Levels

Layer 7 — Application

Layer 6 — Presentation

Layer 5 — Session

Layer 4 — Transport

OMAP

TCAP

TCISP

}TC

ISUP TUP

Level 4

Layer 3 — Network

SCCP

Layer 2 — Link

Layer 1 — Physical

MTP

Level 3
Level 2
Level 1
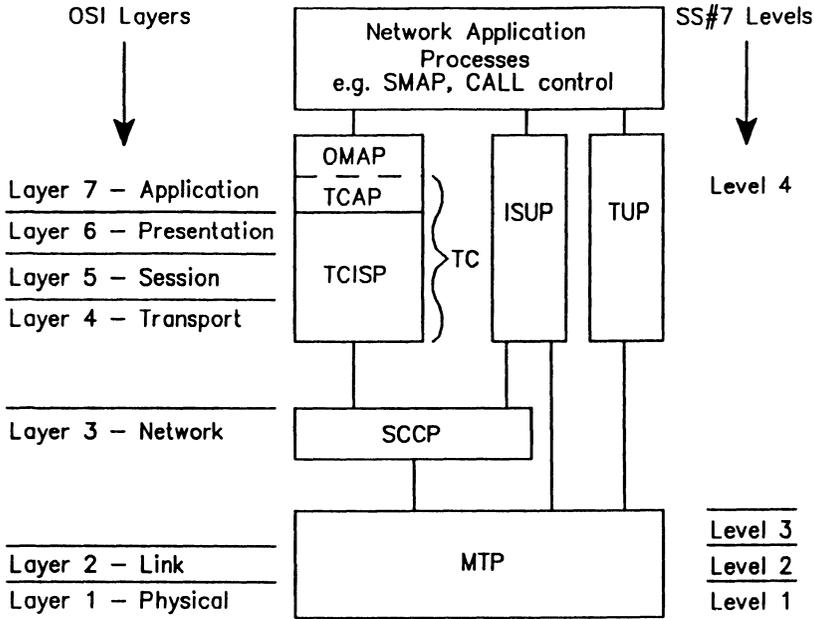
Legend	
ISUP	ISDN User Part
OMAP	Operations Maintenance Application Part
MTP	Message Transfer Part
TC	Transaction Capabilities
TCAP	Transaction Capabilities Application Part
TCISP	Transaction Capabilities Intermediate Service Part
TUP	Telephone User Part
SCCP	Signalling Connection Control Part

Figure 1—1 Functional Level of the SS#7 Protocol

NOTE

TCAP forms the common layer 7 elements for users requiring transaction related services. The corresponding layers 4 through 6, which together with TCAP form the complete set of transaction capabilities, are currently undefined. The applications supported by transaction capabilities are, for the most part, network specific.

2. LOADING THE SS#7 MONITOR PROGRAM

The SS#7 Monitor program can be loaded on a WAN interface or a PRA Test Channel. This section uses PRA Test Channel 1 (timeslot 24) as an example.

NOTE
   Refer to the basic User Manual for instructions to load an
   application on a WAN interface.

Before loading the program, ensure that the system is configured as described in the 'Monitoring at the Primary Rate Access' section in the basic User Manual.

```
┌────────────────────────────────────────────────────┐
│                    ▮PRA-Config                      │
└────────────────────────────────────────────────────┘
              │       ┌──┐                   │
              │       │f2│                   │
              │     ┌─────────────────┐      │
              │     │ Channel Menu    │      │
              │     └─────────────────┘      │
```

```
┌──────────────────────▐ Channel Setup Menu ▌──────────────────────┐
│                                                                   │
│    Channel :    Test Chan 1         Drop and Insert Mode :        │
│                                        Channel Subnode    ---     │
│                                                                   │
│    Specify Parameters :             Current Parameters :          │
│      PRA Port         ---             PRA Port         A/B        │
│      Timeslot         24              Timeslot         24         │
│      Inverted HDLC    NO              Inverted HDLC    NO         │
│      Voice Encoding   ---             Voice Encoding   ---        │
│                                                                   │
│    Configure Test Chan :                                          │
│      Assign Parameters           ➜ Application :   None Loaded    │
│                                                                   │
└───────────────────────────────────────────────────────────────────┘
```

```
  │        ┌──┐                    │
  │        │f1│                    │
  │      ┌──────────────────────┐  │
  │      │ Load Application on TC #1 │
  │      └──────────────────────┘  │
```
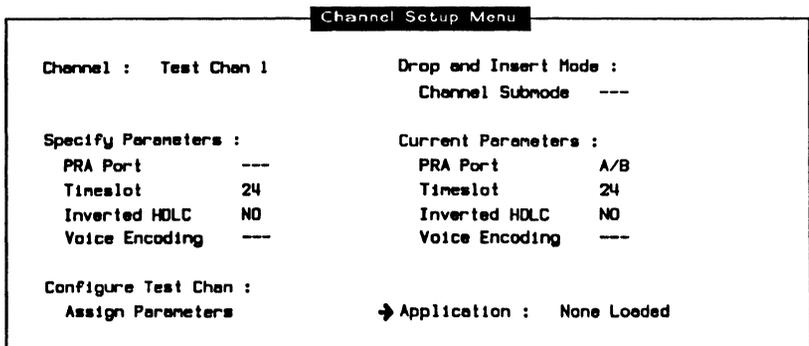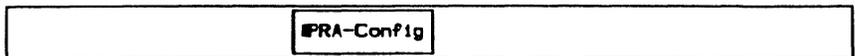
```
   ┌──────── PRA Monitor Applications ────────┐
   │                                          │
   │    Universal         X.25                │
   │    SDLC/SNA          X.25/0              │
   │    TELETEX           X.75                │
   │    ISDN D Channel  → SS#7                │
   │                                          │
   │    Statistic Applications:               │
   │    SDLC/SNA          X.25                │
   │                                          │
   └──────────────────────────────────────────┘
```

```
   ┌f1┐
 ┌─┴──┴──────────┐
 │ Load Application │
 └─────────────────┘
```

When the application has finished loadin g:

```
       ┌f2┐
     ┌─┴──┴──────────┐
     │ Switch to IC #1 │
     └────────────────┘
```

3. CONFIGURATION

In the default configuration, the monitor i s offline. SS#7 protocol files
are not loaded, all triggers and filters are deactivated, disk recording is
off, RAM capture is on, and the display is set to short format. The
default settings can be changed on the Level 1 and Level 2 Configuration
Menus and the appropriate protocol files selected. The monitor can then
be placed online to receive live data.

Additionally, a customized ITL script can be created to automatically
configure the monitor when the application is loaded. Refer to the SS#7
Programmer's Manual for a sample configuration file.

3.1 Level 1

When running on a PRA interface, level 1 is configured on the Home
processor prior to loading the application as described in the 'Monitoring
at the Primary Rate Access' section in the basic User Manual.

To configure level 1 for a WAN interface:

```
┌─────────────────────────────────────────────────────────────┐
│                         │ Monitor │                          │
└─────────────────────────────────────────────────────────────┘
    ┌───────────────┐
    │   │ f1 │       │
    │  Level 1 Menu  │
    └───────────────┘
```

```
                 ┌──────── Level 1 Configuration Menu ────────┐
                 │                                             │
                 │            Signalling Data Link Level       │
                 │                                             │
                 │      → Interface Type      RS232C/V.28      │
                 │        Bit Rate            64000            │
                 │        BOF Timestamp       OFF              │
                 │                                             │
                 └─────────────────────────────────────────────┘
```
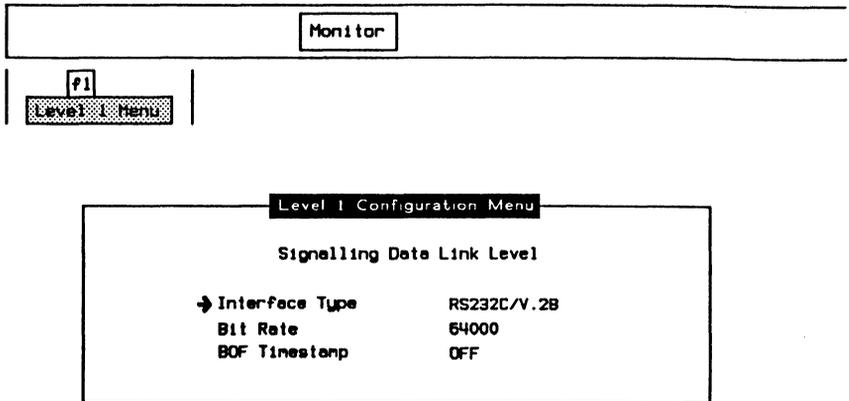
→ *Interface Type*
The connector module contains three interface connectors:
  • RS–232C/V.28 (default)
  • V.35 or V.36
  • RS–422/V.11

→ *Bit Rate* (WAN and PRA Interface)
The interface speed is measured, in bits per second, directly from the
physical line.

→ *BOF Timestamp* (WAN and PRA Interface)
Selects whether a beginning of frame timestamp is saved for each
incoming message (default is off).

🖐 **NOTE**
   End of frame timestamps are always saved.

___

3.2 Level 2

```
                          ┌──────────┐
                          │ Monitor  │
                          └──────────┘
```
```
                    ┌─┐
                    │f2│
              ┌─────────────┐
              │ Level 2 Menu │
              └─────────────┘
```
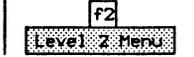
```
┌────────────────Level 2 Configuration Menu────────────────┐
│                                                           │
│                     Signalling Link Level                 │
│  → SU Compression    MAX                                  │
│                                                           │
│     SUERM Function   ON        Octet Counting Mode  AUTO  │
│       T   Threshold  64           Maximum SIF       272   │
│                                                           │
└───────────────────────────────────────────────────────────┘
```

→ *SU Compression*
Successive identical FISU's or LSSU's on the same channel can be captured and displayed as a single frame with an indication of the number of copies received.

Modify Count	Sets compression to a specified maximum number of successive identical FISU's or LSSU's on the same channel.
MAX (default)	Sets compression of successive identical FISU's or LSSU's on the same channel up to 99,999,999 copies.
OFF	Compression is not performed.

⚡ **WARNING**
   High levels of FISU or LSSU traffic, with reduced or eliminated compression, can result in machine overload.

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→ *SUERM Function*
Selects whether errors are monitored according to the SUERM
specification. Every SU received with an error increments the SUERM
counter. Every 256 SU's received with or without an error decrements
the counter. When the SUERM counter reaches a preset T Threshold, a
link failure indication is reported to the user and the SUERM function is
turned off (default is on).

→ *T Threshold*
Sets the threshold for reporting a link failure (default is 64). Used with
the *SUERM Function*.

→ *Octet Counting Mode*
Selects the method of octet counting. When active, the SUERM counter
is incremented every 16 octets received. The start and stop of octet
counting is reported to the user (see the SS#7 Programmer's Manual).

AUTO (default)	Starts octet counting when an octet containing seven successive '1' bits is received, or when an SIF is received with a length greater than the specified maximum SIF.
	Stops octet counting when an octet containing six successive '1' bits is received.
ON	Continuously performs octet counting without conditions.
OFF	Octet counting is not performed.

→ *Maximum SIF*
Specifies the maximum length of the signalling information field used
with octet counting. Valid values are 1 through 999 (default is 272
octets).

3.3 Saving Configurations

Previously defined configuration settings can be saved to disk for later retrieval.

Example:
Save the current configuration in a file named CONFIG on floppy drive DR0.

| Monitor |

| **f3** |
| Save Config |

□ Enter the filename and press ↵ (RETURN).
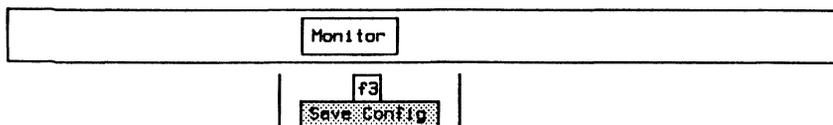
| Enter Configuration Filename: DR0:CONFIG█ |

3.4 Loading Configurations

Previously saved configuration settings can be retrieved from disk.

Example:
Retrieve a configuration saved in the file named CONFIG on floppy drive DR0.

| Monitor |

| **f4** |
| Load Config |

___

□ Enter the filename and press ◄┘ (RETURN).

```
┌──────────────────────────────────────────────────────────────────┐
│  Enter Configuration Filename:  DRO:CONFIG█_____                │
│                                                                    │
└──────────────────────────────────────────────────────────────────┘
```

3.5 Selecting a Protocol Set

All or individual functional parts of a selected protocol set can be
selected and then loaded. The protocol filename (less the suffix −.T),
drive, description, version, and an indication of whether the file is loaded
are listed on the Protocol Set Selection Menu.

Example:
Select the CCITT protocol set and load all the associated files.

```
┌──────────────────────────────────────────────────────────────────┐
│                          │ Monitor │                               │
└──────────────────────────────────────────────────────────────────┘
                                                      │     │ f5 │   │
                                                      │ Protocol Set Menu │
```

```
┌───────────────────────────────────────────────────────────────────┐
│                      Protocol Set Selection Menu                    │
│  ➜ Protocol Variance:  All Available Files                          │
│                                                                     │
│    Name         Drive    Description                    Ver Loaded  │
│    CCITT_LINK88  VD2   CCITT MTP Level 2, Q.703, 1988    1.0        │
│    CCITT_NET88   VD2   CCITT MTP Level 3, Rec Q.704, 1988 1.0       │
│    CCITT_SCCP88  VD2   CCITT SCCP, Q.713, 1988           1.0        │
│    CCITT_ISUP88  VD2   CCITT ISDN User Part, Q.763, 1988 1.0        │
│    CCITT_TCAP88  VD2   CCITT TCAP/OMAP, Q.773/Q.795, 1988 1.0       │
│    TC_TCAP88     VD7   Telecom Canada TCAP, Issue 1, 1988 1.0       │
│    CCITT_TUP88   VD7   CCITT TUP, Q.723, 1988            1.0        │
│    ANSI_ISUP88   VD7   ANSI ISDN User Part, T1.113-1988  1.0        │
│    ANSI_NET88    VD7   ANSI MTP Level 3, T1.111.4-1988   1.0    ↓   │
└───────────────────────────────────────────────────────────────────┘
```

All Available Files   Displays all protocol files found on the current
           drives.

Scan Drives   Scans the current drives and updates the list of
           files found (useful for protocols stored on floppy
           disks).

NOTE
*If a file is not found, the drive field is dashed on the menu and the
version field is blank.*

| f1 |
| Select Variance |

```
┌─────────────── Protocol Set Selection Menu ───────────────┐
│                                                            │
│ ➜ Protocol Variance:  All Available Files                  │
│                   ┌──── Protocol Variance Menu ────┐       │
│   Name            │                                │ Ver Loaded
│   CCITT_LINK88    │ ➜ 1988 CCITT Q.7xx Recommendations │  1.0
│   CCITT_NET88     │   1988 ANSI T1.11x Standards    │  1.0
│   CCITT_SCCP88    │   1988 Telecom Canada Standards │  1.0
│   CCITT_ISUP88    │   1987 1 TR 7 Standards         │  1.0
│   CCITT_TCAP88    │   1988 Hong Kong Telecom Standards │ 1.0
│   TC_TCAP88       │                                │  1.0
│   CCITT_TUP88     └────────────────────────────────┘  1.0
│   ANSI_ISUP88   WD7  ANSI ISDN User Part. T1.113-1988    1.0
│   ANSI_NET88    WD7  ANSI MTP Level 3. T1.111.4-1988     1.0   ↓
└────────────────────────────────────────────────────────────┘
```

| f1 |
| Select |

| f5 |
| Execute |

```
                        ┌──────────────────────────────────┐
                        │   Protocol Set Selection Menu     │
       ┌────────────────┴──────────────────────────────────┴──────────────────────┐
       │                                                                           │
       │   Protocol Variance:   CCITT Q.7xx Recommendations                        │
       │                                                                           │
       │   Name         Drive    Description                        Ver Loaded     │
       │ ➔ CCITT_LINK88  VD2   CCITT MTP Level 2, Q.703, 1988          1.0          │
       │   CCITT_NET88   VD2   CCITT MTP Level 3, Rec Q.704, 1988      1.0          │
       │   CCITT_SCCP88  VD2   CCITT SCCP, Q.713, 1988                 1.0          │
       │   CCITT_ISUP88  VD2   CCITT ISDN User Port, Q.763, 1988       1.0          │
       │   CCITT_TCAP88  VD2   CCITT TCAP/OMAP, Q.773/Q.795, 1988      1.0          │
       │   CCITT_TUP88   VD7   CCITT TUP, Q.723, 1988                  1.0     ↓    │
       │                                                                           │
       └───────────────────────────────────────────────────────────────────────────┘
```

┌──┐
│f3│
│Alt│
└──┘

┌──┐
│f5│
│Load│
└──┘

3.6 Monitoring Live Data

```
                            ┌─────────┐
                            │ Monitor │
                            └─────────┘

                                              ┌────┐
                                              │ f5 │
                                              │Online│
                                              └────┘
```

```
┌──────────────────────────────────────────────────────────────────┐
│ TC #1   (24) : SS#7 Monitor    ▓Live Data▓      1990-11-07 14:58:44│
│ Block Number Source  BSN   FSN  LI Type MP NI   SI      DPC      DPC      SLS│
│                                                                    │
│  29442       T1 TX   1/85  1/82 11 MSU  PO INT ISUP   0-030-0   0-030-1   06│
│  29443       T1 TX   1/85  1/82 00 FISU                            │
│  29612       T1 RX   1/81  1/85 00 FISU      COPIES=239            │
│  29851       T1 RX   1/82  1/85 00 FISU                            │
│  29852       T1 RX   1/82  1/85 00 FISU      COPIES=11730          │
│  41582       T1 RX   1/82  1/86 13 MSU  PO INS ISUP   0-030-1   0-030-0   05│
│  41583       T1 RX   1/82  1/86 00 FISU                            │
│  29444       T1 TX   1/85  1/82 00 FISU      COPIES=12002          │
│  41446       T1 TX   1/86  1/82 00 FISU                            │
│  41447       T1 TX   1/86  1/82 00 FISU      COPIES=135            │
│  41582       T1 TX   1/86  1/83 09 MSU  PO INT ISUP   0-030-0   0-030-1   06│
│  41583       T1 TX   1/86  1/83 00 FISU                            │
│  41584       T1 RX   1/82  1/86 00 FISU      COPIES=161            │
│                                                                    │
│ ┌───────────────────────┬─────────┬───────────────────────────────┐│
│ │TestPorts  Background   │ Monitor │ Capture  Display  Format  Search  ResponseTi││
│ ├──────┬──────┬──────────┼──────┬──────┬──────┬─────────┤│
│ │  f1  │  f2  │    f3    │  f4  │  f5  │  f6  ││
│ │Level 1 Menu│Level 2 Menu│Save Config│Load Config│Protocol Set Menu│Online││
│ └──────┴──────┴──────────┴──────┴──────┴──────┘│
└──────────────────────────────────────────────────────────────────┘
```

Figure 3-1 SS#7 Monitor Program Display

The received data is captured to RAM, decoded, and displayed as shown
above.

4. SS#7 DISPLAY FORMATS

Protocol level display formats vary depending on the number of protocols loaded. Refer to the 'General Application Topics' section in the basic User Manual for general display format setup information.

Format

f1
Menu

```
┌─────────────────────── Display Format Menu ───────────────────────┐
│                                                                    │
│ → Display Format  COMPLETE      Dual Window          OFF           │
│                                                                    │
│   Header                        Trace Display Format  SHORT        │
│     Link        MNEMONIC                                           │
│     Network     MNEMONIC        Timestamp            OFF           │
│   Detail                                                           │
│     Network     COMPLETE        Character Set        ---           │
│     SCCP        COMPLETE                                           │
│     TUP         COMPLETE        Throughput Graph     OFF           │
│     ISUP        COMPLETE          Short Interval (sec)  10         │
│     TCAP        COMPLETE          Long  Interval (sec)  600        │
│   Other         HEX             Maximum Scale  (%)     100         │
└────────────────────────────────────────────────────────────────────┘
```

The default display is short format. The Header, Detail, and Other formats can only be modified when *Display Format* is *COMPLETE.*

🖐 **NOTE**
   Routing label formats (OPC, DPC, and SLS) can be selected via the Labels topic (see Section 5).

4.1 Header

→ *Link*
Selects the format of link level protocol information (i.e. forward and backward sequence octets, length indicator, signal unit type, and the status field for LSSU's).

OFF   Fields are not reported.

TEXT   Reports fields in decimal.

```
                    ┌── Backward Indicator and Sequence Number
                    │   ┌── Forward Indicator and Sequence Number
                    │   │   ┌── Length Indicator
                    │   │   │   ┌── Signal Unit Type:  FISU, LSSU, or MSU
                    │   │   │   │  ┌── LSSU Type
                    │   │   │   │  │
Block Number Source BSN  FSN  LI Type MP NI    SI      DPC      OPC     SLS
┌─────────────────────────────────────────────────────────────────────────┐
│ 5230       T1 RX  0/81  1/47  01 LSSU 0                                    │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

HEX   Reports fields in hexadecimal.

```
Block Number Source BSN  FSN  LI Type MP NI    SI      DPC      OPC     SLS
┌─────────────────────────────────────────────────────────────────────────┐
│ 5230       T1 RX  0/51  1/2F  01 LSSU 0                                    │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

MNEMONIC (default)   Reports backward and forward sequence octets and the length indicator in decimal. Displays the status field (for LSSU's) in a comprehensive protocol report.

```
Block Number Source  BSN   FSN   LI Type MP NI   SI      DPC       OPC      SLS
5230          T1 RX  0/81  1/47  01 LSSU SIO
```

→ *Network*

Selects the format of network level protocol information (i.e. information field).

OFF   Fields are not reported.

🖐 **NOTE**

   The message priority bits are bits 'A' and 'B' of the service information octet and are not used (i.e. coded 00) in the International Network.

TEXT   Reports fields in decimal.

```
                                      ┌ Message Priority
                                      │ ┌ Network Indicator
                                      │ │ ┌ Service Indicator
                                      │ │ │   ┌ Destination Point Code
                                      │ │ │   │   ┌ Originating
                                      │ │ │   │   │ Point Code
Block Number Source  BSN   FSN   LI Type MP NI   SI      DPC       OPC      SLS┐
5231          T1 RX  0/81  1/47  16 MSU  0  0    01      7-063-0   7-095-0   11
8      ----0001 Header 0           TM   : Test Message
       0001---- Header 1           SLTM : Signalling Link Test Message
9      ----0000 Spare TLI bits
       1001---- Test Length Ind.    : 9
10     01010100 Test Pattern        : 54 45 53 54 20 40 53 55 2E
       ********
```

                                       Signalling Link Selection ┘

HEX   Reports fields in hexadecimal.

```
Block Number Source  BSN    FSN   LI Type MP NI    SI      OPC        OPC      SLS
5231         T1 RX   0/81   1/47  16 MSU  0   0    1      7-063-0    7-095-0    11
8      ----0001 Header 0              TM   : Test Message
       0001---- Header 1              SLTM : Signalling Link Test Message
9      ----0000 Spare TLI bits
       1001---- Test Length Ind.          : 9
10     01010100 Test Pattern               : 54 45 53 54 20 40 53 55 2E
       ********
```

MNEMONIC (default)   Reports fields in a comprehensive protocol
                        report.

```
Block Number Source  BSN    FSN   LI Type MP NI    SI      OPC        OPC      SLS
5231         T1 RX   0/81   1/47  16 MSU  PO INT SNTM     7-063-0    7-095-0    11
8      ----0001 Header 0              TM   : Test Message
       0001---- Header 1              SLTM : Signalling Link Test Message
9      ----0000 Spare TLI bits
       1001---- Test Length Ind.          : 9
10     01010100 Test Pattern               : 54 45 53 54 20 40 53 55 2E
       ********
```

4.2 Detail

→ *Network*
Selects the level of detail reported within signalling network management
or signalling network test messages.
OFF   Network detail information is not reported.

COMPLETE (default)   Displays network detail in a comprehensive
                            protocol report. The start of each byte is
                            indicated with a number located on the left of the
                            bit pattern. This number is the byte offset from
                            the start of the frame.

```
Block Number Source BSN    FSN    LI Type MP NI   SI        DPC        OPC       SLS
5231          P2 RX  0/81  1/47  18 MSU  PO INT SNTM     7-063-0    7-095-0   11
8     ----0001 Header 0            TM   : Test Message
      0001---- Header 1            SLTM : Signalling Link Test Message
9     ----0000 Spare TLI bits
      1001---- Test Length Ind      : 9
10 01010100 Test Pattern           : 54 45 53 54 20 40 53 55 2E
      ********
```

CHAR   Displays network detail in the currently selected
                            character set.

```
Block Number Source BSN    FSN    LI Type MP NI   SI        DPC        OPC       SLS
5231          P2 RX  0/81  1/47  18 MSU  PO INT SNTM     7-063-0    7-095-0   11
              Message Transfer Part
              [<00>#TEXT MSU.]
```

HEX   Displays network detail in hexadecimal.

```
Block Number Source BSN    FSN    LI Type MP NI   SI        DPC        OPC       SLS
5231          P2 RX  0/81  1/47  18 MSU  PO INT SNTM     7-063-0    7-095-0   11
              Message Transfer Part
              11 90 54 45 53 54 20 40 53 55 2E
```

→ *SCCP*

→ *TUP*

→ *ISUP*

→ *TCAP*

Selects the upper level protocol format information within the message.

OFF   Information is not reported.

COMPLETE (default)   Displays information in a comprehensive protocol
                        report.

```
Block Number Source BSN   FSN   LI Type MP NI   SI       DPC      OPC      SLS
 1532         P1 TX  1/127 1/2   11 MSU  PO INT  SCCP    5-072-6  4-010-0  05
  8   00000011 SCCP Message      CREF  : Connection Refused
  9   00000001 Destination Local Ref  : 197121
      ========
  12  00000010 Refusal Cause          : End user failure
  13  00000000 Parameter Pointer      : No Optional Parameters
```

HEX   Displays information in hexadecimal.

```
Block Number Source BSN   FSN   LI Type MP NI   SI       DPC      OPC      SLS
 1532         P1 TX  1/127 1/2   11 MSU  PO INT  SCCP    5-072-6  4-010-0  05
      ------SCCP Message-------------------------------
          03 01 02 03 02 00
```

CHAR   Displays information in the currently selected
                        character set.

MSG   Displays only the circuit identification code (for
                        TUP and ISUP messages) and the message type.

```
Block Number Source BSN   FSN   LI Type MP NI   SI       DPC      OPC      SLS
 1532         P1 TX  1/127 1/2   11 MSU  PO INT  SCCP    5-072-6  4-010-0  05
  8   00000011 SCCP Message      CREF  : Connection Refused
```

PARS   Displays the message detail and lists all optional parameter names present for the selected upper level protocol format (format not available for the TUP protocol).

```
Block Number Source BSN   FSN   LI Type MP NI   SI      DPC      OPC     SLS
 1532       P1 TX  1/127 1/2   11 MSU  PO INT SCCP    5-072-6  4-010-0  05
 8   00000011 SCCP Message      CREF  : Connection Refused
 13  00000000 Parameter Pointer       : No Optional Parameters
```

→ *Other*

Selects the level of detail reported for information which cannot be decoded due to errors, or the appropriate decoder has not been installed.

OFF   Other information is not reported.

HEX (default)   Displays other information in hexadecimal.

CHAR   Displays other information in the currently selected character set.

5. ROUTING LABELS

Up to ten routing labels can be configured for filters and triggers. Both CCITT and ANSI have seven parts which can be set individually for each label. Routing labels can only be configured when an MTP level 3 protocol has been loaded (see Section 3.5).

CCITT routing labels include:
- zone   } for both destination and origination
- network identifier   } point code
- signalling point identifier ⌡
- signalling link selection

ANSI routing labels include:
- network identifier   } for both destination and origination
- network cluster   } point code
- network cluster member ⌡
- signalling link selection

5.1 Routing Label Formats

```
                                              | Labels |
 _____

    | f2 |      | f3 |     | f4 |           | f5 |
    |Decimal|    Hex      |3-8-3 Format|    4-4-6 Format
```
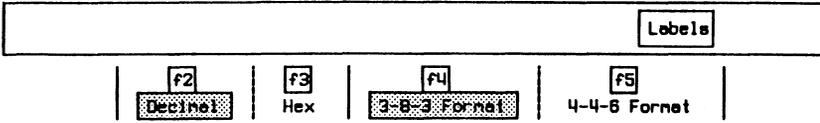
Routing labels can be displayed in either decimal (default) or
hexadecimal format. As well, 14 bit point codes used by CCITT
protocols can be displayed with either 3−8−3 (3 bit zone, 8 bit network,
and 3 bit signalling point identifier) or 4−4−6 format. These point code
formats also apply to higher level protocols (eg. SCCP).

5.2 Creating Labels

Example 1:
Create a label 3 destination point code for zone 5 (Z), network identifier
123 (NI), and a "don't care" signalling point identifier (SPI).
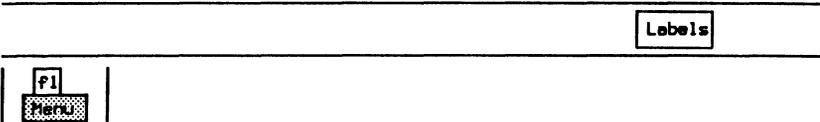
```
                                              | Labels |
 _____

    | f1 |
    |Menu|
```

```
┌──────────────── Routing Label Selection Menu ────────────────┐
│                                                              │
│  Label      │ Dest. Point Code │ Orig. Point Code │  SLS    │
│  Number     │    Z-NI-SPI      │    Z-NI-SPI      │         │
│ ────────────┼──────────────────┼──────────────────┼──────── │
│    1        │    0-000-0       │    0-000-0       │   00    │
│    2        │    0-000-0       │    0-000-0       │   00    │
│    3      ➜ │    0-000-0       │    0-000-0       │   00    │
│    4        │    0-000-0       │    0-000-0       │   00    │
│    5        │    0-000-0       │    0-000-0       │   00    │
│    6        │    0-000-0       │    0-000-0       │   00    │
│    7        │    0-000-0       │    0-000-0       │   00    │
│    8        │    0-000-0       │    0-000-0       │   00    │
│    9        │    0-000-0       │    0-000-0       │   00    │
│   10        │    0-000-0       │    0-000-0       │   00    │
│                                                              │
└──────────────────────────────────────────────────────────────┘
```

```
    ┌──────┐
    │  f1  │
 ┌──────────────┐
 │ Set Point Code│
 └──────────────┘
```

❑ Enter the zone (5) and network identifier (123) values.
❑ Move to the 'SPI' field.

```
┌──────────────────────────────────────────────────────────────┐
│  Enter Point Code Value (Decimal): 5   - 123 - ▌             │
└──────────────────────────────────────────────────────────────┘
```

```
                          ┌──────┐
                          │  f4  │
                       ┌──────────────┐
                       │  Don't Care  │
                       └──────────────┘
```

❑ Press *Execute* to enter the label on the menu.

☝ **NOTE**
*The SPI field on the menu is indicated as 'x'. Consequently, this
line on the menu would be displayed as:*

	Routing Label Selection Menu		
Label Number	Dest. Point Code Z-NI-SPI	Orig. Point Code Z-NI-SPI	SLS
1	0-000-0	0-000-0	00
2	0-000-0	0-000-0	00
3	➜ 5-123-X	0-000-0	00

Example 2:
Set all fields for label 3 origination point code to "don't care".

	Routing Label Selection Menu		
Label Number	Dest. Point Code Z-NI-SPI	Orig. Point Code Z-NI-SPI	SLS
1	0-000-0	0-000-0	00
2	0-000-0	0-000-0	00
3	5-123-X	➜ X-XXX-X	00

f2
Don't Care

5.3 Saving Routing Labels

Routing labels can be saved to disk for later retrieval.

Example:
Save the current set of routing labels in the file LABEL1.

```
                              │        ┌──┐                │
                              │        │f3│                │
                              │     ▓▓Save Routing Labels▓▓ │
```

□ Enter the filename and press ◄┘ (RETURN).

```
┌──────────────────────────────────────────────────────────┐
│  Enter Routing Label Filename:  LABEL1█_____            │
└──────────────────────────────────────────────────────────┘
```

5.4 Loading Routing Labels

Previously saved routing labels can be retrieved from disk.

Example:
Retrieve the set of routing labels saved in the file LABEL1.
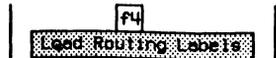
```
                         │              ┌──┐              │
                         │              │f4│              │
                         │           ▓▓Load Routing Labels▓▓ │
```

□ Enter the filename and press ◄┘ (RETURN).

```
┌──────────────────────────────────────────────────────────┐
│  Enter Routing Label Filename:  LABEL1█_____            │
└──────────────────────────────────────────────────────────┘
```

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6. SS#7 FILTERS

Protocol level filters vary depending on the number of protocols loaded.
Refer to the 'General Application Topics' section in the basic User
Manual for general filter setup information.

There are two categories of protocol filters available:
- Message Type Filters
  Message types can be either passed or blocked. For hierarchically
  structured messages and application/user parts, if the parent
  message type is blocked, all subordinate message types will be
  dashed on the menu.
- Parameter Filters
  Additionally, parameters and the associated conditions can be
  filtered. When parameters are passed or blocked, the associated
  conditions can be modified. When set to off, conditions are
  dashed on the menu.

  OFF (default)   Filter conditions are not applied.

  PASS   Passes the SU if one or more parameters match
                    the specified conditions. The SU is also passed
                    if the parameter is not present.

  BLOCK   Blocks the SU if one or more parameters match
                    the specified conditions.

When an SU can be filtered at more than one point in the protocol, a
block condition takes precedence over a pass condition.

Example:
If the SCCP Unitdata filter is blocked and the TCAP Unidirectional filter
is passed, only TCAP Unidirectional messages which do not use the
SCCP Unitdata message will be passed.

When two parameter filters are activated in the same group, a match
condition takes precedence over a no-match condition.]

Example:
If the SCCP Calling Party Address is passed and the SCCP Called Party
Address is blocked, SU's containing both parameters will be passed only
if the Calling Party Address matches and the Called Party Address fails
to match the specified conditions.

Example 1:
Program a filter to pass an SIPO (processor outage) and block all other
level 2 events for the display.

Move the cursor to the required parameters and use the *PASS* or *BLOCK*
function key to display (pass) only required frames.

```
                    ┌────────┐
                    │ Filters │
                    └────────┘
  ┌────────┐
  │ f1     │
  │ Menu   │
  └────────┘
```

```
                         ▐ Filter Selection Menu ▌

        Filter Type      DISPLAY        Trace Statements  ON
        Filter Status    ACTIVATED

     → Link              PASS
       Network           BLOCK
       SCCP              NONE
       TUP               NONE
       ISUP              NONE
       TCAP              NONE
       Others            BLOCK
```

```
  ┌──────────────┐
  │ f1           │
  │ Select Setup │
  └──────────────┘
```

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```
┌──────────────────┤ Link Filter Setup Menu 1 ├──────────────────┐
│                                                                 │
│   Filter Type   DISPLAY              Link Messages  PASS         │
│                                                                 │
│   FIB Inversion  ---                 BIB Inversion  ---          │
│                                                                 │
│   Fill-in Signal Unit                BLOCK                       │
│   Link Status Signal Unit (1 byte)   PASS                       │
│     SIO   BLOCK           SIN   BLOCK          SIE   BLOCK       │
│     SIOS  BLOCK           SIPO  PASS           SIB   BLOCK       │
│                                                                 │
│   Link Status Signal Unit (2 byte)   PASS                       │
│     SIO   BLOCK           SIN   BLOCK          SIE   BLOCK       │
│     SIOS  BLOCK         ➜ SIPO  PASS           SIB   BLOCK       │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

Example 2:
Program a filter to display only frames with:
- an international network indicator code;
- a message priority of 0;
- a destination point code of zone 5, NI 123, and "don't care" SPI (5–123–X);
- a "don't care" origination point code;
- a "don't care" signalling link selection; and
- a COA (change–over acknowledgement).

Move the cursor to the required parameters and use the *PASS* or *BLOCK* function key to display (pass) only required frames.

Filters

f1
Menu

Filter Selection Menu

| Filter Type | DISPLAY | Trace Statements | ON |
| Filter Status | ACTIVATED | | |

```
        Link         PASS
 →  Network       PASS
        SCCP         PASS
        TUP          PASS
        ISUP         PASS
        TCAP         PASS
        Others       PASS
```

f1
Select Setup

Network Filter Setup Menu 1

```
    Filter Type    DISPLAY              Network Messages   PASS

 →  Message Priority    ALL             Network Indicator  ALL


    Routing Label   OFF

    Signalling Ntwk Test & Maintenance Msgs   PASS
       SLTM   PASS          SLTA   PASS                          ↓
```

f1
Selection Menu

```
┌─────────────────Network Filter Setup Menu 1─────────────────┐
│                  ┌──────Message Priority Menu──────┐          │
│  Filter Type     │                                 │          │
│                  │ → Message Priority 0            │          │
│  Message Prio    │   Message Priority 1            │          │
│                  │   Message Priority 2            │          │
│                  │   Message Priority 3            │          │
│  Routing Labe    │                                 │          │
│                  └─────────────────────────────────┘          │
│  Signalling Ntwk Test & Maintenance Msgs  PASS               │
│     SLTM  PASS          SLTA  PASS                      ↓     │
└──────────────────────────────────────────────────────────────┘
```

```
              ┌──────┐
              │  f4  │
              │ None │
              └──────┘
```

```
┌────────┐
│   f1   │
│ Select │
└────────┘
```

□ Press *Exit.*

```
┌─────────────────Network Filter Setup Menu 1─────────────────┐
│                                                              │
│  Filter Type   DISPLAY            Network Messages  PASS     │
│                                                              │
│  Message Priority   SELECTED    → Network Indicator  ALL     │
│                                                              │
│                                                              │
│  Routing Label  OFF                                          │
│                                                              │
│  Signalling Ntwk Test & Maintenance Msgs  PASS              │
│     SLTM  PASS          SLTA  PASS                     ↓     │
└──────────────────────────────────────────────────────────────┘
```

```
┌────────────────┐
│      f1        │
│ Selection Menu │
└────────────────┘
```

```
┌─────────────────── Network Filter Setup Menu 1 ───────────────┐
│                    ┌──── Network Indicator Menu ────┐          │
│   Filter Type      │                                │          │
│                    │  ➜ International Network        │          │
│   Message Prio     │    International Spare          │          │
│                    │    National Network             │          │
│                    │    National Spare               │          │
│   Routing Labe     │                                │          │
│                    └────────────────────────────────┘          │
│   Signalling Ntwk Test & Maintenance Msgs  PASS               │
│      SLTM  PASS          SLTA  PASS                         ↓  │
└───────────────────────────────────────────────────────────────┘
```

```
                         │  ┌──────┐  │
                         │  │  f4  │  │
                         │  │ None │  │
                         │  └──────┘  │
```

```
│  ┌────────┐  │
│  │   f1   │  │
│  │ Select │  │
│  └────────┘  │
```

❑ Press *Exit*.

```
┌─────────────────── Network Filter Setup Menu 1 ───────────────┐
│                                                               │
│   Filter Type   DISPLAY            Network Messages  PASS      │
│                                                               │
│   Message Priority   SELECTED      Network Indicator  SELECTED │
│                                                               │
│ ➜ Routing Label  PASS                                         │
│                                                               │
│   Signalling Ntwk Test & Maintenance Msgs  BLOCK              │
│      SLTM  ---          SLTA  ---                          ↓  │
└───────────────────────────────────────────────────────────────┘
```

🛡 **NOTE**
*The Routing Label filter is normally off. To pass or block selected
routing labels, the Routing Label filter must be set to PASS.*

NOTE

The label selected from this menu must have been created previously under the Labels topic (see Section 5.2).

NOTE

Routing labels turned off are ignored by the filtering process.

❑ Press *Exit*.

```
┌──────────────────────────────────────────────────────────────────────┐
│              ▂▂▂▂▂▂ Network Filter Setup Menu 2 ▂▂▂▂▂▂                  │
│                                                                     ↑  │
│   Filter Type   DISPLAY            Network Messages  PASS               │
│                                                                        │
│   Signalling Network Management Messages  PASS                         │
│                                                                        │
│    Header 0         │                Header 1                          │
│   ─────────────────┼──────────────────────────────────────────────    │
│   CHM  PASS    COO  BLOCK  ➔COA  PASS     CBD  BLOCK    CBA  BLOCK      │
│   ECM  BLOCK   ECO  ---     ECA  ---                                    │
│   FCM  BLOCK   RCT  ---     TFC  ---                                    │
│   TFM  BLOCK   TFP  ---     TFR  ---      TFA  ---                      │
│   RSM  BLOCK   RST  ---     RSR  ---                                    │
│                                                                     ↓  │
└──────────────────────────────────────────────────────────────────────┘
```

```
                                                            ┌──────────┐
                                                            │   f6     │
                                                            │ Next Page│
                                                            └──────────┘
```

```
┌──────────────────────────────────────────────────────────────────────┐
│              ▂▂▂▂▂▂ Network Filter Setup Menu 3 ▂▂▂▂▂▂                  │
│                                                                     ↑  │
│   Filter Type   DISPLAY            Network Messages  PASS               │
│                                                                        │
│   Signalling Network Management Messages  PASS                         │
│                                                                        │
│    Header 0         │                Header 1                          │
│   ─────────────────┼──────────────────────────────────────────────    │
│   MIM  BLOCK   LIN  ---     LUN  ---     LIA  ---     LUA  ---          │
│                LID  ---     LFU  ---     LLT  ---     LRT  ---          │
│   TRM  BLOCK   TRA  ---                                                 │
│   DLM  BLOCK   DLC  ---     CSS  ---     CNS  ---     CNP  ---          │
│ ➔ UFC  BLOCK   UPU  ---                                                 │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘
```

Example 3:
Pass CR (connection request) SCCP messages with a Called Party
Address subsystem number of 'Mobile Application Part' and a Called
Party Address digit string of 8003663868.

Move the cursor to the required parameters and use the *PASS* or *BLOCK*
function key to display (pass) only required frames.

| Filters |

| f1 |
| Menu |

Filter Selection Menu

Filter Type	DISPLAY	Trace Statements	ON
Filter Status	ACTIVATED		
Link	PASS		
Network	PASS		
➔ SCCP	PASS		
TUP	PASS		
ISUP	PASS		
TCAP	PASS		
Others	PASS		

| f1 |
| Select Setup |

SCCP Filter Setup Menu I

Filter Type DISPLAY   SCCP Messages PASS

SCCP Message

➔ CR	PASS	CC	BLOCK	CREF	BLOCK	RLSD	BLOCK
RLC	BLOCK	DT1	BLOCK	DT2	BLOCK	AK	BLOCK
UDT	BLOCK	UDTS	BLOCK	ED	BLOCK	EA	BLOCK
RSR	BLOCK	RCS	BLOCK	ERR	BLOCK	IT	BLOCK

↓

```
                                                           ┌──────┐
                                                           │  f6  │
                                                        │  │Next Page│  │
```

```
┌─────────────────────SCCP Filter Setup Menu 2─────────────────────┐  ↑
│                                                                   │
│   Filter Type  DISPLAY              SCCP Messages  PASS           │
│                                                                   │
│                         Parameters                               │
│   ─────────────────────────────────────────────────────────     │
│                                                                   │
│   Called Party Address  PASS       Calling Party Address  OFF    │
│     Signalling Point Code X-XXX-X    Signalling Point Code ---   │
│   → Subsystem Number      ALL        Subsystem Number      ---   │
│     Translation Type      XXX        Translation Type      ---   │
│     Numbering Plan        ALL        Numbering Plan        ---   │
│     Nature of Address Ind ALL        Nature of Address Ind ---   │
│     Address Information   Don't Care Address Information   ---   │
│                                                                   │  ↓
└───────────────────────────────────────────────────────────────────┘
```

```
        ┌──────┐
        │  f1  │
      │ │Selection Menu│ │
```

```
┌─────────────────────SCCP Filter Setup Menu 2─────────────────────┐  ↑
│                  ┌───────Subsystem Number Menu───────┐           │
│   Filter Type    │                                   │           │
│                  │  SSN not known/not used           │           │
│   ────────────── │  SCCP Management                  │           │
│                  │  Reserved for CCITT allocation    │           │
│   Called Party   │  ISDN User Part                   │ FF        │
│     Signalling   │  OMAP                             │ ---       │
│     Subsystem    │→ Mobile Application Part          │ ---       │
│     Translatio   │  Reserved                         │ ---       │
│     Numbering    │  Spare                            │ ---       │
│     Nature of    │                                   │ ---       │
│     Address In   └───────────────────────────────────┘ ---       │
│                                                                   │  ↓
└───────────────────────────────────────────────────────────────────┘
```

```
                        ┌──────┐
                      │ │  f4  │ │
                        │ None │
```

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```
 ┌──┐
 │f1│
 ├──┴──┐
 │Select│
 └─────┘
```

□ Press *Exit.*

```
          ┌───────────────────────────────────┐
          │       SCCP Filter Setup Menu 2     │                    ↑
┌──────────────────────────────────────────────────────────────┐
│                                                                │
│   Filter Type  DISPLAY            SCCP Messages  PASS           │
│                                                                │
│                        Parameters                              │
│   ──────────────────────────────────────────────────────      │
│                                                                │
│   Called Party Address  PASS      Calling Party Address  OFF    │
│     Signalling Point Code X-XXX-X   Signalling Point Code ---   │
│     Subsystem Number      SELECTED  Subsystem Number      ---   │
│     Translation Type      XXX       Translation Type      ---   │
│     Numbering Plan        ALL       Numbering Plan        ---   │
│     Nature of Address Ind ALL       Nature of Address Ind ---   │
│   → Address Information   Don't Care Address Information   ---  │
│                                                                │ ↓
└──────────────────────────────────────────────────────────────┘
```

```
 ┌──┐
 │f1│
 ├──┴────────┐
 │Select Value│
 └───────────┘
```

□ Enter the digits in hex and press ↵ (RETURN).

```
┌──────────────────────────────────────────────────────────────┐
│  Enter Digits (HEX): 8003663868▌ _____                       │
└──────────────────────────────────────────────────────────────┘
```

```
┌──────────────────── SCCP Filter Setup Menu 2 ────────────────────┐        ↑
│                                                                  │
│   Filter Type  DISPLAY              SCCP Messages  PASS           │
│                                                                  │
│                           Parameters                             │
│   ─────────────────────────────────────────────────────────     │
│   Called Party Address  PASS       Calling Party Address  OFF     │
│     Signalling Point Code X-XXX-X    Signalling Point Code ---    │
│     Subsystem Number      SELECTED   Subsystem Number      ---    │
│     Translation Type      XXX        Translation Type      ---    │
│     Numbering Plan        ALL        Numbering Plan        ---    │
│     Nature of Address Ind ALL        Nature of Address Ind ---    │
│   ➜ Address Information   8003663868  Address Information   ---    │
│                                                                  │        ↓
└──────────────────────────────────────────────────────────────────┘
```

7. SS#7 TRIGGERS

Protocol level triggers vary depending on the number of protocols loaded.

📖 **NOTE**
*Refer to the 'General Application Topics' section in the basic User
Manual for general filter setup information.*

There are two categories of protocol triggers available:
 • Message Type Triggers
   Message types can be either on or off. For hierarchically
   structured messages and application/user parts, if the parent
   message type is off, all subordinate message types will be dashed
   on the menu.
 • Parameter Triggers
   Additionally, parameters and the associated conditions can be
   triggered. When parameters are triggered, the associated
   conditions can be modified. When set to off, conditions are
   dashed on the menu.
   OFF (default)   Trigger conditions are not applied.

   ON   Triggers the SU if one or more parameters match
                       the specified conditions.

When an SU can be triggered at more than one point in the protocol, an
off condition takes precedence over an on condition.

Example:
If the SCCP Unitdata trigger is off and the TCAP Unidirectional trigger is on, only TCAP Unidirectional messages which do not use the SCCP Unitdata message will be triggered.

📓 **NOTE**
BIB and FIB inversion triggers can trigger SU's regardless of other trigger settings.

When two parameter triggers are activated in the same group, a match condition takes precedence over a no-match condition.

Example:
If SCCP Calling Party Address and SCCP Called Party Address triggers are on, SU's containing both parameters will be triggered if either parameter matches the specified conditions.

7.1 Setting Conditions

Example 1:
Upon receipt of BIB inversion or SIPO (processor outage):
* beep;
* stop the display and RAM capture;
* start disk recording; and
* display a message in the Data Window.

Move the cursor to the required parameters and use the *ON* or *OFF* function key to trigger only required frames.
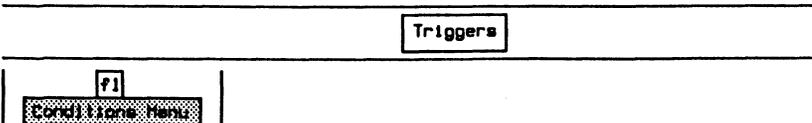
| Triggers |

| f1 |
| Condition Menu |

```
┌──────────────────[ Trigger Conditions Menu ]──────────────────┐
│                                                                │
│   Event Trigger    TRIGGER #1      Trigger Direction  FROM BOTH│
│   Trigger Status   ARMED                                       │
│                                                                │
│ ➔ Link             ON              Disk Full          OFF      │
│   Network          ON              RAM  Full          OFF      │
│   SCCP             ON              Alarm Clock         OFF      │
│   TUP              ON                Time              ---      │
│   ISUP             ON                                          │
│   TCAP             ON              String Match        OFF      │
│   Others           OFF               String            ---      │
│                                      Mask              ---      │
│                                                                │
└────────────────────────────────────────────────────────────────┘
```

```
┌─────────────┐
│    │f1│      │
│ ▓Select Events▓ │
└─────────────┘
```

```
┌──────────────────────[ Link Event Menu 1 ]──────────────────────┐
│                                                                  │
│   Event Trigger  TRIGGER #1        Link Messages  ON             │
│                                                                  │
│   FIB Inversion OFF                BIB Inversion  ON             │
│                                                                  │
│   Fill In Signal Unit              OFF                           │
│   Link Status Signal Unit (1 byte)  ON                          │
│      SIO   OFF             SIN   OFF            SIE   OFF         │
│      SIOS  OFF             SIPO  ON             SIB   OFF         │
│                                                                  │
│   Link Status Signal Unit (2 byte)  ON                          │
│      SIO   OFF             SIN   OFF            SIE   OFF         │
│      SIOS  OFF          ➔ SIPO   ON            SIB   OFF         │
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```

Example 2:
Upon receipt of any ISUP message containing a release cause 'no circuit available':
- beep;
- stop the display and RAM capture;
- start disk recording; and
- display a message in the Data Window.

Move the cursor to the required parameters and use the *ON* or *OFF* function keys to trigger only required frames.

```
                              ┌─────────────┐
                              │  Triggers   │
                              └─────────────┘
```

```
        ┌────┐
        │ f1 │
   ┌─────────────────┐
   │ Conditions Menu │
   └─────────────────┘
```

```
┌──────────────── Trigger Conditions Menu ────────────────┐
│                                                          │
│   Event Trigger      TRIGGER #1    Trigger Direction  FROM BOTH │
│   Trigger Status     ARMED                             │
│                                                          │
│   Link               ON            Disk Full     OFF   │
│   Network            ON            RAM  Full     OFF   │
│   SCCP               OFF           Alarm Clock   OFF   │
│   TUP                OFF              Time        ---   │
│ → ISUP               ON                                │
│   TCAP               NONE          String Match  OFF   │
│   Others             OFF              String      ---   │
│                                       Mask        ---   │
│                                                          │
└──────────────────────────────────────────────────────────┘
```

```
        ┌────┐
        │ f1 │
   ┌─────────────────┐
   │  Select Events  │
   └─────────────────┘
```

```
┌──────────────────── ISUP Event Menu 1 ────────────────────┐
│                                                            │
│    Event Trigger   TRIGGER #1          ISUP Messages   ON  │
│                                                            │
│                          ISUP Message                      │
│   ─────────────────────────────────────────────────────   │
│  ➔ IAM    ON        SAM    ON        INR    ON      INF   ON│
│    COT    ON        ACM    ON        CON    ON      FOT   ON│
│    ANM    ON        REL    ON        SUS    ON      RES   ON│
│    RLC    ON        CCR    ON        RSC    ON      BLO   ON│
│    UBL    ON        BLA    ON        UBA    ON      GRS   ON│
│    CGB    ON        CGU    ON        CGBA   ON      CGUA  ON│
│    CMR    ON        CMC    ON        CMRJ   ON      FAR   ON│
│    FAA    ON        FRJ    ON        LPA    ON      DRS   ON│
│                                                            │
└────────────────────────────────────────────────────────────┘
```

```
                                                     ┌──────┐
                                                     │  f6  │
                                                     ├──────┤
                                                     │ Next Page │
                                                     └──────┘
```

```
┌──────────────────── ISUP Event Menu 2 ────────────────────┐  ↑
│                                                            │
│    Event Trigger   TRIGGER #1          ISUP Messages   ON  │
│                                                            │
│                          ISUP Message                      │
│   ─────────────────────────────────────────────────────   │
│  ➔ PAM    ON        GRA    ON        CQM    ON      CQR   ON│
│    CPG    ON        USR    ON        UCIC   ON      CFN   ON│
│    OLM    ON        CRG    ON                               │
│                                                            │  ↓
└────────────────────────────────────────────────────────────┘
```

```
                                                     ┌──────┐
                                                     │  f6  │
                                                     ├──────┤
                                                     │ Next Page │
                                                     └──────┘
```

```
┌─────────────────────────────────────────────────────────────┐
│                  ▐ ISUP Event Menu 1 ▌                        ↑
│                                                              │
│   Event Trigger   TRIGGER #1          ISUP Messages   ON     │
│                                                              │
│                         Parameters                           │
│   ─────────────────────────────────────────────────────     │
│   Subsequent Number     OFF       Calling Category    OFF    │
│     Address Information  ---         Calling Party's Cat ---  │
│                                                              │
│                                                              │
│   Cause Indicators      ON        Call Reference      OFF    │
│     Location            ALL         Call Identity     ---    │
│ ➔ Cause Value           ALL         Point Code        ---    ↓
└─────────────────────────────────────────────────────────────┘
```

```
┌──────────────────────┐
│  ┌──────┐            │
│  │ f1 │            │
│  ┌▓▓▓▓▓▓▓▓▓▓▓▓▓▓┐    │
│  ▓Selection Menu▓    │
│  └▓▓▓▓▓▓▓▓▓▓▓▓▓▓┘    │
└──────────────────────┘
```

```
┌─────────────────────────────────────────────────────────────┐
│                  ▐ ISUP Event Menu 1 ▌                        │
│              ┌──▐ Cause Value Menu ▌──┐                       │
│  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓    │
│  ▓Unallocated (unassigned) number    Number changed      ▓    │
│  ▓No route to specified transit net  Destination out of order▓│
│  ▓No route to destination            Address incomplete  ▓    │
│  ▓Send special information tone       Facility rejected  ▓    │
│  ▓Misdialled trunk prefix             Normal - unspecified▓    │
│  ▓Normal call clearing              ➔No circuit available ▓    │
│  ▓User busy                          Network out of order ▓    │
│  ▓No user responding                 Temporary failure   ▓    │
│  ▓No answer from user (alerted)      Switching equipment congestion▓
│  ▓Call rejected                      Requested channel not available▓
│  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓    ↓
└─────────────────────────────────────────────────────────────┘
```

```
┌──────────────┐
│   ┌──────┐   │
│   │ f4 │   │
│   ┌▓▓▓▓▓▓┐   │
│   ▓None ▓   │
│   └▓▓▓▓▓▓┘   │
└──────────────┘
```

```
┌──────────────┐
│  ┌──────┐    │
│  │ f1 │    │
│  ┌▓▓▓▓▓▓▓┐   │
│  ▓Select ▓   │
│  └▓▓▓▓▓▓▓┘   │
└──────────────┘
```

7.2 Setting Actions

Triggers

f2
Action Menu

Trigger Action Menu

Event Trigger   TRIGGER #1   Display   TURN OFF
Trigger Status   ARMED   RAM Recording TURN OFF
Beep   ON   Disk Recording TURN ON
Highlight   NO EFFECT

→ Data Display Message   'TRIGGER NO.1 HAS FIRED'
  User Window Message   ''

NOTE
Specify the drive and data filename on the Recording Menu before arming the trigger.

The SS#7 Monitor now captures and displays all data. When it receives a BIB inversion or SIPO, the display and RAM capture are stopped, a disk recording is opened, and the message 'TRIGGER NO.1 HAS FIRED' is displayed in the Data Window.