1 Preface

Logging processes record the messages issued in problem situations.
Supplementary information is added to each error message (hardware fault and/or software error) and the expanded messages are written as records into a file. The file is analyzed with suitable programs for diagnostic and maintenance purposes. The programs furnish both specific and statistical information on type of error, location, time, date and so on.
BS2000 incorporates both permanent and user-activated logging processes. Some of these processes are intended primarily for logging software errors, while others log hardware faults.
By analyzing the logging records, the system supervisor and the maintenance technician can ascertain whether the error disrupting operation is minor or serious, and can initiate suitable measures for error correction.

This chapter contains a brief description of the ELSA analysis routine for hardware fault logging and SVP logging. The product's target groups are described, and the structure of the manual explained.

Brief description of the ELSA analysis routine

ELSA is a component in the Error Logging System, a permanent logging facility in BS2000. Further components are hardware error logging (HEL) and the service processor logging function (SVP logging).

HEL and SVP log hardware faults (machine malfunctions, faults associated with channel loss, errors in the operation of peripheral devices). ELSA, on the other hand, analyzes the data stored in the HEL file or in the SVP file according to different criteria, e.g.

– in order to create a global overview of errors
– to output individual logging records, either in their raw state or with explanatory notes added
– to create statistical error lists and/or to generate bit totals of the sense information for device errors
– to determine the error frequency for data volumes and devices.

A range of functions is available for these analyses. When you call a function, you can choose either HEL or SVP file data for analysis, or you can specify joint analysis of both types. By specifying selection criteria, you can predefine a particular set of logging records for analysis.

ELSA outputs the results of analysis to the screen or to a printer. In addition, the HEL and/or SVP file records can be written to a history file.

Target groups

This manual is intended for BS2000 systems support and the hardware service.

Structure of the manual

The manual consists of ten chapters with the following contents:

Chapter 1, *Preface*

This contains a brief description of the ELSA program, names the target groups and explains the structure of the manual.

Chapter 2, *Components of the error logging system*

This briefly discusses the two logging methods HEL and SVP and the ELSA routine, which analyzes the logging records generated by both methods.

Chapter 3, *Overview of the ELSA analysis routine*

This contains information on the ELSA operating modes, and also presents an overview of the individual functions and the statements for analyzing the HEL and the SVP file data, along with a list of the files employed by ELSA.

Chapter 4, *Installation*

This contains notes on installation and lists the files that must exist under the SERVICE ID before ELSA can be used.

Chapter 5, *Menu-driven operation*

This explains how to use ELSA in menu mode. It also describes the screen layout, discusses functions, follow-up functions and the flow structure, and provides information on the output options for the results of analysis. Also explained are the paging functions and the function key assignments. You will also find an explanation of the procedures for using the main menu and defining selection criteria.

Chapter 6, *Operation by program statements*

This describes how ELSA can be used in the batch/procedure mode and explains the individual statements in alphabetic order.

Chapter 7, *Functions and results of HEL file and SVP file analysis*

This describes the individual functions of ELSA, discusses the listing layout in general terms and provides sample result listings for HEL and SVP files (screen dumps and listings).

Chapter 8, *Messages*

The program messages are listed here.

Chapter 9, *HEL records*

This shows the general structure of the HEL records and describes the format of individual HEL records.

Chapter 10, *Field names*

This lists (in alphabetic order) the names of the fields in the output screens and printer listings and briefly describes the significance of each field.

The *Appendix* contains the SDF syntax description and an overview of the SDF standard statements, which ELSA uses in batch and procedure modes.

You will find a list of related publications and an index at the back of the manual.

README file

Information of any functional changes and additions to the current product version described in this manual can be found in the product-specific README file for ELSA. You will find the README file for ELSA V1.6A on your BS2000 computer under the file name SYSRME.ELSA.016.E.
The user ID under which the README file is cataloged can be obtained from systems support, or you can obtain its complete path name using the command:

```
/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=ELSA,LOGICAL-ID=SYSRME.E
```

You can view the README file using the SHOW-FILE command or an editor, or have it printed out on a standard printer using the following command:

```
/PRINT-DOCUMENT <filename>, LINE-SPACING=*BY-EBCDIC-CONTROL
```

or, for SPOOL versions earlier than V3.0A:

```
/PRINT-FILE <filename>, CONTROL-CHARACTER=*EBCDIC
```

Changes made since publication of "ELSA V1.4A"

General changes

All version-specific references have been updated to V1.6A, and all screens now have the status "ELSA V1.6A".
The changes and extensions described in the README file for ELSA V1.5A have been incorporated in the manual.

Functional changes and extensions

New and modified statements

Statement	Operands	Functionality, comments
SET-SELECTION	HEL-SEQUENCE-NUMBER= HEL-SEQUENCE-NUMBER-FROM HEL-SEQUENCE-NUMBER-TO	Replaced by the two new operands: Start of the range End of the range
	SVP-SEQUENCE-NUMBER= SVP-SEQUENCE-NUMBER-FROM= SVP-SEQUENCE-NUMBER-TO=	Replaced by the two new operands: Start of the range End of the range
SET-SVP-REFERENCE	REFERENCE-TYPE=	New reference type *S150 for the SVP analysis
START-FUNCTION	FUNCTION=	The operand value *SUPPRESS-TIMESTAMP-UPDATE has been renamed *TIMESTAMP-SUPPRESS-UPDATE (analogous to the function itself) New values: *SMIM
START-MENU-MODE	FUNCTION=	New values: *SMIM

New functions for function group S

Function	Brief description
SMIM (VOLUME MEDIA INFORMATION MESSAGE)	This displays those MTC volumes that contain a media information message (MIM).

Changes in selection criteria specifications

– Changed behavior in main menu presetting:
the main menu is preset so that "*VM-GLOBAL" flashes if ELSA is started at the monitor system of a VM system and if there are VM-global HEL files under TSOS.

– Specification of the selection criteria HEL-SEQ-NUM and SVP-SEQ-NUM has been extended. A range of sequence numbers can be specified in both statement mode and menu mode.

– When selecting a DER time stamp or exactly one HEL-SEQ-NUM, all the HEL files on the system are always searched.

Changes to functions

– Statistics can now be called from all HEL analysis functions (except DETAIL-PROCESSING).

– The new function SMIM has been added to function group S.

– The long name of the CTSU function has been changed to TIMESTAMP-SUPPRESS-UPDATE.

Support of new systems and devices

– The systems S115, S135, S150, S160 and DS2000 have been incorporated.
– Support for MBK7 has been extended.
– DUALCOPY is no longer supported as of ELSA V1.5A.

System types that are no longer supported

ELSA V1.6A can be used as of BS2000/OSD-BC V1.0. It should be borne in mind that systems specified in the manual of the types C80, H60, H90 and H120 are no longer supported as of BS2000/OSD-BC V4.0.

New screens

- Function group DE
  - screen DE245 (Device Error - Service Information Message (SIM))
  - screen DE246 (Device Error - Media Information Message (MIM))
- Function group S
  - screen SMIM100 (Volume Media Information Messages - SMIM)
  - screen SDL255 (Service Information Message - SIM)

Structure of the HEL records

– Device Error Record - Record 13
  When working with VM2000, the VM record indicator and the VM index are output, as is the CPU ID of the real system.

– Statistic Data Record - Record 30
  Since DUALCOPY is no longer supported, the information on the mnemonic device name and device address of the reporting device has been removed. By the same token, the information concerning RAID and the PID has also been removed.

– Statistic Data Record - Record 90
  Since DUALCOPY is no longer supported, the information on the mnemonic device name and device address of the reporting device has been removed. By the same token, the information concerning RAID and the PID has also been removed.

Obsolete and new field names for screens and printer lists

– The field name *ALERT* has been removed.

– Since DUALCOPY is no longer supported, the field names *RAID*, *PID-ALT-DEV*, *RAID-INFO*, *REP-PADR* and *REPORT-DEV* have been removed.

– New field names:
  – *EXCEPTION MESS*
  – *FORMAT ID*
  – *MEDIA ID*
  – *PRODUCT*
  – *REAL-CPU*
  – *REF1*
  – *REF2*
  – *REF3*
  – *REFCODE*
  – *SERIAL NO*
  – *SERVICE MESS*
  – *SEVERITY*
  – *SIM ID*
  – *SIM-TYPE*
  – *UM*
  – *VOLUME*

Installation

– On systems with BS2000/OSD-BC V1.0 or V2.0, ELSA V1.6A can be installed both with SOLIS2 and with the installation monitor IMON.

– As of BS2000/OSD-BC V3.0, standard installation of ELSA V1.6A must be performed using the installation monitor IMON.

– If the SERVICE ID is not present on the home pubset, the message file and the system syntax file are installed under the TSOS ID.

2 Components of the error logging system

The error logging system is a permanent logging facility for the channel and device drivers (including their error recovery routines) and for machine error processing. It consists of the following components:

Components	Brief description
HEL hardware error logging	Logging process of BS2000
SVP logging	Logging process of the service processor (SVP)
ELSA	Analysis routine for HEL and SVP logging

2.1 The hardware error logging component HEL

HEL logs hardware faults that the operating system can recognize and process, as well as statistical data for peripheral devices.

The information collected and processed is that generated by the BS2000 error recovery routines (machine error recovery - MER, device error recovery - DER, channel drivers - IOC (I/O control), test and diagnostic programs - TDP, transport system - BCAM and so on).

The information registered for a hardware fault is transferred in the form of a record by the error recovery routine in question to the HEL task. The HEL task adds supplementary data (BS2000 version, CPU type, date, current time, etc.) to the record and writes this expanded record into a BS2000 file. This file is known as the **HEL file** in this manual.

The HEL file is updated past the end of the current session with the ISAM access method (shared update). Consequently, the HEL file can be analyzed while operation is in progress.

The current HEL file is closed once it reaches a certain size (standard: 402 PAM pages, i.e. 2 Kbytes * 402 or 4 Kbytes * 402, depending on the disk format used). A new HEL file is created automatically. The records generated over a certain period of time (HEL records) are generally distributed across several HEL files. The ELSA analysis routine considers all (max. 5) HEL files of a specified analysis period as a logical HEL file and analyzes all the data contained in this logical file.

In addition to the local VM HEL of the individual virtual machines (VM), VM2000 also includes the VM-global logging routine VMHEL. This routine gathers the HEL records of the VM-local HEL of all virtual machines and writes them into a VM-global HEL file on the monitor VM (VM1). As with local VM HEL, the VM-global HEL file generated by VMHEL is closed once it attains a certain size, and a new VM-global HEL file is created.

If ELSA is started on a guest system, the following message is issued:

```
"ELS0020 NOTE: YOU ARE CURRENTLY ON A GUEST SYSTEM OF A VM".
```

Note

Systems support can change the size at which the current HEL file is closed and the next opened by issuing the START-HEL-LOGGING or CHANGE-HEL-FILE command.

The service technician can control hardware error logging. Certain commands are available for this purpose. These commands must be under a user ID having the HWMAINT system privilege (HARDWARE MAINTENANCE). The commands are as follows:

Command	**Meaning**
CHANGE-HEL-FILE	Close current HEL file and open new file
CHANGE-VMHEL-FILE	Close current VM-global HEL file and open new file
MODIFY-HEL-CHECK	Control threshold monitoring
MODIFY-VMHEL-CHECK	Control global threshold monitoring
MODIFY-HEL-LOGGING	Control storage of the HEL records
MODIFY-VMHEL-LOGGING	Control storage of the VMHEL records
MODIFY-HEL-TELESERVICE-ALARM	Define whether and when the message "Call Teleservice" should be issued
MODIFY-VMHEL-TELESERVICE-ALARM	Define whether and when the message "Call Teleservice" should be output if a global error threshold is violated
SHOW-HEL-CHECK	Display current settings for threshold monitoring
SHOW-VMHEL-CHECK	Display current settings for global threshold monitoring
SHOW-HEL-LOGGING	Request information on log records
SHOW-VMHEL-LOGGING	Request information on VMHEL records
SHOW-HEL-STATUS	Request general information about the status of hardware error logging
SHOW-VMHEL-STATUS	Request general information about the status of global HW error logging

Continued ➠

Command	Meaning
SHOW-HEL-TELESERVICE-ALARM	Request information about current Teleservice parameters
SHOW-VMHEL-TELESERVICE-ALARM	Request information about current Teleservice parameters
START-HEL-LOGGING	Activate system function HW error logging and open HEL file
START-VMHEL-LOGGING	Activate global HW error logging and open VM-global HEL file
STOP-HEL-LOGGING	Terminate system function HW error logging and close HEL file
STOP-VMHEL-LOGGING	Terminate global HW error logging and close VM-global HEL file

Note

The HEL commands are described in detail in volumes 1 through 5 of the "Commands" manual [7]. The VMHEL commands have the same syntax as the HEL commands.

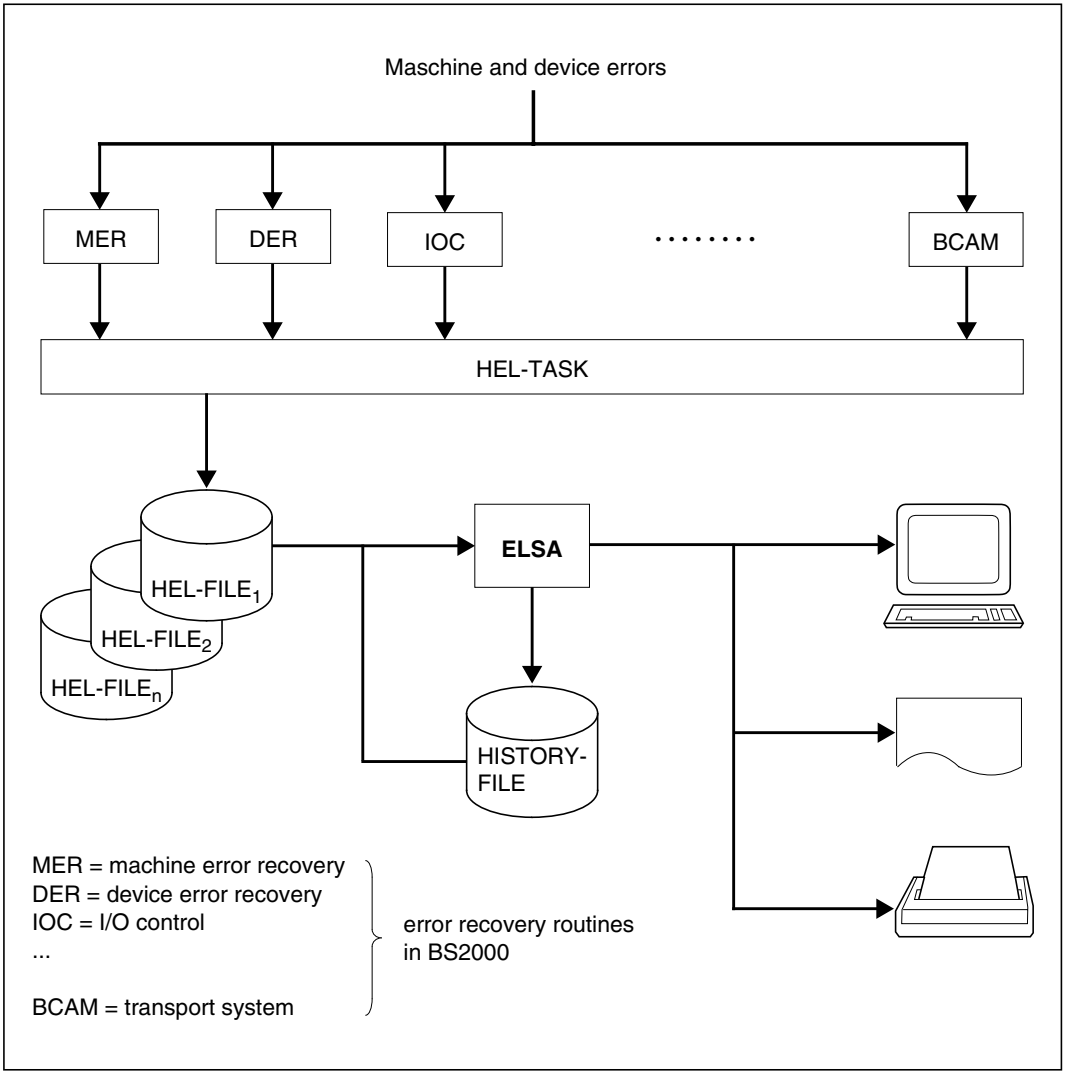


Figure 1: Creation and analysis of the HEL files

2.2 The SVP logging component

On CFCS3 systems, machine errors are recorded on the SVP hard disk by the service processor (SVP). This error log is known as the SVP file in this manual.
On systems of the types H60, H90, H100, C50, C70 and C80, there are two SVP pages (A and B) in the biprocessor system, each with an associated SVP disk. Machine errors are always logged on the page that is the master at the time of error occurrence. Each master/slave switchover changes the master page and thus the SVP hard disk.
Similarly, on systems on the types H120, H130, S110, S115, S130, S135, S150 and S160 there can be more than one independent device on which current logging is performed.

The ELSA analysis routine considers the SVP files of the two hard disks as a logical SVP file which contains all existing error information.

In physical terms, an SVP file generally consists of several distinct files.
Each file is written in wrap-around mode, i.e. each new entry overwrites the oldest entry in the file. The type of file created depends on the type of system:

H60/H90/H100/C50/C70/C80/SR2000/DS2000 systems:

- Overview file with a maximum of 512 overview records, 80 bytes per record
- Cross-reference files (logouts) with cross-reference records:
  - GP machine error
  - IOP machine error
  - IOP device error
  - PP4 machine error (not H100)
  - GS machine error (H100 only)
  - Test manager logouts
- Text files:
  - SVP error analysis texts (results)
  - SVP messages

7.590 system

Flag code file with a maximum of 128 flag code records, 32 bytes per record

C40 system

Flag code file with a maximum of 8 screens; each screen line is a flag code record

H120 system

Flag code file with a maximum of 100 flag code records, 128 bytes per record

H121/H130/S110/S115/S130/S135/S150/S160 systems

Flag code file with a maximum of 100 flag code records, 384 bytes per record

The overview records and flag code records are called SVP records in this manual.

Note

In the case of the 7.590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 mainframe systems, files with additional information (extended SVP data) are not analyzed.

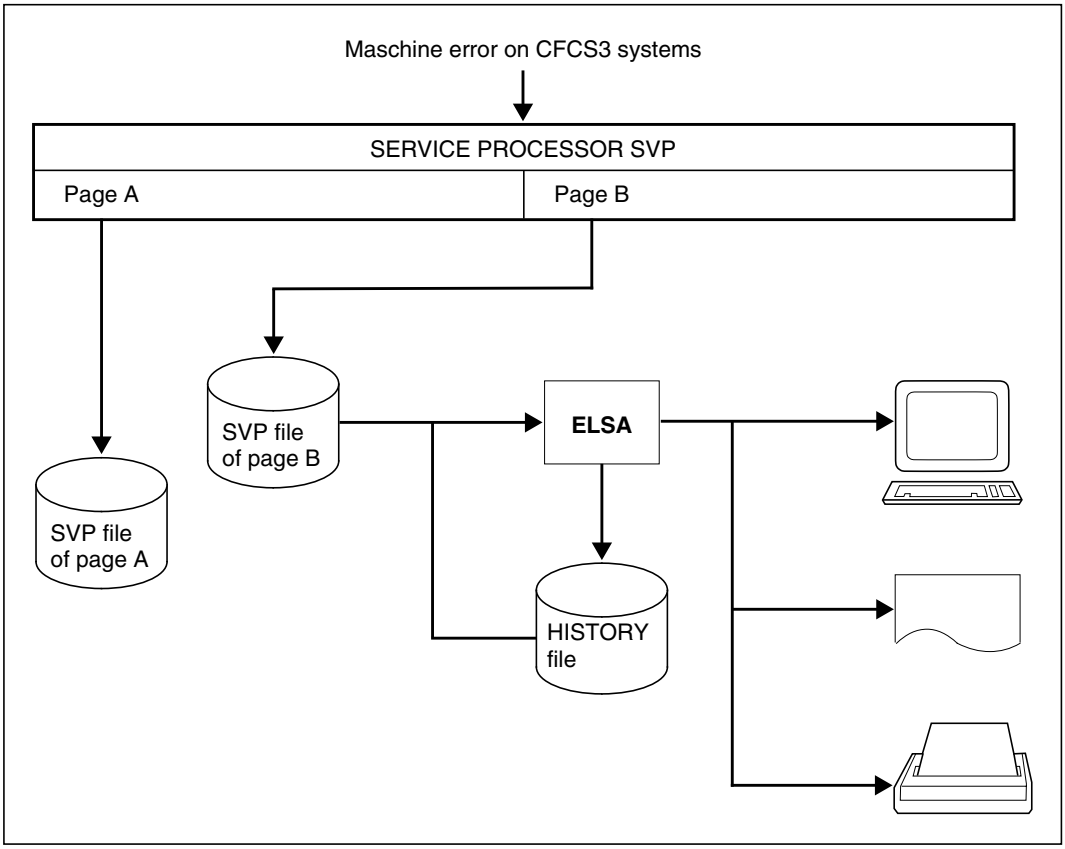


Figure 2: Creation and analysis of the SVP files

2.3 The ELSA component

The ELSA program has numerous functions for analyzing HEL and SVP file data. These functions include:

– the *GLOBAL-VIEW* function which creates a global error overview

– the functions *ERROR-TYPE-LIST* and *ERROR-LIST* which output lists of the most important error data

– the *DETAIL-PROCESSING* functional block which edits individual logging records or outputs them in dump format

– the *STATISTICS* functional block which creates various statistics, for example regarding device errors (*DEVICE ERRORS*).

When you call a function, you can decide whether you want to restrict analysis to HEL or SVP file data, or have both data types included in analysis. You can also define selection criteria to restrict logging to only those records that match the criteria.

The results of analysis can be output to the screen or to a printer. Another function (*WRITE-HISTORY*) writes selected HEL and SVP file data to a history file. This history file can be used again as an input file.

Notes

– ELSA is intended primarily for use under the SERVICE user ID.
– Each record contains the time at which the error occurred as the main sort criterion. You can select specific records by specifying the time at which an error occurred or a time interval. The time at which an error occurred is represented in LOCAL-TIME format and must also be specified using this format.

3 Overview of the ELSA analysis routine

This chapter describes the operating modes of ELSA. It contains an overview of the individual functions and the statements used to analyze the HEL and the SVP file data, plus a list of the files used by ELSA.

3.1 Operating modes

The ELSA program can be called in either interactive or batch mode. In interactive mode, the program can be operated in menu mode or in line mode. Only line mode is possible in batch operation.

Menu mode

The menu mode is the default for each interactive session if you call the program with **/START-ELSA** or if the program is called in a DO procedure without SYSDTA being assigned to SYSCMD or to a file.

The entire functional scope of the program is available in menu mode. The functions are called by means of screen masks. Output can be directed to the screen or a printer. In addition, the HEL and SVP file records can also be written to a history file.

Line mode

The line mode is the default for each interactive session if the program is called in a procedure and SYSDTA is assigned to SYSCMD or to a file. In batch operation, the program always runs in line mode.

Only a limited functional scope is available in line mode. The functions are called by means of SDF statements. The program reads the statements from SYSDTA and returns its messages and results to SYSOUT.

The results of analysis are directed to a printer. In addition, the HEL and SVP file records can also be written to a history file.

Line mode does not make provision for output to screen. Note, however, that you can use the START-MENU-MODE statement to terminate line mode and switch to menu mode. After switching modes, you have the entire functional scope of menu mode at your disposal - including output to screen.

3.2 List of functions

An identifier is allocated to each function. The identifier is usually a mnemonic abbreviation of the function designation. You call a function by entering its identifier in the *NEXT* field.

Any function can be called from the main menu. The output screens of some functions offer the possibility of calling certain other functions.

Related functions are combined into function groups. Each function group has a submenu in which the functions of the group are listed. It is not absolutely essential to call the submenu. You can call the functions of a submenu directly if you are aware of their names.

Identifier	Function designation and brief description
G	*GLOBAL-VIEW* Global status overview of mainframe and peripherals. This function shows the number of HEL and SVP records, sorted by device types, units, priorities, attributes, etc.
T	*ERROR-TYPE-LIST* Trimmed lists of HEL and SVP records. Records describing errors of similar type are grouped by "error type", instead of being repeated.
L	*ERROR-LIST* Lists of the most important data of the individual HEL and SVP records
D	*DETAIL-PROCESSING - SUBMENU* Submenu of the *DETAIL-PROCESSING* function group. This function group is used to output all (essential) details of the individual HEL and SVP records.
DE	*DETAIL-PROCESSING - EDIT* Processing and output of all essential details of the records, with error analysis to some extent.
DD	*DETAIL-PROCESSING - DUMP* Complete output of the records in hexadecimal form, partially also in printable form (dump format).

Continued ➠

Identifier	Function designation and brief description
S	*STATISTICS - SUBMENU* Submenu of the *STATISTICS* function group. This function group contains several functions for the statistical analysis of the HEL file.
SCHR	*CHRONOLOGICAL ERROR LIST* Generates a list of all the errors in chronological order (with VM display).
SPL	*PATH ERROR LIST* Generates separate lists of path errors of devices and device controllers, sorted by path addresses.
SDL	*DEVICE ERROR LIST* Generates a list of errors for every errored device.
SDT	*CARTRIDGE DEVICE TEMPORARY ERRORS* Shows the sum totals of temporary errors of MTC devices and calculates the average error rates.
SDTL	*DEVICE TAPE LIBRARY* Generates lists of robot errors for magnetic tape cartridge systems.
SDV	*DEVICE ERROR VIEW* Shows the totals of HEL file records per priority and attribute for each device as well as the total of HEL file records for controller log data.
SMIM	*VOLUME MEDIA INFORMATION MESSAGE* Shows the MTC volumes that contain a media information message (MIM).
SVD	*VOLUME DATA CHECKS* Shows the number of data checks per volume, sorted by product groups and error count (descending).
SVDD	*VOLUME DATA CHECKS PER DAY* Generates day-by-day totals of data checks per volume.
SVEL	*DISK VOLUME ERROR LOCALITY* Shows the defective tracks of disk volumes (block number, cylinder and track addresses). The number of correctable and uncorrectable data checks is output for each defective track.
SVFL	*CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS* Shows the MTC volumes which have exceeded one of the permissible limit values for temporary errors or which evince a permanent error. Totals both temporary and permanent data checks and calculates the average error rates.
SCLD	*CONTROLLER LOG DATA* Prepares the statistics counters of all disk controllers and tape controllers for device type E4

continued ➠

Identifier	Function designation and brief description
SSHR	*SYSTEM AND HEL RUN TIME* Shows the system runtimes and within every system runtime the time windows in which hardware error logging (HEL and/or VMHEL) was on or off.
C	*CONFIGURATION - SUBMENU* Submenu of the *CONFIGURATION* function group. This function group provides information about the program environment of ELSA, and in some instances for modifying the program environment.
CSL	*STATUS LIST* Shows the number of HEL and SVP records, the times of the first and last error occurrences, and the file names of the current input files.
CTL	*TIMESTAMP LIST* Shows a list of all time stamps. In addition, you can delete time stamps in menu mode. For more information on time stamps, see page 41.
CTSU	*TIMESTAMP SUPPRESS UPDATE* Prevents the storage of the new values of those time stamps which were used in the current program run; i.e. the time stamps retain their original values instead of being updated after use.
W	*WRITE-HISTORY* Outputs HEL and SVP records to a history file. This history file can subsequently be analyzed just like the original HEL and SVP files.

3.3 List of statements

There are two types of statement:

– selection statements
– action statements

Selection statements are for controlling input/output and for selecting the input data. Every selection statement remains valid until superseded by another, similar statement or until the program is terminated.

An action statement always initiates an immediate action (e.g. function call).

Selection statements

Statement	Meaning
SET-INOUT	Assign input files and select output type
SET-MASK	Define special selection masks
SET-SELECTION	Select input data
SET-SVP-REFERENCE	Define reference type for SVP analysis
SET-TITLE	Define title for lists and screens

Action statements

Statement	Meaning
START-FUNCTION	Start function (except for CTSU and submenus)
START-MENU-MODE	Exit line mode, switch to menu mode and start function
SUPPRESS-TIMESTAMP-UPDATE	Prevent storage of new time stamp values
END	Terminate processing

3.4 List of files

The table below shows the files used by ELSA.

Standard file name	Logical ID	File
$TSOS.SYS.HEL. yyyy-mm-dd.hhmmss	-	HEL files of BS2000. yyyy-mm-dd.hhmmss is the date of creation of the HEL file.
$TSOS.SYS.VMHEL. yyyy-mm-dd.hhmmss	-	VM-global HEL files of VM2000. These files are only on the monitor VM (VM1).
SYSPAR.ELSA.CONFIG	SYSPAR.CONFIG	ELSA configuration file. This file is created automatically on the appropriate work ID when ELSA is called for the first time. Currently, only the time stamp is stored in this file, see page 41.
SYSLOG.ELSA.HISTORY	-	History file in connection with the WRITE-HISTORY function. SYSLOG.ELSA.HISTORY is the default name for the history file; any file name can be used, however.

Notes

– With the aid of the ELSACON link name, you can define any other file name for the configuration file. For the remaining files, no link names are necessary since their file names can be specified via the user interface of ELSA or can be set via the LOGICAL-ID with the help of IMON.

– The configuration file is shareable; all users can use the same configuration file if ELSA is started several times under one user ID (exception: if shared pubsets are used, the configuration file is available to only one user and blocked for all others).

– The file names SYSPAR.ELSA.CONFIG and SYSLOG.ELSA.HISTORY contain no version identifiers; these files are valid for all ELSA versions.

4 Installation of ELSA

ELSA V1.6A can be installed on systems with BS2000/OSD-BC V1.0 or BS2000/OSD-BC V2.0 with both SOLIS2 and IMON. As of BS2000/OSD-BC V3.0, standard installation of ELSA V1.6A must be performed with the aid of IMON.
Coexistence with other ELSA versions is not possible.

The following files and libraries must be available on the SERVICE ID or the installation ID in order to run ELSA:

Standard file name	**Logical ID**	**File**
SYSPRG.ELSA.016	SYSPRG	ELSA program (load module)
SYSFHS.ELSA.016	SYSFHS	FHS mask library
SYSLNK.ELSA.016.SVP	SYSLNK.SVP	Library for SVP file analysis
SYSDAT.ELSA.016.HELP	SYSDAT.HELP	Help texts (multilingual)
SYSMES.ELSA.016	SYSMES	Message file (multilingual)
SYSMSV.ELSA.016	-	Message file (old format; BS2000/OSD V1.0)
SYSSDF.ELSA.016	SYSSDF	ELSA SDF system syntax file for the ELSA commands in command mode and the /START-ELSA command
SYSSII.ELSA.016	SYSSII	SYSSII file for IMON (installation monitor)

Notes for installation

– The standard installation ID is SERVICE. This may be changed if desired (exception: the library for SVP file analysis SYSLNK.ELSA.016.SVP).

– If the standard installation ID SERVICE is not on the home pubset, IMON automatically installs the message file and the system syntax file on the TSOS ID.

– The library for SVP file analysis must be available under the SERVICE user ID in order to use the SVP file analysis provided by ELSA.
If the library is not available, SVP file analysis cannot be executed and is not offered at the ELSA user interface. The library is only supplied on BS2000 systems for which a service contract exists or for which the test and diagnostic systems has been purchased.

– The ELSA system syntax file SYSSDF.ELSA.016 must either be merged in the global system syntax file (in BS2000/OSD-BC V1.0) or be activated with the command

```
/MODIFY-SDF-PARAMETERS SCOPE=*PERMANENT,
   SYNTAX-FILE-TYPE=*SUBSYSTEM($SERVICE.SYSSDF.ELSA.016,ELSA)
```

– At system startup, systems support must attach the message file for the system (under $TSOS) using the following command (in BS2000/OSD V1.0 and V2.0) :

```
/MODIFY-MSG-FILE-ASSIGNMENT ADD-FILE=$SERVICE.SYSMES.ELSA.016
```

As of BS2000/OSD V3.0, the message file is attached permanently by means of an entry in the MIP parameter file:

```
/MODIFY-MIP-PARAMETERS SCOPE=*PERMANENT,
    ADD-MSG-FILE=$SERVICE.SYSMES.ELSA.016
```

Notes for the program test

Nonprivileged users can assign any message file for their own task with the MODIFY-MSG-FILE-ASSIGNMENT command.

5 Menu-driven operation

This chapter describes how to start and terminate ELSA in menu mode, shows the layout of the screen, deals with the functions, follow-up functions and flow structure, and discusses the output types for the results of analysis. It also describes the paging function, how the function keys have been assigned, and the procedures for using the main menu and defining selection criteria.

5.1 Starting and terminating ELSA

The command for starting ELSA is

/START-ELSA

The main menu appears on the screen when the program call is answered. This is the starting point for all analyses of HEL files and SVP files.

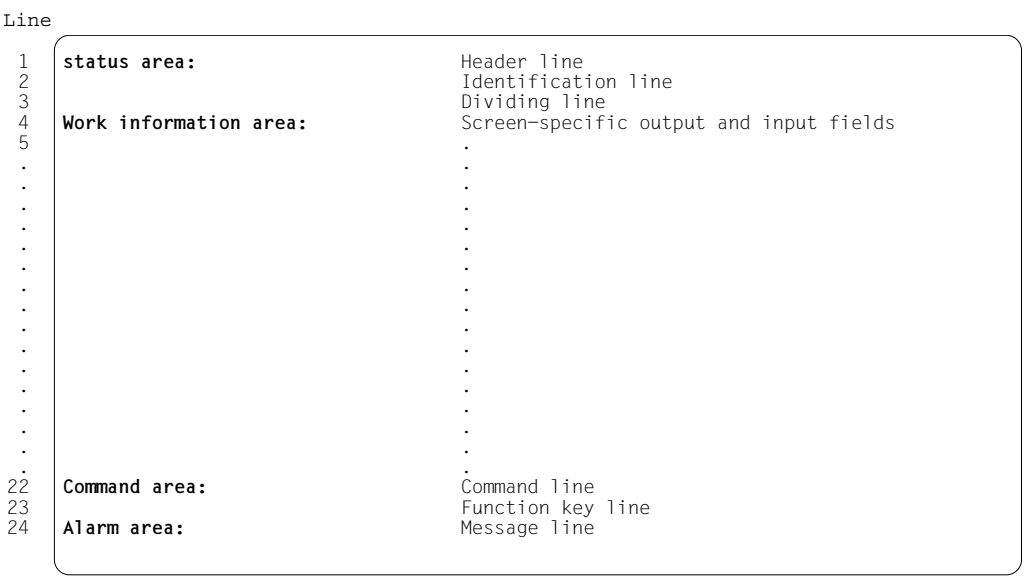
In the main menu, you can call all functions, either directly or through submenus.
The input files, i.e. HEL files and SVP file or a history file, are also defined in the main menu.
In addition, you can preset selection criteria so that only specific data is analyzed.

In menu mode, you exit the program from within the main menu by pressing function key **K1** or **F3** (see page 32) or by typing *END* in the *NEXT* field of any screen.

See page 63 for instructions on terminating processing in batch/procedure mode.

5.2 Screen layout

The entire screen is always available in menu mode.
You can use the cursor keys to position the insertion point only on those fields that accept user inputs. The cursor can also be positioned at the top left corner in each screen. This supports the hardcopy function.
With the cursor at the top left corner, you can use the LA keys (or PRINTER keys) to dump individual screens to a hardcopy printer connected to your terminal.
The screen layout is as follows:



Status area, lines 1 - 3:

The *header line* contains the screen label and screen header.
The screen label appears at the start of the line (except in the case of the main menu); it consists of a max. four-character function identifier and a three-digit number.
The screen header is a centered, screen-dependent text.

The following information is in the *identification line*:
– ELSA program name
– program version of ELSA
– CPU identification of the system that was the originator of the input data
– CPU designation of the system that was the originator of the input data
(in multiprocessor systems, the CPU identification and CPU designation displayed are those of CPU0)
– date and time of the current output

There is no identification line in the main menu, since the source of the input data is unknown at the time when the main menu is displayed. The ELSA program name, the program version, the date and the current time appear in the header line (instead of the screen label).

The *dividing line* separates the status area from the work information area. In the main menu can you define a string of your choice (name of customer, system, etc.) to overwrite part of the dividing line. This title then appears on all subsequent screens and all printer listings.

Work information area, lines 4 - 21:

The layout and contents of the work information area are screen-specific. This area contains the selection parameters in the main menu, while in the output screens it contains the output data.

Command area, lines 22 and 23:

In the *command line*, you input the command you want executed next in the *NEXT* field. In this way you can call a function, for example, or page through output screens or terminate a function. If a particular output screen does not have the paging function, it is not necessary to enter anything in *NEXT*; instead, *DUE* takes you to the next screen.
The *NEXT* field always contains a proposed value if an input is necessary.
The main menu and the submenus include a function overview in addition to the *command line*. As a result, the command area is larger than in the output screens.

If you enter *END* or *ENDE* in the *NEXT* field, you can terminate ELSA from any screen.

The *function keys line* shows you which function keys are assigned on your keyboard (*F* and *K* keys).

If no function keys are assigned on your keyboard, you can enter /<function key> (e.g. */K1*) in the *NEXT* field. This has the same effect as pressing the function key of the same name.

Alarm area, line 24:

The *message line* informs you of user errors and other system states.
If the *message line* is empty, it appears at reduced intensity. The message line goes to full intensity if a message is issued.

5.3 Functions and follow-up functions, flow structure

The individual functions differ radically as regards the level of detail afforded by their outputs.

The *GLOBAL-VIEW* function returns only a global overview of the status of the mainframe and peripherals. The *DETAIL-PROCESSING* function group, in contrast, shows all (essential) details of the HEL and SVP records. The level of detail returned by *ERROR-TYPE-LIST, ERROR-LIST* and some functions of the *STATISTICS* function group are between these two.

When working in an output screen with a low level of detail, you can call follow-up functions offering higher detail. These functions, in turn, offer other functions with even higher levels of detail, and so on up to the highest level (*DETAIL-PROCESSING - EDIT/DUMP*). Furthermore, the statistics function can be called as a follow-up function in every function except for *DETAIL-PROCESSING - EDIT/DUMP* .

The illustration on the next page shows the flow structure of ELSA in diagram form.

A follow-up function returns more details about what you currently see on the screen; i.e. the follow-up function analyzes in greater detail those HEL and SVP records currently shown in overview on the screen.

You call a follow-up function by entering its identifier in the *NEXT* field. In addition, every output screen in which a follow-up function can be called contains a marking column (or row) in which you can select data by marking. If you select data in this way, the follow-up function analyzes only those HEL and SVP records that belong to the marked data.

If you mark data without specifying a follow-up function in the *NEXT* field, the next follow-up function is called by default (for example in *GLOBAL-VIEW*, the next follow-up function is *ERROR-TYPE-LIST*).

When a follow-up function is called, the predecessor function is merely interrupted and not terminated. Once the follow-up function is completed, you return automatically to the predecessor function. You can prematurely terminate any follow-up function by pressing function key *K1* (see page 32).

Advanced users have another means of returning to the initial function. This entails entering the identification of a higher function in the hierarchy (a function already passed through, in other words) in the *NEXT* field of any follow-up function. This method returns you in a single jump directly to the last output screen of the function you specify. The advantage is that it is not necessary to use function key *K1* repeatedly.

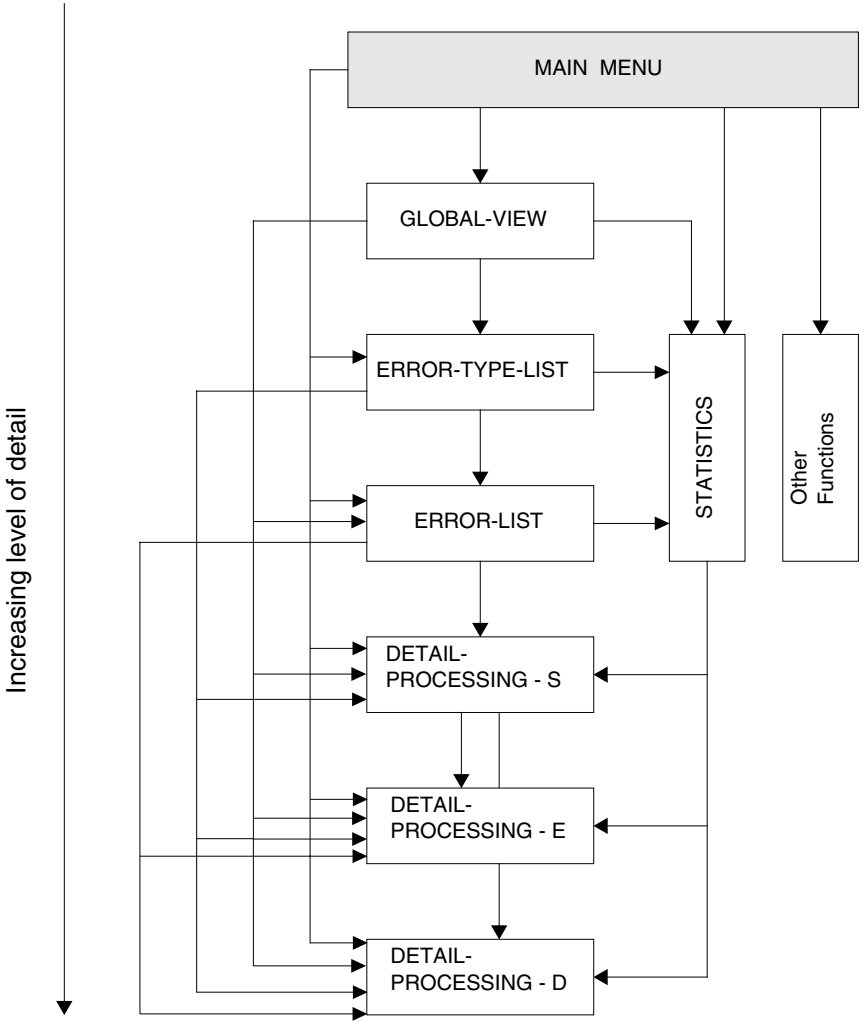


Figure 3: Flow structure of ELSA

5.4 Output types

For all the functions - except *W* and *CTSU* - output is directed to the screen or a printer. You may also specify whether the HEL and/or SVP file records are to be written to a history file. The desired output type is defined in the main menu (OUTPUT field or function W). Only screen output is available for follow-up functions.

The function listing is always written to the SYSLST file. This file is printed on the specified printer when the function is terminated, and is then deleted.

Note

The SYSLST file must be assigned the attribute *PRIMARY. If the SYSLST file is assigned to a user file, the listing is output to this file. In this case, it is not possible to print the listing with ELSA, the user must print the file himself with the command PRINT-DOCUMENT (or PRINT-FILE).

5.5 Paging function

The screen output of a function consists of one or more sections.
There are two types of section:

– single-page screen with fixed layout
– variable-length list, extending over one or more screen pages

If the screen or listing consists of only one page, it is not necessary to enter anything in the *NEXT* field. *DUE* takes you to the next section (or terminates the function if there are no more sections).
The *K3* function key allows you to page up through the sections (see page 32).

If a list fills more than one screen page, you can page up and down through it.

The table overleaf shows how page up/down commands in the *NEXT* field are used:

***NEXT* field: default/input value**	**Meaning**
+	Page down one screen page.
-	Page up one screen page.
+n	Page down n lines.
-n	Page up n lines.
++	Go to last page of list.
--	Go to first page of list.
<addr>	In dump screens, e.g. in DD100 on page 143, you can specify a hexadecimal address <addr> as a page command; leading zeros may be omitted. <addr> goes to the dump line containing the byte with the address <addr>. *Note:* *C*, *D*, *DD* or *DE* is interpreted as a function identifier, not as an address. If you want to go to an address C, D, DD or EE, you must prefix a leading zero, e.g. 0DD.
Blank character	Terminates the output of the list; output resumes with the next section. If the current page is the last section, it terminates the function. *Note:* Press the *K3* function key to page up one section at a time, see page 32.

The program sets the *NEXT* field to "+" by default until the end of the list is reached. Once the end of the list is reached, *NEXT* is cleared. This means, therefore, that it is not necessary to enter anything in *NEXT* in order to page down.

If you overwrite *NEXT* with a paging function (+, -, +n, -n), your choice is automatically carried over onto subsequent pages.

If you can page through a list, one of the following flags appears immediately beside the *NEXT* field:

(+)	or	(+/<addr>)	at the start of the list
(+/-)	or	(+/-/<addr>)	within the list
(-)	or	(-/<addr>)	at the end of the list

In addition, a note appears in the message line when you reach the start or end of a list.

On the last screen page of a function, a message to the effect that the end of output has been reached appears in the message line.

Exception

No such message is output for the functions *DE* and *DD* because this could cause considerable delays in screen output. In the worst case, the entire HEL/SVP file would have to be read in order to display a single record.

5.6 Use of the function keys

You can use the function keys as follows:

Key	Meaning
K1	Backs up to the next highest screen in the hierarchy. In the main menu: exits the program.
K2	Interrupts the program, switches to BS2000 command mode. Under the SERVICE ID, the only way to return to the program is by using the command INFORM-PROGRAM (ot SEND-MSG TO=*PROGRAM); the RESUME-PROGRAM command is blocked.
K3	Pages up to the preceding section in the screen output of a function. If the preceding section is a multipage list, pages up to the first page in the list.
F1	Calls the global HELP function *HELP ON MASK*.
F2	Displays the currently valid selection criteria. In the main menu: calls a screen for entering selection masks (see section 'Mask input screen' on page 52).
F3	Terminates all functions and returns to the main menu. In the main menu: terminates the program. In HELP function: terminates HELP.

Note

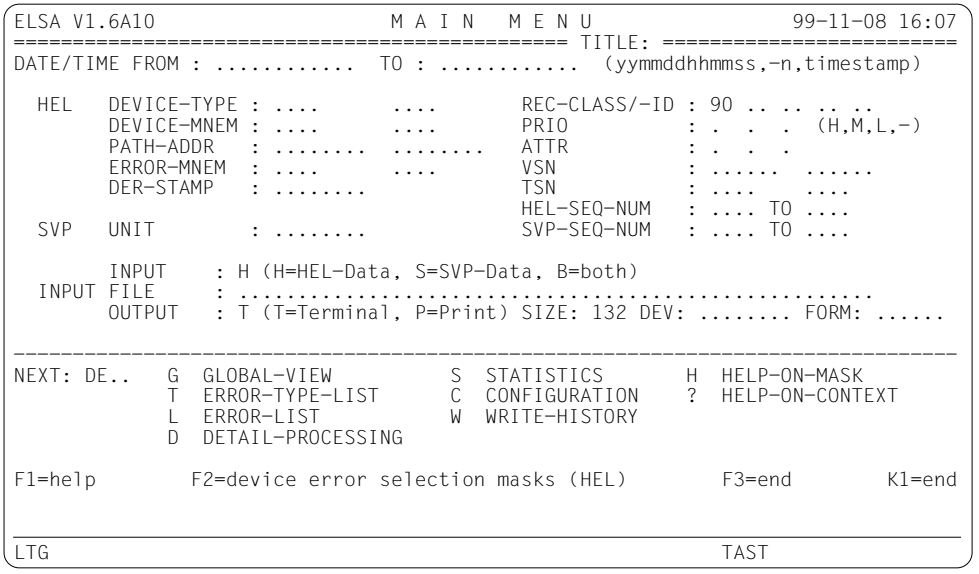
If no function keys are assigned on your keyboard, you can enter /<function key> (e.g. */K1*) in the *NEXT* field. This has the same effect as pressing the function key of the same name.

5.7 Main menu

If you call the program in menu mode, the main menu appears on the screen. This is the starting point for all analyses.

The main menu offers certain options for controlling the analyses of your choice:

You can
- call any function of the program
- define the output type for the results of analysis
  (output to screen or printer; and also to a history file; see also section 'Output types' on page 30)
- determine the input files (HEL files, SVP file, history file)
- pre-set selection parameters for HEL and SVP records
- request selection masks in order to select HEL records by the contents of the sense bytes (press *F2*).



SVP file analysis is not available on BS2000 systems without a service contract, see chapter 'Installation of ELSA' on page 23. This means that all the fields relating to SVP file analysis are omitted from the main menu, i.e. only HEL file analysis is included in the main menu.

```
ELSA V1.6A10                    M A I N   M E N U                 99-11-08 15:58
================================================ TITLE: ========================

DATE/TIME FROM : ............  TO : ............  (yymmddhhmmss,-n,timestamp)

  HEL   DEVICE-TYPE : ....       ....       REC-CLASS/-ID : .. .. .. .. ..
        DEVICE-MNEM : ....       ....       PRIO          : .  .  .  (H,M,L,-)
        PATH-ADDR   : ........   ........   ATTR          : .  .  .
        ERROR-MNEM  : ....       ....       VSN           : ......  ......
        DER-STAMP   : ........              TSN           : ....    ....
                                            HEL-SEQ-NUM   : .... TO ....

  INPUT FILE     : ..................................................
        OUTPUT   : T (T=Terminal, P=Print) SIZE: 132 DEV: ........ FORM: ......

--------------------------------------------------------------------------------

NEXT: G...   G  GLOBAL-VIEW          S  STATISTICS       H  HELP-ON-MASK
             T  ERROR-TYPE-LIST      C  CONFIGURATION    ?  HELP-ON-CONTEXT
             L  ERROR-LIST           W  WRITE-HISTORY
             D  DETAIL-PROCESSING

F1=help        F2=device error selection masks (HEL)        F3=end        K1=end


LTG                                                          TAST
```

Function selection

► In the following description, input is indicated by this sign.

NEXT

Determines which function or submenu is called. The default setting active subsequent to the program call is *G (GLOBAL-VIEW)*.
Possible inputs: <identifier>, *H*, *?*, /<function key>, *END*.

► <identifier>

Identifier of a function or a submenu.
You will find a complete list of all identifiers in the list of functions on page 18ff.
In the main menu itself, only the main functions and the submenus are listed.

► *H*

Calls the *HELP ON MASK* function (see page 221ff).
The function offers you a general description of the screen and an introduction to program operation.

► *?*

Calls the *HELP ON CONTEXT* function (see page 221ff). This function supplies information on the significance of the *NEXT* field and its permitted entries.
You can enter a question mark in any input field anywhere in the program. This calls the *HELP ON CONTEXT* function for the field in question.

► /<function key>

Substitute commands for function keys not defined on your keyboard (see page 32).

► *END*

Terminates the program.

TITLE

The part of the dividing line that follows *TITLE:* can be overwritten. The field accepts any title of your choice (for example the name of the customer, the designation of the system and so on). The title then appears in the dividing line of every subsequent screen and on every printer listing page.
If you clear this field by entering blanks, the programs fills it again with "=".

Note

The field is case-sensitive, i.e. the program does not convert lowercase letters into uppercase.

Input/output control

INPUT

Defines the record types for analysis. The default is *B* (=both)
Possible inputs: *H*, *S*, *B*.

► *H*

The program analyzes only HEL records.

► *S*

The program analyzes only SVP records.

► *B*

By default, the program analyzes both record types.
If, however, you define selection criteria for a particular record type - HEL or SVP - only the type of record that satisfies your criteria is analyzed.
(By analogy, only HEL records are analyzed if you press *F2* to call the mask input screen and enter selection mask, see page 52).

INPUT FILE

Specifies the input files from which the HEL records and SVP records will be read.
Possible input files for HEL records:
– 1-5 (native) HEL files from BS2000 of the local system
– 1-5 VM-global HEL files from VM2000 of the local system
– any 1 HEL file
– any 1 history file

Possible input files for SVP records:
– the SVP file(s) of the service processor of the local system
– any 1 history file

Possible inputs: Blank character, *VMGLOBAL, <hel file>, <history>, <partqual.>

► Blank character

The program reads HEL records from 1-5 HEL files from the BS2000 of the local system, and SVP records from the SVP file(s) of the service processor of the local system.

The HEL files generated by the BS2000 of the local system are stored under the TSOS user ID and have the following file names:

```
$TSOS.SYS.HEL.yyyy-mm-dd.hhmmss.
```

The program determines the file names of all HEL files with SHOW-FILE-ATTRIBUTES and then selects one or more HEL files as input files:

– If you have not defined an analysis period (with the selection criterium *DATE/TIME FROM* and/or *TO*), a file selection screen in which the current (= most recent) HEL file is marked is displayed.

– If you define an analysis period, the HEL files which contain records generated within the analysis period are read. If more than five HEL files come into consideration, the names of these HEL files are listed on one or more file-selection screens. You can then select 1-5 HEL files. The function is started once you have made your choice.

Notes

- The program searches for the records of the analysis period in the HEL file created most recently before the analysis period, and in the HEL files created during the analysis period. The program also searches for late entries in all HEL files created within a certain period of time (a month) after the end of the analysis period.
- If a *DER-STAMP* or exactly one *HEL-SEQ-NUM* was specified, all existing HEL files are searched, regardless of the analysis period.
- HEL files of remote systems must not be cataloged under their original names under the TSOS user ID, because otherwise ELSA and the HEL task consider them as HEL files of the local system.

► **VMGLOBAL*

The program reads HEL records from 1-5 VM-global HEL files of the VM2000 of the local system, and SVP records from the SVP file(s) of the service processor of the local system.

The VM-global HEL files of the VM2000 of the local system are stored under the TSOS user ID on the monitor VM (VM1) and have the following file names:

```
$TSOS.SYS.VMHEL.yyyy-mm-dd.hhmmss.
```

See notes for *blank character* (see above).

► <hel-file>

File name of a HEL file or the copy of a HEL file.
The program reads HEL records from the specified file, SVP records from the SVP file(s) of the service processor of the local system.

► <history>

File name of a history file created with the *W* function *(WRITE-HISTORY)*. The program reads HEL and SVP records from the specified history file.

► <partqual>

Partially qualified file name in accordance with SHOW-FILE-ATTRIBUTES conventions (e.g. $TSOS.*HEL* or *HISTORY* etc.; for information on placeholders, see the description of the data suffix "with-wild", page 280f).
All file names matching your partially qualified file name are displayed on one or more file selection screens. The catalog entries of these files (FILE-STRUC, KEY-LEN and so on) are such that they may be HEL files or history files. The corresponding function is started once you select a file from those offered by the system. Once the function is terminated, the name of the file is placed in the *INPUT FILE* field (as the default for the next function call).

OUTPUT

Indicates where the results of the function involved are output (Exception: This field is ignored for the *W* and *CTSU* functions). Possible input: *T*, *P*.

► *T*

Output to the screen.

► *P*

Output to a printer.
The function involved generates a printer listing and writes it to the SYSLST file. Specifying P generates a print job for the SYSLST file. Output is directed to a computer center printer or a decentralized (office) printer.

Note
The SYSLST file must be assigned the attribute *PRIMARY. If the SYSLST file is assigned to a user file, the listing is output to this file. In this case, it is not possible to print the listing with ELSA, the user must print the file himself with the command PRINT-DOCUMENT (or PRINT-FILE).

Most printer listings are no wider than 80 characters. Some listings, however, may have lines up to 132 characters long. If you want to output such a list to the printer, you must specify a form suitable for 132 characters in the *FORM* field (see below).

SIZE

Maximum width of the listing for OUTPUT=P.

► *132*

The maximum width of the listing is 132 characters (default value).

► *80*

The maximum width of the listing is 80 characters. Listings wider than this will be printed using their compressed output format.

DEV

Device name for output to a printer.

The device name is incorporated into the PRINT-DOCUMENT (or PRINT-FILE) command as the DEVICE operand. If the DEV field is empty, the default setting (*CENTRAL) is used.

A printer listing is only output to the specified printer if SYSLST is assigned to the primary file (*PRIMARY).

FORM

Form name for output on a printer.
The name is incorporated into the PRINT-DOCUMENT (or PRINT-FILE) command as the FORM-NAME operand. If the *FORM* field is empty, the default setting (*STD) is used. You can list the possible form names on SYSOUT with the SHOW-SPOOL-FORMS command.

5.8 Defining selection criteria

The selection criteria provide a means of limiting the set of HEL and SVP records to be analyzed.

In the fields *DATE/TIME FROM* and *TO*, you can define an analysis period; this applies to both HEL and SVP records.
The *HEL* and *SVP* sections of the menu below this field enable you to define special selection criteria for HEL and SVP records.

DATE/TIME FROM

Start of the analysis period, referring to the error occurrence; or if a time stamp is specified then referring to the time of storage.
Possible inputs: yymmddhhmmss, -n, time stamp.

TO

End of the analysis period, referring to the error occurrence; or the initial error occurrence in the case of serial errors in the SVP file.
Possible inputs: yymmddhhmmss.

► yymmddhhmmss

Absolute time (yy=year, of mm=month, dd=day, hh=hour, mm=minute, ss=second).
The specification may be incomplete, with details omitted at the end. The program fills the missing parts of *FROM* with the smallest possible values, and fills the missing parts of *TO* with the greatest possible values, e.g.:

FROM: '93.....' yields '930101000000'

TO: '93.....' yields '931231235959'

Ranges of values for the year:

61 ≤ yy ≤ 99: 20th century i.e. 1961 ... 1999,
00 ≤ yy ≤ 39: 21st century i.e. 2000 ... 2039.

Years from 40 to 59 (i.e. 2040 to 2059) are not allowed, because the time-of-day register can be used only until the year 2042 (overflow on Sept. 17, 2042).

► -n

Relative time in days:

-n means: Date minus n days; time=00:00
Permissible values: 0 ≤ n ≤ 99.

► <time stamp>

A time stamp can be specified instead of an absolute or relative time. The time stamp is freely selectable, and cannot be more than eight characters in length. The first character of the time stamp must be a letter or $, #, @. If a digit is specified as a first character, the program assumes that the entry means date and current time.

All analyses begin with the record which is marked by the time stamp or at the beginning of file, if no value is allocated to the time stamp as yet. The program writes the time stamp into the configuration file if you terminate the program run normally, i.e. by pressing the *K1* function key or *F3*. Under these circumstances, the time it was last used is assigned to the time stamp as its new value.

Every time the program is subsequently called, you can employ the time stamp as a lower time limit. Only the logging records added since the last use and storage of the time stamp are analyzed. Bear in mind that you can define and use more than one time stamp in the same program run.

Time stamps are not updated and stored unless you specify *INPUT FILE:* blank character/zero or *INPUT FILE:*VMGLOBAL*, i.e. only when you analyze original records of the local system.
A time stamp functions as a selection criterion for analysis of a history file or a specifically selected HEL file, but it is not updated under these circumstances.

If you analyze HEL and SVP records separately at different points in time, two different values are allocated to the time stamp - one for the HEL file and one for the SVP file.

In the *C* function group *(CONFIGURATION)*, you can view and delete time stamps, or prevent time stamps already used from being stored (with the *CTSU* function or with the SUPPRESS-TIMESTAMP-UPDATE statement).

Notes

– In the C40 mainframe system, error occurrences are stored without the year in the SVP file. The program assigns a year to each error occurrence, as the means of permitting the *DATE/TIME* selection criterion to be put to practical use.

– The history file is an ISAM file; its records are sorted in ascending order by date. In order to optimize the access time, therefore, it is advisable to define a time period when evaluating large history files.

– If ELSA is started at the monitor system of an VM system and there are VM-global HEL files under the TSOS ID, the main menu is preset with a flashing "*VMGLOBAL" when starting ELSA.
If there are no VM-global HEL files under the TSOS user ID, the main menu is preset to <blank> as before. The preset values in command mode are analogous to those for menu mode.

5.8.1 Special selection criteria for HEL records

If you define a selection criterion for a specific data field, analysis is rigorously restricted to those HEL records which contain the data field.
If, for example, you specify a device type code (*DEVICE-TYPE*), machine error records are excluded from analysis, since they contain no device type code.

DEVICE-TYPE

Specification of 1 or 2 device type codes; see "device type code" table in the "System Installation" manual [1]. You can also specify partially qualified device type codes, using the following characters:

* For any character string (even an empty string).
The asterisk may be used only at the last position.

/ For any one character.

Example

A*: Display the entries of all hard disk types.

Special case printer:

The printer device type codes depend on the appropriate record classes (REC-CLASS, see below):

– In the case of a device error (REC-CLASS D), the device type code is composed of BS2000 device type code 21 and the SPOOL device type code nm, e.g. 212F.

– In the case of all other record classes, the device type code is always 21, irrespective of the printer type.

The effects on selection are as follows:

Selection	Selected set
21	All records of printers
21*	All records of printers
21mn	Only REC-CLASS D, SPOOL device type code mn
21/n	Only REC-CLASS D, SPOOL device type code n
21/m	Only REC-CLASS D, SPOOL device type code m
21m*	Only REC-CLASS D, SPOOL device type code m
21//	Only REC-CLASS D, any SPOOL device type code
21/*	Only REC-CLASS D, any SPOOL device type code

DEVICE-MNEM

Specification of 1 or 2 mnemonic device designations. You can also enter partially qualified designations, using the following characters:

* For any character string (including an empty string).
The asterisk may be used only at the last position.

/ For any one character.

PATH-ADDR

Specification of 1 or 2 path addresses. A path address always consists of 8 hexadecimal characters (4 bytes). You can also enter partially qualified path addresses, using the following characters:

* For any character string (including an empty string).
The asterisk may be used only at the last position.

/ For any one character.

The format of the path address is as follows:

Byte	0	1	2	3	
	IC	00	00	UU	in BS2000/OSD-BC V1.0/V2.0
	PI	LK	CU	DV	BS2000/OSD-BC V3.0 and higher with DCS
	PI	00	00	DV	BS2000/OSD-BC V3.0 and higher without DCS

The meanings of the path-address bytes are as follows:

IC IOP number and channel number
UU Control and device number
PI Channel path ID
LK Link address
CU Control unit image address
DV Device address

ERROR-MNEM

Specification of 1 or 2 mnemonic error codes of the device error recovery (DER). The HEL file will be searched for these codes.

DER-STAMP

Specification of a time stamp of the device error recovery (DER). The HEL file will be searched for this time stamp.

The DER attaches an eight-character time stamp to every device error message output at the operator console. The HEL record belonging to the console message can be found by specifying the time stamp.

REC-CLASS/ -ID

Specification of one or more record classes (REC-CLASS) or record identifications (REC-ID).

Similar or related HEL records are combined in a record class. The following record classes have been defined:

REC-CLASS	Designation of the HEL record type
M	MACHINE CHECK
C	CHANNEL CHECK
I	INTERRUPT ERROR
R	CHANNEL REPORT WORDS
D	DEVICE ERROR
T	TDP DATA
H	START/STOP HEL
L	CONTROLLER LOG DATA
A	ALL ERRORS (= M, C, I, R and D)

The record identification is a technical identifier for the layout and the contents of the HEL record:

REC-ID	Contents of the HEL record
13	Machine error (machine check, MCH)
20	Channel fault (channel check, CCH)
24	Abnormal interrupt
25	Channel report words (CRW)
30	Device error
40	Test/diagnostic program results (TDP DATA)
50	Start/stop HEL (HW error logging)
70	Missing interrupt
90	Controller log data

A REC-CLASS contains all HEL records of one or more REC-IDs, namely:

REC-CLASS	REC-IDs
M	13
C	20
I	24, 70
R	25
D	30
T	40
H	50
L	90
A	13, 20, 24, 25, 30, 70

Special arrangement for TDP DATA:

Usually, HEL records of the TDP DATA record class are ignored by the program. These records are output only if you input 'T' (or '40') in *REC-CLASS/ -ID*.

PRIO

Specification of one or more error priorities.
Possible inputs:

H	high
M	medium
L	low
-	for HEL records without priority

ATTR

Specification of one or more error attributes (attribute 0).
Possible inputs:

C	Correctable data check
U	Uncorrectable data check
D	Dalta function (only in the case of hard disks)
H	Hardware fault
O	Overrun
	Data volume error (only in the case of tape/MTC)
-	For HEL records without error attribute

VSN

Specification of 1 or 2 volume serial numbers (VSN).

TSN

Specification of 1 or 2 task sequence numbers (TSN).

HEL-SEQ-NUM

Specification of a range of sequence numbers for HEL records.
The sequence numbers must be specified in hexadecimal form; leading zeros may be omitted. If a single sequence number is specified, it is sought in all existing HEL files.

5.8.2 Special selection criteria for SVP records

UNIT

Designation of a hardware unit.
You can also enter partially qualified designations, using the following characters:

* For any character string (including an empty string).
The asterisk may be used only at the last position.

/ For any one character.

The table below lists the units for the various system types:.

System	Unit group	UNITs
H60/H90/ C50/C70/ C80/ SR2000/ DS2000	GP machine error IOP machine error IOP device error PP4 machine error Power supply control SVP message/text	GP0 . . . . . GP3 IOP0M . . . . . IOP7M IOP0D0 . . . . . IOP7DF Modul# IOP# PP4 PSC SVP
H100	GP machine error IOP machine error IOP device error GS machine error Power supply control SVP message/text	GP0 . . . . . GP3 IOP0M . . . . . IOP7M IOP0D0 . . . . . IOP7DF Modul# IOP# GS PSC SVP
7590	Central processor	CPU0 . . . . . CPU3 MCU0 MCU1 MSU0 . . . . . MSU3 SCI
	Peripheral processor	CHP
	Other processor	PSU SPEC SVP
	Undefined unit	UNDEF

Continued ➟

System	Unit group	UNITs		
C40		ARC		
		BMC		
		BMCI		
		CHU0	. . . . .	CHU3
		COMM		
		CPU0	. . . . .	CPU3
		CPU0I	. . . . .	CPU3I
		DCVA		
		FA		
		FAI		
		FAN		
		FPD		
		FSBA		
		HDD		
		INP		
		INTH		
		IOA		
		IVA		
		LPA		
		MAC		
		MACI		
		MSU		
		MTA1	MTA2	
		MTA1I	MTA2I	
		MXC0	. . . . .	MXC2
		MXC0I	. . . . .	MXC2I
		OSMSG		
		OTHER		
		OUTTH		
		PWR		
		SVP		
		SVPA		
		WSA		

Continued ➠

System	Unit group	UNITs		
H120	Central processor	CPU0 ESU0 MCU0 MSU0 SCI	. . . . MCU1	CPU3 ESU3 MSU3
	Peripheral processor	CHP		
	Other processor	CDCU IPL SPC SPTS SVP		
	Not analyzable failure	UNANAL		
	Undefined unit	UNDEF		
H130	Central processor	CPU0 MCU0 MSU0 SCI0	. . . . . MCU1 . . . . . SCI1	CPU7 MSU3
	Peripheral processor	CHP0		CHP7
	Other processor	HIT WTCSL IPL SSU0 SVP0 1	 SSU1 SVP1	
	Power supply	POW0	POW1	
	Not analyzable failure	UNANAL		
	Undefined unit	UNDEF		
H121	Central processor	CPU0 MCU0 MSU0 SCI0 SU0 VU0	. . . . SCI1	CPU7 MCU1 MSU3 SU7 VU7
	Peripheral processor	CHP0		
	Other processor	HIT WTCSL SPC0 SSE0 SVP0	 SPC1 SSE1 SVP1	
	Power supply	POW0	POW1	

Continued ➟

System	Unit group	UNITs		
H121 (continued)	Unable to analyze	UNANAL		
	Undefined unit	UNDEF		
S110/S115	Central processor	CPU0 CPU0SX CPU MCU0 MSU0 SCI0	. . . . MCU1 MSU1	CPU3 CPU3SX
	Peripheral processor	IOP0 CHP	IOP1	
	Other processor	SSH0 WTCSL IPL SSU0 SVP	 SSU1	
	ARMSS	ARMSS		
	Power supply	POW		
	Not analyzable failure	UNANAL		
	Undefined unit	UNDEF		
S130	Central processor	CPU0 CPU0SX CPU MCU0 MSU0	. . . . MCU1 MSU1	CPU7 CPU7SX MCU1 MSU1
	Peripheral processor	CHP0 IOPA CHP	. . . . .	CHP3
	Other processor	WTCSL SSU0 SVP	 SSU1	
	ARMSS	ARMSS		
	Power supply	POW		
	Unanalyzable failure	UNANAL		
	Undefined unit	UNDEF		

Continued ➠

System	Unit group	UNITs
S135 / S150/S160	Central processor	CPU0 . . . . . CPUB CPU0SX . . . . . CPUBS CPU MCU MSU0 MSU1
	Peripheral processor	CHP IOP0 . . . . . IOP3 IOPA0 . . . . . IOPAF
	Other processor	FW IPL SSU0 SSU1 SVP SVPOS WTCSL
	ARMSS	ARMSS
	Power supply	POW
	Undefined unit	UNDEF

SVP-SEQ-NUM

Specification of 1 or 2 sequence numbers of SVP records.
The sequence numbers must be specified in hexadecimal form; leading zeros may be omitted.

Exception:

In the case of the C40 system, SVP file sequence numbers must be specified in decimal form.

5.9 Mask input screen

This screen enables the input of special selection masks for HEL records of record class D (DEVICE ERROR). With the selection masks, these records are selected according to the contents of specific sense bytes. A maximum of 12 selection masks can be input.

A selection mask consists of a sense byte number (beginning with 0) and a bit mask. The program analyzes only those records in which the bits of the sense byte match those of the bit mask.

The mask input screen is called if you press the *F2* function key in the main menu or enter *NEXT: /F2*. When the mask input screen is called and at least one selection mask defined, analysis is restricted to records of record class D. All other HEL records and the SVP records are inherently excluded from analysis.

When the mask input screen is called for the first time, all input fields are empty except *NEXT*. On every subsequent call, the content of each field is carried over from the preceding session.

```
M100                SPECIAL SELECTION MASKS for DEVICE ERROR
ELSA V1.6A10                                                  99-11-10 16:09
================================================================================

    SENSEBYTE                  BITS OF SENSEBYTE
      NUMBER                 0  1  2  3  4  5  6  7
        07                   0  1  1  1  0  0  0  x
        13                   x  x  x  1  x  x  x  x
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .
        ..                   .  .  .  .  .  .  .  .

                             Possible Values:  0, 1, other - don't care

NEXT: DE..
F1=help                        F3=main menu                    K1=main menu

LTG                                                            TAST
```

NEXT

This has the same meaning as in the main menu (see page 34); the value from the main menu is used by default.

Note:

If you called the screen with *NEXT:/F2*, enter the identification of the function of your choice.

SENSEBYTE NUMBER

Number of the sense byte whose bits are to be compared with those of the bit mask. The number must be specified in decimal form; numbering of the bytes begins with 0.

If a number is missing, the number of the preceding line is used. If the first number is also missing, number 0 is assumed.
The postulated numbers appear the next time the screen is called.

BITS OF SENSEBYTE

Bit mask for the bit comparison with the sense byte.
Possible values are:

0	=	Bit comparison 0
1	=	Bit comparison 1
Other character	=	No bit comparison

5.10 File selection screens

5.10.1 HEL file selection without specification of an analysis period

If you do not define an analysis period for HEL file analysis (in the main menu parameter *DATE/TIME FROM* and/or *TO*), the program shows you a list of the names of all HEL files, with the current, i.e. most recent, HEL file already marked in each case (see selection screen for definition of an analysis period). You can then select up tol 5 HEL files, after which the appropriate function is started.

5.10.2 HEL file selection by specification of an analysis period

If you define an analysis period for HEL file analysis (in the main menu parameter *DATE/TIME FROM* and/or *TO*, there will generally be several HEL files (or VM-global HEL files) containing records of the analysis period.

The program can analyze up to 5 HEL files in parallel. If more than 5 (VM-global) HEL files contain records of the specified analysis period, the program lists the names of these HEL files. You can then select a maximum of 5 HEL files. The respective function is started once you have selected the files.

```
M2OO                HEL-FILES - SELECTION  (max. 5 Files)
ELSA V1.6A10                                              99-11-10 13:49
================================================================================

MARK FILENAME
 X   :1OSH:$TSOS.SYS.HEL.1999-11-11.091701
 _   :1OSH:$TSOS.SYS.HEL.1999-11-09.154450
 _   :1OSH:$TSOS.SYS.HEL.1999-11-09.115229
 _   :1OSH:$TSOS.SYS.HEL.1999-11-09.083410
 _   :1OSH:$TSOS.SYS.HEL.1999-11-09.051635
 _   :1OSH:$TSOS.SYS.HEL.1999-11-09.015715
 _   :1OSH:$TSOS.SYS.HEL.1999-11-01.135538









NEXT: ....
F1=help                      F3=main menu                      K1=main menu

LTG                                                            TAST
```

MARK

If you activate the *MARK* fields, you can select up to 5 HEL files. To mark a *MARK* field, position the cursor on it and type any character except "?" (=HELP function). Alternatively, you can use the MAR key.

If you inadvertently mark a *MARK* field, you can undo your selection by overwriting with blanks.

The function is started when you confirm your selection with *DUE*.

NEXT

The field is of significance only until you select by marking a *MARK* field.

If the list of file names is longer than a screen page, you can page up and down in the list. The program sets *NEXT* to "+" by default until the end of the list is reached. *NEXT* is cleared at the end of the list.
If you wish, you can overwrite the default setting of *NEXT* with a page command of your choice, or you can clear the field at any time.
If you do not select a file, you will return to the main menu if the *NEXT* field is empty.

If the list fits into one screen page, the program clears *NEXT*.
If you do not select a file, you return to the main menu.

The options for *NEXT* are as follows:

– *H* or *?* (HELP function)

– /<function key> (e.g. */K1*).

FILENAME

HEL file names displayed in sequence, beginning with the most recent.

OPEN ERROR

This output column appears only if errors occurred in opening the selected HEL files. In this case the file selection screen reappears and an error message is listed for each error in the *OPEN ERROR* column.

Error cause or DMS code	Error message German/English
File is empty	DATEI IST LEER FILE IS EMPTY
DMS0512	KATALOG NICHT GEFUNDEN CATALOG CANNOT BE FOUND
DMS0533	DATEI NICHT GEFUNDEN FILE NOT FOUND
DMS0535	DATEI NICHT MEHRFACH BENUTZBAR FILE NOT SHAREABLE
DMS05B1	DATE IST IN GEBRAUCH FILE IS CURRENTLY IN USE
DMS05B7	FEHLERHAFTER PFADNAME INVALID PATH NAME
DMS05FC	BENUTZERKENNUNG EXISTIERT NICHT USER ID DOES NOT EXIST
DMS0D33	DATEI NICHT GEFUNDEN FILE NOT FOUND
DMS0D91	DATEI IST GESCHUETZT (PASSWORT) FILE IS PASSWORD-PROTECTED
DMS0D99	DATEI IST SCHREIBGESCHUETZT FILE IS WRITE-PROTECTED
DMS0D9A	DATEI IST LEER FILE IS EMPTY

The list only contains those errors that can be caused by an error on the part of the user or the system administrator. If any other error occurs, the DMS code is output instead of an error message.

5.10.3 File selection by specification of a partially qualified file name

If you specify a partially qualified file name in the main menu parameter *INPUT FILE*, the names of all files complying with your specification are listed. On account of their directory entries (ISAM file, ISAM key, etc.), these files may be HEL files or history files. The corresponding function is started once you select a file from the list.

```
M201            INPUT-FILE - SELECTION  (one HEL-/HISTORY-File)
ELSA V1.6A10                                                  99-11-12 13:48
================================================================================

MARK  FILENAME
 _    :2OSC:$ELSAELSA.ELS339.SYS.HEL.1998-07-17.015012
 _    :2OSC:$ELSAELSA.ELS398.SYS.HEL.1999-09-23.082148
 _    :2OSC:$ELSAELSA.HT.SYS.HEL.S110.1
 _    :2OSC:$ELSAELSA.SYS.HEL.CARTRDG.C1
 _    :2OSC:$ELSAELSA.SYS.HEL.CARTRDG.C1.UPD
 _    :2OSC:$ELSAELSA.SYS.HEL.1996-01-12.102829.MBK7
 _    :2OSC:$ELSAELSA.SYS.HEL.1996-01-22.171807.MBK7









NEXT: ....
F1=help                       F3=main menu                     K1=main menu


LTG                                                            TAST
```

MARK

You can select a file by marking it with any character except "?" (=HELP function) or by pressing the MAR key.

If you inadvertently mark a file and wish to undo your selection, overwrite the *MARK* field with blanks.

After marking a file, confirm your choice and start the function by selecting *DUE*.

NEXT

As in the first file selection screen (see page 55).

FILENAME

File names listed in alphabetical order.

5.10.4 Selection screen for an SVP reference type

If you start SVP file analysis on a CPU that ELSA does not yet support (new system), you can specify an SVP reference type. However, this is only possible if a CPU whose SVP file analysis is compatible with the current CPU is already known.

You will find a description of the possible specification of SVP reference types in the SERVICE information.

```
M300                    SVP REFERENCE TYPE - SELECTION
ELSA V1.6A10                                                  99-09-24 10:39
================================================================================

***    THIS CPU-TYPE IS UNKNOWN FOR THE CURRENTLY RUNNING VERSION OF ELSA.   ***
***   IF YOU ARE SURE THAT THE SVP HARDDISK OF THIS CPU MAY BE USED AS ONE   ***
***    OF THE WELLKNOWN TYPES LISTED BELOW, THEN MARK IT. ELSA WILL TREAT    ***
***           THE SVP HARDDISK LIKE A HARDDISK OF THE SIGNED TYPE.           ***
***        IN ALL OTHER CASES DO NOT USE THE SVP HARDDISK EVALUATION.        ***
***                          ALSO SEE HELP <F1>                              ***
     MARK  REFERENCE-TYPE
      _    H60  (NOTE: H90, C50, C70, C80, SR2000, DS2000 WORK LIKE H60)
      _    H100
      _    7590
      _    C40
      _    H120
      _    H130
      _    H121
      _    S110

                     SAVE THE SELECTED CPU-TYPE FOR FURTHER USE (Y/N): N
NEXT: +...  (+)
F1=HELP                         F3=MAIN MENU                    K1=MAIN MENU


LTG                                                             TAST
```

MARK

You can select an SVP reference type by marking a MARK field. To mark a *MARK* field, position the cursor on it and type any character except "?" (=HELP function). Alternatively, you can use the MAR key.

If you inadvertently mark a *MARK* field, you can undo your selection by overwriting with blanks. After marking a field, you start SVP file analysis by pressing the DUE key.

NEXT

This field is only of significance until you make a selection in a MARK field. If the list of SVP reference types is longer than the screen, you can page through the list, see page 30.

The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. Note, however, that you can overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish.
If you do not select an SVP reference type, an empty *NEXT* field returns you to the main menu.

The following input is also possible:

- *H* or *?* (HELP function), see page 221.
- /<function-key> (e.g. */K1*), see page 32.

REFERENCE-TYPE

Name of the SVP reference type which is compatible with the current CPU.

SAVE-CPU-TYPE

Save the SVP reference type for further use.

- *Y*

  The SVP reference type specified in the MARK field will automatically be used for SVP analysis in all subsequent ELSA program runs.

- *N*

  The specified SVP reference type is only used during the current ELSA program run. The next time ELSA is started, the SVP reference type must be specified again.

Note

When you save an SVP reference type, ELSA creates a file with the name SYSPAR.ELSA.SVPREF.<reference-type>. If several of these reference files exist, ELSA automatically deletes these files (for SVP analysis on an unknown system). This invalid saving of SVP reference types is cancelled in this case by ELSA.

6 Control by program statements (batch/ procedure mode)

In batch mode, ELSA is controlled by means of SDF statements.

If the BS2000 command /ASSIGN-SYSDTA TO-FILE=*SYSCMD is entered in a procedure before the program is called, ELSA is controlled by means of SDF statements. These statements must be in the procedure file. You will find the SDF syntax definitions in the appendix.

The analysis routine is started with the command

/START-ELSA

The statement

//END

terminates the program run.

6.1 List of statements

There are two types of statement:

– selection statements
– action statements

Selection statements are for controlling input/output and for selecting the input data. Each selection statement remains valid until superseded by another, similar statement or until the program is terminated.

An action statement always initiates an immediate action (e.g. function call).

Selection statements

Statement	Meaning
SET-INOUT	Assign input files and select output type
SET-MASK	Define special selection masks
SET-SELECTION	Select input data
SET-SVP-REFERENCE	Define reference type for SVP analysis
SET-TITLE	Define title for listings and screens

Action statements

Statement	Meaning
START-FUNCTION	Start function (except for CTSU and submenus)
START-MENU-MODE	Exit line mode, switch to menu mode and start function
SUPPRESS-TIMESTAMP-UPDATE	Prevent storage of new time stamp values
END	Terminate processing

6.2 Statements

The statements for the ELSA program are described in alphabetical order below.

END
End processing

Function

The END statement immediately terminates the ELSA program.

This statement also causes the time stamps used in the current session to be stored, unless storage was suppressed with the SUPPRESS-TIMESTAMP-UPDATE statement.

Format

END

SET-INOUT
Assign input files and select output type

Function

This statement defines the data to be analyzed (HEL and/or SVP records), the source from which the data is to be read, and the output to which all results will be directed.
The validity of this statement is sustained until the next SET-INOUT statement is entered, or until the program is terminated.

If the SET-INOUT statement is not used, input and output are regulated by defaults.

Format

```
SET-INOUT

 INPUT = *BOTH / *HEL-DATA / *SVP-DATA
,FILE = *STD / *VMGLOBAL / <filename 1..54 with-wild> /
        <partial-filename 2..53 with-wild>
,OUTPUT = *PRINTER (...) / *TERMINAL
    *PRINTER(...)
        | MAX-LINE-SIZE = *132 / *80
        | ,DEVICE-NAME = *STD / <name 1..8>
        | ,FORM-NAME = *STD / <alphanum-name 1..6>
,EXTENDED-SVP-DATA = *NO / *YES
```

Operands

INPUT =
Defines which record types are analyzed by ELSA.

INPUT = *BOTH
The program analyzes both HEL and SVP records (default).

INPUT = *HEL-DATA
The program analyzes only HEL records.

INPUT = *SVP-DATA
The program analyzes only SVP records.

FILE =
The input files from which the HEL and/or SVP records are to be read.

FILE = *STD
The program reads HEL records from 1-5 HEL files of the BS2000 of the local system, and SVP records from the SVP file(s) of the service processor of the local system.

FILE = *VMGLOBAL
The program reads HEL records from 1-5 VM-global HEL files of the VM2000 of the local system, and SVP records from the SVP file(s) of the service processor of the local system.

FILE = <filename 1..54 with-wild>
The full file name of a HEL file or history file from which the records are to be read.

FILE = <partial filename 2..53 with-wild>
The partially qualified file name of a HEL file or history file from which the records are to be read.

OUTPUT =
Determines where the results of analysis are output.

OUTPUT = *PRINTER(...)
The function involved generates a printer listing and writes it to the SYSLST file. The OUTPUT=... operand generates a print job for the SYSLST file. Output is directed to a computer center printer or a decentralized (office) printer.

Most printer listings are no wider than 80 characters. Some listings, however, may have lines up to 132 characters long. If you want to output such a list to the printer, you must specify a form suitable for 132 characters for the FORM-NAME operand.

Note

The SYSLST file must be assigned the attribut *PRIMARY. If the SYSLST file is assigned to a user file, the listing is output to this file. In this case, it is not possible to print the listing with ELSA, the user must print the file himself with the PRINT-DOCUMENT (or PRINT-FILE) command.

MAX-LINE-SIZE =
Defines the maximum list width.

MAX-LINE-SIZE = *132
The maximum list width is 132 characters.

MAX-LINE-SIZE = *80
The maximum list width is 80 characters.

DEVICE-NAME =
Device name for output to a printer.

DEVICE-NAME = *STD
The printer listing is output to the local computer center printer.

DEVICE-NAME = <name 1..8>
Indicates the device name of the printer on which the listing is to be output.

FORM-NAME =
Specifies the form name for output to printer.

FORM-NAME = *STD
If no form name is specified, the default form is used.

FORM-NAME = <alphanum-name 1..6>
Name of the form to be used.

OUTPUT = TERMINAL
The results of the analysis are output to the screen.

EXTENDED-SVP-DATA =
Applies only to generation of SVP file lists on H60, H90, H100, C50, C70, C80, SR2000 and DS2000 systems. It determines whether the logouts should be printed out in addition to the overview records.

EXTENDED-SVP-DATA = *NO
Logouts are not printed.

EXTENDED-SVP-DATA = *YES
If there is a logout for an overview record, it is printed immediately after the overview record.

Notes

– Operand names and values which are abbreviated in menu mode are defined in full length in the statements. Note, however, that you can use the abbreviated forms, for example *H instead of *HEL-DATA, *P instead of *PRINTER, DEV (or D) instead of DEVICE-NAME, *Y instead of *YES and so on.

– The *STD keyword has the same meaning as a blank character/zero in the corresponding input field of the main menu.

– If the placeholder "*" is specified at the start of a file name, it must appear twice (e.g. FILE=**HEL*).

– Neither a partially qualified file name nor the operand OUTPUT=*TERMINAL may be specified before the START-FUNCTION statement. Both are allowed, however, before the START-MENU-MODE statement.

– If FILE=*STD or FILE=*VMGLOBAL is specified, the program analyzes the current HEL file (i.e. the most recent one), unless an analysis period has been specified. If you specified an analysis period in the SET-SELECTION statement (with the DATE-TIME-FROM and/or DATE-TIME-TO operand), the HEL files which contain records belonging to the analysis period are analyzed.

  If the analysis period covers more than five HEL files, only the five most recent HEL files are analyzed by a subsequent START-FUNCTION statement. Under these circumstances, the HEL-FILE selection screen appears in response to the START-MENU-MODE statement (see page 54).

– On BS2000 systems on which SVP file analysis is not available, the program ignores the INPUT operand and limits itself to HEL file analysis.

Example

```
//SET-INOUT INPUT=*HEL-DATA,FILE=SYSLOG.ELSA.HISTORY, -
          OUTPUT=*PRINTER(DEVICE-NAME=MDRS01,FORM-NAME=STDNHT)
```

HEL records only are analyzed. The records are read from the history file SYSLOG.ELSA.HISTORY. Results are output in listing form. The listings are printed on the printer MDRS01 with the STDNHT form.

SET-MASK
Define special selection masks

Function

The SET-MASK statement enables you to define special selection masks for HEL records of record class D (DEVICE ERROR) or delete selection masks defined beforehand.

As soon as selection masks are defined, analysis is restricted to HEL records of record class D. These records are selected with the selection masks according to the contents of specific sense bytes. All other HEL records and SVP records are automatically excluded from analysis.

The statement remains valid until the next SET-MASK statement is entered, or until the program is terminated.

The SET-MASK statement corresponds exactly to the mask input screen of the menu system (see page 52).

Format

```
SET-MASK

SENSEBYTE-NUMBER = *NONE / list-poss(12): <integer 1..2>(...)
    <integer 1..2>(...)
        | BITMASK = <alphanum-name 1..8>
```

Operands

SENSEBYTE-NUMBER =
Defines or deletes the selection masks.

SENSEBYTE-NUMBER = *NONE
The selection masks defined beforehand are deleted; analysis is no longer restricted to records of record class D.

SENSEBYTE-NUMBER = list-poss(12): <integer 1..2>(...)
One or more numbers of sense bytes; the bits of these sense bytes will be compared with those of a bit mask.
Enter the numbers of the sense bytes in decimal form; numbering of the bytes begins with 0.

BITMASK = <alphanum name 1..8>
Used to input the bit mask for comparison of the corresponding sense byte.
This operand is mandatory.
A bit mask contains a maximum of 8 positions (i.e. positions can be omitted to the right).
The individual positions can contain the following values:

0 = bit comparison to 0
1 = bit comparison to 1

If a position contains a different alphanumeric character, bit comparison does not take place.

Example

```
//SET-MASK SENSEBYTE-NUMBER=(0(BITMASK=1XXX0),5(BITMASK=XXXXXXX1))
```

Analysis is restricted to HEL records of the record class D and having a sense byte (SSB) containing the following bit values:

SSB0: bit0=1 and bit4=0
SSB5: bit7=1

SET-SELECTION
Select input data

Description of function

The SET-SELECTION statement enables you to define an analysis period and selection criteria for HEL and SVP records. The statement remains valid until the next SET-SELECTION statement is entered, or until the program is terminated.
If you do not use the SET-SELECTION statement, the defaults are used for the individual operands.

The operands correspond exactly to the selection parameters of the main menu. For a description of the selection parameters and the possible entries, see page 40ff.

Format

SET-SELECTION
DATE-TIME-FROM = *NOT-SELECTED / <alphanum-name 1..12> / <c-string 1..12> ,DATE-TIME-TO = *NOT-SELECTED / <alphanum-name 1..12> ,DEVICE-TYPE = *NOT-SELECTED / list-poss(2): <alphanum-name 1..4 with-wild> ,DEVICE-MNEMONIC = *NOT-SELECTED / list-poss(2): <alphanum-name 1..4 with-wild> ,PATH-ADDRESS = *NOT-SELECTED / list-poss(2): <alphanum-name 1..8 with-wild> ,ERROR-MNEMONIC = *NOT-SELECTED / list-poss(2): <alphanum-name 1..4> ,DER-STAMP = *NOT-SELECTED / <alphanum-name 1..8> ,RECORD-CLASS-ID = *NOT-SELECTED / list-poss(5): <alphanum-name 1..2> ,PRIORITY = *NOT-SELECTED / list-poss(3): <name 1..1> / <c-string 1..1> ,ATTRIBUTE = *NOT-SELECTED / list-poss(3): <name 1..1> / <c-string 1..1> ,VSN = *NOT-SELECTED / list-poss(2): <vsn 1..6> ,TSN = *NOT-SELECTED / list-poss(2): <alphanum-name 1..4> ,HEL-SEQUENCE-NUMBER-TO = *NOT-SELECTED / <alphanum-name 1..4> ,HEL-SEQUENCE-NUMBER-FROM = *NOT-SELECTED / <alphanum-name 1..4> ,UNIT = *NOT-SELECTED / <alphanum-name 1..8 with-wild> ,SVP-SEQUENCE-NUMBER-FROM = *NOT-SELECTED / <alphanum-name 1..4> ,SVP-SEQUENCE-NUMBER-TO = *NOT-SELECTED / <alphanum-name 1..4>

Operands

DATE-TIME-FROM =
The start of the analysis period for HEL and SVP records relative to the time the error occurred. If a time stamp is specified, the specification refers to the time and date of storage.

DATE-TIME-FROM = *NOT-SELECTED
The start of the analysis period is not determined. *NOT-SELECTED is the default value for all operands of this statement, i.e. the set of records to be analyzed is not limited by an operand set to the default.

DATE-TIME-FROM = <alphanum-name 1..12> / <c-string 1..12>
Absolute time for the start of the analysis period (yymmddhhmmss), relative time in days (-n) or input of a time stamp (see page 41).

DATE-TIME-TO = <alphanum-name 1..12>
The end of the analysis period when used for error occurrence. In the case of serial errors in the SVP file, refers to the first occurrence of the error.

DEVICE-TYPE = list-poss(2): <alphanum-name 1..4 with-wild>
The device type code, see page 42.

DEVICE-MNEMONIC = list-poss(2): <alphanum-name 1..4 with-wild>
The mnemonic device designation, see page 43.

PATH-ADDRESS = list-poss(2): <alphanum-name 1..8 with-wild>
The path address, see page 43f.

ERROR-MNEMONIC = list-poss(2): <alphanum-name 1..4>
The mnemonic error identification of the device error recovery (DER) to be searched for in the HEL file.

DER-STAMP = <alphanum-name 1..8>
The time stamp of the device error recovery (DER) to be searched for in the HEL file. The DER attaches an eight-character time stamp to every device error message output at the operator console. The HEL record belonging to the console message can be found by specifying the time stamp.

RECORD-CLASS-ID = list-poss(5): <alphanum-name 1..2>
The record class (REC-CLASS) or record identifier (REC-ID), see page 44f.

PRIORITY = list-poss(3): <name 1..1> / <c-string 1..1>
Error priority: (H for high, M for medium, L for low, - for HEL records without priority).

ATTRIBUTE = list-poss(3): <name 1..1> / <c-string 1..1>
The error attribute; possible inputs are:

C Correctable data check

U Uncorrectable data check

D Dalta function (hard disks only)

H Hardware fault

O Overrun

T Data volume error (tape/MTC only)

- For HEL records without error attribute

VSN = list-poss(2): <vsn 1..6>
The volume serial number (VSN).

TSN = list-poss(2): <alphanum-name 1..4>
The task sequence number (TSN).

HEL-SEQUENCE-NUMBER-FROM = <alphanum-name 1..4>
Specifies the HEL record sequence number with which the range begins. If no end-of-range value is specified (corresponds to HEL-SEQUENCE-NUMBER-TO=*NOT-SELECTED), the specified value is interpreted as standing on its own and all HEL files are searched.

HEL-SEQUENCE-NUMBER-TO = <alphanum-name 1..4>
Specifies the HEL record sequence number with which the range ends.

UNIT = <alphanum-name 1..8 with-wild>
The hardware unit, see page 47ff.

SVP-SEQUENCE-NUMBER-FROM = <alphanum-name 1..4>
Specifies the SVP record sequence number with which the range begins.

SVP-SEQUENCE-NUMBER-TO = <alphanum-name 1..4>
Specifies the SVP record sequence number with which the range ends.

Notes

– Operand names and values which are abbreviated in menu mode are defined in full length in the statements. Note, however, that you can use the abbreviated forms, for example ATTR instead of ATTRIBUTE and so on.

– Virtually all operand values of DATE-TIME-FROM, PRIORITY and ATTRIBUTE can be specified as <alphanum-names> or <c-strings>. Only operand values beginning with a minus sign must be entered as <c-strings>. The minus sign occurs in the following cases:

DATE-TIME-FROM=C'-n'	Relative time stamp in days (n=0,1,...,99)
PRIORITY=C'-'	HEL records without priority
ATTRIBUTE=C'-'	HEL records without attribute

– On BS2000 systems on which SVP file analysis is not available, the program ignores the UNIT, SVP-SEQUENCE-NUMBER-FROM and SVP-SEQUENCE-NUMBER-TO operands.

Example

```
//SET-SELECTION DATE-TIME-FROM=C'-5',DEVICE-TYPE=(A1,A2),PATH-ADDRESS=1A*
```

The analysis period began at 00.00 hours five days previously; no finishing date is specified. Only device-specific HEL records are to be analyzed; analysis is restricted to the device type codes A1 and A2 and to path addresses which begin with X'1A'.

SET-SVP-REFERENCE
Define reference type for SVP analysis

Function

The SET-SVP-REFERENCE statement enables you to specify an SVP reference type if ELSA does not yet support the current CPU. This is, however, only possible if a CPU exists whose SVP file analysis is compatible with the current CPU.

You will find a description of the possible specification of SVP reference types in the SERVICE information.

Format

SET-SVP-REFERENCE
REFERENCE-TYPE = *H60 / *H100 / *7590 / *C40 / *H120 / *H130 / *H121 / *S110 / *S130 / *S150 SAVE-CPU-TYPE = *NO / *YES

The REFERENCE-TYPE and SAVE-CPU-TYPE operands correspond to the identical input fields on the SVP reference type selection screen. Several operand names which have been abbreviated in menu mode are defined in their full length in command mode. You may, however, also use the abbreviated names in command mode.

Operands

REFERENCE-TYPE =
Name of the SVP reference type which is compatible with the current CPU.

SAVE-CPU-TYPE =
The SVP reference type is to be saved for further use.

SAVE-CPU-TYPE = *NO
The specified SVP reference type is only used during the current ELSA program run. The next time ELSA is started, the SVP reference type must be specified again.

SAVE-CPU-TYPE = *YES
The SVP reference type specified in the MARK field will automatically be used for SVP analysis in all subsequent ELSA program runs.

Note

If an SVP reference type is defined with a command, any previously saved reference type has no effect.

Example

```
//SET-SVP-REFERENCE REF=H130,SAVE=*YES
```

The SVP reference type H130 is specified for SVP file analysis on a CPU that is not yet supported. Furthermore, this SVP reference type is saved for all subsequent ELSA program runs.

SET-TITLE
Define titles for listings and screens

Function

The SET-TITLE statement allows you to define a title of your choice. This title then appears in the dividing line of every listing page and (after START-MENU-MODE) in the dividing line of every screen.

The statement corresponds exactly to the TITLE input field of the main menu (see page 35).

Format

SET-TITLE
TITLE = *NONE / <c-string 1..25 with-low>

Operands

TITLE =
Defines or deletes a title for listings and screens.

TITLE = *NONE
A title previously defined is deleted and its place filled with "=" characters.

TITLE = <c-string 1..25 with-low>
Defines a title of your choice. Uppercase and lowercase letters are distinguished, i.e. lowercase letters are not converted to uppercase.

Example

```
//SET-TITLE TITLE=C'System H90-I, Customer...'
```

The string " System H90-I, Customer..." appears as the title in all subsequent printer listing pages and screens.

START-FUNCTION
Start function

Function

The START-FUNCTION statement enables you to start any function (except *CTSU*).

There is a special startup statement for the *CTSU* function (SUPPRESS-TIMESTAMP-UPDATE). Bear in mind, too, that submenus cannot be called with START-FUNCTION since this statement has no screen output.

Format

```
START-FUNCTION

FUNCTION = *G / *GLOBAL-VIEW /
                *T / *ERROR-TYPE-LIST /
                *L / *ERROR-LIST /
                *DE / *DETAIL-PROCESSING-EDIT /
                *DD / *DETAIL-PROCESSING-DUMP /
                *SCHR / *CHRONOLOGICAL-ERROR-LIST /
                *SPL / *PATH-ERROR-LIST /
                *SDL / *DEVICE-ERROR-LIST /
                *SDT / *CARTRIDGE-DEVICE-TEMP-ERRORS /
                *SDTL / *DEVICE-TAPE-LIBRARY /
                *SDV / *DEVICE-ERROR-VIEW /
                *SMIM / *VOLUME-MEDIA-INFO-MESSAGES /
                *SVD / *VOLUME-DATA-CHECKS /
                *SVDD / *VOLUME-DATA-CHECKS-PER-DAY /
                *SVEL / *DISK-VOLUME-ERROR-LOCALITY /
                *SVFL / *CARTRIDGE-VOLUME-FAIL-LIMITS /
                *SCLD / *CONTROLLER-LOG-DATA /
                *SSHR / *SYSTEM-AND-HEL-RUN-TIME /
                *CSL / *STATUS-LIST /
                *CTL / *TIMESTAMP-LIST /
                *W(...) /  *WRITE-HISTORY(...)
  *W(...) / *WRITE-HISTORY(...)
    |  OUTPUT-FILE = *STD / <filename 1..54>
    |  ,WRITE-MODE = *NEW / *OVERWRITE / *EXTEND
```

Operands

FUNCTION =
Defines the function to be started (see syntax format).
You can enter the identifier (for example *G*) or the full designation of the function (*GLOBAL-VIEW* e.g.). You can also abbreviate parts of the designations, as long as uniqueness is maintained (e.g. D-P-E = DETAIL-PROCESSING-EDIT).

FUNCTION = *W(...) / *WRITE-HISTORY(...)
Starts the *WRITE-HISTORY* function. This function writes HEL and/or SVP records into a history file.
In the case of H60, H90, H100, C50, C70 and C80 systems, the SVP file logouts are also written into the history file if SET-INOUT EXTENDED-SVP-DATA=YES was entered beforehand.

OUTPUT-FILE = *STD / <filename 1..54>
The name of the history file. The default name is SYSLOG.ELSA.HISTORY.

WRITE-MODE =
Defines whether the history file is to be created, overwritten or extended.

WRITE-MODE = *NEW
Create a new history file. If a file with the name defined in OUTPUT-FILE already exists, an error message is output.

WRITE-MODE = *OVERWRITE
Overwrite the history file. If no file with the name defined in OUTPUT-FILE exists, a new file is created.

WRITE-MODE = *EXTEND
Extends the history file. If no file with the name defined in OUTPUT-FILE exists, a new file is created.

Notes

– When a function is called with the START-FUNCTION statement, there is no output on the screen. The only output is to SYSLST (to a file or any printer). The START-FUNCTION statement is rejected if it was preceded by a SET-INOUT statement containing the operand OUTPUT=*TERMINAL.

– The START-FUNCTION statement is also rejected if a partially qualified file name was entered in the FILE operand of the SET-INOUT statement.

– If an analysis period defined with the SET-SELECTION statement affects more than five HEL files, only the five most recent HEL files are analyzed by a subsequent START-FUNCTION statement.

Examples

```
//START-FUNCTION FUNCTION=SDL                 or
//START-FUNCTION FUNCTION=DEVICE-ERROR-LIST
```

The SDL function (= DEVICE-ERROR-LIST) is started.

```
//START-FUNCTION FUNCTION=W(OUTPUT-FILE=ELS.HISTORY.DEV-ERR, -
   WRITE-MODE=OVERWRITE)
```

The WRITE-HISTORY function is started. The HEL and/or SVP records are written to the history file ELS.HISTORY.DEV-ERR. If the file does not yet exist, it is created. If the file already exists, it is overwritten.

START-MENU-MODE
Switch to menu mode and start function

Function

The START-MENU-MODE statement enables you to switch to menu mode.
When you switch modes in this way, you can either go to the main menu or call a function of your choice. Thereafter, the program behaves as if it had been originally called in the menu mode.

Format

START-MENU-MODE

FUNCTION = *NONE /
*G / *GLOBAL-VIEW /
*T / *ERROR-TYPE-LIST /
*L / *ERROR-LIST /
*D / *DETAIL-PROCESSING-SUBMENU /
*DE / *DETAIL-PROCESSING-EDIT /
*DD / *DETAIL-PROCESSING-DUMP /
*S / *STATISTICS-SUBMENU /
*SCHR / *CHRONOLOGICAL-ERROR-LIST /
*SPL / *PATH-ERROR-LIST /
*SDL / *DEVICE-ERROR-LIST /
*SDT / *CARTRIDGE-DEVICE-TEMP-ERRORS /
*SDTL / *DEVICE-TAPE-LIBRARY /
*SDV / *DEVICE-ERROR- VIEW /
*SMIM / *VOLUME-MEDIA-INFO-MESSAGES /
*SVD / *VOLUME-DATA-CHECKS /
*SVDD / *VOLUME-DATA-CHECKS-PER-DAY /
*SVEL / *DISK-VOLUME-ERROR-LOCALITY /
*SVFL / *CARTRIDGE-VOLUME-FAIL-LIMITS /
*SCLD / *CONTROLLER-LOG-DATA /
*SSHR / *SYSTEM-AND-HEL-RUN-TIME /
*C / *CONFIGURATION-SUBMENU /
*CSL / *STATUS-LIST /
*CTL / *TIMESTAMP-LIST /
*CTSU / *TIMESTAMP-SUPPRESS-UPDATE /
*W / *WRITE-HISTORY

Operands

FUNCTION =
Determines the first action in menu mode.

FUNCTION = *NONE
Goes to the main menu of menu mode. The fields of the main menu contain the operand values as carried over from the SET-TITLE, SET-INOUT and SET-SELECTION statements issued beforehand. In addition, the *EXTENDED-SVP-DATA* fields in submenu D000 and screen W100 contain the operand value of the preceding SET-INOUT statement.

If you press the F2 function key, the mask input screen is activated; the screen defaults are carried over from the operand values of the SET-MASK statement.

FUNCTION = *G / *GLOBAL-VIEW / ...
Defines a function or a submenu of your choice (see syntax format). The program skips over the main menu and immediately starts the specified function or submenu.

You can enter the identifier (for example *G*) or the full designation of the function (e.g. *GLOBAL-VIEW*). You can also abbreviate parts of the designations, as long as uniqueness is maintained (e.g. D-P-E = DETAIL-PROCESSING-EDIT).

Example

```
//START-MENU-MODE FUNCTION=SDL                 or
//START-MENU-MODE FUNCTION=DEVICE-ERROR-LIST
```

This statement switches to the menu mode and starts the SDL function (= *DEVICE-ERROR-LIST*).

SUPPRESS-TIMESTAMP-UPDATE
Prevent storage of the new time stamp values

Function

The SUPPRESS-TIMESTAMP-UPDATE statement enables you can delete the new values of time stamps used in a session. This means that the new values are not stored when the program is terminated. Instead, the time stamps retain their original values.

Time stamps are described in detail on page 41.

Note

In menu mode, you can use the function *CTSU* (= *TIMESTAMP-SUPPRESS-UPDATE*) to request information on the currently used time stamp or to prevent storage of the new time stamp values.

Format

SUPPRESS-TIMESTAMP-UPDATE
TIMESTAMP-NAME = *ALL / list-poss(10): <name 1..8>

Operands

TIMESTAMP-NAME =
Defines the time stamps for which the new values will be deleted.

TIMESTAMP-NAME = *ALL
The new values of all time stamps used in the session will be deleted.

TIMESTAMP-NAME = list-poss(10): <name 1..8>
One or more time stamps; the new values of these time stamps are deleted.

Example

```
//SUPPRESS-TIMESTAMP-UPDATE TIMESTAMP-NAME=(BEATE,HUGO1)
```

The new values of the time stamps `BEATE` and `HUGO1` are deleted and therefore these time stamps are not updated at the end of the program run.

7 Functions and results of HEL file and SVP file analysis

Any function can be called from the main menu. The output screens of some functions offer the possibility of calling certain other functions. You call a function by entering its identifier in the *NEXT* field.

Functions which discharge similar tasks are combined into function groups. Each function group has a submenu in which the functions of the group are listed. It is not absolutely essential to call the submenu. You can call the functions of a submenu directly if you are aware of their names.

The table below is an overview of all functions available for analysis of HEL files and SVP files.

Identifier	Function designation and brief description
G	*GLOBAL-VIEW* Global status overview of mainframe and peripherals. This function shows the number of HEL and SVP records, sorted by device types, units, priorities, attributes, etc.
T	*ERROR-TYPE-LIST* compressed lists of HEL and SVP records. Records describing errors of similar type are grouped by "error type", instead of being repeated.
L	*ERROR-LIST* Lists of the most important data of the individual HEL and SVP records; a maximum of two lines per record.
D	*DETAIL-PROCESSING - SUBMENU* Submenu of the *DETAIL-PROCESSING* function group. This function group is used to output all (essential) details of the individual HEL and SVP records.
DE	*DETAIL-PROCESSING - EDIT* Processing and output of all essential details of the records, with error analysis to some extent.
DD	*DETAIL-PROCESSING - DUMP* Complete output of the records in hexadecimal form, partially also in printable form (dump format).

Continued ➠

Identifier	Function designation and brief description
S	*STATISTICS - SUBMENU* Submenu of the *STATISTICS* function group. This function group contains several functions for the statistical analysis of the HEL file.
SCHR	*CHRONOLOGICAL ERROR LIST* Generates a list of all errors in chronological order (with VM display).
SPL	*PATH ERROR LIST* Generates separate lists of path errors of devices and device controllers, sorted by path addresses.
SDL	*DEVICE ERROR LIST* Generates a list of errors for every errored device.
SDT	*CARTRIDGE DEVICE TEMPORARY ERRORS* Shows the sum totals of temporary errors of MTC devices and calculates the average error rates.
SDTL	*DEVICE TAPE LIBRARY* Generates several lists of robot errors for magnetic tape cartridge systems.
SDV	*DEVICE ERROR VIEW* Shows the totals of HEL file records per priority and attribute for every device, as well as the total of HEL file records for controller log data.
SMIM	*VOLUME MEDIA INFORMATION MESSAGE* Shows the MTC volumes that contain a media information message (MIM).
SVD	*VOLUME DATA CHECKS* Shows the number of data checks per volume, sorted by product groups and error count (descending).
SVDD	*VOLUME DATA CHECKS PER DAY* Generates day-by-day totals of data checks per volume.
SVEL	*DISK VOLUME ERROR LOCALITY* Shows the defective tracks of disk volumes (block number, cylinder and track addresses). The number of correctable and uncorrectable data checks is output for each defective track.
SVFL	*CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS* Shows the MTC volumes which have exceeded one of the permissible limit values for temporary errors or which evince a permanent error. Totals both temporary and permanent data checks and calculates the average error rates.
SCLD	*CONTROLLER LOG DATA* Prepares the statistics counters of all disk controllers and tape controllers for device type E4

Continued ➠

Identifier	Function designation and brief description
SSHR	*SYSTEM AND HEL RUN TIME* Shows the system runtimes and within every system runtime the time windows in which hardware error logging (HEL and/or VMHEL) was on or off.
C	*CONFIGURATION - SUBMENU* Submenu of the *CONFIGURATION* function group. This function group provides information about the program environment of ELSA, and in some instances for modifying the program environment.
CSL	*STATUS LIST* Shows the number of HEL and SVP records, the times of the first and last error occurrences, and the file names of the current input files.
CTL	*TIMESTAMP LIST* Shows a list of all time stamps. In addition, you can delete time stamps in menu mode. For more information on time stamps, see page 41.
CTSU	*TIMESTAMP SUPPRESS UPDATE* Prevents the storage of the new values of those time stamps which were used in the current program run; i.e. the time stamps retain their original values instead of being updated after use.
W	*WRITE-HISTORY* Outputs HEL and SVP records to a history file. This history file can subsequently be analyzed just like the original HEL and SVP files.

See section 'Screen layout' on page 26 for general information on the screen layouts.

This following section describes the general layout of the printer listings.

Notes

The analysis of HEL files which contain data from new hardware is possible at any time using the basic functions *G, T, L, DE, DD*, as well as the statistics function *SDV*.

All other ELSA functions for analyzing the HEL files supply device-specific data and therefore only provide a result if the detail information of the new hardware is taken into account by the ELSA routine.

SVP file analysis on a new system is not possible since access to the original SVP file and analysis of the data is system-dependent.

7.1 Layout of printer listings

For all the functions - except *W* and *CTSU* - you can choose whether output is directed to the screen or a printer. The desired output type is defined in the main menu. Only screen output is available for follow-up functions.

The function listing is always written to the SYSLST file. This file is printed on the specified printer when the function is terminated, and is then deleted. See also section 'Output types' on page 30 for information on printer output.

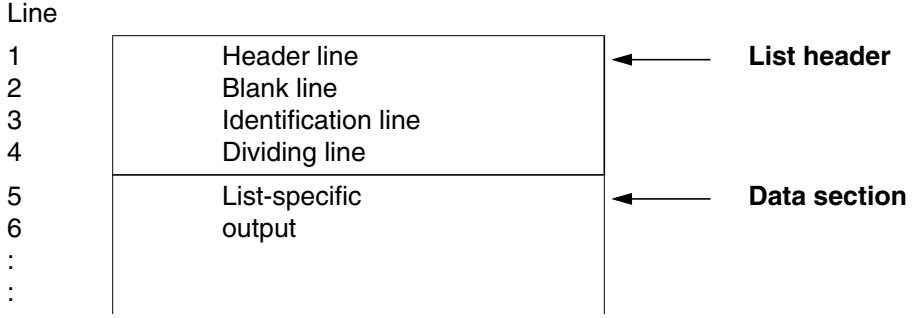
The layout and sort order of the listings is analogous to that of the screens of the corresponding functions unless specified otherwise. The maximum with of the listings is 80 characters which means that these listings can be output on printers which do not support lines of more than 80 characters in length.

Some listings, however, are wider than 80 characters. There are several list formats compressed to 80 characters which can be used in these cases:

– 1 list format for the L function
– 7 list formats for the DE - HEL-FILE function
– 1 list format for the DE - SVP-FILE function
– 1 list format for the DD - HEL-FILE function
– 5 list formats for the DD - SVP-FILE function
– 3 list formats for the SDT function
– 3 list formats for the SDTL function
– 1 list format for the SVFL function

As regards their content, the compressed list formats correspond to their standard-width counterparts. The only difference is that the structure is more compact.

The first column of each listing line contains a feed character, followed by either 80 or 132 text characters. The listing page layout is as follows:



List header, lines 1 - 4:

Header line, line 1:

The header line contains the list label and list title, plus the page number.
The list label appears at the start of the line; it consists of a max. four-character function identifier and a three-digit number.
The list title is a centered, list-dependent text.

Identification line, line 3:

The following information is in the identification line:

– ELSA program name
– program version of ELSA
– CPU identification of the system that was the originator of the input data
– CPU designation of the system that was the originator of the input data
– date and time of the function call

Dividing line, line 4:

The dividing line separates the list header from the data section. If you defined a title either by incorporating it in the main-menu dividing line or by means of the SET-TITLE statement, the title you defined appears in the dividing line of each page of the listing.

Data section, line 5 onward:

In most lists, the data section is analogous to that of the corresponding function screen, but it is continuous to the end of the listing (or end of output).

Technical note

In some lists (as in some screens), the output columns are separated by vertical lines. The separating character is the vertical bar "|" (X'4F').

In some national character sets, X'4F' may be a character other than the vertical bar. It may, therefore, be necessary to select a different character.

Provision for this change is made in the program. The line character is defined as a global variable which receives its value at a central point of the program. In this way, a function for modifying the line character can be implemented at any time and with relatively little effort.

The output screens are explained one after the other below. Listings are described only if there is a discrepancy between the listing and the screen layouts.

Some functions return several screens. In these cases a single screen is shown below by way of example, unless several screens have to be shown for the sake of clarity.

7.2 G function: GLOBAL-VIEW

The function provides a global overview of mainframe and peripherals status.

This function returns two sequential screens as the result of analysis. The first screen contains data of the HEL file, the second screen contains data of the SVP file.

If output is directed to SYSLST (or a printer), the function generates two listings, one for the HEL file and one for the SVP file (list format with 132-character lines).

7.2.1 HEL file screen

The screen contains the totals for HEL records. The totals are formed as follows:

– Device-specific errors (record classes I and D) are totalled per device type, priority and attribute. The totals for the controller log data (record class L) are formed and displayed separately (in the *CLOG* column).

– All other records are totalled per record class, priority and attribute.

```
G100                          GLOBAL-VIEW - HEL-FILE
ELSA V1.6A10             CPU: 11022001 88000000   S135              99-11-08 09:40

================================================================================
     FIRST: 99-10-29 15:19:54   LAST: 99-11-16 09:40:47   TOTAL CNT: 7514

MARK
   REC-CLASS / DTYP   PRI:H ATTR   PRI:M ATTR   PRI:L ATTR   PRI:- ATTR     CLOG
 _  CHANNEL CHECK          .            .            .          49 -          .
 _  CH REPORT WORDS        .          221 -          6 -          .           .
 _  TD      63             .            .            .           3 -          .
 _  TD      6D             .            .            .           2 -          .
 _  DISK    84             .            .            .           .         3366
 _  DISK    86           19 -           .           51 H         94 -        120
 _  DISK    86           38 O           .            .           .           .
 _  DISK    88             .            .            .           .           2
 _  DISK    89           20 -           .            .           .         402
 _  DISK    A7             .            .            .           .          12
 _  CARTRDG C2             .            .          1 -           .           8
 _  CARTRDG C4             .          2 U          9 -           .        2219
 _  CARTRDG C5             .            .        866 -           .           .

NEXT: +...  (+)                More details:  MARK data  and/or  NEXT = T/L/D/S
F1=help           F2=show sel-par           F3=main menu             K1=return

LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff, for a description of the output fields.

NEXT

If the listing is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the list is terminated if the *NEXT* field is empty. Output switches to the *GLOBAL-VIEW* of the SVP file (if available; if this file is not available the function is terminated).

If the listing fits onto one screen, *NEXT* is cleared by the program. It is not necessary to enter anything; *DUE* takes you to the *GLOBAL-VIEW* of the SVP file.

Instead of paging through the list, you can call a follow-up function:

T = ERROR-TYPE-LIST

L = ERROR-LIST

D = DETAIL-PROCESSING - SUBMENU

DE = DETAIL-PROCESSING - EDIT

DD = DETAIL-PROCESSING - DUMP

S = STATISTICS - SUBMENU

Sxxx = a function from the function group STATISTICS

The follow-up function analyzes only those records in the data currently presented on the screen. You can restrict this set even further by selecting data (see below). If you select data without specifying a function in the *NEXT* field, function *T* is called.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).

MARK

You can select data by marking one or more *MARK* fields.
You can mark a record by placing the cursor on its *MARK* field and pressing any character key except "*?*" (HELP function). Alternatively, you can use the MAR key.

You can mark both lines and columns.
If you mark **only** lines or **only** columns, you select the entire lines or columns.
If you mark both lines **and** columns, only the intersections of the lines and columns you mark are selected.

Your selection initiates the call of a follow-up function which furnishes more information on the selected data (see description of *NEXT*).

You can unmark *MARK* fields by overwriting with blanks.

7.2.2 SVP file screen

The screen shows the sums of the SVP records per unit.
A record describing a succession of errors (= series error) is counted only once. The *T*, *L* and *D* functions show the number of times a series error is repeated.

There are four output columns on the screen. The first column contains units without index or units with the index 0+4n index (n=0,1,...). The second column contains units with index 1+4n, and so on.

Only the first index of units having multiple indexes is analyzed. The remaining, variable indices are represented by the partial qualification characters "*" and "/".

```
G60O                        GLOBAL-VIEW - SVP-FILE
ELSA V1.6A10            CPU: 84020002 07800000   H120              99-11-23 14:30
================================================================================
     FIRST: 70-02-20 07:11:11   LAST: 98-04-23 11:14:59   TOTAL CNT: 200

MARK
             CNT UNIT          CNT UNIT          CNT UNIT          CNT UNIT
 _             6 CPUO            1 CPU1
 _             1 MSUO
 _             1 SCI
 _           163 CHP
 _             1 CDCU
 _             8 IPL
 _             7 SPC
 _            12 SVP




NEXT:                              More details:  MARK data  and/or  NEXT = T/L/D
F1=help            F2=show sel-par            F3=main menu             K1=return
ELS102O NO HEL FILE RECORDS FOUND

LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT and *MARK*

The function is terminated if the *NEXT* field is empty.
You can page back to the *GLOBAL-VIEW* output for the HEL file by pressing *K3* (or by entering */K3* in the *NEXT* field).
See the description of the *GLOBAL-VIEW* output of the HEL file for more details.

7.2.3 HEL file and SVP file listings

The layout of the listings is analogous to that of the corresponding function screens.

7.3 T function: ERROR-TYPE-LIST

The function generates compressed output listings of HEL and SVP records.

Multiple, related records generated on a single day are not repeated. Note, however, that only certain information is used as the basis of comparison between individual records. This information is output to the screen/printer. If only individual positions of a data field are compared, the positions not compared are indicated by the fill character ".".

The information compared and output depends on the type of record concerned. Consequently, the function creates a list for each record class in the HEL file, plus another list for the SVP file.

7.3.1 Selection screen

The screen presents an overview of the output listings of the *ERROR-TYPE-LIST* function. The number of HEL records per record class and the total number of SVP records are shown in the *CNT* column. You can mark all lists containing records (*CNT* > 0) by marking the *MARK* fields. If a particular list is empty (*CNT* = 0), its *MARK* field is suppressed and blocked.

If there is only a single output listing that contains records, the selection screen is skipped and output of the listing starts immediately.

```
T000                          ERROR-TYPE-LIST - SELECTION
ELSA V1.6A10              CPU: 11022001 88000000   S135              99-11-19 09:45
===============================================================================


             MARK           RECORD-CLASS                      CNT

                            M - MACHINE CHECK                   0
               _            C - CHANNEL CHECK                  49
               _            I - INTERRUPT ERROR                94
               _            R - CHANNEL REPORT WORDS          227
               _            D - DEVICE ERROR                 1011
                            T - TDP DATA                        0
               _            H - START/STOP HEL                  4
               _            L - CONTROLLER LOG DATA          6135

               _            SVP-FILE RECORDS                  100



NEXT: ....
F1=help            F2=show sel-par           F3=main menu            K1=return

LTG                                                         TAST
```

NEXT

The *NEXT* field is empty. No input is necessary.

The following inputs are possible:

- *H* or*?* (HELP function)
- /<function key> (e.g. */K1*)
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

MARK

Marking (press any character key except "*?*" (HELP function) or use the MAR key) enables you to select one or more error classes. The listings are output one after the other.

You can unmark *MARK* fields selected by mistake by overwriting with blanks.

7.3.2 HEL file screens

Screen for MACHINE CHECK

The screen contains a compressed list of records for the MACHINE CHECK record class.

The errors are sorted by priority. The individual entries are listed by date (*MMDD*).

```
T120                    ERROR-TYPE-LIST - MACHINE CHECK
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-24 13:47
================================================================================
     FIRST: 93-01-19 15:50:43   LAST: 93-09-13 15:03:55   TOTAL CNT: 1883

MARK              MMDD     PRI     <----- MCIC ---->       CNT
 _                0830      M      00220F9D 40030F00         1
 _                0831      M      00220F9D 40030F00         2
 _                0901      M      00220F9D 40030F00         1
 _                0119      L      00420F1D 00030000         5
 _                0120      L      00420F1D 00030000         1
 _                0121      L      00420F1D 00030000         8
 _                0122      L      00420F1D 00030000         8
 _                0125      L      00420F1D 00030000         6
 _                0126      L      00420F1D 00030000        10
 _                0127      L      00420F1D 00030000         5
 _                0128      L      00420F1D 00030000         3
 _                0128      L      20020F1D 00030000         1
 _                0129      L      00420F1D 00030000         5
 _                0201      L      00420F1D 00030000        21

NEXT: +...  (+)                 More details:  MARK data  and/or  NEXT = L/D/S
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                               TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the output listing is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the list is terminated if the *NEXT* field is empty. Output switches to the next list you marked in the selection screen (if available; if no list is available the function is terminated).

If the listing fits onto one screen, you do not need to enter anything; *DUE* takes you to the next list you marked in the selection screen.

Instead of paging through the list, you can call a follow-up function:

L = ERROR-LIST

D = DETAIL-PROCESSING - SUBMENU

DE = DETAIL-PROCESSING - EDIT

DD = DETAIL-PROCESSING - DUMP

S = STATISTICS - SUBMENU

Sxxx = a function from the function group STATISTICS

The follow-up function analyzes only those records in the data currently presented on the screen. You can restrict this set even further by selecting data (see below). If you select data without specifying a function in the *NEXT* field, function *L* is called.

The following inputs are also possible:

- *H* or *?* (HELP function), see page 221.
- /<function key> (e.g. */K1*), see page 32.
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

MARK

You can select data by marking one or more *MARK* fields.
You can mark a record by placing the cursor on its *MARK* field and pressing any character key except "*?*" (HELP function). Alternatively, you can use the MAR key.

Your selection initiates the call of a follow-up function which furnishes more information on the selected data (see description of *NEXT*).

You can unmark *MARK* fields by overwriting with blanks.

Screen for CHANNEL CHECK

The screen contains a compressed list of records for the CHANNEL CHECK record class.

The errors are sorted by device type (*DTYP*), priority (*PRI*), mnemonic device designation (*MN*) and path address (*PADR*). The individual entries are listed by date (*MMDD*).

```
T150                    ERROR-TYPE-LIST - CHANNEL CHECK
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-24 13:50
================================================================================
     FIRST: 93-03-09 07:23:26   LAST: 93-09-01 15:56:54   TOTAL CNT: 428

MARK         PRI             CHT    SDB                                  FLG5
    MMDD DTYP   MN   PADR       CSB USB CMD  <----- CSW -----> SCSWO        CNT
 _  0309 21     L8   01000010 2  02 00  09   064F05B8 00020063 04C24017 A0    1
 _  0309 21     L8   01000010 2  02 00  09   064F0A58 00020082 04C24017 A0    1
 _  0506 63     Y2   750000D0 2  02 00  01   02A940F0 00020000 04C24017 80    1
 _  0416 63     Y5   22000090 2  02 00  01   025A17F0 0002006E 05C24417 80   11
 _  0416 63     Y5   22000090 2  02 00  01   027DE790 00020002 05C24417 80   44
 _  0416 63     Y5   22000090 2  02 00  01   027DE7A0 00020002 05C24417 80    3
 _  0416 63     Y5   22000090 2  02 00  01   032F0790 00020002 05C24417 80   18
 _  0416 63     Y5   22000090 2  02 00  01   032F07A0 00020002 05C24417 80    5
 _  0416 63     Y5   22000090 2  02 00  01   03AE7790 00020002 05C24417 80   11
 _  0416 63     Y5   22000090 2  02 00  01   0487D790 00020002 05C24417 80   11
 _  0416 63     Y6   22000091 2  02 00  02   025A7178 00020084 05C24417 80   11
 _  0416 63     Y6   22000091 2  02 00  02   025A7578 00020084 05C24417 80   33
 _  0416 63     Y6   22000091 2  02 00  02   025A7778 00020084 05C24417 80   88

NEXT: +...  (+)                 More details:  MARK data  and/or  NEXT = L/D/S
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                              TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for INTERRUPT ERROR

The screen contains a compressed list of records for the INTERRUPT ERROR record class.

The errors are sorted by device type (*DTYP*), priority (*PRI*), mnemonic device designation (*MN*) and path address (*PADR*). The individual entries are listed by date (*MMDD*).

```
T180                    ERROR-TYPE-LIST - INTERRUPT ERROR
ELSA V1.6A10             CPU: 11022001 88000000   S135              99-11-11 09:45
================================================================================

     FIRST: 99-11-08 17:55:01   LAST: 99-11-15 11:29:06   TOTAL CNT: 94

MARK          PRI              CHT   SDB    ITYP                            FLG5
    MMDD DTYP   MN   PADR      CSB USB CMD    <----- CSW -----> SCSW0         CNT
 _  1108 86     420C 2864000C 2 00 00       A  0A2336D0 00000000 00C01001 00    1
 _  1108 86     420C 2864000C 2 00 00  00   M  0A2336D8 00000000 00C04400 80    6
 _  1109 86     420C 2864000C 2 00 0C  00   M  006E27D0 0C000000 00C04400 80    1
 _  1109 86     420C 2864000C 2 00 00       A  02C85110 00000000 00C01001 00    1
 _  1109 86     420C 2864000C 2 00 00  00   M  006E27D0 00000000 00C04400 80    1
 _  1109 86     420C 2864000C 2 00 00  00   M  02C85118 00000000 00C04400 80    1
 _  1108 86     421F 2864001F 2 00 00       A  02C85110 00000000 00C01001 00    3
 _  1108 86     421F 2864001F 2 00 00       A  0A2336D0 00000000 00C01001 00    3
 _  1108 86     421F 2864001F 2 00 00  00   M  00CF7110 00000000 00C04400 80    2
 _  1108 86     421F 2864001F 2 00 00  00   M  02C85118 00000000 00C04400 80    7
 _  1108 86     421F 2864001F 2 00 00  00   M  0A2336D8 00000000 00C04400 80   16
 _  1108 86     421F 2864001F 2 00 04  00   M  0A2336D8 04000000 00C04400 80    1
 _  1108 86     421F 2864001F 2 00 08  00   M  02C85118 08000000 00C04400 80    1

NEXT: +...  (+)                  More details:  MARK data  and/or  NEXT = L/D/S
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for CHANNEL REPORT WORDS

The screen contains a compressed list of records for the CHANNEL REPORT WORDS record class.

The errors are sorted by reporting source (*RS-ID*).The individual entries are listed by date (*MMDD*).

```
T210                 ERROR-TYPE-LIST - CHANNEL REPORT WORDS
ELSA V1.6A10            CPU: 60020001 86000000   S130             99-11-22 12:50
================================================================================
     FIRST: 99-11-09 05:42:58   LAST: 99-11-13 14:08:01   TOTAL CNT: 17

MARK  MMDD   RS-ID   <------- RSC ------->    <--------- ERC --------->     CNT
 _    1109   0009    CHANNEL PATH            PERM. ERR. FAC. INITIAL.        1
 _    1109   000B    CHANNEL PATH            TEMPORARY ERROR                 2
 _    1110   000B    CHANNEL PATH            TEMPORARY ERROR                 5
 _    1113   000B    CHANNEL PATH            TEMPORARY ERROR                 1
 _    1110   001B    CHANNEL PATH            TEMPORARY ERROR                 1
 _    1109   002B    CHANNEL PATH            TEMPORARY ERROR                 1
 _    1110   002B    CHANNEL PATH            TEMPORARY ERROR                 1
 _    1113   002B    CHANNEL PATH            TEMPORARY ERROR                 2
 _    1110   0030    CHANNEL PATH            INITIALIZED                     1
 _    1110   0034    CONFIG.-ALERT FACIL.    TEMPORARY ERROR                 2




NEXT: ....                          More details:  MARK data  and/or  NEXT = L/D/S
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for DEVICE ERROR

The screen contains a compressed list of records for the DEVICE ERROR record class.

The errors are sorted by device type (*DTYP*), priority (*PRI*), and mnemonic device designation (*MN*). The individual entries are listed by date (*MMDD*).

```
T240                    ERROR-TYPE-LIST - DEVICE ERROR
ELSA V1.6A10           CPU: 11022001 88000000   S135            99-11-15 09:46
================================================================================
     FIRST: 99-10-31 09:08:42   LAST: 99-11-16 08:52:30   TOTAL CNT: 1011

MARK        PRI     CHT    SDB     SENSEBYTES (SSB)
   MMDD DTYP   MN      CSB USB CMD  0 1 2 3  4 5 6 7  8 91011 12131415 FSC   CNT
 _ 1110 63     Y3    2  00 0E  01  4100.... ........ ........ ........ ....    1
 _ 1110 63     Y4    2  40 0E  02  4100.... ........ ........ ........ ....    2
 _ 1104 6D     U5    2  00 4E  02  40000100 ........ ........ ........ ....    2
 _ 1106 86   H 441B  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1110 86   H 441B  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1106 86   H 4411  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1107 86   H 4411  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1104 86   H 4413  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1106 86   H 4415  2  40 0E  42  048000.. ......0D ........ ........ 090D    2
 _ 1108 86   H 4415  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1106 86   H 442B  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1106 86   H 4423  2  40 0E  42  048000.. ......0D ........ ........ 090D    1
 _ 1106 86   H 4424  2  00 06  41  100000.. ......11 ........ ........ 0000    8

NEXT: +...  (+)                  More details:  MARK data  and/or  NEXT = L/D/S
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for TDP DATA

The screen contains a compressed list of records for the TDP DATA record class.

The errors are sorted by device type (*DTYP*), mnemonic device designation (*MN*) and the path address (*PADR*). The individual entries are listed by date (*MMDD*).

```
T270                        ERROR-TYPE-LIST - TDP DATA
ELSA V1.6A10             CPU: MORE THAN ONE CPU TYPE              99-11-23 12:51
================================================================================
     FIRST: 93-04-22 13:27:49   LAST: 93-04-22 13:28:04   TOTAL CNT: 8

MARK      MMDD     DTYP   MN     PADR         CT   CHT    CALL      CNT
 _        0422     C2     MP     7F000089     00    2     TDP         8









NEXT: ....                          More details:  MARK data  and/or  NEXT = L/D/S
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for START/STOP HEL

The *ERROR-TYPE-LIST* function corresponds exactly to the *ERROR-LIST* function for the START/STOP HEL record class. The screen contains a list of the records in chronological order.

```
T300                    ERROR-TYPE-LIST - START/STOP HEL
ELSA V1.6A10            CPU: 30020001 88000000   S150            99-11-16 14:24
================================================================================
     FIRST: 98-06-09 18:55:44   LAST: 98-06-22 09:16:59   TOTAL CNT: 20

MARK          VM-ID      DATE/TIME           STATUS FLAG    STATUS TEXT
 _             MO        98-06-10 08:31:48        90        HLV-STOP BY SYS
 _             MO        98-06-15 09:19:31        10        HLV-START BY SYS
 _             MO        98-06-15 14:06:12        90        HLV-STOP BY SYS
 _             MO        98-06-16 09:08:28        10        HLV-START BY SYS
 _             MO        98-06-16 13:06:01        90        HLV-STOP BY SYS
 _             MO        98-06-19 08:56:19        10        HLV-START BY SYS
 _             MO        98-06-19 14:04:51        90        HLV-STOP BY SYS
 _             MO        98-06-22 09:16:59        10        HLV-START BY SYS
 _             02        98-06-15 10:46:46        00        START BY SYSTEM
 _             02        98-06-16 09:57:24        00        START BY SYSTEM
 _             02        98-06-19 09:59:22        00        START BY SYSTEM
 _             03        98-06-15 10:55:56        00        START BY SYSTEM
 _             03        98-06-16 10:02:07        00        START BY SYSTEM
 _             03        98-06-19 10:01:00        00        START BY SYSTEM

NEXT: +...  (+)                        More details:  MARK data  or  NEXT = DD/S
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT and *MARK*

As for the first screen of this function (screen for MACHINE CHECK), but with the following restriction:

You can only call the follow-up function *DD* or, with *S* or *Sxxx*, a statistics function. The other functions would furnish no additional information.

If you enter *D* in the *NEXT* field, the *DD* function is called, i.e. the *D* submenu is skipped.

Screen for CONTROLLER LOG DATA

The screen contains a compressed list of records for the CONTROLLER LOG DATA record class.

The errors are sorted by device type (*DTYP*) and mnemonic device designation (*MN*). The individual entries are listed by date (*MMDD*).

```
T360                ERROR-TYPE-LIST - CONTROLLER LOG DATA
ELSA V1.6A10           CPU: 60020001 86000000   S130            99-11-18 14:26
================================================================================
     FIRST: 99-11-09 02:18:01   LAST: 99-11-09 11:40:53   TOTAL CNT: 12

MARK                      CHT  LOGBYTES (LOGB)
     MMDD   DTYP   MN          0 1 2 3  4 5 6 7  8 91011 12131415   FSC     CNT
 _   1109   84     430C   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     4305   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     434B   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     436A   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     436F   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     4361   2   000010.. ......60 ........ ........  0000       1
 _   1109   84     4366   2   000010.. ......60 ........ ........  0000       1
 _   1109   86     423C   2   000010.. ......60 ........ ........  0000       1
 _   1109   C4     EQ     2   ......2B ........ ........ ........  ....       2
 _   1109   C4     ER     2   ......2B ........ ........ ........  ....       1
 _   1109   C4     ME     2   ......2B ........ ........ ........  ....       1



NEXT: ....                          More details:  MARK data  and/or  NEXT = L/D/S
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

7.3.3 SVP file screens

Unlike the HEL file data, the SVP records can be displayed in a single joint listing. The screen layout, however, depends on the type of system in use.

H60/H90/H100/C50/C70/C80/SR2000 systems

The screen contains a compressed list of SVP records (= general records).

The records are sorted primarily by unit groups (*GP*, *IOP* and so on). Within a unit group, the records are sorted alphabetically by units. The individual records are listed by date (*MMDD*).

```
T600                  ERROR-TYPE-LIST - SVP-FILE RECORDS
ELSA V1.6A10           CPU: 3866EA84 80030000   2000            99-11-25 10:46
================================================================================
     FIRST: 98-05-07 09:07:28   LAST: 98-08-17 10:07:08   TOTAL CNT: 360

MARK      MMDD     UNIT       FLAGCODE or MSG#                     CNT   ERCNT
 _        0816     IOP0D7     INVALID                                1       0
 _        0618     IOP0D8     INVALID                                7       2
 _        0619     IOP0D8     INVALID                                3       0
 _        0618     IOP0D9     INVALID                                7       4
 _        0619     IOP0D9     INVALID                               11       0
 _        0804     IOP2D4     INVALID                                1       0
 _        0810     IOP2D4     INVALID                                1       0
 _        0810     IOP2D5     INVALID                                1       0
 _        0810     IOP2D6     INVALID                                1       0
 _        0813     IOP2D7     INVALID                                2       0
 _        0507     SVP        SVIM032                                2       0
 _        0507     SVP        SVNM020                                2       0
 _        0511     SVP        SVIM032                                1       0
 _        0512     SVP        SVIM032                                1       0

NEXT: +...  (+/-)                  More details:  MARK data  and/or  NEXT = L/D
F1=help           F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

7590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 systems

The screen contains a compressed list of SVP records (= flagcode records).

The records are sorted primarily by unit groups (central processor, peripherals processor and so on). Within a unit group, the records are sorted alphabetically by units. The individual records are listed by date (*MMDD*).

```
T620                    ERROR-TYPE-LIST - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 11022001 88000000   S135              99-11-22 10:47
================================================================================
     FIRST: 99-11-08 12:34:54   LAST: 99-11-15 17:05:43   TOTAL CNT: 100

MARK       MMDD      UNIT      FLAGCODE                  CNT    ERCNT
 _         1110      CHP       A9 7351 3B 00201P01         1        2
 _         1110      CHP       A9 7351 3B 00501P01         2        2
 _         1110      CHP       52 2310 3B 00231P01         1        1
 _         1110      CHP       52 2311 3B 00231P01         1        1
 _         1110      CHP       52 5310 3B 00531P01         1        1
 _         1110      CHP       52 5311 3B 00531P01         1        1
 _         1112      CHP       A1 5712 3B 00281P01         1        1
 _         1113      CHP       A6 7A02 1B 00331P01         2        3
 _         1113      CHP       A6 7A02 1B 00481P01         2        3
 _         1115      CHP       A1 5712 3B 00281P01         1        2
 _         1108      WTCSL     D9 0050  0 00001P01         4        4
 _         1109      WTCSL     D9 0050  0 00001P01         1        1
 _         1110      WTCSL     D9 T501  0 00001P01         1        1
 _         1115      WTCSL     D9 0050  0 00001P01         1        1

NEXT: +...  (+/-)                  More details:  MARK data  and/or  NEXT = L/D
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

7.3.4 HEL file and SVP file listings

If output is directed to SYSLST (or a printer), the function first outputs a general list (*SUMMARY*). The layout of this listing is analogous to that of the function's selection screen. The listing shows the number of HEL records (*CNT*) per record class, plus the number of SVP records.

This general list is followed by a separate list for each record class in the HEL file, and a single list for the SVP file. Only those lists which contain records (*CNT* > 0) are output.

The layout of the listings (format with line length 132) is analogous to that of the screens of the function.

7.4 L function: ERROR-LIST

This function creates lists of HEL and SVP records. Instead of showing all the data in the records, however, these lists contain only the most important data.

The data output depends on the type of record. Consequently, the function generates a list for each record class in the HEL file and another list for the SVP file.

Unlike the *ERROR-TYPE-LIST* function, the *ERROR-LIST* function outputs individual records instead of grouping related records.

7.4.1 Selection screen

The screen presents an overview of the output listings of the *ERROR-LIST* function. The number of HEL records per record class and the total number of SVP records are shown in the *CNT* column. You can mark all lists containing records (*CNT* > 0) by marking the *MARK* fields. If a particular list is empty (*CNT* = 0), its *MARK* field is suppressed and blocked.

If there is only a single output listing that contains records, the selection screen is skipped and output of the listing starts immediately.

```
L000                           ERROR-LIST - SELECTION
ELSA V1.6A10            CPU: 11022001 88000000   S135              99-11-16 10:47
================================================================================


             MARK           RECORD-CLASS                      CNT

                            M - MACHINE CHECK                   0
              _             C - CHANNEL CHECK                  49
              _             I - INTERRUPT ERROR                94
              _             R - CHANNEL REPORT WORDS          227
              _             D - DEVICE ERROR                 1011
                            T - TDP DATA                        0
              _             H - START/STOP HEL                  4
              _             L - CONTROLLER LOG DATA          6183

              _             SVP-FILE RECORDS                  100




NEXT: ....
F1=help            F2=show sel-par           F3=main menu            K1=return


LTG                                                           TAST
```

NEXT

The *NEXT* field is empty. No input is necessary.

The following inputs are possible:

- *H* or*?* (HELP function)
- /<function key> (e.g. */K1*)
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

MARK

Marking (press any character key except "*?*" (HELP function) or use the MAR key) enables you to select one or more error classes. The listings are output one after the other.

You can unmark *MARK* fields selected by mistake by overwriting with blanks.

7.4.2 HEL file screens

Screen for MACHINE CHECK

The screen contains a compressed list of records for the MACHINE CHECK record class.

The errors are sorted by priority (*PRI*). The individual entries are listed by the time of error occurrence.

```
L120                        ERROR-LIST - MACHINE CHECK
ELSA V1.6A10             CPU: 84020002 17800000   H120-S            99-11-24 13:47
================================================================================
     FIRST: 93-01-19 15:50:43   LAST: 93-09-01 08:26:06   TOTAL CNT: 77

MARK MMDD PRI <--- PSW-OLD --->  <---- MCIC ----->    EDC     <----- FSA ----->
 _   0830  M  070C3000 F10BE016  00220F9D 40030F00
 _   0831  M  070C3000 F10BE016  00220F9D 40030F00
 _   0831  M  070C3F00 F10BDFF2  00220F9D 40030F00
 _   0901  M  070C3000 F10BE016  00220F9D 40030F00
 _   0119  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0119  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0119  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0119  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0119  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0120  L  070F0000 80E2E6E3  00420F1D 00030000
 _   0121  L  070C0F00 F1279A4E  00420F1D 00030000
 _   0121  L  07ED0F00 80651EE2  00420F1D 00030000
 _   0121  L  040C0000 F1005B2C  00420F1D 00030000
 _   0121  L  07ED1F00 002347DC  00420F1D 00030000

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D/S
F1=help           F2=show sel-par           F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the output listing is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the list is terminated if the *NEXT* field is empty. Output switches to the next list you marked in the selection screen (if available; if no list is available the function is terminated).

If the listing fits onto one screen, you do not need to enter anything; *DUE* takes you to the next list you marked in the selection screen.

Instead of paging through the list, you can call a follow-up function:

D = DETAIL-PROCESSING - SUBMENU

DE = DETAIL-PROCESSING - EDIT

DD = DETAIL-PROCESSING - DUMP

S = STATISTICS - SUBMENU

Sxxx = a function from the function group STATISTICS

The follow-up function analyzes only those records in the data currently presented on the screen. You can restrict this set even further by selecting records (see below). If you select data without specifying a function in the *NEXT* field, function *D* is called.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

MARK

You can select records by marking one or more *MARK* fields.
You can mark a record by placing the cursor on its *MARK* field and pressing any character key except "*?*" (HELP function). Alternatively, you can use the MAR key.

Your selection initiates the call of a follow-up function which furnishes more information on the selected records (see description of *NEXT*).

You can unmark *MARK* fields by overwriting with blanks.

Screen for CHANNEL CHECK

The screen contains a compressed list of records for the CHANNEL CHECK record class.

The records are sorted by device type (*DTYP*), priority (*PRI*), mnemonic device designation (*MN*) and path address (*PADR*). The individual entries are listed by date (*MMDD*).

```
L150                           ERROR-LIST - CHANNEL CHECK
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-24 13:51
================================================================================
     FIRST: 93-03-09 07:23:26   LAST: 93-05-06 21:06:47   TOTAL CNT: 238

MARK        PRI             CHT   SDB                                       FLG5
   MMDD DTYP   MN   PADR      CSB USB CMD <----- CSW -----> ESW/LCL  SCSW0
 _ 0309 21     L8   01000010 2 02 00  09  064F0A58 00020082 00807E83 04C24017 A0
 _ 0309 21     L8   01000010 2 02 00  09  064F05B8 00020063 00807E83 04C24017 A0
 _ 0506 63     Y2   750000D0 2 02 00  01  02A940F0 00020000 00807E43 04C24017 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80
 _ 0416 63     Y5   22000090 2 02 00  01  025A17F0 0002006E 00807E44 05C24417 80

NEXT: +...  (+)                        More details:  MARK data  or  NEXT = D/S
F1=help            F2=show sel-par           F3=main menu            K1=return


--------------------------------------------------------------------------------
LTG                                                          TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for INTERRUPT ERROR

The screen contains a list of the most important data of the records in the INTERRUPT ERROR record class.

The records are sorted by device type (*DTYP*), priority (*PRI*), mnemonic device designation (*MN*) and path address (*PADR*). The individual entries are listed by date (*MMDD*).

```
L180                      ERROR-LIST - INTERRUPT ERROR
ELSA V1.6A10            CPU: 11022001 88000000   S135              99-11-16 10:49
================================================================================
     FIRST: 99-11-08 17:55:01   LAST: 99-11-15 11:29:06   TOTAL CNT: 94

MARK                          CHT   SDB   ITYP                                FLG5
    MMDD DTYP MN   PADR      CSB USB CMD  <----- CSW -----> ESW/LCL  SCSWO
 _  1108 86   420C 2864000C 2 00 0C  00 M 006E27D0 0C000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00  00 M 0A2336D8 00000000 00800000 00C04400 80
 _  1108 86   420C 2864000C 2 00 00     A 0A2336D0 00000000 00000000 00C01001 00
 _  1109 86   420C 2864000C 2 00 00  00 M 006E27D0 00000000 00800000 00C04400 80
 _  1109 86   420C 2864000C 2 00 00     A 02C85110 00000000 00000000 00C01001 00
 _  1109 86   420C 2864000C 2 00 00  00 M 02C85118 00000000 00800000 00C04400 80
 _  1108 86   421F 2864001F 2 00 00  00 M 00CF7110 00000000 00800000 00C04400 80
 _  1108 86   421F 2864001F 2 00 08  00 M 02C85118 08000000 00800000 00C04400 80

NEXT: +...  (+)                       More details:  MARK data  or  NEXT = D/S
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff, for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for CHANNEL REPORT WORDS

The screen contains a list of the most important data of the records in the CHANNEL REPORT WORDS record class.

The records are sorted by time of error occurrence.

```
L210                    ERROR-LIST - CHANNEL REPORT WORDS
ELSA V1.6A10             CPU: 11022001 88000000   S135              99-11-16 10:49
================================================================================
     FIRST: 99-10-30 07:14:42   LAST: 99-11-15 20:12:55   TOTAL CNT: 227
                                                                      CRW-  LOST
MARK  MMDD     CRW0     CRW1     CRW2     CRW3     CRW4     CRW5      CNT  CRWS
 _    1030   04030048 04030033                                         2     0
 _    1030   04030048 04030033                                         2     0
 _    1030   04030033 04030048                                         2     0
 _    1030   04030063 0403003A 04030048 04030033                       4     0
 _    1030   04030033 04030048                                         2     0
 _    1031   04030033 04030048                                         2     0
 _    1031   04030048 04030033                                         2     0
 _    1031   04030033 04030048                                         2     0
 _    1031   04030033 04030048                                         2     0
 _    1101   04030048 04030033                                         2     0
 _    1101   04030033                                                  1     0
 _    1101   04030048                                                  1     0
 _    1102   04030033 04030048                                         2     0
 _    1102   04030033 04030048                                         2     0

NEXT: +...  (+)                        More details:  MARK data  or  NEXT = D/S
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                              TAST
```

See chapter ’Field names’ on page 259ff, for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for DEVICE ERROR

The screen contains a list of the most important data of the records in the DEVICE ERROR record class.

The records are sorted by device type (*DTYP*), priority (*PRI*), and mnemonic device designation (*MN*). The individual entries are listed by time of error occurrence.

If a record contains more than 24 sense bytes, output of the sense bytes is wrapped round onto the next line.

```
L240                        ERROR-LIST - DEVICE ERROR
ELSA V1.6A10            CPU: 60020001 86000000   S130              99-11-16 14:36
================================================================================
     FIRST: 99-11-09 05:16:36   LAST: 99-11-15 21:31:16   TOTAL CNT: 5320

MARK          PRI    CHT    SENSEBYTES (SSB)
    MMDD DTYP   MN    CMD    0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223
 _  1115 89   H 5067 2 63   00101000 67008FE0 420000E4 74000014 030001F9 00E11467
                             05104A00 F1000000
 _  1115 89   H 5067 2 63   00101000 67008FE0 420000E4 74000014 030001F9 00E11467
                             05104A00 F1000000
 _  1115 C2   L MN   2 02   00488048 00000020 02007161 71610000 00000070 00000000
                             F78F1E70 00773300
 _  1115 C2   L MN   2 02   0049882E 00000020 02007161 71610000 00000070 00000000
                             F78F1E70 00793300
 _  1115 C4   M ME   2 02   08408423 40000220 52007630 CF900000 D00501E9 00000000
                             FE8F4021 05078800
 _  1109 C4   L ME   2 OF   004A9848 00000020 0000B013 0000B10D 000000E9 00000000
                             FE8F4021 05078800


NEXT: +...  (+/-)                       More details:  MARK data  or  NEXT = D/S
F1=help           F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff, for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for TDP DATA

The screen contains a list of the most important device data such as the device type and the sense ID.

The records are sorted according to device type (*DTYP*), SENSE-ID, mnemonic device name (*MN*) and path address (*PADR*). The individual entries are listed by time of error occurrence.

```
L270                          ERROR-LIST - TDP DATA
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE                99-11-16 10:51
================================================================================
     FIRST: 93-04-22 13:27:49   LAST: 93-04-22 13:28:04   TOTAL CNT: 8

MARK  DATE/TIME          DTYP  SENSE-ID       MN    PADR       CT  CHT  VSN
 _    93-04-22 13:27:49  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:49  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:49  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:49  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:50  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:59  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:27:59  C2    000000 000000  MP    7F000089   00   2   DAR01K
 _    93-04-22 13:28:04  C2    000000 000000  MP    7F000089   00   2   DAR01K




NEXT: ....                                 More details:  MARK data  or  NEXT = D/S
F1=help           F2=show sel-par           F3=main menu              K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff, for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

Screen for START/STOP HEL

The ERROR-TYPE-LIST function corresponds exactly to the ERROR-LIST function for the START/STOP HEL record class. The screen contains a list of the records in chronological order.

```
L3OO                      ERROR-LIST - START/STOP HEL
ELSA V1.6A10            CPU: 11022001 88000000   S135              99-11-16 10:51
================================================================================
     FIRST: 99-11-06 06:42:12   LAST: 99-11-10 19:03:01   TOTAL CNT: 4

MARK          VM-ID      DATE/TIME           STATUS FLAG    STATUS TEXT
 _              --       99-11-06 06:42:12        80        STOP BY SYSTEM
 _              --       99-11-06 10:15:34        00        START BY SYSTEM
 _              --       99-11-10 18:54:27        80        STOP BY SYSTEM
 _              --       99-11-10 19:03:01        00        START BY SYSTEM









NEXT: ....                                 More details:  MARK data  or  NEXT = DD/S
F1=help           F2=show sel-par            F3=main menu              K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                    TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT and *MARK*

As for the first screen of this function (screen for MACHINE CHECK), but with the following restriction:

You can only call the follow-up function *DD* or, with *S* or *Sxxx*, a statistics function. The other functions would furnish no additional information.

If you enter *D* in the *NEXT* field, the *DD* function is called, i.e. the *D* submenu is skipped.

Screen for CONTROLLER LOG DATA

The screen contains a list of the most important data of the records in the CONTROLLER LOG DATA record class.

The records are sorted by device type (*DTYP*) and mnemonic device name (*MN*). The individual entries are listed by time of error occurrence.

If a record contains more than 24 log bytes, output of the log bytes is wrapped round onto the next line.

```
L360                    ERROR-LIST - CONTROLLER LOG DATA
ELSA V1.6A10            CPU: 60020001 86000000   S130             99-11-16 14:40
================================================================================
     FIRST: 99-11-09 08:10:27   LAST: 99-11-16 14:37:22   TOTAL CNT: 799

MARK                CHT  LOGBYTES (LOGB)
     MMDD DTYP MN         0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223
 _   1115 89   5078  2   00000600 38246100 3C680000 00000014 030001F9 00E16F00
                        04104A00 FF020810
 _   1111 C2   MM    2   0048802B 00000030 00000000 00000000 00000000 00000000
                        00000070 00772200 0024BD00 00000024 87000000 00063800
                        00000003 02000000 00000000 001E0000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000 00000000 00000000
                        00000000 00000000 00000000 00000000

NEXT: +...  (+/-)                     More details:  MARK data  or  NEXT = D/S
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

7.4.3 SVP file screens

Unlike the HEL file data, the SVP records can be displayed in a single, common listing. The screen layout, however, depends on the type of system in use.

H60/H90/H100/C50/C70/C80/SR2000/DS2000 systems

The screen contains a list of the most important data of the SVP records (= general records).

The records are sorted primarily by unit groups (*GP*, *IOP* and so on). Within a unit group, the records are sorted alphabetically by units. The individual records are listed by time of error occurrence.

```
L600                    ERROR-LIST - SVP-FILE RECORDS
ELSA V1.6A10           CPU: 3866EA84 80030000   2000            99-11-23 10:53
================================================================================
     FIRST: 98-05-07 09:07:28   LAST: 98-08-17 10:07:08   TOTAL CNT: 360

MARK SEQ# UNIT   FLAGCODE or MSG#              DATE/TIME    ERCNT LAST DATE/TIME
 _   0178 IOP0D9 INVALID                       980619 132350   0  980619 132350
 _   0179 IOP0D9 INVALID                       980619 132352   0  980619 132352
 _   017A IOP0D9 INVALID                       980619 132354   0  980619 132354
 _   045C IOP2D4 INVALID                       980804 095330   0  980804 095332
 _   0476 IOP2D4 INVALID                       980810 144118   0  980810 144118
 _   0478 IOP2D5 INVALID                       980810 144130   0  980810 144130
 _   0477 IOP2D6 INVALID                       980810 144128   0  980810 144128
 _   0486 IOP2D7 INVALID                       980813 073900   0  980813 073900
 _   0487 IOP2D7 INVALID                       980813 074022   0  980813 074022
 _   006E SVP    SVNM020                       980507 090728   0  980507 090728
 _   006F SVP    SVIM032                       980507 091004   0  980507 091004
 _   0071 SVP    SVNM020                       980507 122918   0  980507 122918
 _   0072 SVP    SVIM032                       980507 123126   0  980507 123126
 _   0080 SVP    SVIM032                       980511 135148   0  980511 135148

NEXT: +...  (+/-)                       More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 93 for details on the input fields.

7590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 systems

The screen contains a list of the most important data of the SVP records (= flag code records).

The records are sorted primarily by unit groups (central processor, peripherals processor and so on). Within a unit group, the records are sorted alphabetically by units. The individual records are listed by time of error occurrence.

```
L620                    ERROR-LIST - SVP-FILE RECORDS
ELSA V1.6A10           CPU: 11022001 88000000   S135              99-11-23 10:54
================================================================================
     FIRST: 99-11-08 12:34:54   LAST: 99-11-15 17:05:43   TOTAL CNT: 100

MARK  SEQ#   UNIT     FLAGCODE              DATE/TIME     ERCNT LAST DATE/TIME
 _    131A   CHP      A6 7A02 1B 00481P01   991110 233120    1
 _    131B   CHP      A6 7A02 1B 00331P01   991110 233126    1
 _    131C   CHP      A6 7A02 1B 00631P01   991110 235734    1
 _    131D   CHP      A6 7A02 1B 003A1P01   991110 235741    1
 _    131E   CHP      A1 5712 3B 00281P01   991112 112156    1
 _    131F   CHP      A6 7A02 1B 00331P01   991113 063915    1
 _    1320   CHP      A6 7A02 1B 00481P01   991113 063922    2  991113 072408
 _    1321   CHP      A6 7A02 1B 00331P01   991113 072413    2  991113 140801
 _    1322   CHP      A6 7A02 1B 00481P01   991113 140806    1
 _    1323   CHP      A1 5712 3B 00281P01   991115 101956    2  991115 164420
 _    12C8   WTCSL    D9 0050  0 00001P01   991108 133923    1
 _    12CF   WTCSL    D9 0050  0 00001P01   991108 152514    1
 _    12D8   WTCSL    D9 0050  0 00001P01   991108 161236    1
 _    12E1   WTCSL    D9 0050  0 00001P01   991108 163911    1

NEXT: +...  (+/-)                      More details:  MARK data  or  NEXT = DD
F1=help           F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT and *MARK*

As for the first screen of this function (screen for MACHINE CHECK), but with the following restriction:

The only follow-up function you can call is *DD*. The *DE* function is identical to the *L* function for these types of system.

If you enter *D* in the *NEXT* field, the *DD* function is called, i.e. the *D* submenu is skipped.

7.4.4 HEL file and SVP file listings

If output is directed to SYSLST (or a printer), the function first outputs a general list (*SUMMARY*). The layout of this listing is analogous to that of the function's selection screen. The listing shows the number of HEL records (*CNT*) per record class, plus the number of SVP records.

This general list is followed by a separate list for each record class in the HEL file, and a single list for the SVP file. Only those lists which contain records (*CNT* > 0) are output.

The layouts of the listings (format with line length 132) are analogous to those of the screens of the function.

7.5 Function group D: DETAIL-PROCESSING

This function group outputs all essential details of selected HEL and SVP records. The records are sorted primarily by source (HEL file/SVP file) and are listed in chronological order.

Functional overview

Identifier	Function designation and brief description
D	*DETAIL-PROCESSING - SUBMENU* Submenu of the *DETAIL-PROCESSING* function group.
DE	*DETAIL-PROCESSING - EDIT* Processing and output of all essential details of the records, with error analysis to some extent.
DD	*DETAIL-PROCESSING - DUMP* Complete output of the records in hexadecimal form, partially also in printable form (dump format).

7.5.1 Submenu

```
D000                          DETAIL-PROCESSING - SUBMENU
ELSA V1.6A10                                                              99-11-24 10:51
================================================================================


SELECT NEXT FUNCTION:


                        DE    DETAIL-PROCESSING - EDIT

                        DD    DETAIL-PROCESSING - DUMP




                        EXTENDED-SVP-DATA :  N   (Y/N)




NEXT: DE
F1=help            F2=show sel-par            F3=main menu            K1=return


LTG                                                            TAST
```

NEXT

DE is the default, but it can be overwritten with *DD*.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

EXTENDED-SVP-DATA

This input field affects the generation of SVP file printer listings only (*OUTPUT = P*) on H60, H90, H100, C50, C70, C80 SR2000 and DS2000 systems.
The field appears on the screen only if SVP file listings are to be created (i.e. parameters set accordingly in main menu) and if the SVP file data comes from one of the system types listed above.

The content of the field determines whether the logouts are printed in addition to the overview records.
"*N*" is the default for the first submenu call. Thereafter, the field retains its content as the default for each successive call. The content of the field remains valid even if the submenu is skipped, in other words if you call *DE* or *DD* directly in the main menu.
Possible inputs: *Y*, *N*.

- *Y*

  If there is a logout for an overview record, it is printed out immediately after the overview record.

- *N*

  Logouts are not printed.

7.5.2 DE function: DETAIL-PROCESSING - EDIT

This function outputs all principal details of selected HEL and SVP records.

HEL file screens

A screen containing all information is output for each HEL record. Under exceptional circumstances a list may be output. The screen layout depends on the record class, and in some cases on the type of error.

Screen for MACHINE CHECK

```
DE120                  DETAIL-PROCESSING - MACHINE CHECK
ELSA V1.6A10            CPU: 24220003 07800000  H120              99-11-22 09:25
================================================================================

DATE/TIME          SEQ#   CURR   REAL-CPU  VM
94-05-18 17:12:09  0049   0001     0000


    PROGRAM STATUS WORD  (PSW-OLD)  :   070C0000 F10D57EC

    MACHINE CHECK INTERRUPTION CODE :   20020F1D 00030000


    SPSTCEVD WCSC.VBD SSKDWMPI FREFGCLS IAD..... ......CC .G..FE.G ........
    DDRDDDFG  PPK.S   ECESPSMA ACCPRRGT ERA..... ......TC .E..CP.S ........
    00100000 00000010 00001111 00011101 00000000 00000011 00000000 00000000


              EXTERNAL DAMAGE CODE :
              FAILING STORAGE ADDR :

NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

The field is empty. If you input nothing, *DUE* takes you to the next screen (or ends the function if there are no follow-on screens). The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

Screens for the HELP function HELP ON MASK

The HELP function *HELP ON MASK* (*F1* function key or *NEXT: H*) presents a HELP selection screen in which you can mark fields to view descriptions of various topics, including the bits of the machine check interruption code:

```
H100                        H E L P   O N   M A S K              99-11-29 11:08
================================================================================
 FUNCTION DE: DETAIL-PROCESSING - EDIT

 This function outputs all (important) details of the HEL file records and
 SVP file records in edited format. The records are sorted primarily by their
 origin (HEL file/SVP file) and also chronologically.


 Screen for MACHINE CHECK:

 The screen displays one HEL file record at a time.

 x  Description of the bits of the MACHINE CHECK INTERRRUPTION CODE

 _  DATE/TIME      Error time or the time at which the record was created.

    SEQ#           Sequence number of the HEL file record in hexadecimal
                   format.

 _  CURR           Current counter of the record supplier.
NEXT: +     (+)
F3=end of help                                                  K1=return

--------------------------------------------------------------------------------
LTG                                                              TAST
```

```
H100                        H E L P   O N   M A S K              99-11-29 11:08
================================================================================
 _  CURR           Current counter of the record supplier.

    REAL-CPU       Address of real CPU (on guest-systems).

    VM             Number of the guest system (for 'only logging records').

    PSW-OLD        Program status word before switching to MEH but after the
                   occurrence of the error.

 _  MCIC           Machine check interruption code.

 _  EDC            External damage code (from memory location 244-247).

 _  FSA            Failing storage address.




NEXT: ....  (+)
F3=end of help                                                  K1=return

--------------------------------------------------------------------------------
LTG                                                              TAST
```

Follow-up screen for the requested description of the bits of the machine check interruption code:

```
H100                        H E L P   O N   M A S K              99-11-22 09:24
================================================================================
 MACHINE CHECK INTERRUPTION CODE:

    AR  Access register validity            FC  Feature control reg validity
    B   Backed up                           FP  FP regs stored are valid
    CC  Clock comparator valid              GE  Global storage error
    CD  Timing facility damage              GR  GP regs stored are valid
    CK  Channel subsystem damage            GS  Global scope reg validity
    CP  Channel report pending              IA  PSW instruction addr validity
    CR  Control regs stored are valid       IE  Indirect storage error
    CT  CPU timer valid                     KE  Storage key error uncorrected
    D   Delayed                             LG  Extended logout area valid
    DA  Delayed access exception            MS  System mask and key are valid
    DG  Degradation                         PD  Instruction processing damage
    DS  Storage degradation                 PM  PGM mask and code are valid
    EC  External damage code valid          RC  Region code valid
    ED  External damage                     SC  Corrected storage errors
    EP  Extended prefix reg validity        SD  System damage
    FA  Failing storage addr is valid       SE  Uncorrected storage errors

NEXT: +...  (+)
F3=end of help                                                  K1=return


LTG                                                              TAST
```

Screen for CHANNEL CHECK

```
DE150                  DETAIL-PROCESSING - CHANNEL CHECK
ELSA V1.6A10            CPU: 11022001 88000000   S135             99-11-22 10:55
================================================================================

DATE/TIME          SEQ#  DTYP  MN    PADR      CT CHT  FLG5  CHFLG    CALL  CURR
99-11-10 19:56:01  85F9  54    443F  205E003F  04  2    80    80       IOC   0002

      CCW ADDR USB CSB COUNT          CC FL  COUNT DAT ADDR   ESW/LCL: 00807644
 CSW: 00759118  00 02  000C     ECCW: AF 00  000C  00759150     SCSW0: 05C24417

 USB: ATTENTION (ATT)           0      CSB: PRGM-CTLD INTERRUPT (PCI)    0
      STATUS MODIFIER (STM)     0           INCORRECT LENGTH (IL)        0
      CONTROL UNIT END (CUE)    0           PROGRAM CHECK (PGRC)         0
      BUSY                      0           PROTECTION CHECK (PRTC)      0
      CHANNEL END (CHE)         0           CHANNEL DATA CHECK (CDC)     0
      DEVICE END (DVE)          0           CHANNEL CNTL CHECK (CCC)     0
      UNIT CHECK (UCK)          0           INTERFACE CTRL CHECK (ICC)   1
      UNIT EXCEPTION (UEX)      0           CHAINING CHECK (CHCK)        0

 ECW: 0) 00000000 1) 00000000 2) 00000000 3) 00000000  4) 08020400  5) 00000000
      6) 00012360 7) 20010000 8) 00000000 9) A6F0000C 10) B000020C 11) 5E000000
NEXT: ....
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Note

The information available through the HELP function *HELP ON MASK* (function key *F1* or *NEXT:H*) includes a description of the individual SCSW0 bits.

Screen for ABNORMAL CHANNEL INTERRUPTION, channel type 1

```
DE175          DETAIL-PROCESSING - ABNORMAL CHANNEL INTERRUPTION
ELSA V1.6A10            CPU: 76020457 84200000  H60              99-11-22 14:55
================================================================================

DATE/TIME          SEQ#  DTYP  MN    PADR      CT CHT                 CALL  CURR
97-01-07 08:39:07  0789  63    Y0    0C000010  0C  1                  IOC   000B

FLG5: 00    AIFLG: 3          INTERR. CODE: 000100A1 71770BB8

      CCW ADDR SDB1 CSB COUNT
 CSW: 02FDDA90  00  00  000        ESW/LCL: 00000000          SCSW0: 00C01001

SDB1: ATTENTION INT REQUEST     0      CSB: IDO                          0
      TERMINATION INT PENDING   0           INCORRECT LENGTH (INCL)      0
      DEVICE BUSY               0           CHANNEL PROGRAM CHECK (CPC)  0
      CONTROLLER BUSY           0           MEMORY PROTECT CHECK (MPC)   0
      DEVICE END                0           CHANNEL DATA CHECK (CDC)     0
      SECONDARY INDICATOR       0           CHANNEL CONTROL CHECK (CCC)  0
      INOPERABLE                0           ID1                          0
      STATUS MODIFIER           0           ID2                          0
                                            IDO-2: --> ATTENTION INT (AI)
NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                          TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Note

The information available through the HELP function *HELP ON MASK* (function key *F1* or *NEXT:H*) includes a description of the individual SCSW0 bits.

Screen for ABNORMAL CHANNEL INTERRUPTION, channel type 2

```
DE180          DETAIL-PROCESSING - ABNORMAL CHANNEL INTERRUPTION
ELSA V1.6A10            CPU: 11022001 88000000   S135            99-11-22 10:55
================================================================================

DATE/TIME          SEQ#  DTYP  MN    PADR      CT CHT                 CALL  CURR
99-11-08 17:55:35  8105  86    421F  2864001F  04  2                  IOC   0001

FLG5: 00    AIFLG: 3          INTERR. CODE: 000102B9 60E51F60

      CCW ADDR USB CSB COUNT
 CSW: 02C85110  00 00  0000        ESW/LCL: 00000000          SCSW0: 00C01001

 USB: ATTENTION (ATT)           0      CSB: PRGM-CTLD INTERRUPT (PCI)    0
      STATUS MODIFIER (STM)     0           INCORRECT LENGTH (IL)        0
      CONTROL UNIT END (CUE)    0           PROGRAM CHECK (PGRC)         0
      BUSY                      0           PROTECTION CHECK (PRTC)      0
      CHANNEL END (CHE)         0           CHANNEL DATA CHECK (CDC)     0
      DEVICE END (DVE)          0           CHANNEL CNTL CHECK (CCC)     0
      UNIT CHECK (UCK)          0           INTERFACE CTRL CHECK (ICC)   0
      UNIT EXCEPTION (UEX)      0           CHAINING CHECK (CHCK)        0

NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Note

The information available through the HELP function *HELP ON MASK* (function key *F1* or *NEXT:H*) includes a description of the individual SCSW0 bits.

Screen for MISSING CHANNEL INTERRUPTION, channel type 1

```
DE325          DETAIL-PROCESSING - MISSING CHANNEL INTERRUPTION
ELSA V1.6A10            CPU: 76020457 84200000  H60              99-11-22 14:55
================================================================================

DATE/TIME          SEQ#  DTYP  MN    PADR      CT CHT                CALL  CURR
97-01-07 08:39:07  0788  63    Y0    0C000010  0C  1                 IOC   0006

FLG5: 80     USER FLG: 00       TIMEOUT DRIV: 8         TIMEOUT IOCTL: 0

      CCW ADDR SDB1 CSB COUNT         CC FL  COUNT DAT ADDR   ESW/LCL: 00800000
 CSW: 02FDDA90  08  00  000     ECCW: 00 00  0000  00000000     SCSW0: 00C040C0

SDB1: ATTENTION INT REQUEST     0      CSB: IDO                          0
      TERMINATION INT PENDING   0           INCORRECT LENGTH (INCL)      0
      DEVICE BUSY               0           CHANNEL PROGRAM CHECK (CPC)  0
      CONTROLLER BUSY           0           MEMORY PROTECT CHECK (MPC)   0
      DEVICE END                1           CHANNEL DATA CHECK (CDC)     0
      SECONDARY INDICATOR       0           CHANNEL CONTROL CHECK (CCC)  0
      INOPERABLE                0           ID1                          0
      STATUS MODIFIER           0           ID2                          0
                                            IDO-2: --> ATTENTION INT (AI)
NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                              TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Note

The information available through the HELP function *HELP ON MASK* (function key *F1* or *NEXT:H*) includes a description of the individual SCSW0 bits.

Screen for MISSING CHANNEL INTERRUPTION, channel type 2

```
DE330          DETAIL-PROCESSING - MISSING CHANNEL INTERRUPTION
ELSA V1.6A10            CPU: 60020001 86000000   S130            99-11-22 15:11
================================================================================

DATE/TIME          SEQ#  DTYP  MN    PADR      CT CHT                CALL  CURR
99-11-09 08:18:55  D050  86    423C  3864003C  04  2                 IOC   0045

FLG5: 80     USER FLG: 00       TIMEOUT DRIV: 40        TIMEOUT IOCTL: 32

      CCW ADDR USB CSB COUNT          CC FL  COUNT DAT ADDR   ESW/LCL: 00800000
 CSW: 00755118  0C 00  0000     ECCW: 00 00  0000  00000000     SCSW0: 00C04400

 USB: ATTENTION (ATT)           0      CSB: PRGM-CTLD INTERRUPT (PCI)    0
      STATUS MODIFIER (STM)     0           INCORRECT LENGTH (IL)        0
      CONTROL UNIT END (CUE)    0           PROGRAM CHECK (PGRC)         0
      BUSY                      0           PROTECTION CHECK (PRTC)      0
      CHANNEL END (CHE)         1           CHANNEL DATA CHECK (CDC)     0
      DEVICE END (DVE)          1           CHANNEL CNTL CHECK (CCC)     0
      UNIT CHECK (UCK)          0           INTERFACE CTRL CHECK (ICC)   0
      UNIT EXCEPTION (UEX)      0           CHAINING CHECK (CHCK)        0

NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                              TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Note

The information available through the HELP function *HELP ON MASK* (function key *F1* or *NEXT:H*) includes a description of the individual SCSW0 bits.

Screen for CHANNEL REPORT WORDS

```
DE210              DETAIL-PROCESSING - CHANNEL REPORT WORDS
ELSA V1.6A10           CPU: 11022001 88000000   S135            99-11-16 10:56
================================================================================

DATE/TIME          SEQ#         LOST CRWS                          CALL  CURR
99-10-30 07:14:42  716C                0                           IOC   0059

                                                              OVER  CHAINED  SOLIC
RS-ID   <------- RSC ------->   <--------- ERC --------->     FLOW  TO FOLL   CRW
0048    CHANNEL PATH           TEMPORARY ERROR                 N       N       N
0033    CHANNEL PATH           TEMPORARY ERROR                 N       N       N









NEXT: ....
F1=help           F2=show sel-par          F3=main menu            K1=return

LTG                                                          TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

NEXT

If the output listing is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the list is terminated if the *NEXT* field is empty. Output switches to the next record you marked in the selection screen (if available; if no record is available the function is terminated).

If the listing fits onto one screen, you do not need to enter anything; *DUE* takes you to the next record.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

Screen for DEVICE ERROR - disk devices

```
DE240          DETAIL-PROCESSING - DEVICE ERROR - DEV-FAM: DISK
ELSA V1.6A10            CPU: 11022001 88000000   S135             99-11-16 10:56
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
99-11-06 13:31:07  7B3C  86    343154 342122  4411  50000011  04  2   DER   02D6

   SENSEBYTES (SSB)
    0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223 24252627 28293031
   04800025 FF42F40D 8D000810 00070000 00000000 0000090D FFFFFFFF FFFFFFFF


   ERR-MN: SRNH    CSB    : 40    VSN: B301.1    EFB1: A0    RETRY: 0
   LRC   : C800    SDB/USB: 0E    TSN: RP01      EFB2: 00    DER-
                   ECCW   : 42900010 60110000    EFB3: 00    STAMP: MP8P8UDU

        CSW: 08406360 0E400100       ESW/LCL: 00200000       SCSW0: 00C04017
   WRC-DATA: 26000001 00000000     CCHR/CCHS: INVALID          PHP: INVALID



NEXT: ....
F1=help           F2=show sel-par           F3=main menu             K1=return

LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for DEVICE ERROR - other devices

```
DE241          DETAIL-PROCESSING - DEVICE ERROR - DEV-FAM: CARTRDG
ELSA V1.6A10            CPU: 11022001 88000000   S135            99-11-16 10:56
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
99-11-06 10:19:12  7B1C  C5    359000 359010  QE    536D0008  0C  2   DER   012A

   SENSEBYTES (SSB)
    0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223 24252627 28293031
   100810D0 60107050 00771800 00000000 00000000 0000001B 22180000 02F11011



   ERR-MN: IVRQ    CSB    : 00    VSN: ......    EFB1: A0    RETRY: 0
   LRC   : C800    SDB/USB: 0E    TSN: AMT1      EFB2: 00    DER-
                   ECCW   : 77600000C 5FFFE638    EFB3: 00    STAMP: MEHKS6ER

         CSW: 00938AC8 0E000000       ESW/LCL: 00800000       SCSW0: 00C04017



NEXT: ....
F1=help            F2=show sel-par            F3=main menu             K1=return

LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for DEVICE ERROR - SERVICE-INFORMATION-MESSAGE (SIM)

```
DE245          DETAIL-PROCESSING - DEVICE ERROR - DEV-FAM: CARTRDG
ELSA V1.6A10            CPU: 19020120 18000000  H130             99-11-16 10:57
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
97-12-16 23:10:50  3B55  C5    359000 359010  MC    29000000  0C  2   DER   54EC

SERVICE-INFORMATION-MESSAGE (SIM):

    SERIAL NO: 0610-000707      SIM ID: 57

       *  SERVICE ALERT
             PRODUCT: 3970-KA    REF1: 00FF   REF2: C559   REF3: C559   UM: 0000
       *  NO EXCEPTION MESSAGE

       *  NO SERVICE MESSAGE




NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for DEVICE ERROR - MEDIA-INFORMATION-MESSAGE (MIM)

```
DE246          DETAIL-PROCESSING - DEVICE ERROR - DEV-FAM: CARTRDG
ELSA V1.6A10            CPU: F84E1EC3 80020000  2000             99-11-16 10:59
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
98-10-27 08:08:19  0015  B1    B17000 00B100  GO    00000069  04  2   DER   0049

MEDIA-INFORMATION-MESSAGE (MIM):

   VOLUME: JANZO2

      *  PRODUCT: 3591-B11    SERIAL NO: 080R- XXN48
      *  NO ALERT               REFCODE: 0000    MEDIA ID: 0000    FORMAT ID: 00
      *  NO EXCEPTION MESSAGE
      *  NO SERVICE MESSAGE




NEXT: ....
F1=help           F2=show sel-par           F3=main menu             K1=return

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for BCAM ERROR

```
DE260          DETAIL-PROCESSING - DEVICE ERROR - DEV-FAM: BCAM
ELSA V1.6A10           CPU: 11022001 88000000   S135            99-11-16 10:59
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
99-11-10 19:12:32  85D4  63    000000 000000  Y4    130000D1  0C  2   BCAM  0001

   SENSEBYTES (SSB)
    0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223 24252627 28293031
   4100



   ERR-MN:         CSB    : 40    VSN:           EFB1: A0    RETRY: 0
   LRC   : C800    SDB/USB: 0E    TSN:           EFB2: 00    DER-
                   ECCW   : 02A00092 02BECODE    EFB3: 00    STAMP: ........

        CSW: 02BEC178 0E400092       ESW/LCL: 00800000       SCSWO: 00C04017
   DEV ACCESS RIGHT : 00018513                  ADDR OF FIRST CCW: 62049170
   RESIDUAL BYTE CNT: 00920000                  ADDR OF NEXT  CCW: 62049178
                                                KAI USER ID      : 03
NEXT: ....
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                              TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for TDP DATA

```
DE270                    DETAIL-PROCESSING - TDP DATA
ELSA V1.6A10           CPU: 24220003 17800000  H120              99-11-16 11:00
================================================================================

  TDP-ERROR  (RECORD-ID = 40)                                        SCREEN 01
================================================================================
 DATE=93-04-22  TIME=13:27:49  TDP=QRT1/M01  BS=BS2000.V11.0   TSN=029
 DEVICE 1: MNEMONIC=MP   TYPE=C2  ST-PATH=FREE    CPU=24220003 1780000
 EXEC=0001  START=0002   LOOPS: PL=0000 SL=0000 RL=0000
 TEST=1 ,01(00/0001)  I/O-CNT=000.000.001  ** TRACE ON! *
 SENS
 1CSW=000249A0 0C000000  1ESW=00800000  1SCSW0=00C0400
     PATH  CC  CCW-ADDR  COUNT  1ICSB  1US
 IS: 7F89  0   000249A0  0000   00     0
 SB: ----  -   --------  ----   --     -

 NO SECONDARY SENSE EXECUTED

 CCW-ADDR  CHANNEL PROGRAM   CCW DAT
 00024998: 04000640 00000020 00485800000000200000000000000000000000070000000000F

NEXT: +...  (+)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for START/STOP HEL

```
DE300            DETAIL-PROCESSING - HW-ERROR-LOGGING STATUS
ELSA V1.6A10           CPU: 30020001 88000000   S150            99-11-22 15:08
================================================================================

VM-ID      DATE/TIME          SEQ#
 MO        98-06-10 08:31:48  3D94


     STATUS FLAG:  90
     STATUS TEXT:  HLV-STOP BY SYS









NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                              TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

Screen for CONTROLLER LOG DATA

```
DE360              DETAIL-PROCESSING - CONTROLLER LOG DATA
ELSA V1.6A10            CPU: 60020001 86000000   S130             99-11-22 15:18
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
99-11-09 14:03:45  DB29  C4    349020 349040  EQ    6000008A  OC  2   DER   00E2

LOGBYTES 0 1 2 3  4 5 6 7  8 91011 12131415 16171819 20212223 24252627 28293031
        0040602B 0121A630 00000000 00000000 00000053 00000000 00008825 1025AA90
        00000106 84270000 0102D956 00000501 21A70000 05001940 00000000 00400000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
        00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

   VSN: K05084     TSN:   TM     ERA-CODE: 2B



NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

See the description of the first screen of this function (screen for MACHINE CHECK) on page 121 for details on the *NEXT* field.

SVP file screens

H60/H90/H100/C50/C70/C80/SR2000/DS2000 systems

At least one screen is output for each SVP record (=general record).
The header of the screen contains all essential data of the SVP record (sequence number, unit, flag code and so on). The header is followed by the associated SVP error analysis text (*RESULT*) or an SVP message (*MSG*). If the text does not fit onto one screen, the overflow is placed on follow-on screens and a paging function is available.

If the SVP record contains a reference to a logout, you can request output of the logout.

Note

If the text and/or logout has already been overwritten (the SVP file is written in wrap-around mode), a message to this effect is issued.

Screen for SVP record and SVP error analysis text / SVP message

```
DE600                DETAIL-PROCESSING - SVP-FILE RECORDS
ELSA V1.6A10           CPU: 30368382 80030000   2000            99-11-15 16:23
================================================================================

SEQ#  UNIT    FLAGCODE or MSG#              DATE/TIME     ERCNT  LAST DATE/TIME
00F6  IOP3M   INVALID                       991231 200800    0   991231 200800

RESULT or MSG                                  SVP-HEAD: 7701F600 00209F27 00A1
LOGOUT-ANALYSIS FOR CHAT 1  Version 1.5 (30.03.99)
FW-MODULE-LOGOUT ANALYSIS    (MODULES: IBM/ESCON)
      !! (#0842): TAG ERROR & INVALID DEVICE ADDRESS (MSE) !!
PRIO 1:
      PCB  : MOD6  MBZ3 S1    A04  D552/MIBAA
      PLUG : TAGO  MBZ3 S1    A04/RA01
      PLUG : BUSO  MBZ3 S1    A04/RA02









NEXT: ....                                      Extended SVP-data:  _ LOGOUT
F1=help           F2=show sel-par           F3=main menu            K1=return

LTG                                                                 TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the text is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the text is reached. *NEXT* is cleared when you reach the end of the text. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the text is terminated if the *NEXT* field is empty. Output switches to the next record (if available; if no record is available the function is terminated).

If the text fits onto one screen, you do not need to enter anything; *DUE* takes you to the next record.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

Extended SVP-data: _ LOGOUT

This message appears if the SVP record contains a pointer to a logout.
You can request output of the logout by marking the associated MARK field "_" by entering any character except "*?*" (HELP function) or by pressing the MAR key.
The screen layout is shown on the next page:

Screen for SVP file logout

```
DX600                DETAIL-PROCESSING - SVP-FILE LOGOUT
ELSA V1.6A10           CPU: 30368382 80030000   2000            99-11-15 15:14
================================================================================
SEQ#: 00F6                              DATE/TIME: 99-12-31 20:08:00
UNIT: IOP3M                             FLAGCODE: INVALID
SVP-HEAD: 9E01F600 00209F27 00A10203 00000002 03000000 01000000 00000000 0000

 ADDR  HEX LOGOUT
 0000  FF000001 4A000000 8CB00180 C0AB1600  20000000 00000000 00000000 00000000
 0020  00000000 00000000 00000000 00000000  0000FF00 00009F00 00009F00 FFFF60FF
 0040  00000000 0102FFFF 00000000 00000000  00000000 00000000 00000000 00000000
 0060  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
 0080  50AB1600 60000000 08420000 00000000  19160000 34000903 0000A000 00060024
 00A0  39390000 02030000 42000000 0F0C7000  00000000 0000FF42 FFFF0041 00072505
 00C0  A0030000 9800C240 00000000 00000001  F02B6407 3FF92000 1605194C 20B020AF
 00E0  780020AE 20AD157C 157B157A 15791578  780220AC 20A820A7 20A620A5 700E20A4
 0100  20A320A2 20A120A0 7802209F 209E13BE  7BC7139F 139E139D 139C139B 139A7800
 0120  13991398 209D24ED 24EC24EB 24EA24E9  24E824E7 700E24E6 24E524E0 780024DF
 0140  209C209B 7BDB209A 7BDB2099 7BDB2098  7BDB2097 20967BC3 20957BC3 20942093
 0160  20922091 740C2090 740C208F 7403208E  7403208D 7403208C 740C208B 740C208A

NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                              TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the dump is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the dump is reached. *NEXT* is cleared when you reach the end of the dump. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the dump is terminated if the *NEXT* field is empty. Output switches to the SVP record.

If the dump fits onto one screen, you do not need to enter anything; *DUE* takes you to the SVP record.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

7590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 systems

In the case of these system types, the output of the *DE* function is identical to the output of the *L* function (*ERROR-LIST*, see page 117).

```
DE620                DETAIL-PROCESSING - SVP-FILE RECORDS
ELSA V1.6A10           CPU: 34021001 88000000   S160            99-11-16 15:16
================================================================================
     FIRST: 99-04-16 08:34:05   LAST: 99-04-21 06:28:27   TOTAL CNT: 100

    SEQ#   UNIT     FLAGCODE             DATE/TIME     ERCNT LAST DATE/TIME
    06C4   WTCSL    D9 2033  0 00001T00   990420 103147    5  990421 022811
    06C5   WTCSL    D9 0012  0 00001T00   990421 062827    1
    069A   IPL      EB 4000 00 02741T00   990419 122423    1
    069B   IPL      EB 7000 00 02741T00   990419 122423    1
    069D   IPL      EB 7000 00 02741T00   990419 122448    1
    069E   IPL      EB 5000 00 02741T00   990419 122448    1
    06A0   IPL      EB 7000 00 02741T00   990419 122519    1
    06A1   IPL      EB 4000 00 02741T00   990419 122521    1
    06A3   IPL      EB 7000 00 02741T00   990419 122626    1
    06A4   IPL      EB 4000 00 02741T00   990419 122628    1
    06AE   IPL      EB 7000 00 02491T00   990419 133623    2  990419 133623
    06BC   IPL      EB 4000 00 46411T00   990419 150921    1
    0673   SVPOS    F0 409B 00 CE001T00   990416 120826    1
    067F   SVPOS    FB 700F 00 00001T00   990416 131844    1

NEXT: +...  (+/-)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the list is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty.

If the list fits onto one screen, you do not need to enter anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

HEL file lists

As with screen output, all essential details of selected HEL records are listed in edited form. The lists are usually wider than 80 characters.

Unlike the screen output, all records of a record class are combined in a list.

In the lists for the CHANNEL-CHECK, INTERRUPT ERROR, DEVICE ERROR and CONTROLLER LOG DATA record classes, the records are primarily sorted by device families. A page feed is implemented at the start of each device family. Within the individual device families, the records are sorted by devices (device type, device mnemonic and device address). The individual entries are listed by time of error occurrence.

In all other lists, the records are sorted only by time of error occurrence.

SVP file lists

As with screen output, the SVP records are listed in chronological order. The list layout depends on the system type.

H60/H90/H100/C50/C70/C80/SR2000/DS2000 systems

The principal data (sequence number, unit, flag code, etc.) is output in edited form for each SVP record. In each case, the associated SVP error analysis text (*RESULT*) or the SVP message (*MSG*) is included.

If there is a logout for the record, this is also printed providing you specified EXTENDED-SVP-DATA=Y in the submenu or in the SET-INOUT statement.

Note

If the text and/or logout has already been overwritten (the SVP file is written in wrap-around mode), a message to this effect is issued.

7590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 systems

In the case of these system types, the output of the *DE* function is identical to the output of the *L* function (*ERROR-LIST*). The layout of this list is analogous to that of the function's screen (see page 141).

7.5.3 DD function: DETAIL-PROCESSING - DUMP

This function outputs complete records in hexadecimal form and dump format.

HEL file screen

This editing mode offers a single screen layout for all HEL records. At least one screen is output for each record.

The principal data in the record (time of occurrence, device type, etc.) appears in edited form at the top of the work information area. This is followed by the entire contents of the record in dump format (hexadecimal and printable).

```
DD100          DETAIL-PROCESSING DUMP - REC-CLASS D / REC-ID 30
ELSA V1.6A10           CPU: 60020001 86000000   S130            99-11-16 15:20
================================================================================

DATE/TIME          SEQ#  DTYP  SENSE-ID       MN    PADR      CT CHT  CALL  CURR
99-11-09 05:16:36  CA8E  6D    963200 000021  KO    090000F8  0C  2   BCAM  08ED

        ADDR    HEX RECORD                                 EBCDIC
        0000    00710302 FFFFFFFF 0040CA8E E5F1F3F0    ......... ..V130
        0010    01009060 A6247FFF 60020001 86000000    ...-w...-...f...
        0020    19991109 05163600 B31EAEC0 7447EFFF    .r..............
        0030    4EF0F17A F0F060F0 F17AF0F0 60E60040    +01:00-01:00-W.
        0040    00980001 FFFFFFFF 30C20020 C2C3C1D4    .q.......B..BCAM
        0050    B31EBC29 EA8EC5FF 404040E8 000008ED    ......E.   Y....
        0060    00983002 FFFFFFFF 00B00000 40404040    .q..........
        0070    D2D64040 000009F8 6D000C6A 00000000    KO  ...8-..^....
        0080    96320000 00210000 40404040 40404040    o.......
        0090    40404040 00000000 07600001 016BE2DB        .....-...,S.
        00A0    016BE300 00000000 00800000 03C14407    .,T..........A..
        00B0    40404040 40400000 0000AC00 00000000          ..........

NEXT: +...  (+/<addr>)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                 TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

NEXT

If the dump is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the dump is reached. *NEXT* is cleared when you reach the end of the dump. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the dump is terminated if the *NEXT* field is empty. Output switches to the next record (if available; otherwise the function is ended).

If the dump fits onto one screen, *NEXT* is cleared by the program. It is not necessary to enter anything; *DUE* takes you to the next record.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

SVP file screens

H60/H90/H100/C50/C70/C80/SR2000/DS2000 systems

Screen for SVP record and SVP error analysis text / SVP message

At least one screen is output for each SVP record (= general record). The principal data (sequence number, unit, flag code, etc.) is output in edited form at the top of the screen. The entire content of the record appears in dump format below this information.

The associated SVP error analysis text (*RESULT*) or the SVP message (*MSG*) follows. This information is displayed in dump format. If the dump does not fit onto one screen, the overflow is placed on follow-on screens and a paging function is available.

If the SVP record contains a pointer to a logout, you can request output of the logout.

Note

If the text and/or logout has already been overwritten (the SVP file is written in wrap-around mode), a message to this effect is issued.

```
DD600              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10            CPU: 30368382 80030000   2000              99-11-16 15:23
================================================================================

SEQ#  UNIT    FLAGCODE or MSG#              DATE/TIME     ERCNT  LAST DATE/TIME
00F6  IOP3M   INVALID                       991231 200800    0   991231 200800
 ADDR   HEX RECORD                          ASCII
 0000   5000F600 00209F27 00A12000 F600B000  P.... .'.. .....
 0010   F6009F27 00A19F27 00A10000 02030000  ...'...'........
 0020   30303030 30303030 30303030 30303030  00000000000000000
 0030   00000000 00000000 00000000 00000000  ................
 0040   00000000 00000000 00000000 00000000  ................

 ADDR   HEX RESULT or MSG                   ASCII
 0000   7701F600 00209F27 00A14C4F 474F5554  w.... .'..LOGOUT
 0010   2D414E41 4C595349 5320464F 52204348  -ANALYSIS FOR CH
 0020   41542031 20205665 7273696F 6E20312E  AT 1  Version 1.
 0030   35202833 302E3033 2E393929 0A46572D  5 (30.03.99).FW-
 0040   4D4F4455 4C452D4C 4F474F55 5420414E  MODULE-LOGOUT AN
 0050   414C5953 49532020 2020284D 4F44554C  ALYSIS    (MODUL
 0060   45533A20 49424D2F 4553434F 4E292020  ES: IBM/ESCON)
NEXT: +...  (+/<addr>)                             Extended SVP-data:  _ LOGOUT
F1=help           F2=show sel-par            F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the dump is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the dump is reached. *NEXT* is cleared when you reach the end of the dump. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. Output of the dump is terminated if the *NEXT* field is empty. Output switches to the next record (if available; if no record is available the function is terminated).

If the dump fits onto one screen, you do not need to enter anything; *DUE* takes you to the next record.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

Extended SVP-data: _ LOGOUT

This message appears if the SVP record contains a pointer to a logout.
You can request output of the logout by marking the associated MARK field "_" by entering any character except "*?*" (HELP function) or by pressing the MAR key.

The layout of the logout output screen corresponds to that of the *DE* function (see page 140).

H60/H90/H100/C50/C70/C80/SR2000 systems

Screen for short SVP message

Usually, an SVP record (=general record) contains a pointer to an SVP error analysis text (*RESULT*) or an SVP message (*MSG*). There is no pointer if the SVP record actually contains the SVP message.

There is a separate screen for output of these SVP records. The header contains the principal data of the SVP record in edited form (sequence number, unit, flag code and so on). This is followed by the entire contents of the record in dump format (hexadecimal and printable).

```
DD602              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 01000001 80500000   H100-A           99-11-16 15:43
================================================================================

 SEQ#   UNIT     MSG#              DATE/TIME          ERCNT  LAST DATE/TIME
 000B   SVP      SVE120E           94-02-14 08:36:48      1   94-02-14 08:36:48

 ADDR   HEX RECORD                            ASCII
 0000   50000B00 01514E1C 98440000 00000000  P....QN..D......
 0010   00004E1C 98444E1C 98440100 53564531  ..N..DN..D..SVE1
 0020   3230453A 20435241 53482021 20202020  20E: CRASH !
 0030   47502020 494E2020 52205520 4E202053  GP  IN  R U N  S
 0040   54415445 00000000 00453132 30312020  TATE.....E1201









NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                              TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

The field is empty. No input is necessary; *DUE* takes you to the next record (or terminates the function if there are no further records).
The following inputs are also possible:

- *H* or *?* (HELP function), see page 221.
- /<function key> (e.g. */K1*), see page 32.

- Advanced users have another means of returning to the initial function. This entails entering the identification of a higher function in the hierarchy (a function already passed through, in other words) in the *NEXT* field of any follow-up function. This method returns you in a single jump directly to the last output screen of the function you specify. The advantage is that it is not necessary to use function key *K1* repeatedly, see page 28.

7590/C40/H120/H121/H130/S110/S115/S130/S135/S150/S160 systems

In the case of these systems, the SVP records of the flag code files only are edited.

7590 system

The screen contains a list of the SVP records (= flag code records).

The principal data of the SVP records (sequence number, unit, flag code and so on) is shown in edited form. This is followed by the entire contents of the record in hexadecimal form.

```
DD620              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 24220003 17800000   7590              99-11-16 11:13
================================================================================

SEQ#   UNIT     FLAGCODE               DATE/TIME          ERCNT LAST DATE/TIME
ADDR   HEX RECORD
8000   UNDEF    C0 0005 95 80004100    92-02-17 10:11:53    64
       8000C000 05958000 41000001 23551061  00000000 00000040 00000000 92021710

1000   SPEC     00 0005 96 10000100    92-02-17 18:08:03    64  01-89-00 00:00:00
       10000000 05961000 01000001 E8C00051  01890000 00000040 00000000 92021718

4000   UNDEF    C0 0005 97 40000100    92-02-18 06:12:04    64  5D-61-00 00:00:00
       4000C000 05974000 01000001 47301151  5D610000 00000040 00000000 92021806

4000   UNDEF    C0 0005 98 40000100    92-02-18 06:12:18    64  5D-6A-00 00:00:00
       4000C000 05984000 01000001 47301151  5D6A0000 00000040 00000000 92021806

8000   UNDEF    C0 0005 99 80004100    92-02-18 06:16:36    64
       8000C000 05998000 41000001 23551061  00000000 00000040 00000000 92021806

NEXT: +...  (+)
F1=help           F2=show sel-par           F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the list is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty.

If the list fits onto one screen, you do not need to enter anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

C40 system

The screen contains a list of the SVP records (= flag code records).

The principal data of the SVP records (sequence number, unit, flag code and so on) is shown in edited form. This is followed by the entire contents of the record in hexadecimal form.

```
DD630              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 11020017 07300000    C40-F           99-11-16 11:15
================================================================================

SEQ#   UNIT     FLAGCODE               DATE/TIME         ERCNT LAST DATE/TIME
ADDR   HEX RECORD
 146   BMCI     A2 5064 0B 03B181A0    00-01-13 02:00:09    1
0000   262626F1 F4F64040 C2D4C3C9 4040C1F2  40F5F0F6 F440F0C2 40F0F3C2 F1F8F1C1
0020   F0404040 F44BF1F7 40F0F67A F1F44BF1  F7404040 F0F14040 24404025 40402540
0040   40254040 25404040 40404040 40404040

 147   OSMSG    C0 0026 00 C5E7C3F0    00-01-13 02:00:09    1
0000   262626F1 F4F74040 D6E2D4E2 C740C3F0  40F0F0F2 F640F0F0 40C3F5C5 F7C3F3C6
0020   F0404040 F44BF1F7 40F1F77A F4F24BF5  F5404040 F0F14040 24404025 40402540
0040   40254040 25404040 40404040 40404040

 148   OTHER    E9 0901 00 01008000    00-01-13 02:00:09    2  00-04-17 17:47:09
0000   262626F1 F4F84040 D6E3C8C5 D940C5F9  40F0F9F0 F140F0F0 40F0F1F0 F0F8F0F0
0020   F0404040 F44BF1F7 40F1F77A F4F74BF0  F3404040 F0F24040 24F0F44B F1F725F1
0040   F77AF4F7 4BF0F940 40404040 40404040

NEXT: +...  (+/-)
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                 TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the list is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty. If the list fits onto one screen, *NEXT* is cleared by the program. It is not necessary to enter anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

H120 system

The screen contains a list of the SVP records (= flag code records).

The principal data of the SVP records (sequence number, unit, flag code and so on) is shown in edited form. This is followed by the entire contents of the record in hexadecimal form.

```
DD640              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 24220003 17800000   H120-I           99-11-16 11:15
================================================================================

SEQ#   UNIT     FLAGCODE               DATE/TIME         ERCNT LAST DATE/TIME
ADDR   HEX RECORD

0595   CPU2     23 5510 61 00000000   92-02-17 10:11:53    1

0000   8000C000 05958000 41000001 23551061  00000000 00000040 00000000 92021710
0020   11530000 00000000 00010000 41050000  00000000 00000000 00012800 00000000
0040   00000000 00000000 00000000 00012852  00000000 00000000 00000000 00000000
0060   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

0596   IPL      E8 C000 51 01890000   92-02-17 18:08:03    1

0000   10000000 05961000 01000001 E8C00051  01890000 00000040 00000000 92021718
0020   08030000 00000000 00010000 00000000  00000000 00000000 00000000 00000000
0040   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
0060   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

NEXT: +...  (+)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

If the list is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty. If the list fits onto one screen, *NEXT* is cleared by the program. It is not necessary to enter anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

H121/H130/S110/S115/S130/S135/S150/S160 systems

The screen contains a list of the SVP records (= flag code records).

The principal data of the SVP records (sequence number, unit, flag code and so on) is shown in edited form. This is followed by the entire contents of the record in hexadecimal form.

```
DD650              DETAIL-PROCESSING DUMP - SVP-FILE RECORDS
ELSA V1.6A10             CPU: 11022001 88000000   S135              99-11-16 11:16
================================================================================

SEQ#   UNIT     FLAGCODE              DATE/TIME         ERCNT LAST DATE/TIME
12C3   CHP      A6 7A02 1B 003A1P01   991108 123454       1

ADDR   HEX RECORD
0000   400030C1 12C34000 00E00002 C1F6F7C1  F0F2F1C2 F0F0F3C1 F1D7F0F1 C1E6E7E7
0020   F3C1F0C2 F0F0F3C1 F1D7F0F1 19991108  12345400 00000000 00000000 00010000
0040   00000000 00000000 00000000 00000000  00000000 00008000 C5F2F0D3 F0F1C7F0
0060   F2C54EF0 F0F0F240 00000000 00000000  00000006 00000000 00000000 00000000
0080   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
00A0   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
00C0   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
00E0   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
0100   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
0120   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
0140   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
0160   00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

NEXT: ....
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

The field is empty. No input is necessary; *DUE* takes you to the next record (or terminates the function if there are no further records).
The following inputs are also possible:

- *H* or *?* (HELP function), see page 221.
- /<function key> (e.g. */K1*), see page 32.
- Advanced users have another means of returning to the initial function. This entails entering the identification of a higher function in the hierarchy (a function already passed through, in other words) in the *NEXT* field of any follow-up function. This method returns you in a single jump directly to the last output screen of the function you specify. The advantage is that it is not necessary to use function key *K1* repeatedly, see page 28.

HEL file list

The HEL records are listed in dump format. The layout of the list is analogous to that of the HEL file screen of the function, but the full listing width of 132 characters is utilized.

```
DD100                          DETAIL-PROCESSING DUMP - HEL-FILE RECORDS                    PAGE:  1

ELSA V1.6A10     CPU: 11022001 88000000  S135                                    99-11-17 14:27
================================================================================================

REC-CLASS/-ID  DATE/TIME          SEQ#  DTYP  SENSE-ID      MN  PADR      CT  CHT  CALL  CURR
     L   90    99-11-17 11:19:54  8FCD  C4    349020 349040 E0  38000088  0C  2    DER   0903

          ADDR  HEX RECORD                                                          EBCDIC
          0000  00710302 FFFFFFFF 00408FCD E5F1F3F0  0100A010 A6247FFF 11022001 88000000  ..... ..V130....w.......h...
          0020  19991117 11195400 B3290EE0 B0C643FF  4EF0F17A F0F060F0 F17AF0F0 60E60040  .r..........F..+01:00-01:00-W.
          0040  00980001 FFFFFFFF 90E90020 C4C5D940  B3290EE0 B0A541FF 404040E8 00000903  .q.......Z..DER .....v..  Y....
          0060  00989001 FFFFFFFF 00400100 C5D64040  C5D64040 00003888 C4000C6A 00003888  .q....... ..EO  EO  ...hD..^...h
          0080  34902034 90400000 00000000 00000000  4040E3D4 00000000 00000000 0000002B  ..... .....  TM.............
          00A0  0048282B 00000030 00000000 00000000  00000000 00000000 00008825 10258890  .....h...h.
          00C0  00048A00 00000003 0B000000 0000BA00  00000000 26000000 00000000 00400000  ..... ..
          00E0  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000  ................................
         =0180  00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000  ................................
```

See chapter 'Field names' on page 259ff for a description of the output fields.

SVP file lists

The layouts of these lists are analogous to those of the corresponding screen functions. The lists are, however, more clearly arranged and therefore wider than 80 characters.

Note

Logouts are printed only if you specified EXTENDED-SVP-DATA=Y in the submenu or the SET-INOUT statement.

7.6 Function group S: STATISTICS

This function group contains several functions for the statistical analysis of the HEL file. There are no statistics functions for the SVP file.

The layouts of the printer listings of this function group are analogous to those of the corresponding screens. The listings are usually wider than 80 characters.

Functional overview

Identifier	Function designation and brief description
S	*STATISTICS - SUBMENU* Submenu of the *STATISTICS* function group.
SCHR	*CHRONOLOGICAL ERROR LIST* Generates a list of all errors in chronological order (with VM display).
SPL	*PATH ERROR LIST* Generates separate lists of path errors of devices and device controllers, sorted by path addresses.
SDL	*DEVICE ERROR LIST* Generates a list of errors for every errored device.
SDT	*CARTRIDGE DEVICE TEMPORARY ERRORS* Shows the sum totals of temporary errors of MTC devices and calculates the average error rates.
SDTL	*DEVICE TAPE LIBRARY* Generates several lists of robot errors for magnetic tape cartridge systems.
SDV	*DEVICE ERROR VIEW* Shows the totals of HEL file records per priority and attribute for each device as well as the total of HEL file records for controller log data.
SMIM	*VOLUME MEDIA INFORMATION MESSAGE* Shows the MTC volumes which contain a media information message (MIM).
SVD	*VOLUME DATA CHECKS* Shows the number of data checks per volume, sorted by product groups and error count (descending).
SVDD	*VOLUME DATA CHECKS PER DAY* Generates day-by-day totals of data checks per volume.
SVEL	*DISK VOLUME ERROR LOCALITY* Shows the defective tracks of disk volumes (block number, cylinder and track addresses). The number of correctable and uncorrectable data checks is output for each defective track.

Continued ➟

Identifier	Function designation and brief description
SVFL	*CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS* Shows the MTC volumes which have exceeded one of the permissible limit values for temporary errors or which evince a permanent error. Totals both temporary and permanent data checks and calculates the average error rates.
SCLD	*CONTROLLER LOG DATA* Prepares the statistics counters of all disk controllers and tape controllers for device type E4
SSHR	*SYSTEM AND HEL RUN TIME* Shows the system runtimes and within every system runtime the time windows in which hardware error logging (HEL and/or VMHEL) was on or off.

7.6.1 Submenu

```
S000                          STATISTICS - SUBMENU
ELSA V1.6A10                                                  99-11-17 14:31
================================================================================
SELECT NEXT FUNCTION:

           SCHR    CHRONOLOGICAL ERROR LIST (used sort time is UTC)
           SPL     PATH ERROR LIST

           SDL     DEVICE ERROR LIST
           SDT     CARTRIDGE DEVICE TEMPORARY ERRORS
           SDTL    DEVICE TAPE LIBRARY
           SDV     DEVICE ERROR VIEW

           SMIM    VOLUME MEDIA INFORMATION MESSAGES
           SVD     VOLUME DATA CHECKS
           SVDD    VOLUME DATA CHECKS PER DAY
           SVEL    DISK VOLUME ERROR LOCALITY
           SVFL    CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS

           SCLD    CONTROLLER LOG DATA
           SSHR    SYSTEM AND HEL RUN TIME
NEXT: SCHR
F1=help           F2=show sel-par          F3=main menu            K1=return

LTG                                                               TAST
```

NEXT

By default, this field contains the function identifier of the first function (*SCHR*). You can overwrite this default with a function identifier of your choice from the submenu.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).
- Identifier of each hierarchically higher function activated in this history. If you enter an identifier you return to the last output screen of the function in question.

7.6.2 SCHR function: CHRONOLOGICAL ERROR LIST

The screen shows a list - in table form - of the path addresses for all errors of the record classes *C*, *I*, *D*, *T* and *L*. For the record classes *M*, *R* and *H*, on the other hand, a line of information containing the most important data is generated and output. These error records are marked with '=>' in the field *MN*.

Sorting is performed according to Universal Time (UTC) resulting in the chronological order (especially for virtual machines on which several time zones are used).

Furthermore, the number of the guest system on which the error record involved originated is also output for virtual machines (e.g. if VM-global HEL files exist).

```
SCHR100              CHRONOLOGICAL ERROR LIST  (used sort time is UTC)
ELSA V1.6A10            CPU: 60020001 86000000   S130             99-11-11 15:29
================================================================================
       FIRST: 99-11-09 18:08:19   LAST: 99-11-11 09:16:27   TOTAL CNT: 1571

    UTC-DATE: 99-11-09 / 99-11-10
MARK                                                    SSB / LOGB
    LOC-TIME MN   PADR     VSN    DTYP ERMN CC CSB USB  0 1 2 3  4 5 6 7 VM TSN
 _  18:08:19 ME   54720008 QE7961 C4   CMRT OF 00  4E  004A9848 00000020 00   TM
 _  18:55:53 => START/STOP: 'STOP BY SYSTEM  '                             00
 _  19:03:12 => START/STOP: 'START BY SYSTEM '                             00
 _  19:12:15 XV   13000071        63        02 40  0E  41000000 00000000 00
 _  19:12:15 XU   13000070        63        01 00  0E  41000000 00000000 00
 _  19:14:08 XV   13000071        63        02 40  0E  41000000 00000000 00
 _  12:56:01 ME   34720008        C4   CMRT OF 00  4E  00488448 00000020 00   TM
 _  19:02:12 4470 305F0030 ------ 86   ---- 00 00  00  -------- -------- 00 ----
 _  19:02:12 4470 30000030        86   NINT 64 00  00  00000000 00000000 00 XAGT
 _  19:02:45 4470 305F0030 ------ 86   ---- 00 00  00  -------- -------- 00 ----
 _  19:04:51 4474 305F0034 ------ 86   ---- 00 00  0C  -------- -------- 00 ----
 _  19:05:25 4474 30000034        86   NINT AF 00  0C  00000000 00000000 00 IOTD

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D
F1=help            F2=show sel-par            F3=main menu            K1=return


LTG                                                                TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

NEXT

If the list is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty. If the list fits onto one screen, you do not need to enter anything; *DUE* terminates the function.

Note

If the function generates **more than one** list, this takes you to the next list unless there are no further lists, in which case the function is terminated. You can also press function key *K3* (or enter *NEXT: /K3*) to return to the preceding list.

Instead of paging through the list, you can call a follow-up function:

D = DETAIL-PROCESSING - SUBMENU

DE = DETAIL-PROCESSING - EDIT

DD = DETAIL-PROCESSING - DUMP

The follow-up function analyzes only those records in the data currently presented on the screen. You can restrict this set even further by selecting data (see below). If you select data without specifying a function in the *NEXT* field, function *D* is called.

The following inputs are also possible:

- *H* or *?* (HELP function), see page 221.
- /<function key> (e.g. */K1*), see page 32.

MARK

You can select data by marking one or more *MARK* fields.
You can mark a record by placing the cursor on its *MARK* field and pressing any character key except "*?*" (HELP function). Alternatively, you can use the MAR key.

Your selection initiates the call of a follow-up function which furnishes more information on the selected data (see description of *NEXT*).

You can unmark *MARK* fields by overwriting with blanks.

7.6.3 SPL function: PATH ERROR LIST

The screen shows a list of path errors. The errors are sorted by path address (*PADR*), device type (*DTYP*), mnemonic device designation (*MN*) and mnemonic error identifier (*ERR-MN*).

```
SPL100                          PATH ERROR LIST
ELSA V1.6A10            CPU: 11022001 88000000   S135            99-11-11 11:19
================================================================================
     FIRST: 99-10-31 09:08:42   LAST: 99-11-16 08:52:30   TOTAL CNT: 38

MARK     PADR         DTYP    MN      ERR-MN    CNT

 _       20000010     86      4550    SRNH       12
 _       20000020     86      4560    SRNH        2
 _       20000021     86      4561    SRNH        6
 _       28000010     86      4550    SRNH        1
 _       28000037     86      4537    SRNH        1
 _       50000011     86      4411    SRNH        2
 _       50000013     86      4413    SRNH        1
 _       50000015     86      4415    SRNH        3
 _       5000001B     86      441B    SRNH        2
 _       50000023     86      4423    SRNH        1
 _       50000027     86      4427    SRNH        1
 _       5000002B     86      442B    SRNH        1
 _       50000031     86      4431    SRNH        1

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

7.6.4 SDL function: DEVICE ERROR LIST

This function generates a list of errors for each device that has experienced at least one error.

The lists are based on the mnemonic error identifiers of the DER (device error recovery) and the contents of specific sense bytes. Similar errors are totalled, instead of being repeated.

The devices are sorted according to the following criteria:

1. Device family (DISK, FAM50, OPTDISK, TAPE, CARTRIDGE, PRINTER).
2. Within each device family, the device type with most errors appears at the top of the list (HEL records plus sum of input/output repetitions), and the device type with the least errors at the bottom.
3. Within each device type, the device with most errors appears at the top of the list (HEL records plus sum of input/output repetitions), and the device with the least errors at the bottom.

Selection screen

This screen presents an overview of those devices that have experienced at least one error. One or more error lists were generated for each of these devices. The number of errors (HEL records plus total input/output repetitions) registered for each device in the error lists appears in the *CNT* column.

If you mark *MARK* fields and confirm your selection with *DUE*, the error lists of the devices you select are output one after the other.

If only one device experienced an error, the selection menu is skipped and output of the error list or lists commences immediately.

```
SDL000                  DEVICE ERROR LIST - SELECTION
ELSA V1.6A10          CPU: MORE THAN ONE CPU TYPE              99-11-11 11:19
================================================================================

DEV-FAM      MARK  CNT DTYP MN       MARK  CNT DTYP MN       MARK  CNT DTYP MN

DISK          _     3 AC   6C0A      _     1 AC   FF4B      _     1 85   9720
TAPE          _    34 E4   A00B      _     5 E2   0S
CARTRDG       _    38 C5   QE        _    27 C5   QF        _     3 C5   MB
CARTRDG       _     1 C5   MC        _    12 C4   AA        _     3 C4   BB
CARTRDG       _     3 C4   CC        _     3 C4   DD        _     1 C4   T5
PRINTER       _    33 2124 A007      _    33 212C A00B      _    22 212B L5
PRINTER       _    11 212F A00E      _     1 212A LS
FAM50         _     1 54   A8



NEXT: ....
F1=help          F2=show sel-par          F3=main menu            K1=return

LTG                                                              TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

MARK

You can select error lists by marking one or more *MARK* fields. The lists you mark are output one after the other. You can mark a list by placing the cursor on its *MARK* field and pressing any character key except "*?*" (HELP function). Alternatively, you can use the MAR key.You can unmark *MARK* fields by overwriting with blanks.

Error list screens

Screen for disk devices and disk controllers, channel type 1

```
SDL100          CHANNEL TYPE 1  DISK ERRORS - DTYP/MN: AC  /6C0A
ELSA V1.6A10             CPU: MORE THAN ONE CPU TYPE              99-11-11 11:20
================================================================================

   FIRST: 97-01-20 11:10:40    LAST: 97-01-23 09:18:34    TOTAL CNT: 3
   SENSE-ID: 341801 348006     PADR: 2200000A/3200000A

MARK          ERR-MN      CNT      RETRY      SENSEBYTES       FSC
                                                0  1  2  7
 _             CORR         2          0      08 00 40 53
 _             CORR         1          0      08 01 40 53









NEXT: ....                                 More details:  MARK data  or  NEXT = D
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screens for disk devices, channel type 2

Among these disk devices and disk controllers, the 3860-4x/5x controller (IBM 3990) is a special case. There are two different sense formats that can occur with this controller, the 24-byte compatible sense and 32-byte sense. A further distinction is drawn in the case of the 32-byte sense using the SSB6 sense byte: if sense byte SSB6 contains the value X'xF', a SERVICE INFORMATION MESSAGE (SIM) has been generated. This special error information is output on the screen SDL120 (see page 164).

```
SDL110            CHANNEL TYPE 2  DISK ERRORS - DTYP/MN: AC  /FFC5
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-24 13:59
================================================================================

     FIRST: 93-01-27 15:45:27    LAST: 93-05-03 08:15:31    TOTAL CNT: 4224
     SENSE-ID: 388003 338006     PADR: 07000045/16000045/23000045

  MARK          ERR-MN       CNT       RETRY        SENSEBYTES        FSC
                                                     0  1  2  7
   _             CORR         19           0        08 00 40 53
   _             EQCH       1475         342        10 00 00 10       A258
   _             EQCH         13           5        10 00 00 10       A302
   _             EQCH          9           4        10 00 00 10       A586
   _             EQCH          3           0        10 00 00 11       A140
   _             EQCH          3           0        10 00 00 11       A5F7
   _             EQCH          1           0        10 00 00 16       A140
   _             EQCH         16           6        10 00 00 16       A586
   _             EQCH         26          11        10 00 02 10       A302
   _             MTOP         50           0        00 10 10 01       0001
   _             NTFC         11           5        00 08 00 00       0F00

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                              TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for disk devices, channel type 2, service information message

```
SDL120        SERVICE INFORMATION MESSAGES (SIM) - DTYP/MN: 89  /A039
ELSA V1.6A10            CPU: 84020002 17800000   H120-S          99-11-24 14:01
================================================================================

     FIRST: 93-02-01 07:46:05    LAST: 93-02-01 07:46:23    TOTAL CNT: 23
     SENSE-ID: 3990C2 33900A     PADR: 190000C9/1D0000C9

   MARK       SIM-TYPE    REPEAT    SEVERITY        CNT       REFCODE
    _          SCU           Y       SERIOUS          9       3C1E-1500-0010
    _          SCU           Y       SERIOUS         10       3C1E-3500-000D
    _          SCU           N       SERIOUS          1       3C1E-1500-0010
    _          SCU           N       SERIOUS          1       3C1E-3500-000D









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for disk devices, device type 85

```
SDL125                  DISK ERRORS - DTYP/MN: 85  /9720
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE              99-11-11 11:21
================================================================================

     FIRST: 95-03-22 14:51:43    LAST: 95-03-22 14:51:43    TOTAL CNT: 1
     SENSE-ID: 343254 340912     PADR: 1F0000A0

MARK          ERR-MN         CNT         RETRY         SENSEBYTES
                                                        0  1  2  7  8 14 15 25
 _             EQCH            1             0        10 00 00 1F 40 00 00 81









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                  TAST
```

See chapter 10 "Field names", page 259ff, for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for disk controllers, device type 54

```
SDL130           DISK CONTROLLER ERRORS - CTL NAME/MN: 3409/A8
ELSA V1.6A10           CPU: 84020002 17800000   H120-S          99-11-24 14:13
================================================================================

     FIRST: 93-07-13 09:51:31    LAST: 93-07-14 09:55:52    TOTAL CNT: 189
     SENSE-ID: 000000 000004     PADR: 1C0000BF/3B0000BF

MARK         ERR-MN        CNT         RETRY        SENSEBYTES
                                                     0  1  2  7  8 14 15 25
 _            ....           2             0        10 00 00 08 00 00 00 00
 _            EQCH         187             0        10 00 00 7D 18 00 00 00









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help            F2=show sel-par          F3=main menu             K1=return


LTG                                                        TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for tape devices, channel type 1, MBST5 controller

```
SDL200        CHANNEL TYPE 1  TAPE ERRORS - DTYP/MN/TYPE: E2  /FQ  /3559
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE              99-11-25 12:46
================================================================================

     FIRST: 99-01-14 10:42:27    LAST: 99-01-15 13:46:41    TOTAL CNT:   58
     SENSE-ID: F3F4F0 F9F0F0     PADR: 2800003F/7C00003F

MARK  ERR-MN  CNT  RETRY   CMD MOD  SDB1 SDB2  ERROR TYPE (OSB#, BIT)
 _     COLF    15      6    03  GC   7C   00   LEFT (7.1=1)
 _     CCPE     3      0    03  GC   7C   00   IOC-ERROR
 _     RAWR    40      2    03  GC   7C   00   READ AFTER WRITE









NEXT: ....                                 More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for tape devices, channel type 1, MBST12 controller

```
SDL205        CHANNEL TYPE 1  TAPE ERRORS - DTYP/MN/TYPE: E2  /FT  /3527-1
ELSA V1.6A10             CPU: MORE THAN ONE CPU TYPE              99-11-25 12:46
================================================================================

     FIRST: 99-01-14 10:42:27    LAST: 99-01-15 13:46:41    TOTAL CNT:   58
     SENSE-ID: F3F4F0 F9F0F0     PADR: 2800003F/7C00003F

MARK  ERR-MN  CNT  RETRY   CMD MOD  SDB1 SDB2  SSB#, ERROR TYPE
 _     COLF    10      3    03  GC   0E   00   COLUMN FAILED
 _     EQCH    31      0    03  GC   0E   00   EQUIPMENT CHECK
 _     EQCH     9      0    03  GC   7E   00   EQUIPMENT CHECK
 _     EQCH    17      5    05  GC   7E   00   EQUIPMENT CHECK
 _     SRNH     8      2    05  GC   7C   00   SR NOT HONORED









NEXT: ....                                 More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                      TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for tape devices, channel type 2

```
SDL210        CHANNEL TYPE 2  TAPE ERRORS - DTYP/MN/TYPE: E2  /FL  /3559
ELSA V1.6A10             CPU: 84020002 17800000   H120-S          99-11-24 14:02
================================================================================

     FIRST: 93-01-21 09:30:23    LAST: 93-09-13 10:48:18    TOTAL CNT: 1721
     SENSE-ID: 000000 000003     PADR: 0E000022

MARK  ERR-MN   CNT   RETRY    CMD  MOD  USB    ERROR TYPE
 _     EQCH     1       0     01   GC   0E    REC NOT DET
 _     EQCH     1       0     02   PE   02    REJ TU
 _     EQCH   189       0     07   PE   02    REJ TU
 _     EQCH    11       0     0F   PE   02    REJ TU
 _     EQCH     4       0     D3   PE   02    REJ TU
 _     IDCK   237     217     01   GC   0E    ID-BURST-CHECK
 _     NCAP    94      83     02   GC   0E    NOT CAPABLE
 _     NCAP   380     320     02   PE   0E    NOT CAPABLE
 _     OVER     1       0     02   GC   0E    OVERRUN  (0.5)
 _     RAWR   117       6     01   GC   0E    READ AFTER WRITE
 _     RAWR     2       1     01   GC   0F    READ AFTER WRITE
 _     READ   550     522     02   GC   0E    READ DATA CHECK

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D
F1=help            F2=show sel-par            F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for tape devices, C40 system, device type E4

```
SDL215          SYSTEM C40  TAPE ERRORS - DTYP/MN/TYPE: E4  /A00B/3506
ELSA V1.6A10             CPU: MORE THAN ONE CPU TYPE              99-11-11 11:21
================================================================================

     FIRST: 93-08-18 10:21:01    LAST: 93-08-18 10:21:01    TOTAL CNT: 34
     SENSE-ID: 000000 000004     PADR: 2600008B

MARK      ERR-MN       CNT     RETRY     CMD  MOD  USB  CSB  SSB3  SSB7     FSC
 _         EQCH         34        30      0B   GC   02   00   C3    7C


NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for MTC devices, device types C1, C2, C4

```
SDL250                CARTRIDGE ERRORS - DTYP/MN: C4  /MB
ELSA V1.6A10             CPU: 84020002 17800000   H120-S           99-11-24 14:15
================================================================================

     FIRST: 93-01-19 22:17:07    LAST: 93-09-08 11:23:25    TOTAL CNT: 399
     SENSE-ID: 000000 000004     PADR: 030000B1/060000B1/1B0000B1/200000B1/...

MARK  ERR-MN   CNT   RETRY   CMD  USB  ERA      ERROR TYPE
                                    (SSB3)
 _      CMRT      4       1    4F   06   48     UNSOLICITED INFORMATIONAL DATA
 _      CUTE      1       0    01   0E   47     VOLUME FENCED
 _      CUTE      2       0    02   4E   47     VOLUME FENCED
 _      CUTE      1       0    2F   4E   47     VOLUME FENCED
 _      EODM      1       0    4F   06   36     END OF DATA
 _      EQCH      1       0    01   4E   2C     PERMANENT EQUIPMENT CHECK
 _      EQCH      1       0    02   4E   2C     PERMANENT EQUIPMENT CHECK
 _      EQCH      1       0    12   0E   2C     PERMANENT EQUIPMENT CHECK
 _      EQCH      1       0    43   4E   22     PATH EQUIPMENT CHECK
 _      IOER      1       0    02   00   --
 _      LDCK      5       0    07   02   33     LOAD FAILURE

NEXT: +...  (+/-)                        More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for MTC devices, service information messages (SIM)

```
SDL255        SERVICE INFORMATION MESSAGES (SIM) - DTYP/MN: C5  /QE
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE              99-11-16 11:21
================================================================================

     FIRST: 98-05-29 15:22:38    LAST: 98-06-04 01:12:02    TOTAL CNT: 38
     SENSE-ID: 359000 359010     PADR: 7CAC0008

 MARK      SIM-TYPE       REPEAT      SEVERITY        CNT       REFCODE
  _        CONTROL UNIT     N         ACUTE             2       1617-1819-2021
  _        CONTROL UNIT     N         SERIOUS          28       1617-1819-2021
  _        CONTROL UNIT     Y         ACUTE             1       1617-1819-2021
  _        CONTROL UNIT     Y         SERIOUS           1       1617-1819-2021
  _        DEVICE           N         SERIOUS           2       1617-1819-2021
  _        LIBRARY          N         SERIOUS           2       1617-1819-2021
  _        NO TYPE          N         SERIOUS           2       1617-1819-2021









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for OPTICAL DISK

```
SDL260            OPTICAL DISK ERRORS - DTYP/MN: C4  /00
ELSA V1.6A10            CPU: 09400011 80C04000  7.000            99-11-16 14:46
================================================================================

     FIRST: 95-12-22 09:19:25    LAST: 96-01-02 12:14:16    TOTAL CNT: 25
     SENSE-ID: B17000 00C400     PADR: 00000070

MARK  ERR-MN   CNT   RETRY   CMD  USB  ERA      ERROR TYPE
                                    (SSB3)
 _     LIBE     7       0    77   0E   62     LIB MANAGER OFFLINE TO SUBSYSTEM
 _     LIBE     2       0    7F   0E   62     LIB MANAGER OFFLINE TO SUBSYSTEM
 _     NCAP     6       0    02   0E   2E     NOT CAPABLE
 _     READ     9       0    02   0E   23     READ DATA CHECK
 _     UNRC     1       0    7F   0E   00     UNSOLICITED SENSE









NEXT: ....                                More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu            K1=return

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 2124

```
SDL300                PRINTER ERRORS - DTYP/MN: 2124/A007
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE              99-11-09 11:21
================================================================================

     FIRST: 93-08-18 10:20:28    LAST: 93-08-18 10:20:28    TOTAL CNT: 33
     SENSE-ID: 388003 338006     PADR: 26000087

MARK   ERR-MN   CNT   RETRY    STATUS    ERROR TYPE
 _      EQCH     33      30      E0



NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device types 2127, 2128, 212B

```
SDL305                  PRINTER ERRORS - DTYP/MN: 212B/L5
ELSA V1.6A10             CPU: MORE THAN ONE CPU TYPE              99-11-09 11:21
================================================================================

     FIRST: 95-08-23 05:40:04    LAST: 95-09-19 16:50:24    TOTAL CNT: 22
     SENSE-ID: 000000 000000     PADR: 41000013

MARK   ERR-MN   CNT   RETRY     SSB4     ERROR TYPE
 _      EQCH      4       0       21     FUSER THERM / TEMPERATURE
 _      EQCH      1       0       26     TANK CHECK
 _      INOP      3       0       16     PAP TRANSPORT
 _      INOP      2       0       1E     PAP TENSION
 _      INOP      1       0       25     CONCENTRATION
 _      INOP      2       0       78     GLASSBAR CLOCK
 _      IVRQ      2       0       0F     AGENT EMPTY/F.-OIL EMPTY
 _      IVRQ      2       0       21     FUSER THERM / TEMPERATURE
 _      IVRQ      2       0       25     CONCENTRATION
 _      IVRQ      3       0       32     FOLD ERROR



NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 212A

```
SDL310                PRINTER ERRORS - DTYP/MN: 212A/LS
ELSA V1.6A10           CPU: MORE THAN ONE CPU TYPE              99-11-09 11:22
================================================================================

     FIRST: 94-01-12 20:02:28    LAST: 94-01-12 20:02:28    TOTAL CNT: 1
     SENSE-ID: 000000 000000     PADR: 24000030

MARK   ERR-MN   CNT   RETRY     SSB8     ERROR TYPE
 _      NINT     1       0      --



NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask

LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 212C

```
SDL315                 PRINTER ERRORS - DTYP/MN: 212C/L5
ELSA V1.6A10            CPU: 19020120 18000000   H130             99-11-24 14:43
================================================================================

     FIRST: 97-12-18 11:45:54    LAST: 98-02-13 06:27:42    TOTAL CNT: 107
     SENSE-ID: 000000 000000     PADR: 24000012

MARK   ERR-MN   CNT   RETRY    SSB4/5    ERROR TYPE
 _      INOP      1       0
 _      IVRQ      2       0     2003     TEMPERATURE ERROR FUSING STATION
 _      IVRQ      2       0     3201     STACKER JAM
 _      IVRQ      6       0     3202     STACKER JAM
 _      IVRQ      1       0     3203     STACKER JAM
 _      IVRQ     10       0     3701     PAPER JAM A
 _      IVRQ      3       0     3702     PAPER JAM B
 _      IVRQ      2       0     3703     PAPER JAM C
 _      IVRQ      2       0     3704     PAPER JAM BUCK A
 _      IVRQ      1       0     3705     PAPER JAM BUCK B
 _      IVRQ      2       0     3706     PAPER JAM BUCK C
 _      IVRQ      1       0     3707     PAPER JAM UNDER ENTW. STATION

NEXT: +...  (+)                          More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 212 D

```
SDL320                PRINTER ERRORS - DTYP/MN: 212D/A00F
ELSA V1.6A10           CPU: CPU: 84020002 17800000   H120        99-11-25 16:50
================================================================================

     FIRST: 93-08-18 10:20:41    LAST: 93-08-18 10:20:42    TOTAL CNT:   23
     SENSE-ID: 388003 338006     PADR: 2600008B

MARK   ERR-MN   CNT   RETRY    STATUS    ERROR TYPE
                              (SSB6/7)
 _      EQCH     3       0      0400     TONER EMPTY
 _      INOP    14       1      6500     FRONTDOOR OPEN
 _      INOP     6       0      8600     PAC INOPERABLE









NEXT: ....                                 More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 212E

```
SDL325                  PRINTER ERRORS - DTYP/MN: 212E/A00A
ELSA V1.6A10             CPU: CPU: 84020002 17800000   H120        99-11-25 16:50
================================================================================

     FIRST: 93-08-18 10:20:41    LAST: 93-08-18 10:20:42    TOTAL CNT: ····
     SENSE-ID: 388003 338006     PADR: 2600008B

MARK   ERR-MN   CNT   RETRY    STATUS    ERROR TYPE
                                (SSB6/7)
 _       CSBE      1       0     0000     NOT READY
 _       EQCH      4       1     3701     PAPER JAM (LS-A-WAIT, ZONE 1)
 _       EQCH      9       5     3C00     PAPER SEQUENCE ERROR
 _       EQCH      9       5     3C00     PAPE BUFFER ERROR
 _       INOP      1       0     8600     PAC INOPERABLE









NEXT: ....                                 More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par             F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Screen for printers, device type 212F

```
SDL330                PRINTER ERRORS - DTYP/MN: 212F/A00E
ELSA V1.6A10           CPU: MORE THAN ONE CPU TYPE              99-11-09 11:21
================================================================================

     FIRST: 93-08-18 10:20:42    LAST: 93-08-18 10:20:42    TOTAL CNT: 11
     SENSE-ID: 388003 338006     PADR: 2600008E

MARK   ERR-MN   CNT   RETRY    STATUS    ERROR TYPE
                                (SSB2/3)
 _       CSBE     3       0     ----
 _       EQCH    11      10     00C3
 _       NINT     2       0     ----









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                                    TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Listings

The first listing output by the function is an overview listing (summary). The summary lists the errored devices and its layout is analogous to that of the selection screen.

The summary is followed by error lists for the individual errored devices. More than one error list may be output for each device.

The layouts of the listings are analogous to those of the screens of the function.

7.6.5 SDT function: CARTRIDGE DEVICE TEMPORARY ERRORS

This function totals the temporary errors of MTC devices and calculates average error rates.

The function creates a separate device-specific statistical analysis for each device type. In addition, it creates statistical records of channel data transferred for device types C2 and C4. These statistics lists contain an entry for each MTC device used in the course of the analysis period.

The entries are sorted in accordance with the following criteria:

1. Device number i.e. last position of *PIDV* or *ICUU*.
2. Mnemonic device designation (*MN*).

Device-specific statistics for device type C1:

```
SDT100           CARTRIDGE DEVICE TEMPORARY ERRORS - DTYP: C1
ELSA V1.6A10            CPU: 44020039 17800000  H120              99-11-25 09:55
================================================================================

PIDV      CU        |   TEMPORARY ERRORS    |          TOTAL PROCESSED
 or       SERIAL    | --WRITE-- | --READ--- | ---MBYTES---- | -----BLOCKS------
ICUU MN   NO  MOUNTS|MB/ERR  CNT|MB/ERR  CNT|   READ   WRITE|     READ     WRITE
------------------+-----------+-----------+---------------+------------------
3F1B TP   00055    2|    -     0|    -     0|      0     188|        0      7696
0A7C PC   00081    4|    -     0|     4    3|     14       0|      640         0
0A7E PE   00081    1|    -     0|    -     0|      0       3|        0       160
   TOTALS:        22|          6|          4|     29     564|     1520     23120

 CORRECTED ON THE FLY  | READ   WRITE|                  |
 --READ--- | --WRITE-- | RECVY  ERASE| --BLOCKS/ERR--- | ----AVERAGE VALUES----
MB/COR  ECC|MB/COR  ECC| ACTS   GAPS |    READ   WRITE |
-----------+-----------+-------------+-----------------+-----------------------
    0     8|   94     2|     0      0|       -       - | MB/TEMP RD-ERR:       7
   -      0|   -      0|     0      0|     213       - | MB/TEMP WR-ERR:      94
   -      0|    3     1|     0      0|       -       - |
         17|        2804|     0      1|                 | TOTAL MEGABYTS:     593
NEXT: +...  (-)
F1=help           F2=show sel-par           F3=main menu            K1=return
ELS1002 END OF LIST REACHED - DUE: NEXT LIST

LTG                                                                 TAST
```

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

PIDV

Physical device address in BS2000/OSD-BC V3.0 or later, comprising byte 0 (*PI*) and byte 3 (*DV*) of the path address *PADR:*

PI Channel path ID

DV Device address

ICUU

Physical device address in BS2000/OSD-BC V1.0/V2.0:

IC IOP number and channel number

UU Controller and device number

MN

Mnemonic device designation (device mnemonic).

CU SERIAL NO

Control unit serial number.

MOUNTS

Number of magnetic tape cartridges mounted.

---WRITE---

MB/ERR

Average number of megabytes written between temporary write errors.

CNT

Total temporary write errors.

---READ---

MB/ERR

Average number of megabytes read between temporary read errors.

CNT

Total temporary read errors forwards and backwards.

---MBYTES---

READ

Total megabytes read.

WRITE

Total megabytes written.

---BLOCKS---

READ

Total blocks read.

WRITE

Total blocks written

---READ---

MB/COR

Average number of megabytes read between read errors corrected on the fly.

ECC

Total blocks corrected on the fly for read operations.

---WRITE---

MB/COR

Average number of megabytes written between write errors corrected on the fly.

ECC

Total blocks corrected on the fly for write operations.

READ RECVY ACTS

Total read retries for internal error recovery.

WRITE ERASE GAPS

Total write retries for internal error recovery.

--BLOCKS/ERR--
READ WRITE

Average number of blocks between temporary read and write errors.

TOTALS:

Overall column totals.

MB/TEMP RD-ERR:

Average megabytes read between temporary read errors of all devices.

MB/TEMP WR-ERR:

Average megabytes written between temporary write errors of all devices.

TOTAL MEGABYTS:

Total megabytes read and written by all devices.

Notes

– The overall figures (*TOTALS*) and the global average values of all devices (*MB/TEMP RD-ERR etc.*) are displayed only on the last screen page of statistics lists.
– If a value is too large for the counter on the screen, the abbreviation "*OFL*" (overflow) appears at the position of the counter.

Device-specific statistics for device types C2/C4

```
SDT101           CARTRIDGE DEVICE TEMPORARY ERRORS - DTYP: C4
ELSA V1.6A10             CPU: 76020457 84200000  H60              99-11-17 15:02
================================================================================

PIDV      CU         |   TEMPORARY ERRORS    |          TOTAL PROCESSED
 or       SERIAL     | --WRITE-- | --READ--- | ---MBYTES---- | -----BLOCKS------
ICUU MN   NO  MOUNTS|MB/ERR  CNT|MB/ERR  CNT|   READ   WRITE|      READ     WRITE
------------------+-----------+-----------+---------------+------------------
232A E6   51037   11|     -     0|     -     0|   1586     816|     13662      6959
252B EF   51047    6|     -     0|     -     0|    777     151|      6602      1302
232B E7   51037    4|     -     0|     -     0|    926     507|      7657      4280
   TOTALS:       196|           1|           0|  22296   51143|    189026    428905

 CORRECTED ON THE FLY  | READ   WRITE|  DRV   CU       |
 --READ--- | --WRITE-- | RECVY  ERASE|  DET   EQC   TRA| ----AVERAGE VALUES----
MB/COR  ECC|MB/COR  ECC| ACTS   GAPS |  ERR   CHK   ERR|
-----------+-----------+-------------+-----------------+------------------------
   66    24|  136     6|     0      0|    0     0     0| MB/TEMP RD-ERR:       -
   59    13|   75     2|     0      0|    0     0     0| MB/TEMP WR-ERR:   51143
   71    13|   72     7|     0      0|    0     0     0|
       697|       1224|     0      2|    8     0     6| TOTAL MEGABYTS:   73439
NEXT: ....  (-)
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask
ELS1002 END OF LIST REACHED - DUE: NEXT LIST

LTG                                                              TAST
```

DRV DET ERR

Total drive detected errors.

CU EQC CHK

Total control unit equipment checks.

TRA ERR

Total transient errors.

See statistics for device type C1 (page 181ff) for a description of all other fields.

Statistics based on the channel data for device types C2/C4

This statistical analysis calculates the average error rates on the basis of channel data transferred (not compressed).

The compression factor can be calculated by comparing the *TOTAL PROCESSED MB-READ/WRITE* or *BLOCKS-READ/WRITE* of the "Temporary error by device" and "Temporary error summary based on channel" statistics. The larger the difference, the larger is the blocking factor. The device blocks the data, and thus reads or writes less data than is transmitted through the channel.

```
SDT200   CARTRIDGE DEVICE TEMP ERRORS based on CHANNEL DATA - DTYP: C4
ELSA V1.6A10            CPU: 76020457 84200000  H60              99-11-17 15:03
================================================================================

PIDV      CU        |   TEMPORARY ERRORS    |          TOTAL PROCESSED
 or       SERIAL    | --WRITE-- | --READ--- | ---MBYTES---- | -----BLOCKS------
ICUU MN   NO  MOUNTS|MB/ERR  CNT|MB/ERR  CNT|   READ   WRITE|      READ     WRITE
------------------+-----------+-----------+---------------+-----------------------
232A E6   51037   11|    -     0|    -     0|   2903    1581|   179320     82352
252B EF   51047    6|    -     0|    -     0|   1536     308|    77734     19558
232B E7   51037    4|    -     0|    -     0|   1728    1029|    70414     42794
   TOTALS:       196|          1|          0|  40511   83579|  1939035   3599275

  CORRECTED ON THE FLY    |
 --READ---  |  --WRITE--  |   ----AVERAGE VALUES----
MB/COR  ECC | MB/COR  ECC |
------------+-------------+-------------------------------
  120    24 |   263     6 |   MB/TEMP RD-ERR:      -
  118    13 |   154     2 |   MB/TEMP WR-ERR:   83579
  132    13 |   147     7 |
        697 |        1224 |   TOTAL MEGABYTS:  124091
NEXT: ....  (-)
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                              TAST
```

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

PIDV

Physical device address in BS2000/OSD-BC V3.0 or later, comprising byte 0 (*PI*) and byte 3 (*DV*) of the path address *PADR*:

PI Channel path ID

DV Device address

ICUU

Physical device address in BS2000/OSD-BC V1.0/2.0:

IC IOP number and channel number

UU Control and device number

MN

Mnemonic device designation (device mnemonic).

CU SERIAL NO

Control unit serial number.

MOUNTS

Number of magnetic tape cartridges mounted.

---WRITE---

MB/ERR

Average number megabytes transferred to the MTC controller between temporary write errors.

CNT

Total temporary write errors.

---READ---

MB/ERR

Average number of megabytes transferred to the channel between temporary read errors.

CNT

Total temporary read errors forwards and backwards.

---MBYTES---

READ

Total megabytes transferred to the channel.

WRITE

Total megabytes transferred to the MTC controller.

---BLOCKS---

READ

Total blocks transferred to the channel.

WRITE

Total blocks transferred to the MTC controller.

---READ---

MB/COR

Average number of megabytes transferred to the channel between read errors corrected on the fly.

ECC

Total blocks corrected on the fly for read operations

---WRITE---

MB/COR

Average number of megabytes transferred to the MTC controller between write errors corrected on the fly.

ECC

Total blocks corrected on the fly for write operations.

TOTALS:

Overall column totals.

MB/TEMP RD-ERR:

Average number of megabytes transferred to the channel between temporary read errors of all devices.

MB/TEMP WR-ERR:

Average number of megabytes transferred to the MTC controller between temporary write errors of all devices.

TOTAL MEGABYTS:

Total megabytes transferred from and to the channel for all devices.

Notes

– The overall figures (TOTALS) and the global average values of all devices (MB/TEMP RD-ERR) are displayed only on the last screen page of statistics lists.

– If a value is too large for the counter on the screen, the abbreviation "*OFL*" (overflow) appears at the position of the counter.

Listing

The contents of the listing correspond to the screen outputs. All the data for a particular device is written into one line, however, which means that the lists are usually wider than 80 characters.

Device-specific listing for device types C2/C4

```
SDT101                          CARTRIDGE DEVICE TEMPORARY ERRORS - DTYP: C2                          PAGE:  1

ELSA V1.6A10     CPU: 76020457 84200000  H60                                                  99-11-17 15:11
```

PIDV or ICUU MN	CU SERIAL NO	MOUNTS	TEMPORARY ERRORS WRITE MB/ERR	WRITE CNT	READ MB/ERR	READ CNT	TOTAL PROCESSED MBYTES READ	MBYTES WRITE	BLOCKS READ	BLOCKS WRITE	CORRECTED ON THE FLY READ MB/COR	READ ECC	WRITE MB/COR	WRITE ECC	READ RECVY ACTS	WRITE ERASE GAPS	DRV DET ERR	CU EQC CHK	TRA ERR
1220 GG	00111	125	-	0	-	0	8803	5074	158523	90382	54	161	40	125	0	0	0	0	0
3380 G8	00108	146	-	0	-	0	7154	16602	128986	295195	26	268	27	607	0	0	0	0	0
1221 GH	00111	90	-	0	-	0	5915	10486	105615	186645	38	155	26	403	0	0	0	0	0
3381 G9	00108	56	-	0	-	0	4946	2908	88254	52006	64	77	28	101	0	0	0	0	1
3382 GA	00108	266	8310	2	-	0	23334	16621	419040	296186	37	615	48	340	0	6	0	0	0
1222 GI	00111	26	-	0	-	0	2551	1165	46192	20665	48	53	52	22	0	0	0	0	0
3383 GB	00108	73	1611	4	-	0	5058	6447	91110	114730	27	184	10	618	0	12	0	0	1
1223 GJ	00111	27	-	0	-	0	3034	305	54410	5534	32	93	61	5	0	0	0	0	0
238A MQ	00077	1	-	0	-	0	0	0	1	0	-	0	-	0	0	0	0	0	0
238C M4	00079	4	-	0	-	0	0	92	21	2055	-	0	46	2	0	0	0	0	0
TOTALS:		814		6		0	60798	59706	1092152	1063398		1606		2223	0	18	0	0	2

```
AVERAGE VALUES:    MB/TEMP RD-ERR:      -
                   MB/TEMP WR-ERR:   9951
                   TOTAL MEGABYTS:  120504
```

7.6.6 SDTL function: DEVICE TAPE LIBRARY

This function generates a list of robot errors for magnetic tape cartridge systems.

ERROR CODE SUMMARY

All record-30 entries of the 3594 Tape Library System which have the same library manager error code (*LM*), other error code (*OTH*), serial number (*SER#*) and the same device mnemonic (*MN*) are counted (*OCCURRENCES*).

```
SDTL100          DEVICE-TAPE-LIBRARY  -  ERROR CODE SUMMARY
ELSA V1.6A10           CPU: MORE THAN ONE CPU TYPE              99-11-24 15:11
================================================================================

                    ** ERROR CODE **                  ** LAST ENTRY **
       SER#      MN     LM      OTH     OCCURRENCES       DATE / TIME
--------------------------------------------------------------------------------
      010022     OT    60B7    0000          2         94-11-25 13:46:39
      010022     OT    7D2E    0111          1         94-11-23 15:49:34
      010022     OT    9123    0000          1         94-11-23 15:46:44
      010022     OS    FB43    0000          1         94-11-25 14:08:15









NEXT: ....
F1=help           F2=show sel-par          F3=main menu            K1=return

LTG                                                                TAST
```

Input fields

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

Output fields

SER#

Serial number of the tape library, from the sense bytes 21-23.

MN

Device mnemonic (mnemonic device name).

LM

Library manager error code, from the sense bytes 09-10.

OTH

Other error code, from the sense bytes 11-12.

OCCURRENCES

Number of errors of this type.

The entries are sorted in accordance with the following criteria: *SER#*, *LM*, *OTH*, *MN*.

PERMANENT ERROR SUMMARY

All the record-30 entries of the tape library 3594 are output with the exception of records with the ERA codes 6D or 74 for which a separate list is generated.

```
SDTL110           DEVICE-TAPE-LIBRARY  -  PERMANENT ERROR SUMMARY
ELSA V1.6A10            CPU: MORE THAN ONE CPU TYPE                99-11-16 11:23
================================================================================

                                                        |-ERROR CODE--|
  PADR   MN   DATE     TIME  |STATUS|ERA |BLK-ID|FMT |MOD| LM |OTH | VOL SERIAL
-----------------------------+------+----+------+----+---+----+----+------------
390000B0 AA 94-06-01 23:55:05|000102| 03 |040506| 23 |12 |0903|0B01|0D0E0F101112
390000B2 AA 94-06-06 10:54:11|000102| 03 |040506| 23 |21 |0902|0B01|0D0E0F101112
0D000080 AA 94-06-07 14:16:18|000102| 03 |040506| 23 |08 |0901|0B01|0D0E0F101112
0D000080 AA 94-06-07 14:20:27|000102| 03 |040506| 23 |08 |0901|0B01|0D0E0F101112


SW|SS|      |--------CU--------|  |VOLUME
EC|ID| SER# |IF|SF|EC|HW-SER|DR|  |SERIAL
--+--+------+--+--+--+------+--+--+------
13|14|151601|18|19|1A|1B1C1D|1E|1F|......
13|14|151601|18|19|1A|1B1C1D|1E|1F|......
13|14|151603|18|19|1A|1B1C1D|1E|1F|......
13|14|151602|18|19|1A|1B1C1D|1E|1F|......

NEXT: +...  (+)
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                              TAST
```

Input fields

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

Output fields

PADR

Path address

STATUS

Status from the sense bytes 00-02.

ERA

Error recovery action code, from the sense byte 03.

BLK-ID

Channel logical block number, from the sense bytes 04-06.

FMT

Sense byte format, from the sense byte 07.

MOD

ERA modifier byte, from the sense byte 08.

VOL SERIAL

Volume serial number, from the sense bytes 13-18.

SWEC

Library manager software EC level identifier, from the sense byte 19.

SSID

Library subsystem identifier, from the sense byte 20.

IF

Installed channel adapter and data transfer mode, from the sense byte 24.

SF

Subsystem features, from the sense byte 25.

EC

Control unit microcode EC level, from the sense byte 26.

HW-SER

Control unit hardware information and serial number, from the sense bytes 27-29.

DR

Drive address, from the sense byte 30.

VOL SERIAL

Volume serial number (printable), from the sense byte 13-18.

See *ERROR CODE SUMMARY*, page 191, for all other output fields.

The entries are sorted in accordance with the following criteria: *MN*, *DATE/TIME*.

RECOVERED ERROR SUMMARY

All the record-30 entries of the tape library 3594 with the ERA code 6D are output (summary of recoverable errors).

```
SDTL120          DEVICE-TAPE-LIBRARY  -  RECOVERED ERROR SUMMARY
ELSA V1.6A10           CPU: MORE THAN ONE CPU TYPE              99-11-16 11:23
================================================================================

                                                          |-ERROR CODE--|
  PADR   MN   DATE     TIME  |STATUS|ERA |BLK-ID|FMT |MOD| LM |OTH | VOL SERIAL
-----------------------------+------+----+------+----+---+----+----+------------
390000B0 AA 94-06-01 23:55:05|000102| 6D |040506| 23 |12 |0903|0B01|0D0E0F101112
390000B2 AA 94-06-06 10:54:11|000102| 6D |040506| 23 |21 |0902|0B01|0D0E0F101112
0D000080 AA 94-06-07 14:16:18|000102| 6D |040506| 23 |08 |0901|0B01|0D0E0F101112
0D000080 AA 94-06-07 14:20:27|000102| 6D |040506| 23 |08 |0901|0B01|0D0E0F101112


SW|SS|      |--------CU--------|  |VOLUME
EC|ID| SER# |IF|SF|EC|HW-SER|DR|  |SERIAL
--+--+------+--+--+--+------+--+--+------
13|14|151601|18|19|1A|1B1C1D|1E|1F|......
13|14|151601|18|19|1A|1B1C1D|1E|1F|......
13|14|151603|18|19|1A|1B1C1D|1E|1F|......
13|14|151602|18|19|1A|1B1C1D|1E|1F|......

NEXT: +...  (+)
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask


LTG                                                              TAST
```

See *PERMANENT ERROR SUMMARY*, page 193f, for a description of the output fields.

Input fields

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

SERVICE ALERT SUMMARY

All record-30 entries of the tape library 3594 with the ERA code 74 are output (summary of the service alerts).

```
SDTL130          DEVICE-TAPE-LIBRARY  -  SERVICE ALERT SUMMARY
ELSA V1.6A10           CPU: MORE THAN ONE CPU TYPE              99-11-24 15:11
================================================================================

                                                          |-ERROR CODE--|
  PADR   MN   DATE     TIME  |STATUS|ERA |BLK-ID|FMT |MOD| LM |OTH | VOL SERIAL
-----------------------------+------+----+------+----+---+----+----+------------
13000001 OT 94-11-23 15:49:34|024020| 74 |000000| 23 |02 |7D2E|0111|404040404040
13000001 OT 94-11-25 13:46:39|024020| 74 |000000| 23 |10 |60B7|0000|404040404040
13000001 OT 94-11-25 14:12:10|024020| 74 |000000| 23 |10 |60B7|0000|404040404040
                             |      |    |      |    |   |    |    |


SW|SS|      |--------CU--------|  |VOLUME|
EC|ID| SER# |IF|SF|EC|HW-SER|DR|  |SERIAL| LIBRARY ERROR MODIFIER CODE MEANING
--+--+------+--+--+--+------+--+--+------+-----------------------------------
0C|01|010022|C6|3F|39|963239|11|00|      | LIBRARY COMPONENT HAS BECOME AVAIL
0C|01|010022|C6|3F|39|963239|11|00|      | DEV CLEAN OPER PERF BASED ON TIME
0C|01|010022|C6|3F|39|963239|11|00|      | DEV CLEAN OPER PERF BASED ON TIME
  |  |      |  |  |  |      |  |  |      |

NEXT: ....
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                              TAST
```

See *PERMANENT ERROR SUMMARY*, page 193f, for a description of the output fields.
The entries are sorted in accordance with the following criteria: *MOD*, *DATE/TIME*.

Input fields

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

Listings

The contents of the listings correspond to the screen output. All the data for a particular device is written into one line, however, which means that the lists are usually wider than 80 characters. Exception: *ERROR CODE SUMMARY*.

7.6.7 SDV function: STATISTIK DEVICE ERROR VIEW

This function shows the totals of HEL file records. These totals are displayed sorted by device.

– device-specific errors (record class *C*, *I* and *D*) are generated and displayed per priority and attribute

– controller log data (record class *L*) is generated and shown separately (in the column CLOG).

```
SDV100                          DEVICE ERROR VIEW
ELSA V1.6A10              CPU: 44020039 17800000  H120              99-11-24 15:10
================================================================================
     FIRST: 93-08-19 22:28:41   LAST: 93-08-25 12:41:56   TOTAL CNT: 337

MARK
    DEV-FAM  DTYP  MN      PRI:H ATTR  PRI:M ATTR  PRI:L ATTR  PRI:- ATTR   CLOG
 _  TD       63    UX            .           .           .           8 -          .
 _  TD       63    UY            .           .           .           6 -          .
 _  TD       63    U7            .           .           .           2 -          .
 _  TD       63    U8            .           .           .           1 -          .
 _  TD       63    VD            .           .           .           2 -          .
 _  DISK     AC    1306         35 -         .          23 -         .            .
 _  DISK     AC    1306          .           .          18 C         .            .
 _  DISK     AC    1307         26 -         .          18 -         .            .
 _  DISK     AC    1307          .           .           5 C         .            .
 _  TAPE     E2    M1            .           .           .           3 -          .
 _  TAPE     E2    M2            .           .           .           5 -          .
 _  TAPE     E2    M3            .           .           2 H         .            .
 _  CARTRDG  C1    PA            .           .           .           .            5

NEXT: +...  (+)                       More details:  MARK data  and/or  NEXT = D
F1=help           F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

7.6.8 SMIM function: VOLUME MEDIA INFORMATION MESSAGES

This function creates totals of HEL file records for the device types that contain a media information message (MIM). All affected volumes are output sorted according to the number of HEL file records (in descendng order).

```
SMIM100          VOLUME MEDIA INFORMATION MESSAGES - SELECTION
ELSA V1.6A10              CPU: MORE THAN ONE CPU TYPE              99-11-15 11:26
================================================================================
     FIRST: 98-10-27 08:08:19   LAST: 98-10-29 17:19:43   TOTAL CNT: 5

MARK       VOLUME       CNT
 _         JANZO2         5









NEXT: ....                                  More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

7.6.9 SVD function: VOLUME DATA CHECKS

This function shows the number of data checks per volume. The volumes are sorted primarily by device families. Within a particular device family, the volume with the most data checks appears at the top and the volume with the fewest data checks at the bottom of the list.

```
SVD100                          VOLUME DATA CHECKS
ELSA V1.6A10            CPU: 84020002 17800000   H120-S          99-11-24 14:51
================================================================================
     FIRST: 93-01-21 02:47:07   LAST: 93-09-13 10:48:18   TOTAL CNT: 2297

DEV-FAM     MARK  VSN    CNT       MARK  VSN    CNT       MARK  VSN    CNT

DISK          _  2OSX.J   60         _  2OSX.I   18         _  VSP002   12
DISK          _  C0031E   11         _  2OS2.7   11         _  D0328D   10
DISK          _  VM1112    8         _  2OSW.2    7         _  2OSW.1    6
DISK          _  D0317D    5         _  2OSX.3    4         _  C0025E    3
DISK          _  2OS2.5    3         _  ARCDIR    2         _  D0326D    2
DISK          _  2BY.00    2         _  2OSX.E    2         _  2OSX.2    2
DISK          _  2OSX.5    2         _  2OS7.A    2         _  2OS7.7    2
DISK          _  C0024E    1         _  C0026E    1         _  C0028E    1
DISK          _  PUBU01    1         _  2BV.00    1         _  2OSX.H    1
DISK          _  2OSX.L    1         _  2OSX.4    1         _  2OSX.8    1
DISK          _  2OS6.A    1         _  2OS6.3    1         _  2OS7.C    1
DISK          _  2OS7.F    1
TAPE          _  D3359A   84         _  ......   38         _  D4919A   13

NEXT: +...  (+/-)               More details:  MARK data  and/or  NEXT = SVDD/D
F1=help           F2=show sel-par           F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

Note

This screen enables you to call the follow-up function *D*, and also *SVDD* (*VOLUME DATA CHECKS PER DAY*, see next page). If you select data without specifying a follow-up function in *NEXT*, the *SVDD* function is called.

7.6.10 SVDD function: VOLUME DATA CHECKS PER DAY

This function generates day-by-day summaries of data checks per volume, arranged by mnemonic error identifiers and attributes. The volumes are sorted primarily by device families. Within a particular device family, the volume with the most data checks appears at the top and the volume with the fewest data checks at the bottom of the list.

```
SVDD100                    VOLUME DATA CHECKS PER DAY
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-24 14:52
================================================================================
     FIRST: 93-01-21 02:47:07   LAST: 93-09-10 13:28:49   TOTAL CNT: 322

MARK
    DEV-FAM  VSN    MMDD    ERR-MN ATTR CNT    ERR-MN ATTR CNT    ERR-MN ATTR CNT
 _  DISK    20SX.I 0505      PGER  C     2
 _  DISK    20SX.I 0526      PGER  C     1
 _  DISK    20SX.I 0603      PGER  C     1
 _  DISK    20SX.I 0607      PGER  C     1
 _  DISK    20SX.I 0701      PGER  C     2
 _  DISK    20SX.I 0714      PGER  C     1
 _  DISK    20SX.I 0823      PGER  C     3
 _  DISK    VSP002 0126      CORR  C     1
 _  DISK    VSP002 0127      CORR  C     1
 _  DISK    VSP002 0203      CORR  C     1
 _  DISK    VSP002 0206      CORR  C     1
 _  DISK    VSP002 0210      CORR  C     1
 _  DISK    VSP002 0217      CORR  C     3

NEXT: +...  (+/-)                        More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu            K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

7.6.11 SVEL function: DISK VOLUME ERROR LOCALITY

This function generates a list of defective tracks of disk volumes. The number of correctable and uncorrectable data checks is shown for each defective track.
Each defective track is characterized by its cylinder and track address, plus side and block number.

The list reveals error accumulations on certain tracks of the type that could require remedial measures, for example assignment of alternative tracks.

```
SVEL100                    DISK VOLUME ERROR LOCALITY
ELSA V1.6A10            CPU: 84020002 17800000   H120-S           99-11-29 10:54
================================================================================
     FIRST: 93-01-21 02:47:07   LAST: 93-09-11 06:31:46   TOTAL CNT: 1939

                                  CC.HH.R                              ECC-ERRORS
MARK   VSN      DTYP   MN         CC.HH.S         PHP       RBN      UNCORR  CORR
       ------   ----   ----     ------------    --------  --------   ------  ----
 _     20S6.A   AC     A00A     0227.0006.11    00022550  INVALID             1
 _     20S6.3   AC     A003     00E7.000A.08    0000E6CB  INVALID             1
 _     20S7.A   AC     FFBD     011F.0001.0F    00011E01  INVALID             2
 _     20S7.C   AC     FFBC     01B5.000D.04    0001B42C  INVALID             1
 _     20S7.F   AC     FFBC     01B5.000D.04    0001B42C  INVALID             1
 _     20S7.7   AC     FFB5     018D.0002.08    00018B9D  INVALID             2
 _     C0024E   AD     U4       0248.0007.0B    0002463A  INVALID             1
 _     C0025E   AD     7901     01AB.000C.01    0001AA22  INVALID             3
 _     C0026E   AD     7902     016D.0009.08    00016C34  INVALID             1
 _     C0028E   AD     U8       0053.0003.0C    000052EC  INVALID             1
 _     C0031E   AD     UB       0497.0005.0F    000492CD  INVALID             1
 _     C0031E   AD     7907     0117.0007.10    00011670  INVALID            10

NEXT: +     (-)                          More details:  MARK data  or  NEXT = D
F1=help           F2=show sel-par           F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

The input fields are explained in the description of the screen for the first statistics function (*CHRONOLOGICAL ERROR LIST*) on page 157.

7.6.12 SVFL function: CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS

This function creates a separate volume-specific statistical analysis of temporary and permanent data checks for each type of MTC device.

The temporary and permanent data checks are totalled for each volume processing operation and average error rates are calculated.

The only volumes listed are those which overshoot a permissible limit for temporary errors in at least one processing operation or those which evince a permanent error. If a volume is listed, all available error totals for the volume in question are output, including those which do not overshoot the permissible limit values.

Exception

Error totals that do not overshoot the permissible limit volumes are not output for volumes without VSN.

Permissible limit values for device type C1 device type for

Write: Less than 40 Mbytes between temporary write errors or more than three temporary write errors per volume processing operation.

Read: Less than 200 Mbytes between temporary read errors or more than one temporary read error per volume processing operation.

Permissible limit values for device types C2/C4 for

Write: Less than 40 Mbytes between temporary write errors or more than two temporary write errors per volume processing operation.

Read: Less than 200 Mbytes between temporary read errors or more than 0 temporary read errors per volume processing operation.

Statistics for device type C1

This volume-specific statistical analysis is a comparison of the permanent and temporary write and read errors with the number of Mbytes read and written.

These statistics are output only if the following limit values are exceeded:

Write: The interval between two temporary write errors is less than 40 Mbytes or more than three temporary write errors occur per cartridge processing operation.

Read: The interval between two temporary read errors is less than 200 Mbytes, or at least two temporary read errors occur per cartridge processing operation.

```
SVFL100  CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS - DTYP: C1
ELSA V1.6A10            CPU: 84020002 07800000   H120-S           99-11-15 11:21
================================================================================

VSN     DATE/TIME          MN  | BLOCK | ---MB/ERR PERM--- | ---MB/ERR TEMP----
        YY-MM-DD HH:MM:SS      |  ID   | READ(CT) WRITE(CT)|  READ(CT) WRITE(CT)
-------------------------------+-------+--------------------+--------------------
D0557K  93-09-28 00:14:25  MA  |       |  - (  0)  - (  0) |   0(   1)  - (   0)
D0557K  VOLUM.END MISSING  MB  | 00004 |  - (  0)   0(  1) |  - (   0)  - (   0)
D0958K  93-09-28 00:37:45  ME  |       |  - (  0)  - (  0) |  - (   0)  32(  14)
                TOTALS:        |       |   (   0)   (   4) |   (    1)   (   54)

READ   WRITE |   BLOCKS    |
RECVY  ERASE | -PROCESSED- |  BLK
ACTS   GAPS  | READ  WRITE |  LNG  TSN     **** CURRENT LIMITS (MB/ERR) ****
-------------+-------------+-----------
    0      0 |     3  3873 |          TM      TEMP WRITE(CT)  TEMP READ(CT)
    0      0 |     0     0 | 0001  5L9G             <40 (>3)      <200 (>1)
    0     24 |    26  3899 |       5L9F
    0    357 |             |

NEXT: ....  (-)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                TAST
```

Input fields

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

Output fields

VSN

Volume serial number.

DATE/TIME

Date (year-month-day) / current time (hours:minutes:seconds) of end of volume processing operation.

MN

Mnemonic device designation (device mnemonic).

BLOCK ID

Logical block position of the (first) permanent error.

---MB/ERR PERM---

READ

Average number of megabytes read between permanent read errors.

(CT)

Total permanent read errors.

WRITE

Average number of megabytes written between permanent write errors.

(CT)

Total permanent write errors.

---MB/ERR TEMP---

READ

Average number of megabytes read between temporary read errors.

(CT)

Total temporary read errors.

WRITE

Average number of megabytes written between temporary write errors.

(CT)

Total temporary write errors.

READ RECVY ACTS

Total read retries of internal error recovery.

WRITE ERASE GAPS

Total write retries of internal error recovery.

BLOCKS -PROCESSED-

READ

Number of blocks read.

WRITE

Number of the blocks written.

BLK LNG

Length of the block with permanent read or write error.

TSN

Task sequence number of the volume processing operation.

TOTALS

Overall column totals. The totals are output only on the last screen page of the statistical analysis.

Note

If a value is too large for the counter on the screen, the abbreviation "*OFL*" (overflow) appears at the position of the counter.

Statistics for device types C2/C4

This volume-specific statistical analysis is a comparison of the permanent and temporary write and read errors with the number of Mbytes read and written.

These statistics are output only if the following limit values are exceeded:

Write: The interval between two temporary write errors is less than 40 Mbytes or more than three temporary write errors occur per cartridge processing operation.

Read: The interval between two temporary read errors is less than 200 Mbytes, or at least two temporary read errors occur per cartridge processing operation.

```
SVFL101  CARTRIDGE VOLUME FAILING LIMITS / PERMANENT ERRORS - DTYP: C4
ELSA V1.6A10            CPU: 11022001 88000000   S135             99-11-15 11:28
================================================================================

VSN     DATE/TIME          MN  | BLOCK | ---MB/ERR PERM--- | ---MB/ERR TEMP----
        YY-MM-DD HH:MM:SS      |  ID   | READ(CT) WRITE(CT)|  READ(CT) WRITE(CT)
-------------------------------+-------+--------------------+--------------------
M2975K  99-11-15 17:21:06  ET  |       |  - (  0)  - (  0) |  - (   0) 154(   6)
M2983K  99-11-15 18:58:12  ET  |       |  - (  0)  - (  0) |  - (   0) 155(   6)
M2993K  99-11-15 20:10:40  ET  |       |  - (  0)  - (  0) |  - (   0) 154(   6)
                TOTALS:        |       |   (   0)   (   1) |   (  106)   (  366)

READ   WRITE |   BLOCKS    |
RECVY  ERASE | -PROCESSED- |  BLK
ACTS   GAPS  | READ  WRITE |  LNG  TSN     **** CURRENT LIMITS (MB/ERR) ****
-------------+-------------+----------
    4      5 |    15  7678 |         TM      TEMP WRITE(CT)  TEMP READ(CT)
    2      4 |    13  7947 |         TM            <40 (>2)      <200 (>0)
    0      4 |    13  7772 |       98EZ
   82    374 |             |

NEXT: ....  (-)
F1=help     F2=show sel-par     F3=main menu      K1=return     K3=previous mask
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                    TAST
```

For a description of the fields, see the statistics for device type C1, page 203ff.

Listing

The contents of the listing correspond to the screen output. All the data for a particular volume processing operation is written into one line, however, which means that the lists are usually wider than 80 characters.

7.6.13 SCLD function: CONTROLLER LOG DATA

This function analyzes the statistics counters for the device controllers.
The function creates separate statistical records for disk controllers and tape controllers (device type E4).

Statistics for disk controllers

```
SCLD100                    DISK CONTROLLER LOG DATA
ELSA V1.6A10           CPU: 11022001 88000000   S135              99-11-15 11:31
================================================================================
     FIRST: 99-10-29 15:19:54   LAST: 99-11-16 11:29:12   TOTAL CNT: 3944

                              CORR           RETRY                          SEEK
DTYP  MN     BLOCKS READ     DATA CHECKS    DATA CHECKS       SEEKS        ERRORS
----  ----  -------------  -------------  -------------  -------------   -------
86    455C         386 397              0              0         262 140         0
86    4550       1 024 158              0              0          65 535         0
86    4560       1 049 925              0              0         196 605         0
86    4561       1 267 284              0              0          65 535         0
88    A92C          62 198              0              0          66 779         0
89    500A           OFLOW              -              -         264 532         -
89    5006           OFLOW              -              -       1 044 480         -
89    5007           OFLOW              -              -         522 240         -
89    5008           OFLOW              -              -         456 960         -
89    5009           OFLOW              -              -         238 274         -
89    503D   8 556 507 232              -              -          43 021         -
89    503E   4 278 238 416              -              -          42 184         -

NEXT: +...  (+/-)
F1=help           F2=show sel-par           F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

Note

If a counter overflows, only the contents of the overflown counter are stored in the case of certain controllers. Consequently, there is a possibility that *SEEKS* or *BLOCKS READ* = 0.

7.6.14 SSHR function: SYSTEM AND HEL RUN TIME

This function shows the system run times and within every system runtime, the time windows in which hardware error logging (HEL and/or VMHEL) was on or off. The system run times for VM operation are sorted by VM-ID (VM monitor or number of the VM guest system).

```
SSHR100                      SYSTEM AND HEL RUN TIME
ELSA V1.6A10            CPU: 30020001 88000000   S150              99-11-15 15:41
================================================================================

VM-ID  SYSTEM STARTUP     HEL STOP           HEL RESTART         SYSTEM SHUTDOWN
-----  -----------------  -----------------  -----------------   -----------------
 MO    98-06-16 09:08:28                                         98-06-16 13:06:01
 MO    98-06-19 08:56:19                                         98-06-19 14:04:51
 MO    98-06-22 09:16:59
 02    98-06-15 10:46:46
 02    98-06-16 09:57:24
 02    98-06-19 09:59:22
 03    98-06-15 10:55:56
 03    98-06-16 10:02:07
 03    98-06-19 10:01:00
 05    98-06-15 11:15:25
 05    98-06-16 10:01:52
 05    98-06-19 09:58:56
 07                                                              98-06-09 18:55:44
 07    98-06-15 10:43:39

NEXT: +...  (+/-)
F1=help            F2=show sel-par            F3=main menu             K1=return


LTG                                                                  TAST
```

See chapter ’Field names’ on page 259ff for a description of the output fields.

NEXT

Same as in the screen of the first statistics function (*CHRONOLOGICAL ERROR LIST*, page 157), but without the possibility of calling a follow-up function.

7.7 Function group C: CONFIGURATION

This function group furnishes information about the program environment of ELSA and is used to some extent to modify the program environment.

Functional overview

Identifier	Function designation and brief description
C	*CONFIGURATION - SUBMENU* Submenu of the *CONFIGURATION* function group.
CSL	*STATUS LIST* Shows the number of HEL and SVP records, the times of the first and last error occurrences, and the file names of the current input files.
CTL	*TIMESTAMP LIST* Shows a list of all time stamps. In addition, you can delete time stamps in menu mode. For more information on time stamps, see page 41.
CTSU	*TIMESTAMP SUPPRESS UPDATE* Prevents the storage of the new values of those time stamps which were used in the current program run; i.e. the time stamps retain their original values instead of being updated after use.

7.7.1 Submenu

```
COOO                          CONFIGURATION - SUBMENU
ELSA V1.6A10                                                    99-11-12 15:42
================================================================================


SELECT NEXT FUNCTION:

                          CSL    STATUS LIST

                          CTL    TIMESTAMP LIST

                          CTSU   TIMESTAMP SUPPRESS UPDATE









NEXT: CSL.
F1=help                           F3=main menu                        K1=return

--------------------------------------------------------------------------------
LTG                                                                      TAST
```

NEXT

By default, the field contains the function identifier *CSL*. You can overwrite the default by entering any function identifier of your choice from the submenu.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).

7.7.2 CSL function: STATUS LIST

The screen lists the following information:
– the number of HEL and SVP records that meet the specified selection criteria
– the time of error occurrence for the first and last records
– the sequence number of the first and last SVP records
– the file names of the input files (HEL files, SVP file or history file).

```
CSL100                    CONFIGURATION - STATUS LIST
ELSA V1.6A10            CPU: 11022001 88000000   S135              99-11-12 11:32
================================================================================

      HEL-FILE-RECORDS FOUND:  7588
             FIRST DATE/TIME:  99-10-29 15:19:54     SEQ# FIRST REC:  7046
             LAST  DATE/TIME:  99-11-16 11:31:42     SEQ# LAST  REC:  8DED

      FILE:  :2OSH:$TSOS.SYS.HEL.1999-11-12.012245
             :2OSH:$TSOS.SYS.HEL.1999-11-09.035423
             :2OSH:$TSOS.SYS.HEL.1999-11-08.032647
             :2OSH:$TSOS.SYS.HEL.1999-11-03.071701
             :2OSH:$TSOS.SYS.HEL.1999-10-29.151955


      SVP-FILE-RECORDS FOUND:  100
             FIRST DATE/TIME:  99-11-08 12:34:54     SEQ# FIRST REC:  12C3
             LAST  DATE/TIME:  99-11-15 17:05:43     SEQ# LAST  REC:  1326

      FILE:  ORIGINAL SVP-FILE

NEXT: ....
F1=help           F2=show sel-par           F3=main menu             K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG    22:07                                                        TAST
```

See chapter 'Field names' on page 259ff for a description of the output fields.

NEXT

The field is empty. It is not necessary to input anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).

Listing

The layout is analogous to that of the screen of the function.

7.7.3 CTL function: TIMESTAMP LIST

This function returns a list of all time stamps. In the *DELETE* column, you can select time stamps for deletion. Time stamps are described in detail on page 41.

The values for the HEL file and the SVP file are output for each time stamp.
If you used a time stamp in the current program run, its original values - still valid at this juncture - are displayed. The time stamp is not updated until termination of the program run.
If you used a time stamp for the first time in the current program run, no value is as yet assigned to it (*NONE*).

```
CTL100                    CONFIGURATION - TIMESTAMP LIST
ELSA V1.6A10                                                    99-11-12 15:49
================================================================================

DELETE        TIMESTAMP         HEL-FILE-VALUE       SVP-FILE-VALUE

 _            STAMPHEL          99-11-17 15:47:56    NONE
 _            STAMPSVP          NONE                 99-11-17 15:46:05
 _            STAMP1            99-11-17 15:45:28    SAME
 _            STAMP2            99-11-17 15:47:33    99-11-17 15:47:44
 _            STMP9911          99-11-17 15:45:01    SAME









NEXT: ....
F1=help                          F3=main menu                        K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                                  TAST
```

NEXT

The field is evaluated only if you marked nothing in the *DELETE* column.

If the output listing is too long to fit onto a single screen page, you can page through it. The program sets *NEXT* to "+" by default, until the end of the list is reached. *NEXT* is cleared when you reach the end of the list. You can, however, overwrite *NEXT* with any paging command of your choice, or clear it at any time you wish. The function is terminated if the *NEXT* field is empty.

If the output listing fits onto one screen, *NEXT* is cleared by the program. It is not necessary to enter anything; *DUE* terminates the function.

The following inputs are also possible:

- *H* or *?* (HELP function)
- /<function key> (e.g. */K1*).

DELETE

You can select time stamps for deletion by marking in the *DELETE* column (press any character key except "*?*" (HELP function) or with the MAR key.

If you delete a time stamp, the program ignores the contents of *NEXT*. Output of the time stamps is continued at the current screen position, but without the deleted time stamps.

DELETE fields marked by mistake can be unmarked by overwriting with blank characters.

SVP file analysis is not available on BS2000 systems without a service contract, see chapter 'Installation of ELSA' on page 23. This means that time stamp values for the SVP files are not supported. Under these circumstances a different screen appears, which contains values only for the HEL file.

```
CTL110                    CONFIGURATION - TIMESTAMP LIST
ELSA V1.6A10                                                  99-11-12 15:54
================================================================================

      DELETE            TIMESTAMP            TIMESTAMP-VALUE

        _               HEL1                 99-11-17 15:54:02
        _               HEL2                 99-11-17 15:54:14
        _               HUBER                99-11-17 15:53:47
        _               STAMP1               99-11-17 15:52:54









NEXT: ....
F1=help                          F3=main menu                          K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                              TAST
```

Listing

The contents of the listing correspond to the screens of the two functions *CTL* and *CTSU*, see pages 212 and 214.

7.7.4 CTSU function: TIMESTAMP SUPPRESS UPDATE

This function returns a list of all time stamps used in the current program run. Time stamps are described in detail on page 41.

The original value - still valid at this juncture - of each time stamp is displayed. The new value appears beneath the original value, but bear in mind that the new values are not stored until the program run is terminated.

You can prevent storage of the new values by marking the *SUPPRESS* column.

```
CTSU100            CONFIGURATION - TIMESTAMP SUPPRESS UPDATE
ELSA V1.6A10                                                  99-11-12 15:48
================================================================================

SUPPRESS     TIMESTAMP             HEL-FILE-VALUE      SVP-FILE-VALUE

     _       STAMPHEL      OLD     NONE                NONE
                           NEW     99-11-17 15:47:56   NONE

     _       STAMPSVP      OLD     NONE                NONE
                           NEW     NONE                99-11-17 15:46:05

     _       STAMP1        OLD     NONE                NONE
                           NEW     99-11-17 15:45:28   SAME

     _       STAMP2        OLD     NONE                NONE
                           NEW     99-11-17 15:47:33   99-11-17 15:47:44

     _       STMP9911      OLD     NONE                NONE
                           NEW     99-11-17 15:45:01   SAME

NEXT: ....
F1=help                          F3=main menu                      K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                              TAST
```

NEXT

The field is evaluated only if you mark nothing in the *SUPPRESS* column.

For more details, see the description of the *CTL* function on page 212f.

SUPPRESS

You can select and delete the new value of a time stamp by marking the time stamp in question by pressing any character key except "*?*" (HELP function) or by pressing the MAR key. Marking a time stamp prevents it being updated when the program run is terminated.

If you delete a time stamp, the program ignores the contents of *NEXT*. Output of the time stamps is continued at the current screen position, but without the deleted time stamps.

SUPPRESS fields marked by mistake can be unmarked by overwriting with blank characters.

Time stamp values are not supported for SVP files on BS2000 systems that do not offer SVP file analysis. Under these circumstances a different screen appears, which is valid only for the HEL file.

```
CTSU110            CONFIGURATION - TIMESTAMP SUPPRESS UPDATE
ELSA V1.6A10                                                    99-11-24 11:18
================================================================================

    SUPPRESS          TIMESTAMP              TIMESTAMP-VALUE

         _            BERGER         OLD     NONE
                                     NEW     99-11-24 11:17:22

         _            STAMP1         OLD     99-11-17 15:52:54
                                     NEW     99-11-24 11:17:38









NEXT:
F1=help                          F3=main menu                        K1=return
ELS1004 END OF FUNCTION REACHED - DUE: RETURN

LTG                                                              TAST
```

Listing

There is no separate listing for the *CTSU* function. The relevant data is contained in the listing generated by the *CTL* function.

7.8 W function: WRITE-HISTORY

This function writes HEL and/or SVP records into a history file.

In the case of H60, H90, H100, C50, C70, C80 SR2000 and DS2000 systems, the SVP file logouts are also written into the history file if you entered *EXTENDED-SVP-DATA: Y*.

If you call the function in menu mode, a screen for function parameters appears (see below). The function is not started until this screen has been completed.

```
W100                                WRITE-HISTORY
ELSA V1.6A10            CPU: 01000001 80500000   H100-A          99-11-12 15:56
================================================================================



  OUTPUT-FILE       :   SYSLOG.ELSA.HISTORY


  WRITE-MODE        :   N  (N=new, O=overwrite, E=extend)



  EXTENDED-SVP-DATA :   N  (Y/N)






NEXT: W...
F1=help           F2=show sel-par            F3=main menu              K1=return

________________________________________________________________________________
LTG                                                          TAST
```

NEXT

The default value is *W*. The *W* function is started with *DUE*.

The following inputs are also possible:

- *H* or *?* (HELP function), see page 221
- /<function key> (e.g. */K1*), see page 32.

OUTPUT-FILE

File name of the history file into which output is directed. When *W* is called for the first time, the field is set to 'SYSLOG.ELSA.HISTORY' by default. Thereafter, the content of the field is retained as the default for each subsequent call.

WRITE-MODE

Determines whether the history file is created, overwritten or extended.
When *W* is called for the first time, the field is set to *N* by default. Thereafter, the content of the field is retained as the default for each subsequent call.
Possible inputs: *N*, *O*, *E*.

- *N*

  Create new history file. If a file having the name specified in *OUTPUT-FILE* already exists, an error message is output.

- *O*

  Overwrite the history file. If no file having the name specified in *OUTPUT-FILE* exists, a new file is created.

- *E*

  Extend the history file. If no file having the name specified in *OUTPUT-FILE* exists, a new file is created.

Notes for WRITE-MODE: E:

– HEL records of different systems can be stored in a common history file.
When a mixed history file is analyzed, the identification line contains

"CPU: MORE THAN ONE CPU TYPES".

instead of the CPU identification and CPU designation (i.e. screen line 2 or list line 3).

– SVP records of different systems cannot be stored in a common history file.

EXTENDED-SVP-DATA

This input field affects only the output of the SVP file data of H60, H90, H100, C50, C70, C80, SR2000 and DS2000 systems.

The field appears on the screen only if the parameters set in the main menu specify registration of SVP file data and if this data is generated by one of the systems listed above.

The contents of the field determine whether the logouts are also output in addition to the overview records.
When *W* is called for the first time, the field is set to *N* by default. Thereafter, the content of the field is retained as the default for each subsequent call.

► *Y*

If there is a logout for an overview record, it is written together with the overview record into the history file and is available with it for subsequent analysis.

► *N*

Logouts are not written into the history file.

7.9 Function key F2: SHOW-SELECTION-PARAMETERS

In most function screens and submenus, you can press function key *F2* or enter *NEXT: /F2* to call the SHOW-SELECTION-PARAMETERS screen.

SHOW-SELECTION-PARAMETERS shows the valid selection criteria and the names of the input files concerned.

The display consists of a screen for HEL file analysis and another for SVP file analysis. Note, however, that both screens appear only if the current analysis includes both types of record. If only one type of record is being analyzed, only the corresponding screen appears.

Screen for HEL file analysis

```
$SHS100              SHOW-SELECTION-PARAMETERS - HEL-FILE
ELSA V1.6A10                                                  99-11-24 11:29
================================================================================
   DATE/TIME FROM : 990501000000              DATE/TIME TO  : 991123235959

   DEVICE-TYPE    : A*..      C*..            REC-CLASS/-ID : M. 30 90 .. ..
   DEVICE-MNEM    : ....      ....            PRIO          : .  .  .
   PATH-ADDR      : ........  ........        ATTR          : .  .  .
   ERROR-MNEM     : ....      ....            VSN           : ......  ......
   DER-STAMP      : ........                  TSN           : ....    ....
                                              HEL-SEQ-NUM   : 7F88 TO 8000

   FILE           : :2OSH:$TSOS.SYS.HEL.1999-11-21.131046
                    :2OSH:$TSOS.SYS.HEL.1999-11-17.111305
                    :2OSH:$TSOS.SYS.HEL.1999-11-12.012245
                    :2OSH:$TSOS.SYS.HEL.1999-11-09.035423
                    :2OSH:$TSOS.SYS.HEL.1999-11-08.032647




NEXT: ....
F1=help                          F3=main menu                          K1=return

_______________________________________________________________________________
LTG                                                                    TAST
```

Screen for SVP file analysis

```
$SHS600              SHOW-SELECTION-PARAMETERS - SVP-FILE
ELSA V1.6A10                                                  99-11-24 11:29
================================================================================
   DATE/TIME FROM : 990501000000             DATE/TIME TO  : 991123235959

   UNIT           : ........                 SVP-SEQ-NUM   : 1200 TO 1300

   FILE           : ORIGINAL SVP-FILE









NEXT: ....
F1=help          F3=main menu          K1=return          K3=previous mask
ELS1007 END OF SHOW-SELECTION-PARAMETERS REACHED - DUE: RETURN

LTG                                                              TAST
```

7.10 HELP function

The HELP function consists of two separate subfunctions:

HELP ON MASK

This function is called if you enter *H* in the *NEXT* field of any screen or press function key *F1*.

The function outputs a description of the screen. The description may occupy one or more screen pages. If you call this function in the main menu, you also receive an introduction on how to use the program.

HELP ON CONTEXT

This function is called if you overwrite the first position of any input field with a question mark and then press *DUE* or *F1*.

The function outputs a description of the input field. The description may occupy one or more screen pages. The possible inputs are listed and explained, and you can fill the input field directly in the HELP screen.

If you place question marks in more than one input field, *HELP ON CONTEXT* is called for each field in turn.

Each HELP screen may contain key words for which HELP contains further information. These terms are easily recognized, because they are preceded by a mark field '_' (in column 2). You can call up the additional information by typing any character into the mark field.

The screens shown on the next page are examples of the *HELP ON MASK* and *HELP ON CONTEXT* functions. A further example can be found on page 122.

HELP ON MASK for screen DE180 of the DE function

```
H100                        H E L P   O N   M A S K              99-11-23 16:01
================================================================================
 FUNCTION DE: DETAIL-PROCESSING - EDIT

 This function outputs all (important) details of the HEL file records and
 SVP file records in edited format. The records are sorted primarily by their
 origin (HEL file/SVP file) and also chronologically.


 Screen for CONTROLLER LOG DATA:

 The screen displays one HEL file record at a time.

 _  DATE/TIME      Error time or the time at which the record was created.

    SEQ#           Sequence number of the HEL file record in hexadecimal.

 _  DTYP           Device type code of the faulty device.

    SENSE-ID       Device identification, fetched with the command
                   "Sense ID".
NEXT: +...  (+)
F3=end of help                                                  K1=return


LTG                                                              TAST
```

HELP ON CONTEXT for input field FILE in the main menu

```
HFILE                    H E L P   O N   C O N T E X T          99-11-23 16:03
================================================================================
FILE :
--------------------------------------------------------------------------------
FILE               determines the input files from which the HEL file records
                   and SVP file records are to be read.

                   Permissible input files for HEL file records:
                   - 1-5 (native)   HEL files of BS2000 of the local system
                   - 1-5 VM-global  HEL files of VM2000 of the local system
                   - 1   any        HEL file
                   - 1   any        history file

                   Permissible input files for SVP file records:
                   - the SVP HD of the service processors of the local
                     system
                   - 1   any history file


  =Blank/Nil       The program reads HEL file records from 1-5 HEL files of the
                   BS2000 of the local system, and SVP file records from the
NEXT: +...  (+)
F3=end of help                                                  K1=return


LTG                                                              TAST
```

8 Messages

ELS0000 NOTE: ONLY THE LAST 5 HEL FILES WILL BE ANALYZED

Meaning
In command mode you have specified an analysis period using the DATE-TIME-FROM and/or DATE-TIME-TO operands.
The analysis period covers more than 5 HEL files. A maximum of 5 HEL files can be analyzed together. Consequently only the last 5, i.e. the 5 most recent HEL files, are analyzed.

ELS0001 NOTE: CURRENT HEL FILE – THERE ARE MORE (OLDER) HEL FILES PRESENT

Meaning
In command mode you have not specified an analysis period (DATE/TIME...); only the current HEL file will be analyzed.

Response
If you specify an analysis period, the HEL files from that period will be analyzed jointly. A maximum of 5 HEL files can be analyzed jointly.

ELS0020 NOTE: YOU ARE CURRENTLY ON A GUEST SYSTEM OF A VM

Meaning
HEL file analysis on a guest system of a virtual machine covers only the error entries of the relevant guest system.

Response
Start HEL file analysis on the monitor system.

ELS0200 RETURN PERFORMED – FUNCTION NOT EXECUTED

ELS0201 RETURN PERFORMED, SELECTED MARK FIELDS HAVE BEEN IGNORED

Meaning
It is not appropriate to select MARK fields when performing a return. Fields should be selected before calling a follow-up function.

ELS0202 FUNCTION '(&00)' NOT EXECUTED

ELS0210 (&00) RECORDS WRITTEN

Meaning

– The WRITE-HISTORY function has written (&00) HEL file records and/or SVP file records to the history file.

ELS0211 (&00) RECORDS WRITTEN, (&01) DUPLICATES NOT WRITTEN

Meaning

– The WRITE-HISTORY function has written (&00) HEL file records and/or SVP file records to the history file.
– Duplicates are records already present in the history file. Such records are not written to the history file again.

ELS0212 (&00) RECORDS WRITTEN, (&01) SVP READ ERRORS

Meaning

– The WRITE-HISTORY function has written (&00) HEL file records and/or SVP file records to the history file.
– (&01) results or logouts could not be read from the SVP file because read errors occurred.

Response

Print out the SVP file using the DETAIL-PROCESSING EDIT or DUMP function. The printer listing contains an appropriate ELS message for each read error. The message appears in place of the result or logout that could not be read.

ELS0213 (&00) RECORDS WRITTEN, (&01) DUPLICATES NOT, (&02) SVP READ ERRORS

Meaning

– The WRITE-HISTORY function has written (&00) HEL file records and/or SVP file records to the history file.
– Duplicates are records already present in the history file. Such records are not written to the history file again.
– (&02) results or logouts could not be read from the SVP file because read errors occurred.

Response

Print out the SVP file using the DETAIL-PROCESSING EDIT or DUMP function. The printer listing contains an appropriate ELS message for each read error. The message appears in place of the result or logout that could not be read.

ELS0220 (&00) PAGE(S) OF PRINTER LISTING GENERATED

ELS0230 CPU-type is known - command 'SET-SVP-REFERENCE' ignored

ELS0250 SCANNING (&00) OF (&01) HEL-FILES DONE

ELS0300 ELSA PROGRAM TERMINATED NORMALLY

ELS0301 ELSA PROGRAM TERMINATED ABNORMALLY

ELS1000 START OF FILE REACHED

ELS1001 END OF FILE REACHED

ELS1002 END OF LIST REACHED - DUE: NEXT LIST

ELS1003 START OF LIST REACHED

ELS1004 END OF FUNCTION REACHED - DUE: RETURN

ELS1005 END OF LIST REACHED

ELS1007 END OF SHOW-SELECTION-PARAMETERS REACHED - DUE: RETURN

ELS1009 START OF HELP TEXT REACHED

ELS1010 END OF HELP TEXT REACHED - DUE: RETURN OR NEXT HELP MASK

ELS1011 END OF RECORD REACHED - DUE: NEXT RECORD

ELS1012 START OF RECORD REACHED

ELS1013 END OF LOGOUT REACHED - DUE: RETURN

ELS1014 START OF LOGOUT REACHED

ELS1020 NO HEL FILE RECORDS FOUND

Meaning
No HEL file records that match the specified selection criteria were found.

Response
Check selection criteria and, if necessary, restart the analysis.

ELS1021 NO SVP FILE RECORDS FOUND

Meaning
No SVP file records that match the specified selection criteria were found.

Response
Check selection criteria and, if necessary, restart the analysis.

ELS1022 NEITHER HEL NOR SVP FILE RECORDS FOUND

Meaning
Neither HEL nor SVP file records that match the specified criteria were found.

Response
Check selection criteria and, if necessary, restart the analysis.

ELS1025 NO SUITABLE HEL FILE RECORDS FOUND FOR THE STATISTICS FUNCTION '(&00)'

Meaning
A statistics function can analyze only HEL file records appropriate to the function. No such records were found.
Possible causes:
– There are no appropriate records.
– There are no appropriate records that match the specified selection criteria.

Response
Check selection criteria and, if necessary, restart the analysis.

ELS1026 ALL CHECKED VOLUMES ARE WITHIN THE PERMITTED ERROR LIMIT VALUES

Meaning
The SVFL function shows only those volumes that have exceeded one of the permitted error limit values in at least one processing operation. No such volumes were found.

ELS1030 TIMESTAMP '(&00)' WAS NOT USED

Meaning
The SUPPRESS-TIMESTAMP-UPDATE statement could not be executed for this timestamp because this timestamp has not yet been used in the current program run.

ELS1031 NO TIMESTAMP WAS USED

Meaning
The SUPPRESS-TIMESTAMP-UPDATE statement could not be executed because no timestamp has yet been used in the current program run.

ELS1032 NO TIMESTAMP PRESENT

Meaning
The CTL function cannot be called because no timestamp is present.

ELS1033 ALL TIMESTAMPS HAVE BEEN DELETED

Meaning
The CTL function has been terminated because you have selected and thus deleted all timestamps.

ELS1035 NO TIMESTAMP PRESENT TO BE STORED

Meaning
The CTSU function cannot be called because no timestamp has yet been used in the current program run.

ELS1036 STORAGE OF ALL TIMESTAMPS USED HAS BEEN SUPPRESSED

Meaning
The CTSU function has been terminated because you have selected all timestamps, thus indicating that they are not to be stored.

ELS1100 SVP FILE RECORD CONTAINS NO RESULT OR NO MESSAGE

ELS1101 RESULT ALREADY OVERWRITTEN IN THE SVP HD BECAUSE OF WRAP-AROUND

ELS1102 RESULT NOT FOUND IN THE HISTORY FILE

ELS1110 SVP FILE RECORD CONTAINS NO POINTER TO A LOGOUT

ELS1111 LOGOUT ALREADY OVERWRITTEN IN THE SVP HD BECAUSE OF WRAP-AROUND

ELS1112 LOGOUT NOT FOUND IN THE HISTORY FILE

ELS1200 PLEASE SPECIFY A FUNCTION IN THE 'NEXT' OPERAND

Meaning
You have not selected a function in the NEXT operand.

Response
Enter function ID and try again.

ELS1210 PLEASE SELECT AT LEAST ONE MARK FIELD

ELS1211 PLEASE SELECT AT LEAST ONE MARK FIELD OR PAGE

ELS1212 PLEASE SELECT A MARK FIELD

ELS1213 PLEASE SELECT A MARK FIELD OR PAGE

ELS1214 PLEASE SELECT 1 TO 5 HEL FILES

ELS1215 PLEASE SELECT 1 TO 5 HEL FILES OR PAGE

ELS1220 MORE THAN (&OO) HEL FILES, PLEASE DELETE OLDER HEL FILES

Meaning
There are too many HEL files under the TSOS user ID. Program memory is not sufficient to store the names of all HEL files.

Response
Delete or rename HEL files no longer required.

ELS1221 MORE THAN (&OO) FILES, LIMIT SELECTION IN 'FILE' OPERAND

Meaning
There are too many files whose names match the partially qualified name in the FILE operand. Program memory is not sufficient to store the names of all files.

Response
Specify a more detailed partial qualification in the FILE operand.

ELS2000 PLEASE CORRECT THE ERRORED OPERANDS

Meaning
There is more than 1 incorrect operand.

Response
Correct the error or use DUE to call the HELP ON CONTEXT function.

ELS2010 INPUT ERROR IN THE 'NEXT' OPERAND

Meaning
The contents of the NEXT operand cannot be identified.

ELS2020 THE FUNCTION KEY '(&OO)' IS NOT PERMITTED IN THIS MASK

Meaning
The function keys shown in the penultimate line and the function key K2 are permitted.

ELS2021 AN INVALID FUNCTION KEY WAS PRESSED

Meaning
ELSA supports only the function keys K1, K2, K3, F1, F2, F3.

ELS2022 THE SPECIFIED FUNCTION CANNOT BE CALLED IN THIS MASK

Meaning
You can find out which functions are permitted by using NEXT=? and pressing DUE to call the HELP ON CONTEXT function.

ELS2023 PAGING IS NOT PERMITTED IN THIS MASK

Meaning
The contents of the mask fill only one screen page.

ELS2025 NO FUNCTION CAN BE CALLED IN THIS MASK

ELS2026 FUNCTION '(&OO)' IS NOT APPLICABLE AS IT PROVIDES NO FURTHER INFORMATION

Meaning
It is not appropriate to call the specified function in this mask as it would return no additional information. For this reason the function is not executed.

ELS2030 HISTORY FILE ALREADY CONTAINS SVP FILE RECORDS OF ANOTHER SYSTEM TYPE

Meaning
It is not possible to mix SVP file records of different system types in the same history file.

ELS2040 'START-MENU-MODE' STATEMENT IS NOT PERMITTED IN BATCH MODE

Meaning
The START-MENU-MODE statement terminates command mode and starts menu mode. Menu mode cannot run in batch operation.

ELS2045 'START-FUNCTION' STATEMENT ILLEGAL AFTER 'SET-INOUT OUTPUT=TERMINAL'

Meaning
The START-FUNCTION statement starts a function in command mode. Output type OUTPUT=TERMINAL is permitted only for menu mode.

Response
Use the START-MENU-MODE statement instead of the START-FUNCTION statement, i.e. terminate command mode and start the function in menu mode.

ELS2050 THERE IS NO PRINTER LISTING FOR THE FUNCTION '(&OO)'

ELS2090 CANNOT CALL THE 'HELP ON MASK' FUNCTION

Response
Possible causes:
– ELSA not fully installed
– System error.

Response
Inform the system administrator.

ELS2091 CANNOT CALL THE 'HELP ON CONTEXT' FUNCTION

Response
Possible causes:
– ELSA not fully installed
– System error.

Response
Inform the system administrator.

ELS2092 CANNOT CALL THE HELP FUNCTION FOR THE SELECTED KEYWORD

Response
Possible causes:
– ELSA not fully installed
– System error.

Response
Inform the system administrator.

ELS2093 '?' AND 'H' NOT PERMITTED TO REQUEST HELP WITHIN THE HELP FUNCTIONS

ELS2094 ONLY PAGE-BY-PAGE SCROLLING IS PERMITTED IN THIS MASK (+/-/++/--)

Meaning
Output consists of a number of sections each requiring a whole screen page. For this reason line-by-line scrolling using '+n' and '-n' is not permitted.

ELS2100 MASK CONTAINS AN ILLEGAL CONTROL CHARACTER (E.G.: START MARKER)

Meaning
Certain control characters cannot be processed by FHS.

Response
Remove the control characters from the mask.

ELS2190 OUT OF CLASS 6 MEMORY

Meaning
The volume of input data for analysis is too large.

Response
Limit the input data by using suitable selection criteria.

ELS2191 MAXIMUM SIZE OF TABLES EXCEEDED IN ELSA PROGRAM

Meaning
The volume of input data for analysis is too large.

Response
Limit the input data by using suitable selection criteria.

ELS2200 OPERAND '(&00)' IS INCORRECT

Meaning
The next message describes the error.

ELS2210 TIME SPECIFICATION IS INVALID

Meaning
Valid entries:
- Absolute: yymmddhhmmss.
  (FROM,TO) part entries are accepted, e.g. yymm. (yy: year, mm: month etc.).
- Relative: -0,-1,...,-99 in menu mode, (FROM) C'-0',...,C'-99' in command mode.
  (-n: today 0 hrs minus n days).
- Timestamp: up to 8-character string starting with a (FROM) letter or $, #, @. Digits are also permitted.

ELS2211 RELATIVE TIME SPECIFICATION IS WRONG - VALID VALUES: -0,-1,...,-99

Meaning
The first character in the DATE/TIME FROM (or DATE-TIME-FROM) operand is a minus sign. ELSA therefore identified the entry as a relative time specification (-n).
The values -0,-1,...,-99 are permitted as relative time entries.

ELS2212 RELATIVE TIME SPECIFICATION IS TOO LARGE - VALID VALUES: -0,-1,...,-99

Meaning
The first character in the DATE/TIME FROM (or DATE-TIME-FROM) operand is a minus sign. ELSA therefore identified the entry as a relative time specification (-n).
The values -0,-1,...,-99 are permitted as relative time entries.

ELS2213 START OF ANALYSIS PERIOD (FROM) GREATER THAN END (TO)

ELS2214 YEAR SPECIFICATION INVALID - VALID VALUES: 60-99,00-39 (= 1960-2039)

ELS2215 MONTH SPECIFICATION IS INVALID - VALID VALUES: 01-12

ELS2216 DAY SPECIFICATION IS INVALID OR INCOMPATIBLE WITH MONTH SPECIFICATION

ELS2217 HOURS SPECIFICATION IS INVALID - VALID VALUES: 00-23

ELS2218 MINUTES SPECIFICATION IS INVALID - VALID VALUES: 00-59

ELS2219 SECONDS SPECIFICATION IS INVALID - VALID VALUES: 00-59

ELS2230 TIMESTAMP CONTAINS ILLEGAL CHARACTERS - VALID: A-Z,$,#,@,0-9

Meaning
The first character in the DATE/TIME FROM (or DATE-TIME-FROM) operand is a letter or $, #, @. ELSA therefore identified the entry as a timestamp.
Further permitted characters are letters, $, #, @ and digits.

ELS2231 SPECIFIED TIMESTAMP IS TOO LONG - MAXIMUM LENGTH: 8 CHARACTERS

Meaning
The first character in the DATE/TIME FROM (or DATE-TIME-FROM) operand is a letter or $, #, @. ELSA therefore identified the entry as a timestamp.
A timestamp may be up to 8 characters long.

ELS2250 '(&00)' IS NOT A VALID PRIORITY - VALID: H,M,L,- (=NO PRIORITY)

Meaning
Valid entries:
- Menu mode: H,M,L,-
- Command mode: H,M,L,C'-'

ELS2255 '(&00)' IS NOT A VALID ATTRIBUTE - VALID: C,U,D,H,O,T,- (=NO ATTRIBUTE)

Meaning
Valid entries:
- Menu mode: C, U, D, H, O, T,-
- Command mode: C, U, D, H,O, T, C'-'

ELS2260 '(&00)' IS NOT A VALID INPUT SPECIFICATION – VALID VALUES: H,S,B

Meaning
Valid entries:
– Menu mode: H, S, B
– Command mode: HEL-DATA, SVP-DATA, BOTH
(Entries can be abbreviated to the first character, i.e.: H,S,B).

ELS2261 SVP ANALYSIS IS NOT AVAILABLE ON THIS SYSTEM

Meaning
The specification INPUT=SVP-DATA is not permitted because SVP analysis was not supplied for this BS2000 system. SVP analysis is only supplied for BS2000 systems for which a service contract has been concluded or for which the Test and Diagnosis System has been purchased.

ELS2265 '(&00)' IS NOT A VALID OUTPUT SPECIFICATION – VALID VALUES: T,P

Meaning
Valid entries:
– Menu mode: T, P
– Command mode: TERMINAL, PRINTER
(Entries can be abbreviated to the first character, i.e.: T,P).

ELS2266 PRINTER NAME '(&00)' INVALID OR NOT DEFINED

Meaning
Possible causes:
– Printer name contains illegal characters. Valid chars: A-Z,$,#,@,0-9.
– The printer is not defined in the SPOOL parameter file.

Response
Correct the entry or inform the system administrator.

ELS2267 FORM NAME '(&00)' INVALID OR NOT (FULLY) DEFINED

Meaning
Possible causes:
– Printer name contains illegal characters. Valid chars: A-Z,$,#,@,0-9.
– The printer is not defined in the SPOOL parameter file.

Response
Correct the entry or inform the system administrator.

ELS2268 '(&00)' IS NOT A VALID SIZE SPECIFICATION – VALID VALUES: 132,80

Meaning
Valid entries:
– Menu mode: 132, 80
– Command mode: 132, 80

ELS2270 ILLEGAL CHARACTER IN HEL SEQ NUM INTERVAL '(&00)' – VALID: 0–9,A–F

ELS2271 HEL SEQ NUM INTERVAL: START (FROM) GREATER THEN END (TO)

ELS2275 '(&00)' IS NOT A VALID RECORD CLASS/RECORD ID

Meaning
Valid entries:
– RECORD CLASS: M, C, I, R, D, T, H, L and A (= ALL ERRORS, M+C+I+R+D)
– RECORD ID: 13, 20, 24, 25, 30, 40, 50, 70, 90

ELS2280 '(&00)' IS NOT A VALID DEVICE TYPE

Meaning
Valid entries:
– Two-character hex. number,e.g. AC, C1, E2 etc.
– Four-character hex. number, e.g. 2124, 212B etc.
– Partially qualified entry,e.g. A*, 21*, 21// etc.

ELS2285 '(&00)' IS NOT A VALID DEVICE MNEMONIC

Meaning
Valid entries:
– Alphanumeric string
– Partially qualified entry, e.g. TP*

ELS2290 '(&00)' IS NOT A VALID PATH ADDRESS

Meaning
Valid entries:
– Hexadecimal string, e.g. 2B000031
– Partially qualified entry, e.g. 2B*, 2B////31

ELS2295 ILLEGAL CHARACTER IN ERROR MNEMONIC '(&00)' – VALID: A–Z

ELS2300 ILLEGAL CHARACTER IN DER STAMP '(&00)' – VALID: A–Z,0–9

ELS2305 ILLEGAL CHARACTER IN TSN '(&00)' – VALID: A–Z,0–9

ELS2310 ILLEGAL CHARACTER IN VSN '(&00)' – VALID: $,#,@,.,A–Z,0–9

ELS2315 ILLEGAL CHARACTER IN SVP SEQ NUM INTERVAL '(&00)' – VALID: 0–9,A–F

ELS2316 SVP SEQ NUM INTERVAL: START (FROM) GREATER THEN END (TO)

ELS2320 '(&00)' IS NOT A VALID UNIT

Meaning
There is no such unit on the systems supported by ELSA.

Response
In menu mode call the HELP ON CONTEXT function using UNIT=? and DUE or refer to the unit table in the ELSA manual.

ELS2350 SENSE BYTE NUMBER '(&OO)' SPECIFIED TWICE

ELS2351 SENSE BYTE NUMBER '(&OO)' IS ILLEGAL – VALID: OO,01,...,31

ELS2352 BIT MASK NOT SPECIFIED FOR SENSE BYTE '(&OO)'

ELS2353 OUT OF VALUE RANGE (OO,01,...,31) FOR SENSE BYTE NUMBER

ELS2354 FILE NAME OF HISTORY FILE WAS NOT SPECIFIED

ELS2355 PARTIALLY QUALIFIED FILE NAME NOT PERMITTED

ELS2356 '(&OO)' IS NOT A VALID WRITE MODE – VALID: N,O,E

Meaning
Valid entries:
– Menu mode: N, O, E
– Command mode: NEW, OVERWRITE, EXTEND
(Entries can be abbreviated to the first character, i.e.: N, O, E).

ELS2357 NEITHER 'Y' NOR 'N' WAS SPECIFIED IN THE 'EXTENDED-SVP-DATA' OPERAND

Meaning
'Y' (YES) or 'N' (NO) must be specified.

ELS2358 NEITHER 'Y' NOR 'N' WAS SPECIFIED FOR 'SAVE-CPU-TYPE' OPERAND

Meaning
'Y' (YES) or 'N' (NO) must be specified.

ELS2500 CONFLICT BETWEEN RECORD CLASS/RECORD ID AND REMAINING SELECTION CRITERIA

Meaning
Specifying device-specific selection criteria (DEVICE TYPE etc.) results in an implicit restriction of the record class and record ID.
This restriction conflicts with the entries for RECORD CLASS/RECORD ID.

ELS2501 SELECTION MASK INPUT CONFLICTS WITH ENTRIES IN RECORD CLASS/RECORD ID

Meaning
Selection mask input restricts analysis to records of record class D or record ID 30. This restriction conflicts with the entries in the RECORD-CLASS/RECORD-ID operand.

Response
Delete entries for RECORD CLASS/RECORD ID and try again.

ELS2504 STATISTICS FUNCTIONS NOT PERMITTED WHEN SELECTING SVP DATA

Meaning
The statistics functions analyze HEL file records. There are no such functions for SVP file records. If you set INPUT=B (or INPUT=BOTH) and specify selection criteria exclusively for SVP file records, analysis will be restricted to SVP file records and HEL file records will be excluded from the analysis. It is not therefore appropriate to call statistics functions.

ELS2505 STATISTICS FUNCTIONS ONLY FOR HEL DATA (NOT FOR INPUT=S)

Meaning
The statistics functions analyze HEL file records. There are no such functions for SVP file records. If you set INPUT=S (or INPUT=SVP-DATA) HEL file records will be excluded from the analysis. It is not therefore appropriate to call statistics functions.

ELS2506 SELECTION MASK INPUT ONLY FOR HEL DATA (NOT FOR INPUT=S)

Meaning
Selection masks concern only HEL file records of record class D (DEVICE ERROR).
If you set INPUT=S (or INPUT=SVP-DATA) HEL file records will be excluded from the analysis. It is not therefore appropriate to call statistics functions.

ELS2510 UNIT '(&00)' ILLEGAL FOR SYSTEM TYPE FROM WHICH THE DATA ORIGINATES

Meaning
There is no corresponding unit on the system in question whose SVP file records are to be analyzed.

Response
In menu mode call the HELP ON CONTEXT function using UNIT=? and DUE or refer to the unit table in the ELSA manual.

ELS2600 MORE THAN 5 HEL FILES HAVE BEEN SELECTED

ELS2601 MORE THAN 1 FILE HAS BEEN SELECTED

ELS2605 MORE THAN 1 REFERENCE TYPE HAS BEEN SELECTED

ELS2700 'START-FUNCTION' STATEMENT ILLEGAL AFTER 'SET-INOUT FILE=<PARTQUAL>'

Meaning
The START-FUNCTION statement is illegal if a partially qualified file name was specified in the FILE operand of a preceding SET-INOUT statement. A partially qualified file name is, however, permitted before the START-MENU-MODE statement.

ELS2701 'START-FUNCTION' STATEMENT LOCKED AFTER ERRORED STATEMENT

Meaning
The START-FUNCTION statement cannot be executed because one or more errors have occurred in the preceding statements.

Response
Correct statements and try again.

ELS2702 'START-MENU-MODE' STATEMENT LOCKED AFTER ERRORED STATEMENT

Meaning
The START-MENU-MODE statement cannot be executed because one or more errors have occurred in the preceding statements.

Response
Correct statements and try again.

ELS2710 SPECIFIED SDF STANDARD STATEMENT IS ILLEGAL

ELS2715 SPECIFIED STATEMENT ONLY ALLOWED FOR INTERNAL USE

ELS2720 'END' STATEMENT MISSING - BS2000 COMMAND OR SYSDTA EOF OCCURRED

ELS2730 SPECIFIED STATEMENT TOO LONG - MAXIMUM LENGTH: 2044 CHARACTERS

ELS3000 NO HEL FILE/HISTORY FILE MATCHES THE PARTIALLY QUALIFIED FILE NAME

Meaning
There are files with matching file names. However, the catalog entries of these files indicate that they are neither HEL files nor history files.

ELS3001 NO HEL FILES PRESENT

Meaning
No HEL files are cataloged under TSOS, i.e. there is no file named $TSOS.SYS.HEL.yyyy-mm-dd.hhmmss.

ELS3002 NO VM-GLOBAL HEL FILES OF VM2000 PRESENT

Meaning
No VM-global HEL files of VM2000 are cataloged under the TSOS of the current virtual machine, i.e. there is no file named $TSOS.SYS.VMHEL.yyyy-mm-dd.hhmmss.

ELS3003 NO HISTORY FILE MATCHES THE PARTIALLY QUALIFIED FILE NAME

Meaning
There are files with matching file names. However, the catalog entries of these files indicate that they are not history files.

ELS3010 SPECIFIED HEL FILES COULD NOT BE OPENED

Meaning
The cause of the error is shown in the mask next to the appropriate file name.

ELS3011 CURRENT HEL FILE COULD NOT BE OPENED

Meaning
The cause of the error is shown in the mask next to the appropriate file name.

ELS3015 THE CURRENT HEL FILE IS EMPTY – FUNCTION TERMINATED

Meaning
A change of HEL file has just taken place. The new HEL file is still empty.

Response
Restart the analysis and, if necessary, specify an analysis period.

ELS3020 ALL RELEVANT HEL FILES ARE EMPTY – FUNCTION TERMINATED

Meaning
Possible causes:
– All HEL files for the appropriate analysis period are empty.
– The HEL files you have selected are empty.

Response
Restart the analysis for another analysis period or with other HEL files.

ELS3021 FILE IS NEITHER A HEL FILE NOR A HISTORY FILE

Meaning
The catalog entry of the specified file indicates that it is neither a HEL file nor a history file.

ELS3022 FILE IS AN OLD HERSFILE – ANALYZE USING THE ELT/ELP PROGRAM

Meaning
The contents of the file indicate that it is an old HERSFILE.

Response
You can analyze the file using the ELT and ELP programs.

ELS3023 FILE IS AN OLD HERS HISTORY FILE – ANALYZE USING THE ELT/ELP PROGRAM

Meaning
The contents of the file indicate that it is an old HERS history file.

Response
You can analyze the file using the ELT and ELP programs.

ELS3024 FILE IS AN OLD HARDDISK HISTORY FILE – ANALYZE USING THE ELT/ELP PROGRAM

Meaning
The contents of the file indicate that it is an old HARDDISK history file.

Response
You can analyze the file using the ELT and ELP programs.

ELS3025 THE FILE SPECIFIED IN THE 'OUTPUT-FILE' OPERAND ALREADY EXISTS

Meaning
WRITE-MODE=N(EW) has been used to create the specified history file.
This is not possible, however, as a file with the specified name already exists.

Response
Use WRITE-MODE=O(VERWRITE) or select a different file name.

ELS3027 FILE IS NOT A HISTORY FILE CREATED BY THE ELSA PROGRAM

Meaning
WRITE-MODE=E(XTEND) has been used to extend the specified history file.
This is not possible, however, as the file is not a history file created by the ELSA program.

Response
Use WRITE-MODE=O(VERWRITE) or select a different file name.

ELS3030 FILE IS NOT A HISTORY FILE AND THEREFORE CONTAINS NO SVP FILE RECORDS

ELS3040 UNKNOWN CPU-TYPE - HISTORY FILE COULD NOT BE EXTENDED

Meaning
Using WITE-MODE=E(XTEND) a specified history file is extended.
In this case the extension is not possible, because the correct system name could not be ascertained due to a system inconsistency.

Response
Use WRITE-MODE=O(VERWRITE) or a new filename. Inform the system administrator.

ELS3200 CONFIGURATION FILE '(&00)' IS INVALID

Meaning
Possible causes:
1) The file was not closed properly because of a system crash.
2) The file is not a configuration file generated by the ELSA program.

Response
Re 1) Reconstruct the file using the BS2000 command REPAIR-DISK-FILES.
Re 2) Delete the file. The configuration file will be regenerated automatically the next time the ELSA program is started. Using the link name ELSACON it is possible to specify any other file name for the configuration file.

ELS3201 CONFIGURATION FILE '(&00)' LOCKED FOR LONGER THAN 1 MINUTE

Meaning
The file has been locked by another user.

Response
Try again later or use a different configuration file (using the link name ELSACON).

ELS4000 SVP ACCESS ERROR (&00): RC='(&01)' SC1='(&02)' SC2='(&03)'

Meaning
Error in accessing SVP HD via the ADAM device interface.
The error codes RC, SC1, SC2 have the following meaning:
– RC: ADAM return code
– SC1 : ADAM subcode 1
– SC2 : ADAM subcode 2
The exact meaning of the error codes is given in the ADAM manual.

Response
Inform the system administrator.

ELS4001 SVP ACCESS ERROR (&00): RC='(&01)' SB1='(&02)' SB2='(&03)'

Meaning
Error in accessing SVP HD via the ADAM device interface.
The error codes RC, SB1, SB2 have the following meaning:
– RC: ADAM return code
– SB1 : ADAM status byte 1
– SB2 : ADAM status byte 2
The exact meaning of the error codes is given in the ADAM manual.

Response
Inform the system administrator.

ELS4005 MORE ERRORS HAVE OCCURED IN ACCESSING SVP-HD'S: (&00),(&01),..

Meaning
More errors have occured in accessing SVP HD's via the ADAM device interface.
Mnemonics of the first two failling harddisks are given in the message.

Response
Inform the system administrator.

ELS4010 DEVICE NAME '(&00)' IS INVALID

Meaning
The SVP HD has not been generated or has been generated with an invalid name.

Response
Inform the system administrator.
Refer to the installation instructions for the correct name of SVP HD.

ELS4011 DEVICE TYPE '(&OO)' IS INVALID

Meaning
The SVP HD has not been generated or has been generated with an invalid symbolic type name.

Response
Inform the system administrator.
For correct type name of SVP HD refer to installation instructions.

ELS4012 SVP HD (&OO) RESERVED OR NOT AVAILABLE

Meaning
Possible causes:
1) The SVP HD is currently not available; e.g. locked by a MART transfer.
2) Has the privilege "HW-MAINTENANCE" been set for the current user ID ?

Response
Try again later or inform the system administrator.

ELS4013 DEVICE-SPECIFIC ADAM MODULE '(&OO)' NOT AVAILABLE

Meaning
ADAM module library not available or wrong version.

Response
Inform the system administrator.

ELS4014 SVP HD (&OO) TIMEOUT

Meaning
The SVP HD is currently not available.

Response
Try again later.

ELS4016 SVP HD (&OO) NOT PRESENT OR NOT AVAILABLE

Meaning
Possible causes:
– The SVP HD has not been generated.
– The SVP HD has been incorrectly generated.
– The SVP HD hardware unit is DETACHED.

Response
Inform the system administrator.

ELS4100 ADAM IS NOT AVAILABLE

Meaning
ADAM subsystem is not available in the system environment.

Response
Inform the system administrator.

ELS4210 SVP HD READ ERROR: REPORT BLOCK RC = '(&00)', CB = '(&01)'

Meaning
Error in SVP HD access.
For further information on REPORT BLOCK and CB (control block) refer to SVP description.

ELS4215 ERRORS IN SVP DATA READ

Meaning
The SVP HD contains inconsistent data.

ELS4300 SVP ANALYSIS IS NOT SUPPORTED ON THIS SYSTEM

Meaning
Possible causes:
– Analysis of the SVP data for your system type is not supported in the current version of ELSA.
– The correct system name could not be ascertained because of a system inconsistency.

Response
If possilbe, specify a SVP reference type (CPU-types, which have this option, are published in Service Informations); in command mode you can specify a reference type with the command 'SET-SVP-REFERENCE'.

ELS4310 SVP ANALYSIS OF SPECIFIED HISTORY FILE NOT POSSIBLE

Meaning
The specified history file contains a system type that is not supported in the current version of ELSA.

Response
Use a more recent version of ELSA.

ELS4900 SVP HD (&00) RESERVED (SERIALIZATION)

Meaning
Another ELS user has locked the SVP HD for longer than 10 minutes.

Response
Try again later.

ELS5000 DMS-ERROR '(&00)' FROM FILENAME '(&01)'

Meaning
A DMS error with the specified DMS error code DMSnnnn has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMSnnnn.

ELS5001 FILE NOT FOUND

Meaning
A DMS error with the DMS error code DMS0D33 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0D33.

ELS5002 FILE IS EMPTY

Meaning
A DMS error with the DMS error code DMS0D9A has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0D9A.

ELS5003 USER-ID DOES NOT EXIST

Meaning
A DMS error with the DMS error code DMS05FC has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS05FC.

ELS5004 INVALID PATHNAME

Meaning
A DMS error with the DMS error code DMS05B7 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS05B7.

ELS5005 NO FILE CORRESPONDING TO SPECIFIED OPERANDS

Meaning
A DMS error with the DMS error code DMS06CC has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS06CC.

ELS5006 FILE NOT SHAREABLE

Meaning
A DMS error with the DMS error code DMS0535 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0535.

ELS5007 CATALOG CANNOT BE FOUND

Meaning
A DMS error with the DMS error code DMS0512 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0512.

ELS5008 IT IS NOT ALLOWED TO CREATE A FILE ON A FOREIGN USER-ID

Meaning
A DMS error with the DMS error code DMS055E has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS055E.

ELS5009 FILE IS PASSWORD-PROTECTED

Meaning
A DMS error with the DMS error code DMS05D8 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS05D8.

ELS5010 FILE IS WRITE-PROTECTED OR ALREADY IN USE

Meaning
A DMS error with the DMS error code DMS0D99 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0D99.

ELS5011 FILE IS LOCKED BECAUSE CURRENTLY IN USE

Meaning
A DMS error with the DMS error code DMS05B1 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS05B1.

ELS5012 FILE NAME INVALID OR MISSING

Meaning
A DMS error with the DMS error code DMS0554 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0554.

ELS5050 NOT ENOUGH DISC-MEMORY

Meaning
A DMS error with the DMS error code DMS0AA4 has occurred.
For further information use the BS2000 command HELP-MSG-INFO DMS0AA4.

ELS5099 FILE: '(&00)'

Meaning
Name of file to which the preceding error message refers.

ELS9000 FATAL ERROR: RC '(&00)' FROM '(&01)' - CALLED AT '(&02)'

ELS9001 MACRO ERROR: RC X'(&00)' FROM '(&01)' - CALLED AT '(&02)'

ELS9002 MSG BUFFER OVERFLOW

Meaning
ELSA was called as a subroutine. Insufficient memory has been reserved for the message buffer in the main program.

ELS9003 FHS ERROR: MAIN RC=(&00),ERROR CATEGORY=(&01),ERROR REASON=(&02)

Meaning
Error in mask input/output using FHS.
The specified error codes have the following meaning:
– MAIN RC: primary return code
– ERROR CATEGORY : error category
– ERROR REASON: cause of error
The exact meaning of the error codes is given in the FHS manual.

Response
Inform the system administrator.

ELS9004 ILLEGAL CODE IN MODULE '(&00)'

ELS9010 ERROR IN PRINT CALL : R15 = X'(&00)'

Meaning
An error has occurred when calling the PRNT macro. For return code R15 refer to EXECUTIVE MACROS.

Response
Inform the system administrator.

ELS9011 ERROR IN OUTPUT TO SYSLST : R15 = X'(&00)'

Meaning
An error has occurred when calling the WRLST macro. For return code R15 refer to EXECUTIVE MACROS.

Response
Inform the system administrator.

ELS9020 INTEGRATION ERROR: ERROR WHEN USING SYSTEM SYNTAX FILE

Meaning
Possible causes:
– installation of ELSA incomplete.
– ELSA has assigned an invalid version of the system syntax file.
– system error.

Response
Inform the system administrator.

ELS9200 ELSA CANNOT BE EXECUTED IN THIS BS2000 VERSION

Meaning
The ELSA program requires BS2000 V11.0A or higher.

9 HEL records

This chapter describes the structure of the HEL records, particularly the error data area.

9.1 General structure of the HEL records

Each HEL record consists of three parts:

– system data area
– global record part
– specific record part

The total length of the global and the specific record parts must not exceed 1008 bytes.

The table below represents the record structure:

System data area (FHDR + system data) Length: 64 bytes
Global record part (FHDR + global data) Length: 32 bytes
Specific record part (FHDR + error data) Length: depends on the record type

System data area

The system data area is created by the HEL task. It contains data such as CPU type, BS2000 version and time of record storage.

Structure of the system data area

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the system area	2
X'0A'	Record number	2
X'0C'	BS2000 version	4
X'10'	CPU basis	1
X'11'	CPU line	1
X'12'	CPU type	1
X'13'	reserved	1
X'14'	Feature control vector	4
X'18'	CPU ID of the IPL-CPU	8
X'20'	Time of error in the BCD format (YYYYMMDDHHMMSS, left-justified)	8
X'28'	Time of storage in the TOD format	8
X'30'	Zone information	14
X'3E'	VM ID	1
X'3F'	reserved	1

Global record part

The global part of the record mainly contains data classifying the error. It also contains information about the record sources (MER, DER, BCAM etc.).

Structure of the global part

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Record ID	1
X'09'	Control ID	1
X'0A'	Length of the global part	2
X'0C'	Record source	4
X'10'	Time of error in the TOD format	8
X'18'	Priority	1
X'19'	Attribute 0	1
X'1A'	Attribute 1	1
X'1B'	Attribute 2	1
X'1C'	reserved	2
X'1E'	Counter for calls by record sources	2

Specific record part

This part of the HEL record contains the error data as such. Its contents depend on the type of error. Section 9.2 shows in detail the structure of the HEL records for the individual types of error without system data area and global part.

9.2 Structure of the HEL records

This section describes in detail the part of the individual HEL records specific to particular errors.

Machine check record (record 13) - HEL record for machine errors

These records contain the error data relevant to a CPU error. A record of this type is created by a machine error recovery (MER).

Relative address	Contents	Length in bytes
X'0000'	Macro header (FHDR)	8
X'0008'	Length of the fixed part	2
X'000A'	reserved	6
X'000C'	VM Record Indicator	1
X'000D'	VM Index	1
X'000E'	CPU-ID of the real CPU	2
X'0010'	CPU ID of the interrupted CPU	8
X'0018'	Machine error - old PSW	8
X'0020'	Machine error interruption code	8
X'0028'	CPU timer	8
X'0030'	Clock comparator	8
X'0038'	External damage code	4
X'003C'	Failing storage address	4
X'0040'	Fixed logout area	16
X'0050'	Extended prefix register	4
X'0054'	reserved	12
X'0060'	Access register	64
X'00A0'	Floating-point register 0-6	32
X'00C0'	General register	64
X'0100'	Control register	64
X'0140'	reserved	16
X'0150'	Global storage feature FSA high	4
X'0154'	Global scope register	4
X'0158'	Feature control register	4

Continued ➠

Relative address	Contents	Length in bytes
X'015C'	reserved	4
X'0160'	Floating-point register 8-14	32
X'0180'	Extended control register	64
X'01C0'	reserved	16

Channel check record (record 20) - HEL record for channel errors

These records contain data on channel errors, channel processor errors and interface errors. A record of this type is generated by I/O control in response to a channel error assignable to an I/O.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	Length of the variable part	2
X'0C'	reserved	4
X'10'	Device mnemonic	4
X'14'	Link address, control unit image address	2
X'16'	Device address	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	PDT flag 5	1
X'21'	Channel flag	1
X'22'	reserved	6
X'28'	CCW	8
X'30'	Channel status	16
X'40'	Supplementary data (variable part)	max. 944

Abnormal channel interruption record (record 24) - HEL record for unexpected channel interrupts

These records contain data on unexpected channel interruptions.
A record of this type is generated by I/O control if an unexpected channel interruption occurs, a device is not busy, not assigned or unknown.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	reserved	6
X'10'	Device mnemonic	4
X'14'	Link address, control unit image address	2
X'16'	Device address	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	PDT flag 5	1
X'21'	reserved	1
X'22'	AI flag	1
X'23'	reserved	5
X'28'	Interruption code	8
X'30'	Channel status	16

Channel report word record (record 25) - HEL record for errors of the channel bus system

These records contain data on errors of the channel bus system. A record of this type is generated by I/O control in response to I/O interruptions.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	Length of the variable part	2
X'0C'	Counter for CRWs	2
X'0E'	Number of lost CRWs	2
X'10'	n channel report words (CRWs) (variable part)	4 per CRW

Device error record (record 30) - HEL record for device errors

These records contain data on device errors. A record of this type is generated by DER, BCAM, I/O control, paging error recovery or SPOOL-DER in response to a device error.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	Length of the variable part	2
X'0C'	reserved	4
X'10'	Device mnemonic (defective device)	4
X'14'	reserved	2
X'16'	Device address (defective device)	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	SENSE-ID	6
X'26'	reserved	2
X'28'	Symbolic device type	8
X'30'	Task sequence number (TSN)	4
X'34'	reserved	4
X'38'	CCW	8
X'40'	Channel status	16
X'50'	Volume serial number (VSN)	6
X'56'	reserved	1
X'57'	reserved	1
X'58'	reserved	1
X'59'	EFB3	1
X'5A'	EFB	1
X'5B'	EFB2	1
X'5C'	USB	1
X'5D'	CSB	1
X'5E'	Number of sense bytes	2
X'60'	32 sense bytes	32

Continued ➠

Relative address	Contents	Length in bytes
X'80'	Error mnemonic	4
X'84'	Logical return code	2
X'86'	Number of input/output repeats	2
X'88'	DER time stamp	8
X'90'	Device-dependent data	32

Description of device-dependent data

A) for hard disks:

Relative address	Contents	Length in bytes
X'00'	WRC data	8
X'08'	Address of the last record/sector	4
X'0C'	Physical half page (PHP)	4
X'10'	Real block number (RBN)	4
X'14'	reserved	12

B) for BCAM:

Relative address	Contents	Length in bytes
X'00'	Device access right (DAR)	4
X'04'	KAI USER ID	1
X'05'	KAI CCB format	1
X'06'	KAI return code	1
X'07'	Number of MSN terminals	1
X'08'	Address of the first CCW	4
X'0C'	Address of the next CCW	4
X'10'	Rest byte count	2
X'12'	reserved	14

C) for SPOOL:

Relative address	Contents	Length in bytes
X'00'	SPOOL device type code	1
X'01'	reserved	31

TDP record (record 40) - HEL record for error during test and diagnostic program runs

These records contain data on faulted input/outputs and faulted data comparisons in testing and diagnostic program runs. A record of this type is generated by the test and diagnostic programs (TDPs). These records contain device data and the appropriate plain-text error messages.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	Length of the variable part	2
X'0C'	reserved	4
X'10'	Device mnemonic	4
X'14'	Link address, control unit image address	2
X'16'	Device address	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	Sense ID	6
X'26'	reserved	2
X'28'	Symbolic device type	8
X'30'	Task sequence number (TSN)	4
X'34'	reserved	4
X'38'	Volume serial number (VSN)	6
X'3E'	reserved	2
X'40'	n double words for free text (variable part)	

The free text at the end of the record is structured as follows:
Max. 16 lines of text; first byte on each line must contain the line length (including length byte). A line must not be longer than 80 bytes.

HEL status record (record 50) - HEL record for the starting or termination of the HEL task

This record is generated each time the HEL task starts or is started by a command, and when it shuts down or is shut down by a command. It is generated by HERSLOG and always contains a plain-text message indicating the reason for generation.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	reserved	5
X'0F'	Flag byte	1
X'10'	Text	16

Missing channel interruption record (record 70) - HEL record for missing I/O interrupts

These records contain data on missing I/O interrupts.
A record of this type is generated by I/O control if no interrupt was reported for the I/O in question before timeout.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	reserved	2
X'0C'	Timeout value driver	2
X'0E'	Timeout value I/O control	2
X'10'	Device mnemonic	4
X'14'	Link address, control unit image address	2
X'16'	Device address	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	PDT flag 5	1
X'21'	reserved	3
X'24'	User flag	1
X'25'	reserved	11
X'30'	CCW	8
X'38'	Channel status	16

Statistic data record (record 90) - HEL record for statistics data of device controllers

These records contain statistical data on device controllers. A record of this type is generated by the DER or by a test and diagnostic program if a statistics counter in the controller overflows or if the data volume is changed.

Relative address	Contents	Length in bytes
X'00'	Macro header (FHDR)	8
X'08'	Length of the fixed part	2
X'0A'	Length of the variable part	2
X'0C'	reserved	4
X'10'	Device mnemonic (defective device)	4
X'14'	reserved	2
X'16'	Device address (defective device)	2
X'18'	Device type	2
X'1A'	Controller type	1
X'1B'	Channel type	1
X'1C'	reserved	4
X'20'	Sense ID	6
X'26'	reserved	2
X'28'	Symbolic device type	8
X'30'	Task sequence number (TSN)	4
X'34'	reserved	4
X'38'	Volume serial number (VSN)	6
X'3E'	reserved	1
X'3F'	ERA / PID	1
X'40'	n double words for statistical data (variable part)	

Meanings of the abbreviations

The table below is an alphabetical list of the abbreviations that occur in the individual fields of the data records described above.

See chapter 'Field names' on page 259 for explanations of the most important terms.

Name	Meaning
AI	Abnormal Interrupt
BCD	Binary Coded Decimal
CC	Cluster Controller (local)
CCW	Channel Command Word
CRW	Channel Report Word
CSB	Channel Status Byte
DER	Device Error Recovery
EFB	Executive Flag Byte
ERA	Error Recovery Procedure Action Code
FHDR	Function Header
FSA	Failing Storage Address
IPL	Initial Program Load
KAI	Kernel Activity Interface
PDT	Device Physical table
PID	Physical Identifier
PSW	Program Status Word
TOD	Time of Day (error occurrence)
USB	Unit Status Byte
WRC	Write control

10 Field names

This chapter lists the names of the fields in the output screens and printer listings. The field names are listed in alphabetical order and are accompanied by brief explanatory notes. The list does not include self-explanatory fields (e.g. the machine check interruption code field) or fields which are explained in the corresponding screen/printer listing description.

Field name	Meaning
AIFLG	AI flag; indicates the type of abnormal interrupt. Possible values are: 1 ABNORMAL DEVICE ADDRESS 2 ABNORMAL 2NDARY INTERRUPTION 3 ABNORMAL PRIMARY INTERRUPTION 4 ABNORMAL BUSY INTERRUPTION 5 ABNORMAL PCI INTERRUPTION 6 ABNORMAL DEFERRED INTERRUPT
ASCII	Contents of the record. (The original data is coded in ASCII).
ATTR	Error attribute (attribute 0). Possible values are: C Correctable data check U Uncorrectable data check D Dalta function (hard disks only) H Hardware fault O Overrun T Data volume error (tape/MTC only) - without attribut
CALL	Identification of the record source (CALLER).
CC	Command code in the channel command word (CCW).
CC.HH.R CC.HH.S	Record address (CC=cylinder, HH=head, R=record). Sector address (CC=cylinder, HH=head, S=sector).
CCHR/CCHS	Record/sector address.
CCW	Channel command word.
CCW ADDR	Address of the last CCW used, incremented by 8.

Continued ➠

Field name	Meaning
CHAINED TO FOLL	Indicates chaining of a CRW to its successor CRW. Possible values: Y if bit3=1 and bit2=0 in the CRW (i.e. no overflow) N under all other circumstances.
CHFLG	Channel flag. The meanings of bits 0-7 in the channel flag are as follows: 0 CSW STORED AFTER START I/O INSTR. 1 CSW STORED AFTER AN I/O INTERRUPT 2 CSW STORED AFTER TEST I/O INSTR. 3 CSW STORED AFTER HALT DEV. INSTR. 4 UNUSED 5 SENSE DATA WAS STORED 6 CSW COUNT IS VALID 7 NO RETRY IS TO BE ATTEMPTED
CHT CHANNEL TYPE	Channel type. Possible values: 1 SIEMENS channel 2 IBM channel
CLOG	Number of CONTROLLER LOG DATA.
CMD	Channel instruction code of the error CCW.
CNT	Number of HEL or SVP records. *Exception* In the masks of the SDL function this number is also the total for input/output repetitions.
COUNT	Count in the CSW or the CCW; output in hexadecimal form.
CPU	CPU identification and CPU designation of the system which generated the input data.
CRW	Channel report word.
CRW-CNT	Number of channel report words.
CSB	Channel status Byte.
CSW	Channel status word.
CT	Controller type from CCB.
CTL NAME	Controller name.
CURR	Current counter; incremented by one by the caller for each error (thus a means of indicating record loss).
DAT ADDR	Data address from bits 33-63 of the CCW.
DATE/TIME	Date and time of error occurrence or record generation. The time is output in the yy-mm-dd hh:mm:ss form (yy=year, mm=month and so on); if space is short, the dashes and colons are omitted.

Continued ➠

Field name	Meaning
DER-STAMP	Timestamp of the device error recovery (DER). Assigns the error to the console message.
DEV ACCESS RIGHT	Device access right aus CCB.
DEV-FAM	Device family.
DTYP DEVICE-TYPE	Device type code of the defective device. For possible values see "Device type code" table in the manual "Introductory Guide to Systems Support" [2]. *Special case printers:* If a device error occurs (REC-CLASS D) the device type code consists of BS2000 device type code 21 and the SPOOL device type code mn, e.g. 212F All other record classes: the device type code is always 21, irrespective of the printer type.
EBCDIC	Contents of the record. (The original data is coded in EBCDIC.)
ECC	Error correction counter.
ECCW	CCW, bei dessen Bearbeitung der Fehler aufgetreten ist.
ECW	Extended control word.
EDC	External damage code (from storage location 244-247). The EDC is generated only if bit5 (ED) is set in the machine check interruption code. Bit26 (EC) must also be set, as otherwise the EDC is invalid. If the EDC is invalid, the program outputs "INVALID" instead of the EDC.
EFB1, EFB2, EFB3	Executive flag bytes from CCB.
ERA ERA-CODE	Error recovery procedure action code.
ERC	Error recovery rode (in edited form).
ERCNT	Number of HW errors stored in the SVP file. *Note* If a hardware error occurs several times in succession, only a single SVP record is stored; consequently, ERCNT is generally larger than CNT (= number of SVP records).
ERR-MN ERMN ERR-MNEMONIC	Mnemonic error code of the device error recovery.
ERROR TYPE	Type of error (explanatory text).
ESW	Extended status word. Occurs only in the case of CFCS3/2 systems, i.e. not encountered with C40 systems.
EXCEPTION MESS	Exception message; is derived from sense byte 08 (bits 0-3).
FL	Flags in the channel command word (CCW).

Continued ➠

Field name	Meaning
FLAGCODE	Flag code in hexadecimal form.
FLAGCODE or MSG#	The contents of this field depend on the unit, i.e.: **Unit** — **Field** GP,IOP,PP4 — Flag code in hexadecimal form. GS — *Exception*: as ASCII test for the H100 system. PSC — *only for H60, H90, C50, C70 and C80:* Type of power supply controller. Possible values: – POWER SUPPLY – FAN – OVERHEAT (temperature sensor) – WATERCHILLER (cooling system) – SVP — SVP message number, e.g. SVC8006. *Note* The position of the SVP message number in the SVP record is not fully standardized. The ELSA program attempts to find the message number, but there is a possibility that the message cannot be found or is not output in its entirety.
FLG5	PDT flag 5.
FORMAT ID	Format identifier; is derived from sense byte 22.
FSA	Failing storage address. The FSA is generated only if bit16, bit17 or bit18 (SE, SC or KE) is set in the machine check interruption code. Bit24 (FA) must also be set, as otherwise the FSA is invalid. If the FSA is invalid, the program outputs "INVALID" instead of the FSA.
FSC	Fault symptom code.
HEX ...	Contents of the record, logout etc. in hexadecimal form.
INTERR. CODE	Interruption code for abnormal interruption.
ITYP	Interrupt type. Possible values: A Abnormal interrupt M Missing interrupt
KAI-ID	KAI USER ID from CCB.
LAST DATE/TIME	If a hardware error occurs several times in succession, only one SVP record is stored. The LAST DATE/TIME field contains the time at which the error last occurred. The form of this output is the same as that of DATE/TIME.
LCL	Limited channel logout. LCL occurs only with CFCS3/1 systems, i.e. not with C40 systems.

Continued ➟

Field name	Meaning
LOGB LOGBYTES	Log bytes of device controllers (= statistics bytes). Numbering of the log bytes begins with 0.
LOC-TIME	Time of the error in local time.
LOST CRWS	Number of lost channel report words.
LRC	Logical return code.
MCIC	Machine check interruption code.
MEDIA ID	Media identifier; is derived from sense bytes 12-13.
MMDD	Date (MM=month, DD=day).
MN	Mnemonic device designation (device mnemonic).
MOD	Packing density (tape devices).
MSG MSG#	SVP message. SVP message number.
OVERFLOW	Contains Y, if the DCS of the software could not make all CRWs available.
PADR PATH-ADDR	Path address, has 8 hexadecimal characters (4 bytes). The path address is structured as follows: Byte: 0 1 2 3 in BS2000/OSD-BC V1.0/V2.0: IC 00 00 UU BS2000/OSD-BC V3.0 with DCS: PI LK CU DV BS2000/OSD-BC V3.0 without DCS: PI 00 00 DV The bytes of the path address have the following meanings: IC IOP number and channel number UU Controller and device number PI Channel path ID LK Link address CU Control unit image address DV Device address
PHP	Physical half page.
PRI PRIO	Error priority. Possible values: H high M medium L low - without priority
PRI:H PRI:M PRI:L PRI:-	Number of HEL records with high priority. Number of HEL records with medium priority. Number of HEL records with low priority. Number of HEL records without priority.

Continued ➠

<table>
<tr><th>Field name</th><th>Meaning</th></tr>
<tr><td>PRODUCT</td><td>Device type and model number.</td></tr>
<tr><td>PSW-OLD</td><td>Program status word - before the change to MEH but after the occurrence of the error.</td></tr>
<tr><td>RBN</td><td>Real block number.</td></tr>
<tr><td>REAL-CPU</td><td>Real affected CPU number (on guest systems)</td></tr>
<tr><td>REC-CLASS
RECORD-CLASS</td><td>Record class. A record class is a group of similar or related HEL records. A record class contains all HEL records of one or more record IDs (see below). The record classes are:
REC-CLASS Designation REC-IDs in class
M MACHINE CHECK 13
C CHANNEL CHECK 20
I INTERRUPT ERROR 24, 70
R CHANNEL REPORT WORDS 25
D DEVICE ERROR 30
T TDP DATA 40
H START/STOP HEL 50
L CONTROLLER LOG DATA 90
A ALL ERRORS (= M, C, I , R und D) 13, 20, 24, 25, 30, 70</td></tr>
<tr><td>REC-ID
RECORD-ID</td><td>Record identification. Record identification is a technical identifier for the structure and contents of each HEL record:
REC-ID Contents of the record
13 Machine error (machine check, MCH)
20 Channel error (channel check, CCH)
24 Abnormal interrupt
25 Channel report words (CRW)
30 Device error
40 Test / diagnostic program results (TDP DATA)
50 Start/stop HEL (HW error logging)
70 Missing interrupt
90 Controller log data</td></tr>
<tr><td>REF1</td><td>Reference code 1; is derived from sense bytes 16-17.</td></tr>
<tr><td>REF2</td><td>Reference code 2; is derived from sense bytes 18-19.</td></tr>
<tr><td>REF3</td><td>Reference code 3; is derived from sense bytes 20-21.</td></tr>
<tr><td>REFCODE</td><td>Reference code of the service information message (SIM) or the media information message (MIM); it is formed as follows:
SIM for DISK Sense bytes 22, 23 and 11-14
SIM for CARTRIDGE Sense bytes 16-21
MIM for CARTRIDGE Sense bytes 10-11</td></tr>
</table>

Continued ➠

Field name	Meaning
REFCODE	Reference code (= sense bytes 22,23,11,12,13,14) of the service information messages (SIM).
REPEAT	Indicates (Y/N) whether a repeated SIM is responded to (within 8 hours).
REPORT-DEV	Reporting device mnemonic.
RESULT	SVP error analysis text.
RETRY	Number of repetitions.
RSC	Reporting source code (in edited form).
RS-ID	Reporting source identifier.
SCSW0	Subchannel status word 0. SCSW0 occurs only in the case of CFCS3/2 systems, i.e. not encountered with C40 systems.
SDB	SDB1.
SDB1, SDB2	Standard device bytes (only channel type 1).
SENSE-ID	Device identification which is fetched with the command "sense ID".
SERIAL NO	Serial number of manufacturer and device.
SERVICE MESS	Service message; is derived from sense byte 08 (bits 4-7).
SEQ#	Sequence number of the HEL or SVP record. Output in hexadecimal form. *Exception* In C40 systems the SVP file sequence numbers are output in decimal form; a leading asterisk indicates the existence of a detailed logout.
SEVERITY	Severity code of the service information message (SIM) or of the media information message (MIM). The severity code is derived from bits 0-1 of sense byte 09: **SIM:** **MIM:** 11 ACUTE 11 ACUTE 10 SERIOUS 10 SERIOUS 01 MODERATE 01 MODERATE 00 SERVICE 00 NO
SIM	Service information message, i.e. device error message in 32-byte sense format with SSB6=X'xF'.
SIM ID	SIM identifier; is derived from sense byte 13.

Continued ➠

Field name	Meaning
SIM-TYPE	Type of service information message (SIM). The SIM-TYPE for DISK is derived from sense byte 28 as follows: X'F1' SCU X'F2' CACHE X'F3' REMOTE X'FE' DASD X'FF' MEDIA The SIM-TYPE for CARTRIDGE is derived from sense byte 24 (bits 0-2) as follows: B'001' CONTROL UNIT B'010' DEVICE B'011' LIBRARY
SOLIC CRW	Indicates whether the CRW is "solicited" (i.e. caused by the software) or "unsolicited". Possible values: Y if bit1=1 in the CRW N in all other circumstances.
SSB SENSEBYTES	Sense bytes of device controllers. Numbering of the sense bytes begins with 0.
STATUS	The first sense byte - regarded from SSB9 to SSB3 - which is not equal to X'00' indicates the status.
STATUS FLAG	Hardware error logging status flag. Four possible values for HEL logging (physical machines) and four for VM-global logging VMHEL (virtual machines): X'00' HEL started by the system (IPL) X'01' HEL started by a command X'80' HEL stopped by the system (shutdown) X'81' HEL stopped by a command X'10' VMHEL started by the system X'11' VMHEL started by a command X'90' VMHEL stopped by the system X'91' VMHEL stopped by a command.
STATUS TEXT	HW error logging status text.
SVP-HEAD	VP header from bytes 0-9 byte of the result or SVP header from bytes 0-29 of the logout.
TIMEOUT DRIV	Interrupt time limit in driver.
TIMEOUT IOCTL	Interrupt time limit in I/O control.
TSN	Task sequence number.
TYPE	Product number of the device.

Continued ➠

Field name	Meaning
UM	Unit modifier; is derived from sense byte 14-15.
UNIT	Hardware unit. See page 47ff for possible values The UNIT field can also contain a partially qualified designation; in this case, the variable name parts (for example indices) are replaced by the following characters: * for any character string (including an empty string), / for any one character.
USB	Unit status byte (only channel type 2).
USER FLG	User flag. Possible values: X'40' 2ND INT IMPLIES TERMINATION X'10' DEVICE OFFLINE OPERATION X'02' NO LONG WAIT I/O
UTC-DATE	Date of the error in universal time.
VM	Number of the VM guest system: only supplied with a meaningful value for VM-global HEL files.
VM-ID	VM identification: native HEL: - - (no VM-ID) global HEL: MO (VM monitor system) nr (number of the VM guest system)
VOLUME	VNS of the cartridge from sense bytes 16-21.
VSN	Volume serial number of the data volume.
WRC WRC-DATA	CCW data from control commands, as follows: for hard disks: SEEK adress + record no. (CCHHR/S) or LOCATE data (FBA) for tape devices: control bytes

11 Appendix

11.1 SDF syntax notation

The statement format consists of a field with the statement name. This is followed by a list of all operands with their permissible operand values. Operand values which initiate structures, and the operands which are dependent on these, are listed separately.

```
SET-INOUT

 INPUT = *BOTH / *HEL-DATA / *SVP-DATA
,FILE = *STD / *VMGLOBAL / <filename 1..54 with-wild> / <partial-filename 2..53 with-wild>
,OUTPUT = *PRINTER (...) / *TERMINAL
    *PRINTER(...)
        | MAX-LINE-SIZE = *132 / *80
        | ,DEVICE-NAME = *STD / <name 1..8>
        | ,FORM-NAME = *STD / <alphanum-name 1..6>
,EXTENDED-SVP-DATA = *NO / *YES
```

This syntax description is based on SDF Version 4.1A. The syntax of the SDF command/statement language is explained in three tables.

table 1: Metasyntax

The meanings of the special characters and the notation used to describe command and statement formats are explained in Table 1.

table 2: Data types

Variable operand values are represented in SDF by data types. Each data type represents a specific set of values. The number of data types is limited to those described in Table 2.

The description of the data types is valid for the entire set of commands/statements. Therefore only deviations (if any) from the attributes described here are explained in the relevant operand descriptions.

table 3: Suffixes for data types

Data type suffixes define additional rules for data type input. They contain a length or interval specification and can be used to limit the set of values (suffix begins with *without*), extend it (suffix begins with *with*), or declare a particular task mandatory (suffix begins with *mandatory*). The following short forms are used in this manual for data type suffixes:

cat-id	cat
completion	compl
correction-state	corr
generation	gen
lower-case	low
manual-release	man
odd-possible	odd
path-completion	path-compl
separators	sep
temporary-file	temp-file
underscore	under
user-id	user
version	vers
wildcard-constr	wild-constr
wildcards	wild

The description of the 'integer' data type in Table 3 contains a number of items in italics; the italics are not part of the syntax and are only used to make the table easier to read.
For special data types that are checked by the implementation, Table 3 contains suffixes printed in italics (see the *special* suffix) which are not part of the syntax.

The description of the data type suffixes is valid for the entire set of commands/statements. Therefore only deviations (if any) from the attributes described here are explained in the relevant operand descriptions.

Metasyntax

Representation	Meaning	Examples
UPPERCASE LETTERS	Uppercase letters denote keywords (command, statement or operand names, keyword values) and constant operand values. Keyword values begin with *	**HELP-SDF** **SCREEN-STEPS** = ***NO**
UPPERCASE LETTERS in boldface	Uppercase letters printed in boldface denote guaranteed or suggested abbreviations of keywords.	**GUID**ANCE-**MODE** = ***Y**ES
=	The equals sign connects an operand name with the associated operand values.	**GUID**ANCE-**MODE** = ***NO**
< >	Angle brackets denote variables whose range of values is described by data types and suffixes (see Tables 2 and 3).	**SYNTAX-F**ILE = <filename 1..54>
Underscoring	Underscoring denotes the default value of an operand.	**GUID**ANCE-**MODE** = ***NO**
/	A slash serves to separate alternative operand values.	**NEXT-FIELD** = ***NO** / ***Y**ES
(…)	Parentheses denote operand values that initiate a structure.	,**UNGUID**ED-**DIA**LOG = ***Y**ES (...) / ***NO**
[ ]	Square brackets denote operand values which introduce a structure and are optional. The subsequent structure can be specified without the initiating operand value.	**SELECT** = [***BY-ATTR**IBUTES](...)
Indentation	Indentation indicates that the operand is dependent on a higher-ranking operand.	,**GUID**ED-**DIA**LOG = ***Y**ES (...) ***Y**ES(...) **SCREEN-STEPS** = ***NO** / ***Y**ES

Table 1: Metasyntax (Teil 1 von 2)

Representation	Meaning	Examples
|	A vertical bar identifies related operands within a structure. Its length marks the beginning and end of a structure. A structure may contain further structures. The number of vertical bars preceding an operand corresponds to the depth of the structure.	**SUP**PORT = ***TAPE**(...) ***TAPE(...)** | **VOL**UME = ***ANY**(...) | ***ANY**(...) | | ...
,	A comma precedes further operands at the same structure level.	**GUID**ANCE-**MODE** = ***NO** / ***Y**ES ,**SDF-COM**MANDS = ***NO** / ***Y**ES
list-poss(n):	The entry “list-poss” signifies that a list of operand values can be given at this point. If (n) is present, it means that the list must not have more than n elements. A list of more than one element must be enclosed in parentheses.	list-poss: ***SAM** / ***ISAM** list-poss(40): <structured-name 1..30> list-poss(256): ***OMF** / ***SYSLST**(...) / <filename 1..54>
Alias:	The name that follows represents a guaranteed alias (abbreviation) for the command or statement name.	**HELP-SDF** Alias: **HPSDF**

Table 1: Metasyntax (Teil 2 von 2)

Data types

Data type	Character set	Special rules
alphanum-name	A…Z 0…9 $, #, @	
cat-id	A…Z 0…9	Not more than 4 characters; must not begin with the string PUB
command-rest	freely selectable	
composed-name	A…Z 0…9 $, #, @ hyphen period catalog ID	Alphanumeric string that can be split into multiple substrings by means of a period or hyphen. If a file name can also be specified, the string may begin with a catalog ID in the form :cat: (see data type filename).
c-string	EBCDIC character	Must be enclosed within single quotes; the letter C may be prefixed; any single quotes occurring within the string must be entered twice.
date	0…9 Structure identifier: hyphen	Input format: yyyy-mm-dd jjjj: year; optionally 2 or 4 digits mm: month tt: day
device	A…Z 0…9 hyphen	Character string, max. 8 characters in length, corresponding to a device available in the system. In guided dialog, SDF displays the valid operand values. For notes on possible devices, see the relevant operand description.
fixed	+, - 0…9 period	Input format: [sign][digits].[digits] [sign]: + oder - [digits]: 0...9 must contain at least one digit, but may contain up to 10 characters (0...9, period) apart from the sign.

Table 2: Data types (Teil 1 von 6)

Data type	Character set	Special rules
filename	A…Z 0…9 $, #, @ hyphen period	Input format: [:cat:][$user.] { file | file(no) | group | group { (*abs) | (+rel) | (-rel) } } :cat: optional entry of the catalog identifier; character set limited to A...Z and 0...9; maximum of 4 characters; must be enclosed in colons; default value is the catalog identifier assigned to the user ID, as specified in the user catalog. $user. optional entry of the user ID; character set is A…Z, 0…9, $, #, @; maximum of 8 characters; first character cannot be a digit; $ and period are mandatory; default value is the user's own ID. $. (special case) system default ID file file or job variable name; may be split into a number of partial names using a period as a delimiter: $name_1$[.$name_2$[...]] $name_i$ does not contain a period and must not begin or end with a hyphen; file can have a maximum length of 41 characters; it must not begin with a $ and must include at least one character from the range A...Z.

Table 2: Data types (Teil 2 von 6)

Data type	Character set	Special rules

filename
(continued)
		#file (special case)
		@file (special case)
		# or @ used as the first character indicates temporary files or job variables, depending on system generation.
		file(no)
		tape file name
		no: version number;
		character set is A...Z, 0...9, $, #, @.
		Parentheses must be specified.
		group
		name of a file generation group
		(character set: as for “file”)
		group (*abs) (+rel) (-rel)
		(*abs)
		absolute generation number (1-9999);
		* and parentheses must be specified.
		(+rel)
		(-rel)
		relative generation number (0-99);
		sign and parentheses must be specified.

integer	0…9, +, -	+ or -, if specified, must be the first character.
name	A…Z 0…9 $, #, @	Must not begin with 0...9.

Table 2: Data types (Teil 3 von 6)

Data type	Character set	Special rules
partial-filename	A…Z 0…9 $, #, @ hyphen period	Input format: [:cat:][$user.][partname.] :cat: see filename $user. see filename partname optional entry of the initial part of a name common to a number of files or file generation groups in the form: $name_1$.[$name_2$.[...]] $name_i$ (see filename). The final character of “partname” must be a period. At least one of the parts :cat:, $user. or partname must be specified.
posix-filename	A...Z 0...9 special characters	String with a length of up to 255 characters; consists of either one or two periods or of alpha-numeric characters and special characters. The special characters must be escaped with a preceding \ (backslash); the / is not allowed. Must be enclosed within single quotes if alter-native data types are permitted, separators are used, or the first character is a ?, ! or ^ A distinction is made between uppercase and lowercase.
posix-pathname	A...Z 0...9 special characters structure identifier: slash	Input format: [/]$part_1$/.../$part_n$ where $part_i$ is a posix-filename; max. 1023 characters; must be enclosed within single quotes if alter-native data types are permitted, separators are used, or the first character is a ?, ! or ^

Table 2: Data types (Teil 4 von 6)

Data type	Character set	Special rules
product-version	A…Z 0…9 period single quote	Input format: [[C]'][V][m]m.naso['] correction status release status where m, n, s and o are all digits and a is a letter. Whether the release and/or correction status may/must be specified depends on the suffixes to the data type (see suffixes without-corr, without-man, mandatory-man and mandatory-corr in Table 3). product-version may be enclosed within single quotes (possibly with a preceding C). The specification of the version may begin with the letter V.
structured-name	A…Z 0…9 $, #, @ hyphen	Alphanumeric string which may comprise a number of substrings separated by a hyphen. First character: A...Z or $, #, @
text	freely selectable	For the input format, see the relevant operand descriptions.
time	0…9 structure identifier: colon	Time-of-day entry: Input format: hh:mm:ss / hh:mm / hh hh: hours mm: minutes ss: seconds Leading zeros may be omitted
vsn	a) A…Z 0…9 b) A…Z 0…9 $, #, @	a) Input format: pvsid.sequence-no max. 6 characters pvsid: 2-4 characters; PUB must not be entered sequence-no: 1-3 characters b) Max. 6 characters; PUB may be prefixed, but must not be followed by $, #, @.

Table 2: Data types (Teil 5 von 6)

Data type	Character set	Special rules
x-string	Hexadecimal: 00…FF	Must be enclosed in single quotes; must be prefixed by the letter X. There may be an odd number of characters.
x-text	Hexadecimal: 00…FF	Must not be enclosed in single quotes; the letter X must not be prefixed. There may be an odd number of characters.

Table 2: Data types (Teil 6 von 6)

Suffixes for data types

Suffix	Meaning
x..y *unit*	With data type “integer”: interval specification x minimum value permitted for “integer”. x is an (optionally signed) integer. y maximum value permitted for “integer”. y is an (optionally signed) integer. *unit* with “integer” only: additional units. The following units may be specified: *days* *byte* *hours* *2Kbyte* *minutes* *4Kbyte* *seconds* *Mbyte*
x..y *special*	With the other data types: length specification For data types catid, date, device, product-version, time and vsn the length specification is not displayed. x minimum length for the operand value; x is an integer. y maximum length for the operand value; y is an integer. x=y the length of the operand value must be precisely x. *special* Specification of a suffix for describing a special data type that is checked by the implementation. “special” can be preceded by other suffixes. The following specifications are used: *arithm-expr* arithmetic expression (SDF-P) *bool-expr* logical expression (SDF-P) *string-expr* string expression (SDF-P) *expr* freely selectable expression (SDF-P) *cond-expr* conditional expression (JV)
with	Extends the specification options for a data type.
-compl	When specifying the data type “date”, SDF expands two-digit year specifications in the form yy-mm-dd to: 20jj-mm-tt if jj < 60 19jj-mm-tt if jj ≥ 60
-low	Uppercase and lowercase letters are differentiated.
-path-compl	For specifications for the data type “filename”, SDF adds the catalog and/or user ID if these have not been specified.
-under	Permits underscores (_) for the data type “name”.

Table 3: Data type suffixes (Teil 1 von 7)

<table>
<tr><th>Suffix</th><th>Meaning</th></tr>
<tr><td>with (contd.)
-wild(n)</td><td>Parts of names may be replaced by the following wildcards.
n denotes the maximum input length when using wildcards.
Due to the introduction of the data types posix-filename and posix-pathname, SDF now accepts wildcards from the UNIX world (referred to below as POSIX wildcards) in addition to the usual BS2000 wildcards. However, as not all commands support POSIX wildcards, their use for data types other than posix-filename and posix-pathname can lead to semantic errors.
Only POSIX wildcards or only BS2000 wildcards should be used within a search pattern. Only POSIX wildcards are allowed for the data types posix-filename and posix-pathname. If a pattern can be matched more than once in a string, the first match is used.
<table>
<tr><th>BS2000 wildcards</th><th>Meaning</th></tr>
<tr><td>*</td><td>Replaces an arbitrary (even empty) character string. If the string concerned starts with *, then the * must be entered twice in succession if it is followed by other characters and if the character string entered does not contain at least one other wildcard.</td></tr>
<tr><td>Termina-ting period</td><td>Partially-qualified entry of a name.
Corresponds implicitly to the string “./*”, i.e. at least one other character follows the period.</td></tr>
<tr><td>/</td><td>Replaces any single character.</td></tr>
<tr><td><s_x:s_y></td><td>Replaces a string that meets the following conditions:
– It is at least as long as the shortest string (s_x or s_y)
– It is not longer than the longest string (s_x or s_y)
– It lies between s_x and s_y in the alphabetic collating sequence; numbers are sorted after letters (A...Z0...9)
– s_x can also be an empty string (which is in the first position in the alphabetic collating sequence)
– s_y can also be an empty string, which in this position stands for the string with the highest possible code (contains only the characters X'FF')</td></tr>
<tr><td><s_1,…></td><td>Replaces all strings that match any of the character combinations specified by s. s may also be an empty string. Any such string may also be a range specification “s_x:s_y” (see above).</td></tr>
</table>
</td></tr>
</table>

Table 3: Data type suffixes (Teil 2 von 7)

Suffix	Meaning	
with-wild(n)		
(continued)	-s	Replaces all strings that do not match the specified string s. The minus sign may only appear at the beginning of string s. Within the data types filename or partial-filename the negated string -s can be used exactly once, i.e. -s can replace one of the three name components: cat, user or file.
	Wildcards are not permitted in generation and version specifications for file names. Only system administration may use wildcards in user IDs. Wildcards cannot be used to replace the delimiters in name components cat (colon) and user ($ and period).	
	POSIX wildcards	Meaning
	*	Replaces any single string (including an empty string). An * appearing at the first position must be duplicated if it is followed by other characters and if the entered string does not include at least one further wildcard.
	?	Replaces any single character; not permitted as the first character outside single quotes.
	$[c_x\text{-}c_y]$	Replaces any single character from the range defined by c_x and c_y, including the limits of the range. c_x and c_y must be normal characters.
	[s]	Replaces exactly one character from string s. The expressions $[c_x\text{-}c_y]$ and [s] can be combined into $[s_1c_x\text{-}c_ys_2]$.
	$[!c_x\text{-}c_y]$	Replaces exactly one character not in the range defined by c_x and c_y, including the limits of the range. c_x and c_y must be normal characters. The expressions $[!c_x\text{-}c_y]$ and [!s] can be combined into $[!s_1c_x\text{-}c_ys_2]$.
	[!s]	Replaces exactly one character not contained in string s. The expressions [!s] and $[!c_x\text{-}c_y]$ can be combined into $[!s_1c_x\text{-}c_ys_2]$.

Table 3: Data type suffixes (Teil 3 von 7)

<table>
<tr><th>Suffix</th><th>Meaning</th></tr>
<tr><td>with (contd.)

wild-
constr(n)</td><td>Specification of a constructor (string) that defines how new names are to be constructed from a previously specified selector (i.e. a selection string with wildcards). See also with-wild. n denotes the maximum input length when using wildcards.
The constructor may consist of constant strings and patterns. A pattern (character) is replaced by the string that was selected by the corresponding pattern in the selector.
The following wildcards may be used in constructors:
<table>
<tr><td>Wildcard</td><td>Meaning</td></tr>
<tr><td>*</td><td>Corresponds to the string selected by the wildcard * in the selector.</td></tr>
<tr><td>Termina-
ting period</td><td>Corresponds to the partially-qualified specification of a name in the selector;
corresponds to the string selected by the terminating period in the selector.</td></tr>
<tr><td>/ or ?</td><td>Corresponds to the character selected by the / or ? wildcard in the selector.</td></tr>
<tr><td><n></td><td>Corresponds to the string selected by the n-th wildcard in the selector, where n is an integer.</td></tr>
</table>
Allocation of wildcards to corresponding wildcards in the selector:
All wildcards in the selector are numbered from left to right in ascending order (global index).
Identical wildcards in the selector are additionally numbered from left to right in ascending order (wildcard-specific index).
Wildcards can be specified in the constructor by one of two mutually exclusive methods:
1. Wildcards can be specified via the global index: <n>
2. The same wildcard may be specified as in the selector; substitution occurs on the basis of the wildcard-specific index. For example:
the second “/” corresponds to the string selected by the second “/” in the selector</td></tr>
</table>

Table 3: Data type suffixes (Teil 4 von 7)

Suffix	Meaning
with-wild-constr (continued)	The following rules must be observed when specifying a constructor: – The constructor can only contain wildcards of the selector. – If the string selected by the wildcard <...> or [...] is to be used in the constructor, the index notation must be selected. – The index notation must be selected if the string identified by a wildcard in the selector is to be used more than once in the constructor. For example: if the selector “A/” is specified, the constructor “A<n><n>” must be specified instead of “A//”. – The wildcard * can also be an empty string. Note that if multiple asterisks appear in sequence (even with further wildcards), only the last asterisk can be a non-empty string, e.g. for “****” or “*//*”. – Valid names must be produced by the constructor. This must be taken into account when specifying both the constructor and the selector. – Depending on the constructor, identical names may be constructed from different names selected by the selector. For example: “A/*” selects the names “A1” and “A2”; the constructor “B*” generates the same new name “B” in both cases. To prevent this from occurring, all wildcards of the selector should be used at least once in the constructor. – If the constructor ends with a period, the selector must also end with a period. The string selected by the period at the end of the selector cannot be specified by the global index in the constructor specification.

Table 3: Data type suffixes (Teil 5 von 7)

<table>
<tr><th>Suffix</th><th>Meaning</th></tr>
<tr><td>with-wild-
constr
(continued)</td><td>Examples:
<table>
<tr><th>Selector</th><th>Selection</th><th>Constructor</th><th>New name</th></tr>
<tr><td>A//*</td><td>AB1
AB2
A.B.C</td><td>D<3><2></td><td>D1
D2
D.CB</td></tr>
<tr><td>C.<A:C>/<D,F></td><td>C.AAD
C.ABD
C.BAF
C.BBF</td><td>G.<1>.<3>.XY<2></td><td>G.A.D.XYA
G.A.D.XYB
G.B.F.XYA
G.B.F.XYB</td></tr>
<tr><td>C.<A:C>/<D,F></td><td>C.AAD
C.ABD
C.BAF
C.BBF</td><td>G.<1>.<2>.XY<2></td><td>G.A.A.XYA
G.A.B.XYB
G.B.A.XYA
G.B.B.XYB</td></tr>
<tr><td>A//B</td><td>ACDB
ACEB
AC.B
A.CB</td><td>G/XY/</td><td>GCXYD
GCXYE
GCXY. 1)
G.XYC</td></tr>
</table>
1) The period at the end of the name may violate naming conventions (e.g. for fully-qualified file names).</td></tr>
<tr><td>without</td><td>Restricts the specification options for a data type.</td></tr>
<tr><td>-cat</td><td>Specification of a catalog ID is not permitted.</td></tr>
<tr><td>-corr</td><td>Input format: [[C]'][V][m]m.na[']
Specifications for the data type product-version must not include the correction status.</td></tr>
<tr><td>-gen</td><td>Specification of a file generation or file generation group is not permitted.</td></tr>
<tr><td>-man</td><td>Input format: [[C]'][V][m]m.n[']
Specifications for the data type product-version must not include either release or correction status.</td></tr>
<tr><td>-odd</td><td>The data type x-text permits only an even number of characters.</td></tr>
<tr><td>-sep</td><td>With the data type “text”, specification of the following separators is not permitted: ; = ( ) < > ␣ (i.e. semicolon, equals sign, left and right parentheses, greater than, less than, and blank).</td></tr>
<tr><td>-temp-
file</td><td>Specification of a temporary file is not permitted (see #file or @file under filename).</td></tr>
</table>

Table 3: Data type suffixes (Teil 6 von 7)

Suffix	Meaning
without (contd.)	
-user	Specification of a user ID is not permitted.
-vers	Specification of the version (see “file(no)”) is not permitted for tape files.
-wild	The file types posix-filename and posix-pathname must not contain a pattern (character).
mandatory	Certain specifications are necessary for a data type.
-corr	Input format: [[C]'][V][m]m.naso['] Specifications for the data type product-version must include the correction status and therefore also the release status.
-man	Input format: [[C]'][V][m]m.na[so]['] Specifications for the data type product-version must include the release status. Specification of the correction status is optional if this is not prohibited by the use of the suffix without-corr.
-quotes	Specifications for the data types posix-filename and posix-pathname must be enclosed in single quotes.

Table 3: Data type suffixes (Teil 7 von 7)

11.2 SDF standard statements

The following SDF standard statements can be used during a program run.

Statement	Function
END	Terminates the program
EXECUTE-SYSTEM-COMMAND [1)]	Executes the command during the program run
HOLD-PROGRAMM [1)]	Switches to BS2000 system mode
MODIFY-SDF-OPTIONS	Modifies the SDF settings
REMARK	Adds comments to programs
RESET-INPUT-DEFAULTS	Deletes task-specific default values
RESTORE-SDF-INPUT	Redisplays the last entry
SHOW-INPUT-DEFAULTS	Outputs task-specific default values
SHOW-INPUT-HISTORY	Outputs the input buffer to SYSOUT
SHOW-SDF-OPTIONS	Displays the SDF settings
STEP	Defines a restart point
WRITE-TEXT	Writes text to SYSOUT

The SDF standard statements are not described in this manual. A description is provided in the manual "Introductory Guide to the SDF Dialog Interface“ [3].

The SDF standard statements marked with [1)] are not supported in versions previous to BS2000/OSD-BC V2.0.

Related publications

Please apply to your local office for ordering the manuals.

[1] **BS2000/OSD-BC V4.0**
System Installation
User Guide

Target group
This manual is intended for BS2000/OSD system administration.

Contents
The manual describes the generation of the hardware configuration with UGEN and the following installation services: disk organization with MPVS, the installation of volumes using the SIR utility routine, and the IOCFCOPY subsystem.
Order number
U2505-J-Z125-14-76

[2] **BS2000/OSD-BC V4.0**
Introductory Guide to Systems Support
User Guide

Target group
This manual is addressed to BS2000/OSD systems support staff and operators.
Contents
The manual covers the following topics relating to the management and monitoring of the BS2000/OSD basic configuration: system initialization, parameter service, job and task control, memory/device/user/file/pubset management, assignment of privileges, accounting and operator functions.
Order number
U2417-J-Z125-13-76

[3] **SDF V4.1A** (BS2000/OSD)
Introductory Guide to the SDF Dialog Interface
User Guide

Target group
BS2000/OSD users
Contents
This manual describes the interactive input of commands and statements in SDF format. A Getting Started chapter with easy-to-understand examples and further comprehensive examples facilitates use of SDF. SDF syntax files are discussed.
Order number
U2339-J-Z125-7-76

New functionality about BS2000/OSD V4.0 is included in the manual Functional Extensions and Supplementary Documentation [8].

[4] **BS2000/OSD-BC V4.0**
Performance Handbook
User Guide

Target group
Computer center and system support staff
Contents
The manual helps system users to evaluate the performance of their dp system and points out how to use hardware and software cost-effectively and how to improve system performance. Diagrams, formulas and examples explain the processes in the system and their influence on overall performance.
Order number
U1794-J-Z125-9-76

[5] **OSD-SVP V2.0A**
Performance Guidelines for SR2000-B
User Guide

Target group
This manual is intended for users, systems support and service technicians.

Contents
The manual focuses on describing the basic principles of and measures used to assess the performance of BS2000/OSD applications running on systems with RISC architecture. Detailed information on fine-tuning software and configuration allow OSD-SVP V2.0A to be used as economically as possible.
Overview of contents:
– SR2000 architecture and basic operating sequences
– processor power and performance characteristics
– configuration of peripherals (channel, bus), disks, LANs
– data backup
– use of the SM2 software monitor to investigate system- and user-specific performance problems

Order number
U25704-J-Z125-1-76

[6] **VM2000 V5.0A** (BS2000/OSD)
Virtual Machine System
User Guide

Target group
System administrators and operators in BS2000, VM2000 and VM administrators
Contents
The manual describes the VM2000 Virtual Machine System for BS2000 guest systems. It contains:
– an introduction to VM2000
– installation, system initialization and termination
– operation, management and error diagnosis
– a description of the VM2000 commands
Order number
U5183-J-Z125-6-76

[7] **BS2000/OSD-BC V4.0**
Commands, Volumes 1 - 5
User Guide

Target group
This manual is addressed to nonprivileged users and systems support staff.
Contents
Volumes 1 through 5 contain the BS2000/OSD commands ADD-... to WRITE-... (basic configuration and selected products) with the functionality for all privileges. The command and operand functions are described in detail, supported by examples to aid understanding. An introductory overview provides information on all the commands described in Volumes 1 through 5.
The Appendix of Volume 1 includes information on command input, conditional job variable expressions, system files, job switches, and device and volume types.
The Appendix of Volumes 4 and 5 contains an overview of the output columns of the SHOW commands of the component NDM. The Appendix of Volume 5 contains additionally an overview of all START commands.
There is a comprehensive index covering all entries for Volumes 1 through 5.
Order numbers
U2338-J-Z125-14-76 Commands, Volume 1, A – C
U41074-J-Z125-1-76 Commands, Volume 2, D – MOD-I
U21070-J-Z125-4-76 Commands, Volume 3, MOD-J – R
U41075-J-Z125-1-76 Commands, Volume 4, S – SH-O
U23164-J-Z125-3-76 Commands, Volume 5, SH-P – Z

[8] **BS2000/OSD V4.0**
Functional Extensions and Supplementary Documentation
User Guide

Target group
This manual is addressed to systems support staff, Assembler programmers and BS2000 users.
Contents
The manual contains supplementary information for the following manuals, for which there will be no new edition for BS2000/OSD-BC V4.0:
– "Introductory Guide to DMS"
– "DMS Macros"
– "Executve Macros"
– "Dynamic Binder Loader / Starter"
– "Subsystem Management"
– "Introductory Guide to the SDF Dialog Interface"
– "PCA"
– "ADAM"
– "System Exits"
– "Job Variables"
– "SDF-P"
– "SPOOL"
The manual incorporates the new functionalities for BS2000/OSD V4.0, all relevant README files, and supplementary information relating to support for SR2000 systems. Together with the various manuals named above, the supplementary information in this manual constitutes complete, up-to-date documentation.
Order number
U41077-J-Z125-1-76

[9] **BS2000/OSD**
Softbooks English

Target group
BS2000/OSD users
Contents
The CD-ROM "BS2000/OSD SoftBooks English" contains almost all of the English manuals and README files for the BS2000 system software of the latest BS2000/OSD version and also of the previous versions, including the manuals listed here.
These Softbooks can also be found in the Internet on our manual server. You can browse in any of these manuals or download the entire manual.
Order number
U26175-J8-Z125-1-76
Internet address
http://manuals.mchp.siemens.de

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ELSA V1.6A (BS2000/OSD)

Error Logging System Analysis

Target group
This manual is intended for systems support and the hardware service.

Contents
The ELSA analysis program is a component of the Error Logging System, a permanent logging method for recording and analyzing hardware errors. The manual describes the operation, installation and functions of ELSA.

Edition: December 1999

File: ELSA.PDF

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Comments
Suggestions
Corrections

Submitted by

Comments on ELSA V1.6A
Error Logging System Analysis

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and the user documentation at *http://manuals.ts.fujitsu.com*.

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