SINTRAN III COMMANDS
Reference Manual

ND-60.128.5 EN

SINTRAN III COMMANDS
Reference Manual
ND-60.128.5 EN

Preface:

The Manual

This manual describes the K-version of SINTRAN III and the H-version of ND-500 Monitor. The first part is an alphabetical list of the SINTRAN III commands and their precise details. The second part is an alphabetical list of commands in the SINTRAN-Service-Program. The third part is an alphabetical list of commands to the ND-500 Monitor. The final part consists of appendices.
Changes from the previous version are indicated by a change bar.

The Reader

The manual is written for experienced users who need to look up precise details.

Related Manuals

SINTRAN III Monitor Calls Guide (ND-60.228)
This manual is a complete reference to the SINTRAN III monitor calls. It replaces chapter two in previous versions of the SINTRAN III Reference Manual.

SINTRAN III Introduction (ND-60.125)
This gives an introductory survey of the basic functions available for those with little or no knowledge of computers or those unfamiliar with the SINTRAN III operating system.

SINTRAN III Timesharing/Batch Guide (ND-60.132)
This describes the use of commands and monitor calls available for time sharing users. The commands and monitor calls are grouped according to function.

SINTRAN III Real Time Guide (ND-60.133)
This describes real time programming facilities. It is written for application programmers and assumes a reading knowledge of FORTRAN.

SINTRAN III System Supervisor (ND-30.003)
This describes the tasks performed by the System Supervisor who is responsible for keeping the system running properly from day to day. It contains descriptions of Accounting and the use of the SINTRAN-Service-Program.

SINTRAN III Utilities Manual (ND-60.151)
This describes some utility functions and subsystems available under SINTRAN III. These are

- Perform
- General Purpose Macro Generator
- Mail
- Look-file
- File Extract Utility

TABLE OF CONTENTS

Appendix Page

CHAPTER 1

SINTRAN III COMMANDS

1. SINTRAN III COMMANDS

1.1 INTRODUCTION

The command names are listed following the SINTRAN prompt character @. This character is written to the terminal by the system when SINTRAN is ready to accept a command. The user types characters after the @.

A command can be written as one or several lines, in upper or lower case. If the user types carriage return (CR) before all parameters are entered, SINTRAN asks for the missing parameters on the next lines.

A command may be written in one of the following ways (user input is underlined):

```
     @LIST-FILES ALFA,TERMINAL
or
     @LIST-FILES
     FILE NAME: ALFA
     OUTPUT FILE: TERMINAL
or
     @LIST-FILES,ALFA
     OUTPUT FILE: TERMINAL
or
     @LIST-FILES
     FILE NAME: ALFA,TERMINAL
or
     @LIST-FILES,ALFA,,
```

The last example uses the default value for the parameter OUTPUT-FILE. To use a default value for the last parameter in a command requires an extra comma, one comma causes a request for the parameter.

The radix of a parameter may be specified by appending D (for decimal) or B (for octal) to the number.

Some parameters have default values, omitting parameters without default values causes an error message.

The notation [.....] is used to indicate that the parts in brackets may be omitted.

Parameters are separated by a comma or space.

The SINTRAN editing characters are used to edit the current or previous command line. The following editing functions may be used:

```
CTRL+A   Delete one character
CTRL+W   Delete one word backwards
CTRL+Q   Start a new empty line where old command can be edited
         (not XON/XOFF terminals)

CTRL+C   Copy one character
CTRL+D   Copy rest of line including RETURN
CTRL+F   Copy rest of line including RETURN (no echo)
CTRL+H   Copy rest of line, but NOT including RETURN
CTRL+Zx  Copy until and including "x"
CTRL+Ox  Copy until but NOT including "x"
CTRL+U   Copy until next TAB stop

CTRL+B   Skip one character
CTRL+S   Skip one character (not XON/XOFF terminals)
CTRL+Xx  Skip characters until and including "x"
CTRL+Px  Skip characters until but NOT including "x"

CTRL+E   Switch insert mode on/off
CTRL+I   Overwrite with spaces until next TAB stop
CTRL+Vx  Quote character "x" (also if CTRL character)

CTRL+T   Align new line with old line
CTRL+R   Type rest of lines and continue edit
CTRL+Y   Copy rest of line, no echo, and restart edit
CTRL+K   Erase line on display and restart edit
```

For example, pressing CTRL+A after

```
     @LIST-FO
```

deletes the character O.

If the command

```
     @LIST-FI OLE,TERM
```

has just been entered, pressing CTRL+D reenters this command.

Beware that segment name may now be entered instead of segment number whenever a segment is to be specified. A segment name consists of 1-7 alphanumeric characters. The underline character ( ), may be used as a separator in a segment name and will count as one character. Note that a segment name may not be abbreviated.

1.2 COMMAND SUMMARY

Command	Parameters	Short Description
ABORT	RT-program name	stop RT-program
ABORT-BATCH	batch no.	abort batch process
ABORT-JOB	batch no., user name	abort current batch job
ABORT-PRINT	peripheral file	abort current print
ABSET	RT-program name, seconds, minutes, hours	start RT-program at a fixed time of day
ALLOCATE-FILE	file name, page address, no. of pages	create and allocate file
ALLOCATE-NEW-VERSION	file name, page address, no. of pages	create and allocate new version of file
ALTOFF	none	reset 2-bank mode
ALTON	none	set 2-bank mode
APPEND-BATCH	batch no., input file, output file	append batch files to batch queue
APPEND-REMOTE	host computer, input file	append remote batch file to remote batch queue
APPEND-SPOOLING-FILE	peripheral file, file name, no. of copies, text [,printing message]	append file to spooling queue
BACKSPACE-PRINT	peripheral file, no. of pages, no. of lines	backspace current print-out
BATCH	optional: batch number	start batch process
CC	none	comment in batch/mode
CHANGE-BACKGROUND-SEGMENT-SIZE	device no., no. of pages	change virtual memory size
CHANGE-BIT-FILE	directory name, block no.	change specified bit-file block
CHANGE-DIRECTORY-ENTRY	device name,unit, [fixed/removable,subunit]	change contents of directory entry

Command	Parameters	Short Description
CHANGE-OBJECT-ENTRY	user name, object no.	change specified object entry
CHANGE-PAGE	directory name, page no.	change specified page
CHANGE-PASSWORD	new password, old password	change user password
CHANGE-USER-ENTRY	directory name, user no.	change user entry
CLADJ	no.of time units, timeunit	adjust internal clock
CLEAR-BATCH-QUEUE	batch process number	empty one batch queue
CLEAR-DEFAULT-DIRECTORY	directory name	remove status as default directory.
CLEAR-DEVICE	logical device number	execute clear device
CLEAR-MAIN-DIRECTORY	directory name	remove status as main directory
CLEAR-PASSWORD	user name	clear user password
CLEAR-REENTRANT-SEGMENT	segment name/number	similar to RT-Loader command CLEAR-SEGMENT
CLOSE-FILE	file no.	close opened file
COLD-START	none	perform a cold start
CONCT	RT-program name, logical unit no.	connect RT-program to interrupt line
CONNECT-FILE	file name, file no., access mode	open file for access on given file number
CONTINUE	none	restart background program
COPY	destination file, source file	copy from/to file or device
COPY-DEVICE	destination device, source device	copy all pages from source to destination
COPY-DIRECTORY	destination directory name source directory name	copy all files from source directory to destination directory
COPY-FILE	destination file,source f.	copy file or device

Command	Parameters	Short Description
CREATE-DIRECTORY	directory name, device name, unit [,fixed/ removable, subunit], bit file address	create a directory
CREATE-FILE	file name, no. of pages	create one or more versions of a file
CREATE-FRIEND	friend name	define user as friend
CREATE-NEW-VERSION	file name, no. of pages	create one or more new versions of file
CREATE-USER	user name	create a new user
DATCL	none	current time and date
DEFAULT-SUBSYSTEM-DISABLE	terminal number	disable execution of default subsystem
DEFAULT-SUBSYSTEM-ENABLE	terminal number	enable execution of default subsystem
DEFINE-DEFAULT-SUBSYSTEM	subsystem name	define a (global) command string
DEFINE-ESCAPE-CHARACTER	logical unit, escape character	define value of break character
DEFINE-HISTOGRAM	program name, start address, interval	define intervals for measuring CPU time
DEFINE-LOCAL-CHARACTER	terminal number,value of local character	defines local char. for a given terminal
DEFINE-MASS-STORAGE-UNIT	directory name, device name, unit[,fixed/removable, subunit]	define device in directory table
DEFINE-REENTRANT-PROGRAM	program name, start address, restart address, segment no. or name	define new entry in already built reentrant segment
DEFINE-SPOOLING-CONDITIONS	peripheral file,printing name of spooling files?, stop wait for START-PRINT, no. of lines per page	define conditions for spooling
DEFINE-SPOOLING-FILE-MESSAGE	text, independant of spooling conditions?	define message to operator on printing

Command	Parameters	Short Description
DEFINE-SYSTEM-HISTOGRAM	program name, interrupt level,start address, interval	define address area, interrupt level for measuring CPU time
DEFINE-TERMINATION-HANDLING	background,RT	define termination handling
DELETE-BATCH-QUEUE-ENTRY	batch no., input file, output file	delete entry from batch queue
DELETE-FILE	file name	delete file
DELETE-FRIEND	friend name	delete friend
DELETE-MASS-STORAGE-UNIT	directory name, device name, unit[,fixed/removable, subunit]	delete device from directory table
DELETE-REENTRANT	subsystem name	delete reentrant subsystem
DELETE-REMOTE-QUEUE-ENTRY	host computer, queue entry	delete entry from remote batch queue
DELETE-SPOOLING-FILE	peripheral file, file name	remove file from spooling queue and empty it
DELETE-USER	user name	delete user
DELETE-USERS-FILES	file name, manual check	delete all files with matching file names
DEVICE-FUNCTION	file name, function, optional parameter 1,2	various operations on special devices
DIRECTORY-STATISTICS	directory name, output file	list statistics of directories entered
DISABLE-ESCAPE-FUNCTION	logical unit	set terminal in "non-user-break" mode
DISABLE-TERMINATION-HANDLING	background, RT terminal no.	disable termination handling
DMAC	none	assembler for system debugging
DSCNT	RT-program name	disconnect RT-program
DUMP	file name, start address, restart address	save contents of a user's virtual memory

Command	Parameters	Short Description
DUMP-BIT-FILE	directory name, block no., output file	octal dump of one 16-word block from bit-file of a directory
DUMP-DIRECTORY-ENTRY	device name,unit, [fixed/removable,subunit,] output file	octal dump of directory entry
DUMP-OBJECT-ENTRY	user name, object no., output file	octal dump of object entry
DUMP-PAGE	directory name, page address, output file	octal dump of one page
DUMP-PROGRAM-REENTRANT	subsystem name, file name, segment name	dump a :PROG file as a reentrant subsystem
DUMP-REENTRANT	subsystem name, start address, restart address, binary file, segment name	dump a :BPUN file as a reentrant subsystem
DUMP-USER-ENTRY	directory name, user no., output file	octal dump of user entry
ENABLE-ESCAPE-FUNCTION	logical unit	reset non-user-break mode of terminal
ENABLE-TERMINATION-HANDLING	background, RT	enable termination handling
ENTER	user name, password, project password, max. time	identify the owner of a batch job
ENTER-DIRECTORY	directory name, device name, unit[,fixed/removable, subunit]	enter directory into the file system
ENTSG	segment no.,PIT,interrupt level, start address	define the condition under which a direct task will be run
EXECUTE-IOX	value, device no.	execute an IOX instr.
EXPAND-FILE	file name, no. of pages	expand contiguous file
FILE-STATISTICS	file name, output file	list statistics of files matching name
FIX	segment no.	fix segment in memory

Command	Parameters	Short Description
FIXC	segment no., first physical page	contiguously fix segment in memory
FORWARD-SPACE-PRINT	peripheral file, no. of pages, no. of lines	forward space current print-out
GET-ERROR-DEVICE	none	show logical unit no. of error device
GET-RT-NAME	octal address	get RT-program name given RT-descr. addr.
GET-TERMINAL-TYPE	logical unit	show terminal type
GIVE-OBJECT-BLOCKS	directory:user, no. of object blocks	increase max. number of files for user
GIVE-SPOOLING-PAGES	no. of pages	increase no. of spooling pages
GIVE-USER-SPACE	user name, no. of pages	give user space in directory
GOTO-USER	octal address	start background prog
HELP	command, output file	list matching command
HOLD	no.of time units,time unit	enter waiting state for specified time
INIT-ACCOUNTING	desired, max., background[,RT,spooling, clear logged information, logging interval, ND-500]	initialize and start accounting of specified resources
INITIAL-COMMAND	command string	execute command at system restart
INITIALIZE-BACKGROUND-PROGRAMS	none	start background programs
INITIALIZE-ERROR-LOG	none	initialize error log segment
INTV	RT-program name, no. of time units, time unit	schedule RT-program for periodic exec.
IOSET	Unit, input/output, RT program name, control	reset device / clear device buffers
LIST-BATCH-PROCESS	none	list status of batch processors

Command	Parameters	Short Description
LIST-BATCH-QUEUE	batch no.	list batch queue
LIST-DEFAULT-SUBSYSTEM	output file	list command string executed after login
LIST-DEVICE	logical unit, input/output	list RT-program reserving device
LIST-DEVICE-FUNCTION	command, output file	list available @DEVICE-FUNCTIONs
LIST-DIRECTORIES-ENTERED	directory name,output file	list names of directories entered
LIST-EXECUTION-QUEUE	none	list execution queue
LIST-FILES	file name, output file	list names of file names matching given name
LIST-FRIENDS	friend name, output file	list names of friends matching names
LIST-INITIAL-COMMANDS	output file	list commands to be exec. at syst. start
LIST-MASS-STORAGE-UNIT	output file	list directory table
LIST-OPEN-FILES	output file	list numbers/names of opened files
LIST-REENTRANT	none	list reentrant subsystems
LIST-REMOTE-QUEUE	host computer	list remote batch queue
LIST-RT-ACCOUNT	output file	list accounting data for RT-programs
LIST-RT-DESCRIPTION	RT-program name	list RT-description
LIST-RTOPEN-FILES	none	list files open by RT-programs
LIST-RT-PROGRAMS	output file	list all RT-programs
LIST-SEGMENT	segment no.	list segment info.

Command	Parameters	Short Description
LIST-SPOOLING-FORM	peripheral file	list info. on spooling forms
LIST-SPOOLING-QUEUE	peripheral file, output file	list spooling queue on a device
LIST-TERMINATION-HANDLING	background, RT	list defined termination commands
LIST-TIME-QUEUE	none	list time queue
LIST-TITLE	none	list system ident.
LIST-USERS	user name, output file	list all users matching names
LOAD-BINARY	file name	load / start program in :BPUN format
LOAD-REENTRANT-SEGMENT	file name, segment name	build a reentrant segment
LOGOUT	none	log out user and release terminal
LOOK-AT	space reference	examine/change memory
MAIL	[output file]	enter mail system
MEMORY	lower bound, upper bound	define dump area
MEMORY-LIMITS	low program address, high program address, low data address, high data address	define virtual memory dump area
MODE	input file, output file	execute SINTRAN cmd. from input file
MOVE-SPOOLING-QUEUE-ENTRY	peripheral file,file name, insert or append, before/after file name	edit spooling queue
NEXT-INITIAL-COMMAND	command string	define further cmd.s to be run at restart
NEXT-TERMINATION-COMMAND	command string	given command will be executed at terminat.
OPCOM	none	enter operator's communication
OPEN-FILE	file name, access mode	open file

Command	Parameters	Short Description
OPERATOR	text	send message to error device
PLACE-BINARY	file name	load :BPUN file
PLACE-PROGRAM	file name	load a :PROG program do not start
PRINT-ERROR-LOG	output file	print error log
PRINT-HISTOGRAM	output file	print percentage of CPU time spent as defined
PRIOR	RT-program name, priority	set priority of RT-p.
PRLS	logical unit, input/output	force-release device
PRSRV	logical unit,input/output, RT-program name	reserve unit for RT-program
RECOVER	file name	start background prog
REGENERATE-DIRECTORY	directory name	regenerate specified directory
RELEASE-DEVICE-UNIT	device name, unit	release reserved device
RELEASE-DIRECTORY	directory name	releases a directory from file system use
RELEASE-FILE	device name	release logical unit (peripheral file)
RELEASE-OPEN-FILE-ENTRIES	none	release reserved resources
REMOVE-FROM-SPOOLING-QUEUE	peripheral file, file name	remove specified spooling queue entry
RENAME-DIRECTORY	old directory name, new directory name, device name, unit, [fixed/removable,subunit]	rename directory on specified device
RENAME-FILE	old file name, new object name:type	change file name/type
RENAME-USER	old user name, new user name	change name of user in given directory

Command	Parameters	Short Description
RESERVE-DEVICE-UNIT	device name, unit	reserve device for special use
RESERVE-DIRECTORY	directory name	reserve directory for special use
RESERVE-FILE	device name	reserve given unit
RESERVE-OPEN-FILE-ENTRIES	system name, access-id, no. of entries	reserve resources on remote system
RESET-DEFAULT-REMOTE-SYSTEM	none	resets user ident. back to local user
RESTART-PRINT	peripheral file	restart current print from beginning
RESTART-SYSTEM	none	stop system and it (warm start)
RESTART-USER	logical unit	restart time sharing user (@WAIT-FOR-OPER)
RFILE	file no., memory address, block no., no. of words	random read from file
RT	RT-program name	start RT-program
RT-LOADER	none	start RT-Loader
RT-PROGRAM-LOG	RT-program name, report interval,interrupts/sample logical unit 1, logical unit 2,output file	measure usage of resources
RTCLOSE-FILE	file number	close file for RT-prg
RTCONNECT-FILE	file name, file no., access mode	open file with number for access by RT-prog
RTENTER	none	allow file handling from RT-programs
RTOFF	RT-program name	inhibit RT-program
RTON	RT-program name	allow RT-program
RTOPEN-FILE	file name, access mode	open file for RT-prog
RTRELEASE-OPEN-FILE-ENTRIES	none	release reserved file entries remote

Command	Parameters	Short Description
RTRESERVE-OPEN-FILE-ENTRIES	system name, access-id, no. of entries	reserve resources on remote system
SAVE-DIRECTORY	destination device, source device	same as @COPY-DEVICE
SCHEDULE	device numbers.	reserve devices
SCRATCH-OPEN	file name, access mode	open file as scratch
SET	RT-program name, no. of time units, time unit	start RT-program after a given time
SET-AVAILABLE	none	set system available
SET-BLOCK-POINTER	file no., block no.	set byte pointer to first byte in block
SET-BLOCK-SIZE	file no., block size	set blocksize of file
SET-BYTE-POINTER	file no., byte no.	set byte pointer to specified byte number
SET-DEFAULT-DIRECTORY	directory name	set directory as default directory
SET-DEFAULT-FILE-ACCESS	public access, friend access, owner access	set default file access for new users
SET-DEFAULT-REMOTE-SYSTEM	system name, user name, password, project password	set remote system and user as default
SET-ERROR-DEVICE	logical unit	error messages appear on specified terminal
SET-FILE-ACCESS	file name, public access, friend access,owner access	set access for specified file
SET-FRIEND-ACCESS	friend name, access mode	set access of friend
SET-INITIAL-FILE-ACCESS	public access, friend access, own access	set initial file access for new users
SET-INITIAL-FRIEND-ACCESS	public access, friend access, own access	set initial friend access for new users
SET-LOCAL-MODE	none	reset file system
SET-MAIN-DIRECTORY	directory name	define a directory as main directory
SET-MEMORY-CONTENTS	contents, lower limit, upper limit	set contents of user logical memory area

Command	Parameters	Short Description
SET-NUMBER-OF-PRINT-COPIES	peripheral file,file name, no. of copies	specify desired no. of copies
SET-PERIPHERAL-FILE	file name, device no.	define name of a file for peripheral device
SET-PERMANENT-OPEN	file no.	set open file permanently open
SET-REMOTE-MODE	none	define default remote system
SET-SPOOLING-FORM	peripheral file name, spooling form identification	define spooling parameters
SET-TEMPORARY-FILE	file name	define file as a temporary file
SET-TERMINAL-FILE	file name	define a name of the terminal file
SET-TERMINAL-TYPE	logical unit,terminal type	set terminal type
SET-UNAVAILABLE	text	set system unavailab.
SET-USER-PARAMETERS	P1: - P5:	set the five user parameters in SINTRAN
SINTRAN-SERVICE-PROGRAM	none	activate the SINTRAN SERVICE PROGRAM
SPOOLING-PAGES-LEFT	none	list number of free spooling pages
START-ACCOUNTING	background [,RT, clearing logged info., logging interval, ND-500], spooling	start accounting specified resources
START-HISTOGRAM	none	start sampling of CPU
START-PRINT	peripheral file	resume printing
START-PROGRAM-LOG	interrupts/sample	start sampling of CPU usage
START-RT-ACCOUNT	RT-program	start accounting for specified RT-program
START-SPOOLING	peripheral file	start spooling on dev
START-TADADM	none	start TADADM

Command	Parameters	Short Description
STATUS	none	list register values
STOP-ACCOUNTING	background [,RT, ND-500], spooling	stop accounting given resources
STOP-HISTOGRAM	none	stop sampling of CPU
STOP-PRINT	peripheral file	stop current printout
STOP-PROGRAM-LOG	output file	stop sampling / print CPU usage measurement
STOP-RT-ACCOUNT	RT-program name	stop accounting for RT-programs
STOP-SPOOLING	peripheral file	stop spooling for dev
STOP-SYSTEM	none	stop the system
STOP-TADADM	none	stop TADADM
STOP-TERMINAL	logical unit	force logout of user and release terminal
TADADM	none	list TAD status
TAKE-OBJECT-BLOCKS	directory:user, no. of object blocks	reduce max. number of files on
TAKE-SPOOLING-PAGES	no. of pages	decrease number of spooling pages
TAKE-USER-SPACE	user name, no. of pages	take pages from user
TERMINAL-MODE	capital letters, delay after carriage return, stop on full page, logout on missing carrier	define operational requirements of a terminal
TERMINAL-STATUS	terminal no., interval	print information on terminal usage
TEST-DIRECTORY	directory name	error test directory and rebuild bit-file
TIME-USED	none	print time used
UE-AUTOMATIC-LOGIN	all terminals, enable/disable, [term.no]	define UE-status on terminals
UNFIX	segment	unfix a FIXed segment

Command	Parameters	Short Description
UNRESERVE-DIRECTORY	directory name	release directory from special use
UPDAT	minute, hour, day, month, year	update clock/calendar
USER-STATISTICS	user name, output file	list user statistics
WAIT-FOR-OPERATOR	none	wait for oper. action
WFILE	file no., memory address, block no., no. of words	random write to file
WHERE-IS-FILE	file name	who has reserved dev.
WHO-IS-ON	none	who is logged in

1.3 COMMAND DESCRIPTIONS

@ABORT

Function:
Stops an RT-program by setting it in the passive state. It is removed from the time queue and execution queue, all resources are released and periodic execution is discontinued.

Related commands:

Related SINTRAN III commands:	ABORT-BATCH
	ABORT-JOB
	STOP-TERMINAL
Related ND-500 Monitor commands:	ABORT-PROCESS
	LOGOUT-PROCESS
Related SINTRAN III Monitor calls:	ABORT (MON 105)
	RTEXT (MON 134)

Format:
@ABORT <program>

Parameters:
<program> RT-program name or RT-description address.

Rules:
1. Permitted only for users RT and SYSTEM
2. The command has effect only if the program is in the running or wait state.
3. Do not abort a background program. If a background program is hanging, the system may have to be restarted. Contact your system supervisor.

Example:
@ABORT KLOKK

The RT-program KLOKK is aborted.

@ABORT-BATCH

Function:
Stop the batch processor by setting it in the passive state. Any currently running batch job is aborted and the batch queue cleared.

Related commands:
Related SINTRAN III commands: ABORT
ABORT-JOB
BATCH
CLEAR-BATCH-QUEUE

Format:
@ABORT-BATCH <batch no.>

Parameters:
<batch no.> batch processor number as returned from @BATCH (decimal value).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Effective only if the batch processor is idle or active.

Example:
@ABORT-BATCH 1

The batch processor no. 1 is aborted.

@ABORT-JOB

Function:
Abort the current batch job being processed. The next batch job in the batch queue (if any) will be initiated.

Related commands:
Related SINTRAN III commands: ABORT-BATCH
DELETE-BATCH-QUEUE-ENTRY

Format:
@ABORT-JOB <batch no.>,<user name>

Parameters:
<batch no.> batch processor number as returned from @BATCH.
<user name> owner of the batch job as specified by @ENTER.

Rules:
1. Users may abort their own job and user SYSTEM may abort a batch job belonging to any <user name>.
2. Only effective if <user name> is logged in on the batch processor.

Example:
@ABORT-JOB 2,GUEST

The current batch job for batch processor 2 is aborted if its owner is GUEST.

@ABORT-PRINT

Function:
Abort the current print-out on a spooling device and let the spooling program continue with the next file in the queue.

Related commands:
Related SINTRAN III commands: STOP-PRINT
STOP-SPOOLING

Format:
@ABORT-PRINT <peripheral file name>

Parameters:
<peripheral file name> name of the spooling device.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file.
2. Effective only if the spooling program for the peripheral is started and a file is being printed on it.

Example:
@ABORT-PRINT LINE-PRINTER

The current file on LINE-PRINTER is aborted.

@ABSET

Function:
Start an RT-program at a specific time of day. The program is put in the time queue and moved to the execution queue at the specified time.

Related commands:

Related SINTRAN III commands:	INTV
	SET
Related SINTRAN III Monitor calls:	ABSET (MON 102)
	INTV (MON 103)
	SET (MON 101)

Format:
@ABSET <program name>,<second>,<minute>,<hour>

Parameters:

<program name>	RT-program name or address (octal value) of RT-description (default = own terminal background program).
<second>	(decimal value in the range 0-59, default = 0).
<minute>	(decimal value in the range 0-59, default = 0).
<hour>	(decimal value in the range 0-23, default = 0).

Rules:
1. Permitted for users RT and SYSTEM.
2. If the time of day has passed, the program is scheduled for the next day.
3. If the program is already in the time queue, it is removed and inserted according to the new specifications.
4. Programs in the time queue scheduled by @ABSET are rescheduled according to the new clock, if the clock is adjusted (CLADJ).

Example:
@ABSET KLOKK,,10,13

KLOKK will be put in the execution queue at 13:10.

@ALLOCATE-FILE

Function:
Create and allocate a contiguous file. The file is created on a specified area of a disk.

Related commands:

Related SINTRAN III commands:	ALLOCATE-NEW-VERSION
	CREATE-FILE
	EXPAND-FILE
Related SINTRAN III Monitor calls:	CRALF (MON 221)

Format:
@ALLOCATE-FILE <file name>,<page address>,<no. of pages>

Parameters:

<file name>	optional version number specifies the number of versions allocated (default type = :DATA, default version = 1).
<page address>	page number on the device where the file is to start (octal value, 1→).
<no. of pages>	size of the contiguous file area (decimal value, 1→).

Rules:
1. Permitted for all users.
2. If several versions are created, they are allocated one after the other. Version 1 will start at <page address>.
3. The allocated area must not be already in use.

Example:
@ALLOCATE-FILE FILE-3,100,8

The contiguous file FILE-3:DATA is allocated in the executing user's default directory starting at address 100_8. Its size is 8_{10} pages.

@ALLOCATE-NEW-VERSION

Function:
Create and allocate a new version of a contiguous file. The file is created on a specified area of a disk.

Related commands:
Related SINTRAN III commands: ALLOCATE-FILE
CREATE-NEW-VERSION
Related SINTRAN III Monitor calls: CRALF (MON 221)

Format:
@ALLOCATE-NEW-VERSION <file name>,<page address>,<no. of pages>

Parameters:

<file name>	file name with indication of highest version. For version (v) see rule 3 of @CREATE-NEW-VERSION (default type = :DATA).
<page address>	page number on the device where the file is to start (octal value, 1→).
<no. of pages>	size of the contiguous file area (decimal value, 1→).

Rules:
1. Permitted for all users.
2. The allocated area must not be already in use.

Example:
@ALLOCATE-NEW-VERSION FILE-3;2,200,8

Version 2 of the contiguous file FILE-3 is created and allocated at address 200_8 in default directory. Its size is 8_{10} pages.

@ALTOFF

Function:
To reset 2-bank mode.

Related commands:
Related SINTRAN III commands: ALTON
CHANGE-BACKGROUND-SEGMENT-SIZE

Format:
ALTOFF

Parameters:
None.

Rules:
1. Permitted for all users.

@ALTON

Function:
To set 2-bank mode.

Related commands:
Related SINTRAN III commands: ALTOFF
CHANGE-BACKGROUND-SEGMENT-SIZE

Format:
ALTON

Parameters:
None.

Rules:
1. Permitted for all users.

@APPEND-BATCH

Function:
Append a batch job to the batch queue.

Related commands:
Related SINTRAN III commands: APPEND-REMOTE
BATCH
ENTER
MODE

Format:
@APPEND-BATCH <batch no.>,<input file>,<output file>

Parameters:

<batch no.>	batch processor number as returned from @BATCH or @LIST-BATCH-PROCESS.
<input file>	name of a file containing one or more batch jobs (default type = :SYMB).
<output file>	name of file to which the output is appended (default type = :SYMB).

Rules:
1. Permitted for all users.
2. <Input file> must have read access for all users with jobs on it and for the user SYSTEM.
3. <Output file> must have write append access for all users with jobs on the corresponding <input file>.
4. In a batch job, logical device number 1 means the <input file>/<output file> pair is in use.
5. The command is only valid if the batch processor is started (see @BATCH).
6. The batch file must be terminated with double escape.

Example:
@APPEND-BATCH 1,JOB-1,LINE-PRINTER

The batch input file JOB-1:SYMB is appended to batch processor 1. Output is appended to LINE-PRINTER.

@APPEND-REMOTE

Function:
Append a batch input file to the remote batch queue for a remote computer. This is used for remote job entry (RJE) to a host computer.

Related commands:
Related SINTRAN III commands: APPEND-BATCH
DELETE-REMOTE-QUEUE-ENTRY
LIST-REMOTE-QUEUE

Format:
@APPEND-REMOTE <remote computer>,<input file>

Parameters:

<remote computer>	peripheral file name denoting the host computer. Standard names are IBM, CDC, UNIVAC and HONEYWELL-BULL (default type = REM).
<input file>	name of the file containing one or more batch jobs.

Rules:
1. Permitted for all users.
2. <Input file> must have read access for user RT.

Example:
@APPEND-REMOTE UNIVAC,JOB-1

The batch input file JOB-1 is appended to the batch queue for the remote computer UNIVAC.

@APPEND-SPOOLING-FILE

Function:
Append a spooling queue entry to a spooling queue. When this entry is processed by a spooling program, one or more copies of the file will be printed.

Related commands:

Related SINTRAN III commands:	DEFINE-SPOOLING-CONDITIONS
	LIST-SPOOLING-QUEUE
Related SINTRAN III Monitor calls:	APSPF (MON 240)
	SPCLO (MON 40)

Format:
@APPEND-SPOOLING-FILE <peripheral file name>,<file name>,
<no. of copies>,<text>[,<printing message?>]

Parameters:

<peripheral file name>	name of peripheral file associated with spooling program.
<file name>	the file to be appended.
<no. of copies>	number of output copies required (decimal value, default = 1).
<text>	any printable characters terminated by an apostrophe '. The text is printed on the error device when file output is started. If no text is given ' alone must be given.
<printing message?>	YES = wait for a @START-PRINT command after printing <text>. This specification overrides @DEFINE-SPOOLING-CONDITIONS. NO = the text is printed on the error device only if @DEFINE-SPOOLING-CONDITIONS specifies print (default = NO).

Rules:
1. Permitted for all users.
2. If no <text> is specified, the last parameter is ignored.
3. The parameter <file name> may specify files on a remote computer. The file specification may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

Example:
@APPEND-SPOOLING-FILE LINE-PRINTER,F-1,,MOUNT FORM-1',YES

One copy of the file F-1 is appended to the spooling queue of LINE-PRINTER. The message "MOUNT FORM-1" is output on the error device before the printing starts. The spooling program then waits for @START-PRINT.

@BACKSPACE-PRINT

Function:
Causes the spooling program to repeat the printing of the specified pages or lines and then continue to the end of the file.

Related commands:
Related SINTRAN III commands: FORWARD-SPACE-PRINT
RESTART-PRINT
START-PRINT
STOP-PRINT

Format:
@BACKSPACE-PRINT <peripheral file name>,<no. of pages>,<no. of lines>

Parameters:

<peripheral file name>	spooling device name.
<no. of pages>	number of pages to backspace.
<no. of lines>	number of lines to backspace (decimal value, default = 0).

Rules:
1. Permitted only for user SYSTEM and the user who appended the current print file to the queue.
2. Valid only when spooling is started and printing has been stopped by @STOP-PRINT.
3. The number of lines per page may be changed by @DEFINE-SPOOLING-CONDITIONS.

Example:
```
@STOP-PRINT LINE-PRINTER
@BACKSPACE-PRINT LINE-PRINTER,2,,
@START-PRINT LINE-PRINTER
```

The spooling output for LINE-PRINTER is stopped and output is resumed, starting two pages back.

@BATCH

Function:
Start a passive batch processor.

Related commands:
Related SINTRAN III commands: ABORT-BATCH
APPEND-BATCH
LIST-BATCH-PROCESS

Format:
@BATCH [<batch number>]

Parameters:
<batch number> Start the batch process indicated. Default value is the first batch process not started.

Rules:
1. Permitted only for users RT and SYSTEM.
2. The response is: BATCH NUMBER = n, where n is the decimal number of this batch processor. The number is used to identify this batch processor in other commands.
3. If no passive batch processor is available an error message is given.
4. When a batch processor is started, it enters the idle state because the batch queue is empty. It is activated by the first @APPEND-BATCH command.
5. If the optional parameter is used, the corresponding batch processor will start. Otherwise the first passive batch processor will be activated.

Example:
@BATCH
BATCH NUMBER = 2

Batch processor no. 2 is activated. (Batch processor 1 is already active.)

@CC

Function:
Comment. The command or text which follows has no effect. Normally used in batch or mode files.

Related commands:
Related SINTRAN Service Program commands: CC
Related ND-500 Monitor commands: CC

Format:
@CC <text>

Parameters:
<text> any printable characters.

Rules:
1. Permitted for all users.
2. There should be a space between the second C and the text.

@CHANGE-BACKGROUND-SEGMENT-SIZE

Function:
Change segment size for a particular background program.

Related commands:

Related SINTRAN III commands:	ALTOFF
	ALTON
Related SINTRAN III Monitor calls:	ALTOF (MON 34)
	ALTON (MON 33)

Format:
@CHANGE-BACKGROUND-SEGMENT-SIZE ,<no. of pages>

Parameters:

<segment (name or number)> must be a segment identification: segment number or segment name for a background segment.

<background segment size in pages> must be 128 or 64 (decimal value, default is 128)).

Rules:

1. Permitted only for user SYSTEM.
2. This command must be executed after @INITIALIZE-BACKGROUND-PROGRAMS.
3. A 64K segment is automatically re-allocated if there is not enough space on the segment file for a 128K segment.

Example:
@CHANGE-BACKGROUND-SEGMENT-SIZE 250,64

The background segment number 250_8 is set to 64 pages.

@CHANGE-BIT-FILE

Function:
Change a block in the bit file of a directory.

Related commands:
Related SINTRAN III commands: DUMP-BIT-FILE

Format:
@CHANGE-BIT-FILE <directory name>,<block no.>
(subcommands)

Parameters:
<directory name>
<block no.> see rule 3 below (decimal value, default = 0).

Rules:
1. Permitted only for user SYSTEM.
2. Should not be used in batch or mode jobs.
3. The subcommands must follow rule 3 given in @LOOK-AT. Terminate subcommands with a full stop.
4. The bit file is divided into 20_8 word blocks. <address> in subcommands is relative address within block (0 - 17_8).

Example:
```
@CHANGE-BIT-FILE PACK-ONE,5
5/177777 157777
2000 .
@
```

@CHANGE-DIRECTORY-ENTRY

Function:
Change the contents of the directory entry on a device unit.

Related commands:
Related SINTRAN III commands: DUMP-DIRECTORY-ENTRY

Format:
@CHANGE-DIRECTORY-ENTRY <device name>,<unit>[,<'F' or 'R'>,<subunit>]
(subcommands)

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. Permitted only for user SYSTEM.
2. Should not be used in batch or mode jobs.
3. The directory must not be entered.
4. <'F' or 'R'> is only used for fixed or removable cartridge disk.
5. <subunit> is only required on logically sub-divided disks.
6. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
7. The parameter <unit> is now always required.
8. The subcommands must follow the rules given for @LOOK-AT. Terminate subcommands with a full stop. <address> is relative address in the range 0 - 17_8.

Example:
```
@CHANGE-DIRECTORY-ENTRY DISC-10MB-1,0,R
17/  33 20
1000 .
@
```

Change the number of unreserved pages from 33_8 to 20_8.

@CHANGE-OBJECT-ENTRY

Function:
Change the specified object entry.

Related commands:
Related SINTRAN III commands: DUMP-OBJECT-ENTRY
LIST-FILES

Format:
@CHANGE-OBJECT-ENTRY [<directory name>:]<user name>,<object no.>
(subcommands)

Parameters:

<directory name>:<user name>	the user name (and directory) of the file.
<object no.>	the object number of the file (decimal value, default = 0).

Rules:
1. Permitted only for user SYSTEM.
2. Should not be used in batch or mode jobs.
3. The subcommands must follow rule 3 given for @LOOK-AT. Terminate subcommands with a full stop. <address> is relative address in the range 0 to 37_8.
4. If no <directory name> is specified, the user's main directory is used.

Example:
```
@CHANGE-OBJECT-ENTRY P-T:GUEST,15
35/  1000 2000
2000 .
@
```

Change the maximum byte pointer in file no. 15 of user GUEST from 1000 to 2000.

@CHANGE-PAGE

Function:
Change a page in a directory.

Related commands:
Related SINTRAN III commands: DUMP-PAGE

Format:
@CHANGE-PAGE <directory name>,<page address>
(subcommands)

Parameters:

<directory name>	name of the directory.
<page address>	address within the directory (octal value, default = 0).

Rules:
1. Permitted only for user SYSTEM.
2. Should not be used in batch or mode jobs.
3. The subcommands must follow rule 3 given for @LOOK-AT. Terminate subcommands with a full stop. <address> is relative address within the page in the range 0 to 1777_8.

Example:
```
@CHANGE-PAGE PACK-TWO,100
400/  1000 2000
2000 .
@
```

Change location 400 on page 100 in directory PACK-TWO from 1000 to 2000.

@CHANGE-PASSWORD

Function:
Change user password.

Related commands:
Related SINTRAN III commands: CLEAR-PASSWORD

Format:
@CHANGE-PASSWORD <old password>,<new password>

Parameters:
<old password> (mandatory).
<new password> (default = no password).

Rules:
1. Permitted for all users.
2. The password is only changed if the old one is specified correctly.
3. A password may consist of printable and control characters, except carriage return.
4. The parameters are not echoed on the terminal if the command is entered on more than one line (see example).
5. Only the password of the logged-in user may be changed.

Example:
```
@CHANGE-PASSWORD
OLD PASSWORD: (old password is entered)
NEW PASSWORD: (new password is entered)
@
```

@CHANGE-USER-ENTRY

Function:
Change a user entry in a directory.

Related commands:
Related SINTRAN III commands: DUMP-USER-ENTRY

Format:
@CHANGE-USER-ENTRY <directory name>,<user no.>
(subcommands)

Parameters:

<directory name>	directory name of the directory containing the specific user (default = main directory)
<user no.>	number of the user found by @USER-STATISTICS (decimal value, default = 0).

Rules:
1. Permitted only for user SYSTEM.
2. Should not be used in batch or mode jobs.
3. The subcommands must follow rule 3 given for @LOOK-AT. Terminate subcommands with a full stop. <address> is relative address in the range 0 to 37_8.

Example:
```
@CHANGE-USER-ENTRY PACK-TWO,19
20/  1200 400
0 .
@
```

Change the number of pages used by user 19 in PACK-TWO from 1200_8 to 400_8.

@CLADJ

Function:
Adjust internal clock.

Related commands:
Related SINTRAN III commands: DATCL
UPDAT
Related SINTRAN III Monitor calls: CLADJ (MON 112)

Format:
@CLADJ <no. of time units>,<time unit>

Parameters:

<no. of time units>	time adjustment as a positive or negative number (decimal value).
<time unit>	see @SET.

Rules:
1. Permitted only for user RT and SYSTEM.
2. The software clock and calendar are set forward if the adjustment is positive or stand still for the specified period if it is negative.
3. The time queue is checked and the schedule of all programs started by @ABSET is corrected.
4. The command adjusts the panel clock.

Example:
@CLADJ -25,2

The internal clock will stand still for 25 seconds.

@CLEAR-BATCH-QUEUE

Function:
Delete all entries in a batch queue.

Related commands:
Related SINTRAN III commands: ABORT-BATCH
DELETE-BATCH-QUEUE-ENTRY
LIST-BATCH-PROCESS
LIST-BATCH-QUEUE

Format:
@CLEAR-BATCH-QUEUE <batch process number>

Parameters:
<batch process number> The number of a batch process.

Rules:
1. Permitted for user SYSTEM only.

@CLEAR-DEFAULT-DIRECTORY

Function:
Clear the specified directory from the list of entered directories which are marked as default.

Related commands:
Related SINTRAN III commands: CLEAR-MAIN-DIRECTORY
SET-DEFAULT-DIRECTORY

Format:
@CLEAR-DEFAULT-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. Only user SYSTEM may clear the default status of a directory on a hard disk. Any user may clear the default status of a floppy disk.
2. A default directory can only be cleared if no user is logged in with this directory as default.
3. A main directory is always default, and its main status must be cleared before its default status can be cleared.

@CLEAR-DEVICE

Function:
Execute a clear device operation (IOX instruction). This command can for example be used to stop the line printer if an attempt is made to print non-alphanumeric information, or it can be used to stop a search for a nonexistent EOF mark on a magnetic tape and prevent the tape from winding off.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION CLEAR-DEVICE
EXECUTE-IOX
IOSET

Format:
@CLEAR-DEVICE <logical device no.>

Parameters:
<logical device no.> logical number of a peripheral device (octal value).

Rules:
1. Permitted only for user SYSTEM.
2. @CLEAR-DEVICE on a magnetic tape operates on the magnetic tape controller, that is, if several magnetic tape stations are connected to the same controller, they are all cleared through one @CLEAR-DEVICE command.

Example:
@CLEAR-DEVICE 22

Clear the Versatec printer on DMA.

@CLEAR-MAIN-DIRECTORY

Function:
Clear the specified directory from the list of entered directories marked as main.

Related commands:
Related SINTRAN III commands: CLEAR-DEFAULT-DIRECTORY
SET-MAIN-DIRECTORY

Format:
@CLEAR-MAIN-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. Only executable by user SYSTEM.
2. After clearing the main status of a directory, it is still left as a default directory.
3. No user must be logged in with this directory as main directory.

@CLEAR-PASSWORD

Function:
Clear the password of a user.

Related commands:
Related SINTRAN III commands: CHANGE-PASSWORD

Format:
@CLEAR-PASSWORD <user name>

Parameters:
<user name> name of the user.

Rules:
1. Permitted only for user SYSTEM.
2. User SYSTEM should not forget his/her password!

Example:
@CLEAR-PASSWORD GUEST

The password for user GUEST is cleared.

@CLEAR-REENTRANT-SEGMENT

Function:
To clear a specified segment, that is, release the space on the segment file occupied by that segment. The segment number will then be free again.

Related commands:
Related SINTRAN III commands: LOAD-REENTRANT-SEGMENT
Related RT-Loader commands: CLEAR-SEGMENT

Format:
@CLEAR-REENTRANT-SEGMENT <segment name/number>

Parameters:
<segment name/number> The name or number of the segment.

Rules:
1. Permitted only for user SYSTEM.

@CLOSE-FILE

Function:
Close one or more files opened by currently logged-in user.

Related commands:
Related SINTRAN III commands: OPEN-FILE
RTCLOSE-FILE
Related SINTRAN III Monitor calls: CLOSE (MON 43)
SPCLO (MON 40)

Format:
@CLOSE-FILE <file no.>

Parameters:
<file no.> > 0: close the file
= -1: close all user files not permanently open
= -2: close all user files
(octal value)

Rules:
1. Permitted for all users.
2. The file with <file no.> must be opened in order for it to be closed.
3. CLOSE -1 sets the block size of all permanently opened scratch files to 400_8.

Example:
@CLOSE 101

Close file number 101_8.

@COLD-START

Function:
Perform a cold start.

Related commands:

Related SINTRAN III commands:	RESTART-SYSTEM
	STOP-SYSTEM
Related SINTRAN Service Program commands:	RESET-COLDSTART-MODE-FILE
	SET-COLDSTART-MODE-FILE

Format:
@COLD-START [<terminal number>]

Parameters:
<terminal number> the terminal indicated will be treated as console terminal during the start-up process.

Rules:
1. Permitted only for user SYSTEM.
2. The contents of the save-areas is transferred to the image-area on SEGFILO and to the other "run"-segments, and the system is started. The contents of user segments and reentrant segments must be built up again by running the mode file HENT-MODE, and using the DUMP-REENTRANT and/or DUMP-PROGRAM-REENTRANT commands.
3. If the system includes separate processors (ND-500 part, HDLC, etc.) these should be stopped before COLD-START.

@CONCT

Function:
Connect an RT-program to the interrupt from a device. The RT-program is put in the execution queue when the device gives an interrupt.

Related commands:
Related SINTRAN III commands: DSCNT
Related SINTRAN III Monitor calls: CONCT (MON 106)

Format:
@CONCT <program name>,<logical device no.>

Parameters:

<program name>	RT-program name or RT-description address (octal value, default = user's terminal background program).
<logical device no.>	(decimal value).

Rules:
1. Permitted only for user RT and SYSTEM.
2. Several units may be connected to one program.

Example:
@CONCT KLOKK,410B

The RT-description of KLOKK will be put in the execution queue every time an interrupt is given from device 410_8.

@CONNECT-FILE

Function:
Open a mass-storage file with a specified number.

Related commands:
Related SINTRAN III commands: OPEN-FILE
RTCONNECT-FILE

Format:
@CONNECT-FILE <file name>,<file no.>,<access type>

Parameters:
<file name> (default type = :SYMB).
<file no.> a logical device number (octal value, 100-177).
<access type> see @OPEN-FILE.

Rules:
1. Permitted for all users.
2. Valid only if file number has not been opened previously.
3. See @OPEN-FILE, rules 2, 4, 5 and 6.

Example:
@CONNECT-FILE F-1,120,R

File F-1:SYMB is opened for read and given file number 120_8.

@CONTINUE

Function:
Restart the execution of a program previously started by @RECOVER. The program is restarted at the <restart address> specified in @DUMP.

Related commands:
Related SINTRAN III commands: GOTO-USER
RECOVER

Format:
@CONTINUE

Parameters:
None.

Rules:
1. Permitted for all users.
2. Cannot be used to restart:
   a. DMAC
   b. SINTRAN-Service-Program
   c. MAIL
   d. RT-Loader
   e. A program started with @PLACE-BINARY and @GOTO-USER or @LOAD-BINARY.
   f. A program running on the ND-500.

@COPY

Function:
Copy data to a destination file from a source file. The file is copied byte by byte.

Related commands:
Related SINTRAN III commands: COPY-FILE

Format:
@COPY <to device>,<from device>

Parameters:

<to device>	a file to which data is copied. It may be any type of file (default type = :SYMB).
<from device>	a file from which data is copied (default type = :SYMB).

Rules:

1. Permitted for all users.
2. If the <source file> is a mass-storage file with a hole, the copying will stop at the hole and the error message NO SUCH PAGE will be given.
3. The file is copied byte for byte up to the value of the maximum byte pointer.
4. Both <destination file> and <source file> may specify files on a remote computer. The file specifications may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

@COPY-DEVICE

Function:
Copy all pages to the destination device from the source (mass-storage) device.

Related commands:
Related SINTRAN III commands: COPY-DIRECTORY
SAVE-DIRECTORY

Format:
@COPY-DEVICE <destination device name>,<unit>,[<'F' or 'R'>,]
<source device name>,<unit>[,<'F' or 'R'>]

Parameters:

<destination device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<source device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.

Rules:
1. Permitted only for user SYSTEM.
2. Valid only for devices which can contain directories.
3. A directory must exist on the source device.
4. Destination device must not be an entered directory.
5. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
6. The parameters <unit> are now always required.

Example:
@COPY-DEVICE DISC-75MB-2,DISC-75MB-1

Copy all pages from one device to the other.

@COPY-DIRECTORY

Function:
Copy all files onto the destination directory from the source directory.

Related commands:
Related SINTRAN III commands: COPY-DEVICE

Format:
@COPY-DIRECTORY <destination directory name>,<source directory name>

Parameters:

<destination directory name>	name of the destination directory.
<source directory name>	name of the source directory.

Rules:
1. Permitted only for user SYSTEM.
2. The users and the file names are identical in both directories after the command is executed.
3. All files must be closed during the copying. All spooling processes should be stopped.

Example:
```
@CREATE-DIRECTORY PACK-TWO,DISC-33MB-2,,
@ENTER-DIRECTORY PACK-TWO,DISC-33MB-2,
@COPY-DIRECTORY PACK-TWO,PACK-ONE
```

Copy all users and all files in PACK-ONE onto PACK-TWO.

@COPY-FILE

Function:
Copy data to a destination file from a source file. The file is copied page by page if both files are mass-storage files.

Related commands:
Related SINTRAN III commands: COPY

Format:
@COPY-FILE <destination file>,<source file>

Parameters:

<destination file>	a file to which data is copied (default type = :SYMB).
<source file>	a file from which data is copied (default type = :SYMB).

Rules:

1. Permitted for all users.
2. If the <destination file> is a peripheral file and the mass-storage <source file> is an indexed file with a hole, copying stops at the hole and the error message NO SUCH PAGE is given.
3. If both files are mass-storage files, the file is copied including holes.
4. All pages allocated to the <source file> are copied, except if there are zero bytes in the file.
5. If the <destination file> does not exist, it is created by giving the name in quotes. It will be an indexed file.
6. Both <destination file> and <source file> may specify files on a remote comupter. The file specifications may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

@CREATE-DIRECTORY

Function:
Create a new directory on a disk (or part of a disk). Any old directory which may have been on the disk is destroyed, and the files on it are lost. The directory name, as part of the directory entry, is written to the disk. The bit file area is allocated by the file system in the middle of the directory (unless the user specifies a page address) starting from the beginning of a track. The bit file pages are tested by performing write and compare with three standard test patterns before being cleared. If there is a bad page in the bit file area the file system automatically locates the bit file on an adjacent track.

Using default position for the bit file restricts the maximum length of a contiguous file to half the size of the disk, but the user can specify another location for the bit file to get more contiguous space. In the case of ECC disks the disk driver tests the disk to see if it has been formatted with spare-track re-allocation (and sets the TYPE C bit in the big disk data field). If yes, the testing of all pages on the disk is skipped. If the disk has not been formatted with spare-track re-allocation, or on other disk types, every page is tested by performing a read and compare from the disk. Any page in error is marked as used in the bit map.

Related commands:
Related SINTRAN III commands: ENTER-DIRECTORY
RENAME-DIRECTORY

Format:
@CREATE-DIRECTORY <directory name>,<device name>,<unit>[,<'F' or 'R'>]
[,<subunit>],<bit file address>

Parameters:

<directory name>	the name to be written onto the new directory. A maximum of 16 alphanumeric characters, including the hyphen -, is legal.
<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).
<bit file address>	specified if the user wants to place the bit file in a particular area. (octal value, default = the file system will select a medium dependent optimal value.) The System Supervisor manual contains more information on this parameter.

Rules:

1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. Fixed or removable is specified only for 10, 30, 60, 90Mb cartridge disks.
3. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
4. The parameter <unit> is now always required.

Example:

```
@CREATE-DIRECTORY PACK-ONE,DISC-10MB-1,1,F
```

A directory named PACK-ONE is created on cartridge disk controller 1, unit 1, fixed pack.

```
@CREATE-DIRECTORY DIR-1,FLOPPY-DISC-1,0
```

A directory with the name DIR-1 is created on the floppy disk controller 1, unit 0.

@CREATE-FILE

Function:
Create one or more versions of a file. The file will be contiguous or indexed depending on <no. of pages>.

Related commands:
Related SINTRAN III commands: ALLOCATE-FILE
CREATE-NEW-VERSION
OPEN-FILE
RENAME-FILE

Format:
@CREATE-FILE <file name>,<no. of pages>

Parameters:

<file name>	optional version number specifies number of versions to be created (default type = :DATA). File type should be specified, if not: :DATA (default) is assumed.
<no. of pages>	0: create empty file, the file will be indexed the first time something is written to it, or be contiguous if expanded with @EXPAND-FILE. > 0: create contiguous file with the specified no. of pages (decimal value, default = 0).

Rules:
1. Permitted for all users.
2. If there are not enough pages for all versions, the system creates as many as possible and gives an error message. To find the number created, use @LIST-FILES.
3. Contiguous files are positioned in the highest page address range possible on the directory.
4. Contiguous files are more efficient than indexed files. If contiguous files can be used, performance may be improved.

Example:
@CREATE-FILE F-1,0

One version of the indexed file F-1:DATA is created in default directory.

@CREATE-FRIEND

Function:
Declare a user as a friend to the current user. This friendship is not reciprocal, that is, you cannot create yourself as a friend of another user.

Related commands:
Related SINTRAN III commands: DELETE-FRIEND
LIST-FRIENDS
SET-FRIEND-ACCESS
SET-INITIAL-FRIEND-ACCESS

Format:
@CREATE-FRIEND <user name>

Parameters:
<user name> name of a user in the same main directory as you.

Rules:
1. Permitted for all users.
2. A user can have a maximum of eight friends, and all must belong to the same main directory as him/her.
3. When the friend is created, his/her general default file access to the terminal user's files is read, write and append (RWA). This can be changed by @SET-FRIEND-ACCESS. Friends can be given restricted access to a specific file by @SET-FILE-ACCESS.
4. Access given to a friend overrides public access, even if it is more limited than public access.

Example:
@CREATE-FRIEND GUEST

The user GUEST is created as a friend to the terminal user and is given file access RWA by default.

@CREATE-NEW-VERSION

Function:
Create one or more new versions of an existing file.

Related commands:
Related SINTRAN III commands: ALLOCATE-NEW-VERSION
CREATE-FILE

Format:
@CREATE-NEW-VERSION <file name>,<no. of pages>

Parameters:
<file name> for version (v) see rule 3 below (default type = :DATA).
<no. of pages> see @CREATE-FILE.

Rules:
1. Permitted for all users with directory access (D) to the user's file space.
2. See @CREATE-FILE, rule 2.
3. If version v already exists, one new version is created and inserted as this version. The old version is renumbered as v + 1 and so on. If v is higher than the highest version existing (= w) the versions w + 1, w + 2, ..., v are created. Default version is w + 1.
4. A new version can be created by other commands (for example @OPEN-FILE). The file version number is then enclosed in quotes.

Example:
@CREATE-NEW-VERSION F-1;4,0

Versions 2, 3 and 4 of the indexed file F-1 are created.

@CREATE-USER

Function:
Create a new user in a directory, or define a new user name in a directory.

Related commands:
Related SINTRAN III commands: DELETE-USER
GIVE-USER-SPACE
RENAME-USER
TAKE-USER-SPACE

Format:
@CREATE-USER [<directory name>:]<user name>

Parameters:
<directory name>:<user name> (default directory is user SYSTEM's main directory).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. A user must be created on a main directory before he is created in any other directory.
3. If the user needs space in the directory, @GIVE-USER-SPACE must be used.

Example:
@CREATE-USER PACK-TWO:GUEST

The user GUEST is created in directory PACK-TWO.

@DATCL

Function:
Print the current setting of the clock and the date.

Related commands:

Related SINTRAN III commands:	CLADJ
	UPDAT
Related SINTRAN III Monitor calls:	CLOCK (MON 113)
	TIME (MON 11)

Format:
@DATCL

Parameters:
None.

Rules:
1. Permitted for all users.

Example:
```
@DATCL
09.15.30    21 DECEMBER 1984
```

@DEFAULT-SUBSYSTEM-DISABLE

Function:
Disable execution of command string defined by @DEFINE-DEFAULT-SUBSYSTEM.

Related commands:
Related SINTRAN III commands: DEFAULT-SUBSYSTEM-ENABLE
DEFINE-DEFAULT-SUBSYSTEM
LIST-DEFAULT-SUBSYSTEM

Format:
@DEFAULT-SUBSYSTEM-DISABLE <terminal number>

Parameters:
<terminal number> the logical device number of the terminal which is no longer to execute a default command string.

Rules:
1. Permitted for all users.
2. Only user SYSTEM can disable terminals other than their own.

@DEFAULT-SUBSYSTEM-ENABLE

Function:
Enable execution of command string defined by @DEFINE-DEFAULT-SUBSYSTEM

Related commands:
Related SINTRAN III commands: DEFAULT-SUBSYSTEM-DISABLE
DEFINE-DEFAULT-SUBSYSTEM
LIST-DEFAULT-SUBSYSTEM

Format:
@DEFAULT-SUBSYSTEM-ENABLE <terminal number>

Parameters:
<terminal number> the logical device number of the terminal which is to execute a default command string.

Rules:
1. Permitted for all users.
2. Only user SYSTEM can enable terminals other than their own.

@DEFINE-DEFAULT-SUBSYSTEM

Function:
This command is used to define a (global) command string, normally a recover command, to enter a user program immediately after LOGIN, that is, before @ and after OK. Although the command string is global it can be enabled and disabled for each terminal individually.

Related commands:
Related SINTRAN III commands: DEFAULT-SUBSYSTEM-DISABLE
DEFAULT-SUBSYSTEM-ENABLE
LIST-DEFAULT-SUBSYSTEM

Format:
@DEFINE-DEFAULT-SUBSYSTEM <subsystem name>

Parameters:
<subsystem name> Command string or subsystem name to be executed at LOGIN.

Rules:
1. Permitted only for user SYSTEM.

@DEFINE-ESCAPE-CHARACTER

Function:
Define the "user break" key for a specified terminal.

Related commands:
Related SINTRAN III commands: DEFINE-LOCAL-CHARACTER
DISABLE-ESCAPE-FUNCTION
ENABLE-ESCAPE-FUNCTION

Format:
@DEFINE-ESCAPE-CHARACTER <terminal number>,<value of "escape" char.>

Parameters:

<terminal number>	must be a terminal (decimal value, default = own terminal).
<value of "escape" char.>	ASCII value of new character to be the break character (octal, default = 33 escape).

Rules:
1. Permitted only for user SYSTEM.
2. Valid until the next time SINTRAN is started.

Example:
@DEFINE-ESCAPE-CHARACTER 29,30

The escape character for terminal 29 is changed to 30_8 (cancel).

@DEFINE-HISTOGRAM

Function:
Specify histogram parameters.

Related commands:
Related SINTRAN III commands: DEFINE-SYSTEM-HISTOGRAM
PRINT-HISTOGRAM
RT-PROGRAM-LOG
START-HISTOGRAM
STOP-HISTOGRAM

Format:
@DEFINE-HISTOGRAM <program name>,<start address>,<interval>

Parameters:

<program name>	the program being measured (default = background program of user's terminal).
<start address>	the virtual memory address where the measurements begin, that is, the starting address of the first interval (octal value, default = 0).
<interval>	the number of words in each of the 64 intervals. The intervals are contiguous (octal value).

Rules:
1. Permitted for all users if <program name> is background program. Otherwise permitted only for users RT and SYSTEM.
2. The program is sampled at every basic time unit.

Example:
@DEFINE-HISTOGRAM,,100,10,

A histogram of the user's background program is to be produced. The range to be measured is 100_8 to 1077_8, divided into 64_{10} intervals of 10_8 words.

@DEFINE-LOCAL-CHARACTER

Function:
Defines the local character for a specified terminal.

Related commands:

Related SINTRAN III commands:	DEFINE-ESCAPE-CHARACTER
	DISABLE-ESCAPE-FUNCTION
	ENABLE-ESCAPE-FUNCTION
Related CONNECT-TO subcommands:	CHANGE-LOCAL-CHARACTER
	LIST-LOCAL-CHARACTER

Format:
@DEFINE-LOCAL-CHARACTER <terminal number>,<value of local character>

Parameters:

<terminal number>	(default. = own terminal).
<value of local character>	(octal value, default = 0).

Rules:
1. Permitted for user SYSTEM only.
2. Unlike CHANGE-LOCAL-CHARACTER the effect of this command survives after LOGOUT.
3. The defined local character will not survive a warm start.
4. If you want the defined local character to be set permanently, use SINTRAN-SERVICE-PROGRAM subcommand CHANGE-DATAFIELD, as the local character is stored in the 8 most significant bits in displacement CESCP. The 8 least significant bits hold the octal value of the escape character.

@DEFINE-MASS-STORAGE-UNIT

Function:
Define a mass-storage device in the directory table. This is used to reserve a directory index for a device even if the device is not to be entered yet. On standard versions of SINTRAN III/VSX version K, devices are not allocated a directory index at generation time, but are placed in the directory table when the device is defined. Defining a device is done either by entering it (@ENTER-DIRECTORY), or by this command.

Related commands:
Related SINTRAN III commands: DELETE-MASS-STORAGE-UNIT
LIST-MASS-STORAGE-UNITS

Format:
```
@DEFINE-MASS-STORAGE-UNIT <device name>,<device unit>
                          [,<fixed(F) or removable(R)>]
                          [,<device sub-unit>]
```

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<device unit>	device unit number (0-3, default 0).
<fixed(F) or removable(R)>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<device sub-unit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. A definition of a device in the directory table does not survive a warm start.
2. This command is restricted to user SYSTEM.

@DEFINE-REENTRANT-PROGRAM

Function:
Define a new entry in an already-built reentrant segment. The segment may be referenced by either its no. or name.

Related commands:
Related SINTRAN III commands: DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT
LOAD-REENTRANT-SEGMENT

Format:
@DEFINE-REENTRANT-PROGRAM <program name>,<start address>,
<restart address>,<segment no. or name>

Parameters:

<program name>	the program name of the new entry on the segment.
<start address>	the initial start address (octal, default = 0).
<restart address>	the address where the program should be reentered by @CONTINUE (octal, default = 0).
<segment no. or name>	the no. (octal value) of the segment or the name if given.

Rules:
1. Permitted only for user SYSTEM.

Example:
@DEFINE-REENTRANT-PROGRAM SECOND-ENTRY, 177777,177777, SEG-NAME

A new entry with start address 177777_8 and restart address 177777_8 is defined on the segment named SEG-NAME.

@DEFINE-REENTRANT-PROGRAM NEW-ENTRY, 11,11,133
A new entry with start and restart address 11_8 is defined on segment number 133_8.

@DEFINE-SPOOLING-CONDITIONS

Function:
Define conditions under which spooling operates on a peripheral device.

Related commands:
Related SINTRAN III commands: DEFINE-SPOOLING-FILE-MESSAGE

Format:
```
@DEFINE-SPOOLING-CONDITIONS <peripheral file name>,
                            <printing name of spooling files?>,
                  <stop and wait for start-print before printing file ?>,
                            <no. of lines per page>
```

Parameters:

<peripheral file name>	the peripheral file name of the spooling device.
<printing ... ?>	YES = file names will be printed on the error device when printing starts. Otherwise, NO (default = NO).
<stop ... ?>	YES = automatic @STOP-PRINT between every printing of a file (see @DEFINE-SPOOLING-FILE-MESSAGE). Otherwise, NO (can be YES only if <printing ... ?> = YES.
<no. of lines per page>	number of lines per page as used by the commands @FORWARD-SPACE-PRINT and @BACKSPACE-PRINT (decimal value, default = 68).

Rules:
1. Permitted only for user SYSTEM.

Example:
```
@DEFINE-SPOOLING-CONDITIONS LINE-PRINTER,NO,NO,,
```

Spooling conditions are defined on the peripheral file LINE-PRINTER. Files are output without interruption.

@DEFINE-SPOOLING-FILE-MESSAGE

Function:
Define a text to be written on the error device whenever a terminal user's file is printed on the spooling device.

Related commands:
Related SINTRAN III commands: DEFINE-SPOOLING-CONDITIONS

Format:
@DEFINE-SPOOLING-FILE-MESSAGE <text>',<printing message independent of spooling conditions>

Parameters:

<text>	Text to be written to the error device when printing starts. The text must be terminated by an apostrophe '.
<printing message independent	of spooling conditions> YES = print text unconditionally NO = write text only if requested in @DEFINE-SPOOLING-CONDITIONS (def = NO).

Rules:
1. Permitted for all users.

@DEFINE-SYSTEM-HISTOGRAM

Function:
Specify parameters for measuring the CPU time spent in different parts of the memory for a particular interrupt level.

Related commands:
Related SINTRAN III commands: DEFINE-HISTOGRAM
RT-PROGRAM-LOG

Format:
@DEFINE-SYSTEM-HISTOGRAM <level>,<start address>,<interval>

Parameters:

<level>	any interrupt level less than 13 (decimal value).
<start address>	(octal value)
<interval>	see @DEFINE-HISTOGRAM (octal value).

Rules:
1. Permitted only for user SYSTEM.
2. Sampling interval is basic time unit.
3. If used in conjunction with @RT-PROGRAM-LOG a distribution of interrupt levels 0 - 10 and above is given.

Example:
@DEFINE-SYSTEM-HISTOGRAM 11, 60000, 100

A histogram for interrupt level 11_{10} is produced. The range measured is 60000_8 to 67777_8, divided into 64_{10} intervals of 100_8 words.

@DEFINE-TERMINATION-HANDLING

Function:
Define termination handling for background or RT-programs in case of termination with escape, MON 65 or fatal errors such as executing privileged instructions etc.

Related commands:
Related SINTRAN III commands: ENABLE-TERMINATION-HANDLING
LIST-TERMINATION-HANDLING
NEXT-TERMINATION-COMMAND
Related SINTRAN III Monitor calls: EDTRM (MON 206)

Format:
@DEFINE-TERMINATION-HANDLING ‹RT or background›,
‹RT name or command string›

Parameters:

‹RT or background›	Define termination handling for RT-programs or background programs.
‹RT name or command string›	Name of the RT-program to be started or the commands to be executed.

Rules:
1. In background a (global) set of commands is executed when interactive or mode (not batch) jobs are terminated abnormally.
2. In background the command is used like @INITIAL-COMMAND. The command buffer pointer is reset and the first command can be defined. If more than one command is to be defined, use @NEXT-TERMINATION-COMMAND.
3. In RT-termination the name of a user-defined RT-program should be given as a parameter. If enabled, this program will be started whenever a user RT-program terminates.
4. @MODE cannot be defined as a termination command and if a program is started (by a recover command) this will be the last command executed and termination will not be re-enabled automatically.
5. Permitted only for user SYSTEM.

@DELETE-BATCH-QUEUE-ENTRY

Function:
Delete a job waiting in the batch queue.

Related commands:
Related SINTRAN III commands: ABORT-JOB
LIST-BATCH-QUEUE

Format:
@DELETE-BATCH-QUEUE-ENTRY <batch no.>,<input file>,<output file>

Parameters:

<batch no.>	batch processor number as returned from @BATCH.
<input file>	the file to be deleted.
<output file>	associated output file in batch queue.

Rules:
1. Permitted only for user SYSTEM and the owner of the <input file>.
2. Valid only if second and third parameters match with a queue entry. These must be spelled exactly the same way as in @APPEND-BATCH.
3. The currently active batch job must be deleted by @ABORT-JOB.
4. If more than one entry matches, only the first one is deleted.
5. @LIST-BATCH-QUEUE may be used to find the correct spelling of the second and third parameters.

Example:
```
@DELETE-BATCH-QUEUE-ENTRY 1, JOB-1,LINE-PRINTER
```

The batch job file JOB-1 is deleted from the queue to batch processor 1 (if matched). LINE-PRINTER was the output device in the corresponding @APPEND-BATCH command.

@DELETE-FILE

Function:
Delete a file and release its pages.

Related commands:
Related SINTRAN III commands: DELETE-USERS-FILES
Related SINTRAN III Monitor calls: MDLFI (MON 54)

Format:
@DELETE-FILE <file name>

Parameters:
<file name> an unambiguous file name. The type must be specified (no default type). If a version is specified only that version is deleted (default = all versions).

Rules:
1. Permitted for all users with directory (D) access to the file.
2. If version v is deleted, the version numbers of v + 1, v + 2, ... are decreased by 1.

Example:
File FILE-1:DATA;1 exists.

@DELETE-FILE FILE-1:D

The file is deleted.

@DELETE-FRIEND

Function:
Remove a user from the list of friends of the current user.

Related commands:
Related SINTRAN III commands: CREATE-FRIEND

Format:
@DELETE-FRIEND <user name>

Parameters:
<user name> a friend of the current user.

Rules:
1. Permitted for all users.
2. Note that <user name> may still have the current user as friend, that is, the friend relationship is not reciprocal.

Example:
@DELETE-FRIEND DESADE

The user DESADE is deleted as a friend of the current user.

@DELETE-MASS-STORAGE-UNIT

Function:
Delete a definition of a mass-storage device from the directory table.

Related commands:
Related SINTRAN III commands: DEFINE-MASS-STORAGE-UNIT
LIST-MASS-STORAGE-UNITS

Format:
@DELETE-MASS-STORAGE-UNIT <device name>,<device unit>
[,<fixed(F) or removable(R)>]
[,<device sub-unit>]

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<device unit>	device unit number (0-3, default 0).
<fixed(F) or removable(R)>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<device sub-unit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. This command is restricted to user SYSTEM.

@DELETE-REENTRANT

Function:
Delete a reentrant subsystem. The segment where the reentrant subsystem resides is cleared, as well as the corresponding entry in the reentrant subsystem table.

Related commands:
Related SINTRAN III commands: DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT

Format:
@DELETE-REENTRANT <name>

Parameters:
<name> name of the subsystem to be deleted.

Rules:
1. Permitted only for user SYSTEM.

Example:
@DELETE-REENTRANT ACCESS

The subsystem named ACCESS is deleted.

@DELETE-REMOTE-QUEUE-ENTRY

Function:
Remove a remote batch input file from the remote batch queue to a remote computer. (The file is removed before it is sent to the remote computer.)

Related commands:
Related SINTRAN III commands: APPEND-REMOTE

Format:
@DELETE-REMOTE-QUEUE-ENTRY <remote computer>,<queue entry>

Parameters:

<remote computer>	see @APPEND-REMOTE.
<queue entry>	a file name previously given in the @APPEND-REMOTE command (parameter must match exactly the remote batch queue entry and the user name must be given).

Rules:
1. Permitted only for user SYSTEM and the owner of the file.
2. If the queue contains two or more equivalent entries, only the first one will be removed.

Example:
@DELETE-REMOTE-QUEUE-ENTRY UNIVAC, (GUEST) JOB-1:SYMB

The batch input file (GUEST) JOB-1:SYMB is deleted from the batch queue for the host computer UNIVAC.

@DELETE-SPOOLING-FILE

Function:
A file is removed from the spooling queue of a spooling device. If it is a spooling file, its pages are released and returned to the pool of free spooling pages and the file is marked as unused.

Related commands:
Related SINTRAN III commands: REMOVE-FROM-SPOOLING-QUEUE

Format:
@DELETE-SPOOLING-FILE <peripheral file name>,<file name>

Parameters:

<peripheral file name>	the spooling device.
<file name>	the spooling queue file to be deleted.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file, or if the file was appended by an RT-program, only users SYSTEM and RT.
2. Only the first name matching <file name> is removed.
3. If the file is not a spooling file, the command is equivalent to @REMOVE-FROM-SPOOLING-QUEUE.
4. The parameter <file name> may specify files on a remote computer. The file specification may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

Example:
@DELETE-SPOOLING-FILE LINE-PRINTER, LINE-PRINTER:;10

If the file LINE-PRINTER:;10 is in the spooling queue to LINE-PRINTER, it is deleted from the queue; if it is a spooling file, its pages are removed and it exists as an object in the file system with no pages.

@DELETE-USER

Function:
Remove a user from a directory.

Related commands:
Related SINTRAN III commands: CREATE-USER
GIVE-USER-SPACE
LIST-USERS
TAKE-USER-SPACE

Format:
@DELETE-USER [<directory name>:]<user name>

Parameters:

<directory name>:<user name>	user to be removed on the particular directory (default directory = the user's main directory).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. Valid only if the user has no files.

Example:
@DELETE-USER USER-ONE

The user USER-ONE is deleted from their main directory.

@DELETE-USERS-FILES

Function:
Delete one or more of a user's files and release their pages.

Related commands:
Related SINTRAN III commands: DELETE-FILE

Format:
@DELETE-USERS-FILES <file name>[,<manual check?>]

Parameters:

<file name>	delete all files matching this name (default = delete all files in default directory for the terminal user).
<manual check?>	YES = the name of every file matching <file name> is written on the terminal. The user then answers YES to delete, NO or return to keep the file. NO = delete all files matching <file name> immediately. (default = YES).

Rules:
1. Permitted for all users with directory access (D) to the files.
2. If current user is SYSTEM, manual check is compulsory so the parameter <manual check?> is not requested.

Example:
```
@DELETE-USER-FILES F-1, YES
FILE 5: (BIG-PACK:GUEST) F-10:DATA;1? N
FILE 7: (BIG-PACK:GUEST) F-1:DATA;1? Y
@
```

The file F-1:DATA is deleted but match was also found on the file F-10:DATA, which was not deleted.

@DEVICE-FUNCTION

Function:
Perform operations on magnetic tapes, Versatec printer/plotter and floppy disk.

Related commands:
Related SINTRAN III commands: LIST-DEVICE-FUNCTIONS
Related SINTRAN III Monitor calls: MAGTP (MON 144)

Format:
@DEVICE-FUNCTION <peripheral file name>,<function>
[,<optional parameter 1>[,<optional parameter 2>]]

Parameters:

<peripheral file name>	name of the peripheral file associated with the device.
<function>	see below.
<optional parameter 1>	see below.
<optional parameter 2>	see below.

Rules:
1. Permitted for all users.

@DEVICE-FUNCTION ADVANCE-RECORDS

Function:
Advance by the specified number of records on a magnetic tape. On a floppy disk, the disk address is incremented by the specified number of records.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ADVANCE-TO-EOF
DEVICE-FUNCTION BACKSPACE-RECORDS
DEVICE-FUNCTION REVERSE-TO-EOF
DEVICE-FUNCTION REWIND

Format:
ADVANCE-RECORDS ‹number of records›

Parameters:
‹number of records› number of records or amount by which disk address is to be incremented.

Rules:
1. Allowed on magnetic tape and floppy disk.

@DEVICE-FUNCTION ADVANCE-TO-EOF

Function:
Advance from the current position on a device over the specified number of end-of-file (EOF) marks. A tape will be positioned immediately after the last EOF mark is passed. A floppy disk will have its address incremented to the address immediately after the last EOF mark is passed.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ADVANCE-RECORDS
DEVICE-FUNCTION BACKSPACE-RECORDS
DEVICE-FUNCTION REVERSE-TO-EOF
DEVICE-FUNCTION REWIND

Format:
ADVANCE-TO-EOF <number of EOF marks>

Parameters:
<number of EOF marks> the number of EOF marks to skip.

Rules:
1. Allowed on magnetic tape and floppy disk.

@DEVICE-FUNCTION BACKSPACE-RECORDS

Function:
On magnetic tape, move the tape backwards by the specified number of records; on floppy disk, decrement the disk address by the specified number of records.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ADVANCE-RECORDS
DEVICE-FUNCTION ADVANCE-TO-EOF
DEVICE-FUNCTION REVERSE-TO-EOF
DEVICE-FUNCTION REWIND

Format:
BACKSPACE-RECORDS ‹number of records›

Parameters:
‹number of records› number of records by which to backspace, or amount by which disk address is to be decremented.

Rules:
1. Allowed on magnetic tape and floppy disk.

@DEVICE-FUNCTION CLEAR-DEVICE

Function:
Abandon current operation of specified device. The device buffer on a Versatec is cleared.

Related commands:
Related SINTRAN III commands: CLEAR-DEVICE
DEVICE-FUNCTION CLEAR-SELECTED-UNIT

Format:
CLEAR-DEVICE

Parameters:
None.

Rules:
1. Allowed on magnetic tape, Versatec and floppy disk.
2. On magnetic tape clears all the units attached to one controller.

@DEVICE-FUNCTION CLEAR-SELECTED-UNIT

Function:
Clear the specified unit on the device.

Related commands:
Related SINTRAN III commands: CLEAR-DEVICE
DEVICE-FUNCTION CLEAR-DEVICE

Format:
CLEAR-SELECTED-UNIT <unit>

Parameters:
<unit> device unit.

Rules:
1. Allowed only on STC magnetic tapes.

@DEVICE-FUNCTION DUMP-BOOTSTRAP

Function:
Dump a bootstrap onto page 0 (the first page) of a floppy. The floppy monitor can then be loaded into a machine (not running SINTRAN) by pressing MASTER CLEAR and typing 1560&.

Format:
DUMP-BOOTSTRAP <file name>

Parameters:

<file name>	name of the :BPUN file containing the bootstrap. This will normally be FLOPPY-MONITOR:BPUN or a carefully prepared user monitor.

Rules:
1. Allowed only on floppy disk.

@DEVICE-FUNCTION ERASE-TAPE

Function:
Remove all recorded data from a tape.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION WRITE-ERASE-GAP

Format:
ERASE-TAPE

Parameters:
None.

Rules:
1. Allowed only on tape.

@DEVICE-FUNCTION FORMAT-FLOPPY

Function:
Write new address information onto the floppy in the currently selected format.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION SET-FLOPPY-FORMAT

Format:
FORMAT-FLOPPY

Parameters:
None.

Rules:
1. Allowed on floppy disk.
2. The floppy format must be set before using this function (SET-FLOPPY-FORMAT)

@DEVICE-FUNCTION GET-CURRENT-DISC-ADDRESS

Function:
Return the current address on the floppy disk. This is the address from which data will be written/read by the functions WRITE/READ-RECORD.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION SET-CURRENT-DISC-ADDRESS

Format:
GET-CURRENT-DISC-ADDRESS

Parameters:
None.

Rules:
1. Allowed on floppy disk.

@DEVICE-FUNCTION GIVE-FORM-FEED

Function:
Give form feed on a Versatec. On fan-fold paper this advances the paper to the top of the form; on roll paper it advances the paper 7 cm.

Format:
GIVE-FORM-FEED <number of form feeds>

Parameters:
<number of form feeds> number of form feeds, or 7 cm advances, required.

Rules:
1. Allowed on Versatec.

@DEVICE-FUNCTION READ-BACKWARDS

Function:
Read magnetic tape backwards.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION READ-BYTE-RECORD
DEVICE-FUNCTION READ-DELETED-RECORD
DEVICE-FUNCTION READ-ODD-NUMBER-OF-BYTES
DEVICE-FUNCTION READ-RECORD

Format:
READ-BACKWARDS <destination address>,<number of words to read>

Parameters:

<destination address>	address to which the data will be read (octal value).
<number of words to read>	number of words to transfer.

Rules:
1. Available on STC magnetic tape only.

@DEVICE-FUNCTION READ-BYTE-RECORD

Function:
Read specified number of bytes from peripheral to given address on user's background segment.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION READ-BACKWARDS
DEVICE-FUNCTION READ-DELETED-RECORD
DEVICE-FUNCTION READ-ODD-NUMBER-OF-BYTES
DEVICE-FUNCTION READ-RECORD

Format:
READ-BYTE-RECORD <destination address>,<number of bytes>

Parameters:

<destination address>	address to which the data will be read (octal value).
<number of bytes>	number of bytes to transfer (octal value).

Rules:
1. Allowed on magnetic tape.

@DEVICE-FUNCTION READ-DELETED-RECORD

Function:
Read a record even if it has been flagged as deleted.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION READ-BACKWARDS
DEVICE-FUNCTION READ-BYTE-RECORD
DEVICE-FUNCTION READ-ODD-NUMBER-OF-BYTES
DEVICE-FUNCTION READ-RECORD

Format:
READ-DELETED-RECORD <address>,<number of words>

Parameters:
<address> destination of words read to the user's background segment.
<number of words> number of words to transfer.

Rules:
1. Allowed on floppy disk.

@DEVICE-FUNCTION READ-FORMAT

Function:
Read the type of address information (format) on a floppy disk.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION SET-FLOPPY-FORMAT

Format:
READ-FORMAT

Parameters:
None.

Rules:
1. Allowed only on floppy disk.
2. The format returned is 0, 1 or 2 for single density.
3. The format returned is 0-15 for double density. For explanation see SET-FLOPPY-FORMAT.

@DEVICE-FUNCTION READ-LAST-STATUS

Function:
Read the status saved by the driver for the last operation on the device unit. An IOX instruction is not executed.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-STATUS
DEVICE-FUNCTION READ-TAPE-STATUS

Format:
READ-LAST-STATUS

Parameters:
None.

Rules:
1. Allowed on magnetic tape, Versatec and floppy disk.
2. For explanation of status word returned see Appendix G.

@DEVICE-FUNCTION READ-ODD-NUMBER-OF-BYTES

Function:
Read a specified odd number of bytes from the specified file to the user's background segment.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-BACKWARDS
DEVICE-FUNCTION READ-BYTE-RECORD
DEVICE-FUNCTION READ-DELETED-RECORD
DEVICE-FUNCTION READ-RECORD

Format:
READ-ODD-NUMBER-OF-BYTES <address>,<number of bytes>

Parameters:

<address>	address of destination of data on the user's background segment.
<number of bytes>	number of bytes to transfer.

Rules:
1. Allowed only on magnetic tape.

@DEVICE-FUNCTION READ-RECORD

Function:
Read the specified number of words from the specified device to the specified address on the user's background segment.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION READ-BACKWARDS
DEVICE-FUNCTION READ-BYTE-RECORD
DEVICE-FUNCTION READ-DELETED-RECORD
DEVICE-FUNCTION READ-ODD-NUMBER-OF-BYTES

Format:
READ-RECORD <address>,<number of words>

Parameters:

<address>	address on the user's background segment to which the data will be read (octal value).
<number of words>	number of words to be written (octal value).

Rules:
1. Allowed on mag. tape, Versatec and floppy disk.

@DEVICE-FUNCTION READ-STATUS

Function:
Read the hardware status register of the specified device. The status is read by means of an IOX instruction.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-LAST-STATUS
DEVICE-FUNCTION READ-TAPE-STATUS

Format:
READ-STATUS

Parameters:
None.

Rules:
1. Allowed on magnetic tape, Versatec and floppy disk.
2. For explanation of status word returned see Appendix G.

@DEVICE-FUNCTION READ-TAPE-STATUS

Function:
Read the status word for a magnetic tape.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-LAST-STATUS
DEVICE-FUNCTION READ-STATUS

Format:
READ-TAPE-STATUS

Parameters:
None.

Rules:
1. Allowed on magnetic tape.

@DEVICE-FUNCTION REVERSE-TO-EOF

Function:
Move from the current position backwards over the specified number of EOF marks. The device will be positioned just before the last EOF mark.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ADVANCE-RECORDS
DEVICE-FUNCTION ADVANCE-TO-EOF
DEVICE-FUNCTION BACKSPACE-RECORDS
DEVICE-FUNCTION REWIND

Format:
REVERSE-TO-EOF ‹number of EOF marks›

Parameters:
‹number of EOF marks› number of EOF marks to backspace.

Rules:
1. Allowed on magnetic tape and Versatec.

@DEVICE-FUNCTION REWIND

Function:
On magnetic tape, rewinds the tape to the load point; on floppy disk, the disk address is reset to zero.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION UNLOAD

Format:
REWIND

Parameters:
None.

Rules:
1. Allowed on magnetic tape and floppy disk.

@DEVICE-FUNCTION SELECT-DENSITY

Function:
Select the density with which data is written onto a magnetic tape.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION SELECT-PARITY-AND-DENSITY

Format:
SELECT-DENSITY <density>

Parameters:

<density>	0 = 1600 Bits per inch	on STC
	1 = 6250 Bits per inch	magnetic
	2 = 800 Bits per inch	tape

Rules:
1. Allowed on Tandberg/Pertec and STC magnetic tape.
2. On some drive units density can be selected by switches on the front panel.

@DEVICE-FUNCTION SELECT-PARITY-AND-DENSITY

Function:
Select the density and parity with which data are written onto magnetic tape.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION SELECT-DENSITY

Format:
SELECT-PARITY-AND-DENSITY <density/parity>

Parameters:

<density/parity>	0 : 800 Bits per inch, odd parity
	1 : 556 Bits per inch, odd parity
	2 : 200 Bits per inch, odd parity
	4 : 800 Bits per inch, even parity
	5 : 556 Bits per inch, even parity
	6 : 200 Bits per inch, even parity
	Default value is 0.

Rules:
1. Allowed on Tandberg/Pertec magnetic tapes.
2. On some drive units density can be selected by switches on the front panel.

@DEVICE-FUNCTION SET-ALPHANUMERIC-MODE

Function:
Put the Versatec into print mode. In this mode it functions like a line printer.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION SET-GRAPHIC-MODE

Format:
SET-ALPHANUMERIC-MODE

Parameters:
None.

Rules:
1. Allowed on Versatec.

@DEVICE-FUNCTION SET-CURRENT-DISC-ADDRESS

Function:
Set new disk address on floppy disk.

Related commands:
SINTRAN III commands: DEVICE-FUNCTION GET-CURRENT-DISC-ADDRESS

Format:
SET-CURRENT-DISC-ADDRESS <new disk address>

Parameters:
<new disk address> address to be used for next transfer to/from disk.

Rules:
1. Available on floppy disks only.

@DEVICE-FUNCTION SET-FLOPPY-FORMAT

Function:
Select format to be used when formatting floppy.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION FORMAT-FLOPPY
DEVICE-FUNCTION READ-FORMAT

Format:
SET-FLOPPY-FORMAT <format number>

Parameters:
<format number> Format number as defined in the following table:

No.	Bytes/ Sector	Number of sides	Density	Sectors/ diskette	Capacity in pages
0	512	Single	Single	1150_8	154
1	256	Single	Single	2203_8	144
2	128	Single	Single	3722_8	125
4	512	Double	Single	2320_8	308
5	256	Double	Single	4406_8	288
6	128	Double	Single	7644_8	250
10_8	512	Single	Double	2203_8	288
11_8	256	Single	Double	3722_8	250
13_8	1024	Single	Double	1150_8	308
14_8	512	Double	Double	4406_8	577
15_8	256	Double	Double	7644_8	500
17_8	1024	Double	Double	2320_8	616

The SINTRAN III file system can only be used with formats 0 and 17_8. All of the listed formats are available on the new floppy disk system (controller 3027). Only formats 0,1 and 2 are available on the old floppy disk system.

Rules:
1. Allowed on floppy disk.
2. The function, SET-FLOPPY-FORMAT, should always be the first function used before formatting diskettes.

@DEVICE-FUNCTION SET-GRAPHIC-MODE

Function:
Put the Versatec into plot mode. In this mode it functions like a graph plotter.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION SET-ALPHANUMERIC-MODE

Format:
SET-GRAPHIC-MODE

Parameters:
None.

Rules:
1. Allowed only on Versatec printer plotter.

@DEVICE-FUNCTION UNLOAD

Function:
Unload a magnetic tape, that is, the vacuum is removed from the tape and the tape rewound onto its spool.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION REWIND

Format:
UNLOAD

Parameters:
None.

Rules:
1. Allowed on magnetic tape.
2. The tape must be at the load point (with the load point light illuminated) for this command to have effect.

@DEVICE-FUNCTION WRITE-BYTE-RECORD

Function:
Write specified number of bytes to peripheral file from the user's background segment.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-BYTE-RECORD
DEVICE-FUNCTION WRITE-DELETED-RECORD
DEVICE-FUNCTION WRITE-RECORD

Format:
WRITE-BYTE-RECORD <address>,<number of bytes>

Parameters:
<address> address from which the bytes will be read.
<number of bytes> number of bytes transferred to the peripheral file.

Rules:
1. Allowed on magnetic tape.

@DEVICE-FUNCTION WRITE-DELETED-RECORD

Function:
Write a record and then flag it as deleted.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-DELETED-RECORD
DEVICE-FUNCTION WRITE-BYTE-RECORD
DEVICE-FUNCTION WRITE-RECORD

Format:
WRITE-DELETED-RECORD <address>,<number of words>

Parameters:

<address>	address on the user's background segment from which data is read.
<number of words>	number of words to transfer.

Rules:
1. Allowed only on floppy disk.

@DEVICE-FUNCTION WRITE-EOF

Function:
Write specified number of EOF marks on the specified device. On floppy disk the device address is incremented by one for each EOF mark written.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ADVANCE-TO-EOF
DEVICE-FUNCTION REVERSE-TO-EOF

Format:
WRITE-EOF ‹number of EOF marks›

Parameters:
‹number of EOF marks› number of EOF marks to write.

Rules:
1. Allowed on magnetic tape and Versatec.

@DEVICE-FUNCTION WRITE-ERASE-GAP

Function:
Write a 4-inch (approximately 10 cm) gap on a tape.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION ERASE-TAPE

Format:
WRITE-ERASE-GAP

Parameters:
None.

Rules:
1. Allowed on magnetic tape.

@DEVICE-FUNCTION WRITE-RECORD

Function:
Write the specified number of words to the specified device from the specified address on the user's background segment.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION READ-RECORD
DEVICE-FUNCTION WRITE-BYTE-RECORD
DEVICE-FUNCTION WRITE-DELETED-RECORD

Format:
WRITE-RECORD <address>,<number of words>

Parameters:

<address>	address on the user's background segment from which the data will be taken (octal value).
<number of words>	number of words to be written (octal value).

Rules:
1. Allowed on magnetic tape, Versatec and floppy disk.

@DIRECTORY-STATISTICS

Function:
List the following for one or more entered directories:
1. Device name and unit number.
2. Directory status (default, main).
3. Unreserved, unused and total space on the device.
4. Size of the largest unreserved contiguous block on the directory

Related commands:
Related SINTRAN III commands: LIST-DIRECTORIES-ENTERED

Format:
@DIRECTORY-STATISTICS <directory name>,<output file>

Parameters:

<directory name>	the directory/directories to be listed (default = all directories entered).
<output file>	destination of listing (default = TERMINAL).

Rules:
1. Permitted for all users.
2. The command requires some time to respond when referring to large disks.

Example:
@DIRECTORY-STATISTICS,,,

```
DIR INDEX 0: DISC-75MB-1 UNIT 0 : JOHNNY-ALVARADO
(MAIN AND DEFAULT DIRECTORY)
9298 PAGES UNRESERVED AND 6782 PAGES UNUSED OUT OF 36945 PAGES
MAXIMUM UNRESERVED CONTIGUOUS AREA ON DIRECTORY 2663 PAGES

DIR INDEX 1 : DISC-75MB-1 UNIT 1 : FILESYSTEM-TEST
(MAIN AND DEFAULT DIRECTORY)
(RESERVED FOR SPECIAL USE)

DIR INDEX 4 : FLOPPY-DISC-1 UNIT 0 : FLOPPY DIRECTORY
9 PAGES UNRESERVED AND 52 PAGES UNUSED OUT OF 154 PAGES
MAXIMUM UNRESERVED CONTIGUOUS AREA ON DIRECTORY 44 PAGES
```

Statistics for all the entered directories are listed on the terminal.

@DISABLE-ESCAPE-FUNCTION

Function:
The escape character is ignored in user and command modes, that is, no "user break" is performed.

Related commands:

Related SINTRAN III commands:	DEFINE-ESCAPE-CHARACTER
	DEFINE-LOCAL-CHARACTER
	ENABLE-ESCAPE-FUNCTION
Related SINTRAN III Monitor calls:	DESCF (MON 71)
	EESCF (MON 72)

Format:
@DISABLE-ESCAPE-FUNCTION <terminal number>

Parameters:
<terminal number> must be a terminal (octal value, default = own terminal).

Rules:
1. Permitted for all users. Only user SYSTEM can specify a <logical device no.> other than their own terminal.
2. The escape function is enabled when logging out.

Example:
@DISABLE-ESCAPE-FUNCTION,,

No "user break" is performed for the user's own terminal.

@DISABLE-TERMINATION-HANDLING

Function:
Disable termination handling for background and RT-programs.

Related commands:
Related SINTRAN III commands: ENABLE-TERMINATION-HANDLING
Related SINTRAN III Monitor calls: EDTRM (MON 206)

Format:
@DISABLE-TERMINATION-HANDLING <RT or background>,<terminal no.>,
<user break or fatal error>

Parameters:

<RT or background>	select if termination handling is to be disabled for RT-programs or background programs.
<terminal no.>	(default = own terminal)
<user break or fatal error>	U for user break or F for fatal error.

Rules:
1. Only user SYSTEM can disable terminals other than their own.

@DMAC

Function:
Special version of the MAC assembler used for patching or debugging RT-programs. Also used for patching of SINTRAN segments.

Related commands:
Related SINTRAN III commands: LOOK-AT

Format:
DMAC

Parameters:
None.

Rules:
1. Permitted for users SYSTEM and RT.
2. Cannot be restarted by @CONTINUE.

@DSCNT

Function:
All connections to an RT-program made by @CONCT (or monitor call CONCT) are removed. If the program is in the time queue, it is removed. Periodic execution is prevented.

Related commands:

Related SINTRAN III commands:	CONCT
Related SINTRAN III Monitor calls:	CONCT (MON 106)
	DMAC (MON 51)
	DSCNT (MON 107)

Format:
@DSCNT <program name>

Parameters:
<program name> RT-program name or RT-description address (octal value, default = own terminal background program).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Reserved resources are not released.

Example:
@DSCNT KLOKK

The RT-program KLOKK is disconnected.

@DUMP

Function:
Save the contents of the user's virtual memory on a file.

Related commands:
Related SINTRAN III commands: DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT
MEMORY
MEMORY-LIMITS
PLACE-BINARY
RECOVER

Format:
@DUMP <file name>,<start address>,<restart address>

Parameters:

<file name>	mass-storage file to receive the memory contents (default type = :PROG).
<start address>	the address where the program is started after @RECOVER (octal value, default = 0).
<restart address>	the address where the program is restarted after @CONTINUE (octal value, default = 0).

Rules:
1. Permitted for all users.
2. The amount of memory to be saved can be specified by @MEMORY. If not the values from the last @LOAD-BINARY, @PLACE-BINARY or @RECOVER are used.
3. The contents can be retrieved later by @RECOVER.

Example:
```
@MEMORY 100, 7777
@DUMP US-PROG, 100, 101
@RECOVER US-PROG
```

Virtual memory area 100_8 to 7777_8 is dumped on the program file US-PROG:PROG. The program is then started at address 100_8 by @RECOVER.

@DUMP-BIT-FILE

Function:
Dump, in octal, a 20_8 word block of the directory bit file on an output file.

Related commands:
Related SINTRAN III commands: CHANGE-BIT-FILE

Format:
@DUMP-BIT-FILE <directory name>,<block no.>,<output file>

Parameters:

<directory name>	directory whose bit file is to be dumped.
<block no.>	see below (decimal value, default = 0).
<output file>	destination of the dump (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.
2. The bit file is divided into 20_8 word blocks.

Example:
@DUMP-BIT-FILE B-P,,,

The first block of the bit file on directory B-P is dumped on the terminal.

@DUMP-DIRECTORY-ENTRY

Function:
Dump, in octal, the directory entry part of the master block on an output file.

Related commands:
Related SINTRAN III commands: CHANGE-DIRECTORY-ENTRY

Format:
@DUMP-DIRECTORY-ENTRY <device name>,<unit>[,<'F' or 'R'>]
[,<subunit>],<output file>

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).
<output file>	destination of the octal dump (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.
2. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
3. The parameter <unit> is now always required.

Example:
@DUMP-DIRECTORY-ENTRY DISC-10MB-1, 1, F,,

Make octal dump of directory on 10Mb disk, unit 1, fixed pack, on TERMINAL.

@DUMP-OBJECT-ENTRY

Function:
Dump, in octal, the object entry of a file on an output file.

Related commands:
Related SINTRAN III commands: CHANGE-OBJECT-ENTRY
Related SINTRAN III Monitor calls: ROBJE (MON 41)

Format:
@DUMP-OBJECT-ENTRY [<directory name>:]<user name>,<object no.>,
<output file>

Parameters:

<directory name>:<user name>	directory and user where the file is to be found (default = user's main directory).
<object no.>	the object number of the file which may be found from @LIST-FILES. (decimal value, default = 0).
<output file>	destination of the octal dump (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.

Example:
@DUMP-OBJECT-ENTRY GUEST, 5,,

The object entry of object number 5 from user GUEST in the main directory is dumped, in octal, on TERMINAL.

@DUMP-PAGE

Function:
Dump, in octal, a 1K page from a directory onto an output file.

Related commands:
Related SINTRAN III commands: CHANGE-PAGE

Format:
@DUMP-PAGE <directory name>,<page address>,<output file>

Parameters:

<directory name>	directory which contains the page.
<page address>	physical page number (octal value, default = 0).
<output file>	destination of the octal dump (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.
2. Cannot be interrupted by escape.

Example:
@DUMP-PAGE PACK-ONE,100,,

Page 100_8 in PACK-ONE is dumped, in octal, on the terminal.

@DUMP-PROGRAM-REENTRANT

Function:
Establish a subsystem as a reentrant subsystem. The subsystem is read from a :PROG file. The command then calls the RT-Loader and the subsystem is loaded to a segment. The subsystem name is inserted into a table which is searched by @RECOVER before the list of :PROG files is searched. The segment may be given a name by an optional parameter.

Related commands:
Related SINTRAN III commands: DEFINE-REENTRANT-PROGRAM
DELETE-REENTRANT
DUMP
DUMP-REENTRANT
LIST-REENTRANT

Format:
@DUMP-PROGRAM-REENTRANT <subsystem>,<program file>[,<segment name>]

Parameters:
<subsystem> the name of the subsystem
<program file> a file containing a subsystem loaded by BRF-Linker or NRL. (default type = :PROG).

Optional:

<segment name> the name of the segment where the reentrant subsystem is located.

Rules:
1. Permitted only for user SYSTEM.
2. The command sets a protect flag ('ree-sub') on the segment.

Example:
@DUMP-PROGRAM-REENTRANT COBOL,COBOL,COBSEG

The subsystem COBOL is loaded to a segment and can be started by @RECOVER COBOL or @COBOL. The segment is named COBSEG.

@DUMP-REENTRANT

Function:
Establish a subsystem as a reentrant subsystem. The subsystem is read from a file of type :BPUN. The command then calls the RT-Loader and the subsystem is loaded to a segment. The subsystem name is inserted into a table which is searched by @RECOVER before the list of :PROG files is searched.

Related commands:
Related SINTRAN III commands: DEFINE-REENTRANT-PROGRAM
DELETE-REENTRANT
DUMP
DUMP-PROGRAM-REENTRANT
LIST-REENTRANT

Format:
@DUMP-REENTRANT <subsystem name>,<start address>,<restart address>,
<binary file>, [<segment name>]

Parameters:

<subsystem name>	the name of the subsystem.
<start address>	the initial start address (octal value, default = 0).
<restart address>	the address where the program should be reentered by @CONTINUE (octal value, default = 0).
<binary file>	a file containing the subsystem in the format made by the)BPUN command of the MAC assembler (default type = :BPUN).
	Optional:
<segment name>	the name of the segment where the reentrant subsystem is located.

Rules:
1. Permitted only for user SYSTEM.
2. The command sets a protect flag ('ree-sub') on the segment.

Example:
```
@COPY "MAC:BPUN", (PRO-1:F-U)MAC:BPUN
@DUMP-REENTRANT MAC,-1,-3,MAC,SEGMAC
```

The subsystem MAC is loaded to a segment named SEGMAC and can be started by @RECOVER MAC or @MAC.

@DUMP-USER-ENTRY

Function:
Dump, in octal, a user entry onto an output file.

Related commands:
Related SINTRAN III commands: CHANGE-USER-ENTRY
Related SINTRAN III Monitor calls: RUSER (MON 44)

Format:
@DUMP-USER-ENTRY <directory name>,<user no.>,<output file>

Parameters:

<directory name>	directory name of the directory containing the specific user (default = main directory)
<user no.>	number of the user found by @USER-STATISTICS (decimal value, default = 0).
<output file>	destination of the octal dump (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.

Example:
@DUMP-USER-ENTRY P-0, 4,,

User entry number 4 on directory P-0 is dumped on the terminal.

@ENABLE-ESCAPE-FUNCTION

Function:
Enable the "user break" function.

Related commands:
Related SINTRAN III commands: DEFINE-ESCAPE-CHARACTER
DEFINE-LOCAL-CHARACTER
DISABLE-ESCAPE-FUNCTION
Related SINTRAN III Monitor calls: DESCF (MON 71)

Format:
@ENABLE-ESCAPE-FUNCTION <terminal number>

Parameters:
<terminal number> must be a terminal (octal value, default = the user's terminal).

Rules:
1. Permitted for all users. Only user SYSTEM can specify a <logical device no.> other than their own.
2. This function is performed for the user's terminal when logging out.

Example:
@ENABLE-ESCAPE-FUNCTION,

The "user break" will be performed for the user's terminal whenever the escape key is pressed.

@ENABLE-TERMINATION-HANDLING

Function:
Enable termination handling for background and RT-programs.

Related commands:
Related SINTRAN III commands: DISABLE-TERMINATION-HANDLING
Related SINTRAN III Monitor calls: EDTRM (MON 206)

Format:
@ENABLE-TERMINATION-HANDLING <RT or background>,<terminal no.>,
<user break or fatal error>.

Parameters:

<RT or background>	select if termination handling is to be enabled for RT-programs or background programs.
<terminal no.>	(default = own terminal)
<user break or fatal error>	U for user break or F for fatal error.

Rules:
1. Only user SYSTEM can enable escape handling for terminals other than their own.

@ENTER

Function:
Identify the owner of a batch job; this must be the first command in a batch job.

Related commands:
Related SINTRAN III commands: APPEND-BATCH

Format:
@ENTER <user name>,<password>,<project password>,<maximum time>

Parameters:

<user name>	name of a user on a main directory; if the user's main directory is known, user name can be given as <directory name>:<user name>.
<password>	the correct password for the user; it is not printed on the output listing (default = no password).
<project password>	a background accounting project defined in the file PROJNAM:DATA. See SINTRAN III System Supervisor manual, ND-30.003.
<maximum time>	the maximum CPU time, in minutes, allowed for the total batch job. When time is up the job is aborted (decimal value, default = 1).

Rules:
1. Permitted for all users.
2. If <password> is incorrect, the job is aborted.
3. If the job is run under @MODE, the @ENTER command is ignored.
4. A batch job is terminated by two escape characters. (Entered into the file, in PED, by typing [CTRL+O escape] twice.)
5. A batch input file may contain several batch jobs.

Example:
@ENTER GUEST,,,5

This is the first command in a batch job. The job is run for user GUEST who has no password and no project password. The job will terminate after 5 minutes CPU time.

@ENTER-DIRECTORY

Function:
Enter a directory on a device. This must be done before files can be accessed on the directory.

Related commands:
Related SINTRAN III commands: CREATE-DIRECTORY
RELEASE-DIRECTORY
SET-DEFAULT-DIRECTORY
SET-MAIN-DIRECTORY

Format:
@ENTER-DIRECTORY <directory name>,<device name>,<unit>
[,<'F' or 'R'>][,<subunit>]

Parameters:

<directory name>	the name of the new directory. default = directory on specified device/unit.
<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. For floppy directories: Permitted for all users. For all other directories: Permitted only for user SYSTEM.
2. The directory is only entered if <directory name> matches or is an abbreviation of the name found on the device.
3. All open files are closed. Open spooling files are emptied.
4. User enter counts are set to 0.
5. If <directory name> is omitted, the directory residing on the specified device/unit will be entered as long as no other directory with the same name already is entered.
6. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
7. The parameter <unit> is now always required.

Example:
@ENTER-DIRECTORY PACK-ONE,DISC-10MB-1,1,F

A directory named PACK-ONE is entered on device DISC-10MB-1, unit 1, fixed pack.

@ENTSG

Function:
To define the condition under which a direct task will run.

Related commands:
Related SINTRAN III Monitor calls: ENTSG (MON 157)

Format:
@ENTSG <segment no.>,<page table>,<interrupt level>,<start address>

Parameters:

<segment no.>	the segment where the routine (direct task) resides (octal value).
<page table>	where the direct task will be mapped. Possible values = 0 or 3, for VSE. = 0, 1, 2, 15, 16 or 17 for VSX (17 is designated for direct tasks on VSX).
<interrupt level>	the interrupt level on which the routine is run (decimal value). Legal values are: interrupt levels 6, 7, 8 or 9.
<start address>	start address of the routine (octal value).

Rules:
1. Permitted only for users RT and SYSTEM.
2. The segment must be fixed.

Example:
@ENTSG 42, 3, 9, 30000

The routine on segment 42 is entered to run as a direct task on page table 3, interrupt level 9. Location 30000_8 is the start address of the routine.

@EXECUTE-IOX

Function:
Execute an IOX instruction on a device.

Related commands:
Related SINTRAN III Monitor calls: EXIOX (MON 31)

Format:
@EXECUTE-IOX <value>,<device register address>

Parameters:

<value>	contents of A register before execution (octal value, default = 0).
<device register address>	bits 10 - 0 of the IOX instruction (octal value, default = 0).

Rules:
1. Permitted only for users RT and SYSTEM.
2. The contents of the A register are displayed after execution.
3. <device register address> must be listed in the internal SINTRAN III IOX table. Can be set by *INSERT-IN-IOX-TABLE in @SINTRAN-SERVICE-PROGRAM.

@EXPAND-FILE

Function:
Increase the length of a contiguous file.

Related commands:
Related SINTRAN III commands: ALLOCATE-FILE
CREATE-FILE

Format:
@EXPAND-FILE <file name>,<no. of pages>

Parameters:
<file name> the contiguous file to be expanded.
<no. of pages> the additional number of pages (decimal value).

Rules:
1. Permitted for all users.
2. File must be contiguous.
3. The command only works if there are at least the requested number of free pages immediately following the specified file.
4. If the command fails because free space is not available, create a new file large enough to meet the requirements, then copy the contents of the old file to this new file and delete the old one.

Example:
@EXPAND-FILE F-1, 9

The file F-1 is expanded by 9 pages.

@FILE-STATISTICS

Function:
List the following for the file(s):
1. File object number
2. File name
3. Type (indexed, contiguous, temporary, peripheral, spooling or allocated file)
4. Access modes
5. Date of creation
6. Number of times opened
7. Last time opened for read and write
8. Size of file (in pages and bytes)
9. Device number if peripheral file.

Related commands:
Related SINTRAN III commands: LIST-FILES
LIST-OPEN-FILES

Format:
@FILE-STATISTICS <file name>,<output file>

Parameters:
<file name> list all files matching this name. Can be abbreviated (default = all files in default directory for the current user).
<output file> destination of the list (default = terminal).

Rules:
1. Permitted for all users who have read access to the file.
2. <file name> may specify files on a remote computer. The file specifications may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

Example:
@FILE-STATISTICS F-1, TER

Statistics are listed on the terminal for the file F-1.

@FIX

Function:
Fix a segment in memory, that is, it is not allowed to be swapped out. This command is useful for certain time-critical programs.

Related commands:
Related SINTRAN III commands: FIXC
UNFIX
Related SINTRAN III Monitor calls: FIX (MON 115)

Format:
@FIX <segment no.>

Parameters:
<segment no.> (octal value).

Rules:
1. Permitted only for users RT and SYSTEM.
2. @UNFIX must be executed before the RT-Loader can clear the segment.
3. <segment no.> must be a non-demand segment.

Example:
@FIX 30

Segment number 30_8 is fixed in memory.

@FIXC

Function:
Fix a segment in a contiguous area of physical memory.

Related commands:
Related SINTRAN III commands: FIX
UNFIX
Related SINTRAN III Monitor calls: FIXC (MON 160)

Format:
@FIXC <segment no.>,<first physical page no.>

Parameters:
<segment no.> (octal value).
<first physical page no.> (octal value).

Rules:
1. Permitted only for users RT and SYSTEM.
2. @UNFIX must be executed before RT-Loader can clear the segment.
3. <segment no.> must be a non-demand segment.

Example:
@FIXC 240, 500

Segment number 240_8 is fixed in memory starting at physical page 500_8, that is, address 1200000_8.

@FORWARD-SPACE-PRINT

Function:
Causes the spooling program to skip printing of the specified number of pages and lines in a file which was stopped by @STOP-PRINT.

Related commands:
Related SINTRAN III commands: BACKSPACE-PRINT
START-PRINT
STOP-PRINT

Format:
@FORWARD-SPACE-PRINT <peripheral file name>,<no. of pages>,
<no. of lines>

Parameters:

<peripheral file name>	spooling device name.
<no. of pages>	number of pages to skip.
<no. of lines>	amount of skipping (decimal, default = 0).

Rules:
See @BACKSPACE-PRINT.

Example:
```
@STOP-PRINT LINE-PRINTER
@FORWARD-SPACE-PRINT LINE-PRINTER,2,,
@START-PRINT LINE-PRINTER
```

The spooling output for LINE-PRINTER is stopped and output is resumed two pages ahead.

@GET-ERROR-DEVICE

Function:
List the logical number of the device where error messages will be printed.

Related commands:
Related SINTRAN III commands: SET-ERROR-DEVICE

Format:
@GET-ERROR-DEVICE

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.

Example:
```
@GET-ERROR-DEVICE
ERROR DEVICE: 1
```

Error messages are printed on logical device number 1.

@GET-RT-NAME

Function:
Find the symbolic name of an RT-program from the address of its RT-description.

Related commands:
Related SINTRAN III commands: LIST-RT-DESCRIPTION
LIST-RT-PROGRAMS
Related SINTRAN III Monitor calls: GRTNA (MON 152)

Format:
@GET-RT-NAME <address>

Parameters:
<address> RT-description address (octal value, default = background program of the user's terminal).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Some system programs in SINTRAN have no symbolic name. They can be given names by the RT-Loader command DEFINE-PROGRAM.

Example:
```
@GET-RT-NAME,,
BAK03
@
```

The user's terminal background program is BAK03.

@GET-TERMINAL-TYPE

Function:
List the terminal type number of a terminal.

Related commands:
Related SINTRAN III commands: SET-TERMINAL-TYPE
Related SINTRAN III Monitor calls: MGTTY (MON 16)

Format:
@GET-TERMINAL-TYPE <terminal number>

Parameters:
<terminal number> must be a terminal (decimal value, default = the user's terminal).

Rules:
1. Permitted for all users.
2. The ND standard for terminal types is shown in Appendix A.

Example:
```
@GET-TERMINAL-TYPE 29
TERMINAL TYPE: 1
@
```

Terminal type for terminal 29 is 1.

@GIVE-OBJECT-BLOCKS

Function:
This command will make it possible to create more than 256 files for a single user. To allow this, the user must be given more than the single object block given initially. Each object block contains object entries for 256 files. The maximum number of object blocks per user is 16 (which means a maximum of 4096 files). The number of files allowed for a user is reported by the command @USER-STATISTICS.

Related commands:
Related SINTRAN III commands: TAKE-OBJECT-BLOCKS

Format:
@GIVE-OBJECT-BLOCKS [<directory name>:]<user name>,
<no. of object blocks>

Parameters:

<directory name>:<user name>	directory and user to be given space (default directory = user's main directory).
<no. of object blocks>	number of additional object blocks (1-15) (decimal value).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.

@GIVE-SPOOLING-PAGES

Function:
Increase the total number of pages that can be used by the spooling files.

Related commands:
Related SINTRAN III commands: SPOOLING-PAGES-LEFT
TAKE-SPOOLING-PAGES

Format:
@GIVE-SPOOLING-PAGES <no. of pages>

Parameters:
<no. of pages> additional no. of pages (decimal value).

Rules:
1. Permitted only for user SYSTEM.
2. 500 pages are given to the spooling system.
3. The command does not guarantee that the disk space is available (see @START-SPOOLING, rule 2). User system must have at least as many free pages as there are pages for spooling.

Example:
@GIVE-SPOOLING-PAGES 95

95 pages are added to the spooling pages.

@GIVE-USER-SPACE

Function:
Increase the total amount of space reserved for a user.

Related commands:
Related SINTRAN III commands: TAKE-USER-SPACE

Format:
@GIVE-USER-SPACE [<directory name>:]<user name>,<no. of pages>

Parameters:

<directory name>:<user name>	directory and user to be given space (default directory = user's main directory).
<no. of pages>	additional number of pages (decimal value).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. Only the unreserved pages in the directory may be given to a user (use @DIRECTORY-STATISTICS).

Example:
@GIVE-USER-SPACE USER-ONE,95

95 additional pages are given to the user USER-ONE in main directory.

@GOTO-USER

Function:
Start background program at specific address.

Related commands:
Related SINTRAN III commands: CONTINUE
PLACE-BINARY
PLACE-PROGRAM
RECOVER

Format:
@GOTO-USER <address>

Parameters:
<address> (octal value, default = current P-register of the background program).

Rules:
1. Permitted for all users.
2. When a program is terminated by an "escape" or "break", all files are normally closed. To keep them open until @GOTO-USER is typed, @SET-PERMANENT-OPEN is used before the files are accessed for the first time.
3. After "escape" the values of the background RT-program registers may be examined by @STATUS.

Example:
```
@OPEN F-1:DATA, RX
FILE NUMBER IS: 101
@SET-PERMANENT-OPEN 101
@RECOVER MAIN
 ("escape")
@GOTO-USER,,
```

The program MAIN is started, stopped and finally resumed at the point of interruption. The file F-1:DATA is kept permanently opened so it is not closed at the "break" (files not permanently open will be closed when you type escape).
Note the difference between CONTINUE and GOTO-USER: CONTINUE will restart the program at its start address, GOTO-USER at the specified address (or current value of the P-register).

@HELP

Function:
List command names matching parameter.

Related commands:
Related SINTRAN III commands: LIST-DEVICE-FUNCTIONS

Format:
@LIST-DEVICE-FUNCTIONS <command>,<output file>

Parameters:

<command>	all commands matching <command> will be listed (default = all commands).
<output file>	destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.
2. If a command is a file system command, this is indicated. For all other commands, restrictions on its use (RT, SYSTEM only) are indicated.

Example:
```
@HELP EX,
RT:         EXECUTE-IOX
FILSYS:     EXPAND-FILE
@
```

@HOLD

Function:
Keep the terminal or batch processor waiting for a specified period.

Related commands:
Related SINTRAN III Monitor calls: HOLD (MON 104)

Format:
@HOLD <no. of units>,<time unit>

Parameters:
<no. of units> (decimal value).
<time unit> 1 = basic time units (20 ms)
2 = seconds
3 = minutes
4 = hours

Rules:
1. Permitted for all users.
2. No resources are released.
3. If the repeat bit in the RT-description is set there will be immediate return from HOLD.
4. If <number of time units> = 0 the repeat bit is reset and there is immediate return (without waiting until the next clock interrupt).

Example:
@HOLD 5, 3
@

The second @ is prompted after 5 minutes.

@INIT-ACCOUNTING

Function:
Initialize the accounting files and start accounting.

Related commands:
Related SINTRAN III commands: START-ACCOUNTING
STOP-ACCOUNTING

Format:
@INIT-ACCOUNTING <no. of accounts>,<max.no.>,<background>,
[<RT>,<clear logged information>,<logging interval>,]
<spooling>

Parameters:

<no. of accounts>	number of accounts before warning (decimal value, default = 1000).
<max.no.>	maximum number of accounts (decimal value, default = 1200).
<background>	are background programs to be accounted, both on ND-100 and ND-500.
<RT>	are user RT-programs to be accounted.
<clear logged information>	whether information already logged in the RT accounting table should be cleared.
<logging interval>	number of seconds between dumps of RT accounting table on file ACCOUNTS:DATA.
<spooling>	are spooling processes to be accounted.

Rules:
1. Permitted only for user SYSTEM.
2. When <desired> number of records is reached, the message "APPROACHING END OF ACCOUNTING FILE" is written on the terminal at every log out.
3. When <maximum> number of records is reached, the message "END OF ACCOUNTING FILE ENCOUNTERED" is written on the terminal at every log out. No further accounting is attempted until the next @INIT-ACCOUNTING or until ACCOUNTS:DATA is reset by the ACCOUNTING-SERVICE-PROGRAM.
4. If RT-accounting is not included in the system, the question <RT> will not be asked. If the message "ACCRT NOT LOADED" is given after answering Y to <RT> the ACCRT-program must be loaded onto segment 32 with the RT-Loader (see System Supervisor manual, ND-30.003).
5. Only if the system contains an ND-500 will the question <ND-500> be asked.
6. Accounting on an ND-500 or spooling cannot be started unless background accounting is running. It can be stopped independently but is stopped automatically if background accounting is stopped.

Example:
@INIT-ACCOUNTING 750, 850, Y, Y, Y, 600

The accounting system is initialized. A warning is given after 750 records and after 850 records no further logging takes place until the file is reset. Background and user RT-programs are accounted, information already in the RT-accounting table is cleared and dumps take place every 600 sec.

@INITIAL-COMMAND

Function:
Specify the first command to be executed at next restart from memory image, @RESTART-SYSTEM, or pressing MASTER CLEAR and LOAD buttons. The command must be @ENTER-DIRECTORY. It is stored as the first command in the initial command buffer.

Related commands:
Related SINTRAN III commands: LIST-INITIAL-COMMANDS
NEXT-INITIAL-COMMAND
RESTART-SYSTEM

Format:
@INITIAL-COMMAND <command string>

Parameters:
<command string> the command and parameters are written on one line without @.

Rules:
1. Permitted only for user SYSTEM.
2. When @INITIAL-COMMAND has been issued, @RTENTER is automatically executed at subsequent restarts.
3. The other commands in the initial command buffer are specified using @NEXT-INITIAL-COMMAND.
4. If user RT has file space on a directory other than the first main directory to be entered, this directory must be entered and set as a default directory in the initial commands. Failure to do this means @RTOPEN or OPEN from an RT-program will not access user RT's files by default.

Example:
@INITIAL-COMMAND ENTER-DIRECTORY PACK-ONE,DISC-66MB-1

The command @ENTER-DIRECTORY PACK-ONE,DIS-66MB-1 is executed at restart from memory image.

@INITIALIZE-BACKGROUND-PROGRAMS

Function:
Initiate the background programs for terminals and batch processors.

Related commands:
Related SINTRAN III commands: SET-AVAILABLE

Format:
@INITIALIZE-BACKGROUND-PROGRAMS

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. After a cold start (HENT in MACM or @COLD-START) or initial load, the segment file(s) are defined (see @SINTRAN-SERVICE-PROGRAM *DEFINE-SEGMENT-FILE) and then this command is used to initialize background programs (that is, allocate space for them on the segment file) before any reentrant subsystems are dumped.
3. If necessary @CHANGE-BACKGROUND-SEGMENT-SIZE must be used after @INITIALIZE-BACKGROUND-PROGRAMS.

@INITIALIZE-ERROR-LOG

Function:
Initialize the segment on which error messages concerning hardware faults are recorded.

Related commands:
Related SINTRAN III commands: PRINT-ERROR-LOG

Format:
@INITIALIZE-ERROR-LOG

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. Error messages are collected on a segment for later printout. Messages concerning particular programs are not collected.

@INTV

Function:
Prepare an RT-program for periodic execution.

Related commands:

Related SINTRAN III commands:	ABSET
	RT
	SET
Related SINTRAN III Monitor calls:	ABSET (MON 102)
	INTV (MON 103)
	RT (MON 100)
	SET (MON 101)

Format:
@INTV <program name>,<no. of time units>,<time unit>

Parameters:

<program name>	RT-program name or RT-description address (octal value, default = own terminal background program).
<no. of time units>	interval between each time the program is put in the execution queue.
<time unit>	see @HOLD.

Rules:
1. Permitted only for users RT and SYSTEM.
2. The program must be activated by @CONCT, @RT or MON 100. It is then put in the time queue. At the end of the interval it is transferred from the time queue to the execution queue and at the same time put back in the time queue. This is repeated periodically.
3. @DSCNT or @ABORT stop periodic execution.

Example:
```
@INTV KLOKK, 30, 2
@RT KLOKK
```

The program KLOKK is put in the execution queue every 30 seconds, starting when the @RT command is issued.

@IOSET

Function:
Set control information for device.

Related commands:
Related SINTRAN III commands: CLEAR-DEVICE
Related SINTRAN III Monitor calls: IOSET (MON 141)

Format:
@IOSET <logical device no.>,<input/output>,<program name>,
<control code>

Parameters:

<logical device no.>	(octal value).
<input/output>	0 = input part. 1 = output part.
<program name>	must be zero.
<control code>	-1 = reset device. For card reader: -1 = clear buffer and set ASCII mode. All characters are converted to ASCII and trailing blanks are ignored. 0 = set ASCII mode. 1 = set binary mode. Subsequent INBT monitor calls will return a 12-bit column image. For synchronous modem output: -1 = clear modem output buffer 0 = start sending of the current block 1 = set 377 bytes to send between data 2 = set ASCII synchronous to send 3 = set EBCDIC synchronous to send 4 = synchronise on 26 received (ASCII) 5 = synchronise on 62 received (EBCDIC) 6 = synchronise on 226 received (ASCII) 7 = set ASCII synchronous (226 to send between data)

Rules:
1. Permitted for all users.
2. Device must be reserved by the terminal program.

Example:
@IOSET 5, 1, 0, -1

Reset line printer.

@LIST-BATCH-PROCESS

Function:
List the state of each batch processor in the system.

Related commands:
Related SINTRAN III commands: BATCH
LIST-BATCH-QUEUE

Format:
@LIST-BATCH-PROCESS

Parameters:
None.

Rules:
1. Permitted for all users.
2. A batch processor can be idle, active or passive; if it is active, the name of the logged on user is listed.
3. The command has no effect on the batch processor.

Example:
```
@LIST-BATCH-PROCESS
     1 IDLE,   NO USER LOGGED ON
     2 ACTIVE, USER GUEST LOGGED ON
     3 PASSIVE
```

Three processors are defined. The second is running a job belonging to user GUEST.

@LIST-BATCH-QUEUE

Function:
List the contents of a specific batch queue.

Related commands:
Related SINTRAN III commands: LIST-BATCH-PROCESS

Format:
@LIST-BATCH-QUEUE <batch no.>

Parameters:
<batch no.> batch processor number as returned from @BATCH or @LIST-BATCH-PROCESS.

Rules:
1. Permitted for all users.
2. The command has no effect on the batch processor.

Example:
```
@LIST-BATCH-QUEUE 1
1 CARD-READER LINE-PRINTER
2 (USER-NAME)BATIN LINE-PRINTER
```

The queue contains an entry from the card reader and one from the file (USER-NAME)BATIN.

@LIST-DEFAULT-SUBSYSTEM

Function:
List the defined command string (if any) to be executed after login.

Related commands:
Related SINTRAN III commands: DEFAULT-SUBSYSTEM-DISABLE
DEFAULT-SUBSYSTEM-ENABLE
DEFINE-DEFAULT-SUBSYSTEM

Format:
@LIST-DEFAULT-SUBSYSTEM <output file>

Parameters:
<output file> (default = own terminal).

Rules:
1. Permitted for all users.

@LIST-DEVICE

Function:
List the name of the RT-program which has reserved the device and the name of any RT-programs waiting for the device.

Related commands:
Related SINTRAN III commands: LIST-RT-DESCRIPTION
WHERE-IS-FILE
Related SINTRAN III Monitor calls: WHDEV (MON 140)

Format:
@LIST-DEVICE <logical device no.>,<input/output>

Parameters:

<logical device no.>	(decimal value).
<input/output>	0 = input part.
	1 = output part.

Rules:
1. Permitted for all users.

Example:
```
@LIST-DEVICE 1,1
RESERVED BY: BAKO1
```

The output part of device 1 is reserved by the program BAKO1.

@LIST-DEVICE-FUNCTIONS

Function:
List all the functions available in @DEVICE-FUNCTION.

Related commands:
Related SINTRAN III commands: DEVICE-FUNCTION

Format:
@LIST-DEVICE-FUNCTIONS <command>,<output file>

Parameters:
<command> selection of commands (default = all).
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

@LIST-DIRECTORIES-ENTERED

Function:
List the names of entered directories and where they are mounted.

Related commands:
Related SINTRAN III commands: CREATE-DIRECTORY
DIRECTORY-STATISTICS
ENTER-DIRECTORY

Format:
@LIST-DIRECTORIES-ENTERED <directory name>,<output file>

Parameters:

<directory name>	list all directories matching this name, which can be abbreviated (default = all directories entered).
<output file>	destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

Example:

```
@LIST-DIRECTORIES-ENTERED
DIRECTORY NAME:  PACK-ONE
OUTPUT FILE: (default = terminal)
DIR INDEX 1:   DISC-2-75MB-1 UNIT 0 SUBUNIT 0: PACK-ONE
@
```

The directory matching the name PACK-ONE is listed on the terminal.

@LIST-EXECUTION-QUEUE

Function:
List all the programs in the execution queue. The list contains the name or address of the RT-description.

Related commands:
Related SINTRAN III commands: LIST-TIME-QUEUE

Format:
@LIST-EXECUTION-QUEUE

Parameters:
None.

Rules:
1. Permitted for all users.
2. Programs are listed in the order in which they occur in the queue, that is, in order of decreasing priority.
3. When the list of RT-programs in the execution queue is greater than 16, the list is sorted columnwise from left to right.

@LIST-FILES

Function:
For each file, list file object number and full name.

Related commands:
Related SINTRAN III commands: FILE-STATISTICS
LIST-OPEN-FILES

Format:
@LIST-FILES <file name>,<output file>

Parameters:

<file name>	list all files matching this name, which can be be abbreviated, (default = all files in default directory for current user).
<output file>	destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.
2. Only those files to which the logged-in user has read access are listed.
3. <file name> may specify files on a remote computer. The file specifications may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

@LIST-FRIENDS

Function:
List names and access modes of users declared as friends of the current user.

Related commands:
Related SINTRAN III commands: CREATE-FRIEND
LIST-USERS
USER-STATISTICS

Format:
@LIST-FRIENDS <user name>,<output file>

Parameters:
<user name> list all friends matching this user name, which can be abbreviated (default = all friends).
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

@LIST-INITIAL-COMMANDS

Function:
List the commands defined as initial commands and contained in the initial command buffer which is automatically executed after pressing MACL and LOAD.

Related commands:
Related SINTRAN III commands: INITIAL-COMMAND
NEXT-INITIAL-COMMAND

Format:
@LIST-INITIAL-COMMANDS <output file>

Parameters:
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.

Example:
```
@LIST-INITIAL-COMMANDS,,
ENTER-DIRECTORY,,DISC-2-75MB,0
CONN SYS-OUT-1  105  R
CLOSE  105
BATCH
APPEND-BATCH 1  LOAD-MODE  SYS-OUT-1
@
```

Five initial commands are currently defined.

@LIST-MASS-STORAGE-UNITS

Function:
List all mass-storage units and corresponding directory index.

Related commands:
Related SINTRAN III commands: DEFINE-MASS-STORAGE-UNIT
DELETE-MASS-STORAGE-UNIT

Format:
@DELETE-MASS-STORAGE-UNIT <output file>

Parameters:
<output file> Default TERMINAL.

Rules:
1. This command is allowed for all users.

@LIST-OPEN-FILES

Function:
List open file number and full name of all the terminal user's open files.

Related commands:
Related SINTRAN III commands: FILE-STATISTICS
LIST-FILES
LIST-RTOPEN-FILES

Format:
@LIST-OPEN-FILES <output file>

Parameters:
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

Example:
```
@LIST-OPEN-FILES,
FILE NUMBER 000100: (BIG-PACK:SCRATCH)SCRATCH08:DATA; 1
@
```

File no. 100, (SCRATCH file named SCRATCH08:DATA) is open for the terminal.

@LIST-REENTRANT

Function:
List available reentrant subsystems established by @DUMP-REENTRANT.

Related commands:
Related SINTRAN III commands: DELETE-REENTRANT
DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT

Format:
@LIST-REENTRANT [<subsystem>]

Parameters:
<subsystem> Only reentrant subsystems matching <subsystem> will be listed.

Rules:
1. Permitted for all users.

Example:
```
@LIST-REENT D
START      RESTART      SEGMENT      NAME
  0            1          166        DEBUGGER
```

@LIST-REMOTE-QUEUE

Function:
List the contents of a remote batch queue.

Related commands:
Related SINTRAN III commands: APPEND-REMOTE

Format:
@LIST-REMOTE-QUEUE <remote computer>

Parameters:
<remote computer> see @APPEND-REMOTE.

Rules:
1. Permitted for all users.

Example:
```
@LIST-REMOTE-QUEUE IBM
1 (SYSTEM)CARD-READER
2 (USER-NAME)IBMJOB
```

The queue contains an entry from the card reader and one from the file (USER-NAME)IBMJOB.

@LIST-RT-ACCOUNT

Function:
List accounting data for RT-programs.

Related commands:
Related SINTRAN III commands: INIT-ACCOUNTING
START-RT-ACCOUNT
STOP-RT-ACCOUNT

Format:
@LIST-RT-ACCOUNT

Parameters:
None.

Rules:
1. Permitted for users RT and SYSTEM.

@LIST-RT-DESCRIPTION

Function:
List the information in the RT-description on the terminal.
1. Current state information (repeat, IO wait, etc.).
2. Ring number.
3. Priority.
4. When last started or time left until next start.
5. Length of interval when periodic.
6. Start address.
7. Initial segment numbers.
8. Register contents.
9. READY, PASSIVE or WAITING FOR:<address>.
10. Actual segments.
11. Background if a background RT-program.
12. RTOFF if set.
13. Reentrant segment number if one is in use.
14. Address of data fields of reserved resources.
15. Reserved logical device number is printed in addition to the data field addresses.

Related commands:
Related SINTRAN III commands: LIST-RT-PROGRAMS
Related SINTRAN Service Program commands: DUMP-RT-DESCRIPTION

Format:
@LIST-RT-DESCRIPTION <RT-program (name or address)>

Parameters:
<RT-program (name or address)> symbolic name of the RT-program or address of the RT-description (octal value, default = own terminal background program).

Rules:
1. Permitted for all users.

Example:

```
@LIST-RT-DESCRIPTION
RT-PROGRAM (NAME OR ADDRESS): (default = own terminal's background
                                         program)

BACKGROUND PROGRAM
ACTIVE      ........  ......  ....  ....  .....  .....  .....  .....

        SEGMENTS 1  AND  2    REENT  NPIT APIT RING PRIORITY TIMESLICED
INITIAL  :       3B   1406B           11B   7B   2      100B  CLASS:  0B
ACTUAL   :       3B   1406B           11B   7B   2       55B

START ADDRESS:  35644B   LAST STARTED:     21 SECS
ND-100 CPU TIME USED:    5 SECS

   P      X      T      A      D      L      S      B
 016367 000000 000074 000010 076302 027042 000241 130200

RESERVED   DATAFIELDS  LOGICAL UNIT        FIRST WAITING
               23350B      74B  OUTPUT
               23335B      74B  INPUT
```

@LIST-RTOPEN-FILES

Function:
List all files open for RT-programs.

Related commands:
Related SINTRAN III commands: LIST-OPEN-FILES
RTOPEN-FILE

Format:
@LIST-RTOPEN-FILES <output file>

Parameters:
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
```
@LIST-RTOPEN-FILES
FILE NUMBER 000100 : (PACK-ONE:SYSTEM)LINE-PRINTER:;2
```

@LIST-RT-PROGRAMS

Function:
List the current status of all RT-programs known by name to the RT-Loader. Information given is:

1. Name.
2. RT-description address.
3. Priority.
4. Status (or state).
5. P register.
6. Time left until next start when in time queue.
7. Length of interval when periodic.
8. Actual segments.
9. RTOFF if set.

Related commands:
Related SINTRAN III commands: LIST-RT-DESCRIPTION

Format:
@LIST-RT-PROGRAMS <output file>

Parameters:
<output file> destination of the list (default = TERMINAL).

Rules:

1. Permitted only for users RT and SYSTEM.

@LIST-SEGMENT

Function:
List the following information about a segment:
1. First logical page (the first page on page table 1 is logical page 100_8, the first page on page table 2 is logical page 200_8, etc.).
2. Length in pages.
3. Segment file number.
4. Relative page number within the segment file.
5. Status information (permit protect, demand/non-demand, reentrant sub- system flag, etc.).

Related commands:
Related RT-Loader commands: WRITE-SEGMENTS

Format:
@LIST-SEGMENT <segment (name or number)>

Parameters:
<segment (name or number)> (octal value).

Rules:
1. Permitted for all users.

@LIST-SPOOLING-FORM

Function:
List the identification key as set by @SET-SPOOLING-FORM.

Related commands:
Related SINTRAN III commands: SET-SPOOLING-FORM

Format:
@LIST-SPOOLING-FORM <peripheral file name>

Parameters:
<peripheral file name> a spooling device.

Rules:
1. Permitted for all users.

Example:
```
@LIST-SPOOLING-FORM LINE-PRINTER
FORM-1
@
```

Only files with user text = FORM-1 are to be printed.

@LIST-SPOOLING-QUEUE

Function:
List the following information about the spooling queue:
1. For the file being printed and those remaining in the queue:
   a. Full name
   b. User/RT-program appending the file
   c. Copies left to be printed
   d. Bytes still to be printed in the current file.
2. If defined, a user message to be written on the error device when emptying the file (see @DEFINE-SPOOLING-FILE-MESSAGE).

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE
DEFINE-SPOOLING-FILE-MESSAGE
SPOOLING-PAGES-LEFT

Format:
@LIST-SPOOLING-QUEUE <peripheral file name>,<output file>

Parameters:
<peripheral file name> the spooling device.
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

@LIST-TERMINATION-HANDLING

Function:
Lists commands defined with @DEFINE-TERMINATION-HANDLING and @NEXT-TERMINATION-COMMAND in background, or defined RT-program name in RT-termination.

Related commands:
Related SINTRAN III commands: DEFINE-TERMINATION-HANDLING
NEXT-TERMINATION-COMMAND

Format:
@LIST-TERMINATION-HANDLING <RT or background>,<output file>

Parameters:

<RT or background>	List termination handling for RT-programs or background programs.
<output file>	default = TERMINAL.

Rules:
1. Permitted for all users.

@LIST-TIME-QUEUE

Function:
List the programs in the time queue. The list contains the name or address of RT-descriptions.

Related commands:
Related SINTRAN III commands: LIST-EXECUTION-QUEUE

Format:
@LIST-TIME-QUEUE

Parameters:
None.

Rules:
1. Permitted for all users.
2. Programs are listed in the order in which they occur in the queue, that is, in order of increasing scheduled execution time!
3. When the list of RT-programs in the time queue is greater than 16, the list is sorted columnwise from left to right.

@LIST-TITLE

Function:
List system identification and title.

Related commands:
Related SINTRAN Service Program commands: DEFINE-TITLE
Related ND-500 Monitor commands: VERSION

Format:
@LIST-TITLE

Parameters:
None.

Rules:
1. Permitted for all users.

Example:
```
@LIST-TITLE
SINTRAN III - VSX/500 K
REVISION:   101300B
CPU (SYSTEM NUMBER):     6323
GENERATED:   16.39.00     15 MAY     1986
@
```

@LIST-USERS

Function:
List full name of all users matching specified name.

Related commands:
Related SINTRAN III commands: LIST-FRIENDS
USER-STATISTICS

Format:
@LIST-USERS [<directory name>:]<user name>,<output file>

Parameters:

<directory name>:<user name>	list all users matching this name, which can be abbreviated (default = all users in all default directories).
<output file>	destination of the list (default = TERMINAL).

Rules:
1. Permitted for all users.

@LOAD-BINARY

Function:
Load a program in BPUN format from a file to the user's memory and start execution.

Related commands:
Related SINTRAN III commands: PLACE-BINARY
RECOVER

Format:
@LOAD-BINARY <file name>

Parameters:
<file name> program file name (default type = :BPUN).

Rules:
1. Permitted for all users.
2. The file must start with a bootstrap loader.
3. The addresses used for loading and starting are found in the program file, written by a)BPUN command (@MAC, @MACF, etc.). (The BPUN format is described in the NORD-100 Functional Description ND-06.015.)
4. When loading, a checksum is calculated and compared to the one in the program file. If they do not match, execution is not attempted and an error message is given.
5. No restart address is defined, so restart with @CONTINUE is not possible.

Example:
@LOAD-BINARY PROG-1

The program in the file PROG-1:BPUN is loaded and executed.

@LOAD-REENTRANT-SEGMENT

Function:
To build a reentrant segment.

Related commands:
Related SINTRAN III commands: CLEAR-REENTRANT-SEGMENT
DEFINE-REENTRANT-PROGRAM
DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT
Related RT-Loader commands: READ-PROG-FILE

Format:
@LOAD-REENTRANT-SEGMENT <file name>,<segment name>

Parameters:

<file name>	file name of the :PROG file to be loaded onto a segment.
<segment name>	segment name of the segment to be used.

Rules:
1. Permitted only for user SYSTEM.

@LOGOUT

Function:
Finish a session at the terminal by logging out the user and releasing the terminal.

Related commands:
Related SINTRAN III commands: STOP-TERMINAL
TIME-USED

Format:
@LOGOUT

Parameters:
None.

Rules:
1. Permitted for all users.
2. The time and date are given. The time used is given if the accounting system is in use.
3. If there is mail in the user's mailbox a message is given. The user can collect the mail or repeat @LOGOUT to finish the session without collecting the mail.

Example:
```
@LOGOUT
15.20.54      9 AUGUST 1983
-- EXIT --
```

@LOOK-AT

Function:
Examine and/or modify memory locations and registers.

Related commands:
Related SINTRAN III commands: SET-MEMORY-CONTENTS
STATUS

Format:
@LOOK-AT <space reference>[,<additional parameter>]
(subcommands)

Parameters:

<space reference>

MEMORY = user's virtual memory space.
Permitted for all users.

ALT-MEMORY = users alternative 64K memory. Addresses are specified relative to the 64K boundary.
Permitted for all users with 128 pages background segment.

SEGMENT = an existing segment.

<additional parameter> segment name or number.
Permitted only for users RT and SYSTEM.

COMMON-CODE = the common code part of any PIT.
Permitted only for user SYSTEM.
Available on the VSX-version only.

RTCOMMON = common area for RT-programs.
Permitted only for users RT and SYSTEM.

IMAGE = memory of the resident part of SINTRAN III on mass storage.
A modification is permanent until a cold start overwrites the image.
Permitted only for user SYSTEM.
Available on the VSE-version only.

RESIDENT = resident memory (0 - 177777_8). This includes the resident part of SINTRAN. A modification is permanent until changed by loading from the image area.
Permitted only for user SYSTEM.
Page Tables (PIT) can be accessed at the following octal addresses:
PT0: 177000 - 177177
PT1: 177200 - 177377
PT2: 177400 - 177577
PT3: 177600 - 177777
Available on the VSE-version only.

REGISTERS = all registers on all hardware interrupt levels can be examined but only those on levels 2, 6, 7, 8, 9 and 15 can be changed. The register is specified as an octal number indicating the level, followed by the register name.
Permitted only for users RT and SYSTEM.

ALT-SEG = the alternative 64 K (the upper part) of 128 K segment.
Permitted for users RT and SYSTEM.

PHYSICAL = the physical memory. PHYSICAL is used with double integer physical memory addresses. Only permitted for user SYSTEM.

A segment name may also be used as space reference (without specifying SEGMENT).

Rules:

1. Permission depends on the <space reference> as shown above.
2. When the <space reference> has been checked for legality, the message READY appears.
3. To examine a location, the octal address is typed followed by a slash (/). The contents is printed in octal and can now be changed by typing an octal value followed by CR. The value can be negative (preceded by a minus sign). If only CR is typed, the contents is unchanged and the contents of the next location is printed.
4. If an asterisk * is typed, the current address will be printed.
5. For REGISTERS the valid names are P, X, T, A, D, L, S and B. Register names can also be specified in @LOOK-AT MEMORY.
6. If an illegal character is typed, a question mark is printed. Illegal characters have no effect. The command is terminated by a full stop . or @.
7. If locations on mass-storage segments are changed, the pages are written out so that "patches" are made permanent. Locations changed in the user's virtual memory or the resident part of the operating system are temporary. They may be altered when loading a user program or reloading the system.
8. If <space reference> is SEGMENT or IMAGE the changes only take place when the command is correctly terminated.
9. When MEMORY or ALT-MEMORY is specified, the user's registers may be examined.

Example:

```
@LOOK-AT MEMORY
READY:
1000/ 10 100
11 .
@
```

Location 1000_8 in users virtual memory is changed from 10_8 to 100_8 (11_8 is the contents of location 1001_8).

@MAIL

Function:
Enter the mail system, which is used for sending messages to other users or broadcasts to all users.

See the SINTRAN III Utilities Manual ND-60.151 for a further description.

Format:
@MAIL [<output file>]

Parameters:
<output file> destination of the mail from the terminal user's mailbox. Only requested when collecting mail (default = TERMINAL).

Rules:
1. Permitted for all users, but some subcommands are restricted as shown below.
2. Messages can be sent in two ways:
   a. To a mailbox - the recipient is notified when logging in or out and collects mail by typing @MAIL.
   b. As direct mail - the message is sent immediately.
3. A broadcast is mail to all users, either to every mailbox or directly to each terminal. It can only be sent by user SYSTEM.
4. The mail system can only be used by one user at a time.

Subcommands:

1. For all users the following subcommands are available:

***EXIT**
exit from the mail system.

***FINISH**
exit from the mail system.

***HELP**
list all available subcommands.

***SEND-DIRECT-MESSAGE** <logical device no.>
type message terminated by CTRL+L. The message is sent to the terminal with this <logical device no.>.

***SEND-MESSAGE** <user name>
type message terminated by CTRL+L. The message is sent to the user's mailbox. $ and ' are handled as for *BROADCAST below.

2. For user SYSTEM the following additional subcommands are available:

***BROADCAST**
type message terminated by CTRL+L. It is put in the mailbox of all users. $ is translated to CR, LF. Apostrophe ' is permitted but terminates the message on output to its destination.

***DELETE-BROADCAST** <broadcast index>
the message is removed from all mailboxes. <broadcast index> can be found by *LIST-BROADCASTS.

***DELETE-MESSAGE** <message no.>
the message is removed from the mailbox. The number can be found by *LIST-MESSAGES.

***DIRECT-BROADCAST**
type message terminated by CTRL+L. The message is sent immediately to all terminals. $ and ' are handled as for *BROADCAST.

***INITIALIZE** <max. no. of messages>
this command must be given by user SYSTEM before the mail system can be used. It can be used to reset the mail system. The mail is collected in the file (SYSTEM)MAILBOX:DATA. The maximum length of a message is 512 characters.

***LIST-BROADCASTS** <output file>
all broadcasts are listed with their broadcast number on the output file (default = TERMINAL).

***LIST-MESSAGE** <output file>
as above, but messages are listed.

***RUN-MAIL-SYSTEM**
restarts the mail system after SINTRAN start or after a *STOP-MAIL-SYSTEM command. The contents of the mailbox file are retained.

***STOP-MAIL-SYSTEM**
the mail system is made unavailable; no mail is lost.

@MEMORY

Function:
Defines the area of virtual memory to be saved by the @DUMP command.

Related commands:
Related SINTRAN III commands: DUMP

Format:
@MEMORY <low address>,<high address>

Parameters:

<low address>	lower bound of area to be saved, the address limit is included, (octal value, default = 0).
<high address>	upper bound of area to be saved, the address limit is included, (octal value, default = 0).

Rules:
1. Permitted for all users.
2. The user's virtual memory space is unaffected.
3. The current boundary settings are reset by @LOAD-BINARY, @PLACE-BINARY and @RECOVER.

Example:
@MEMORY 100,1777

The area to be dumped is 100_8 - 1777_8 inclusive.

@MEMORY-LIMITS

Function:
Defines the area of virtual memory of both banks to be saved by the @DUMP command.

Related commands:
Related SINTRAN III commands: DUMP

Format:
@MEMORY-LIMITS <low program address>,<high program address>,
<low data address>,<high data address>

Parameters:

<low program address>	lower bound of the area of code bank to be saved, the address limit is included (octal value, default = 0).
<high program address>	upper bound of the area of code bank to be saved, the address limit is included (octal value, default = 0).
<low data address>	lower bound of the area of data bank to be saved, the address limit is included (octal value, default = 0).
<high data address>	upper bound of the area of data bank to be saved, the address limit is included (octal value, default = 0).

Rules:
1. Permitted for all users.
2. The user's virtual memory space is unaffected.
3. The current boundary settings are reset by @LOAD-BINARY, @PLACE-BINARY, @PLACE-PROGRAM and @RECOVER.

Example:
@MEMORY-LIMITS 100,1777,10000,12345

The code area to be dumped is 100_8-1777_8 inclusive.
The data area to be dumped is 10000_8-12345_8 inclusive.

@MODE

Function:
Enter SINTRAN commands from a file created by means of an editor and execute them.

Related commands:
Related SINTRAN III commands: APPEND-BATCH

Format:
@MODE <input file>,<output file>

Parameters:

<input file>	file containing the commands to be executed.
<output file>	destination of the output normally made to TERMINAL. (If the command is being executed from the terminal (not mode or batch), default input and output files are the terminal; if it is being executed from a mode or batch job default input and output files are the currently open input and output files for that mode or batch job.)

Rules:

1. Permitted for all users.
2. Commands in a @MODE file should obey the following rules:
   a. The first character of a command line in SINTRAN, MAIL or SINTRAN-SERVICE-PROGRAM commands must be @, which corresponds to the prompt character typed by the system in front of commands in direct mode. Commands to other subsystems such as the editor or loader must not be preceded by @ or any other character.
   b. All command parameters must be specified on the same line as the command itself. The system cannot ask for missing parameters. The usual default parameters apply.
   c. A @MODE command is permitted within a @MODE file or batch job. The maximum number of nesting of the MODE file can be 10.
   d. Data input by the user can be interspersed with command lines in the same way as if they were typed from the terminal.
3. The MODE input and output files are assigned SINTRAN file numbers starting with the first available file number (normally 101_8). These file numbers are not available to user programs within the MODE file.
4. The file execution continues under the user currently logged on at the terminal from which the initial @MODE command was issued.
5. If the user program reads or writes data on device unit number 1 (file name: TERMINAL), such data will be taken from the <input file> and written on the <output file>.

6. If an error condition occurs within a @MODE job, a specific error message is written on the <output file>, the message ***BATCH JOB ABORTED*** appears on the terminal and execution is terminated.
7. If the end of the file is reached on the <input file>, control is returned to the terminal.
8. The execution may be interrupted by pressing the "escape" character but cannot then be resumed, as all opened files are closed. The last process initiated can be restarted by typing @CONTINUE (see @CONTINUE for exceptions).
9. The PERFORM subsystem makes it possible to include parameters in MODE files. (See SINTRAN III Utilities Manual ND-60.151 for further details.)

Example:

```
@MODE MF-1, TERM
@DEL-FI F-1:DATA
@CRE-FI F-2, 0
@
```

The mode file MF-1 is executed. It contains a @DELETE-FILE and a @CREATE-FILE command. These latter two commands are the contents of the file MF-1:SYMB.

@MOVE-SPOOLING-QUEUE-ENTRY

Function:
Change the order of the files in the spooling queue.

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE
REMOVE-FROM-SPOOLING-QUEUE

Format:
@MOVE-SPOOLING-QUEUE-ENTRY <peripheral file name>,<file name>,
<insert or append>,<before/after file name>

Parameters:

<peripheral file name>	the spooling device.
<file name>	the file to be moved.
<insert or append>	insert = place <file name> in front of next parameter. append = place <file name> after next parameter (can be abbreviated).
<before/after file name>	a file in the spooling queue referred to by the previous parameter.

Rules:
1. Permitted only for user SYSTEM and the owner of the spooling queue file. Only user SYSTEM may move entries forward in the queue.
2. The parameter <file name> may specify files on a remote computer. The file specification may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

Example:
@MOVE-SPOOLING-QUEUE-ENTRY LINE-PRINTER,F-1,I,F-2

The file F-1 is moved in front of F-2 in the line printer spooling queue.

@NEXT-INITIAL-COMMAND

Function:
Append a command to the set of commands executed at system start-up, that is, put the command in the initial command buffer.

Related commands:
Related SINTRAN III commands: INITIAL-COMMAND
LIST-INITIAL-COMMANDS

Format:
@NEXT-INITIAL-COMMAND <command string>

Parameters:
<command string> the command is written without the @ sign.

Rules:
1. Permitted only for user SYSTEM.
2. The command buffer has room for a total of 256 characters.

Example:
```
@INITIAL-COMMAND ENTER-DIRECTORY,PACK-ONE,DISC-66MB-1,0
@NEXT-INITIAL-COMMAND BATCH
@NEXT-INITIAL-COMMAND APPEND-BATCH,1,ENT-FILE,LINE-PRINTER
```

A sequence of three commands is entered into the initial command buffer.

@NEXT-TERMINATION-COMMAND

Function:
Append a command to the set of commands executed in case of termination with escape, MON 65 or fatal errors such as executing privileged instructions etc.

Related commands:
Related SINTRAN III commands: DEFINE-TERMINATION-HANDLING

Format:
@NEXT-TERMINATION-COMMAND <command string>

Parameters:
<command string> the command is written without the @-sign.

Rules:
1. Permitted only for user SYSTEM.
2. The command buffer has room for a total of 256 characters.

@OPCOM

Function:
Enter the operator communication on the console of an ND-100. It has the same function as pressing OPCOM on the panel.

Related commands:
Related SINTRAN III commands: LOOK-AT
STOP-SYSTEM

Format:
@OPCOM

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. The command must not be used in mode or batch jobs.
3. SINTRAN can be reentered from OPCOM by pressing "escape".
4. Only allowed on the console (terminal no. 1).

@OPEN-FILE

Function:
Make a file available for access and return the file number used for accessing the file.

Related commands:
Related SINTRAN III commands: CLOSE-FILE
CONNECT-FILE
RTCONNECT-FILE
RTOPEN-FILE
SCRATCH-OPEN
SET-PERMANENT-OPEN
Related SINTRAN III Monitor calls: OPEN (MON 50)

Format:
@OPEN-FILE <file name>,<access type>

Parameters:
<file name> name of file to be opened (default type = :SYMB).
<access type> the intended access mode, a legal combination of:
R - read
W - write
X - random access
A - append
C - common access (contiguous file only)

The following combinations are legal:
R - sequential read
W - sequential write (access starts at beginning of mass-storage file)
RW - sequential read and write
RX - random read
WX - random read and write
WA - sequential write append (access starts at end of mass-storage file)
RC - random read with read and write access from other users allowed (contiguous files only)
WC - random read and write with read and write access from other users allowed (contiguous files only)
D - direct transfer (ND-500 only)
DC - direct transfer with file closed (ND-500 only)

Rules:
1. Permitted for all users with sufficient <access type> to the file.
2. New file names and/or versions can be created when opening the file by enclosing <file name> in quotes (default type = :SYMB).
3. If file access is permitted, the message FILE NUMBER IS = n is printed. n is the <logical device no.> (octal value) to be used for later access.

4. An error message is produced if the file cannot be opened.
5. Files opened for sequential access require more than one open file tables entry on the system segment. The additional table entries is used for buffering input and/or output. If files are accessed sequentially, the maximum number of simultaneously opened files is reduced on most systems.
6. Appendix B lists logical device numbers. This is the default number specified by ND at system generation.

Example:

```
@OPEN-FILE "F-1:DATA",W
FILE NUMBER IS 000101
@
```

The indexed file F-1:DATA is created and opened for sequential write only. It is assigned file number 101_8.

@OPERATOR

Function:
Send message to error device.

Related commands:
Related SINTRAN III commands: RESTART-USER
WAIT-FOR-OPERATOR

Format:
@OPERATOR <text>

Parameters:
<text> any printable characters terminated by CR (default = no text).

Rules:
1. Permitted for all users.
2. On the error device the following two lines are produced:
   ***<time of day> TERMINAL <no.>,< text>

Example:
@OPERATOR PLEASE UPDATE THE CLOCK!

On the error device the following message is produced:

```
*** 13.25.15 TERMINAL 52:
PLEASE UPDATE THE CLOCK!
```

@PLACE-BINARY

Function:
Load a program in BPUN format but do not start it.

Related commands:
Related SINTRAN III commands: GOTO-USER
LOAD-BINARY

Format:
@PLACE-BINARY <file name>

Parameters:
<file name> program file name (default type = :BPUN).

Rules:
1. Permitted for all users.
2. The file must start with a bootstrap loader (@MAC,)BPUN format).
3. The program may be started by @GOTO-USER.
4. Programs in BRF format cannot be loaded.

Example:
@PLACE-BINARY USER-PROG

The program USER-PROG:BPUN is loaded to the user's memory but is not started.

@PLACE-PROGRAM

Function:
Load a program in PROG format, but do not start it.

Related commands:
Related SINTRAN III commands: GOTO-USER

Format:
@PLACE-PROGRAM <file name>

Parameters:
<file name> program file name (default type = :PROG).

Rules:
1. Permitted for all users.
2. The PROG format is the one used by the Symbolic Debugger.
3. The program may be started by @GOTO-USER.
4. Programs in BRF or BPUN format cannot be loaded.

Example:
@PLACE-PROGRAM USER-PROG

The program USER-PROG:PROG is loaded to the user's memory, but is not started.

@PRINT-ERROR-LOG

Function:
Print the contents of the error log.

Related commands:
Related SINTRAN III commands: INITIALIZE-ERROR-LOG

Format:
@PRINT-ERROR-LOG <output file>

Parameters:
<output file> destination of the list (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.
2. The log is not reset until next @INITIALIZE-ERROR-LOG.

@PRINT-HISTOGRAM

Function:
Print the current histogram.

Related commands:
Related SINTRAN III commands: DEFINE-HISTOGRAM
DEFINE-SYSTEM-HISTOGRAM
START-HISTOGRAM
STOP-HISTOGRAM

Format:
@PRINT-HISTOGRAM <output file>

Parameters:
<output file> destination of the histogram (default = TERMINAL).

Rules:
1. Permitted for all users.
2. Valid only if the histogram has not been printed before.
3. The sampling is stopped if this has not previously been done by @STOP-HISTOGRAM.
4. Producing the next histogram must start with @DEFINE-HISTOGRAM or @DEFINE-SYSTEM-HISTOGRAM.

Example:
@PRINT-HISTOGRAM,,

```
                  Percent        Samples
Outside:           12             10 out of 123

 100 -  107:       00             0
 110 -  117:       05             5
  ...              ...            ...
1070 - 1077:       00             0
```

(See example of @DEFINE-HISTOGRAM.)

For explanation of output format, see Chap. 18 of SINTRAN III Real Time Guide, ND-60.133.

@PRIOR

Function:
Set priority of an RT-program. The priority is used to determine the sequence of queues (for example execution queue, reservation or waiting queue for devices).

Related commands:
Related SINTRAN III Monitor calls: PRIOR (MON 110)

Format:
@PRIOR <program>,<priority>

Parameters:
<program> RT-program name or RT-description address.
<priority> (decimal value in the range 0-255).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Programs with priority = 0 will never start.
3. The command does not affect background processes running under control of the time slicer.

Example:
@PRIOR KLOKK,80

The priority of RT-program KLOKK is set to 80.

@PRLS

Function:
Release a device from the program which reserved it.

Related commands:
Related SINTRAN III commands: PRSRV
Related SINTRAN III Monitor calls: PRLS (MON 125)

Format:
@PRLS <logical device no.>,<input/output>

Parameters:

<logical device no.>	(decimal value).
<input/output>	0 = input part of device 1 = output part of device (default = 0).

Rules:
1. Permitted only for users RT and SYSTEM when resources are reserved.

Example:
@PRLS 18,1

The output part of unit 18 is released from the RT-program which reserved it.

@PRSRV

Function:
Reserve a device for an RT-program.

Related commands:
Related SINTRAN III commands: PRLS
Related SINTRAN III Monitor calls: PRSRV (MON 124)

Format:
@PRSRV <logical device no.>,<input/output>,<program>

Parameters:

<logical device no.>	(decimal value).
<input/output>	0 = input part of device 1 = output part of device (default = 0).
<program>	RT-program name or RT-description address (octal value, default = user's terminal background program).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Valid only if the unit is not reserved.

Example:
@PRSRV 18,1,KLOKK

The output part of device 18 is reserved for the RT-program KLOKK.

@RECOVER

Function:
Call a subsystem on a reentrant segment, or load a program from a :PROG file to the user's virtual memory and start execution.

Related commands:
Related SINTRAN III commands: CONTINUE
DUMP
DUMP-PROGRAM-REENTRANT
DUMP-REENTRANT
LOAD-BINARY
PLACE-BINARY

Format:
@RECOVER <subsystem name>
or
@<program name>

Parameters:
<subsystem name> reentrant subsystem name or program file name (if file, default type = :PROG).

Rules:
1. Permitted for all users.
2. If @RECOVER is omitted then <program name> must not coincide with a SINTRAN command (full or abbreviated). If it does, this command will be executed instead of @<program name>. To force a search for a :PROG file rather than a command or reentrant subsystem, @RECOVER must be typed.
3. Searching for the program name takes place as follows:
   a. If no user name is specified, the reentrant subsystem names are searched (see @DUMP-REENTRANT).
   b. If not found, <program name> is taken as the name of a :PROG file and the user default directory is searched.
   c. If not found, user SYSTEM's file directory is searched.
   d. If a user name is specified, only that user's file directory is searched.
4. The execution begins at the address specified in @DUMP, @DUMP-REENTRANT or *DUMP (NRL subcommand).

Example:
@RECOVER MAC
or
@MAC

The program MAC is loaded into memory and started.

@REGENERATE-DIRECTORY

Function:
Delete conflicting references to pages and reconstruct the bit file. This command must be used with care (see below).

Related commands:
Related SINTRAN III commands: TEST-DIRECTORY

Format:
@REGENERATE-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. Permitted only for user SYSTEM.
2. All files in the directory must be closed before the command is used. This includes scratch files, which are automatically closed when logging out and can also be closed by @CLOSE 100. User @SYSTEM should log out all users and close his own scratch file before this command is used.
3. The command should be used with care. It may create "holes" in indexed files. This occurs when a reference to a page in an index block is set to zero because it conflicts with another index block or a contiguous file. When trying to read from this page the error message "No such page" is given. The user should take backup of all valuable files before this command is given.
4. If a page is included in an indexed and a contiguous file, it is deleted (0 in index block) from the indexed file.
5. The bit file is regenerated by this command.
6. This command may take a long time to complete on a large disk. Stopping communication and RT-programs reduces the time required for regeneration.
7. It is advisable to use the FILE-SYSTEM-INVESTIGATOR and back up the directory before this command is used.

Example:
@REGENERATE-DIRECTORY PACK-ONE

The directory PACK-ONE is regenerated.

@RELEASE-DEVICE-UNIT

Function:
Release a reserved device unit.

Related commands:
Related SINTRAN III commands: RELEASE-DIRECTORY
RELEASE-FILE
RESERVE-DEVICE-UNIT

Format:
@RELEASE-DEVICE-UNIT <device name>,<unit>[,<'F' or 'R'>]

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.

Rules:
1. Permitted for all users.
2. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
3. The parameter <unit> is now always required.

Example:
@RELEASE-DEVICE-UNIT FLOPPY-DISC-1,

Floppy disk 1 is now available to other users.

@RELEASE-DIRECTORY

Function:
Release an entered directory.

Related commands:
Related SINTRAN III commands: ENTER-DIRECTORY
RELEASE-DEVICE-UNIT

Format:
@RELEASE-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. For floppy directories: Permitted for all users. For all other directories: Permitted only for user SYSTEM.
2. A directory can only be released if:
   a. There are no opened files on it.
   b. No user is logged in, who has this as main or default directory.
3. After a directory is released it may be entered again, or another medium may be mounted on the unit and entered.
4. The command must be given before removing the medium.

Example:
@RELEASE-DIRECTORY PACK-TWO

The directory PACK-TWO is released.

@RELEASE-FILE

Function:
Permit a peripheral file to be used from other terminals.

Related commands:
Related SINTRAN III commands: PRLS
RELEASE-DEVICE-UNIT
RESERVE-FILE
Related SINTRAN III Monitor calls: RELES (MON 123)

Format:
@RELEASE-FILE <file name>

Parameters:
<file name> must be a peripheral file.

Rules:
1. Permitted for all users.

Example:
@RELEASE-FILE LINE-PRINTER

The (peripheral) file LINE-PRINTER is released from the terminal user.

@RELEASE-OPEN-FILE-ENTRIES

Function:
To release all reserved file entries.

Related commands:
Related SINTRAN III commands: RESERVE-OPEN-FILE-ENTRIES
RTRELEASE-OPEN-FILE-ENTRIES
RTRESERVE-OPEN-FILE-ENTRIES

Format:
@RELEASE-OPEN-FILE-ENTRIES

Parameters:
None.

Rules:
1. Permitted for all users.
2. All file entries are automatically released when a batch/mode job is finished, or when an interactive user logs out. In that case it is superfluous to give this command.

@REMOVE-FROM-SPOOLING-QUEUE

Function:
Delete an entry in the spooling queue, which has previously been inserted by @APPEND-SPOOLING-FILE.

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE
DELETE-SPOOLING-FILE
LIST-SPOOLING-QUEUE
MOVE-SPOOLING-QUEUE-ENTRY

Format:
@REMOVE-FROM-SPOOLING-QUEUE <peripheral file name>,<file name>

Parameters:

<peripheral file name>	spooling device.
<file name>	the spooling queue file to be removed.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file to the queue.
2. Only the first name matching <file name> is removed.
3. The parameter <file name> may specify files on a remote computer. The file specification may contain the following parameters:

   system(user(password:project)).(directory:user)file:type;version

Example:
@REMOVE-FROM-SPOOLING-QUEUE LINE-PRINTER,F-1

A search is made for the file name F-1 in the spooling queue to LINE-PRINTER. If found it is removed from the queue.

@RENAME-DIRECTORY

Function:
Change the name of a directory.

Related commands:
Related SINTRAN III commands: CREATE-DIRECTORY
ENTER-DIRECTORY

Format:
@RENAME-DIRECTORY <old directory name>,<new directory name>,
<device name>,<unit>[,<'F' or 'R'>][,<subunit>]

Parameters:

<old directory name>	(default = name of directory on medium of specified device).
<new directory name>	the ned directory name.
<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. Valid only if the directory is not entered.
3. Valid only if the old and new directory names are not entered on any other device unit.
4. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
5. The parameters <unit> are now always required.

Example:
@RENAME-DIRECTORY F-1, F-2, F-D-1

Change directory name on floppy disk controller 1 from F-1 to F-2.

@RENAME-FILE

Function:
Change file object name and/or type.

Related commands:
Related SINTRAN III commands: CREATE-FILE

Format:
@RENAME-FILE <old file name>,[<new object name>] [:<new type>]

Parameters:

<old file name>	an existing file.
<new object name>	(default = no change).
<new type>	(default = no change).

Rules:
1. Permitted for all users with directory access to the file.
2. If version is specified in <old file name> only that version is renamed, otherwise all versions are renamed.
3. Directory name, user name and version number should not be specified in the new file name.
4. Only permitted if the file is not open.

Example:
@RENAME-FILE (P-T:GUEST) F-1:SOU, :SYMB

The file (P-T:GUEST) F-1:SOU is changed to type :SYMB.

@RENAME-USER

Function:
Change the name of a user in a directory.

Related commands:
Related SINTRAN III commands: CREATE-USER

Format:
@RENAME-USER [<directory name>:]<old user name>,<new user name>

Parameters:

<directory name>	directory where the user resides (default = user's main directory).
<old user name>	an existing user.
<new user name>	the new name.

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. Valid only if the user has closed all files.
3. The user name is changed in one directory only.
4. The directory name should not be specified in the new user name.
5. Unless <directory name> specify a main directory, the new user name must exist in a main directory.

Example:
@RENAME-USER GUEST, GJEST

The name of the user GUEST in main directory is changed to GJEST.

@RESERVE-DEVICE-UNIT

Function:
Reserve device for special use. No directories can be entered until the device is released.

Related commands:
Related SINTRAN III commands: RELEASE-DEVICE-UNIT
RESERVE-FILE

Format:
@RESERVE-DEVICE-UNIT <device name>,<unit>[,<'F' or 'R'>]
[,<subunit>]

Parameters:

<device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<subunit>	subunit number. This parameter only apply to disks which are subdivided into several parts or directories (0-5).

Rules:
1. Permitted for all users.
2. The command is not executed if a directory is already entered on the unit.
3. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
4. The parameter <unit> is now always required.

Example:
@RESERVE-DEVICE-UNIT FLOPPY-DISC-1,

No directory can be entered on FLOPPY-DISC-1.

@RESERVE-DIRECTORY

Function:
Reserve a directory for special use.

Related commands:
Related SINTRAN III commands: UNRESERVE-DIRECTORY

Format:
@RESERVE-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. Permitted only for users RT and SYSTEM.
2. The directory must be entered.
3. No files can be open on the directory.
4. A default directory can only have user SYSTEM and user RT entered.
5. A main directory can only have user SYSTEM and user RT entered.

Example:
@RESERVE-DIRECTORY PACK-THREE

PACK-THREE is reserved for special use.

@RESERVE-FILE

Function:
Reserve a peripheral file for the exclusive use of the terminal user.

Related commands:
Related SINTRAN III commands: PRSRV
RELEASE-FILE
RESERVE-DEVICE-UNIT
Related SINTRAN III Monitor calls: RESRV (MON 122)

Format:
@RESERVE-FILE <file name>

Parameters:
<file name> must be a peripheral file.

Rules:
1. Permitted for all users.
2. The reserved file is released on LOGOUT.
3. Not permitted for batch jobs (see @SCHEDULE).

Example:
@RESERVE-FILE LINE-PRINTER

The (peripheral) file LINE-PRINTER is reserved for the terminal user.

@RESERVE-OPEN-FILE-ENTRIES

Function:
Reserving resources on local and remote systems to be used for remote file access. The command will specify a number of permanent connections to be established between the two systems, and later remote file access requests to the remote system will then be executed faster because it will not be necessary to establish a new connection for the request.

Related commands:
Related SINTRAN III commands: RELEASE-OPEN-FILE-ENTRIES
RTRELEASE-OPEN-FILE-ENTRIES
RTRESERVE-OPEN-FILE-ENTRIES

Format:
@RESERVE-OPEN-FILE-ENTRIES <system name>,<access id>,<no. of entries>

Parameters:

<system name>	identification of system.
<access id>	identification of the type: user name(password:project password)
<no. of entries>	number of permanent connections to be established between the systems.

Rules:
1. Permitted for all users.
2. If no more entries are vacant, and error message is given, and if issued from batch or mode job, command is aborted.

@RESET-DEFAULT-REMOTE-SYSTEM

Function:
To change back the identification to a local user after a remote user previously has been set up as default by the @SET-DEFAULT-REMOTE-SYSTEM command.

Related commands:
Related SINTRAN III commands: SET-DEFAULT-REMOTE-SYSTEM
SET-LOCAL-MODE
SET-REMOTE-MODE

Format:
@RESET-DEFAULT-REMOTE-SYSTEM

Parameters:
None.

Rules:
1. Permitted for all users.

@RESTART-PRINT

Function:
Restart from the beginning of the file currently being printed on the spooling device.

Related commands:
Related SINTRAN III commands: START-PRINT
STOP-PRINT

Format:
@RESTART-PRINT <peripheral file name>

Parameters:
<peripheral file name> name of the spooling device.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file.
2. Valid only if the spooling program is started (@START-SPOOLING) and a file is being printed. The command is useful for example when there has been a paper crash on the line printer.

Example:
@RESTART-PRINT LINE-PRINTER

Printing of the current file on the peripheral LINE-PRINTER is started again from the beginning.

@RESTART-SYSTEM

Function:
Restart the system by simulating a STOP, MASTER CLEAR and LOAD.

Related commands:
Related SINTRAN III commands: COLD-START
STOP-SYSTEM

Format:
@RESTART-SYSTEM

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. No users should be logged in.
3. All files should be closed and no directories other than the main directory should be entered.
4. The commands defined by @INITIAL-COMMAND and @NEXT-INITIAL-COMMAND are executed.
5. This command cannot be abbreviated.

@RESTART-USER

Function:
Restart the user on a terminal after @WAIT-FOR-OPERATOR has been used.

Related commands:
Related SINTRAN III commands: OPERATOR
WAIT-FOR-OPERATOR

Format:
@RESTART-USER <logical device no.>

Parameters:
<logical device no.> must be a terminal (decimal value).

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
```
@RESTART-USER 9
*** 09.46.37 RESTARTED TERMINAL 9
```

Terminal 9 is restarted for the user.

@RFILE

Function:
Transfer one or more blocks from a file opened for random read into the user's memory.

Related commands:
Related SINTRAN III commands: SET-BLOCK-SIZE
WFILE
Related SINTRAN III Monitor calls: RFILE (MON 117)

Format:
@RFILE <file no.>,<memory address>,<block no.>,<no. of words>

Parameters:

<file no.>	logical device number from the @OPEN-FILE or @CONNECT-FILE (octal value).
<memory address>	starting address of memory destination (octal, default = 0).
<block no.>	block number to be accessed (octal value, default = 0).
<no. of words>	length of the block in words (octal value, default = 400_8).

Rules:
1. Permitted for all users.
2. Default block size is 256.
3. When using direct access mode, the number of words read/write must be a multiple of physical block (sector) size.

Example:
@RFILE 101,400,0,1000

Read 1000_8 words from block 0 of file 101_8 to memory address 400_8.

@RT

Function:
Put a program in the execution queue.

Related commands:
Related SINTRAN III commands: ABSET
SET
Related SINTRAN III Monitor calls: RT (MON 100)

Format:
@RT <program>

Parameters:
<program> RT-program name or address of RT-description (octal value, default = user's terminal background program).

Rules:
1. Permitted only for users RT and SYSTEM.
2. If the program is already in the execution queue the repeat bit will be set.
3. If the program is in HOLD or RTWT, it is removed from that state. In the case of HOLD it is not removed from the time queue; the program is restarted or its repeat bit set when the HOLD time expires.

Example:
@RT KLOKK

The RT-program KLOKK is put in the execution queue.

@RT-LOADER

Function:
Start the RT-Loader. See the manual ND-60.051 for a further description.

Related commands:
Related SINTRAN III commands: LOAD-REENTRANT-SEGMENT

Format:
@RT-LOADER;

Parameters:
None.

Rules:
1. Permitted only for users RT and SYSTEM.
2. The RT-Loader can only be used from one terminal at a time.
3. Cannot be restarted by @CONTINUE.

@RT-PROGRAM-LOG

Function:
Measure resource usage by logging a particular RT-program and total system usage. Usage of one or two logical units can also be logged. (See "The Analysis of Response Time Problems", ND Bulletin, December 1980.)

Related commands:
Related SINTRAN III commands: START-PROGRAM-LOG

Format:
```
@RT-PROGRAM-LOG <program name>,<report interval>,<interrupts/sample>,
                <logical device no.>[,<input/output>]
                [,<logical device no.>][,<input/output>],
                <output file>
```

Parameters:

<program name>	the name of the RT-program to be measured or the address of it RT-description (default = log only total system usage).
<report interval>	the number of seconds between each report time.
<interrupts/sample>	the number of output interrupts of the user's terminal between each sample.
<logical device no.>	any existing logical device to be measured. Two devices can be measured at one time (decimal value, default = no log).
<input/output>	input or output of the logical device 0 = input 1 = output
<output file>	destination of the report (default = TERMINAL).

Rules:
1. Permitted only for users RT and SYSTEM.
2. Sampling is connected to the output interrupt response time of the terminal. If the terminal is of high speed, for example 9600 baud, a sample on each interrupt would give a considerable system load. The Parameter <interrupts/sample> should specify a number which is reasonable in the particular circumstances. To find such a number, consult SINTRAN III Real Time Guide, ND-60.133, on Program Measurement.
3. The information returned is:
   - CPU time used
   - disk channel time for swapping
   - disk channel time for file access
   - the time the disk was reserved; this is the total of swap and file access time the logical unit(s) is(are) reserved when the operating system itself or an RT-program is measured. For RT-programs additional information is given about:
   - time when program was passive
   - time when program was waiting for I/O interrupts.

Information is given as percentages. For example "20/45" returned as CPU load means that the RT-program uses 20% of the total available CPU time, while the total system uses 45%. The rest of the time the CPU is idle.

4. To terminate the log, press "escape".
5. The command is not permitted from remote terminals.
6. The command cannot be used in MODE and BATCH jobs.

Example:

@RT-PROGRAM-LOG BAKO2,1,1,,

CPU	SWAP	FILES	DISK	PASSIVE	IO WAIT
00/ 95	00/ 00	00/ 00	00	94	04
41/ 98	00/ 00	13/ 13	13	00	60
44/ 97	00/ 00	03/ 03	03	00	57
63/100	00/ 00	00/ 00	00	00	24
24/100	00/ 00	00/ 00	00	00	10
65/100	00/ 00	00/ 00	00	00	33
63/100	00/ 00	01/ 01	01	00	33
04/100	00/ 00	00/ 00	00	00	00
63/100	00/ 00	01/ 01	01	00	33
65/100	00/ 00	00/ 00	00	00	33
65/100	00/ 00	01/ 01	01	00	32
05/100	00/ 00	00/ 00	00	00	00
10/100	00/ 00	01/ 01	01	00	04
03/100	00/ 00	00/ 00	00	00	00
50/100	00/ 00	03/ 03	03	00	28
04/100	00/ 00	00/ 00	00	00	00

The program BAKO2 is logged every second. One sample is taken on every interrupt of terminal 2. The second row shows that CPU was utilised 98% of the time and BAKO2 used 41% of that time. The disk was reserved 13% of the time, all for BAKO2 file access. BAKO2 was in IO-WAIT 60% of the time. The sum of CPU time, passive time and IO-WAIT is 101%, due to rounding inaccuracy.

@RTCLOSE-FILE

Function:
Close a file opened for RT-programs.

Related commands:
Related SINTRAN III commands: CLOSE-FILE
RTCONNECT-FILE
RTOPEN-FILE

Format:
@RTCLOSE-FILE ‹file no.›

Parameters:
‹file no.› › 0: close the file with the given logical device no. -
1 or -2: close all files.
This applies to all RT-programs.

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
@RTCLOSE-FILE 101

The file 101_8 is closed for all RT-programs.

@RTCONNECT-FILE

Function:
Open a file with a previously defined number. The file will be available for all RT-programs.

Related commands:
Related SINTRAN III commands: CONNECT-FILE
RTCLOSE-FILE
RTOPEN-FILE

Format:
@RTCONNECT-FILE <file name>,<file no.>,<access type>

Parameters:
<file name> (default type = :SYMB).
<file no.> any free number (octal value in the range 100-177).
<access type> see @OPEN-FILE.

Rules:
1. Permitted only for users RT and SYSTEM.
2. See rules 2 - 6 of @OPEN-FILE.
3. When accessing files in RT-programs user RT is the user.

Example:
@RTCONNECT-FILE F-1,120,R

File F-1:SYMB is opened for read by all RT-programs and given file number 120_8.

@RTENTER

Function:
Enable RT-programs to open, close, read and write to files.

Related commands:
Related SINTRAN III commands: INITIAL-COMMAND

Format:
@RTENTER

Parameters:
None.

Rules:
1. Permitted only for users RT and SYSTEM.
2. The command must always be given when starting SINTRAN III.
3. If user RT has file space on a directory other than the first main directory to be entered, this directory must be entered and set as a default directory in the initial commands. Failure to do this means @RTOPEN or OPEN from an RT-program will not access user RT's files by default.

@RTOFF

Function:
Disable the starting of an RT-program until @RTON is given.

Related commands:
Related SINTRAN III commands: RTON
Related SINTRAN III Monitor calls: RTOFF (MON 137)

Format:
@RTOFF <program>

Parameters:
<program> RT-program name or RT-description address (octal value, default = user's terminal background program).

Rules:
1. Permitted only for users RT and SYSTEM.
2. RT-programs already running will not be stopped (see @ABORT).

Example:
@RTOFF KLOKK

The RT-program KLOKK cannot be started until @RTON is given.

@RTON

Function:
Enable starting of an RT-program.

Related commands:
Related SINTRAN III commands: RTOFF
Related SINTRAN III Monitor calls: RTON (MON 136)

Format:
@RTON <program>

Parameters:
<program> RT-program name or RT-description address.

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
@RTON KLOKK

The RT-program KLOKK can now be started.

@RTOPEN-FILE

Function:
Open a file for RT-programs.

Related commands:
Related SINTRAN III commands: OPEN-FILE
RTCLOSE-FILE
RTCONNECT-FILE
Related SINTRAN III Monitor calls: OPEN (MON 50)

Format:
@RTOPEN-FILE <file name>,<access type>

Parameters:
<file name> (default type = :SYMB).
<access type> see @OPEN-FILE.

Rules:
1. Permitted only for users RT and SYSTEM.
2. Access to files in RT-programs is as user RT.
3. See rules 2-6 of @OPEN-FILE.

Example:
```
@RTOPEN-FILE F-1,RW FILE NUMBER IS: 100
@
```

The file F-1:SYMB is opened for read and write access for all RT-programs. The file number is 100_8.

@RTRELEASE-OPEN-FILE-ENTRIES

Function:
To release reserved file entries.

Related commands:
Related SINTRAN III commands: RELEASE-OPEN-FILE-ENTRIES
RESERVE-OPEN-FILE-ENTRIES
RTRESERVE-OPEN-FILE-ENTRIES

Format:
@RTRELEASE-OPEN-FILE-ENTRIES

Parameters:
None.

Rules:
1. Permitted for users RT and SYSTEM.
2. Reserved entries for RT-programs must always be released explicitly.

@RTRESERVE-OPEN-FILE-ENTRIES

Function:
Reserving resources on local and remote systems to be used for remote file access. The command will specify a number of permanent connections to be established between the two systems, and later remote file access requests (from RT-programs) to the remote system will then be executed faster because it will not be necessary to establish a new connection for the request.

Related commands:
Related SINTRAN III commands: RELEASE-OPEN-FILE-ENTRIES
RESERVE-OPEN-FILE-ENTRIES
RTRELEASE-OPEN-FILE-ENTRIES

Format:
RTRESERVE-OPEN-FILE-ENTRIES <system-name>,<access-id>,<no. of entries>

Parameters:

<system-name>	identification of system.
<access-id>	identification of the type: user name(password:project password)
<no. of entries>	number of permanent connections to be established between the systems.

Rules:
1. Permitted for user RT and SYSTEM.
2. If no more entries are vacant, an error message is given.
3. Access-id is information containing variables such as remote user name, remote password, project password, etc. For appropriate format, see the COSMOS User's Guide, ND-60.163.

@SAVE-DIRECTORY

Function:
Copy a directory onto another directory. The command is equivalent to @COPY-DEVICE.

Related commands:
Related SINTRAN III commands: COPY-DEVICE

Format:
@SAVE-DIRECTORY <destination device name>,<unit>,[<'F' or 'R'>,]
<source device name>,<unit>[,<'F' or 'R'>]

Parameters:

<destination device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.
<source device name>	device name, see appendix F for a list of legal device names.
<unit>	device unit number (0-3, default 0).
<'F' or 'R'>	F (for fixed) or R (for removable) part of a disk. This parameter only apply to disks which have both a fixed and a removable part.

Rules:
1. Permitted only for user SYSTEM.
2. Valid only for devices which can contain directories.
3. A directory must exist on the source device.
4. Destination device must not be an entered directory.
5. Note that if you give an erroneous disk type as device type (this may happen, for example, if your system has different disk types as different units and you specify the wrong unit), the disk will enter fault state and the system will hang.
6. The parameters <unit> are now always required.

@SCHEDULE

Function:
Reserve devices to be used by a job.

Related commands:
Related SINTRAN III commands: RESERVE-FILE

Format:
@SCHEDULE <logical device no.>,.....,<logical device no.>

Parameters:
<logical device no.> devices to be reserved (octal value).;

Rules:
1. Numbers must be in ascending order.
2. Permitted for all users. Used especially in batch or mode jobs, but may also be useful for time sharing, for example when further operations depend on device availability.
3. If a specified device is reserved by another user, the calling user must wait until the device is released.
4. To prevent deadlock, all device numbers must occur in @SCHEDULE before they are used.
5. The devices may be released explicitly or they are automatically released at log out.

Example:
@SCHEDULE 2,3,4,5

The batch job reserved logical device numbers 2 (paper tape reader), 3 (paper tape punch), 4 (card reader) and 5 (line printer).

@SCRATCH-OPEN

Function:
Open a file as a scratch file.

Related commands:

Related SINTRAN III commands:	CONNECT-FILE
	OPEN-FILE
Related SINTRAN Service Program commands:	SET-CLOSED-SCRATCH-FILE-SIZE
Related SINTRAN III Monitor calls:	OPEN (MON 50)

Format:
@SCRATCH-OPEN <file name>,<access type>

Parameters:
<file name> (default type = :SYMB).
<access type> see @OPEN-FILE.

Rules:
1. Permitted for all users.
2. The file is kept permanently opened. It is closed when logging out or by @CLOSE-FILE <file no.> but not @CLOSE-FILE -1. When closed, only the file is reduced to the size set by the SINTRAN Service Program command SET-CLOSED-SCRATCH-FILE-SIZE (default us 64 pages).
3. @CLOSE-FILE -2 also closes scratch files.
4. See rules 2-6 of @OPEN-FILE.

Example:
```
@SCRATCH-OPEN SCRATCH:DATA, RW
FILE NUMBER IS: 101
```

The file SCRATCH:DATA is opened as a scratch file with read and write access.

@SET

Function:
Enter an RT-program in the time queue to be transferred to the execution queue after a specified period.

Related commands:

Related SINTRAN III commands:	ABSET
	INTV
	SET
Related SINTRAN III Monitor calls:	ABSET (MON 102)
	INTV (MON 103)
	SET (MON 101)

Format:
@SET <program>,<no. of time units>,<time unit>

Parameters:

<program>	RT-program name or address of RT-description (octal value, default = user's terminal background program).
<no. of time units>	the number of time units the program is to stay in the time queue.
<time unit>	1 = basic time units (normally 20 milliseconds) 2 = seconds 3 = minutes 4 = hours

Rules:
1. Permitted only for users RT and SYSTEM.
2. If the program is already in the time queue, it is removed and re-inserted according to the new specifications.
3. If a program is put in the time queue by @SET, clock adjustment (@CLADJ) does not affect waiting time.

Example:
@SET KLOKK 5,3

The RT-program KLOKK is set up for execution in 5 minutes.

@SET-AVAILABLE

Function:
Make the system available to terminal users.

Related commands:
Related SINTRAN III commands: SET-UNAVAILABLE

Format:
@SET-AVAILABLE

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. After starting SINTRAN, the system is unavailable until @SET-AVAILABLE is given.

@SET-BLOCK-POINTER

Function:
Set the byte pointer to the beginning of a block.

Related commands:
Related SINTRAN III commands: SET-BLOCK-SIZE
SET-BYTE-POINTER
Related SINTRAN III Monitor calls: SETBL (MON 77)

Format:
@SET-BLOCK-POINTER <file no.>,<block no.>

Parameters:
<file no.> logical device number of an opened mass-storage file (octal value in the range 100-177).
<block no.> (decimal value, default = 0).

Rules:
1. Permitted for all users.
2. The byte pointer is set to the product of <block no.> and block size (in bytes).

Example:
@SET-BLOCK-SIZE 101,512
@SET-BLOCK-POINTER 101,1

The byte pointer is set to $2000_8 = 1024_{10}$.

@SET-BLOCK-SIZE

Function:
Set the block size (in words) of an opened file.

Related commands:
Related SINTRAN III commands: RFILE
WFILE
Related SINTRAN III Monitor calls: SETBS (MON 76)

Format:
@SET-BLOCK-SIZE <file no.>, <block size>

Parameters:
<file no.> file number of an opened mass-storage file (octal value in the range 100-177).
<block size> number of words per block (decimal value).

Rules:
1. Permitted for all users.
2. Valid only as long as the file is opened; the next time the file is opened, the block size is by default 256 words.

Example:
@SET-BLOCK-SIZE 101,128

The block size of file with device number 101_8 is set to 128 words.

@SET-BYTE-POINTER

Function:
Set byte pointer to be used by the next INBT/OUTBT call on the specified mass-storage file.

Related commands:
Related SINTRAN III commands: SET-BLOCK-POINTER
Related SINTRAN III Monitor calls: SETBL (MON 77)

Format:
@SET-BYTE-POINTER <file no.>,<byte no.>

Parameters:

<file no.>	file number of an opened mass-storage file (octal value in the range 100-177).
<byte no.>	(octal value, 0 = maximum byte pointer, default = 0).

Rules:
1. Permitted for all users.

Example:
@SET-BYTE-POINTER 101,7

The byte pointer of file 101_8 is set to byte 7 relative to the start of the file (first byte is byte 0).

@SET-DEFAULT-DIRECTORY

Function:
Define a directory as a default directory.

Related commands:
Related SINTRAN III commands: CLEAR-DEFAULT-DIRECTORY
ENTER-DIRECTORY

Format:
@SET-DEFAULT-DIRECTORY <directory name>

Parameters:
<directory name> directory entered.

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for any user when floppy disk.
2. Main directory is always default directory.
3. Several directories can be default directory, but a user should not have space in more than one default directory. If so, the directory name should always be specified when accessing a file.
4. The directory specified must be entered.

Example:
@SET-DEFAULT-DIRECTORY PACK-TWO

PACK-TWO is defined as default directory.

@SET-DEFAULT-FILE-ACCESS

Function:
Change the default file access for the current user. This is the public, friend and owner access given to a file when it is created.

Related commands:
Related SINTRAN III commands: SET-FILE-ACCESS
SET-FRIEND-ACCESS

Format:
@SET-DEFAULT-FILE-ACCESS <public access>,<friend access>,
<owner access>

Parameters:

<public access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).
<friend access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).
<owner access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).

Rules:
1. Permitted for all users .
2. When the system is generated, default file access is public READ, friend READ, WRITE and APPEND, and all access for owner.

Example:
@SET-DEFAULT-FILE-ACCESS N,RWA,RWACD

The default file access for public is changed to no access.

@SET-DEFAULT-REMOTE-SYSTEM

Function:
To give the file system a remote system name, user name and password, which may be used as default for remote file accesses. Owner's access rights will be obtained for this specified user.

Related commands:
Related SINTRAN III commands: RESET-DEFAULT-REMOTE-SYSTEM
SET-LOCAL-MODE
SET-REMOTE-MODE

Format:
@SET-DEFAULT-REMOTE-SYSTEM <system name>,<user name>,<password>,
<project password>

Parameters:

<system name>	name of remote system.
<user name>	name of user on remote system.
<password>	password of user on remote system.
<project password>	project password of user on remote system (if applicable).

Rules:
1. Permitted for all users.
2. If parameters are omitted, the default user identification changes back to the local user.

@SET-ERROR-DEVICE

Function:
System error messages will appear on the specified terminal instead of on the console.

Related commands:
Related SINTRAN III commands: GET-ERROR-DEVICE

Format:
@SET-ERROR-DEVICE <logical device no.>

Parameters:
<logical device no.> device to which errors will be sent (decimal value).

Rules:
1. Permitted only for user SYSTEM.
2. The messages are normally written on terminal 1.
3. The command is valid until next @SET-ERROR-DEVICE or until start from SAVE-AREA. @RESTART-SYSTEM (MASTER CLEAR, LOAD) does not change the error device. Messages from the SINTRAN START-program are written on the current error device.

Example:
@SET-ERROR-DEVICE 29

The messages are written on terminal 29.

@SET-FILE-ACCESS

Function:
Set public, friend and owner access of a specified file.

Related commands:
Related SINTRAN III commands: SET-DEFAULT-FILE-ACCESS
SET-FRIEND-ACCESS

Format:
@SET-FILE-ACCESS <file name>,<public access>,<friend access>,
<own access>

Parameters:

<file name>	(default type = :SYMB).
<public access>	N or any combination of R, W, A, C and D; see below (default = no change).
<friend access>	N or any combination of R, W, A, C and D; see below (default = no change).
<own access>	N or any combination of R, W, A, C and D; see below (default = no change).

Rules:
1. Permitted for all users with directory access to the file.
2. The access type can be any relevant combination of the characters (except N which must stand alone):
   R - read permitted
   W - write permitted
   A - append permitted (write from maximum byte pointer)
   C - common access permitted (access by more than one user)
   D - directory access permitted (the file may be created, deleted, legal access mode changed and new version created)
   N - no access permitted
3. @FILE-STATISTICS can be used to check the access types for the file.

Example:
@SET-FILE-ACCESS F-1:DATA N,N,RWACD

Public and friends have no access to the file F-1:DATA. Owner has total access.

@SET-FRIEND-ACCESS

Function:
Specify access for a friend to the terminal user's files.

Related commands:
Related SINTRAN III commands: CREATE-FRIEND
SET-DEFAULT-FILE-ACCESS
SET-FILE-ACCESS

Format:
@SET-FRIEND-ACCESS <friend name>,<access type>

Parameters:
<friend name> a name previously created as a friend.
<access type> N or any combination of R, W, A, C and D
see see @SET-FILE-ACCESS, rule 2 (default = no change).

Rules:
1. Permitted for all users.
2. The permitted access to a file from a friend is the intersection of this friend's access and the general friend access of this specific file (see example below).

Example:
(Assume friend access to file F-1:DATA to be WA.)

```
@SET-FRIEND-ACCESS BUDDY,W
```

Access to file F-1:DATA for user BUDDY is now W. That is, it may now only be opened with write access.

@SET-INITIAL-FILE-ACCESS

Function:
Set default file access to be used for all users subsequently created on this system. The default file access may be changed for each user individually by the command @SET-DEFAULT-FILE-ACCESS.

Related commands:
Related SINTRAN III commands: SET-DEFAULT-FILE-ACCESS
SET-INITIAL-FRIEND-ACCESS

Format:
@SET-INITIAL-FILE-ACCESS <public access>,<friend access>,<own access>

Parameters:

<public access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).
<friend access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).
<own access>	N or any combination of R, W, A, C and D see @SET-FILE-ACCESS, rule 2 (default = no change).

Rules:
1. Restricted to user SYSTEM.

@SET-INITIAL-FRIEND-ACCESS

Function:
Set default friend access to be used for all users subsequently created on this system. The default friend access may be changed for each user individually by the command @SET-FRIEND-ACCESS.

Related commands:
Related SINTRAN III commands: CREATE-FRIEND
SET-FRIEND-ACCESS
SET-INITIAL-FILE-ACCESS

Format:
@SET-INITIAL-FRIEND-ACCESS <access>

Parameters:
<access> N or any combination of R, W, A, C and D
see @SET-FILE-ACCESS, rule 2 (default = no change).

Rules:
1. Restricted to user SYSTEM.

@SET-LOCAL-MODE

Function:
Used to reset the file system back to normal mode after a previous @SET-REMOTE-MODE command.

Related commands:
Related SINTRAN III commands: RESET-DEFAULT-REMOTE-SYSTEM
SET-DEFAULT-REMOTE-SYSTEM
SET-REMOTE-MODE

Format:
@SET-LOCAL-MODE

Parameters:
None.

Rules:
1. Permitted for all users.

@SET-MAIN-DIRECTORY

Function:
Define a directory as main directory.

Related commands:
Related SINTRAN III commands: CLEAR-MAIN-DIRECTORY
SET-DEFAULT-DIRECTORY

Format:
@SET-MAIN-DIRECTORY <directory name>

Parameters:
<directory name> the name of an entered directory.

Rules:
1. Users in this directory need not be present in any other directory.
2. It is illegal to set directories on floppy disk as main.
3. There are some limitations, for example two users belonging to two different main directories cannot be friends.

@SET-MEMORY-CONTENTS

Function:
Set area of user memory (terminal virtual memory) to a specific content.

Related commands:
Related SINTRAN III commands: LOOK-AT

Format:
@SET-MEMORY-CONTENTS <contents>,<low address>,<high address>

Parameters:

<contents>	(octal value, default = 0).
<low address>	lower limit of memory area. The limit is included (octal value, default = 0).
<high address>	upper limit of memory area. The limit is included (octal value, default = 0).

Rules:
1. Permitted for all users.
2. If @ALTON has been executed, the data area is set, if @ALTOFF, the program area will be set.

Example:
@SET-MEMORY-CONTENTS 124000,,177777

Set entire 64K to 124000_8.

@SET-NUMBER-OF-PRINT-COPIES

Function:
Change the number of print copies desired for a file in the spooling queue.

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE

Format:
@SET-NUMBER-OF-PRINT-COPIES <peripheral file name>,<file name>,
<no. of copies>

Parameters:

<peripheral file name>	spooling device.
<file name>	a file in the spooling queue.
<no. of copies>	(decimal value, default = 1).

Rules:
1. Permitted only for user SYSTEM and the user who appended the file.
2. If more than one entry in the queue matches <file name> only the first one is affected.

Example:
@SET-NUMBER-OF-PRINT-COPIES LINE-PRINTER,F-1,8

Change the desired number of print copies to 8 of file F-1 in spooling queue to LINE-PRINTER.

@SET-PERIPHERAL-FILE

Function:
Associate a file name with a logical device number. For how to create a set of spooling files, see the manual SINTRAN III System Supervisor, ND-30.003.

Related commands:
Related SINTRAN III commands: SET-FILE-ACCESS
SET-TEMPORARY-FILE
SET-TERMINAL-FILE

Format:
@SET-PERIPHERAL-FILE <file name>,<logical device no.>

Parameters:

<file name>	if this is a new file the name must be given in quotes.
<logical device no.>	(octal value).

Rules:
1. Permitted only for user SYSTEM.
2. If a file is created in the command, default type is void (empty string).

Example:
@SET-PERIPHERAL-FILE "LINE-PRINTER",5

The file LINE-PRINTER is created and associated with logical device number 5.

@SET-PERMANENT-OPEN

Function:
Open a file so that it is not closed by @CLOSE -1 or the corresponding monitor call.

Related commands:
Related SINTRAN III commands: CLOSE-FILE
CONNECT-FILE
OPEN-FILE

Format:
@SET-PERMANENT-OPEN <file no.>

Parameters:
<file no.> file number from @OPEN-FILE or @CONNECT-FILE (octal value).

Rules:
1. Permitted for all users.
2. The file must be opened.
3. The file is closed by @CLOSE-FILE <file no.> or @CLOSE-FILE -2.

Example:
```
@OPEN-FILE OLE:DATA,RW
FILE NUMBER IS: 101
@SET-PERMANENT-OPEN 101
@CLOSE -1
```

The file OLE:DATA is still open.

@SET-REMOTE-MODE

Function:
Set the file system in remote mode. That is, if no remote system information is given, the file system will first search the files on the local system; if not found, it will start searching for the file on the remote system owned by the user specified in the @SET-DEFAULT-REMOTE-SYSTEM command.

Related commands:
Related SINTRAN III commands: SET-DEFAULT-REMOTE-SYSTEM
SET-LOCAL-MODE

Format:
@SET-REMOTE-MODE

Parameters:
None.

Rules:
1. Permitted for all users.

@SET-SPOOLING-FORM

Function:
Define an identification key to be compared to the user text in the spooling queue entries. The spooling program only prints the files with this user text or files with no text at all. The command is useful for sorting out files to be printed on the same form.

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE
LIST-SPOOLING-FORM
Related SINTRAN III Monitor calls: SPCLO (MON 40)

Format:
@SET-SPOOLING-FORM <peripheral file name>,<spooling form identifier>

Parameters:

<peripheral file name>	a spooling device.
<spooling form identifier>	any printable characters terminated by CR. (default = reset identification to a null string.)

Rules:
1. Permitted only for user SYSTEM.

Example:
@SET-SPOOLING-FORM LINE-PRINTER,FORM -1

Only spooling entries with the user message FORM -1 on LINE-PRINTER are printed.

@SET-TEMPORARY-FILE

Function:
Define the contents of a file as temporary. The contents are deleted when the file is closed after it has been opened for read. The object entry is retained.

Related commands:
Related SINTRAN III commands: FILE-STATISTICS
SET-PERIPHERAL-FILE
SET-TERMINAL-FILE

Format:
@SET-TEMPORARY-FILE <file name>

Parameters:
<file name> an indexed file (default type = :DATA).

Rules:
1. Permitted for all users.
2. The file must not have been written to before the command is given.
3. Temporary files are useful as spooling files.
4. @FILE-STATISTICS show whether a file is temporary or not.

Example:
@SET-TEMPORARY-FILE F-1;2

Version 2 of the file F-1 is defined as temporary file.

@SET-TERMINAL-FILE

Function:
Set the name of terminal.

Related commands:
Related SINTRAN III commands: SET-PERIPHERAL-FILE
SET-TEMPORARY-FILE

Format:
@SET-TERMINAL-FILE <file name>

Parameters:
<file name> to be used for terminal name.

Rules:
1. Permitted only for user SYSTEM.
2. The name is set for all users.
3. Several files can be used as terminal files; any of the file names can be used to write to the terminal.

Example:
@SET-TERMINAL-FILE "TERMINAL"

The new name is TERMINAL.

@SET-TERMINAL-TYPE

Function:
Associate a terminal type number with a terminal (logical device number).

Related commands:
Related SINTRAN III commands: GET-TERMINAL-TYPE
Related SINTRAN III Monitor calls: MSTTY (MON 17)

Format:
@SET-TERMINAL-TYPE <terminal number>,<terminal type>

Parameters:

<terminal number>	must be a terminal (decimal value, default = user's terminal).
<terminal type>	(decimal value in the range -32768 to +32767, default = 0).

Rules:
1. Permitted for all users but only user SYSTEM may specify terminals other than their own.
2. Norsk Data's standard for terminal types is shown in Appendix A.

Example:
@SET-TERMINAL-TYPE,,53

The user's terminal type is set to 53.

@SET-UNAVAILABLE

Function:
Set the system available only for terminal 1 (console terminal).

Related commands:
Related SINTRAN III commands: SET-AVAILABLE

Format:
@SET-UNAVAILABLE <text>

Parameters:

<text>	a string of printable characters terminated by CR. When anyone tries to log in the message "SYSTEM UNAVAILABLE" and the <text> are output. The text should be terminated by $ which is translated to CR, LF on output.

Rules:
1. Permitted only for user SYSTEM.

Example:
@SET-UNAVAILABLE DOWN FOR MAINT.$ AVAILABLE 11:30$

When anyone tries to log in on a terminal other than terminal 1, the following message is output:

```
SYSTEM UNAVAILABLE
DOWN FOR MAINT.
AVAILABLE 11:30
```

@SET-USER-PARAMETERS

Function:
Set the five user parameters in SINTRAN used when termination handling is enabled.

Related commands:
Related SINTRAN III Monitor calls: PAGET (MON 57)
PASET (MON 56)

Format:
@SET-USER-PARAMETERS <p1>,<p2>,<p3>,<p4>,<p5>

Parameters:

<p1>	left byte = directory index, right byte = user index
<p2>	logical device number (terminal number)
<p3>	-1 if escape otherwise error number
<p4>	user defined
<p5>	user defined

Rules:
1. These parameters can be set and read by two monitor calls PASET (56) and PAGET (57).
2. P1, P2 and P3 are set by SINTRAN if termination handling is enabled and a program is terminated with escape, MON 0, MON 65 or a fatal error.
3. P4 and P5 can be set to be used by user-defined termination handling routines.

@SINTRAN-SERVICE-PROGRAM

Function:
Activate service program for maintenance of resident memory, memory image and SINTRAN save area. Full details of the subcommands available are given in chapter 2.

Format:
@SINTRAN-SERVICE-PROGRAM

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM and for one terminal at a time.
2. If subcommands are used in a MODE or batch file each subcommand must be preceded by @.
3. All parameters of the subcommands are default octal. A number terminated with a D (for example 36D) specifies a decimal number.
4. Cannot be restarted with @CONTINUE.

@SPOOLING-PAGES-LEFT

Function:
List the remaining number of pages that can be used by the spooling files.

Related commands:
Related SINTRAN III commands: GIVE-SPOOLING-PAGES
TAKE-SPOOLING-PAGES

Format:
@SPOOLING-PAGES-LEFT

Parameters:
None.

Rules:
1. Permitted for all users.
2. User system should have at least as many unused pages as there are spooling pages left.

Example:
```
@SPOOLING-PAGES-LEFT
500 SPOOLING PAGES LEFT
@
```

@START-ACCOUNTING

Function:
Start the accounting system, but do not initiate the accounting file; if the file does not exist, the command executes as for @INIT-ACCOUNTING.

Related commands:
Related SINTRAN III commands: INIT-ACCOUNTING
LIST-RT-ACCOUNT
START-RT-ACCOUNT
STOP-ACCOUNTING
STOP-RT-ACCOUNT

Format:
@START-ACCOUNTING <background>[,<RT>,<clear logged information>,
<logging interval>][,<ND-500>][,<spooling>]

Parameters:

<background>	are background programs to be accounted.
<RT>	are user RT-programs to be accounted.
<clear logged information>	whether information already logged in the RT accounting table should be cleared.
<logging interval>	number of seconds between dumps of RT accounting table on the file ACCOUNTS:DATA.
<ND-500>	are ND-500 programs to be accounted?
<spooling>	is spooling to be accounted?

Rules:
1. Permitted only for user SYSTEM.
2. Accounting on an ND-500 or spooling cannot be started unless background accounting is running. It can be stopped independently but is stopped automatically if background accounting is stopped.

@START-HISTOGRAM

Function:
Turn on sampling for the histogram.

Related commands:
Related SINTRAN III commands: DEFINE-HISTOGRAM
DEFINE-SYSTEM-HISTOGRAM
PRINT-HISTOGRAM
STOP-HISTOGRAM

Format:
@START-HISTOGRAM.

Parameters:
None.

Rules:
1. Permitted for all users.
2. The histogram must be defined (@DEFINE-HISTOGRAM).
3. The command is normally given before starting the program to be sampled.

@START-PRINT

Function:
Resume printout of the current spooling file from the point where it stopped.

Related commands:
Related SINTRAN III commands: APPEND-SPOOLING-FILE
STOP-PRINT
Related SINTRAN III Monitor calls: SPCLO (MON 40)

Format:
@START-PRINT <peripheral file name>

Parameters:
<peripheral file name> the spooling device.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file to be printed.
2. Print can be stopped by:
   a. @STOP-PRINT.
   b. An automatic stop print defined by @DEFINE-SPOOLING-CONDITIONS.
   c. Closing a file with SPCLO (MON 40) specifying stop print.
   d. Specifying stop print in @APPEND-SPOOLING.

@START-PROGRAM-LOG

Function:
Start the logging of RT and background programs. When used with @DEFINE-SYSTEM-HISTOGRAM, a sampling distribution on various interrupt levels is produced.

Related commands:
Related SINTRAN III commands: RT-PROGRAM-LOG
STOP-PROGRAM-LOG

Format:
@START-PROGRAM-LOG <interrupts/sample>

Parameters:
<interrupts/sample> number of terminal interrupts per sample.

Rules:
1. Permitted only for user SYSTEM.

Example:
(on a 9600 baud rate terminal)

```
@START-PROGRAM-LOG 100
```

Samples are taken at a rate of approximately 10 samples/second.

@START-RT-ACCOUNT

Function:
Start accounting for RT-programs.

Related commands:
Related SINTRAN III commands: INIT-ACCOUNTING
LIST-RT-ACCOUNT
START-ACCOUNTING
STOP-ACCOUNTING
STOP-RT-ACCOUNT

Format:
@START-RT-ACCOUNT <RT-program>

Parameters:
<RT-program> The name of an RT-program which will be logged.

Rules:
1. Each user RT-program is associated with a project password.
2. Available for users SYSTEM and RT.
3. System RT-programs cannot be logged.

@START-SPOOLING

Function:
Start the spooling program for a peripheral, which is now reserved by the spooling program. Print the files already in the spooling queue and those put in later.

Related commands:
Related SINTRAN III commands: STOP-SPOOLING

Format:
@START-SPOOLING <peripheral file name>

Parameters:
<peripheral file name> the spooling device.

Rules:
1. Permitted only for user SYSTEM.
2. The number of pages given to spooling files is compared to the number of unused pages belonging to user @SYSTEM. If the latter number is smaller, the number of pages given to spooling will be reduced accordingly (see also @SPOOLING-PAGES-LEFT).
3. If more than one version of the file is a peripheral file, the spooling programs for all peripheral versions of the file are started. One specific peripheral file can be selected by including a version number in the file name.
4. An error message appears if the <peripheral file name> is not the name of a peripheral or if no spooling program exists for the peripheral.
5. @RTENTER must be given before this command is executed.
6. If there are files in the spooling queue, @START-SPOOLING causes immediate output at the spooling device.

@START-TADADM

Function:
COSMOS command.

Starts the TADADM RT-program, opens the *TADADM port and links to SINTRAN. See manual COSMOS System Supervisor, ND-30.025.

Related commands:
Related SINTRAN III commands: STOP-TADADM
TADADM

Format:
@START-TADADM

Parameters:
None.

Rules:
1. Permitted for user SYSTEM only.

@STATUS

Function:
Print the register contents of the background program.

Related commands:
Related SINTRAN III commands: LOOK-AT

Format:
@STATUS

Parameters:
None.

Rules:
1. Permitted for all users.
2. The printout is as follows:

```
P = xxxxxx   program counter
X = xxxxxx   post-index register
T = xxxxxx   temporary register
A = xxxxxx   accumulator
D = xxxxxx   double accumulator
L = xxxxxx   subroutine link address register
S =    xxx   status register
B = xxxxxx   pre-index (base) register
```

@STOP-ACCOUNTING

Function:
Stop the accounting of system resources.

Related commands:
Related SINTRAN III commands: INIT-ACCOUNTING
START-ACCOUNTING

Format:
@STOP-ACCOUNTING <background>[,<RT>][,<ND-500>][,<spooling>]

Parameters:

<background>	stop accounting of background programs (if started)
<RT>	stop accounting of RT-programs (if started)
<ND-500>	stop accounting of ND-500 programs (if started)
<spooling>	stop accounting of spooling usage (if started)

Rules:
1. Permitted only for user SYSTEM.
2. The accounting file is not affected.

@STOP-HISTOGRAM

Function:
Turn off sampling for the histogram.

Related commands:
Related SINTRAN III commands: DEFINE-HISTOGRAM
PRINT-HISTOGRAM
START-HISTOGRAM

Format:
@STOP-HISTOGRAM

Parameters:
None.

Rules:
1. Permitted for all users.
2. @STOP-HISTOGRAM is performed as part of @PRINT-HISTOGRAM.

@STOP-PRINT

Function:
Stop the current printout and await further commands.

Related commands:
Related SINTRAN III commands: ABORT-PRINT
BACKSPACE-PRINT
FORWARD-SPACE-PRINT
RESTART-PRINT
START-PRINT

Format:
@STOP-PRINT <peripheral file name>

Parameters:
<peripheral file name> the spooling device.

Rules:
1. Permitted only for user SYSTEM and the user who appended the file being printed.
2. The current print buffer is finished before the printing stops (@ABORT-PRINT causes immediate stop).

@STOP-PROGRAM-LOG

Function:
Stop logging programs and print report on a file. The program names are printed and the percentage of the measured time during which the program has been active. If combined with @DEFINE-SYSTEM-HISTOGRAM, it produces a list of sampling distribution on various interrupt levels.

Related commands:
Related SINTRAN III commands: START-PROGRAM-LOG

Format:
@STOP-PROGRAM-LOG <output file>

Parameters:
<output file> destination of the report (default = TERMINAL).

Rules:
1. Permitted only for user SYSTEM.

Example:

```
@STOP-PROGRAM-LOG,
    PERCENT SAMPLES
DUMMY:      63      10258
STSIN:      00      0
RTERR:      00      0
RTSLI:      01      114
RWRT1:      00      0
RWRT2:      00      0
RWRT3:      00      0
SCOM1:      00      0
RCOM1:      00      2
SCOM2:      00      0
RCOM2:      00      0
BAK01:      00      0
BAK02:      00      0
BAK03:      14      2341
BAK04:      00      0
BAK05:      01      132
BAK06:      02      253
BAK07:      02      258
BAK08:      18      2949
BAK09:      00      7
BAK10:      00      0
BAK11:      00      0
...
```

@STOP-RT-ACCOUNT

Function:
Stop accounting for individual RT-programs.

Related commands:
Related SINTRAN III commands: INIT-ACCOUNTING
START-ACCOUNTING
START-RT-ACCOUNT

Format:
@STOP-RT-ACCOUNT <RT-program>

Parameters:
<RT-program> The name of an RT-program which will no loger be logged.

Rules:
1. Each RT-program is associated with a project password.
2. Available for users SYSTEM and RT.

@STOP-SPOOLING

Function:
Stop the spooling program for a peripheral and release the peripheral from the spooling program.

Related commands:
Related SINTRAN III commands: ABORT-PRINT
START-SPOOLING
STOP-PRINT

Format:
@STOP-SPOOLING <peripheral file name>

Parameters:
<peripheral file name> the spooling device.

Rules:
1. Permitted only for user SYSTEM.
2. The spooling program will abort after the current printing is finished, or, immediately if the spooling queue is empty.
3. Files can still be appended to the queue. The spooling program resumes printing the files in the queue when @START-SPOOLING is given.

@STOP-SYSTEM

Function:
Stop the system.

Related commands:
Related SINTRAN III commands: COLD-START
OPCOM
RESTART-SYSTEM

Format:
@STOP-SYSTEM

Parameters:
None.

Rules:
1. Permitted only for user SYSTEM.
2. The command name (STOP-SYSTEM) may not be abbreviated.
3. All hardware registers are saved before the system goes into stop mode.
4. The system can be restarted by typing 20!. On restart, logged-in users can continue their programs. No start-up procedure is necessary and no information is lost.
5. To turn off the system for a longer period:
   a. Log out all users.
   b. Press STOP and MASTER CLEAR on operator's panel.
   c. Stop the disk only if temperature, energy, and/or noise conditions require it. The system should normally be left running, even over night. It should only be turned off for hardware maintenance, etc.

@STOP-TADADM

Function:
COSMOS command.

Closes *TADADM port. For further details see the manual COSMOS System Supervisor, ND-30.025.

Related commands:
Related SINTRAN III commands: START-TADADM
TADADM

Format:
@STOP-TADADM

Parameters:
None.

Rules:
1. Permitted for user SYSTEM only.

@STOP-TERMINAL

Function:
Force @LOGOUT on a specific terminal.

Related commands:
Related SINTRAN III commands: ABORT
LOGOUT
SET-UNAVAILABLE
Related ND-500 Monitor commands: LOGOUT-PROCESS

Format:
@STOP-TERMINAL <terminal number>

Parameters:
<terminal number> must be a terminal (decimal value).

Rules:
1. Permitted only for users RT and SYSTEM.
2. The message **ABORTED BY SYSTEM** is printed on the specified terminal.
3. In some cases the background program hangs in an internal "escape off" state. @STOP-TERMINAL cannot then be used. Instead the other users should log off and SINTRAN should be restarted.
4. If the termination handler for USER-ENVIRONMENT is enabled, the command will not be executed, but will activate the termination handler for USER-ENVIRONMENT.

Example:
@STOP-TERMINAL 28

Terminal 28 will be logged out.

@TADADM

Function:
Show who is using the TADs.

Related commands:
Related SINTRAN III commands: START-TADADM;
STOP-TADADM;

Format:
@TADADM

Parameters:
None.

Rules:
1. Permitted for all users.

@TAKE-OBJECT-BLOCKS

Function:
This command is used to restrict the number of files for a single user. The object blocks to be "taken" must be free; thus if a user is allowed to have a maximum of 512 files, with only files number 0, 1, 2 and 300 used, both object blocks for this user are used and the command may not be given. The number of files allowed for a user is reported by the command @USER-STATISTICS, and the command @LIST-FILES will show which file numbers are used.

Related commands:
Related SINTRAN III commands: GIVE-OBJECT-BLOCKS

Format:
@TAKE-OBJECT-BLOCKS [<directory name>:]<user name>,
<no. of object blocks>

Parameters:

<directory name>:<user name>	directory and user to be given space (default directory = user's main directory).
<no. of object blocks>	number of object blocks (1-15) (decimal value).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.

@TAKE-SPOOLING-PAGES

Function:
Decrease the total number of pages that can be used by the spooling files.

Related commands:
Related SINTRAN III commands: GIVE-SPOOLING-PAGES

Format:
@TAKE-SPOOLING-PAGES <no. of pages>

Parameters:
<no. of pages> the number of pages to be removed (decimal value).

Rules:
1. Permitted only for user SYSTEM.
2. The number of pages to be removed cannot be greater than the number of unused pages available for spooling files.

Example:
@TAKE-SPOOLING-PAGES 95

95 unused spooling pages are removed.

@TAKE-USER-SPACE

Function:
Decrease the total amount of space available to a user for files.

Related commands:
Related SINTRAN III commands: GIVE-USER-SPACE

Format:
@TAKE-USER-SPACE [<directory name>:]<user name>,<no. of pages>

Parameters:

<directory name>:<user name>	directory and user from whom space is taken (default directory is main directory for that user).
<no. of pages>	number of pages to be removed (decimal value).

Rules:
1. Permitted only for user SYSTEM when hard disk is specified, for all users when floppy disk.
2. The number of pages to be removed cannot exceed the number of unused pages owned by the user.

Example:
@TAKE-USER-SPACE PACK-ONE:USER-ONE,95

95 unused pages are taken from the user USER-ONE in directory PACK-ONE.

@TERMINAL-MODE

Function:
Set the communication mode of the terminal.

Related commands:
Related SINTRAN III Monitor calls: TERMO (MON 52)

Format:
@TERMINAL-MODE <capital letters?>,<delay after CR?>,
<stop or full page?>,<logout on missing carrier?>

Parameters:

	(default on all parameters = No change.);
<capital letters?>	YES = all lower case letters are converted to upper case on input. NO = no conversion.
<delay after CR?>	YES = dummy characters are printed after CR. This is necessary for some high speed hard copy terminals. NO = no dummy characters.
<stop on full page?>	YES = the output stops after 20 lines if there has been no input during that period. A "bell" character is then output. Any remaining output continues as soon as a character (preferably NULL, SHIFT/CONTROL/P) is typed. This is useful for fast displays. NO = no stop.
<logout on missing carrier?>	YES = if a "missing carrier" occurs on the connection between the terminal and the computer, the background program logs out. NO = the process on the terminal is stopped and the terminal is returned to command mode (indicated by @).

Rules:
1. Permitted for all users.
2. When logging in, all parameters are set to NO.

Example:
@TERMINAL-MODE,,,YES,,

Only the parameter <STOP ON FULL PAGE?> is changed to YES.

@TERMINAL-STATUS

Function:
List the status of one or all active terminals. The information listed is:

LOG NO.:	terminal number
USER:	user name
MODE:	COMMAND or USER (executing user program)
CPU MIN:	CPU time used in minutes
OUT OF:	total time logged on
LAST COMMAND:	last SINTRAN command or last input line entered on terminal (only first 20 characters)

Related commands:
Related SINTRAN III commands: WHO-IS-ON
Related ND-500 Monitor commands: PROCESS-STATUS

Format:
@TERMINAL-STATUS <terminal number>,<interval>

Parameters:

<terminal number>	must be a terminal (decimal value, default = all active terminals).
<interval>	time interval in seconds between each time the listing is output, 0 = only one listing (decimal value, default = 0).

Rules:
1. Permitted for all users.
2. Periodic output is terminated by pressing "escape".
3. The last command executed by a batch processor will only be displayed, when the user index for the currently logged-in user in the batch process equals own user index.

Example:
@TERMINAL-STATUS 35,5

LOG.NO	USER	MODE	CPU-MIN	OUT OF	LAST COMMAND
35	USER-ONE	COMMAND	13	91	TERMINAL-ST

The same output will be printed again after 5 seconds.

@TEST-DIRECTORY

Function:
Test directory for conflicting references to pages, incorrect user/object entries, incorrect bit file etc. If any are found, write error message. The bit file is rebuilt.

Related commands:
Related SINTRAN III commands: REGENERATE-DIRECTORY

Format:
@TEST-DIRECTORY <directory name>

Parameters:
<directory name> an entered directory.

Rules:
1. Permitted only for user SYSTEM.
2. See rule 2 of @REGENERATE-DIRECTORY
3. The command works like @REGENERATE-DIRECTORY except that only the bit file is modified.
4. The command should run to completion; if not the bit file may be destroyed. Never press escape.
5. The FILE-SYSTEM-INVESTIGATOR can be used instead of this command.
6. See SINTRAN III System Supervisor, ND-30.003, for more information.

@TIME-USED

Function:
Print CPU time and connect time used since log in or start of batch job.

Related commands:
Related SINTRAN III commands: LOGOUT
TERMINAL-STATUS
Related SINTRAN III Monitor calls: TUSED (MON 114)

Format:
@TIME-USED

Parameters:
None.

Rules:
1. Permitted for all users.

Example:
```
@TIME-USED
TIME-USED IS 1 MINS 5 SECS OUT OF 114 MINS 20 SECS
@
```

@UE-AUTOMATIC-LOGIN

Function:
Enable/disable User-Environment automatic login facilities.

Format:
@UE-AUTOMATIC-LOGIN <all terminals>,<enable/disable>
[,<terminal number>]

Parameters:

<all terminals>	YES or NO to specify all or selected terminals.
<enable/disable>	enter 1 for enable and 0 (zero) for disable
<terminal number>	If first parameter is NO, enter terminal number.

Rules:
1. Permitted for user SYSTEM only.

@UNFIX

Function:
Permit a segment to be swapped out after @FIX or @FIXC.

Related commands:
Related SINTRAN III commands: FIX
FIXC
Related SINTRAN III Monitor calls: UNFIX (MON 116)

Format:
@UNFIX <segment no.>

Parameters:
<segment no.> (octal value).

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
@UNFIX 35

Segment 35_8 can be swapped out.

@UNRESERVE-DIRECTORY

Function:
Unreserve directory reserved by @RESERVE-DIRECTORY.

Related commands:
Related SINTRAN III commands: RESERVE-DIRECTORY

Format:
@UNRESERVE-DIRECTORY <directory name>

Parameters:
<directory name> a reserved directory.

Rules:
1. Permitted only for users RT and SYSTEM.

Example:
@UNRESERVE-DIRECTORY PACK-THREE

Unreserve PACK-THREE.

@UPDAT

Function:
Give new values to the clock and calendar.

Related commands:
Related SINTRAN III commands: CLADJ
DATCL
Related SINTRAN III Monitor calls: UPDAT (MON 111)

Format:
@UPDAT <minute>,<hour>,<day>,<month>,<year>

Parameters:

<minute>	current minute (decimal value in the range 0-59, default = 0).
<hour>	current hour (decimal value in the range 0-23, default = 0).
<day>	current day (decimal value in the range 1-31)
<month>	current month (decimal value in the range 1-12)
<year>	current year (decimal value, 4 digits)

Rules:
1. Permitted only for users RT and SYSTEM.
2. The time queue is unaffected by this command.
3. The command updates the panel clock, if installed.

@USER-STATISTICS

Function:
List the following for the user(s) for each directory on which they occur:

1. Full name
2. Date created
3. Last date entered
4. Default access for public, friend and owner
5. Number of pages used
6. Total number of pages
7. Maximum number of files the user may have.

Related commands:
Related SINTRAN III commands: LIST-FRIENDS
LIST-USERS

Format:
@USER-STATISTICS [<directory name>:]<user name>,<output file>

Parameters:

	[<directory name>:]<user name>; list data for all users matching this name. Can be abbreviated; (default = all users in all default directories).;
<output file>	destination of the list (default = TERMINAL).

Rules:

1. Permitted for all users.

Example:

```
@USER-STATISTICS SYSTEM,TERMINAL
USER 0: BIG-PACK:SYSTEM
CREATED 09.31.15   MARCH 13, 1980
LAST DATE ENTERED 16.26.14   JUNE 15, 1986
DEFAULT PUBLIC ACCESS: READ
DEFAULT FRIEND ACCESS: READ, WRITE, APPEND, COMMON, DIRECTORY
DEFAULT OWN ACCESS: READ, WRITE, APPEND, COMMON, DIRECTORY
10505 PAGES USED OUT OF 11861 PAGES
MAXIMUM NUMBER OF FILES : 256
```

@WAIT-FOR-OPERATOR

Function:
Wait for the operator to restart user (@RESTART-USER).

Related commands:
Related SINTRAN III commands: OPERATOR
RESTART-USER

Format:
@WAIT-FOR-OPERATOR

Parameters:
None.

Rules:
1. Permitted for all users.
2. The error device receives the message:
   --- hh.mm.ss WAITING TERMINAL ttt
   where hh.mm.ss is the current time and ttt is the waiting terminal.

@WFILE

Function:
Transfer an area of the user's virtual memory to one or more random blocks in a file.

Related commands:
Related SINTRAN III commands: RFILE
SET-BLOCK-SIZE
Related SINTRAN III Monitor calls: WFILE (MON 120)

Format:
@WFILE <file no.>,<memory address>,<block no.>,<no. of words>

Parameters:

<file no.>	logical device number from the @OPEN-FILE or @CONNECT-FILE command (octal value).
<memory address>	starting address of memory record location (octal value, default = 0)
<block no.>	number of destination file block (octal value, default = 0)
<no. of words>	length of the area (octal value)

Rules:
1. Permitted for all users.
2. Default block size is 256.

Example:
@WFILE 101,400,0,1000

Write 1000_{10} words to block 0 of file 101_8 from memory address 400_8.

@WHERE-IS-FILE

Function:
Check whether a file is opened and/or reserved. List the user or RT-program
opening or reserving the file.

Related commands:
Related SINTRAN III commands: LIST-DEVICE
LIST-FILES
LIST-OPEN-FILES
LIST-RTOPEN-FILES
Related SINTRAN III Monitor calls: WHDEV (MON 140)

Format:
@WHERE-IS-FILE <file name>

Parameters:
<file name> <object name> and <type> must be unique.

Rules:
1. Permitted for all users.
2. The possible messages are:
   a. <file name>: OPEN BY USER <user name> ON TERMINAL <n>
   b. <file name>: RESERVED BY RT-PROGRAM <program name> (a peripheral file is reserved, but not open)
   c. <file name>: FREE TO USE
   d. <file name>: OPEN BY USER RT ON TERMINAL 1 (if opened by an RT-program).

Example:
```
@WHERE-IS-FILE (SCR)SCRATCH08:D
SCRATCH08:DATA: OPENED BY USER GUEST ON TERMINAL 39
@
```

@WHO-IS-ON

Function:
List logical device numbers and name of users logged in.

Related commands:
Related SINTRAN III commands: TERMINAL-STATUS
Related ND-500 Monitor commands: WHO-IS-ON

Format:
@WHO-IS-ON

Parameters:
None.

Rules:
1. Permitted for all users.

Example:
```
@WHO-IS-ON
       39 GUEST
===>   50 SYSTEM
@
```
User GUEST is logged in on terminal 39 and user SYSTEM on terminal 50.
The arrow indicates the terminal which gave the command.

CHAPTER 2

SINTRAN SERVICE PROGRAM COMMANDS

2. SINTRAN SERVICE PROGRAM COMMANDS

The SINTRAN SERVICE PROGRAM is a program that may change variables and tables used by the operating system, for example the enter count for a terminal, the upper address of SINTRAN III RESIDENT, or the length of a time slice. This chapter contains a reference of the SINTRAN-SERVICE-PROGRAM commands.

The service program is entered by giving:

@SINTRAN-SERVICE-PROGRAM

The program is only available to user SYSTEM, and it can only be used from one terminal at a time. An asterisk (*) is used to indicate that the program is ready to accept subcommands. You return to SINTRAN III by the EXIT command. The HELP command lists the available commands.

The SINTRAN SERVICE PROGRAM operates on SINTRAN III RESIDENT, the IMAGE AREA and the SAVE AREA. Each command asks which area is to be operated on. You should answer YES or NO in each case. Most of the commands can operate on all three areas simultaneously. Some can only operate on one area. They will ask which area to access.

Most numbers, both given as parameters to commands and output from the program, are octal by default. If the commands are used in a mode or batch file, they must be preceded by an @, that is, @CHANGE-VARIALBLE. Some commands cannot be given from a batch job, but mode processing is possible.

2.1 Command Summary

The commands available in the SINTRAN SERVICE PROGRAM are shown in the table below. This section also explains key terms used in commands and parameters. The next section describes the commands in detail.

SINTRAN SERVICE PROGRAM COMMANDS

ASCII-DUMP
BACKGROUND-ALLOCATION-UTILITIES
CC
CHANGE-BUFFER-SIZE
CHANGE-DATAFIELD
CHANGE-GPIB-BUFFERSIZE
CHANGE-TABLE
CHANGE-VARIABLE
CLEAR-ENTER-COUNT
CPU-LOG
CREATE-LAMU
CREATE-SYSTEM-LAMU
DEFINE-BATCH-SUPERVISOR
DEFINE-HDLC-BUFFER
DEFINE-PROMPT-STRING
DEFINE-RTCOMMON-SIZE
DEFINE-SEGMENT-FILE
DEFINE-TIME-SLICE
DEFINE-TITLE
DEFINE-USER-MONITOR-CALL
DEFINE-USER-RESTART-PROGRAM
DEFINE-USER-RESTART-SUBROUTINE
DEFINE-USER-START-SUBROUTINE
DELETE-LAMU
DELETE-SEGMENT-FILE
DISC-ACCESS-LOG
DUMP-RT-DESCRIPTION
DUMP-SEGMENT-TABLE-ENTRY
EXIT
FIND-CPULOOPTIME
HELP
INITIALIZE-SYSTEM-SEGMENT
INSERT-IN-BACKGROUND-TABLE
INSERT-IN-EXTENDED-IDENT-TABLE
INSERT-IN-IDENT-TABLE
INSERT-IN-IOX-TABLE
INSERT-IN-LOGICAL-UNIT-TABLE
INSERT-IN-TIME-SLICE
INSERT-IN-TIMER-TABLE
INSERT-PROGRAM-IN-TIME-SLICE
INSERT-SPOOLING-HEADER
LAMU-AREAS
LAMU-INFORMATION
LIST-HDLC-BUFFER
LIST-LAMU-CONSTANTS
LIST-SERVICE-COMMANDS
LIST-TIME-SLICE-CLASS
LIST-TIME-SLICE-PARAMETERS
LIST-TIME-SLICED-PROGRAMS
LIST-USER-RESTART-PROGRAMS
MONCALL-LOG
NEXT-USER-RESTART-PROGRAM
OCTAL-DUMP
PAGES-FROM-LAMU
PAGES-TO-LAMU
PROTECT-LAMU
READ-BINARY
REINSERT-SINTRAN-COMMAND
REMOVE-FROM-BACKGROUND-TABLE
REMOVE-FROM-EXTENDED-IDENT-TABLE
REMOVE-FROM-IDENT-TABLE
REMOVE-FROM-IOX-TABLE
REMOVE-FROM-LOGICAL-UNIT-TABLE
REMOVE-FROM-TIME-SLICE
REMOVE-FROM-TIMER-TABLE
REMOVE-PROGRAM-FROM-TIME-SLICE
REMOVE-SINTRAN-COMMAND
REMOVE-SPOOLING-HEADER
RESET-COLDSTART-MODE-FILE
SEGMENT-WRITE-PERMIT
SEGMENT-WRITE-PROTECT
SET-CLOSED-SCRATCH-FILE-SIZE
SET-COLDSTART-MODE-FILE
SET-COMMAND-PROTECTION
SET-LAMU-CONSTANTS
SET-MAX-ENTER-COUNT
SET-SPOOLING-DEVICE-NUMBER
START-GPIB
START-XMSG
STOP-GPIB
STOP-XMSG
SWAP-DIRECTORY-ENTRIES
SWAPPING-LOG

The following is an explanation of terms used in the commands and parameters:

Background table
A table which contains the input data field for all terminals, batch processors and TADs connected to background processes.

Extended ident table
New devices may be added to a system after SINTRAN III has been generated. If there is no more space in the ident table, the extended ident table can be used. It usually contains ident codes with high values.

Data fields
Each device is described by a data field. All data fields have some information in common, for example the state of the device, linking in various system queues, the device type, the ring protection, and identification of RT-programs that reserve the device.

Ident table
An ident code is used to identity which device that caused an interrupt. The ident table connects the ident code to a logical device number. There is one ident table for each interrupt level.

IOX table
The IOX table contains the physical device numbers of all input and output devices that can be accessed through the machine instruction IOX.

LAMU
Abbreviation of logical addressed memory unit. A LAMU is a limited physically and virtually contiguous address area in the SINTRAN III systems. LAMUs are intended to be an extension to the segment structure. They make it possible for RT-programs and background processes to address more space than covered by the available 3 segments. LAMUs can be shared by several RT-programs or CPUs.

RT-description
Each program is described by an RT description which has an address in the RT-description table. This address is sometimes used to identify the RT-program.

RT-common
An area in physical memory which can be used by all RT-programs. It can be used for fast communication between RT programs. Some SINTRAN III systems are generated without RT-common.

Segment table
Each segment is described by an entry in the segment table. The entry in the segment table describes where the segment is located, its size, how it is linked in various system queues, and it describes some switches.

Spooling header
A page that precedes each file output on a printer with spooling. The spooling header contains the name of the user who ordered the printout and other information.

Spooling index
The index number connected to each spooling program when the system was generated. SPRT1 has spooling index 1, SPRT2 has spooling index 2, etc. The spooling indices range from 1 and upward.

Time slicer
The part of the operating system which allows public users to share the CPU. Each user is allowed to use the CPU for short intervals called time slices.

Timer table
The table contains the addresses of all data fields which should be checked for device time-outs. A device time-out occurs when a device does not answer within a predefined time.

XMSG
XMSG is a system used for task-to-task communication, for example between two RT-programs on different interrupt levels or between a public user's program and an RT-program.

2.2 Command Descriptions

*ASCII-DUMP

Function:
Dump each byte of an area as ASCII characters.

Related commands:
Related SINTRAN Service Program commands: OCTAL-DUMP

Format:
*ASCII-DUMP <area>[,<segment number>],<lower address>,
<upper address>,<output file>

Parameters:

<area>	legal parameters are MEMORY, IMAGE, SAVE AREA or SEGMENT (for the VSE-version) SEGMENT or ALT-SEGMENT (for the VSX-version)
<segment number>	if SEGMENT is specified as <area>, the octal segment number should be entered.
<lower address>	lower limit of the address range to be dumped. The limit is included. The value is octal with 0 as default value.
<upper address>	upper limit of the address range to be dumped. The limit is included. The value is octal with 0 as default value.
<output file>	the file where the information should be dumped. Default is your terminal.

Rules:
1. Each line of the dump consists of a maximum of 64 characters. Control characters such as LF and CR are output as printable characters, that is, CR in memory generates a carriage return on the terminal.

*BACKGROUND-ALLOCATION-UTILITIES

Function:
The background allocation system makes it possible to run SINTRAN III with a larger number of terminals/TADs than the number of background processes. When a background process is requested (user presses ESCAPE), the first free background process, if any, will be allocated.

Format:
*BACKGROUND-ALLOCATION-UTILITIES

Subcommands:
*BACKGROUND-ALLOCATION-UTILITIES has these subcommands:

SET-PERMANENT-CONNECTION <termno>,<memory>,<image>,<save area>
A terminal will be permanently connected to a background process, if one is free. The connection is reset by:

RESET-PERMANENT-CONNECTION <termno>,<memory>,<image>,<save area>

DISABLE-TIMEOUT <termno>,<memory>,<image>,<save area>
The timeout function will not affect this terminal. The timeout function is restored by:

ENABLE-TIMEOUT <termno>,<memory>,<image>,<save area>

CHANGE-LOGOUT-TIME <time>,<memory>,<image>,<save area>
Changes the amount of time a terminal may be inactive before it is logged out (if the timeout function is on). Original value = 30 minutes.

CHANGE-WARNING-TIME <time>,<memory>,<image>,<save area>
Changes the time a terminal may be inactive before the first logout warning is printed . Original value = 25 minutes.

TIMEOUT-OFF
Disables the timeout function for the entire system.

TIMEOUT-ON
Enables the timeout function for the entire system.

DISPLAY
Gives an overview of all the terminals and background processes.

LIST-PARAMETERS
Lists the current timeout parameters.

FREE-BACKGROUND-PROGRAMS
Lists those background programs presently not connected to a terminal/TAD.

HELP

EXIT

Rules:

1. The Background Allocation System is an option to be ordered on the SINTRAN III order form, it is included in the SINTRAN III/VSX standard system.

*CC

Function:
This command has no effect. It is normally used to comment mode and batch files.

Related commands:
Related SINTRAN III commands: CC
Related ND-500 Monitor commands: CC

Format:
*CC <text>

Parameters:
<text> the text can be any printable characters. It is terminated by carriage return.

*CHANGE-BUFFER-SIZE

Function:
Change the length of the ring buffer of a device. The total buffer area is limited depending on system configuration. If a substantial increase in size is desired, calculations should be made.

Related commands:
Related SINTRAN Service Program commands: CHANGE-GPIB-BUFFERSIZE

Format:
*CHANGE-BUFFER-SIZE <logical device number>,<input/output>,
<buffer size>,<image?>,<save area?>

Parameters:

<logical device number>	the octal logical device number identifying the device.
<input/output>	select the INPUT or OUTPUT part of the device.
<buffer size>	the octal length of the ring buffer in words or bytes.
<image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. For SINTRAN III/VSX, the following rule applies to terminals: The size of the data fields (input+output), plus the buffers (input+output), must fit inside one page. This gives the maximum size of the sum of input and output buffers to 3424_8 bytes. The default buffer size for terminals are 134_8 bytes in input and 270_8 bytes in output.

*CHANGE-DATAFIELD

Function:
Change the contents of variables in the data fields connected to devices. The displacements of items in each data field can be entered as symbolic names.

Related commands:
Related SINTRAN Service Program commands: CHANGE-TABLE
CHANGE-VARIABLE
Related SINTRAN III commands: LOOK-AT

Format:
*CHANGE-DATAFIELD <logical device number>,<input/output>,
<memory?>,<image?>,<save area?>
(subcommands for patching)

Parameters:

<logical device number>	the octal logical device number identifying the device.
<input/output>	select the INPUT or OUTPUT part of the device.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.
<subcommands for patching>	these subcommands follow rules 3, 4 and 6 of the @LOOK-AT command. The address specified must be a relative octal address within the data field or the symbolic name of an item within the data field.

The symbolic names available as displacements in data fields are shown in the table below. They cannot be abbreviated. For further information of data fields, see the SINTRAN III Real Time Guide.

AERRB	CXRG	IBLOAD	RESLINK	*TDFLGADDR
ARG	DBADR	ICORAD	ROUSP	*TDFPHPAGE
BHOLD	DBPROG	IFUNC	RTRES	TERM
BLSZ	DERROR	IMAXBHOLD	SERRB	TMR
BRKTAB	DFLAG	IMAXW	SETDV	TMSUB
BSTATE	DFOPP	IOLOG	*SNMIQ	TRG
BUFST	DRG	IOTRANS	SSREF	TINFO
BWLINK	DRIVER	IRETW	STDEV	TRLREG
CARG	DRT	ISTATE	STDRIV	TSPEED
CESCP	ECHOTAB	LAST	*STIMC	TSTATE
CFREE	ERCNT	MAX	*STREN	TTMR
CHARI	FBSIZ	MAXBHOLD	STRSEG	TYPRING
CNTREG	FLAGB	MFUNC	*SUNGL	WERRB
COMFL	FYLLE	MINBHOLD	*SUNIH	WFLAG
CONVTAB	HDEV	MLINK	TACNS	XRG
CTRG	HENTE	MTRANS	TACOUNT	
CTTYP	HSTAT	NOBUF	TADTYP	

Symbolic names marked (*) are only available in the VSX-version.

Example:
The following example shows how to change the speed for terminal 36 to 9600 baud. The variable TSPEED in the input data field of terminal 36 is modified from 177777 to 210. See appendix K for details of terminal speeds. The modification will not take effect until the system has been restarted.

```
@SINTRAN-SERVICE-PROGRAM
*CHANGE-DATAFIELD 36D,I,N,Y,Y
TSPEED/177777  177777 210
       0               0 .
*EXIT
@
```

Rules:
1. The command must not be used in batch jobs.

*CHANGE-GPIB-BUFFERSIZE

Function:
Change the size of buffers used on a GPIB controller.

Related commands:
Related SINTRAN Service Program commands: CHANGE-BUFFER-SIZE

Format:
*CHANGE-GPIB-BUFFERSIZE <controller no.>,<user buffer size (oct)>,
<DMA buffer size (oct)>

Parameters:

<controller no.>	GPIB controller.
<user buffer size (oct)>	user buffer size in (octal) words.
<DMA buffer size (oct)>	DMA buffer size in (octal) words.

*CHANGE-TABLE

Function:
Change values in one of four internal tables:

USER-RESERVED-DEVICE-NUMBERS
A table of hardware device numbers which should not be accessed at system start-up time. An element in this table is defined by the first and last device number of an interval.

USER-RESERVED-MEMORY-AREA
This table specifies memory pages which should not be used for system tables (memory map, device buffers, etc.). An element in this table is defined by the first and last physical page of an area not to be used for system tables.

MEMORY-AREA-UNAVAILABLE-FOR-SWAPPING
This table specifies memory areas which should not be used for swapping. An element in this table is defined by the first and last physical pages of an area not to be used for swapping.

MEMORY-AREA-INVISIBLE-FOR-THIS-SYSTEM
This table specifies memory areas which should not be accessed at all. This feature is used to handle the situations when several CPUs share the same multiport memory. If one CPU is using a particular area of memory, the start-up routine of another CPU may destroy the contents of this area if accessing it. An element in this table is defined by the first and last physical pages of an area to be invisible.

Related commands:
Related SINTRAN Service Program commands: CHANGE-DATAFIELD
CHANGE-VARIABLE

Format:
*CHANGE-TABLE <table>

Parameters:
<table> the name of one of the tables listed above.

Subcommands:
The CHANGE-TABLE command has the following subcommands:

LIST-TABLE <image or save-area (default is image)>,<output file>
Print the contents of the current table on the output file. Default output file is terminal.

CHANGE-TABLE <table>
Change the current table.

CHANGE-ELEMENT <image or save-area (default is image)>,
<element number>,
<first devno. (oct)>,<last devno. (oct)>
or: <first page (oct)>,<last page (oct)>
Change one element of the current table.

DELETE-ELEMENT <image or save-area (default is image)>,
<element number>
Clear one element of the current table.

INSERT-ELEMENT <image or save-area (default is image)>,
<first devno. (oct)>,<last devno. (oct)>
or: <first page (oct)>,<last page (oct)>
Insert a new element in the current table.

CLEAR-TABLE <image or save-area (default is image)>
Clear all of the current table.

EXIT

HELP

*CHANGE-VARIABLE

Function:
Examine and change system variables. These may be single variables or arrays. For some variables, the IMAGE AREA and/or SAVE AREA may be affected. Some variables may also affect SINTRAN III RESIDENT.

Related commands:
Related SINTRAN Service Program commands: CHANGE-DATAFIELD
CHANGE-TABLE
Related SINTRAN III commands: LOOK-AT

Format:
*CHANGE-VARIABLE <variable name>[,<index>],<value>[,<memory?>]
<image?>,<save area?>

Parameters:

<variable name>	the system variables shown in the following table can be examined and modified.
<index>	an octal index will be requested if the <variable name> is an array.
<value>	new octal value. The old value is default.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

VARIABLE	MEANING
BUFERASE	Erase buffer option on/off
BYPINITC	Flag to bypass initial commands.
*CCFPAGE	First legal logical page for RT common.
*CCLPAGE	Last legal logical page for RT common.
*CNVRT	Address of logical device tables. SINTRAN III RESIDENT is affected for index values from 0-24.
CPULOOPTIME	Number of runs of the idle loop per second.
DVBFPAGE	First physical page of memory legal for device buffer.
*ENDCOR	Upper address of SINTRAN III RESIDENT.
EXSECURITY	Flags to show which security features to be used.
*EXTDS	Address of the extended ident code tables. SINTRAN III RESIDENT is affected for index values from 0-3.
FIXMAX	Maximum number of pages which can be fixed in physical memory simultaneously. Affects SINTRAN III RESIDENT.
*IDNTS	Address of the ident code tables. Affects SINTRAN III RESIDENT for index values from 0-3.
IMASK	Value is a mask to be used for enabling internal interrupts, that is, the TRR IIE instruction.
LCACHLIM	Change the lower limit of the CACHE-INHIBIT-LIMIT.
LOADI	Set to 0 if the RT-Loader shall initialize RTFIL. SINTRAN III RESIDENT is affected.
MAXP	Maximum number of pages in physical memory for a demand segment. SINTRAN III RESIDENT is affected.
MINSWPAGES	Minimum number of pages of memory for swapping.
MXDVBUF	Maximum number of device buffers in this system.
NMATP	Number of RFA attempts before forced logout.
*RTFPAGE	First legal logical page number for RT-programs on page table 1.
*RTLPAGE	Last legal logical page number for RT-programs on page table 1.
SWPFLAG	Swapping and disk reservation as in the H-version.
*TABLES	Address of timer, background, batch and RT common table (CCTAB). SINTRAN III RESIDENT is affected for index from 0-3.
*TMCTAB	Monitor call types. See DEFINE-USER-MONITOR-CALL. The TMCTAB array is a byte array. The parameter <index> is a word index. Thus two bytes are changed by one command. SINTRAN III RESIDENT is affected for index values from 0-107.
UCACHLIM	Change the upper limit of the CACHE-INHIBIT-LIMIT.
UNAFLAG	Flag set if system is unavailable after the command @SET-UNAVAILABLE. SINTRAN III RESIDENT is affected.
USEGADR	Address of the first free entry in the segment table.

Symbolic names marked (*) are not available in the VSX-version.

*CLEAR-ENTER-COUNT

Function:
Clear the enter count for a[terminal and allow attempts to log in on that terminal again.

Related commands:
Related SINTRAN Service Program commands: SET-MAX-ENTER-COUNT

Format:
*CLEAR-ENTER-COUNT <logical device number>,<memory?>

Parameters:

<logical device number>	the decimal logical device number of the terminal.
<memory?>	answer YES or NO to whether memory should be modified. The default answer is NO.

*CREATE-LAMU

Function:
Creates a LAMU with an entry in the LAMU table.

Related commands:
Related SINTRAN Service Program commands: CREATE-SYSTEM-LAMU
DELETE-LAMU
LAMU-INFORMATION
PAGES-TO-LAMU
PROTECT-LAMU

Format:
*CREATE-LAMU <LAMU id>,<size>,<physical address>

Parameters:

<LAMU id>	a number to identify the LAMU in the LAMU table. The number will be accepted if it is unused and inside the legal range starting from 1. If 0 is entered, the system selects a LAMU id.
<size>	octal number of pages in the range 1-200$_8$.
<physical address>	specify the first physical page for the LAMU. Legal values are all existing physical pages currently used as LAMU areas. The system selects the first LAMU area large enough for the LAMU if 0 is entered.

*CREATE-SYSTEM-LAMU

Function:
Creates a system LAMU with an entry in the LAMU table.

Related commands:
Related SINTRAN Service Program commands: CREATE-LAMU
DELETE-LAMU
LAMU-INFORMATION
PAGES-TO-LAMU
PROTECT-LAMU

Format:
*CREATE-SYSTEM-LAMU <LAMU id>,<size>,<physical start page>

Parameters:

<LAMU id>	a number to identify the LAMU in the LAMU table. The number will be accepted if it is unused and inside the legal range starting from 1. If 0 is entered, the system selects a LAMU identifier.
<size>	octal number of pages in the range 1-200$_8$.
<physical start page>	specify the first physical page for the LAMU. Memory for system LAMUs are allocated from the swapping area. The system selects the first free area large enough for the LAMU if 0 is entered.

*CPU-LOG

Function:
Report CPU activity.

Format:
*CPU-LOG <interval in seconds>,<output file>

Parameters:

<interval in seconds>	interval. The default is 30 seconds.
<output file>	the default is terminal.

*DEFINE-BATCH-SUPERVISOR

Function:
Define an RT-program to be started each time a batch job is terminated.

Related commands:
Related SINTRAN III commands: DEFINE-TERMINATION-HANDLING

Format:
*DEFINE-BATCH-SUPERVISOR <RT-program>,<memory?>,<image?>,
<save area?>

Parameters:
<RT-program> an RT-description address or an RT-program name.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*DEFINE-HDLC-BUFFER

Function:
Allocate buffer for specified HDLC interface.

Related commands:
Related SINTRAN Service Program commands: LIST-HDLC-BUFFER

Format:
*DEFINE-HDLC-BUFFER <logical device number>,<buffer size>

Parameters:

<logical device number>	logical device number for HDLC interface.
<buffer size>	buffer size.

*DEFINE-PROMPT-STRING

Function:
Define a prompt string to be printed instead of an @ in SINTRAN III remote mode. The system name may, for example, precede the @. The string may also be declared to replace the default prompt on the local system.

Related commands:
Related SINTRAN Service Program commands: DEFINE-TITLE

Format:
*DEFINE-PROMPT-STRING <string>,<local mode?>,<memory>,<save area?>

Parameters:

<string>	the string to replace the old one. The text is terminated with an apostrophe (').
<local mode?>	answer YES or NO to whether the string also should be used in local mode.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*DEFINE-RTCOMMON-SIZE

Function:
Define the size of the RT-common area in pages.

Format:
*DEFINE-RTCOMMON-SIZE <number of pages>,<first physical page>,
<image?>,<save area?>

Parameters:

<number of pages>	the new octal size of the RT-common area.
<first physical page>	the page in physical memory where RT-common should start. In addition to the pages generated for the system, only 8 pages can be added. The default value is the upper end of physical memory.
<image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The size can be increased by up to 10_8 pages in addition to the RT-common size defined at system generation.

*DEFINE-SEGMENT-FILE

Function:
Connect a segment file number to a segment file. This is needed for the RT-Loader to access the file.

Related commands:
Related SINTRAN Service Program commands: DELETE-SEGMENT-FILE

Format:
```
*DEFINE-SEGMENT-FILE <memory?>,<save area?>,
                     <segment file number>,<segment file name>
                     [,<redefine segment file?>]
```

Parameters:

<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.
<segment file number>	specify a segment file number in the range 0-3.
<segment file name>	any existing contiguous file.
<redefine segment file?>	only requested if the <segment file number> is already defined. Specify YES or NO. The default answer is NO.

Rules:
1. User SYSTEM and user RT must have read and write access to to the segment file.
2. The page address of all the pages in the segment file must be less than 77777_8.
3. The command must not be used in batch jobs.

*DEFINE-TIME-SLICE

Function:
Define the length of the time slices of the background processes which control the terminal and batch processors. The unit used in the parameters is 10 basic time units, that is, 20 milliseconds.

Format:
*DEFINE-TIME-SLICE <image?>,<save area?>,
<change timeslice parameters (yes/no?)>

Parameters:

<image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.
<change timeslice parameters (yes/no?)>	if you answer yes, you will be asked for new values for the time slice parameters.

Example:

```
@SINTRAN-SERVICE-PROGRAM
*DEFINE-TIME-SLICE
IMAGE? YES
SAVE-AREA? NO
CHANGE TIMESLICE PARAMETERS (YES/NO) (DEFAULT IS NO): YES
                                                        IMAGE
PRIORITY FOR OWNER OF SYSTEM RESOURCES WHICH
         ARE WAITED FOR BY OTHER PROGRAMS      (1B -  77B) /  67/:
NO. OF BASIC TIME UNITS IN ONE TIMESLICE UNIT  (1B - 400B) /  14/:
LOWEST PRIORITY BEFORE GETTING RAISED ON BREAK (1B -  70B) /  40/:
LOWEST TIME COUNT BEFORE GETTING HASHED        (1B - 400B) /  22/:
            BIT MASK USED WHEN HASHING         (1B - 177B) /  17/:
CHANGE TIMESLICE ELEMENTS (YES/NO) (DEFAULT IS NO)? YES
TIMESLICE CLASS                (0B -   7B) /      0/: 6
                                             IMAGE
ESCAPE ELEMENT FOR THIS CLASS  (0B -  37B) /  30/: 30
BREAK ELEMENT FOR THIS CLASS   (0B -  37B) /  30/: 30
TIMESLICE ELEMENT TO CHANGE    (0B -  37B) /  30/: 30
PRIORITY FOR THIS ELEMENT      (1B -  77B) /  10/: 10
TIME COUNT FOR THIS ELEMENT    (1B - 400B) /   2/: 2
POINTER TO NEXT ELEMENT        (0B -  37B) /  31/: 31
CHANGE NEXT ELEMENT (YES/NO) (DEFAULT IS NO): YES
TIMESLICE ELEMENT NO.  31
PRIORITY FOR THIS ELEMENT      (1B -  77B) /   6/: 6
TIME COUNT FOR THIS ELEMENT    (1B - 400B) /   4/: 4
POINTER TO NEXT ELEMENT        (0B -  37B) /  32/: 32
CHANGE NEXT ELEMENT (YES/NO) (DEFAULT IS NO): YES
TIMESLICE ELEMENT NO.  32
PRIORITY FOR THIS ELEMENT      (1B -  77B) /   1/: 1
TIME COUNT FOR THIS ELEMENT    (1B - 400B) /  30/: 30
POINTER TO NEXT ELEMENT        (0B -  37B) /  31/: 31
CHANGE NEXT ELEMENT (YES/NO) (DEFAULT IS NO):
MORE CLASSES (YES/NO) (DEFAULT IS NO): NO
*EXIT
@
```

*DEFINE-TITLE

Function:
Define the string to be output in addition to system version string when a user logs in on a terminal. The string is also output as part of the spooling header and as response to the command @LIST-TITLE.

Related commands:
Related SINTRAN Service Program commands: DEFINE-PROMPT-STRING
Related SINTRAN III commands: LIST-TITLE

Format:
*DEFINE-TITLE <text>,<memory?>,<save area?>

Parameters:

<text>	any printable characters terminated by an apostrophe ('). The character $ will start a new line on output. Carriage return on input is ignored. An apostrophe only specifies no text.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The maximum is 120 characters including the apostrophe.
2. The command must not be used in batch jobs.

Example:
The following is an example of the command and the generated output:

```
@SINTRAN-SEVICE-PROGRAM
*DEFINE-TITLE $ND-570.2323 $SYSTEM NUMBER 6323$'
*EXIT
@LIST-TITLE

SINTRAN III - VSX/500 K

ND-570.2323
SYSTEM NUMBER 6323

REVISION:    101300B
CPU (SYSTEM NUMBER):      6323
GENERATED:    16.39.00      15 MAY      1986
@
```

*DEFINE-USER-MONITOR-CALL

Function:
Define number, entry point address and type of user-defined monitor calls. The code should be assembled using FMAC or DMAC.

Format:
*DEFINE-USER-MONITOR-CALL <monitor call number>,<start address>,
<type>,<memory?>,<image?>,<save area?>

Parameters:

<monitor call number>	the octal number of the monitor call. User defined monitor calls may be in the range 170-177.
<start address>	the octal entry point of the monitor routine.
<type>	specify 1 if the monitor call should be available to RT-programs only and 16 if it also should be available to background programs. The default value is 1.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:

1. DEFINE-USER-MONITOR-CALL is not available in SINTRAN III/VSX.
2. The subroutine must reside in SINTRAN III RESIDENT.
3. If TPS is installed, monitor call numbers 170-177 are occupied.
4. In SINTRAN III/VSX, user-defined monitor calls are still available, but the user must update the monitor call tables himself.

   The relevant tables are:
   MCTAB (address of monitor call code, 1 word per entry)
   MPPTAB (PIT where the code is placed, 1 byte per entry)
   TMCTAB (type of monitor call - 1 byte per entry)
   GOTAB (level 14 table - type of call - 1 word per entry.
   The entry for a user-written monitor call should contain the address of the common monitor call handling routine MFELL.)

*DEFINE-USER-RESTART-PROGRAM

Function:
Define the first RT-program to be started by SINTRAN III after each power fail. The RT-program may, for example, request the clock to be updated.

Related commands:
Related SINTRAN Service Program commands: LIST-USER-RESTART-PROGRAMS
NEXT-USER-RESTART-PROGRAM

Format:
*DEFINE-USER-RESTART-PROGRAM <program>,<memory?>,<image?>,<save area?>

Parameters:

<program>	An octal RT-description address or an RT-program name.
<memory?, image? and save area?>	Select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*DEFINE-USER-RESTART-SUBROUTINE

Function:
Define the start address of a subroutine to be called when SINTRAN III is restarted after a power fail.

Related commands:
Related SINTRAN Service Program commands: DEFINE-USER-RESTART-PROGRAM
DEFINE-USER-START-SUBROUTINE

Format:
*DEFINE-USER-RESTART-SUBROUTINE <restart address>,<memory?>
<image?>,<save area?>

Parameters:
<restart address> the octal entry point of the subroutine.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The subroutine must reside in SINTRAN III RESIDENT.

*DEFINE-USER-START-SUBROUTINE

Function:
Define the address of a subroutine to be executed when the system is started.

Related commands:
SINTRAN Service Program commands: DEFINE-USER-RESTART-SUBROUTINE

Format:
*DEFINE-USER-START-SUBROUTINE <start address>,<image?>,<save area?>

Parameters:

<start address>	the octal entry point of the subroutine.
<image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The subroutine must reside in SINTRAN III RESIDENT or on the operator communication segment, that is, segment 3.

*DELETE-LAMU

Function:
Deletes a selected LAMU from the LAMU table.

Related commands:
Related SINTRAN Service Program commands: CREATE-LAMU
CREATE-SYSTEM-LAMU
LAMU-INFORMATION
PAGES-FROM-LAMU
PROTECT-LAMU

Format:
*DELETE-LAMU <LAMU id>

Parameters:
<LAMU id> the number identifying the LAMU in the LAMU table.

Rules:
1. The LAMU cannot be in use by RT-programs.
2. The physical pages of the LAMU will remain in the LAMU area.

*DELETE-SEGMENT-FILE

Function:
Set a segment file unavailable for the RT-Loader. The file is not deleted from the directory. Use the @DELETE-FILE command for this purpose.

Related commands:
Related SINTRAN Service Program commands: DEFINE-SEGMENT-FILE

Format:
*DELETE-SEGMENT-FILE <memory?>,<save area?>,<segment file number>

Parameters:

<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.
<segment file number>	the number of one of the four segment files, that is, a number from 0-3.

Rules:
1. A defined segment file must not be deleted without previously having been undefined with DELETE-SEGMENT-FILE.

*DISC-ACCESS-LOG

Function:
Log all or a selection of disk accesses.

Format:
*DISC-ACCESS-LOG

Subcommands:
The command *DISC-ACCESS-LOG has several subcommands:

DEFINE-DISC-ACCESS-LOG <disc access log file>,
<small or big record size on disc log file
(default is big)>,
<log all disc accesses (default is yes)>,
[<count disc accesses to one controller only
(default is no)>],
[<logical device number of disc to log (octal)>],
[<count disc accesses to one disc unit only
(default is no)>],
[<drive number of drive to log>],
[<log only write accesses (default is no)>],
[<log only read accesses (default is no)>],
[<log only accesses to a limited part of the disc
(default is no)>],
[<first disc address in the disc part to log
(octal only)>],
[<last disc address in the disc part to log
(octal only)>]

Define the parameters for the disk log. Logfile must be a contiguous file. Record size is either 4 (small) or 8 (big) words.

START-DISC-ACCESS-LOG
Start logging of disk accesses if a log has been defined.

STOP-DISC-ACCESS-LOG
Stop logging of disk accesses.

START-DISC-ACCESS-COUNTER <count all disc accesses (default is yes)>,
[<count disc accesses to one controller only
(default is no)>],
[<logical device number of disc to log (octal)>],
[<count disc accesses to one disc unit only
(default is no)>],
[<drive number of drive to log>]

Define and start a simple disk access log which only counts the number of read and write accesses.

STOP-DISC-ACCESS-COUNTER
Stop the simple disk access log.

CLEAR-DISC-ACCESS-COUNTER
Clear the counters used by the simple disk access log.

DISC-ACCESS-COUNTER
Report the values of the counters used by the simple disk access log.

DISC-DRIVER-ERROR-INFORMATION <logical device number>

Report the values of certain error variables in the disk driver.

DISC-ERROR-STATUS <logical device number>,<unit number>

Report the error status in the disk data field.

LOG-DISC-ACCESS-COUNTER <interval in seconds (default is 60 secs)>

Report the values of the counters used by the simple disk access log at specified intervals. This command must be terminated by pressing <escape>.

EXIT

HELP

Rules:
1. The Disk Access Log is an option to be ordered on the SINTRAN III order form.

*DUMP-RT-DESCRIPTION

Function:
Dump the symbolic names and the contents of locations in an RT-description.

Related commands:
Related SINTRAN Service Program commands: DUMP-SEGMENT-TABLE-ENTRY
Related SINTRAN III commands: LIST-RT-DESCRIPTION

Format:
*DUMP-RT-DESCRIPTION <program>,<area>,<output file>

Parameters:

<program>	an octal RT-description address or an RT-program name.
<area>	legal parameters are MEMORY, IMAGE, and SAVE AREA.
<output file>	the file where the information should be dumped. Default is your terminal.

*DUMP-SEGMENT-TABLE-ENTRY

Function:
Dump the symbolic name and contents of locations in a segment table entry.

Related commands:
Related SINTRAN Service Program commands: DUMP-RT-DESCRIPTION
Related SINTRAN III commands: LIST-SEGMENT

Format:
*DUMP-SEGMENT-TABLE-ENTRY <segment number>,<area>,<output file>

Parameters:

<segment number>	the octal number of the segment to be dumped.
<area>	legal parameters are MEMORY, IMAGE or SAVE AREA.
<output file>	the file where the information should be dumped. Default is your terminal.

Example:
The following example shows the output from the command. The contents of the segment entries are described in the SINTRAN III Real Time Guide (ND-60.133).

```
*DUMP-SEGMENT-TABLE-ENTRY 30,MEMORY,,
SEGLINK:                    0
BPAGELINK:                  0
LOGADR:                  1074
MADR:                     325
FLAG:                  162003
```

*EXIT

Function:
Leave the SINTRAN SERVICE PROGRAM and return to SINTRAN III.

Related commands:
Related ND-500 Monitor commands: EXIT

Format:
*EXIT

Parameters:
None.

*FIND-CPULOOPTIME

Function:
Find number of "CPU loops" per second and store it in the SINTRAN III variable CPULOOPTIME.

Format:
*FIND-CPULOOPTIME

Rules:
1. This command should only be issued when there is no activity on the system.

*HELP

Function:
List all SINTRAN SERVICE PROGRAM commands. The command is identical to LIST-SERVICE-COMMANDS.

Related commands:
Related SINTRAN Service Program commands: LIST-SERVICE-COMMANDS
Related SINTRAN III commands: HELP
Related ND-500 Monitor commands: HELP

Format:
*HELP <command>,<output file>

Parameters:

<command>	list commands matching command name given.
<output file>	the file where the commands should be listed. Default is your terminal.

Rules:
1. The order of the parameters is changed from previous versions.

*INITIALIZE-SYSTEM-SEGMENT

Function:
Fetch a new copy of the system segment for a terminal. The segment is transferred from the save area to the segment file.

Format:
*INITIALIZE-SYSTEM-SEGMENT ‹segment (name or number(oct))›

Parameters:
‹segment (name or number(oct))›
the segment name or (octal) number of a system segment.

Rules:
1. This command will only be executed if the corresponding background process is passive. Otherwise, the message BACKGROUND PROGRAM ACTIVE will be given.

*INSERT-IN-BACKGROUND-TABLE

Function:
Insert a device into the background table.

Related commands:
Related SINTRAN Service Program commands: REMOVE-FROM-BACKGROUND-TABLE

Format:
*INSERT-IN-BACKGROUND-TABLE <logical device number>,
<memory?>,<image?>,<save area?>

Parameters:
<logical device number> an octal logical device number.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. There must be a free entry in the background table.

*INSERT-IN-EXTENDED-IDENT-TABLE

Function:
Insert an entry in the extended ident code table of a hardware interrupt level.

Related commands:
SINTRAN Service Program commands: INSERT-IN-IDENT-TABLE
REMOVE-FROM-EXTENDED-IDENT-TABLE

Format:
*INSERT-IN-EXTENDED-IDENT-TABLE <level>,<logical device number>,
<input/output>,<ident code>,
<memory?>,<image?>,<save area?>

Parameters:

<level>	the octal interrupt level.
<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<ident code>	the new octal ident code.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*INSERT-IN-IDENT-TABLE

Function:
Insert an entry in the ident code table of a hardware interrupt level.

Related commands:
SINTRAN Service Program commands: INSERT-IN-EXTENDED-IDENT-TABLE
REMOVE-FROM-IDENT-TABLE

Format:
*INSERT-IN-IDENT-TABLE <level>,<logical device number>,
<input/output>,<ident code>,
<memory?>,<image?>,<save area?>

Parameters:

<level>	the octal interrupt level.
<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<ident code>	the new octal ident code.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Example:
The following is an example of inserting and removing the output part of a device in the ident table:

```
@SINTRAN-SERVICE-PROGRAM
*INSERT-IN-IDENT-TABLE 12, 5, OUTPUT, 3
*REMOVE-FROM-IDENT-TABLE 12, 5, OUTPUT
```

*INSERT-IN-IOX-TABLE

Function:
Make a hardware device number available for @EXECUTE-IOX and EXIOX (MON 31).

Related commands:
Related SINTRAN Service Program commands: REMOVE-FROM-IOX-TABLE

Format:
*INSERT-IN-IOX-TABLE <hardware device number>,<memory?>,
<image?>,<save area?>

Parameters:
<hardware device number> an octal physical device number.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*INSERT-IN-LOGICAL-UNIT-TABLE

Function:
Insert a logical device number in the logical device table.

Related commands:
SINTRAN Service Program commands: REMOVE-FROM-LOGICAL-UNIT-TABLE

Format:
*INSERT-IN-LOGICAL-UNIT-TABLE <logical device number>,
<input/output>,<data field>

Parameters:

<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<data field>	the octal address of the data field of the device.

Rules:
1. There must be a free entry in the logical device table for the logical device number.

Example:
The following example shows how to insert and remove devices from the logical device table:

```
@SINTRAN-SERVICE-PROGRAM
*INSERT-IN-LOGICAL-UNIT-TABLE 5,INPUT,14341
*REMOVE-FROM-LOGICAL-UNIT-TABLE 6, OUTPUT
```

*INSERT-IN-TIME-SLICE

Function:
Cause the background process priority to be changed dynamically. If a background process is not in the time slicer, it will run at a fixed priority.

Related commands:
SINTRAN Service Program commands: INSERT-PROGRAM-IN-TIME-SLICE
LIST-TIME-SLICED-PROGRAMS
REMOVE-FROM-TIME-SLICE
REMOVE-PROGRAM-FROM-TIME-SLICE
Related SINTRAN III commands: PRIOR

Format:
*INSERT-IN-TIME-SLICE <logical device number>,<time slice class>,
<memory?>,<image?>,<save area?>

Parameters:

<logical device number>	the octal logical device number of a terminal, batch processor or communication device.
<time slice class>	the number of time slice class to be used.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. A background process not in the time slicer will run on a fixed priority. This priority is defined by @PRIOR.

*INSERT-IN-TIMER-TABLE

Function:
Insert a logical device number in the timer table.

Related commands:
Related SINTRAN Service Program commands: REMOVE-FROM-TIMER-TABLE

Format:
*INSERT-IN-TIMER-TABLE <logical device number>,<input/output>

Parameters:

<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.

Rules:
1. There must be a free entry in the timer table.

Example:
The following is an example of inserting and removing devices from the timer table:

```
@SINTRAN-SERVICE-PROGRAM
*INSERT-IN-TIMER-TABLE 5,OUTPUT
*REMOVE-FROM-TIMER-TABLE 6,INPUT
```

*INSERT-PROGRAM-IN-TIME-SLICE

Function:
Set the specified RT-program to be time sliced.

Related commands:
SINTRAN Service Program commands: INSERT-IN-TIME-SLICE
LIST-TIME-SLICED-PROGRAMS
REMOVE-FROM-TIME-SLICE
REMOVE-PROGRAM-FROM-TIME-SLICE

Format:
*INSERT-PROGRAM-IN-TIME-SLICE <RT name>,<memory?>,<image>,
<save area?>,<timeslice class>

Parameters:

<RT name>	an RT-description address or an RT-program name.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.
<timeslice class>	which time slice class is to be used. Default = 0

*INSERT-SPOOLING-HEADER

Function:
Cause the spooling program to print the spooling header and trailer between each file output by the spooling system.

Related commands:
Related SINTRAN Service Program commands: REMOVE-SPOOLING-HEADER

Format:
*INSERT-SPOOLING-HEADER <spooling index>,<memory?>,<save area?>

Parameters:

<spooling index>	the index of the spooling device as defined by the command SET-SPOOLING-DEVICE-NUMBER.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO. The area parameters apply only to the VSE-version; in the VSX-version, only the MEMORY area of SINTRAN III is affected.

*LAMU-AREAS

Function:
List the memory areas reserved for LAMUs.

Related commands:
Related SINTRAN Service Program commands: LAMU-INFORMATION

Format:
*LAMU-AREAS <output file>

Parameters:
<output file> the file where the information should be dumped. Default is your terminal.

*LAMU-INFORMATION

Function:
List all the relevant information of one or more LAMUs.

Related commands:
Related SINTRAN Service Program commands: LAMU-AREAS
PAGES-FROM-LAMU
PAGES-TO-LAMU

Format:
*LAMU-INFORMATION <LAMU id>,<output file>

Parameters:

<LAMU id>	the number that identifies the LAMU in the LAMU table. If 0 is specified, information about all LAMUs will be listed.
<output file>	the file where the information should be dumped. Default is your terminal.

*LIST-HDLC-BUFFER

Function:
List buffer for specified HDLC interface.

Related commands:
Related SINTRAN Service Program commands: DEFINE-HDLC-BUFFER

Format:
*LIST-HDLC-BUFFER ‹logical device number›

Parameters:
‹logical device number› logical device number for HDLC interface.

*LIST-LAMU-CONSTANTS

Function:
List the total number of LAMUs and the number of LAMUs per RT-program.

Related commands:
Related SINTRAN Service Program commands: SET-LAMU-CONSTANTS

Format:
*LIST-LAMU-CONSTANTS

Parameters:
None.

*LIST-SERVICE-COMMANDS

Function:
List all SINTRAN SERVICE PROGRAM commands. The command is identical to *HELP.

Related commands:
Related SINTRAN Service Program commands: HELP

Format:
*LIST-SERVICE-COMMANDS <command>,<output file>

Parameters:

<command>	list commands matching command name given.
<output file>	the file where the commands should be listed. Default is your terminal.

Rules:
1. The order of the parameters is changed from previous versions.

*LIST-TIME-SLICE-CLASS

Function:
List information about a specific time slice class.

Related commands:
Related SINTRAN Service Program commands: DEFINE-TIME-SLICE
LIST-TIME-SLICE-PARAMETERS

Format:
*LIST-TIME-SLICE-CLASS <timeslice class>,<image or save-area>

Parameters:

<timeslice class>	time slice class.
<image or save-area>	select area.

*LIST-TIME-SLICE-PARAMETERS

Function:
List time slicer information.

Related commands:
Related SINTRAN Service Program commands: DEFINE-TIME-SLICE

Format:
*LIST-TIME-SLICE-PARAMETERS <image?>,<save-area?>

Parameters:

<image? or save-area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*LIST-TIME-SLICED-PROGRAMS

Function:
List information about time sliced programs.

Related commands:
SINTRAN Service Program commands: INSERT-IN-TIME-SLICE
INSERT-PROGRAM-IN-TIME-SLICE
REMOVE-FROM-TIME-SLICE
REMOVE-PROGRAM-FROM-TIME-SLICE

Format:
*LIST-TIME-SLICED-PROGRAMS

Parameters:
None.

*LIST-USER-RESTART-PROGRAMS

Function:
List the RT-programs to be started by SINTRAN III after each power fail.

Related commands:
Related SINTRAN Service Program commands: DEFINE-USER-RESTART-PROGRAM
NEXT-USER-RESTART-PROGRAM

Format:
*LIST-USER-RESTART-PROGRAM <output file>

Parameters:
<output file> default is your terminal.

*MONCALL-LOG

Function:
Inform on monitor call activity for the system.

Format:
*MONCALL-LOG

Subcommands:
The following subcommands are available:

START-MONCALL-LOG
<log moncalls for only one program (default is yes)>[,<RT name>]>

start the log procedure for one or all programs.

STOP-MONCALL-LOG
stop the log procedure. the log may be restarted by:

RESTART-MONCALL-LOG

PRINT-MONCALL-LOG
<output file>

print the current contents of the log. this command may be given both during the log (before stop-moncall-log), and after.

HELP

EXIT

Rules:
1. The Moncall Log is an option to be ordered on the SINTRAN III order form.

*NEXT-USER-RESTART-PROGRAM

Function:
Define further RT-programs to be started by SINTRAN III after each power fail.

Related commands:
Related SINTRAN Service Program commands: DEFINE-USER-RESTART-PROGRAM
LIST-USER-RESTART-PROGRAMS

Format:
*NEXT-USER-RESTART-PROGRAM <program>,<memory?>,<image?>,<save area?>

Parameters:

<program>	an octal RT-description address or an RT-program name.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*OCTAL-DUMP

Function:
Dump each byte of an area as octal numbers. Use ASCII-DUMP dump to have the area dumped as characters.

Related commands:
Related SINTRAN Service Program commands: ASCII-DUMP

Format:
*OCTAL-DUMP <area>[,<segment number>],<lower address>,
<upper address>,<output file>

Parameters:

<area>	in SINTRAN III/VSE, legal parameters are MEMORY, IMAGE, SAVE AREA or SEGMENT. In SINTRAN III/VSX, legal parameters are SEGMENT or ALT-SEGMENT.
<segment number>	if SEGMENT (or ALT-SEGMENT) is specified as <area>, the octal segment number should be entered.
<lower address>	lower limit of the address range to be dumped. The limit is included. The value is octal with 0 as default value.
<upper address>	upper limit of the address range to be dumped. The limit is included. The value is octal with 0 as default value.
<output file>	the file where the information should be dumped. Default is your terminal.

Rules:
1. Each line of the dump consists of 8 words. A separate column lists the address of the first word.

Example:
The following example shows how the memory area from 1000-1777$_8$ can be dumped on the terminal:

```
*OCTAL-DUMP MEMORY,,1000,1777,,
```

*PAGES-FROM-LAMU

Function:
Return pages from the LAMU area to the swapping area.

Related commands:
Related SINTRAN Service Program commands: DELETE-LAMU
PAGES-TO-LAMU

Format:
*PAGES-FROM-LAMU <first physical page>,<memory?>,<image?>

Parameters:

<first physical page>	the fist page to be removed.
<memory? and image?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*PAGES-TO-LAMU

Function:
Move pages from the swapping area to the LAMU area.

Related commands:
Related SINTRAN Service Program commands: LAMU-AREAS
PAGES-FROM-LAMU

Format:
*PAGES-TO-LAMU <first physical page>,<number of pages>,
<memory?>,<image?>

Parameters:

<first physical page>	the physical page that starts the LAMU area.
<number of pages>	the octal number of pages to be moved from the swapping area to the LAMU area.
<memory? and image?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*PROTECT-LAMU

Function:

Related commands:
Related SINTRAN Service Program commands: CREATE-LAMU
DELETE-LAMU

Change LAMU protection.

Format:
*PROTECT-LAMU <LAMU id>,<ring>,<protection bits (rfw)>

Parameters:

<LAMU id>	LAMU id of LAMU to be protected.
<ring>	protection ring.
<protection bits (rfw)>	protection bits (read/fetch/write).

*READ-BINARY

Function:
Read binary information from a file in BPUN format to a system area.

Format:
*READ-BINARY <area>,<file name>

Parameters:

<area>	legal answers are MEMORY, IMAGE AREA or SAVE AREA (for the VSE-version); SEGMENT or ALT-SEGMENT (for the VSX-version)
<file name>	the name of the binary file to be read into the selected area. Default file type is :BPUN.

*REINSERT-SINTRAN-COMMAND

Function:
Reactivate a SINTRAN III command previously disabled by the command *REMOVE-SINTRAN-COMMAND.

Related commands:
Related SINTRAN Service Program commands: REMOVE-SINTRAN-COMMAND
SET-COMMAND-PROTECTION

Format:
*REINSERT-SINTRAN-COMMAND <command>,<memory?>,<save area?>

Parameters:

<command>	the command to be reactivated.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-BACKGROUND-TABLE

Function:
Remove a device from the background table.

Related commands:
Related SINTRAN Service Program commands: INSERT-IN-BACKGROUND-TABLE

Format:
*REMOVE-FROM-BACKGROUND-TABLE <logical device number>,
<memory?>,<image?>,<save area?>

Parameters:
<logical device number> an octal logical device number.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-EXTENDED-IDENT-TABLE

Function:
Insert an entry in the extended ident code table of a hardware interrupt level.

Related commands:
SINTRAN Service Program commands: INSERT-IN-EXTENDED-IDENT-TABLE
REMOVE-FROM-IDENT-TABLE

Format:
*REMOVE-FROM-EXTENDED-IDENT-TABLE <level>,<logical device number>,
<input/output>,<ident code>,
<memory?>,<image?>,<save area?>

Parameters:

<level>	The octal interrupt level.
<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<ident code>	the octal ident code.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-IDENT-TABLE

Function:
Remove an entry from the ident code table of a hardware interrupt level.

Related commands:
SINTRAN Service Program commands: INSERT-IN-IDENT-TABLE
REMOVE-FROM-EXTENDED-IDENT-TABLE

Format:
*REMOVE-FROM-IDENT-TABLE <level>,<logical device number>,
<input/output>,<ident code>,<memory?>,
<image?>,<save area?>

Parameters:

<level>	the octal interrupt level.
<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<ident code>	the octal ident code.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-IOX-TABLE

Function:
Make a hardware device number unavailable for @EXECUTE-IOX and EXIOX (MON 31).

Related commands:
Related SINTRAN Service Program commands: INSERT-IN-IOX-TABLE

Format:
*REMOVE-FROM-IOX-TABLE <hardware device number>,<memory?>,
<image?>,<save area?>

Parameters:

<hardware device number>	an octal physical device number.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-LOGICAL-UNIT-TABLE

Function:
Remove a logical device number from the logical device table.

Related commands:
Related SINTRAN Service Program commands: INSERT-IN-LOGICAL-UNIT-TABLE

Format:
*REMOVE-FROM-LOGICAL-UNIT-TABLE <logical device number>,
<input/output>,<memory?>,<image?>,
<save area?>

Parameters:

<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.
<memory?, image? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*REMOVE-FROM-TIME-SLICE

Function:
Cause the background process to run on a fixed priority. If a background process is in the time slicer, its priority will be modified dynamically.

Related commands:
SINTRAN Service Program commands: INSERT-IN-TIME-SLICE
INSERT-PROGRAM-IN-TIME-SLICE
LIST-TIME-SLICED-PROGRAMS
REMOVE-PROGRAM-FROM-TIME-SLICE
Related SINTRAN III commands: PRIOR

Format:
*REMOVE-FROM-TIME-SLICE <logical device number>,<memory?>,
<image?>,<save area?>

Parameters:
<logical device number> the octal logical device number of a terminal, batch processor or communication device.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. A background process not in the time slicer will run on a fixed priority. This priority is defined by @PRIOR.

*REMOVE-FROM-TIMER-TABLE

Function:
Remove a logical device number from the timer table.

Related commands:
Related SINTRAN Service Program commands: INSERT-IN-TIMER-TABLE

Format:
*REMOVE-FROM-TIMER-TABLE <logical device number>,<input/output>

Parameters:

<logical device number>	an octal logical device number in the range 1-77 or greater than 200.
<input/output>	select the INPUT or OUTPUT part of the device.

*REMOVE-PROGRAM-FROM-TIME-SLICE

Function:
Set the specified RT-program to run on fixed priority.

Related commands:
Related SINTRAN Service Program commands: INSERT-IN-TIME-SLICE
INSERT-PROGRAM-IN-TIME-SLICE
LIST-TIME-SLICED-PROGRAMS
REMOVE-FROM-TIME-SLICE

Format:
*REMOVE-PROGRAM-FROM-TIME-SLICE <RT name>,<memory?>,<image>,
<save area?>,<timeslice class>

Parameters:
<RT name> an RT-description address or an RT-program name.
<memory?, image? and save area?>
select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The program will continue to run on the priority it had when it was removed from time slice. This may be changed with the @PRIOR command.

*REMOVE-SINTRAN-COMMAND

Function:
Remove a SINTRAN III command. File system commands cannot be removed.

Related commands:
Related SINTRAN Service Program commands: REINSERT-SINTRAN-COMMAND
SET-COMMAND-PROTECTION

Format:
*REMOVE-SINTRAN-COMMAND <command>,<memory?>,<save area?>

Parameters:

<command>	the command to be disabled.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. A command which has been disabled by *REMOVE-SINTRAN-COMMAND, is reactivated by *REINSERT-SINTRAN-COMMAND.

*REMOVE-SPOOLING-HEADER

Function:
Cause the spooling program to stop printing the spooling header and trailer between each file.

Related commands:
Related SINTRAN Service Program commands: INSERT-SPOOLING-HEADER

Format:
*REMOVE-SPOOLING-HEADER <spooling index>,<form feed before?>,
<form feed after?>,<memory?>,<save area?>

Parameters:

<spooling index>	the index of the spooling device as defined by the command SET-SPOOLING-DEVICE-NUMBER.
<form feed before?>	answer YES or NO to whether you want an empty page before each file is printed.
<form feed after?>	answer YES or NO to whether you want an empty page after each file is printed.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO. The area parameters apply only to the VSE-version; in the VSX-version, only the MEMORY area of SINTRAN III is affected.

*RESET-COLDSTART-MODE-FILE

Function:
Remove definition of parameters for commands to be executed at cold start.

Related commands:
Related SINTRAN Service Program commands: SET-COLDSTART-MODE-FILE
Related SINTRAN III commands: COLD-START

Format:
*RESET-COLDSTART-MODE-FILE

Parameters:
None.

*SEGMENT-WRITE-PERMIT

Function:
Allows write access to a segment.

Related commands:
Related SINTRAN Service Program commands: SEGMENT-WRITE-PROTECT

Format:
*SEGMENT-WRITE-PERMIT <segment number>

Parameters:
<segment number> the octal segment number of the segment to be write permitted.

Rules:
1. The segment must have been loaded to.

*SEGMENT-WRITE-PROTECT

Function:
Protect a segment against writing.

Related commands:
Related SINTRAN Service Program commands: SEGMENT-WRITE-PERMIT

Format:
*SEGMENT-WRITE-PROTECT ‹segment number›

Parameters:
‹segment number› the octal segment number of the segment to be write protected.

Rules:
1. The segment must have been loaded to.

*SET-CLOSED-SCRATCH-FILE-SIZE

Function:
Set the maximum number of pages to remain in a scratch file when it is closed.

Related commands:
Related SINTRAN III commands: SCRATCH-OPEN

Format:
*SET-CLOSED-SCRATCH-FILE-SIZE <logical device number>,
<number of pages>,<memory?>,<save area?>

Parameters:

<logical device number>	the octal logical device number of a terminal owning the scratch file.
<number of pages>	the octal maximum number of pages to remain in the scratch file.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. The parameter <number of pages> may be a negative number. This will be taken to mean that pages will only be deleted from a scratch file if the user owning the scratch file has less free pages than the absolute value of this number.

*SET-COMMAND-PROTECTION

Function:
Change the category of users who are allowed to use a SINTRAN III command. It is also possible to set protection on reentrant subsystems and ND-500 standard domains.

Related commands:
Related SINTRAN Service Program commands: REINSERT-SINTRAN-COMMAND
REMOVE-SINTRAN-COMMAND

Format:
*SET-COMMAND-PROTECTION <command>,<protection>,<memory?>,<save area?>

Parameters:

<command>	any command or reentrant subsystem name or ND-500 standard domain name.
<protection>	select a user category. PUBLIC permits the command for all users. RT permits the command for user RT and user SYSTEM. SYSTEM permits the command for user SYSTEM only.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

Rules:
1. File system commands can only be changed to be restricted for users RT and/or SYSTEM.

*SET-COLDSTART-MODE-FILE

Function:
Set parameters for commands to be executed at cold start.

Related commands:
Related SINTRAN Service Program commands: RESET-COLDSTART-MODE-FILE
Related SINTRAN III commands: COLD-START

Format:
*SET-COLDSTART-MODE-FILE <parameters to the enter-directory command when entering main directory>,
<coldstart input file>,
<coldstart output file>

Parameters:

<parameters to the enter-directory command>
: this parameter contains directory name, disk name and unit and/or subunit numbers.

<coldstart input file>
: name of mode file to be run at cold start.

<coldstart output file>
: name of output file for mode file to be run at cold start.

*SET-LAMU-CONSTANTS

Function:
Set the system constants of the LAMU system, that is, the number of LAMUs per RT-program and the total number of LAMUs.

Related commands:
Related SINTRAN Service Program commands: LIST-LAMU-CONSTANTS

Format:
*SET-LAMU-CONSTANTS <number of LAMUs per RT-program>,
<total number of LAMUs>

Parameters:

<number of LAMUs per RT-program>	the number of LAMUs available for each RT-program.
<total number of LAMUs>	the maximum number of LAMUs in the system.

Rules:
1. The system needs to be restarted for the command to take effect.

*SET-MAX-ENTER-COUNT

Function:
Set the maximum number of consecutive unsuccessful attempts a user can make to log in on a terminal. If the number is exceeded, the terminal will be disabled until the command CLEAR-ENTER-COUNT is given.

Related commands:
Related SINTRAN Service Program commands: CLEAR-ENTER-COUNT

Format:
*SET-MAX-ENTER-COUNT <logical device number>,<enter count wanted?>
[,<max enter count>],<memory?>,<save area?>

Parameters:

<logical device number>	the logical device number of the terminal, batch processor or communication device.
<enter count wanted?>	answer YES or NO to whether you want to use the enter count facility.
<max enter count>	the maximum number of consecutive unsuccessful attempts to enter that can be made on the specified terminal.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*SET-SPOOLING-DEVICE-NUMBER

Function:
Connect a spooling index to a logical device number.

Format:
*SET-SPOOLING-DEVICE-NUMBER <spooling index>,<logical device number>,
<memory?>,<save area?>

Parameters:

<spooling index>	the octal index of the spooling device in the system. The range is determined at system generation time.
<logical device number>	the octal logical device number of the printer to be used for spooling.
<memory? and save area?>	select the areas to be modified by answering each question with YES or NO. The default answer is NO.

*START-GPIB

Function:
Start a GIB controller.

Related commands:
Related SINTRAN Service Program commands: STOP-GPIB

Format:
*START-GPIB <controller no.>

Parameters:
<controller no.> GPIB controller.

*START-XMSG

Function:
Fix the XMSG PAGING OFF and BUFFER AREA segments in physical memory and start the routine XROUT. See the SINTRAN III Communication Guide (ND-60.134).

Related commands:
Related SINTRAN Service Program commands: STOP-XMSG

Format:
*START-XMSG

Parameters:
None.

Rules:
1. The command should be performed before starting any COSMOS products, preferably in the batch file LOAD-MODE:SYMB.

*STOP-GPIB

Function:
Stop a GIB controller.

Related commands:
Related SINTRAN Service Program commands: START-GPIB

Format:
*STOP-GPIB-BUFFERSIZE <controller no.>

Parameters:
<controller no.> GPIB controller.

*STOP-XMSG

Function:
Disable the XMSG monitor call and release the physical memory space.

Related commands:
Related SINTRAN Service Program commands: START-XMSG

Format:
*STOP-XMSG

Parameters:
None.

*SWAP-DIRECTORY-ENTRIES

Function:
Exchange two directories in the directory table.

Format:
*SWAP-DIRECTORY-ENTRIES ‹directory index 1›,‹directory index 2›,
‹save area?›

Parameters:

‹directory index 1›	the index of the first directory, to be exchanged with:
‹directory index 2›	the index of the second directory. Directory indices are listed by the command @LIST-DIRECTORIES-ENTERED.
‹save area?›	answer YES or NO to whether the SAVE AREA should be affected. Default is NO.

Rules:
1. This command has no effect on SINTRAN III/VSX version K standard systems. On these systems, the directory index is determined from the sequence the directories are defined (either by @ENTER-DIRECTORY or by @DEFINE-MASS-STORAGE-UNIT).

*SWAPPING-LOG

Function:
Inform on swapping activity for the system.

Format:
*SWAPPING-LOG

Subcommands:
The following subcommands are available:

START-SWAPPING-LOG <log swapping for specific program (default: yes)>
[,<RT name>]

Start swapping-log for one specific program, or for all programs.

STOP-SWAPPING-LOG
Stop the current logging. The log may be restarted by:

RESTART-SWAPPING-LOG

READ-SWAPPING-LOG
Print the current contents of the log. This command may be given both during the log (before STOP-SWAPPING-LOG), and after.

SWAPPING-LOG <log swapping for a specific program (default is yes)>
[,<rt name>],
<interval in seconds (default is 60 secs)>

Print swapping log information at specified intervals, default 60 seconds. This command must be terminated by pressing <escape>.

If either of the commands START-SWAPPING-LOG or SWAPPING-LOG has been used, they cannot be used again before the command STOP-SWAPPING-LOG is given.

HELP

EXIT

Rules:
1. The Swapping Log is an option to be ordered on the SINTRAN III order form.

CHAPTER 3

ND-500 MONITOR COMMANDS

3. ND-500 MONITOR COMMANDS

The ND-500 Monitor is the user interface to the operating system on the ND-500. The ND-500 Monitor is started as an ordinary subsystem running under SINTRAN III and will execute commands in much the same way as other subsystems.

The ND-500 Monitor is usually entered by giving:

@ND-500-MONITOR

But the name may vary. The prompt "N500" is used to indicate that the monitor is ready to accept subcommands. You return to SINTRAN III by the EXIT command. The HELP command lists the available commands.

Note that pressing escape while in ND-500 Monitor will only get you the monitor back.

To make it simple to distinguish the commands from SINTRAN III, SINTRAN-Service-Program and the ND-500 Monitor, we use a small s in front of the commands to the ND-500 monitor.

5 ABORT-BATCH-ON-ERROR

Function:
Toggle flag to tell if a batch or mode job should be terminated when an error occurs.

Format:
ABORT-BATCH-ON-ERROR <ON/OFF>

Parameters:

<ON/OFF>	ON if batch jobs should terminate if an error occurs, OFF if only the current command should be terminated.

Rules:

1. If an error occurs in a batch or mode job and this command has been executed with the parameter OFF, only the current command is aborted and the next command in the batch input file is executed. If the command has not been executed or executed with the parameter ON, the entire job is terminated. The error message will be written on the batch output file.
2. This command may be specified several times, switching the batch termination on and off before and after critical sequences.

5 ABORT-PROCESS

Function:
Abort a process which cannot be stopped in any other way.

Related commands:
Related ND-500 Monitor commands: LOGOUT-PROCESS
Related SINTRAN III commands: ABORT
STOP-TERMINAL

Format:
ABORT-PROCESS <process number>

Parameters:
<process number> the number of a currently running process.

Rules:
1. The process specified will be aborted and its reserved resources released. The user will be forced to leave the monitor.
2. This command should be used with care, as no clean-up of the system tables and queues is performed. It should be employed only in case of a system hangup, where there is no other way to stop a process.
3. This command is restricted to user SYSTEM.

5 ATTACH-PROCESS

Function:
Attach to a specific process to communicate with it.

Format:
ATTACH-PROCESS <process number>

Parameters:
<process number> the number of the process with which communication is desired. Default is the current process connected to the terminal.

Rules:
1. Subsequent commands LOOK-AT, RUN etc will be routed to the specified process. The process should not be connected to any other terminal.
2. This command is currently used for debugging purposes, attaching to the swapper process.
3. This command is restricted to user SYSTEM.

5 AUTOMATIC-ERROR-MESSAGE

Function:
Force output of error messages from monitor calls.

Related commands:
Related ND-500 Monitor commands: RESET-AUTOMATIC-ERROR-MESSAGE

Format:
AUTOMATIC-ERROR-MESSAGE

Parameters:
None.

Rules:
1. Error messages caused by monitor calls will automatically be written to the output device. MON 64 (ERMSG) will then be unnecessary after every monitor call in the ND-500.

5 BRANCH-TRACE

Function:
Initiate tracing of the program counter upon branch trap conditions. The tracing is written to the output device.

Related commands:
Related ND-500 Monitor commands: CALL-TRACE

Format:
BRANCH-TRACE <start address>,<min. trace>,<max. trace>

Parameters:

<start address>	the start address of the program to be traced.
<min. trace>	the lower limit of program area to be traced.
<max. trace>	the upper limit of program area to be traced.

Rules:
1. If <lower address> and <upper address> are specified, tracing is performed only within the specified area. Branches executed outside this area are not listed. If the parameters are omitted, all branches will be listed.

5 BREAK

Function:
Set a breakpoint at the specified address.

Format:
BREAK <address>,[<count>],[<command>]

Parameters:

<address>	the program address where a breakpoint is to be set.
<count>	one plus the number of times the breakpoint should be ignored before a break occurs. Default value is 1.
<command>	command to be executed on a break.

Rules:

1. If a positive number is specified for the count argument, the breakpoint will be passed <count>-1 times before reaction.
2. When the breakpoint is reached, execution terminates and control is passed to the command processor.
3. After a breakpoint has been reached, program or data locations or the registers may be displayed or modified. The display format may be changed at will. Control flow or data location tracing may be initiated and terminated.
4. The next instruction to be executed is by default the instruction pointed to by the P register, but this may be overridden by the GO command or the optional <execution start> parameter of the STEP command.
5. When execution is continued by the STEP or CONTINUE command, the original instruction is restored and a single step is performed followed by a re-insertion of the breakpoint. If a non-default execution start address was selected, the original instruction in the break address is not executed, and the breakpoint instruction is retained.
6. It is possible to set new breakpoints as long as the Monitor has memory space to store information about them. New breakpoints are given a number for identification purposes.

5 CACHE-MODE

Function:
Change the way instructions and/or data are fetched from memory.

Format:
CACHE-MODE <program cache mode>,<data cache mode>

Parameters:

<program cache mode>	select cache mode for instruction fetch.
<data cache mode>	select cache mode for data.

The following options are available:

NORMAL	: use cache when possible, otherwise memory
CACHE-ONLY	: use cache only
MEMORY-ONLY	: bypass cache

Rules:
1. When using this command, the micro-program will stop and must be restarted.
2. This command is restricted for user SYSTEM only.

5 CALL-TRACE

Function:
Initiate tracing of the program counter upon call trap conditions. The tracing is written to the output device.

Related commands:
Related ND-500 Monitor commands: BRANCH-TRACE

Format:

CALL-TRACE <start address>,<min. trace>,<max. trace>

Parameters:

<start address>	the start address of the program to be traced
<min. trace>	the lower limit of program area to be traced.
<max. trace>	the upper limit of program area to be traced.

Rules:

1. If <min. trace> and <max. trace.> are specified, tracing is performed only within the specified area. Calls executed outside this area are not listed. If the parameters are omitted, all calls will be listed.
2. All routine calls within the specified area, including run-time library routines, are traced.

5 CC

Function:
Whatever follows on the same line as the CC command is ignored and treated as a comment. This command is primarily useful for making comments in a batch or mode job.

Related commands:
Related SINTRAN III commands: CC
Related SINTRAN Service Program commands: CC

Format:
CC ‹text›

Parameters:
‹text› any text.

5 CHANGE-CPU

Function:
Change current CPU in a multi-CPU system (ND-580).

Format:
CHANGE-CPU <CPU number>

Parameters:

<CPU number>	number of the ND-500 CPU in a multi-CPU system (ND-580) which will execute the commands (programs) following.

5 CLOSE-FILE

Function:
Closes a file and disconnects the file number.

Related commands:
Related ND-500 Monitor commands: OPEN-FILE
Related SINTRAN III commands: CLOSE-FILE

Format:
CLOSE-FILE <connect number>

Parameters:
<connect number> the connect number of a file open from a ND-500 program or through the OPEN-FILE command.

<connect number> > 0 close the file open with the given number
= -1 close all files temporarily open
= -2 close all open files
= -3 close all files open from the ND-500 program or by the OPEN-FILE command in the Monitor.

5 COMPARE-CONTROL-STORE

Function:
Compare micro program currently loaded in the control store with the micro program stored on a file.

Related commands:
Related ND-500 Monitor commands: LOAD-CONTROL-STORE

Format:
COMPARE-CONTROL-STORE <file name>,<start address>,<number of words>,
<max. number of faults>

Parameters:

<file name>	the name where the micro program is stored. Default is CONTROL-STORE:DATA.
<start address>	the octal address where the comparison should start. Default is 0.
<number of words>	the number of words to be compared. Default is 20000_8 (entire control store).
<max. number of faults>	the maximum number of differences accepted between the file contents and the loaded micro program before the comparison is aborted. Default is 7 (the number of messages that will fit on a VDU screen).

Rules:
1. This command is restricted to user SYSTEM.
2. The current ND-500 micro program is compared to the micro program residing on the the specified file, <file name>. The comparison starts at the specified micro-program address, <start address>. This word is compared to the first word on the file, etc. Four words will be modified after the microcode is loaded and will always be different.
3. Upon difference, the address and the two differing control-store words are written to the output device. The comparison lasts until <number of words> are compared or <max. number of faults> are found.

5 CONTINUE

Function:
Continue execution of a program.

Format:
CONTINUE

Parameters:
None.

Rules:
1. The execution is restarted at the current program counter. There is one exception: if a program has stopped normally (by MON 0 or a stack underflow trap) the execution is started at the original start address.
2. If the execution has stopped because of a breakpoint, the original instruction will be restored. If the breakpoint is a permanent breakpoint, a single instruction is performed, and the original instruction is replaced by a breakpoint instruction before the execution is started.
3. If the execution has stopped because an escape character was typed, the execution will be restarted where it stopped. Files will remain opened after an escape, and the program will continue as if nothing had happened.

5 DEBUG-PLACE

Function:
Place a domain and allow temporary patches to be made before execution.

Related commands:
Related ND-500 Monitor commands: PLACE-DOMAIN

Format:
DEBUG-PLACE <domain name>

Parameters:
<domain name> the name of an existing domain.

Rules:
1. The program segments as well a the data segments will be copied to the swap file. This allows patches to be done to the program segment. Patches are not permanent. In order to do permanent patches, LOOK-AT-PROGRAM must be used. Otherwise, this command works exactly like PLACE-DOMAIN.

5 DEBUG-STATUS

Function:
List information about previously-used debug commands. Enabled traps, breakpoints, and the use of the LL and HL registers are listed.

Format:
DEBUG-STATUS

Parameters:
None.

5 DEBUG-SWAPPER

Function:
Debug the ND-500 Swapper.

Format:
DEBUG-SWAPPER <ON/OFF>

Parameters:
<ON/OFF> set debugging mode on or turn it off.

Rules:
1. This command is restricted to user SYSTEM.
2. It is intended for internal use by ND.

5 DEBUGGER

Function:
Start the Symbolic Debugger.

Format:
DEBUGGER [<domain name>]

Parameters:
<domain name> the name of the domain to be debugged. Default is the domain currently in memory.

Rules:
1. The symbolic debugger is started with the specified or current domain as the system to be debugged. The commands of the symbolic debugger are documented fully in the manual Symbolic Debugger User Guide, ND-60.158.
2. For symbolic names to be available the program must have been compiled with the DEBUG-MODE option in the compiler turned ON. If the DEBUG-MODE option was off, the symbolic debugger may be used, but no symbolic references can be made.
3. The debugger is located on the files (SYSTEM)DEBUGGER:PSEG and (SYSTEM)DEBUGGER:DSEG. When started, it will execute as segment number 26D in the user domain; this segment number must not be used by the domain to be debugged.
4. The DEBUGGER command may be issued at any time during execution. The normal execution may be interrupted by pressing the "escape" key, after which the debugger is started and execution resumed from the interrupt point, now in debug mode.

5 DEFINE-MACRO

Function:
Define a macro (a collection of commands executed in a specified sequence and called as if it was a single, user-defined, command).

Related commands:
Related ND-500 Monitor commands: ERASE-MACRO
EXECUTE-MACRO
LIST-MACRO

Format:
DEFINE-MACRO <macro name>
<macro body>
END-MACRO

Subcommands:
The following commands may be used in a macro body:

IF-ERROR-FULL-STOP
Terminate execution of all macros if an error occurs.

IF-ERROR-MACRO-STOP
Terminate execution of the current macro only if an error occurs.

LIST
Resume listing of the macro expansion.

NOLIST
Suppress listing of the macro expansion.

PARAMETER <parameter name>,<default value>,<prompting text>
Define a parameter substituted when the macro is executed. The parameters are:

<parameter name>	name of the parameter used in the macro body.
<default value>	default value to be used when the parameter is omitted.
<prompting text>	parameter prompt text.

If spaces or commas should be part of the parameters <parameter name>, <default value> or <prompting text>, they may be enclosed in apostrophes. Otherwise, apostrophes are permitted but not required.

Rules:

1. Macros defined by this command are temporary. Permanent macros may be prepared by a text editor on a file. The file must be of type :MACR.
2. Every line following the DEFINE-MACRO command is taken as the macro body until the END-MACRO is encountered. END-MACRO must be written on a new line.
3. It is possible within the macro body to define parameters that are replaced by the actual parameters when the macro is called. A parameter is defined by the parameter command in the macro body. If spaces or commas should be part of the ‹parameter name›,‹default value› or ‹prompting text›, they may be enclosed in apostrophes. Otherwise, apostrophes are permitted but not required.
4. The first actual parameter supplied in the macro call line replaces ‹parameter name› used in the first PARAMETER definition; the second actual parameter replaces ‹parameter name› used in the next PARAMETER definition and so on. Excessive parameters are ignored.
5. When the macro is called, the parameters which are not specified are asked for by typing the prompting text on the communication device. If the actual parameter is empty, the default value is used when expanding the macro.
6. A monitor call, MACROE (MON 400), for signalling error return from a program to the Monitor is implemented. There is a flag which is raised when the executing program is terminated by this monitor call or by a trap. The error flag is set to zero when a program is terminated normally.
7. Macro subcommands may not be abbreviated.

s DEFINE-MEMORY-CONFIGURATION

Function:
Define the physical memory configuration to the operating system.

Format:
DEFINE-MEMORY-CONFIGURATION <ND-100 page no. for ND-500 phys. addr. 0>

Parameters:
<ND-100 page no. for ND-500 phys. addr. 0>
the ND-100 page number for which the ND-500 physical address is zero, that is, the difference between the ND-500 and ND-100 physical addresses for the same physical cell in common memory.
Further definitions of the size and status of one (or more) memory parts of the system is given as subcommands to this command.

Subcommands:
The subcommands will request the information

- Size in number of pages for the memory part
- Does ND-100 have access to the part?
- Does ND-500 have access to the part as program (P)?
- Does ND-500 have access to the part as data (D)?
- Is this the last memory part?

Default is access for both CPUs, both P and D for ND-500.

Rules:
1. Normally, the DEFINE-MEMORY-CONFIGURATION command is not required unless it is necessary to define the memory configuration differently from the actual physical configuration. This may be the case on multi-CPU systems if parts of memory is to be reserved for one particular CPU and regarded as invisible to other CPUs.
2. The DEFINE-MEMORY-CONFIGURATION does not survive a warm start.
3. This command is restricted to user SYSTEM.

5 DEFINE-STANDARD-DOMAIN

Function:
Define a domain in the reentrant subsystem table, which means that it may be started without going through the ND-500 monitor.

Related commands:
Related ND-500 Monitor commands: DELETE-STANDARD-DOMAIN
Related SINTRAN III commands: LIST-REENTRANT

Format:
DEFINE-STANDARD-DOMAIN <standard domain name>,<domain name>

Parameters:

<standard domain name>	the name to be used when calling the domain. May be the same as the domain name, but may not include user name. It should not be a legal abbreviation of a monitor command.
<domain name>	name of an already loaded domain, belonging to any user.

Rules:
1. When a user issues <standard domain name>, or an unambiguous abbreviation of it, as a command, the domain <domain name> will be started. If the user has a private domain that would otherwise have been started, the name must include the user name in parentheses.
2. The files comprising the <domain name> should have public read access.
3. DEFINE-STANDARD-DOMAIN is permitted for user SYSTEM only.

5 DEFINE-SWAP-FILE

Function:
Define a file as a swap file for ND-500 segments.

Related commands:
Related ND-500 Monitor commands: DELETE-SWAP-FILE
LIST-SWAP-FILE-INFO

Format:
DEFINE-SWAP-FILE <file name>

Parameters:
<file name> the name of an existing contiguous file.

Rules:
1. The file specified is defined as a swap file for ND-500 segments. The file must be a contiguous file, and must be created before this command is used. The file may belong to any user, but user SYSTEM must have at least read and write access (RW) to it.
2. There may be several swap files in the system; the Monitor will assign a swap area to a process on whichever file has sufficient free space left.
3. Definition of swap files will survive a warm start, but not a cold start.
4. This command is restricted to user SYSTEM.

5 DELETE-STANDARD-DOMAIN

Function:
Remove the definition of a domain from the reentrant subsystem table.

Related commands:
Related ND-500 Monitor commands: DEFINE-STANDARD-DOMAIN
Related SINTRAN III commands: LIST-REENTRANT

Format:
DELETE-STANDARD-DOMAIN <name>

Parameters:
<name> name of an existing standard domain

Rules:
1. The specified standard domain is deleted from the name table of standard domains. The domain will not be deleted, but will no longer be a standard domain.
2. DELETE-STANDARD-DOMAIN may not be issued while the standard domain is in use.
3. DELETE-STANDARD-DOMAIN is permitted for user SYSTEM.

5 DELETE-SWAP-FILE

Function:
Remove the definition of a file as swap file for ND-500 segments.

Related commands:
Related ND-500 Monitor commands: DEFINE-SWAP-FILE
LIST-SWAP-FILE-INFO

Format:
DELETE-SWAP-FILE <file name>

Parameters:
<file name> the name of a file previously defined as an ND-500 swap file.

Rules:
1. The specified file is de-allocated as an ND-500 swap file. The file is not deleted from the file directory, but will no longer be used by the Monitor as swap area for ND-500 segments.
2. This command is restricted to user SYSTEM.

5 DOMAIN-STATUS

Function:
List detailed status of a domain.

Related commands:
Related ND-500 Monitor commands: LIST-DOMAIN

Format:
DOMAIN-STATUS <domain name>

Parameters:
<domain name> the name of a domain.

5 DUMP-MACRO

Function:
Write the definition of a temporary macro (defined by DEFINE-MACRO) to a file.

Format:
DUMP-MACRO <macro name>

Parameters:
<macro name> the name of an existing temporary macro.

Rules:
1. The named temporary macro will be written to a file with the name of the macro, that is, the macro is made permanent and can at a later time be executed by using the macro name as a command. If the file does not exist, it will be created. The default type of the file is :MACR.

5 DUMP-PHYSICAL-SEGMENT

Function:
Write a copy of a segment to a file.

Format:
DUMP-PHYSICAL-SEGMENT <file name>,<physical segment number>

Parameters:

<file name>	the name of the file to receive the dump.
<physical segment number>	physical segment number of the segment to be dumped.

Rules:
1. This command is restricted to user SYSTEM.
2. It is intended for debugging purposes.

5 DUMP-SWAPPER

Function:
Write a copy of the ND-500 Swapper to a file.

Format:
DUMP-SWAPPER <file name>

Parameters:
<file name> the name of the file to receive the dump.

Rules:
1. The ND-500 Swapper's data segment will be dumped on the specified file.
2. This command is restricted to user SYSTEM.
3. It is intended for debugging purposes.

5 ENABLED-TRAPS

Function:
Lists the contents of the own trap-enable register (OTE) of the current domain and the mother trap-enable register.

Format:
ENABLED-TRAPS

Parameters:
None.

Rules:
1. Enabled traps, either in the current domain or in ND-100, are listed on the output device.

5 ERASE-MACRO

Function:
Erase a temporary macro.
Related ND-500 Monitor commands: DEFINE-MACRO
LIST-MACRO

Format:
ERASE-MACRO <macro name>...

Parameters:
<macro name> the name of an existing temporary macro.

Rules:
1. The named temporary macros are erased. Permanent macros are erased through the SINTRAN III command @DELETE-FILE <macro name>:MACR.

5 EXECUTE-MACRO

Function:
Execute a macro.

Related commands:
Related ND-500 Monitor commands: DEFINE-MACRO
LIST-MACRO

Format:
EXECUTE-MACRO <macro name>,[<parameters>]...

Parameters:

<macro name>	the name of an existing (temporary or permanent) macro.
<parameter>	actual parameter to replace a formal parameter in the macro. If several parameters are supplied they are separated by comma or space. The parameter may contain any character except space or comma.

Rules:

1. The macro with the specified name is processed. Formal parameters are substituted with actual parameters. If the actual parameters are not supplied, they are prompted for with <leading text> specified in the PARAMETER definition (see the DEFINE-MACRO command).
2. The words EXECUTE-MACRO can be left out. The procedure used for looking up a command or macro is as follows:

   - A search is made in the list of basic commands. If a match is found, the corresponding command is executed.

   - If no command is found, the list of standard domains are searched. If there is any such standard domain, it is started.

   - If the search among the standard domains was unsuccessful, a search is made in the domains of the current user. If a domain with the specified name is found, it is started as with a RECOVER-DOMAIN command.

   - If no domain with the specified name is found, the domains of user SYSTEM are searched. If a domain with a matching name is found, the domain is started.

   - If no domain is found, the specified string is assumed to be a macro name, and a temporary macro is searched for. If any matching macro is found, it is processed.

   - If no match is found among the temporary macros, the name is assumed to be the name of a permanent macro. If a file with the specified string as name and default type :MACR exists, it is taken as a permanent macro and processed. The file

system will ensure that if a file with the specified name is not found under the current user, the directory of user SYSTEM is searched.

- If none of the above lead to a successful match, the error message NO SUCH COMMAND OR DOMAIN is printed on the communication device, and no further action will result from the entered input.

3. Temporary macros may be defined within permanent macros. Such temporary macros will be erased when the processing of the permanent macro is finished.
4. If a macro is given the name of, or a legal abbreviation of a command, a standard domain or a domain belonging to the current user or SYSTEM, EXECUTE-MACRO may not be left out.
5. Input to the program may not be supplied in a macro body.

5 EXHIBIT-ADDRESS

Function:
Define a breakpoint in a program.

Format:
EXHIBIT-ADDRESS <program address>,<data address>,<data type>

Parameters:

<program address>	the instruction that causes the specified variable to be displayed when executed.
<data address>	the address of the variable to be displayed.
<data type>	BYTE, HALFWORD, WORD, FLOAT or DOUBLEFLOAT, indicating the size of the variable to be displayed. Default is WORD.

Rules:

1. With this command a breakpoint is set in the specified <program address>. When the execution reaches this breakpoint, the <data address> and its contents are written to the output device. The data type of the variable may be specified.
2. Several variables may be traced simultaneously with this command, as long as the Monitor has room for information about the breakpoints.

5 EXIT

Function:
Exit from the ND-500 Monitor.

Format:
EXIT

Parameters:
None.

Rules:
1. Returns to the SINTRAN III command processor.
2. In the Monitor this command releases the allocated ND-500 resources. If the buffer used by the histogram and logging commands was reserved, it will be released.
3. This command is also used to return from the LOOK-AT commands.

5 EXTRA-FORMAT

Function:
Select format on output from commands.

Related commands:
Related ND-500 Monitor commands: MAIN-FORMAT

Format:
EXTRA-FORMAT <format> ...

Parameters:
<format> one of the formats listed below or an unambiguous abbreviation of one of them.

Rules:
1. Set format of output from commands displaying memory or segment contents. The locations may be displayed in various formats in addition to the format specified in the MAIN-FORMAT command. Data and instructions are then displayed in both the format(s) specified in this command as well as the main format. The alternatives are:

   BYTE The displayed location is divided into bytes and they are displayed in the main format.

   HALFWORD Similar to BYTE, except halfwords are displayed. This is effective only when displaying words or doublewords as main format.

   WORD Similar to BYTE, except words are displayed. This is effective only when displaying doublewords as main format.

   FLOAT Single precision floating point format.

   DOUBLEFLOAT Two consecutive words are displayed in double precision floating point format.

   ASCII ASCII format.

   OCTAL Number base for BYTE, HALFWORD and WORD display.

   HEXADECIMAL Number base for BYTE, HALFWORD and WORD display.

   DECIMAL Number base for BYTE, HALFWORD and WORD display.

5 FIX-SEGMENT-ABSOLUTE

Function:
Fix a segment in a particular part of physical memory.

Related commands:
Related ND-500 Monitor commands: FIX-SEGMENT-CONTIGOUS
FIX-SEGMENT-SCATTERED

Format:
FIX-SEGMENT-ABSOLUTE <segment number>,<type(P or D)>,<lower address>,
<upper address>,<physical address>

Parameters:

<segment number>	the number of an existing segment.
<type(P or D)>	P or D, signifying program or data segment.
<lower address>	the lower boundary of the area to be fixed. Default is the lowest address on the segment.
<upper address>	the upper boundary of the area to be fixed. Default is the uppermost address of the segment.
<physical address>	the address in physical memory where the segment should start.

Rules:
1. <lower address> will be rounded down, <upper address> will be rounded up to the nearest page boundary.
2. The specified segment or part of segment is declared to be allocated in a contiguous area in memory, starting at the physical address specified. It will remain in memory until explicitly released through the Monitor command UNFIX-SEGMENT.

5 FIX-SEGMENT-CONTIGOUS

Function:
Fix a segment contiguously in physical memory.

Related commands:
Related ND-500 Monitor commands: FIX-SEGMENT-ABSOLUTE
FIX-SEGMENT-SCATTERED

Format:
FIX-SEGMENT-CONTIGOUS <segment number>,<type(P or D)>,
<lower address>,<upper address>

Parameters:

<segment number>	the number of an existing segment.
<type(P or D)>	P or D, signifying program or data segment.
<lower address>	the lower boundary of the area to be fixed. Default is the lowest address on the segment.
<upper address>	the upper boundary of the area to be fixed. Default is the uppermost address of the segment.

Rules:
1. <lower address> will be rounded down, <upper address> will be rounded up to the nearest page boundary.
2. The segment or part of segment specified is declared to be allocated in a contiguous area of memory, and to be retained in memory until it is explicitly released through the Monitor command UNFIX-SEGMENT.

5 FIX-SEGMENT-SCATTERED

Function:
Fix a segment in physical memory.

Related commands:
Related ND-500 Monitor commands: FIX-SEGMENT-ABSOLUTE
FIX-SEGMENT-CONTIGOUS

Format:
FIX-SEGMENT-SCATTERED <segment number>,<type(P or D)>,
<lower address>,<upper address>

Parameters:

<segment number>	the number of an existing segment.
<type(P or D)>	P or D, signifying program or data segment.
<lower address>	the lower boundary of the area to be fixed. Default is the lowest address on the segment.
<upper address>	the upper boundary of the area to be fixed. Default is the uppermost address of the segment.

Rules:
1. <lower addr> will be rounded down, <upper addr> will be rounded up to the nearest page boundary.
2. The segment or part of segment specified is declared to be retained in memory after it has been loaded for execution, until it is explicitly released through the Monitor command UNFIX-SEGMENT.
3. The pages belonging to the segment may be scattered throughout physical memory.

5 GET-FLAG

Function:
Write the output flag (32-bit word) of a process.

Related commands:
Related ND-500 Monitor commands: SET-FLAG

Format:
GET-FLAG <process number>

Parameters:
<process number> process number of a process.

Rules:
1. The output flag (32-bit word) of the specified process is written on the output device in the current main format.
2. If the specified process is connected to a terminal, this command must be given from another terminal.

5 GIVE-N500-PAGES

Function:
Reserve part of common memory for use by the ND-500.

Related commands:
Related ND-500 Monitor commands: TAKE-N500-PAGES

Format:
GIVE-N500-PAGES <no. of pages>

Parameters:
<no. of pages> the number of pages to be used by ND-500.

Rules:
1. This command is restricted to user SYSTEM.
2. The specified number of pages are taken from the ND-100 and released to the ND-500. If ND-500 already has pages, the specified number of pages is added to those ND-500 had previously.
3. All system tables are located in memory belonging to the ND-100. Thus, the number of pages specified will all be available for user processes.

5 GO

Function:
Starts the execution of an ND-500 program at the specified address.

Format:
GO <address>

Parameters:
<address> an address within the domain.

5 GUARD

Function:
Define a breakpoint as break on reference to a location.

Format:
GUARD <address>,<datatype>,[<lower limit>,[<upper limit>]]

Parameters:

<address>	the address of the variable to be guarded (lowermost byte)
<datatype>	BYTE, HALFWORD, WORD, FLOAT or DOUBLEFLOAT or abbreviation of one of these, indicating the size of the data element to be traced.
<lower limit>	the lower limit of the legal value range or upper limit of prohibited range.
<upper limit>	the upper limit of the legal value range or lower limit of prohibited range.

Rules:

1. If no limits are given, any modification of the location specified in this command causes a guard violation error and gives control back to the command processor whenever the specified "guard area" is modified. The "guard area" starts at <address>, and <datatype> determines the size, from one to eight bytes.
2. If one or two limits (forming a legal range) are specified, the new value of the guard area is checked against this range. If the value is outside the range, it is a conditional guard violation and the control is transferred to the command processor. If <lower limit> ≤ <upper limit>, then the permitted range is <lower limit> ≤ n ≤ <upper limit>. If <lower limit> >,<upper limit> the new value n is legal if n < <upper limit> or n >,<lower limit>.
3. If the variable has a value outside the permitted range at the time the command is given, this is not trapped. The check is made on assignments (store operations) to the variable only.
4. If only <limit1> is specified, then <limit2> is set equal to <limit1>, allowing the variable to take the specified value only.
5. This command will cause a considerable load on the ND-100 if frequent modifications of the guarded area are made.
6. This command uses the LL and HL registers exclusively to delimit the start address and uppermost address of the guarded variable. The previous command (GUARD or TRACE) using these registers will be discontinued.

5 HELP

Function:
Show available commands in the ND-500 Monitor.

Related commands:
Related SINTRAN III commands: HELP
Related SINTRAN Service Program commands: HELP

Format:
HELP <command name>

Parameters:
<command name> any command abbreviation, ambiguous or unambiguous. Default is all commands available.

Rules:
1. All commands matching <command name> are written with their parameters on the output device. Parameters enclosed in brackets [] are optional parameters that will not be prompted for if not supplied.

5 INSERT-IN-TIME-SLICE

Function:
Set a process to be time sliced.

Related commands:
Related ND-500 Monitor commands: REMOVE-FROM-TIME-SLICE

Format:
INSERT-IN-TIME-SLICE <process number>,<time slice class>

Parameters:
<process number> process number of a process.
<time slice class> the selected time slice class.

Rules:
1. This command is restricted to user SYSTEM.

5 INSPECT-DUMP

Function:
Set the monitor in inspect mode to look at a dump of the ND-500 Swapper.

Format:
INSPECT-DUMP <file name>

Parameters:
<file name> file name of a file containing a dump of the ND-500 Swapper's data segment.

Rules:
1. In inspect mode, the commands LOOK-AT-DATA, LOOK-AT-STACK, LOOK-AT-RELATIVE, LOOK-AT-REGISTER and LIST-TABLE will relate to the file specified.
2. This command is restricted to user SYSTEM.

5 LIST-ACTIVE-PROCESSES

Function:
List names of all active processes.

Related commands:
Related ND-500 Monitor commands: PROCESS-STATUS

Format:
LIST-ACTIVE-PROCESSES

Parameters:
None.

Rules:
1. The active processes and their process names are written to the output device.
2. This command will also list processes not owned by a terminal background program.

5 LIST-ACTIVE-SEGMENTS

Function:
List all segments used by a process.

Format:
LIST-ACTIVE-SEGMENTS <process number>

Parameters:
<process number> the number of an active process.

Rules:
1. This command will list all the segments currently in use by a process, the correspondance between logical and physical segments and the name of the process.
2. The <process number> parameter may also take the values OWN or -1, indicating the user's own process, ALL or -2 indicating all active processes.

s LIST-DOMAIN

Function:
List existing domains.

Related commands:
Related ND-500 Monitor commands: DOMAIN-STATUS

Format:
LIST-DOAMIN <domain name>

Parameters:
<domain name> the name or abbreviation of names to be listed. Default is all domains belonging to the current user.

Rules:
1. Writes all domains with names matching <domain name> and their start addresses (if any) on the output device.

5 LIST-EXECUTION-QUEUE

Function:
List processes in the ND-500 execution queue;

Related commands:
Related ND-500 Monitor commands: LIST-TIME-QUEUE

Format:
LIST-EXECUTION-QUEUE <interval>

Parameters:
<interval> time in seconds between each report

Rules:
1. The currently executing program, its priority, the queue of jobs for the ND-500 and their priorities are listed on the output device every <interval> seconds.

5 LIST-MACRO

Function:
List the definitions of one or more macros.

Format:
LIST-MACRO <macro name>...

Parameters:
<macro name> a macro name or abbreviation of names of the macros to be listed. Default is all macros defined.

Rules:
1. The names and contents of the macros with names matching the specified name are listed on the output device.
2. Only temporary macros are listed. Permanent macros may be listed by the SINTRAN III command @LIST-FILES <macro name>:MACR, TERMINAL.

5 LIST-OPEN-FILES

Function:
List files open from the ND-500.

Format:
LIST-OPEN-FILES

Parameters:
None.

Rules:
1. Lists all files opened from a ND-500 program or by the OPEN-FILE command in the Monitor. The list will appear on the output device.
2. Files opened locally in the ND-100 will not be listed.

5 LIST-PROCESS-TABLE-ENTRY

Function:
List the process table entry for a process.

Format:
LIST-PROCESS-TABLE-ENTRY <process number>

Parameters:
<process number> the number of an active process.

Rules:
1. The process description of the specified process is printed on the specified file. OWN or -1 indicates the user's own process, ALL or -2 indicates all active processes.
2. The returned information includes the process segment, the program and data capabilities.

5 LIST-SEGMENT-TABLE-ENTRY

Function:
List the segment table entry for a segment.

Format:
LIST-SEGMENT-TABLE-ENTRY <segment number>

Parameters:
<segment number> a physical segment number.

Rules:
1. The information in the physical segment table will be printed on the output device. This information includes the segment name and type, the owner process, the size of the segment, the segment attributes and allocation in the swap file, and the current use of the segment by the active processes.
2. <segment number> equal to ALL or -1 indicates all segments.

5 LIST-STANDARD-DOMAINS

Function:
List all domains defined as standard domains and their segments.

Related commands:
Related ND-500 Monitor commands: DEFINE-STANDARD-DOMAIN
DELETE-STANDARD-DOMAIN

Format:
LIST-STANDARD-DOMAINS

Rules:
1. The names of all standard domains and the segments comprising them are listed on the output device.
2. This command is permitted for all users.

5 LIST-SWAP-FILE-INFO

Function:
List information on one or all ND-500 swap files.

Format:
LIST-SWAP-FILE-INFO <swap file number>

Parameters:
<swap file number> the number of the swap file, starting at 0, or ALL.

Rules:
1. Information about the swap file is printed on the output device. This information includes both file system statistics and the current usage of the file. If the parameter is given as ALL, information about all swap files defined is printed.

5 LIST-SYSTEM-PARAMETERS

Function:
List values of some system parameters.

Related commands:
Related ND-500 Monitor commands: SET-SYSTEM-PARAMETERS

Format:
LIST-SYSTEM-PARAMETERS

Parameters:
None.

Rules:
1. The values of all parameters specified by the SET-SYSTEM-PARAMETERS command are printed on the output device.
2. This command is restricted to user SYSTEM.

5 LIST-TABLE

Function:
List all or one element of one of the system tables. Detailed system knowledge is required in order to utilise the information obtained through this command.

Format:
LIST-TABLE <table name>,[<index>]

Parameters:
<table name> the name of one of the system tables.
<index> number of one particular element in this table.

The table names available are:

FOLLOW-LINK	Follow the link to the next element in the table.
FOLLOW-TABLE	List the next element in the table.
HW-SEGM-TAB	List the physical segment table.
LAST-N500-MSG	List the ring buffer containing the last 64 messages to ND-500
LAST-N500-MSG	List the messages from ND-100 to ND-500 (currently the last 256 messages), provided that a ND-500 Swapper with message-log capabilities is used.
MEMORY-MAP	List the memory map.
N500-MSG	List the messages to ND-500 from a specified process.
PROC-TAB	List process table entries.
SW-SEGM-TAB	List the segment table used by software.
<octal value>/	List the specified entry in the current table.
cr	List the next element in the current table.
EXIT	Return to the command processor.

5 LIST-TIME-QUEUE

Function:
List processes is the time queue on the ND-500.

Related commands:
Related ND-500 Monitor commands: LIST-EXECUTION-QUEUE

Format:
LIST-TIME-QUEUE <interval>

Parameters:
<interval> interval between each sample in seconds

5 LOAD-CONTROL-STORE

Function:
Load the micro code from disk.

Related commands:
Related ND-500 Monitor commands: COMPARE-CONTROL-STORE

Format:
LOAD-CONTROL-STORE <file name>,<start address>,<number of words>

Parameters:

<file name>	the name of the file from which the micro program is read. Default is CONTROL-STORE:DATA.
<start address>	the octal address where the first micro-program word should be loaded in control store. Default is 0.
<number of words>	the number of words to be compared with the file contents after loading. Default is 20000$_8$ (entire control store).

Rules:
1. This command is restricted to user SYSTEM.
2. The ND-500 micro program is loaded to the control store from the specified file. The first micro-program word on the file is loaded into the control store at the specified start address. Every micro-program word (144 bits, 18 bytes) loaded into successive words.
3. When the loading is finished, the first words of the file are compared with the corresponding contents of the control store. The number of words to be compared is specified through the <no. of words> parameter. If difference is found, the error message CONTROL STORE UNSUCCESSFULLY LOADED is written to the output device.

5 LOAD-SWAPPER

Function:
Load the ND-500 Swapper into ND-500 memory.

Format:
LOAD-SWAPPER <file name>

Parameters:
<file name> name of binary file where the swapper is located. Default file name is (SYSTEM)SWAPPER.

Rules:
1. This command is restricted to user SYSTEM.
2. The swapper process is loaded into ND-500 memory. Normally, this is done automatically when the first ND-500 process is initiated by the monitor, but this command may be useful to load a new copy if there are reasons to believe that the existing one is corrupted, or to load a non-standard version of the swapper process.
3. The file type may not be specified but will always be :PSEG and :DSEG.
4. The swapper will always run as process number zero.

5 LOCAL-TRAP-DISABLE

Function:
Disable one or all trap conditions.

Related commands:
Related ND-500 Monitor commands: LOCAL-TRAP-ENABLE

Format:
LOCAL-TRAP-DISABLE <trap condition> ...

Parameters:
<trap condition> one of the trap names listed below or an unambiguous abbreviation or ALL.

Rules:
1. Bit in the OTE register corresponding to the specified <trap condition> is cleared, thereby disabling trap handling for that trap condition. If ALL is specified, all traps will be locally disabled. This is mainly used in order to override the default setting before a new selection of traps is enabled.
2. The routine defined in the exception handler table is not cleared. If the OTE bit is later set (by program or by using the LOCAL-TRAP-ENABLE command in the monitor before execution is started), the routine defined in the LOCAL-TRAP-ENABLE command acts as the default exception handler.

5 LOCAL-TRAP-ENABLE

Function:
Specify an exception handler to handle a specific trap condition.

Related commands:
Related ND-500 Monitor commands: LOCAL-TRAP-DISABLE

Format:
LOCAL-TRAP-ENABLE <label>,<trap condition> ...

Parameters:

<label> the name of a user written or library exception handler routine. Default is the standard handler in the library for the specified <trap condition>.

<trap condition> one of the trap names listed below or an unambiguous abbreviation.

Trap condition names:

OVERFLOW
INVALID-OPERATION
DIVISION-BY-ZERO
FLOATING-UNDERFLOW
FLOATING-OVERFLOW
BCD-OVERFLOW-
ILLEGAL-OPERAND-VALUE
SINGLE-INSTRUCTION-TRAP
BRANCH-TRAP
CALL-TRAP
BREAKPOINT-INSTRUCTION-TRAP
ADDRESS-TRAP-FETCH
ADDRESS-TRAP-READ
ADDRESS-TRAP-WRITE
ADDRESS-ZERO-ACCESS
DESCRIPTOR-RANGE
ILLEGAL-INDEX
STACK-OVERFLOW
STACK-UNDERFLOW
PROGRAMMED-TRAP
DISABLE-PROCESS-SWITCH-TIMEOUT
DISABLE-PROCESS-SWITCH-ERROR
INDEX-SCALING-ERROR
ILLEGAL-INSTRUCTION-CODE
ILLEGAL-OPERAND-SPECIFIER
INSTRUCTION-SEQUENCE-ERROR
PROTECT-VIOLATION

Rules:

1. The bit in the OTE register corresponding to the specified <trap condition> will be set, thereby causing the trap condition to be reacted upon if it occurs. The <trap condition> parameter must be one or more of the names in the table above. Abbreviations are legal as long as they are unambiguous.
2. The <label> is inserted in the table of exception handler routines. This table may contain different labels for each trap condition, or one routine may be used by several traps. The default trap handler has a label as specified in the table above. The ND-Linkage-Loader will cause the standard handlers used to be loaded from the standard library. The Monitor allows the <label> to be specified either as an absolute address or as a defined program label. This label must be present in the :LINK file of the segment. If the <label> is omitted and an exception handler routine is defined, it is not modified. If no handler was defined, the standard library handler is used. This requires that the standard routine was previously loaded.

5 LOGOUT-PROCESS

Function:
Stop a process.

Related commands:
Related ND-500 Monitor commands: ABORT-PROCESS
Related SINTRAN III commands: STOP-TERMINAL

Format:
LOGOUT-PROCESS <process>

Parameters:
<process> the number of a currently running process.

Rules:
1. The ND-500 process specified will be aborted and its reserved resources released. Also, the user will be forced to leave the ND-500-MONITOR.
2. This is the normal command to remove a user from the ND-500 system. A proper clean-up of the area used by the logged out process is done; it is therefore safer than ABORT-PROCESS. LOGOUT-PROCESS resembles the SINTRAN III command @STOP-TERMINAL for ND-100 processes.
3. This command is restricted to user SYSTEM.

5 LOOK-AT

Function:
By this set of commands it is possible to display and modify register and locations in program and data memory.

Related commands:
Related ND-500 Monitor commands: LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-area

ADDRESS NOTATION
An address in the current segment is specified by its 27 bit segment relative address. An address in an arbitrary segment may be specified as

‹segment no›'‹segment relative address›

Generally, modification of program or data is not permanent. The modifications are made on a copy of the original :PSEG or :DSEG file. However, LOOK-AT-PROGRAM will make permanent modifications to the segment.

Subcommands:
The LOOK-AT commands have a set of subcommands as follows:

cr
carriage return causes display of the next item (register, instruction, memory cell).

EXIT
Return to the Monitor command processor.

Special notation used with the slash (/, indirect) command:

m = address or register name.
n = number of bytes.
cr = carriage return.

m/cr

Take the value of m as the address and display this location. m may also be a register name.

/cr

Take the contents of the current location as next address and display this location. If the current location is a register, displaying of the memory is started. Specifying the P or the L register cause the program memory to be displayed, while the rest of the registers cause the data memory to be d isplayed.

m,n/cr

Take the value of m as next address and display n bytes. m may also be a register name.

,n/cr

Same as /cr except that n bytes are displayed.

Dumping of register, memory or segment to file:

m,n <output file> cr

Same as m,n/cr except that the output is written to the specified file. The file is closed upon exit from LOOK-AT.

,n <output file> cr

Same as ,n/cr except that the output is written to the specified file. The file is closed upon exit from LOOK-AT.

HELP

Listing of all LOOK-AT subcommands

n cr

Modifications of memory or registers are done by typing the new value in the current main format (octal, hexadecimal or decimal as set by the MAIN-FORMAT command) followed by carriage return. It is possible to use other formats than the main one by typing B, H or D before the carriage return for octal, hexadecimal or decimal respectively.

'XXX'cr

Modifying the data memory or a data segment by ASCII characters may be done by enclosing the ASCII string in quotes.

CODE

Modification of program memory is possible by the command CODE followed by an ND-500 assembler instruction. The instruction will be assembled and stored starting at the current location. Program memory may also be modified numerically by first typing BY, and thereafter modifying bytes in the main format (See the MAIN-FORMAT command).

BREAK

Setting a breakpoint in the current address may be done by the BREAK subcommand in LOOK-AT-PROGRAM.

BYTE
HALFWORD
WORD
FLOAT
DOUBLEFLOAT
ASCII

When displaying data memory it is possible to use byte, halfword, word single or double precision float or ASCII characters as a display unit. Changing from one unit to another is done by simply typing BYTE, HALFWORD, WORD, FLOAT, DOUBLEFLOAT or ASCII.

PERMIT-DEPOSIT

In order to avoid unintended modification of the memory or a register, the command PERMIT-DEPOSIT must be typed before the depositing of a new value can take place.

EXTRA-FORMAT <format> ...

In a LOOK-AT command it is possible to specify temporarily that memory locations shall be displayed in the the indicated formats in addition to the main format by the EXTRA-FORMAT command. This command is similar to the global EXTRA-FORMAT command, except that the extra formats are only valid within LOOK-AT.

ABSOLUTE <address>

When relative addresses are displayed (LOOK-AT-STACK and LOOK-AT-RELATIVE), new addresses (number followed by a slash) are taken as relative addresses. However, displaying from an absolute address can be done by the ABSOLUTE command.

NEW-SEGMENT <segment no>

The specified segment number will be set as current segment. Addresses specified without a segment number will be in the new current segment. The segment number is valid only while in LOOK-AT mode, and must be re-specified next time LOOK-AT mode is entered.

In a LOOK-AT command it is possible to change to one of the other LOOK-AT commands by typing one of the subcommands below. This is equivalent to EXITing from LOOK-AT and reenter to inspect or modify another area (program, data or registers), but EXTRA-FORMAT need not be re-specified, and it is faster. These subcommands are:

DATA <address>
PROGRAM <address>
REGISTER <register name>,<
register name>
STACK
RELATIVE <relative to>

5 LOOK-AT-CONTROL-STORE

Function:
Command to examine and modify the current ND-500 micro program.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-CONTROL-STORE <address>

Parameters:
<address> an octal address in control store, range 0:20000. Default is 0.

Rules:
1. This command is restricted to user SYSTEM.
2. The display is started at the specified <address>. One control-store word and the corresponding address are displayed on one line. On carriage return, the next control-store word is displayed. A control-store word consists of 144 bits which are grouped into nine 16-bit words.
3. The next control-store word to be displayed may be specified by typing its address followed by a slash and carriage return.
4. By default, the control store is disassembled and displayed symbolically. Symbolic modifying of the control store is performed by either the subcommand EDIT or ORIN. By EDIT the current control-store word is cleared and the disassembled string is then put into the terminal input buffer. It is then possible to modify the disassembled string by the SINTRAN III line editing features. At carriage return the modified string is assembled and written into the control store. By ORIN the next terminal input is assembled and a logical OR of the entered instruction and the old contents is stored into the current control-store word.
5. By the subcommand OCTAL it is possible to have the control store displayed in octal format. The display is returned to the symbolic mode by typing the command SYMBOLIC.
6. By typing GROUP only one 16-bit word is displayed. On carriage return the next 16-bit word is displayed. Within GROUP mode it is possible to modify the displayed 16-bit word by typing the new octal value followed by a carriage return. By typing WORD the display of nine 16-bit words continues.

5 LOOK-AT-DATA

Function:
Command to examine and modify a data segment of a domain.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-DATA <address>,[<domain>]

Parameters:

<address>	the segment address from where inspection should start.
<domain>	the name of an existing domain. Default is inspection of the domain currently in memory.

Rules:
1. This command is similar to LOOK-AT-PROGRAM except that the data memory or data segment is involved. Modification is always permitted.

5 LOOK-AT-FILE

Function:
Used to examine or modify files that are used as segments on the ND-500.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-FILE <address>,<file name>

Parameters:

<address>	the segment address from where inspection should start.
<file name>	the name of the file containing the program segment to be used. Default file type is :PSEG.

Rules:
1. This command is similar to LOOK-AT-PROGRAM except that the segment is always found on a file. Modification is always permitted.

5 LOOK-AT-HARDWARE

Function:
Command to examine and modify internal ND-500 CPU registers or ND-100/ND-500 interface register.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-HARDWARE <register name>

Parameters:
<register name> the name of an ND-500 CPU register or ND-100/ND-500 interface register. The registers available are listed below.

Rules:
1. This command is restricted to user SYSTEM.
2. Display the contents of the specified internal ND-500 CPU register or ND-100/ND-500 interface register.

   The <hardware register name> may be one of:

   INTERFACE
   Display the interface registers
   Carriage Return
   Display the hardware registers (approximately 80 registers)
   A,XD
   Display the registers starting with name A,XD
   Register name
   Display the specified register
   MMS
   Display the 40 Memory management registers.

3. Note that after this command the microprogram needs to be restarted (MICRO-START <address>).

5 LOOK-AT-PHYSICAL-SEGMENT

Function:
Command to examine and modify a physical segment.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-PHYSICAL-SEGMENT <address>,<segment number>

Parameters:
<address> the octal segment relative address to be inspected.
<segment number> the number of the physical segment to be inspected.

Rules:
1. This command is restricted to user SYSTEM.
2. Equal to LOOK-AT-PROGRAM or LOOK-AT-DATA, except that a physical segment is inspected and modified directly.

5 LOOK-AT-PROGRAM

Function:
Command to examine and modify a program segment of a domain.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-PROGRAM <address>,[<domain>]

Parameters:

<address>	the segment address from where inspection should start.
<domain>	the name of an existing domain. Default is inspection of the domain currently in memory.

Rules:
1. Displays and modifies program memory or program segments. The display is started at the specified <address>.
2. If <domain> is specified, the program segment file is displayed and may be modified. Only one segment may be displayed and modified at a time.
3. Within the LOOK-AT-PROGRAM command the subcommand BREAK may be specified, setting a breakpoint at the current address.
4. If <domain> is not specified, the default is the domain currently in memory. The memory image is inspected, rather than the original segment from which it was loaded. If any modifications are made, the domain must have been placed in memory by the DEBUG-PLACE command, otherwise no modification is legal.

5 LOOK-AT-REGISTER

Function:
Command to examine and modify the registers.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-REGISTER [<register name>]

Parameters:
<register name> the name of one of the registers. Default is P.

Rules:
1. The specified register is displayed in current main format. If carriage return is typed, the next register in the sequence below is displayed. Registers identified as MIC are used by the micro program and are not available to the user.
2. Register sequence:

P,	L,	B,	R,	I1,	I2,	I3,	I4,
A1,	A2,	A3,	A4,	E1,	E2,	E3,	E4,
ST1,	ST2,	PS,	TOS,	LL,	HL,	THA,	CED,
CAD,	MIC,	MIC,	MIC,	MIC,	OTE1,	OTE2,	CTE1,
CTE2,	MTE1,	MTE2,	TEMM1,	TEMM2			

5 LOOK-AT-RELATIVE

Function:
Command to examine and modify the memory relative to the contents of a base register.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RESIDENT-MEMORY
LOOK-AT-STACK

Format:
LOOK-AT-RELATIVE ‹relative to›

Parameters:
‹relative to› B, R, I1, I2, I3, I4 or a numeric address. Default is R.

Rules:
1. Start listing of data memory relative to either the contents of the R, B, I1, I2, I3 or I4 register or an address. Both global and relative address are displayed.

5 LOOK-AT-RESIDENT-MEMORY

Function:
Command to examine and modify locations in memory.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-STACK

Format:
LOOK-AT-RESIDENT-MEMORY <address>

Parameters:
<address> the octal physical address to be inspected.

Rules:
1. This command is restricted to user SYSTEM.
2. Equal to LOOK-AT-DATA except that physical memory is examined and modified.

₅LOOK-AT-STACK

Function:
Command to examine and modify the program stack.

Related commands:
Related ND-500 Monitor commands: LOOK-AT
LOOK-AT-CONTROL-STORE
LOOK-AT-DATA
LOOK-AT-FILE
LOOK-AT-HARDWARE
LOOK-AT-PHYSICAL-SEGMENT
LOOK-AT-PROGRAM
LOOK-AT-REGISTER
LOOK-AT-RELATIVE
LOOK-AT-RESIDENT-MEMORY

Format:
LOOK-AT-STACK

Parameters:
None.

Rules:
1. The current local data field is displayed. This is the memory area pointed to by the current B register, and contains the subroutine call information, such as address local data field of calling routine (PREVB), return address (RETA), number of arguments to the routine (N), the current top of stack (SP) and an auxiliary location for language processes (AUX) not used by hardware. At the next addresses are the addresses of the routine arguments, and the local variables of the routine.
2. The standard locations are labelled with the symbolic names above. For the argument addresses and the local variables two addresses are given, the global address and the address relative to the start of the local data field.
3. **PREVIOUS**
   Display the previous local data field, that is, the local data field of the procedure calling the current one. Several PREVIOUS commands may be given, each descending one more level in the call sequence. It is not possible to move beyond the data field of the main program (the lowermost stack frame).
4. **NEXT**
   Display the next local data field, that is, the local data field of the procedure called by the current one. Valid only after PREVIOUS. It is not possible to move beyond the data field of the routine currently being executed (the uppermost stack frame).

5 MAIN-FORMAT

Function:
Select format on output from commands.

Related commands:
Related ND-500 Monitor commands: EXTRA-FORMAT

Format:
MAIN-FORMAT <format>

Parameters:

<format>	OCTAL, HEXADECIMAL or DECIMAL or abbreviation of one of these.

Rules:

1. When displaying registers, memory contents, or segments with the LOOK-AT commands, the specified <format> is used. When the Monitor is started, octal is used as the main format.
2. The default MAIN-FORMAT may be modified by using the MAIN-FORMAT command, then leaving the Monitor by the EXIT command. The memory image can then be copied to a file by using the SINTRAN III command @DUMP. The :PROG file created by the @DUMP command will be equivalent to the existing monitor, but the default MAIN-FORMAT is as specified before the @DUMP. Refer to chapter 1 for a description of the @DUMP command.

5 MASTER-CLEAR

Function:
Stop the ND-500.

Format:
MASTER-CLEAR

Parameters:
None.

Rules:
1. ND-500; Brings the ND-500 out of any hang-up state by sending a hardware master-clear signal to the ND-500 interface. This will cause the ND-500 to stop immediately and reset the interface. This is equivalent to pressing the MCL button on the ND-500 front panel.
2. This command is used before a complete restart of the ND-500, and the contents of registers are unpredictable.
3. This command is restricted to user SYSTEM.

5 MEMORY-CONFIGURATION

Function:
List information about memory configuration.

Related commands:
Related ND-500 Monitor commands: DEFINE-MEMORY-CONFIGURATION

Format:
MEMORY-CONFIGURATION

Parameters:
None.

Rules:
1. Information about the current memory configuration is printed on the output device.
2. When the ND-500 is started the first time, every page of ND-100/ND-500 shared memory belongs to ND-100. Memory is administered through the commands GIVE-N500-PAGES and TAKE-N500-PAGES.

5 MICRO-START

Function:
Start the ND-500 micro program.

Related commands:
Related ND-500 Monitor commands: MICRO-STOP

Format:
MICRO-START <address>

Parameters:

<address>	the octal control-store address where execution of the micro program should start.

Rules:
1. The execution of the ND-500 micro program is started at the specified address.
2. This command is restricted to user SYSTEM.

5 MICRO-STOP

Function:
Stop the ND-500 micro program.

Related commands:
Related ND-500 Monitor commands: MICRO-START

Format:
MICRO-STOP

Parameters:
None.

Rules:
1. The execution of the ND-500 micro program is stopped, and may be resumed through the command MICRO-START. The ND-500 will stop completely, but the contents of all registers are retained. It is not necessary to restart programs running in the ND-500.
2. This command is restricted to user SYSTEM.

5 OPEN-FILE

Function:
Open a file for access from an ND-500 program.

Format:
OPEN-FILE <file name>,<connect file number>,<access mode>

Parameters:

<file name>	the name of a file to be used by a program. Default file type is :DATA.
<connect file number>	the file number used in the program.
<access mode>	see table below.

Access modes:

W	0	sequential write (OUTBT,OUTST)
R	1	sequential read (INBT)
WX	2	random read/write (RFILE/WFILE)
RX	3	random read (RFILE)
RW	4	sequential read/write (INBT/OUTBT,OUTST)
WA	5	sequential write append
WC	6	random read/write with read/write access allowed from other users (contiguous files only).
RC	7	random read with read access allowed from other users (contiguous files only).
D	8	direct transfer
DC	9	direct transfer with the file closed, mode 9.
WRITE	10	The system will select the access mode RW, WX or D. The most optimal access mode which can be used for the file/device is selected. The following is a list of file/devices and the corresponding access mode selected by the system:

terminal:	RW
indexed file:	RX
contiguous file:	D
magnetic tape:	D

READ	11	The system will select the access mode RW, WX or D, as for WRITE access above (For tape reader R access will be selected by the system).

Rules:

1. Opens a file and connects it to a file number used in the program. If <connect file number> is 0 a file number is returned that must be used from the program.
2. Default number base of <connect file number> is the main format - initially octal. If a decimal number is specified, it must be followed by a D. Unit numbers in Fortran programs are decimal.
3. The opened file will be associated with a SINTRAN file number, usually ranging from 100_8 and upwards, in a manner equivalent to ND-100 operation. However, the monitor maintains a connect number table, allowing programs to access the file either through the SINTRAN file number or through the user-selected connect number.

5 OUTPUT-FILE

Function:
Define an output device different from the current one.

Format:
OUTPUT-FILE <file name>

Parameters:
<file name> the name of the file where output is desired. Default is the terminal.

Rules:
1. This command is used to define an output device different from the current one (initially the communication device). Most output will go to <file name>, but commands, parameter prompt and error messages will continue to appear on the communication device. The <file name> is used as an output device until EXIT or a new OUTPUT-FILE command is given.

5 PLACE-DOMAIN

Function:
Prepare a domain for execution.

Format:
PLACE-DOMAIN <domain name>

Parameters:
<domain name> the name of a domain in the description file of the current user or the user specified in parentheses as a prefix to <domain name>.

Rules:
1. An executable ND-500 domain is made ready for execution. The specified <domain name> is searched for on the description file of the current user. If no match is found, the description file of user SYSTEM is scanned. A user name prefixing <domain name> is valid. The syntax is equal to the file system syntax.
2. If the specified domain is found, some initialization is performed. The start address is moved into the program-counter register. The child-trap-enable register of ND-100, the own-trap-enable register of the domain and the trap handler address register are initialized. Each logical segment is mapped on a physical segment.
3. The program segment will normally map directly onto the :PSEG file. Several users may be using the same physical segment, although the segments may be logically different. It is assumed that the program segments are read only. This means that breakpoints cannot be used, and patching is not possible. The DEBUG-PLACE command will permit modifications.
4. The data segment is initially mapped on the :DSEG file. Upon page fault the required page is read from the file. When modifications are made, the affected pages are not written back to the :DSEG file but to a scratch area on a swap file. This copy is used for later references. Each concurrent user of the data segment has his own copy of modified pages on the swap file, and is thus independent of other users. The physical segment corresponding to the data segment is therefore a mixture of unmodified pages in the :DSEG file and modified pages in the swap file.

5 PRINT-HISTOGRAM

Function:
Print a histogram on the output file.

Format:
PRINT-HISTOGRAM

Parameters:
None.

Rules:
1. This command prints the histogram on the output device. If sampling has been started and stopped several times, the histogram will represent the sum of all samples since SET-HISTOGRAM. The histogram buffer is not cleared by PRINT-HISTOGRAM.

5 PRINT-MONCALL-LOG

Function:
Print a count of monitor calls executed on the output file.

Format:
PRINT-MONCALL-LOG

Parameters:
None.

Rules:
1. A count of monitor calls executed since START-MONCALL-LOG is printed on the output device. Each monitor call number up to 777_8 is listed with an individual count. Parts of this range are not valid as monitor call numbers, and will always appear with a count of zero.
2. This command does not release the buffer, nor does it clear it. Further monitor calls will add to the count already in the buffer.

s PRINT-PROCESS-LOG

Function:
Print the accumulated measurements of a process log on the output file.

Format:
PRINT-PROCESS-LOG <first process>

Parameters:
<first process> the first process to be printed. Default is 0.

Rules:
1. The accumulated measurements from the last START-PROCESS-LOG-ALL or START-PROCESS-LOG-ONE are printed on the output device. The buffer is not cleared, and the logging is continued, adding subsequent measurements to the printed values. In order to clear the buffer, the START-PROCESS-LOG-ALL or START-PROCESS-LOG-ONE should be used to start the next logging period.
2. This command is allowed for user SYSTEM only.

5 PROCESS-LOG-ALL

Function:
Start measurement of CPU usage of all or selected processes and output at regular intervals.

Format:
PROCESS-LOG-ALL <interval>,<first process>

Parameters:
<interval> the time in seconds between each report.
<first process> the first process to be logged. Default is 0.

Rules:
1. The logging of CPU usage in percent of total capacity is started and written to the output device every <interval> second. The buffer is cleared between each report; displayed results are not cumulative.
2. A sample is taken every 20 millisecond, and for the report to have a reasonable accuracy, the interval should be at least 10 seconds. The logging is stopped by pressing the escape key.
3. This command is allowed for user SYSTEM only.

5 PROCESS-LOG-ONE

Function:
Start measurement of CPU usage of a selected process and output at regular intervals.

Format:
PROCESS-LOG-ONE <process number>,<interval>

Parameters:

<process number>	the identifying number of the process, found by the WHO-IS-ON or PROCESS-STATUS command.
<interval>	the time in seconds between each report.

Rules:
1. The logging of the specified process is started, and the log [3inted every <interval> seconds. The buffer is cleared between each report; displayed results are not cumulative. The report contains the same measurements as measured by the START-PROCESS-LOG-ALL command.
2. A sample is taken every 20 milliseconds, and for the result to have a reasonable accuracy, the interval should be at least 10 seconds.
3. The logging is stopped by pressing the escape key.
4. This command is allowed for user SYSTEM only.

5 PROCESS-STATUS

Function:
List a summary of the status of all active processes.

Related commands:
Related ND-500 Monitor commands: WHO-IS-ON
Related SINTRAN III commands: TERMINAL-STATUS

Format:
PROCESS-STATUS

Parameters:
None.

Rules:
1. A summary of the status of all active processes is printed on the output device. The information includes for each active process the terminal number of the user having reserved the process, the user name, the status of the process (idle or active), and the amount of ND-500 CPU time used and login time since the Monitor was entered.

5 RECOVER-DOMAIN

Function:
Place a domain and start execution.

Format:
RECOVER-DOMAIN <domain name>

Parameters:
<domain name> the name of a domain in the description file of the current user, user SYSTEM or if user name specified, of that user.

Rules:
1. The PLACE-DOMAIN and RUN commands are performed as one by using the command RECOVER-DOMAIN. The words RECOVER-DOMAIN can be left out. The domain name itself becomes a pseudo command. The procedure for looking up the command or domain is then as follows:
   1. A search is made in the list of basic commands. If a match is found, the corresponding command is executed.
   2. If no command is found, the list of standard domains are searched. If there is any such standard domain, it is started.
   3. If the search among the standard domains was unsuccessful, a search is made in the domains of the current user. If a domain with the specified name is found, it is started as with a RECOVER-DOMAIN command.
   4. If no domain with the specified name is found, the domains of user SYSTEM are searched. If a domain with a matching name is found, the domain is started.
   5. If no domain is found, the specified string is assumed to be a macro name, and a temporary macro is searched for. If any matching macro is found, it is processed.
   6. If no match is found among the temporary macros, the name is assumed to be the name of a permanent macro. If a file with the specified string as name and type :MACR exists, it is taken as a permanent macro and processed. The file system will ensure that if a file with the specified name is not found under the current user, the directory of user SYSTEM is searched.
   7. If none of the above lead to a successful match, the error message NO SUCH COMMAND OR DOMAIN is printed on the communication device, and no further action will result from the entered input.
2. If a domain has been given the name of or a legal abbreviation of a command or standard domain, the words RECOVER-DOMAIN may not be left out.

5 RELEASE-HISTOGRAM

Function:
Release the histogram buffer.

Format:
RELEASE-HISTOGRAM

Parameters:
None.

Rules:
1. This command releases the histogram buffer. This means that other users may use the HISTOGRAM, the PROCESS-LOG, the MONCALL-LOG and the SWAPPING-LOG commands.
2. If the buffer is not released through this command, it will automatically be released when the user leaves the Monitor.

5 RELEASE-LOG-BUFFER

Function:
Release the buffer used for the SWAPPING-LOG and the PROCESS-LOG-commands

Format:
RELEASE-LOG-BUFFER

Parameters:
None.

Rules:
1. The buffer used for the SWAPPING-LOG and PROCESS-LOG-commands is released, allowing other users to use these commands, the HISTOGRAM- and MONCALL-LOG-commands.
2. If the buffer is not released through this command, it will be released when the user leaves the Monitor.

5 REMOVE-FROM-TIME-SLICE

Function:
Set a process to run on a fixed priority (so longer time sliced).

Related commands:
Related ND-500 Monitor commands: INSERT-IN-TIME-SLICE

Format:
INSERT-IN-TIME-SLICE ‹process number›

Parameters:
‹process number› process number of a process.

Rules:
1. This command is restricted to user SYSTEM.

5 RESET-AUTOMATIC-ERROR-MESSAGE

Function:
Suppress output of error messages from monitor calls, thus enabling programs to treat errors internally.

Related commands:
Related ND-500 Monitor commands: AUTOMATIC-ERROR-MESSAGE

Format:
RESET-AUTOMATIC-ERROR-MESSAGE

Parameters:
None.

Rules:
1. Reverses the effect of the AUTOMATIC-ERROR-MESSAGE command.
2. By pressing the Escape key during the execution of an ND-500 program the execution is stopped and the control is given to the ND-500 command processor.
3. No files are closed and no resources released. Execution may be resumed by the CONTINUE command, possibly after executing other monitor commands. If execution is not resumed, resources are released when the user leaves the monitor.

5 RESET-BRANCH-TRACE

Function:
Dumping or comparing with previous dump of branch conditions is discontinued.

Format:
RESET-BRANCH-TRACE

Parameters:
None.

5 RESET-BREAKS

Function:
Remove breakpoints.

Format:
RESET-BREAKS <break number> ...

Parameters:
<break number> a number identifying a breakpoint.

Rules:
1. The breakpoints with the specified numbers are removed by using this command. If the last active breakpoint is removed, the breakpoint bit in the ND-500 CTE register is reset.
2. If no <break number> is specified, every active breakpoint is removed permanently by typing RESET-BREAKS. If one or more <break number>s are specified, only those breakpoints are removed.
3. 'Breakpoint' includes, in addition to those set by the BREAK command, breakpoints set by the EXHIBIT-ADDRESS command.

5 RESET-CALL-TRACE

Function:
Dumping or comparing with previous dump of routine calls is discontinued.

Format:
RESET-CALL-TRACE

Parameters:
None.

5 RESET-DEBUG

Function:
Clear the effect of all previously-used debugging commands.

Format:
RESET-DEBUG

Parameters:
None.

5 RESET-GUARD

Function:
The guarding of the area specified in the GUARD command is discontinued.

Format:
RESET-GUARD

Parameters:
None.

5 RESET-INSPECT-DUMP

Function:
Reset (stop) inspect of a dump of the ND-500 Swapper.

Format:
RESET-INSPECT-DUMP

Parameters:
None.

Rules:
1. The commands LOOK-AT-DATA, LOOK-AT-STACK, LOOK-AT-RELATIVE, LOOK-AT-REGISTER and LIST-TABLE will work as usual when this command is given.
2. This command is restricted to user SYSTEM.

.RESET-LAST-BREAK

Function:
Remove last breakpoint encountered.

Format:
RESET-LAST-BREAK

Parameters:
None.

Rules:
1. When a breakpoint is encountered during execution, this breakpoint may be removed and the original instruction restored by executing this instruction.

5 RESET-TRACE

Function:
The tracing specified in the TRACE command is discontinued.

Related commands:
Related ND-500 Monitor commands: TRACE

Format:
RESET-TRACE

Parameters:
None.

5 RESIDENT-PLACE

Function:
Place a domain permanently in memory.

Format:
RESIDENT-PLACE <domain name>

Parameters:
<domain name> the name of a domain in the description file of the current user or the user specified in parentheses as a prefix to <domain name>.

Rules:
1. The domain will be placed permanently in memory. The command is used to avoid swapping for processes that require fast execution.
2. Only allowed for user SYSTEM. Only one such process can be run at a time.

5 RESTART-PROCESS

Function:
Restart a process which has stopped itself, or specify repeated execution of an active process.

Format:
RESTART-PROCESS <process name>

Parameters:
<process name> the symbolic name of an existing process.

Rules:
1. A process that has halted itself by the STOPPR call (MON 501) is restarted, or if it is already active, the repeat bit in the process description is set, causing the process to be immediately reactivated if it later executes an STOPPR call.

5 RESUME-MACRO

Function:
The last aborted macro is resumed at the line following the one where the macro was interrupted.

Format:
RESUME-MACRO

Parameters:
None.

5 RUN

Function:
Start an already placed domain.

Format:
RUN

Parameters:
None.

Rules:
1. The current domain is started in its start address.
2. The command must have been preceded with a PLACE-DOMAIN or DEBUG-PLACE command in order to bring the domain into memory. Return will be to the Monitor after execution has completed.

s SET-BLOCK-SIZE

Function:
Set the block size of an open file.

Format:
SET-BLOCK-SIZE <connect number>,<size (in bytes)>

Parameters:

<connect number>	the connect number of a file open from a ND-500 program or through the OPEN-FILE command.
<size (in bytes)>	default block size in bytes when accessing disk or magnetic tape

Rules:

1. Sets the block size used for I/O transfers to or from disk or magnetic tape. The file may be opened by the OPEN-FILE command or MON OPEN (MON 50). The block size may be modified by the program by the SETBS monitor call (MON 76).

5 SET-FLAG

Function:
Set the flag word of a specified process.

Related commands:
Related ND-500 Monitor commands: SET-FLAG

Format:
SET-FLAG <process number>,<value>

Parameters:
<process number> the number of an active process.
<value> an unsigned value in the range 0:3777777777777$_8$.

Rules:
1. The specified <value> (32-bit word) is written into the input flag of the specified process. If the specified process is connected to a terminal, this command must be given from another terminal.
2. A simple mechanism for communication between an ND-100 process and an ND-500 process is implemented.
3. To each process two 32-bit words are assigned, the input and output flags. The owner process may read its own input flag and write into its output flag by the monitor calls Read input flag (MON 402) and Write output flag (MON 403). When the Monitor is entered, both flags are initially zero. The flag word is not used by the monitor, and may contain any information as determined by the process(es).
4. A ND-100 program may use the functions RFLAG (100$_8$) and SFLAG (101$_8$)in the SINTRAN III monitor call N500M (MON 60) to communicate with an ND-500 process.
5. From a terminal the same functions are performed by the commands GET-FLAG and SET-FLAG.
6. Note that there is no queueing of flags; if the input flag of a process is modified twice before the owner reads the flag, the first value is lost.

5 SET-HISTOGRAM

Function:
Reserve and clear the histogram buffer.

Format:
SET-HISTOGRAM <start address>,<max. address>,<number of intervals>

Parameters:

<start address>	the lower address of the area to be measured.
<max. address>	the upper address of the area to be measured.
<number of intervals>	the number of equally sized intervals between <start address> and <max address> in the range 1:64 decimal. Default is 64 decimal.

Rules:
1. A subsequent START-HISTOGRAM will start sampling the accesses to the instruction bank between the <start address> and the <max. address>. This area is divided into <no. of intervals> equally sized intervals.
2. The maximum size of an interval is 32767 bytes.

5 SET-MEMORY-CONTENTS

Function:
Preset data memory.

Format:
SET-MEMORY-CONTENTS <from address>,<up to address>,<value>,<datatype>

Parameters:

<from address>	the lower limit for modification of memory.
<up to address>	the upper limit for modification of memory.
<value>	the value to be written in the specified area.
<datatype>	BYTE, HALFWORD, WORD, FLOAT or DOUBLEFLOAT indicating the size and type of the specified <value>. Default is WORD.

Rules:
1. The data memory is filled with the specified value from the first address specified up to the second specified address, inclusively.

5 SET-ND-500-AVAILABLE

Function:
Set the ND-500 available for use.

Related commands:
Related ND-500 Monitor commands: SET-ND-500-UNAVAILABLE
Related SINTRAN III commands: SET-UNAVAILABLE

Format:
SET-ND-500-AVAILABLE

Parameters:
None.

Rules:
1. Other users may now log in. This command has the reverse effect of SET-ND-500-UNAVAILABLE, and should be issued as soon as exclusive use of the ND-500 is no longer required.
2. An implicit SET-ND-500-AVAILABLE is executed when the user setting it unavailable leaves the monitor.
3. This command is restricted to user SYSTEM.

s SET-ND-500-UNAVAILABLE

Function:
Set the ND-500 available for use.

Related commands:
Related ND-500 Monitor commands: SET-ND-500-AVAILABLE

Format:
SET-ND-500-UNAVAILABLE

Parameters:
None.

Rules:
1. No user may log on to the ND-500 until the SET-ND-500-AVAILABLE command is given. SET-ND-500-UNAVAILABLE must be used before any modification of system parameters is done, to ensure that no user interrupts critical operations. If any command that requires exclusive access to ND-500 is executed, this command is implicitly attempted, and an error message issued only if others are using ND-500. If ND-500 has been implicitly set unavailable, it will be impossible for others to use it until SET-ND-500-AVAILABLE is executed or the user reserving the ND-500 leaves the monitor.
2. This command will not force a logout of those already logged in, but will prevent new users from logging on. Logged in users must log out explicitly.
3. This command is restricted to user SYSTEM.

5 SET-PHYSICAL-SEGMENT-ADDRESS

Function:
Specify physical address where a logical data segment should be placed using the command RESIDENT-PLACE.

Format:
SET-PHYSICAL-SEGMENT-ADDRESS <segment number>,<physical page number>

Parameters:

<segment number>	segment number of the segment.
<physical page number>	physical address in pages.

Rules:
1. Must be used prior to RESIDENT-PLACE.
2. May only be used for data segments.
3. This command is restricted to user SYSTEM.

5 SET-PRIORITY

Function:
Set the priority of an ND-500 process.

Format:
SET-PRIORITY <ND-500 process number>,<ND-500 priority>

Parameters:

<ND-500 process number>	the number of the process to be affected. Default is own process.
<ND-500 priority>	the priority of the ND-500 process, in the range 0:377$_8$. Default is dynamic modification by the time slicing mechanism.

Rules:
1. If <ND-500 priority> is zero, the process will be time sliced with other processes with priority varying between 20$_8$ and 61$_8$. If <ND-500 priority> is non-zero, the process will run on a fixed priority as specified. The default handling of the ND-500 process is time slicing with no fixed priority. A priority specified in the source program is ignored.
2. This command is allowed for user SYSTEM only.

5 SET-PROCESS-NAME

Function:
Select a process name for the current process.

Format:
SET-PROCESS-NAME <name>

Parameters:
<name> up to 16 alphanumeric characters or hyphen, optionally prefixed by the user name enclosed in parentheses.

Rules:
1. Names the process owned by the terminal from which the command is executed. The specified name will replace the previous name. The name is valid until the user leaves the Monitor or replaces the name with another one.
2. This command is useful if two or more processes synchronise by starting and stopping each other.
3. A new process is allocated when a user starts the monitor, and terminates when the user leaves the monitor. If several domains are executed during one monitor session, they are all run under the same process.
4. A process may also be allocated by an ND-100 RT-program using the RESRV function in the N500M monitor call. The process terminates when the RT-program executes the RELIS function in N500M. Using the N500M call requires detailed knowledge of how the monitor operates.

5 SET-SEGMENT-LIMITS

Function:
Specify the physical memory requirements of a segment during execution.

Format:
SET-SEGMENT-LIMITS <segment number>,<type(P or D)>,
<min. number of pages>,<max. number of pages>,
[<process number>]

Parameters:

<segment number>	the number of an existing segment
<type(P or D)>	P or D, indicating program or data segment, respectively.
<min. number of pages>	the minimum number of pages of the specified segment to remain in memory throughout process execution.
<max. number of pages>	the maximum number of pages of the specified segment to remain in memory throughout process execution.
<process number>	the number of the process to be affected. Default is own process.

Rules:
1. Specifies the minimum number of pages of a segment that must be in memory before execution of instructions on the segment starts, and the maximum number of pages allowed in memory at one time.
2. When execution of the segment is started, no page of the segment will be a candidate for swapping until the minimum number of pages specified is brought into memory. At no time during the execution will the number of pages in memory be less than the specified minimum.
3. Normally, due to page faults, the number of pages in memory will increase during the execution of the domain. If this number exceeds the specified maximum, one or more of the pages not used for some time will be marked for swapping.
4. Pages may be swapped even if the maximum limit has not been reached, but at no time will the number of pages in memory be below the specified minimum.

5 SET-SYSTEM-PARAMETERS

Function:
Change the values of one or more system variables.

Related commands:
Related ND-500 Monitor commands: LIST-SYSTEM-PARAMETERS

Format:
SET-SYSTEM-PARAMETERS <number of physical segments>,
<clean segm. at no. of page faults>,
<swapout segm. at no. of page faults>,
<max pages fixed>,<default extra pages to 500>

Parameters:

<number of physical segments> the maximum number of physical segments in the ND-500. Maximum is 2000$_8$. A modification of the number of physical segments will have no effect until the system is restarted. The number of segments include all physical segments including the process segments used internally by the monitor. Reducing the number of physical segments will reduce the space needed by system tables and release memory pages for swapping.

<clean segm. at no. of page faults>
number of page faults occuring before the pages belonging to the segment are marked as "unused pages".

<swapout segm. at no. of page faults>
number of page faults at which the segment is placed in the swapping queue.

<max pages fixed> the maximum number of pages fixed for the system as a whole. When using the commands TAKE-N500-PAGES or GIVE-N500-PAGES the swapper's copy of the parameters is set to half the number of physical pages available for the ND-500. This means that, following either of these, a SET-SYSTEM-PARAMETERS command should be issued thus ensuring a correct value of the parameter <max pages fixed>.

<default extra pages to ND-500>
number of pages used as a default value in the GIVE-N500-PAGES command.

5 SPECIAL-DEBUGGER

Function:
Start an alternate version of the Symbolic Debugger.

Format:
SPECIAL-DEBUGGER <file name>,<segment number>,[<domain name>]

Parameters:

<file name>	name of :PSEG and :DSEG files with an alternative version of the symbolic debugger.
<segment number>	the segment number used by the alternative debugger.
<domain name>	name of the domain to be debugged. Default is the domain currently in memory.

Rules:

1. This command is exactly equal to the DEBUGGER command, but allows the user to specify an alternative debugger, for example the previous version or a version running on a different segment number.

5 START-HISTOGRAM

Function:
Start sampling for a histogram.

Format:
START-HISTOGRAM

Parameters:
None.

Rules:
1. The sampling of the program counter will be started. The sampling may be started and stopped any number of times before the histogram is printed. The buffer is not cleared before sampling is started; samples will be added to what is already in the buffer.
2. Samples are taken every 20 ms.

5 START-MONCALL-LOG

Function:
Start logging of monitor calls.

Format:
START-MONCALL-LOG [<OWN/ALL>]

Parameters:

<OWN/ALL>	if ALL is specified, logging of all monitor calls in the system is started. If OWN is specified, only monitor calls executed by the current process are logged. Default is OWN.

Rules:

1. This command will clear the log buffer, and reserve it for the user issuing the command. All monitor calls executed from the ND-500 will be logged. A count of the number of times each monitor call has been executed can later be printed.
2. Roughly speaking, the load on the ND-100 CPU imposed by the ND-500 is proportional to the number of monitor calls executed from ND-500. (Obviously, this general rule applies to CPU load only, not to file system and channel load.) Isolating programs that perform a disproportionate number of monitor calls may help increasing ND-100 throughput.

5 START-PROCESS-LOG-ALL

Function:
Start accumulating measurements for the process log.

Format:
START-PROCESS-LOG-ALL

Parameters:
None.

Rules:
1. This command will clear the process-log buffer and reserve it for the user issuing the command.
2. Logging the CPU usage of the active processes is started. Samples are taken every 20 ms, and the measurements are represented as percents of the total CPU capacity. The result of the logging may be presented by the PRINT-PROCESS-LOG command.
3. This command is allowed for user SYSTEM only.

5 START-PROCESS-LOG-ONE

Function:
Start accumulating measurements for the process log.

Format:
START-PROCESS-LOG-ONE <process number>

Parameters:
<process number> the process identifier found by the WHO-IS-ON command.

Rules:
1. Logging of one specified process is started. The percentage of the time spent by the process in the following states are logged:
   1. Idle
   2. Waiting for swapper
   3. Using swapper,
   4. In monitor call
   5. Active
   6. Waiting for CPU

   The 'active' entry (5) is equal to the entry that would appear in the START-PROCESS-LOG-ALL command for the specified process.
2. This command is allowed for user SYSTEM only.

5 START-SWAPPER

Function:
Start the swapper process.

Format:
START-SWAPPER

Parameters:
None.

Rules:
1. The swapper process, loaded into memory by the LOAD-SWAPPER command, is started.
2. If the swapper process is not present in memory, it will be loaded and then started.

5 STATUS

Function:
List contents of the status register.

Format:
STATUS

Parameters:
None.

Rules:
1. Lists the contents of the status register. Some of the status bits have no corresponding bit in the trap-enable registers. These bits are always listed with name and value. If other status bits are set, their names and values are listed.

5 STEP

Function:
Specify single step execution of a program.

Format:
STEP <step start>,[<execution start>],[<count>]

Parameters:

<step start>	the program address where single step execution should start. Default is the current value of the program counter.
<execution start>	the program address where execution should start. Default is the current value of the program counter.
<count>	one plus the number of times the address specified as <step start> should be passed before single step execution is started. Default is 1.

Rules:

1. Single step. If no parameter is given, the instruction pointed to by the program counter is disassembled and shown on the output device. By typing carriage return, this instruction will be executed. The next instruction will then be disassembled and shown on the output device and will be executed when another carriage return is given.
2. Typing anything else than a single carriage return causes return to the command processor of the Monitor.
3. If the <step start> parameter is given, normal execution is started from the current program counter, and single step is provided when the <step start> address is reached. If, in addition, the <execution start> parameter is given, the execution is started at the specified address rather than from the current program counter. The <step start> address will be passed <count>-1 times before single step is provided; the default value will start single step execution as soon as the indicated <step start> address is reached.
4. This command may be used immediately after a domain has been placed in memory by the PLACE-DOMAIN (or DEBUG-PLACE) command. More commonly it is used when the program is in a temporary halt state after a breakpoint has been detected. A break is then inserted immediately before the program address where the tracing should start. From this point on, single instruction execution is started. If desired, the contents of any register or data location may be inspected after each instruction executed. Any intermediate command (other than CR) will require that STEP be re-specified in order to continue single step execution. Default parameters to the STEP command will cause the next instruction in sequence to be executed.

5 STOP-HISTOGRAM

Function:
Stop the histogram sampling.

Format:
STOP-HISTOGRAM

Parameters:
None.

5 STOP-MONCALL-LOG

Function:
Stop sampling for the monitor call log.

Format:
STOP-MONCALL-LOG

Parameters:
None.

Rules:
1. The log buffer is released, and no further logging of monitor calls will be done.
2. Other users may use the HISTOGRAM, the PROCESS-LOG, the MONCALL-LOG and the SWAPPING-LOG commands. If the buffer is not released through this command, it will automatically be released when the user leaves the Monitor.

₅STOP-ND-500

Function:
Stop the ND-500.

Format:
STOP-ND-500

Parameters:
None.

Rules:
1. The ND-500 CPU is stopped. When a user attempts to start an ND-500 process after this command has been executed, the microcode will automatically be reloaded, the swapper process placed in memory and started ("warm start" of ND-500).
2. If the ND-500 should be stopped and then started with no need for restarting running jobs, the MICRO-STOP command should be used.
3. This command may not be abbreviated.
4. This command is restricted to user SYSTEM.

5 SWAPPING-LOG

Function:
Start sampling for the swapping log.

Format:
SWAPPING-LOG <interval>

Parameters:
<interval> the period in seconds between each report.

Rules:
1. This command will clear the log buffer and reserve it for the user issuing the command. The buffer is the same as the one used in the PROCESS-LOG, MONCALL-LOG and HISTOGRAM commands, which means that only one user at a time can use any of these commands.
2. Logging of swapping is started, and will be written to the output device every <interval> seconds. The logging is stopped by pressing the escape key.
3. Each report will include values for the last interval, the average per interval since logging was started and the total. For each of these, a count of page faults, transfers, the total free space etc. will be listed.
4. This command is allowed for user SYSTEM only.

5 SYSTEM-TRAP-DISABLE

Function:
Disable handling of the trap conditions specified.

Related commands:
Related ND-500 Monitor commands: SYSTEM-TRAP-ENABLE

Format:
SYSTEM-TRAP-DISABLE <trap condition> ...

Parameters:
<trap condition> one of the trap names listed below or an unambiguous abbreviation.

Rules:
1. The <trap conditions> specified will not be reacted upon by the system when the condition occurs.
2. A number of trap conditions may not be system disabled. If a modification of these traps are attempted, an error message is issued and the command ignored.

5 SYSTEM-TRAP-ENABLE

Function:
Enable handling of the trap conditions specified.

Related commands:
Related ND-500 Monitor commands: SYSTEM-TRAP-DISABLE

Format:
SYSTEM-TRAP-ENABLE <trap condition> ...

Parameters:
<trap condition> one of the trap names listed below or an unambiguous abbreviation.

Trap condition names:

OVERFLOW
INVALID-OPERATION
DIVISION-BY-ZERO
FLOATING-UNDERFLOW
FLOATING-OVERFLOW
BCD-OVERFLOW-
ILLEGAL-OPERAND-VALUE
SINGLE-INSTRUCTION-TRAP
BRANCH-TRAP
CALL-TRAP
BREAKPOINT-INSTRUCTION-TRAP
ADDRESS-TRAP-FETCH
ADDRESS-TRAP-READ
ADDRESS-TRAP-WRITE
ADDRESS-ZERO-ACCESS
DESCRIPTOR-RANGE
ILLEGAL-INDEX
STACK-OVERFLOW
STACK-UNDERFLOW
PROGRAMMED-TRAP
DISABLE-PROCESS-SWITCH-TIMEOUT
DISABLE-PROCESS-SWITCH-ERROR
INDEX-SCALING-ERROR
ILLEGAL-INSTRUCTION-CODE
ILLEGAL-OPERAND-SPECIFIER
INSTRUCTION-SEQUENCE-ERROR
PROTECT-VIOLATION

Rules:
1. The <trap condition> specified will be handled by the Monitor residing in the ND-100 when the condition occurs. It will be given a standard treatment, which varies with the kind of trap.

2. If a local trap handler is defined and the local trap enabled, it will be used rather than the system trap handler. System trap handling is used only for those trap conditions that are locally disabled or have no local trap handling defined.

5 TAKE-N500-PAGES

Function:
Release part of common memory previously reserved for exclusive use by the ND-500.

Related commands:
Related ND-500 Monitor commands: GIVE-N500-PAGES

Format:
TAKE-N500-PAGES <no. of pages>

Parameters:
<no. of pages> the number of pages to be returned to ND-100.

Rules:
1. This command is restricted to user SYSTEM.
2. The specified number of pages are taken from the ND-500 and given to the ND-100. The number specified should be less than or equal to the number given to ND-500 previously with the GIVE-N500-PAGES command, otherwise the number of pages actually released is returned.

5 TEMPORARY-BREAK

Function:
Define a temporary breakpoint.

Format:
TEMPORARY-BREAK <address>,[<count>],[<command>]

Parameters:

<address>	the program address where the breakpoint is to be set.
<count>	one plus the number of times the breakpoint should be ignored before a break is performed. Default is 1.
<command>	command to be executed on a break.

Rules:
1. Similar to BREAK except that when the breakpoint is reached, the original instruction is permanently restored, and will not cause a break next time the instruction is executed.

5 TIME-USED

Function:
Report CPU time used by current process.

Format:
TIME-USED

Parameters:
None.

Rules:
1. This command prints the ND-500 and ND-100 CPU time and clock time elapsed from the moment that the ND-500 Monitor was entered.

5 TRACE

Function:
Define a trace condition.

Format:
TRACE <address>,[<datatype>]

Parameters:

<address>	the address of the variable to be traced (lowermost byte).
<datatype>	BYTE, HALFWORD, WORD, FLOAT or DOUBLEFLOAT or abbreviation of one of these, indicating the size of the data element to be traced.

Rules:

1. Whenever the location starting at the specified address is modified during program execution, its new value is displayed on the output device.
2. This command uses the low and high limit registers, LL and HL of the ND-500 exclusively, that is, the previous command using these registers (GUARD or TRACE) will be discontinued.

5 UNFIX-SEGMENT

Function:
Release a segment previously fixed in memory.

Format:
UNFIX-SEGMENT <segment number>,<type (P or D)>

Parameters:

<segment number>	the name of a segment which has previously entirely or in part been fixed in memory through one of the above commands.
<type (P or D)>	P or D, indicating program or data segment, respectively.

Rules:

1. The area occupied by a segment, or part of segment, previously specified as fixed in memory, is unfixed. The freed space may be used by other segments. The command has no effect before every process that has fixed the segment has released or unfixed it.

5 VALUE-ENTRIES

Function:
Print the value of a defined symbol.

Format:
VALUE-ENTRIES <entries>

Parameters:
<entries> the name of a defined symbol.

Rules:
1. Prints the values of the labels specified on the output device. The value is printed in octal format. The label will also be identified as a program or as a data segment label.

5 VERSION

Function:
Print the version of the current running ND-500 Monitor and Swapper and the micro program.

Related commands:
Related SINTRAN III commands: LIST-TITLE

Format:
VERSION

Parameters:
None.

Rules:
1. The version numbers of the currently active subsystem (background part of the monitor), system part (SINTRAN part of the monitor), swapper and micro program is written to the output device.

5 WHO-IS-ON

Function:
Show which users are using the ND-500.

Related commands:
Related ND-500 Monitor commands: PROCESS-STATUS
Related SINTRAN III commands: WHO-IS-ON

Format:
WHO-IS-ON

Parameters:
None.

Rules:
1. A list of users currently logged on the ND-500 is printed on the output device.

@ (SINTRAN III COMMAND)

Function:
Execute a SINTRAN III command.

Format:
@command

Parameters:
Varying, determined by the SINTRAN III command

Rules:
1. If a line starts with the @ character, the remainder of the line is assumed to be a SINTRAN III command and executed through the COMND monitor call.
2. Note that control will not return to the monitor after execution of the command if another subsystem or user program was called by the command. Also, if an error occurs during the execution of the command, control will not return to the calling program.
3. The Monitor will check the command issued before it is submitted to SINTRAN III, and will allow only a subset of SINTRAN III commands.

APPENDIX A

ND TERMINAL TYPES

A ND TERMINAL TYPES

The list shows the current types defined by Norsk Data A.S. New numbers are allocated as ND adds new terminal types to systems.

To implement a non-standard terminal type see the VTM-compound program, explained in the SINTRAN III Utilities Manual, ND-60.151.

The terminal type number is calculated as follows:

Bit	
15	Reserved.
14	Set to one if the terminal is a VDU (not hard copy).
13	Set to one if the terminal handles the ASCII backspace character (BS) properly.
12	Set to one if ASCII form feed (FF) gives new page or clear screen.
11	Set to one if the VDU has cursor positioning (either directly or by use of cursor arrows).
10	Set if the terminal utilises ASCII escape (ESC) within input sequences.
9-8	Not used.
7-0	Terminal model number. See next page.

Example:
The number for TANDBERG TDV-2115-STD on logical device number 49 is set as follows:

```
@SET-TERMINAL-TYPE 49,164003B
```

or more permanently

```
@SINTRAN-SERVICE-PROGRAM
*CHANGE-DATAFIELD <terminal number> INPUT YES YES YES
CTTYP/164003
.
EXIT
```

ND Terminal Types

Model Name	VDU	BS	FF	Model No.	ND St.	Comments
DUMMY				0		Terminal type not set
VISTAR-OLD	x		x	1		
TELETYPE-ASR-33				2	x	
TANDBERG TDV-2115	x	x		3	x	
INFOTON-200-1	x	x	x	4		
INFOTON-400	x	x	x	5		
DEC-VT100	x	x		6		80-col. mode
TANDBERG TDV-2000	x	x		7		
BEEHIVE-100	x			8		
ND-NCT	x	x	x	9		
HAZELTINE-1520	x	x		10		
DEC-LA36		x		11	x	Decwriter-II
VISTAR-GTX	x	x		12		
DEC-VT52	x	x		29		
TEC-501/502	x	x		30		
DACOLL-242	x	x		31		
NEWBURY-7000/3	x	x		32		
TELEVIDEO-912/920	x	x		33		
VISUAL-200	x	x		34		
LEAR-SIEGLER-ADM-3A	x	x		35		
TANDBERG TDV-2215-EXTENDED	x	x		36	x	
VOLKER-CRAIG-VC404	x	x		37		
VOLKER-CRAIG-VC410	x	x	x	38		
VOLKER-CRAIG-VC414	x	x		39		
HEWLETT-PACKARD-2621A	x	x		40		
DATA-MEDIA-ELITE-3045	x	x		41		
BEEHIVE-MINIBEE	x			42		
PERICOM-6800	x	x	x	43		80-col.mode
LEAR-SIEGLER-ADM-31	x	x		44		
BEEHIVE-DM5A	x	x		45		
FACIT-4420	x	x	x	46		VT52-mode
ADDS-VIEWPOINT	x	x	x	47		
HAZELTINE-EXECUTIVE-80	x	x		48		
AMPEX-DIALOGUE-80	x	x		49		
VOLKER-CRAIG-VC4404	x	x		50		ADM-3A
DATA-MEDIA-ELITE-1520/1521	x	x	x	51		
TANDBERG TDV-2215-SDS-V2	x	x		52	x	
TANDBERG TDV-2200/9-ND NOTIS	x	x		53	x	
TANDBERG TDV-2220	x	x		54		
TANDBERG TDV-2200/9-ND-NET	x	x		55		
FACIT-4420-ND NOTIS	x	x	x	57	x	
NOKIA-VDU210	x	x		58		
LEAR-SIEGLER-ADM-42	x	x		66		
LEAR-SIEGLER-ADM-32	x	x		70		
GENERAL-TERMINAL-CORP.-100/101	x	x	x	73		
TEKTRONIX-4105	x	x		78		
IBM-PC	x	x		79		
TANDBERG TDV-2200/9-V2-ND-NOTIS	x	x		83	x	
FACIT TWIST (24-LINE MODE)	x	x	x	91	x	
FACIT TWIST (72-LINE MODE)	x	x	x	92	x	
TANDBERG TDV-2200/9S-ND NOTIS	x	x	x	93	x	
SIEMENS 3975	x			94		
SIEMENS 3975	x			94		
COLORTREND 210 ND	x			99	x	

ND St.: Those types automatically provided, when ordering NOTIS.

APPENDIX B

LOGICAL DEVICE NUMBERS USED IN SINTRAN III

B LOGICAL DEVICE NUMBERS USED IN SINTRAN III

Octal Logical Device No.:	Decimal Logical Device No.:	Device Name:
0-77	0-63	Character devices
100-177	64-127	Mass storage files
200-277	128-191	Non-internal devices
300-377	192-255	User Semaphores
400-477	256-319	Process Control Devices/Connect Devices
500-577	320-383	System devices
600-677	384-447	Previously used by ND-Net.
700-777		NORDCOM devices and other special devices
1000-1077		Extension of character devices
1100-1177		System devices
1200-1277		System devices
1300-1377		System devices
1400-1477		System devices
1500-1577		System devices
1600-1677		System devices
1700-1777		System devices
2000-2077		Terminal nos. 65-125

Logical Device Numbers Used in SINTRAN III

Octal Logical Device No.:	Decimal Logical Device No.:	Device Name:
0	0	INBT;INCH (background): edited input, else: dummy
1	1	Background: "own terminal" RT: Terminal 1
2	2	Tape reader 1 (Console) / error device
3	3	Tape punch 1
4	4	Card reader 1
5	5	Line printer 1
6	6	Synchronous modem 1
7	7	Terminal 17
10	8	Plotter 1
11	9	Terminal 2
12	10	Tape reader 2
13	11	Tape punch 2
14	12	Bus switch device
15	13	Line printer 2
16	14	Synchronous modem 2
17	15	Terminal 18
20	16	Cassette drive 1
21	17	Cassette drive 2
22	18	Versatec on DMA printer/plotter 1
23	19	Versatec on DMA printer/plotter 2
24	20	Tektronix display
25	21	Magnetic tape 1 unit 2
26	22	Synchronous modem 5
27	23	Synchronous modem 6
30	24	Synchronous modem 3
31	25	Synchronous modem 4
32	26	Magnetic tape 2 unit 0
33	27	Magnetic tape 1 unit 3
34	28	Magnetic tape 2 unit 1
35	29	Card Punch 3
36	30	CDC link
37	31	Not used
40	32	Magnetic tape 1 unit 0
41	33	Magnetic tape 1 unit 1
42-47	34-39	Terminals 3-8
50	40	Card punch 1
51	41	Card punch 2
52-57	42-47	Terminals 19-24
60-67	48-55	Terminals 9-16
70-77	56-63	Terminals 25-32

Logical Device Numbers 400-477:

400-437	CAMAC interrupts or special process interface
440	Direct task level 6
441	Direct task level 7
442	Direct task level 8
443	Direct task level 9
450-467	CONNECT devices
470	ND 23 - programmed clock

Logical Device Numbers 500-577:

500	Internal device for error message RT-program
501	Semaphore for segment transfer
502	Disk 10Mb 1 data field
503	RT-Loader command lock
504	General lock for file system
505	User-file-buffer lock
506	Object-file-buffer lock
507	RT-open-file-table lock
511	Disk 10Mb 1, unit 0, R-bit-file-buffer lock
512	Disk 10Mb 1, unit 0, F-bit-file-buffer lock
513	Disk 10Mb 1, unit 0, R-directory lock
514	Disk 10Mb 1, unit 0, F-directory lock
515	DF1, file-transfer for RT lock for disk 1, disk 2, disk3 and disk 4
516	DF2, for open-file monitor call from RT-program data field
517	RTFIL semaphore
520	NOTIS-IR semaphore 2
521	Device buffer allocation lock
522	Disk 10Mb 1, unit 1, R-directory lock
523	Disk 10Mb 1, unit 1, F-directory lock
524	Disk 10Mb 1, unit 1, R-bit-file-buffer lock
525	Disk 10Mb 1, unit 1, F-bit-file-buffer lock
526	DF3, transfer lock for magnetic tape 1
527	Spooling queue semaphore
530	Accounting semaphore
531	CDC link monitor call data field
532	Spooling device 4, queue semaphore
533	Spooling device 4, queue I/O semaphore
534	Spooling device 5, queue semaphore
535	Spooling device 5, queue I/O semaphore
536	Spooling device 6, queue semaphore
537	Spooling device 6, queue I/O semaphore
540	Internal Device Remote Batch IBM
541	Internal Device Remote Batch UNIVAC
542	Internal Device Remote Batch Honeywell Bull
543	Internal Device Remote Batch CDC
544	(544) Big disk 3, Unit 0 directory lock
545	(545) Big disk 3, Unit 0 bit-file buffer lock
546	(546) Unit 1

550	(547) Unit 1
551	(550) Unit 2
552	(551) Unit 2
554	Disk 10Mb 1, unit 3, R-bit-file-buffer lock (552) Unit 3
555	Disk 10Mb 1, unit 3, F-bit-file-buffer lock (553) Unit 3
556	Disk 10Mb 1, unit 3, R-directory lock
557	Disk 10Mb 1, unit 3, F-directory lock
560	Magnetic tape 1, data field
561	All magnetic tapes, directory lock
562	Spooling device 11, queue semaphore
563	Magtape 2, unit 2, I/O data field
564	Magtape 2, unit 3, I/O data field
565	Big disk 3, data field
567	CDC link data field
570	Disk 10Mb 1, unit 2, R-directory lock
571	Disk 10Mb 1, unit 2, F-directory lock
572	Disk 10Mb 1, unit 2, R-bit-file-buffer lock 563 Magnetic tape 2, unit 2, I/O data field
573	Disk 10Mb 1, unit 2, F-bit-file-buffer lock
574	Monitor call data field for cassette
575	Cassette data field 564 Magnetic tape 2, unit 3 I/O data field
576	DF5, monitor call data field for Versatec 1
577	Versatec data field

Logical Device Numbers 1000 - 1077:

1000	Floppy disk 1, unit 0, I/O data field
1001	Floppy disk 1, unit 1, I/O data field
1002	Floppy disk 1, unit 2, I/O data field
1003	Floppy disk 2, unit 0, I/O data field
1004	Floppy disk 2, unit 1, I/O data field
1005	Floppy disk 2, unit 2, I/O data field
1006	Hasp DMA 1, I/O data field
1007	Hasp DMA 2, I/O data field
1010	Hasp DMA 3, I/O data field
1011	Hasp DMA 4, I/O data field
1012	Hasp DMA 5, I/O data field
1013	Hasp DMA 6, I/O data field
1014	Line printer 3, I/O data field
1015	Line printer 4, I/O data field
1040-1077	Terminals 33 - 64

Logical Device Numbers 1100-1177:

1100	Big disk/big cartridge disk 1, data field
1101	Big disk/big cartridge disk 1, unit 0, directory lock
1102	Big disk/big cartridge disk 1, unit 0, bit-file-buffer lock
1103	NORD-50 data field
1104	Disk 10Mb 2, data field
1105	Disk 10Mb 2, unit 0, R-directory lock
1106	Disk 10Mb 2, unit 0, F-directory lock
1107	Disk 10Mb 2, unit 0, R-bit-file-buffer lock
1110	Disk 10Mb 2, unit 0, F-bit-file-buffer lock
1111	Magnetic tape 2 data field
1112	Big disk 4, unit 0, directory lock
1113	Floppy disk 1, unit 3, I/O data field
1114	Big disk 4, unit 0, bit-file-buffer lock
1115	Floppy disk 2, unit 3, I/O data field
1116	Dr 7, transfer lock for magnetic tape 2
1117	Big disk/big cartridge disk 1, unit 1, directory lock
1120	Big disk/big cartridge disk 1, unit 1, bit-file-buffer lock
1121	Big disk/big cartridge disk 1, unit 2, directory lock
1122	Big disk/big cartridge disk 1, unit 2, bit-file-buffer lock
1123	Big disk/big cartridge disk 1, unit 3, directory lock
1124	Big disk/big cartridge disk 1, unit 3, bit-file-buffer lock
1125	Versatec controller 2
1126	Monitor call data field for Versatec controller 2
1127	DF 39, magnetic tape 3 monitor call data field
1130	Disk 10Mb 2, unit 1, R-directory lock
1131	Disk 10Mb 2, unit 1, F-directory lock
1132	Disk 10Mb 2, unit 1, R-bit-file lock
1133	Disk 10Mb 2, unit 1, F-bit-file lock
1134	Floppy disk 1, unit 3, directory table lock
1135	Floppy disk 1, unit 3, bit-file-buffer lock
1136	Spooling device 1, queue semaphore
1137	Spooling device 1, queue I/O semaphore
1140	Spooling device 2, queue semaphore
1141	Spooling device 2, queue I/O semaphore
1142	Spooling system general semaphore
1143	Spooling system wait for used pages semaphore
1144	Spooling system wait for free pages semaphore
1145	Floppy disk 1, data field
1146	Monitor call data field for floppy disk 1
1147	Floppy disk 2, unit 3, directory table lock
1150	Floppy disk 1, unit 0, directory table lock
1151	Floppy disk 1, unit 0, bit-file-buffer lock
1152	Floppy disk 1, unit 1, directory table lock
1153	Floppy disk 1, unit 1, bit-file-buffer lock
1154	Floppy disk 1, unit 2, directory table lock
1155	Floppy disk 1, unit 2, bit-file-buffer lock
1156	Floppy disk 2, data field
1157	Monitor call data field for floppy disk 2
1160	Floppy disk 2, unit 3, bit-file-buffer lock

1161 Floppy disk 2, unit 0, directory table lock
1162 Floppy disk 2, unit 0, bit-file-buffer lock
1163 Floppy disk 2, unit 1, directory table lock
1164 Floppy disk 2, unit 1, bit-file-buffer lock
1165 Floppy disk 2, unit 2, directory table lock
1166 Floppy disk 2, unit 2, bit-file-buffer lock
1167 Line printer 1, data field
1170 Monitor call data field for line printer 1
1171 Big disk 4, unit 2, directory lock
1172 Big disk 4, unit 2, bit-file buffer lock
1173 Semaphore for spooling device 3
1174 Semaphore for spooling device 3
1175 Line printer 2, data field
1176 Monitor call data field lock for line printer 2
1177 Spooling semaphore, for id data buffer lock

Logical Device Numbers 1200 - 1277:

1200 ND TPS system semaphore
1201 DMAC command lock
1202 RT-PROGRAM-LOG semaphore
1203 Histogram commands lock
1204 SINTRAN-SERVICE-PROGRAM command lock
1205 Mail system lock
1206 Terminal 1, data field
1207 Big disk/big cartridge disk 2, data field
1210 Internal device 1, data field
1211 Monitor call data field for internal device 1
1212 Internal device 2, data field
1213 Monitor call data field for internal device 2
1214 Internal device 3, data field
1215 Monitor call data field for internal device 3
1216 Internal device 4, data field
1217 Monitor call data field for internal device 4
1220 Internal device 5, data field
1221 Monitor call data field for internal device 5
1222 Accounting semaphore
1223 NOTIS-IR semaphore
1224 Winchester disk, data field or STC magtape controller 4
1225 Winchester disk 1, unit 0, directory table lock STC magtape 4, unit 0, I/O data field
1226 Winchester disk 1, unit 0, bit-file-buffer lock STC magtape 4, unit 1, I/O data field
1227 Winchester disk 1, unit 1, directory table lock STC magtape 4, unit 2,I/O data field
1230 Winchester disk, unit 1, bit-file-buffer lock STC magtape 4, unit 3, I/O data field
1231 Winchester disk 2, data field or STC magtape controller 3
1232 Winchester disk 2, Unit 0, directory table lock

1233 Winchester disk 2, unit 0, bit-file-buffer lock STC magtape 3, unit 1, I/O data field
1234 Winchester disk 2, unit 1, directory table lock STC magtape 3, unit 2, I/O data field
1235 Winchester disk 2, unit 1, bit-file-buffer lock STC magtape 3, unit 3, I/O data field
1236 Batch process 1, data field
1237 Batch process 1, internal device
1240 Batch process 2, data field
1241 Batch process 2, internal device
1242 Batch process 3, data field
1243 Batch process 3, internal device
1244 Batch process 4, data field
1245 Batch process 4, internal device
1246 Batch process 5, data field
1247 Batch process 5, internal device
1250 Batch process 6, data field
1251 Batch process 6, internal device
1252 Batch process 7, data field
1253 Batch process 7, internal device
1254 Batch process 8, data field
1255 Batch process 8, internal device
1256 Batch process 9, data field
1257 Batch process 9, internal device
1260 Batch process 10, data field
1261 Batch process 10, internal device
1262 Spooling device 7, queue semaphore
1263 Spooling device 7, queue I/O semaphore
1264 Spooling device 8, queue semaphore
1265 Spooling device 8, queue I/O semaphore
1266 Spooling device 9, queue semaphore
1267 Spooling device 9, queue I/O semaphore
1270 Spooling device 10, queue semaphore
1271 Spooling device 10, queue I/O semaphore
1272 Monitor call data field for internal device 1
1273 Monitor call data field for internal device 2
1274 Monitor call data field for internal device 3
1275 Monitor call data field for internal device 4
1276 Monitor call data field for internal device 5
1277 DF 40, magnetic tape 4, monitor monitor call data field

Logical Device Numbers 1300 - 1377:

1300	Big disk 4, unit 3, directory lock
1301	Big disk 4, unit 3, bit file buffer lock
1302	Device buffer lock
1303	Hasp DMA 1, data field
1304	Hasp DMA 1, data field 1300 big disk 4, unit 3, directory lock
1305	Monitor call data field for Hasp DMA 1 1301 big disk 4, unit 3, bit-file-buffer lock
1306	Monitor call data field for Hasp DMA 1 1302 not used
1307	Hasp DMA 2, data field
1310	Hasp DMA 2, data field
1311	Monitor call data field for Hasp DMA 2
1312	Monitor call data field for Hasp DMA 2
1313	Hasp DMA 3, data field
1314	Hasp DMA 3, data field
1315	Monitor call data field for Hasp DMA 3
1316	Monitor call data field for Hasp DMA 3
1317	Hasp DMA 4, data field
1320	Hasp DMA 4, data field
1321	Monitor call data field for Hasp DMA 4
1322	Monitor call data field for Hasp DMA 4
1323	Hasp DMA 5, data field
1324	Hasp DMA 5, data field
1325	Monitor call data field for Hasp DMA 5
1326	Monitor call data field for Hasp DMA 5
1327	Hasp DMA 6, data field
1330	Hasp DMA 6, data field
1331	Monitor call data field for Hasp DMA 6
1332	Monitor call data field for Hasp DMA 6
1333	Big disk/big cartridge disk 2, unit 0, directory table lock
1334	Big disk/big cartridge disk 2, unit 0, bit-file-buffer lock
1335	Big disk/big cartridge disk 2, unit 1, directory table lock
1336	Big disk/big cartridge disk 2, unit 1, bit-file-buffer lock
1337	Big disk/big cartridge disk 2, unit 2, directory table lock
1340	Big disk/big cartridge disk 2, unit 2, bit-file-buffer lock
1341	Big disk/big cartridge disk 2, unit 3, directory table lock
1342	Big disk/big cartridge disk 2, unit 3, bit-file-buffer lock
1343	Line printer 3, data field
1344	Monitor call data field for line printer 3
1345	Line printer 4, data field
1346	Monitor call data field for line printer 4
1347	Spooling device 11, queue I/O semaphore
1350	Spooling device 12, queue semaphore
1351	Spooling device 12, queue, I/O semaphore
1352	RT-PROGRAM-LOG command lock
1360	HDLC DMA, link 1, input; synchronous modem 1 for HDLC interface input/output
1361	HDLC DMA, link 1, output
1362	HDLC DMA, link 2, input; synchronous modem 2 for HDLC interface input/output
1364	HDLC DMA, link 3, input; synchronous modem 3 for HDLC interface input/output

1366	HDLC DMA, link 4, input; synchronous modem 4 for HDLC interface input/output
1373	HDLC DMA, link 6, output; synchronous modem 6 for HDLC interface output.
1374	X.21 logical number 1
1375	X.21 logical number 2
1376	X.21 logical number 3
1377	X.21 logical number 4
1400-1537	Terminal access device (TAD) 1-96 (decimal)
1600-1677	DMA device buffer, header locks for header numbers 0-77 (octal)
1722	Spooling device 13, queue semaphore
1723	Spooling device 13, queue I/O semaphore
1724	Spooling device 14, queue semaphore
1725	Spooling device 14, queue I/O semaphore
1726	Spooling device 15, queue semaphore
1727	Spooling device 15, queue I/O semaphore
1730	COSMOS file access, DF data field
1731	COSMOS Spooling, peripheral device number
2000-2077	Terminal nos. 65-127
2130	Spooling device 16, queue semaphore
2131	Spooling device 16, I/O semaphore
2132	Spooling device 17, queue semaphore
2133	Spooling device 17, I/O semaphore
2134	Spooling device 18 queue semaphore
2135	Spooling device 18, I/O semaphore
2136	Spooling device 19, queue semaphore
2137	Spooling device 19, I/O semaphore
2140	Spooling device 20, queue semaphore
2141	Spooling device 20, I/O semaphore
2142	Spooling device 21, queue semaphore
2143	Spooling device 21, I/O semaphore
2144	Spooling device 22, queue semaphore
2145	Spooling device 22, I/O semaphore
2146	Spooling device 23, queue semaphore
2147	Spooling device 23, I/O semaphore
2150	Spooling device 24, queue semaphore
2151	Spooling device 24, I/O semaphore
2152	Spooling device 25, queue semaphore
2153	Spooling device 25, I/O semaphore
2154	Spooling device 26, queue semaphore
2155	Spooling device 26, I/O semaphore
2156	Spooling device 27, queue semaphore
2157	Spooling device 27, I/O semaphore
2160	Spooling device 28, queue semaphore
2161	Spooling device 28, I/O semaphore
2162	Spooling device 29, queue semaphore
2163	Spooling device 29, I/O semaphore
2164	Spooling device 30, queue semaphore
2165	Spooling device 30, I/O semaphore
2166	COSMOS Spooling, queue semaphore
2167	COSMOS Spooling, I/O semaphore

A P P E N D I X C

ERROR MESSAGES

C ERROR MESSAGES

This appendix documents SINTRAN run-time and file system errors. Error messages originating in the subsystems are documented in the respective subsystem documentation; this also includes FORTRAN run-time errors, BASIC run-time errors, etc.

C.1 SINTRAN III Monitor

C.1.1 Run-Time Errors

Most run-time errors cause the current RT-program to be aborted and the error message

```
aa.bb.cc ERROR nn IN rr AT ll ; tttt
xx yy
```

is printed.

If the error occurs in a background program, the error message is written on the corresponding terminal. For RT-programs, the error message is written on the error message terminal (usually terminal 1).

The meaning of the parameters is as follows:

aa.bb.cc	Time when the error message was printed. aa hours bb minutes cc seconds
nn	Error number (see following pages).
rr	Name of RT-program.
ll	Octal address where the error occurred.
tttt	Explanatory text.
xx, yy	Numbers giving additional information about the error. One or both numbers can be omitted. (See following pages.)

Example:

```
01.43.32 ERROR 14 IN RTP1 AT 114721;
OUTSIDE SEGMENT BOUNDS
```

In the case of a segment transfer error, an additional message TRANSF! is given.

C.1.2 Run-Time Error Codes

Error Code	Meaning	xx	yy	Program Aborted
00	Illegal monitor call			yes
01	Bad RT-program address			yes
02	Wrong priority in PRIOR			yes
03	Bad memory page	page no.		
04	Internal interrupt on direct task level	level	bit no.	
06	Batch input error	error no.		yes
07	Batch output error	error no.		yes
08	Batch system error	error no.	L-reg.	yes
09	Illegal parameter in CLOCK			yes
10	Illegal parameter in ABSET			yes
11	Illegal parameter in UPDAT			yes
12	Illegal time parameters			yes
13	Page fault for non-demand	page no.		yes
14	Outside segment bounds	page no.		yes
15	Illegal segment number	segment no.		yes
16	Segment not loaded	segment no.		yes
17	Fixing demand	segment no.		yes
18	Too many fixed pages	segment no.		yes
19	Too big segment	segment no.		yes
20	Disk transfer error	hardware device no.	unit	no (yes if segment transfer
21	Disk transfer error	last 16 bit of sector address	hardware status	no
22	False interrupt	level	IDENTcode	no

Error Code	Meaning	xx	yy	Program Aborted
23	Device error	hardware device no.	hardware status	no
25	Already fixed	segment no.		yes
26	Device timeout	hardware device	unit no.	no no.
27	Illegal parameter in CONCT			yes
28	Space not available	segment no.		yes
29	MON 64 and MON 65 (File system error)	error no.	(see NORD File Syst ND-60.122	yes
30	Divide by zero			yes
31	Permit violation			yes
32	Ring violation			yes
33	HDLC driver, fatal error			yes
34	Illegal instruction			yes
35	Reentrant-FTN stack error			yes
36	Privileged instruction			yes
37	IOX error address level			no
38	Memory parity error	PEA reg.	PES reg.	yes
39	Memory out of range	PEA reg.	PES reg.	yes
40	Power fail			no
41	Illegal error code in ERMON			yes
42	Overlapping segments	segments		yes
44	Corrected memory error	PEA reg.	PES reg.	no
45	Not demand segments			yes
46	XMSG fatal error, internal error or inconsistency	XMSG error code	physical address	yes
47	XMSG user error	calling level		yes

Error Code	Meaning	xx	yy	Program Aborted
48	False BEX interrupt			
49	Remote power fail interrupt			
50-69	User defined error (MON 142)	error no.	suberror number	no
70	BEX parity error			
71	False MPM4 interrupt	busc no.	hardware status	no
72	MPM4 power fail interrupt	busc no.		no
73	MPM4 memory out of range	busc no.	lower limit	no
74	MPM4 memory error	local PES	local PEA	no
75	MPM4 parity error	busc no.	lower limit	no
76	MPM4 write parity error	busc no.	port code number	
90	FORTRAN run-time error	error no.		no
91	FORTRAN I/O error	error no.		no
92	Fatal error in GPIB driver. Controller stopped.			
93	GPIB error			
94	Illegal page index block			
95	Illegal function code			
96	Segment is fixed in page index table			
97	Trying to start uninitialised background program			
98	No background process available			
99	Octobus error			
100	FTN library error			

C.2 SINTRAN III File System

C.2.1 Error Codes Returned from Monitor Calls - numeric list

Error Code: Octal	Decimal	Message:
000	000	not used
001	001	not used
002	002	Bad file number
003	003	End of file
004	004	Card reader error (card read)
005	005	Device not reserved
006	006	not used
007	007	Card reader error (card not read)
010	008	not used
011	009	not used
012	010	End of device (timeout)
013	011	not used
014	012	not used
015	013	not used
016	014	not used
017	015	not used
020	016	not used
021	017	Illegal character in parameter
022	018	No such page
023	019	Not decimal number
024	020	Not octal number
025	021	You are not authorised to do this
026	022	Directory not entered
027	023	Ambiguous directory name
030	024	No such device name
031	025	Ambiguous device name
032	026	Directory entered
033	027	No such logical unit
034	028	Unit occupied
035	029	Master block transfer error
036	030	Bit-file transfer error
037	031	No more tracks available
040	032	Directory not on specified unit
041	033	Files open on this directory
042	034	Main directory not last one released
043	035	No main directory
044	036	Too long parameter
045	037	Ambiguous user name
046	038	No such user name
047	039	No such user name in main directory

Error Code: Octal	Decimal	Message:
050	040	Attempt to create too many users
051	041	User already exists
052	042	User has files
053	043	User is entered
054	044	Not so much space unreserved in directory
055	045	Reserved space already used
056	046	No such file name
057	047	Ambiguous file name
060	048	Wrong password
061	049	User already entered
062	050	No user entered
063	051	Friend already exists
064	052	No such friend
065	053	Attempt to create too many friends
066	054	Attempt to create yourself as friend
067	055	Contiguous space not available
070	056	Not directory access
071	057	Space not available to expand file
072	058	Space already allocated
073	059	No space in default directories
074	060	No such file version
075	061	No more pages available for this user
076	062	File already exists
077	063	Attempt to create too many files
100	064	Outside device limits
101	065	No previous version
102	066	File not contiguous
103	067	File type already defined
104	068	No such access code
105	069	File already open
106	070	Not write access
107	071	Attempt to open too many files
110	072	Not write and append access
111	073	Not read access
112	074	Not read, write and common access
113	075	Not read and write access
114	076	Not read and common access
115	077	File reserved by another user
116	078	File already opened for write by you
117	079	No such user index
120	080	Not append access
121	081	Attempt to open too many mass storage files
122	082	Attempt to open too many files
123	083	Not open for sequential write
124	084	Not open for sequential read
125	085	Not open for random write
126	086	Not open for random read
127	087	File number out of range
130	088	File number already used
131	089	No more buffer space
132	090	No file open with this number

Error Code: Octal	Decimal	Message:
133	091	Not mass storage file
134	092	File used for write
135	093	File used for read
136	094	File only open for sequential read or write
137	095	No scratch file open
140	096	File not reserved by you
141	097	Transfer error
142	098	File already reserved
143	099	No such block
144	100	Source and destination equal
145	101	Illegal on tape device
146	102	End of tape
147	103	Device unit reserved for special use
150	104	Main directory must be default
151	105	Not last file on tape
152	106	Not tape device
153	107	Illegal address reference in monitor call
154	108	Source empty
155	109	File already opened by another user
156	110	File already opened for write by another user
157	111	Missing parameter
160	112	Two pages must be left unreserved
161	113	not used
162	114	Device cannot be reserved
163	115	Overflow in read
164	116	DMA error
165	117	Bad data block
166	118	Control/modus word error
167	119	Parity error
170	120	LRC error
171	121	Device error (device-function read-last-status to get status)
172	122	Device buffer of requested size not available
173	123	Illegal mass storage unit number
174	124	Illegal parameter
175	125	Write-protect violation
176	126	Error detected by read after write
177	127	No EOF mark found
200	128	not used
201	129	Illegal function code
202	130	Timeout (no data block found)
203	131	Paper fault
204	132	Device not ready
205	133	Device already reserved
206	134	Not peripheral file
207	135	No such queue entry

Error Code: Octal	Decimal	Message:
210	136	Not so much space left
211	137	No spooling for this device
212	138	No such queue
213	139	Queue empty
214	140	Queue full
215	141	Not last used by you
216	142	not used
217	143	not used
220	144	not used
221	145	not used
222	146	not used
223	147	Formatting error
224	148	Incompatible device sizes
225	149	not used
226	150	Tape format error
227	151	Block count error
230	152	Volume not on specified unit
231	153	Not deleted record
232	154	Device error
233	155	Error in object entry
234	156	Odd number of bytes (right byte in last word insignificant)
235	157	Error in backspace/forward-space print
236	158	Block format error
237	159	Overflow in write
240	160	Illegal device type
241	161	Segment not contiguously fixed
242	162	Segment not fixed
243	163	Approaching end of accounting file
244	164	Accounting file full
245	165	No more unused spooling files available
246	166	Inconsistent directory
247	167	Object entry not used
250	168	User does not exist
251	169	Directory not reserved
252	170	Not a multiple of hardware block size
253	171	Not indexed file
254	172	Illegal floppy format
255	173	File not open
256	174	File already opened for read or write by you
257	175	User does not exist in the same main directory as you
260	176	File-access reentrant segments are not loaded
261	177	Illegal access code for remote file
262	178	File-access connection aborted by file server
263	179	File-access connection aborted by file server administrator
264	180	No answer from remote system; file-access connection aborted
265	181	File-access initialize failed

Error Code: Octal	Decimal	Message:
266	182	Unknown remote system name
267	183	File-access protocol error; connection aborted
270	184	File-access internal error; call not valid in current state
271	185	Illegal range of LAMU identifier
272	186	LAMU in use
273	187	LAMU table full
274	188	Illegal RT-program
275	189	Maximum number of LAMUs per RT-program reached
276	190	LAMU not connected
277	191	No LAMU area big enough
300	192	LAMU not defined
301	193	Illegal logical page number
302	194	Logical LAMU overlap
303	195	You can only log in on a main directory
304	196	Directory index too large
305	197	Object index too large
306	198	not used
307	199	Warning; 2-bank prog. file, but segment is only 1-bank
310	200	Warning; no such page in data bank, program starts as 1-bank
311	201	The specified device is not a terminal
312	202	No termination handling defined
313	203	No more remote file-access data segments available
314	204	Input while escape/local off is illegal
315	205	TAD protocol error, illegal or inconsistent message
316	206	Terminal line not connected
317	207	Illegal combination of DENTE and DTUSE bits
320	208	Directory not reserved by you
321	209	Wrong project password
322	210	File-access transport layer error; all connections aborted
323	211	File-access internal error; invalid parameter value
324	212	File-access not running or crashed; all connections aborted
325	213	Wrong format in file
326	214	Directory already reserved for special use
327	215	Unknown user-control code
330	216	No service is available for this code
331	217	Please terminate current service before requesting new service
332	218	This code is only legal within a service
333	219	Remote file server is not available
334	220	ND-100 panel clock incorrect
335	221	Buffer size too big for buffer previously obtained
336	222	Illegal segment name
337	223	Not octal number
340	224	Not contiguous file
341	225	Ambiguous command
342	226	Protected command

Error Code: Octal	Decimal	Message:
343	227	Ambiguous subsystem
344	228	No more spooling pages left
345	229	No more versions can be created in this object block
346	230	Illegal baud rate specified
347	231	Illegal character length
350	232	Illegal parity specified
351	233	Not legal from RT-program
352	234	Illegal when not originally own terminal
353	235	Illegal break/echo strategy
354	236	Illegal size of parameter array
355	237	Illegal area specified
356	238	Not 8 bits character length
357	239	Terminal already in a display table
360	240	Not a master terminal
361	241	Not connected to specified master terminal
362	242	Error in display table
363	243	Fatal error occurred during read/write in segments
364	244	Baud rate not set by software
365	245	Illegal baud rate in data field
366	246	Program is active
367	247	No more physical memory available
370	248	No more allocate-memory-table indexes available
371	249	Illegal segment
372	250	Illegal address
373	251	Illegal program LAMU identifier
374	252	Program LAMU already exists
375	253	No such program LAMU
376	254	Illegal program LAMU size
377	255	Program LAMU not connected
3200	1664	Not allowed now
3201	1665	Illegal index
3202	1666	Disc access log file is full

C.2.2 Error Codes Returned from Monitor Calls - alphabetic list

Accounting file full (244_8)

The file used to store accounting is full. The file must be reset by the accounting service program.

Ambiguous command (341_8)

The given command is an abbreviated form that can be expanded in more than one way, or its expansion is one of the few commands that must be written in full.

Ambiguous device name (031_8)

The given device specification matches the name of more than one device name.

Ambiguous directory name (027_8)

The given directory specification matches more than one directory name.

Ambiguous file name (057_8)

The given file specification matches more than one file name in the current directory.

Ambiguous subsystem (343_8)

The command given is an abbreviated form that matches the name of more than one subsystem.

Ambiguous user name (045_8)

The user specification matches more than one user name.

Approaching end of accounting file (243_8)

The file used to store accounting information is nearly full. The file must be reset by the accounting service program.

Attempt to create too many files (077_8)

The user already hva the maximum number of files. Either delete files or increase the maximum number of files.

Attempt to create too many friends (065$_8$)

The maximum number of friends (8) has already been defined.

Attempt to create too many users (050$_8$)

The maximum number of users have already been created.

Attempt to create yourself as friend (066$_8$)

You are logged in as the user you specify as the new friend.

Attempt to open too many files (107$_8$)

You have already opened as many files as you are allowed to.

Attempt to open too many files (122$_8$)

You have already opened as many files as you are allowed to.

Attempt to open too many mass storage files (121$_8$)

You have already opened the maximum number of mass storage files.

Bad data block (165$_8$)

Read error - possible device malfunction.

Bad file number (002$_8$)

Internal error - the internal open-file-number is out of range.

Baud rate not set by software (364$_8$)

Terminal speed should have been set by software, but was only set by hardware.

Bit-file transfer error (036$_8$)

Error on a directory device. Unable to read system information on the device.

Block count error (227$_8$)

Self-explanatory.

Block format error (236_8)

Self-explanatory.

Buffer size too big for buffer previously obtained (335_8)

Attempt to change buffer size.

Card reader error (card not read) (007_8)

Error while reading cards. There may be a jammed card, or mispunch.

Card reader error (card read) (004_8)

Error while reading cards. There may be a jammed card, or mispunch.

Contiguous space not available (067_8)

Your file cannot be expanded.

Control/modus word error (166_8)

Error in control word.

DMA error (164_8)

Error in DMA transfer.

Device already reserved (205_8)

Self-explanatory.

Device buffer of requested size not available (172_8)

Self-explanatory.

Device cannot be reserved (162_8)

Self-explanatory.

Device error (232_8)

Device error detected.

Device error (device-function read-last-status to get status) (171$_8$)

Device error detected. Use the SINTRAN III command DEVICE-FUNCTION device,READ-LAST-STATUS to get status information.

Device not ready (204$_8$)

Possibly a floppy disk (or a disk pack) not properly inserted, a printer is in offline (unselect) mode etc. when trying to access the device.

Device not reserved (005$_8$)

Attempt to access a device which must be reserved without reserving it.

Device unit reserved for special use (147$_8$)

Device must be reserved for special use to be accessed the way you tried.

Directory already reserved for special use (326$_8$)

Devices reserved for special use may not be accessed by other users at the same time.

Directory entered (032$_8$)

Attempt to access a directory erroneously while it is entered.

Directory index too large (304$_8$)

Attempt to specify a directory index outside range.

Directory not entered (026$_8$)

Attempt to access a directory that has not been previously entered. Probably due to bad spelling of the directory name.

Directory not on specified unit (040$_8$)

Directory name misspelt or wrong unit specified or wrong removable pack inserted.

Directory not reserved (251$_8$)

The directory must be reserved for this function.

Directory not reserved by you (320$_8$)

The directory is already reserved, but not by you.

Disc access log file is full (3202$_8$)

The file used to store data for the disk access log facility is full.

End of device (timeout) (012$_8$)

Unable to get input from the device.

End of file (003$_8$)

Attempt to read past the end of the file.

End of tape (146$_8$)

Attempt to read past the last data written on tape, or write past physical end of tape.

Error detected by read after write (176$_8$)

The written data were read back in order to check that the write was successfull, but showed that it was not.

Error in backspace/forward-space print (235$_8$)

Error whil eattempting backspace or forward-space print.

Error in display table (362$_8$)

Internal error in the table of terminals used for the display facility.

Error in object entry (233$_8$)

Internal file system error.

Fatal error occurred during read/write in segments (363$_8$)

Self-explanatory.

File-access internal error; call not valid in current state (270$_8$)

Self-explanatory.

File-access internal error; invalid parameter value (323$_8$)

Self-explanatory.

File-access not running or crashed; all connections aborted (324$_8$)

Self-explanatory.

File-access protocol error; connection aborted (267$_8$)

Internal error in remote file access.

File already exists (076$_8$)

Attempt to create a file with the same name as an existing file.

File already open (105$_8$)

Attempt to open a file that is already open, possibly by another user.

File already opened by another user (155$_8$)

Self-explanatory.

File already opened for read or write by you (256$_8$)

Attempt to open a file that is already open.

File already opened for write by another user (156$_8$)

Self-explanatory.

File already opened for write by you (116$_8$)

Attempt to open a file a second time without first closing it.

File already reserved (142$_8$)

Attempt to reserve a file that is already reserved for you.

File not contiguous (102$_8$)

Possibly attempt to define a segment file that is not contiguous.

File not open (255$_8$)

Attempt to read or write to a file that is not open. Possibly specifying wrong file number.

File not reserved by you (140$_8$)

File is reserved by and for some other user, or the same user but at an other terminal.

File number already used (130$_8$)

Attempt to connect a file with a specific file number, when an other file has that number.

File number out of range (127$_8$)

An open-file-number was specified, but no such open file exists.

File only open for sequential read or write (136$_8$)

Self-explanatory.

File reserved by another user (115$_8$)

Attempt to open a file that has been reserved by another user.

File type already defined (103$_8$)

Attempt to redefine file type (terminal file/peripheral file/spooling file, etc).

File used for read (135$_8$)

Self-explanatory.

File used for write (134$_8$)

Self-explanatory.

File-access connection aborted by file server (262$_8$)

Self-explanatory.

File-access connection aborted by file server administrator (263$_8$)

Self-explanatory.

File-access initialize failed (265$_8$)

Self-explanatory.

File-access reentrant segments are not loaded (260$_8$)

The reentrant segments used for remote file access is not loaded.

File-access transport layer error; all connections aborted (322$_8$)

Internal error in remote file access.

Files open on this directory (041$_8$)

The directory cannot be released until all files on it are closed.

Formatting error (223$_8$)

Error while attempting to format a disk or a floppy disk.

Friend already exists (063$_8$)

The specified user is already a friend.

Illegal RT-program (274$_8$)

No legal RT-program address specified.

Illegal access code for remote file (261$_8$)

Attempt to access a remote file with illegal access code(s).

Illegal address (372$_8$)

The address specified is illegal.

Illegal address reference in monitor call (153$_8$)

Probably internal error in the program.

Illegal area specified (355_8)

Attempt to specify illegal area in monitor call,

Illegal baud rate in data field (365_8)

Terminal speed out of range.

Illegal baud rate specified (346_8)

Self-explanatory.

Illegal break/echo strategy (353_8)

Attempt to specify illegal echo and/or break strategy.

Illegal character in parameter (021_8)

Wrong syntax in the parameter. Probably due to bad spelling, missing punctuation, unbalanced parenthesis or extraneous characters.

Illegal character length (347_8)

Attempt to set character length less then 5 bits or greater than 8 bits.

Illegal combination of DENTE and DTUSE bits (317_8)

Internal inconsitency - directory is marked both as entered and reserved for special use.

Illegal device type (240_8)

Self-explanatory.

Illegal floppy format (254_8)

Attempt to set or use an unsupported floppy format.

Illegal function code (201_8)

Illegal function code in monitor call.

Illegal index (3201_8)

Illegal sub-function code or index in monitor call.

Illegal logical page number (301$_8$)

Logical page numbers must be in the range 0-63 decimal (0-77 octal)

Illegal mass storage unit number (173$_8$)

Self-explanatory.

Illegal on tape device (145$_8$)

This function is not allowed on magnetic tape.

Illegal parameter (174$_8$)

One of the parameters can only have one of a few specific values, not including the value given.

Illegal parity specified (350$_8$)

Attempt to specify illegal parity.

Illegal program LAMU identifier (373$_8$)

The LAMU identifier specified is illegal.

Illegal program LAMU size (376$_8$)

Size of LAMU is out of range.

Illegal range of LAMU identifier (271$_8$)

LAMU identifier is out of range.

Illegal segment (371$_8$)

Attempt to change one of the the active segments for a program to an illegal segment.

Illegal segment name (336$_8$)

The segment name specified is illegal.

Illegal size of parameter array (354$_8$)

Parameter array in monitor call too small.

Illegal when not originally own terminal (352_8)

Error in monitor call - attempt to reset other terminal to become own.

Incompatible device sizes (224_8)

Incompatible device sices in COPY-DEVICE.

Inconsistent directory (246_8)

The information in the file directory contradicts itself, as when the same disk blocks are allocated to several files, or some blocks does not appear as belonging to any file, nor in the free list. This error may be a symptom of hardware errors that garble the data on write or read time.

Input while escape/local off is illegal (314_8)

Illegal input function when escape handling is disabled.

LAMU in use (272_8)

Attempt to access LAMU already in use.

LAMU not connected (276_8)

Attempt to access LAMU without connecting it.

LAMU not defined (300_8)

Attempt to access undefined LAMU.

LAMU table full (273_8)

Too many LAMUs defined.

LRC error (170_8)

Hardware error on LRC.

Logical LAMU overlap (302_8)

Two LAMUs may not overlap.

Main directory must be default (150$_8$)

Attempt to clear default directory flag on a main directory.

Main directory not last one released (042$_8$)

Attempt to release the main directory while some other directory is still entered.

Master block transfer error (035$_8$)

Unable to read system information on the device.

Maximum number of LAMUs per RT-program reached (275$_8$)

Attempt to connect too many LAMUs.

Missing parameter (157$_8$)

Self-explanatory.

ND-100 panel clock incorrect (334$_8$)

The ND-100 panel clock is incorrect, probably as a result of a power fail.

No answer from remote system; file-access connection aborted (264$_8$)

Self-explanatory.

No EOF mark found (177$_8$)

A tape device was unable to find the End-Of-File mark.

No LAMU area big enough (277$_8$)

Attempt to define a LAMU which is too big to fit into any LAMU areas.

No file open with this number (132$_8$)

Possibly a symptom of an earlier error. Attempt to access an open file, referencing it by an open-file-number that did not correspond to any open file, either because the number is wrong, or because the file was closed.

No main directory (043_8)

No main directory entered (only user SYSTEM may log in - on the console).

No more allocate-memory-table indexes available (370_8)

Too many allocated areas.

No more buffer space (131_8)

Cannot open further files.

No more pages available for this user (075_8)

All pages reserved for the user are occupied by his files.

No more physical memory available (367_8)

Too much physical memory is reserved by programs that use fixed pages or fixed segments, leaving insufficient swapping space.

No more remote file-access data segments available (313_8)

Too many simultaneuous users of remote file accessed.

No more spooling pages left (344_8)

The total size of the objects in the spooling queue (the printing queue) exceeds the space set aside for this purpose.

No more tracks available (037_8)

Self-explanatory

No more unused spooling files available (245_8)

Self-explanatory.

No more versions can be created in this object block (345_8)

All versions of a file must recide in the same object block in the file system. Attempt to create a new version when no free object entries in current object block.

No previous version (101$_8$)

Inconsitency in the file system. Attempt to access a version of a file when no such version exists.

No scratch file open (137$_8$)

Self-explanatory.

No service is available for this code (330$_8$)

Self-explanatory.

No space in default directories (073$_8$)

Self-explanatory.

No spooling for this device (211$_8$)

Self-explanatory.

No such access code (104$_8$)

Attempt set own, friend or public access for some object specifying an undefined access code.

No such block (143$_8$)

Self-explanatory.

No such device name (030$_8$)

Attempt to access a device with a name that is unknown to the system.

No such file name (056$_8$)

The given file specification does not match any file name on the current directory.

No such file version (074$_8$)

There is a file with the specified file name, but not with the specified version number.

No such friend (064$_8$)

The friend specification does not match the name of any existing friend.

No such logical unit (033$_8$)

Wrong logical unit number, or wrong device name specified.

No such page (022$_8$)

Inconsitency in the file system or attempt to access an indexed file as if it were contiguous.

No such program LAMU (375$_8$)

Attempt to refer to a no-existing program LAMU.

No such queue (212$_8$)

Self-explanatory.

No such queue entry (207$_8$)

A queue entry has been specified, but not found.

No such user index (117$_8$)

A user number was specified, but no user has that index number.

No such user name (046$_8$)

The user specification does not match any user name.

No such user name in main directory (047$_8$)

The user specification does not match any user name in the main directory.

No termination handling defined (312$_8$)

Attempt to enable termination handling when no termination handling is defined.

No user entered (062$_8$)

Attempt to get main directory for current user when no user is entered.

Not 8 bits character length (356$_8$)

Attempt to select 8-bit character conversion when device is using a different character size.

Not a master terminal (360$_8$)

Error while using the display facility.

Not a multiple of hardware block size (252$_8$)

Self-explanatory.

Not allowed now (3200$_8$)

Function is not allowed at this point.

Not append access (120$_8$)

Attempt to open a file for append access, thereby violating your access privvileges for that file.

Not connected to specified master terminal (361$_8$)

Error while using the display facility.

Not contiguous file (340$_8$)

The file specified must be a contiguous file, but is not.

Not decimal number (023$_8$)

A parameter was given in an other number system than expected, or in a non-nummeric form when nummeric form was expected.

Not deleted record (231$_8$)

Attempt to read a deleted record which was not deleted.

Not directory access (070$_8$)

Attempt to perform actions that require higher access privileges.

Not indexed file (253$_8$)

The file specified should be an indexed file, but is not.

Not last file on tape (151$_8$)

End of tape was expected, but not found.

Not last used by you (215$_8$)

Attempt to abort current printout or current batch job, but the job was not yours.

Not legal from RT-program (351$_8$)

Function illegal from RT-programs.

Not mass storage file (133$_8$)

The file specified is not a mass storage file

Not octal number (024$_8$)

A parameter was expected to be given in the octal number system, but the given input did not look like an octal number.

Not octal number (337$_8$)

The number specified contains some illegal characters. Watch out for the letters O and L, and for the digits 8 and 9. Periods are also illegal.

Not open for random read (126$_8$)

Attempt to do a random read when the file was not opened for that kind of access. It was perhaps opened for sequential access.

Not open for random write (125$_8$)

Attempt to do a random write when the file was not opened for that kind of access. It was perhaps opened for sequential access.

Not open for sequential read (124_8)

Attempt to do a sequential read when the file was not opened for that kind of access. It was perhaps opened for random access.

Not open for sequential write (123_8)

Attempt to do a sequential write when the file was not opened for that kind of access. It was perhaps opened for random access.

Not peripheral file (206_8)

Attempt to access a disk file as if it were a peripheral device.

Not read access (111_8)

Attempt to open a file for read access, thereby violating your access privileges for that file.

Not read and common access (114_8)

Attempt to open a file for several kinds of access, of which some exceeds your access privileges to that file.

Not read and write access (113_8)

Attempt to open a file for several kinds of access, of which some exceeds your access privileges to that file.

Not read, write and common access (112_8)

Attempt to open a file for several kinds of access, of which some exceeds your access privileges to that file.

Not so much space left (210_8)

Self-explanatory.

Not so much space unreserved in directory (054_8)

Attempt to reserve more space than available

Not tape device (152_8)

Attempt to perform some function that is only allowed on tape devices, on a device of a different kind.

Not write access (106$_8$)

Attempt to open a file for write access, thereby violating your access privileges for that file.

Not write and append access (110$_8$)

Attempt to open a file for several kinds of access, of which some exceeds your access privileges to that file.

Object entry not used (247$_8$)

Attempt to dump an unused object entry.

Object index too large (305$_8$)

Object index specified is too large.

Odd number of bytes (right byte in last word insignificant) (234$_8$)

An odd number of bytes was read.

Outside device limits (100$_8$)

Attempt to access a mass storage device, with some parameter(s) out of range.

Overflow in read (163$_8$)

Physical block read was too large to fit in buffer.

Overflow in write (237$_8$)

Block size too large.

Paper fault (203$_8$)

A printer device ran out of paper or the paper jammed.

Parity error (167$_8$)

Parity error detected when reading or writing to a device.

Please terminate current service before requesting new service (331$_8$)

Self-explanatory.

Program LAMU already exists (374_8)

Attempt to create an already existing program LAMU.

Program LAMU not connected (377_8)

Attempt to access a program LAMU whithout connecting it.

Program is active (366_8)

Attempt to clear a segment containing an active RT-program.

Protected command (342_8)

The command (or subsystem) specified is restricted to users RT and/or SYSTEM only.

Queue empty (213_8)

Attempt to get an entry from an empty queue.

Queue full (214_8)

Attempt to push an element onto a queue when the queue cannot hold more entries.

Remote file server is not available (333_8)

Self-explanatory.

Reserved space already used (055_8)

Attempt to reserve space which is already used.

Segment not contiguously fixed (241_8)

The segment is not fixed at all, or fixed, but its pages are scattered in physical memory. Some programs need contiguously fixed memory in order to communicate with devices that reads physical memory directly.

Segment not fixed (242_8)

Attemt to UNFIX, or access as fixed, a segment which was not fixed in memory.

Source and destination equal (144_8)

The same file has been specified as original and copy in a copying command.

Source empty (154_8)

Attempt to make a copy when the original file contain no data. Ensure that you are copying in the right direction.

Space already allocated (072_8)

Attempt to allocate a specific space to a file or to a user when that space is already allocated to an other file or user.

Space not available to expand file (071_8)

Self-explaining.

TAD protocol error, illegal or inconsistent message (315_8)

Internal error in when accessing a remote system.

Tape format error (226_8)

Illegal or unsupported magnetic tape format.

Terminal already in a display table (357_8)

Attempt to include a terminal in more than one display table.

Terminal line not connected (316_8)

Self-explanatory.

The specified device is not a terminal (311_8)

Self-explanatory.

This code is only legal within a service (332_8)

Self-explanatory.

Timeout (no data block found) (202_8)

Timeout while waiting for data transfer from a device.

Too long parameter (044$_8$)

Possibly missing separating character between two parameters.

Transfer error (141$_8$)

Error accessing a device.

Two pages must be left unreserved (160$_8$)

Attempt to give the last to pages on a disk device to a user.

Unit occupied (034$_8$)

A directory is already entered on the specified device and unit, possibly by an other user. It may be in use, or he may have forgotten to release it.

Unknown remote system name (266$_8$)

Self-explanatory.

Unknown user-control code (327$_8$)

The user control code specified i sundefined.

User already entered (061$_8$)

Self-explanatory.

User already exists (051$_8$)

There exists already a user with the specified name.

User does not exist (250$_8$)

A user number has appeared that is out of range, or a user specification that does not match any user name.

User does not exist in the same main directory as you (257$_8$)

Attempt to create a user on another main directory as friend.

User has files (052$_8$)

Attempt to delete a user before deleting its files.

User is entered (053_8)

Attempt to delete or rename a user while he is logged in.

Volume not on specified unit (230_8)

Both a (tape) volume and a (tape) drive unit have been specified, but the volume was not found on the unit. Possibly wrong tape mounted.

Warning; 2-bank prog. file, but segment is only 1-bank (307_8)

Attempt to run 2-bank programs when background segment is 1-bank.

Warning; no such page in data bank, program starts as 1-bank (310_8)

Attempt to access notexisting part of a 2-bank program.

Write-protect violation (175_8)

Attempt to write to a device that has been (physically) writeprotected.

Wrong format in file (325_8)

Self-explanatory.

Wrong password (060_8)

The given password does not match the given user name.

Wrong project password (321_8)

Self-explanatory.

You are not authorized to do this (025_8)

Attempt to use functions which is restricted to users RT and/or SYSTEM only.

You can only log in on a main directory (303_8)

Attempt to specify a directory, which is not a main directory, at login.

A P P E N D I X D

STANDARD PERIPHERAL FILE NAMES

D STANDARD PERIPHERAL FILE NAMES

ND no.	Description	Peripheral File Name	Notes
202, 204, - 228	Terminals	TERMINAL	1. Refers to own terminal in background. 2. Terminals can also be PRINTER.
252, 254	Intercomputer link	CHANNEL -0 CHANNEL -1 ... CHANNEL -15 L1-CH-0 ... L1-CH-15 L2-CH-0 ... L2-CH-15 ...	If only one link If two or more links Links with background programs are usually not included.
301, 302	Paper Tape Reader	TAPE-READER	Suffix "-1", "-2", etc. is used if more than one device.
303	Paper Tape Punch	TAPE-PUNCH	See ND-301.
305, etc.	Floppy Disk	FLOPPY-1 FLOPPY-2 ...	These names only work with one controller
400, etc.	Card Reader	CARD-READER	See ND-301
430,431,etc	Line Printer	LINE-PRINTER	See ND-301
414,415,417	Matrix Printer	PRINTER	See ND-301
420	Card Punch	CARD-PUNCH	See ND-301
515, etc.	Magnetic Tape	MAG-TAPE-0 MAG-TAPE-1 ...	These names only work with one controller
603,604,605 606	Versatec Printer Plotter	LINE-PRINTER-1 LINE-PRINTER-2 ... VERSATEC-1 VERSATEC-2 ...	If no other line printer on the system If another line printer on the system

APPENDIX E

STANDARD NAMES OF MASS STORAGE DEVICES

E STANDARD NAMES OF MASS STORAGE DEVICES

DISC-10MB-1	10-Megabyte cartridge disk controller 1
DISC-10MB-2	10-Megabyte cartridge disk controller 2
DISC-14MB-1	14-Megabyte disk controller 1
DISC-14MB-2	14-Megabyte disk controller 2
DISC-16MB-1	16-Megabyte disk controller 1
DISC-16MB-2	16-Megabyte disk controller 2
DISC-21MB-1	21-Megabyte disk controller 1
DISC-21MB-2	21-Megabyte disk controller 2
DISC-23MB-1	23-Megabyte disk controller 1
DISC-23MB-2	23-Megabyte disk controller 2
DISC-28MB-1	28-Megabyte disk controller 1
DISC-28MB-2	28-Megabyte disk controller 2
DISC-30MB-1	30-Megabyte big cartridge disk controller 1
DISC-30MB-2	30-Megabyte bit cartridge disk controller 2
DISC-33MB-1	33-Megabyte disk controller 1
DISC-33MB-2	33-Megabyte disk controller 2
DISC-36MB-1	36-Megabyte disk controller 1 (Butterfly)
DISC-38MB-1	38-Megabyte disk controller 1
DISC-38MB-2	38-Megabyte disk controller 2
DISC-45MB-1	45-Megabyte disk controller 1
DISC-45MB-2	45-Megabyte disk controller 2
DISC-60MB-1	60-Megabyte disk controller 1
DISC-60MB-2	60-Megabyte disk controller 2
DISC-66MB-1	66-Megabyte disk controller 1
DISC-66MB-2	66-Megabyte disk controller 2
DISC-70MB-1	70-Megabyte disk controller 1
DISC-70MB-2	70-Megabyte disk controller 2
DISC-70MB-3	70-Megabyte disk controller 3
DISC-70MB-4	70-Megabyte disk controller 4
DISC-74MB-1	74-Megabyte disk controller 1
DISC-74MB-2	74-Megabyte disk controller 2
DISC-75MB-1	75-Megabyte disk controller 1
DISC-75MB-2	75-Megabyte disk controller 2
DISC-75MB-3	75-Megabyte disk controller 3
DISC-75MB-4	75-Megabyte disk controller 4
DISC-90MB-1	90-Megabyte disk controller 1
DISC-90MB-2	90-Megabyte disk controller 2
DISC-140MB-1-F	140-Megabyte disk controller 1 (fixed)
DISC-140MB-2-F	140-Megabyte disk controller 2 (fixed)
DISC-140MB-3-F	140-Megabyte disk controller 3 (fixed)
DISC-140MB-4-F	140-Megabyte disk controller 4 (fixed)
DISC-2-70MB-1-F	Subdivided 140-Megabyte disk controller 1 (fixed)
DISC-2-70MB-2-F	Subdivided 140-Megabyte disk controller 2 (fixed)
DISC-2-70MB-3-F	Subdivided 140-Megabyte disk controller 3 (fixed)
DISC-2-70MB-4-F	Subdivided 140-Megabyte disk controller 4 (fixed)
DISC-2-75MB-1	Subdivided 150-Megabyte disk controller 1
DISC-2-75MB-2	Subdivided 150-Megabyte disk controller 2
DISC-225MB-1-R	225-Megabyte disk controller 1 (removable)
DISC-225MB-2-R	225-Megabyte disk controller 2 (removable)
DISC-225MB-3-R	225-Megabyte disk controller 3 (removable)
DISC-225MB-4-R	225-Megabyte disk controller 4 (removable)
DISC-3-75MB-1	Subdivided 225-Megabyte disk controller 1
DISC-3-75MB-2	Subdivided 225-Megabyte disk controller 2

DISC-288MB-1-F	288-Megabyte disk controller 1 (fixed)
DISC-288MB-1-E	288-Megabyte disk controller 1 (EMD)
DISC-288MB-1-R	288-Megabyte disk controller 1 (removable)
DISC-288MB-2-F	288-Megabyte disk controller 2 (fixed)
DISC-288MB-2-E	288-Megabyte disk controller 2 (EMD)
DISC-288MB-2-R	288-Megabyte disk controller 2 (removable)
DISC-288MB-3-F	288-Megabyte disk controller 3 (fixed)
DISC-288MB-3-E	288-Megabyte disk controller 3 (EMD)
DISC-288MB-3-R	288-Megabyte disk controller 3 (removable)
DISC-288MB-4-F	288-Megabyte disk controller 4 (fixed)
DISC-288MB-4-E	288-Megabyte disk controller 4 (EMD)
DISC-288MB-4-R	288-Megabyte disk controller 4 (removable)
DISC-4-70MB-1-F	Subdivided 280-Megabyte disk controller 1 (fixed)
DISC-4-70MB-1-E	Subdivided 280-Megabyte disk controller 1 (EMD)
DISC-4-70MB-1-R	Subdivided 280-Megabyte disk controller 1 (remov.)
DISC-4-70MB-2-F	Subdivided 280-Megabyte disk controller 2 (fixed)
DISC-4-70MB-2-E	Subdivided 280-Megabyte disk controller 2 (EMD)
DISC-4-70MB-2-R	Subdivided 280-Megabyte disk controller 2 (remov.)
DISC-4-70MB-3-F	Subdivided 280-Megabyte disk controller 3 (fixed)
DISC-4-70MB-3-E	Subdivided 280-Megabyte disk controller 3 (EMD)
DISC-4-70MB-3-R	Subdivided 280-Megabyte disk controller 3 (remov.)
DISC-4-70MB-4-F	Subdivided 280-Megabyte disk controller 4 (fixed)
DISC-4-70MB-4-E	Subdivided 280-Megabyte disk controller 4 (EMD)
DISC-4-70MB-4-R	Subdivided 280-Megabyte disk controller 4 (remov.)
DISC-450MB-1-F	450-Megabyte disk controller 1 (fixed)
DISC-450MB-1-N	450-Megabyte disk controller 1 (NEC)
DISC-450MB-2-F	450-Megabyte disk controller 2 (fixed)
DISC-450MB-2-N	450-Megabyte disk controller 2 (NEC)
DISC-450MB-3-F	450-Megabyte disk controller 3 (fixed)
DISC-450MB-3-N	450-Megabyte disk controller 3 (NEC)
DISC-450MB-4-F	450-Megabyte disk controller 4 (fixed)
DISC-450MB-4-N	450-Megabyte disk controller 4 (NEC)
DISC-6-70MB-1-F	Subdivided 420-Megabyte disk controller 1 (fixed)
DISC-6-70MB-1-N	Subdivided 420-Megabyte disk controller 1 (NEC)
DISC-6-70MB-2-F	Subdivided 420-Megabyte disk controller 2 (fixed)
DISC-6-70MB-2-N	Subdivided 420-Megabyte disk controller 2 (NEC)
DISC-6-70MB-3-F	Subdivided 420-Megabyte disk controller 3 (fixed)
DISC-6-70MB-3-N	Subdivided 420-Megabyte disk controller 3 (NEC)
DISC-6-70MB-4-F	Subdivided 420-Megabyte disk controller 4 (fixed)
DISC-6-70MB-4-N	Subdivided 420-Megabyte disk controller 4 (NEC)
DISC-2-225MB-1-F	Subdivided 450-Megabyte disk controller 1 (fixed)
DISC-2-225MB-1-N	Subdivided 450-Megabyte disk controller 1 (NEC)
DISC-2-225MB-2-F	Subdivided 450-Megabyte disk controller 2 (fixed)
DISC-2-225MB-2-N	Subdivided 450-Megabyte disk controller 2 (NEC)
DISC-2-225MB-3-F	Subdivided 450-Megabyte disk controller 3 (fixed)
DISC-2-225MB-3-N	Subdivided 450-Megabyte disk controller 3 (NEC)
DISC-2-225MB-4-F	Subdivided 450-Megabyte disk controller 4 (fixed)
DISC-2-225MB-4-N	Subdivided 450-Megabyte disk controller 4 (NEC)
MAG-TAPE-1	Magnetic tape controller 1 (fixed)
MAG-TAPE-2	Magnetic tape controller 2 (fixed)
MAG-TAPE-3	Magnetic tape controller 3 (fixed)
MAG-TAPE-4	Magnetic tape controller 4 (fixed)
FLOPPY-DISC-1	Floppy disk controller 1
FLOPPY-DISC-2	Floppy disk controller 2

A P P E N D I X F

ASCII CHARACTER SET

F ASCII CHARACTER SET

CHAR	Byte Position Left	Right	Dec.	CHAR	Byte Position Left	Right	Dec.
NUL	000000	000000	0	SPACE	020000	000040	32
SOH	000400	000001	1	!	020400	000041	33
STX	001000	000002	2	"	021000	000042	34
ETX	001400	000003	3	#	021400	000043	35
EOT	002000	000004	4	$	022000	000044	36
ENQ	002400	000005	5	%	022400	000045	37
ACK	003000	000006	6	&	023000	000046	38
BEL	003400	000007	7	'	023400	000047	39
BS	004000	000010	8	(	024000	000050	40
HT	004400	000011	9	)	024400	000051	41
LF	005000	000012	10	*	025000	000052	42
VT	005400	000013	11	+	025400	000053	43
FF	006000	000014	12	,	026000	000054	44
CR	006400	000015	13	-	026400	000055	45
SO	007000	000016	14	.	027000	000056	46
SI	007400	000017	15	/	027400	000057	47
DLE	010000	000020	16	0	030000	000060	48
DC1	010400	000021	17	1	030400	000061	49
DC2	011000	000022	18	2	031000	000062	50
DC3	011400	000023	19	3	031400	000063	51
DC4	012000	000024	20	4	032000	000064	52
NAK	012400	000025	21	5	032400	000065	53
SYN	013000	000026	22	6	033000	000066	54
ETB	013400	000027	23	7	033400	000067	55
CAN	014000	000030	24	8	034000	000070	56
EM	014400	000031	25	9	034400	000071	57
SUB	015000	000032	26	:	035000	000072	58
ESC	015400	000033	27	;	035400	000073	59
FS	016000	000034	28	<	036000	000074	60
GS	016400	000035	29	=	036400	000075	61
RS	017000	000036	30	>	037000	000076	62
US	017400	000037	31	?	037400	000077	63

CHAR	Byte Position Left	Right	Dec.	CHAR	Byte Position Left	Right	Dec.
@	040000	000100	64	`	060000	000140	96
A	040400	000101	65	a	060400	000141	97
B	041000	000102	66	b	061000	000142	98
C	041400	000103	67	c	061400	000143	99
D	042000	000104	68	d	062000	000144	100
E	042400	000105	69	e	062400	000145	101
F	043000	000106	70	f	063000	000146	102
G	043400	000107	71	g	063400	000147	103
H	044000	000110	72	h	064000	000150	104
I	044400	000111	73	i	064400	000151	105
J	045000	000112	74	j	065000	000152	106
K	045400	000113	75	k	065400	000153	107
L	046000	000114	76	l	066000	000154	108
M	046400	000115	77	m	066400	000155	109
N	047000	000116	78	n	067000	000156	110
O	047400	000117	79	o	067400	000157	111
P	050000	000120	80	p	070000	000160	112
Q	050400	000121	81	q	070400	000161	113
R	051000	000122	82	r	071000	000162	114
S	051400	000123	83	s	071400	000163	115
T	052000	000124	84	t	072000	000164	116
U	052400	000125	85	u	072400	000165	117
V	053000	000126	86	v	073000	000166	118
W	053400	000127	87	w	073400	000167	119
X	054000	000130	88	x	074000	000170	120
Y	054400	000131	89	y	074400	000171	121
Z	055000	000132	90	z	075000	000172	122
[	055400	000133	91	{	075400	000173	123
\	056000	000134	92	|	076000	000174	124
]	056400	000135	93	}	076400	000175	125
^	057000	000136	94	~	077000	000176	126
-	057400	000137	95	DEL	077400	000177	127

APPENDIX G

HARDWARE STATUS FOR VARIOUS DEVICES

G HARDWARE STATUS FOR VARIOUS DEVICES

This is the status word returned by @DEVICE-FUNCTION <peripheral file name> FUNCTIONS: READ-STATUS FUNCTIONS: READ-LAST-STATUS and by MAGTP (MON 144) function codes 20 and 24. The specified condition is true if the bit is set in the status word.

Contents:

G.1 Status word for Tandberg, Pertec and STC magnetic tape units.

bit 0: tape on line
1: write enable ring present
2: tape standing on load point

3: CRC error/fatal error
4: set if any of bits 5, 6, 7, 8, 9, 11 or 12 are set
5: control or modus word error; trying to write on protected tape, trying to reverse tape at load point, tape unit not on-line etc.; action is inhibited

6: bad data block; an error is detected
7: end of file is detected
8: the search character is detected

9: end of tape is detected; resetting this bit depends on the model. Tandberg, STC: the bit remains set if carrying out a function after EOT Pertec: the bit is cleared if carrying out a function after EOT
10: word counter is not zero
11: DMA error

12: overflow (in read)
13: tape busy or formatter busy
14: LRC error/software error

15: interrupt when formatter is ready

G.2 Status word for Hewlett-Packard magnetic tape units

bit 0: ready interrupt enabled (cleared by the interrupt)
1: error interrupt enabled (cleared by the interrupt)
2: device active

3: device ready for transfer
4: set if any of bits 6, 9, 10, 11 or 12 are set or if a reverse command is given with tape at load point
5: write enable ring present

6: LRC error
7: EOF detected
8: load point (the unit remains in this state also after the first forward command after load point is detected)

9: EOT detected
10: parity error
11: DMA error

12: overflow in read
13: density select: 1 = 800 BPI
14: magnetic tape unit ready (selected, online and not rewinding)

15: bit 15 is loaded by the previous control word.

G.3 Status word for Versatec line printer/plotter

bit 0: ready for transfer, interrupt enabled
1: error interrupt enabled
2: device active

3: device ready for transfer
4: set if bit 6 or 7 is set
5: not used

6: no paper
7: plotter not on-line
8: not used

9: not used
10: not used
11: not used

12: not used
13: plotter ready
14: not used

15: not used

G.4 Status word for old (PIO) floppy disk

bit 0: interrupt enabled
1: not used
2: device busy

3: device ready for transfer
4: set if any of bits 5, 8, 11, 12 or 14 are set
5: deleted record detected

6: read/write completed
7: seek completed
8: drive not ready

9: write protected
10: not used
11: address mismatch

12: CRC error
13: not used
14: data overrun

15: must be 0 for this type of floppy disk

G.5 Status word for new (DMA) floppy disk

```
bit  0:  RFT-interrupt enabled
     1:  not used
     2:  device active
     3:  device ready for transfer
     4:  or of errors
     5:  deleted record
     6:  retry on controller
     7:
     8:  not used
  9-14:  error code from controller (see below)
    15:  should be 1 for this type of floppy disk
```

Status word 1, bit 9-14 (error codes):

oct. no.	description
00	ok
05	CRC-error
06	sector not found
07	track not found
10	format not found
11	diskette defect (impossible to format)
12	format mismatch
13	illegal format
14	single-sided diskette inserted
15	double-sided diskette inserted
16	write-protected diskette
17	deleted record
20	drive not ready
21	controller busy on start
22	lost data (over- or underrun)
23	track zero not detected
24	VCO-frequence out of range
25	microprogram out of range
26	timeout
27	undefined error
30	track out of range
31	RAM error
32	compare error
33	internal DMA-error
40	ND-100 bus error during command fetch
41	ND-100 bus error during status transfer
42	ND-100 bus error during data transfer
43	illegal command
44	wordcount not zero
50	no bootstrap found on diskette
51	wrong bootstrap (too old version of floppy-monitor)
70	prom checksum error (selftest error)
71	RAM error (selftest error)
72	CTC error (selftest error)
73	DMActrl error (selftest error)
74	VCO error (selftest error)
75	floppy control error (selftest error)

G.6 Status word for ECC disk controllers 37/75/288 Phoenix disks

bit 0: controller not active, interrupt enabled
1: error interrupt enabled
2: controller active

3: controller finished with a device operation
4: inclusive or of errors (Bit 5 - 13)
5: illegal load, that is, load while status bit 2 is true, or load of block address while the unit is not on cylinder

6: time out
7: hardware error (disk fault + missing read clocks + missing servo clocks)
8: address mismatch

9: parity error
10: compare error
11: DMA channel error

12: abnormal completion
13: disk unit not ready
14: on cylinder

15: extended cylinder address

G.7 Status word for big disks 33/66 MB

bit 0: controller not active
1: error interrupt enabled
2: controller active

3: finished with device operation
4: inclusive OR of errors (5-13)
5: write protect violation

6: time out
7: hardware error
8: address mismatch

9: parity error
10: compare error
11: DMA channel error

12: abnormal completion
13: disk unit not ready
14: on cylinder

15: extended cylinder-address

G.8 Status word for small disk 10 MB

bit 0: ready for transfer, interrupt enabled
1: error interrupt enabled
2: device active

3: device ready for transfer
4: inclusive OR of errors (bit 5-11)
5: write protect violation

6: time out
7: hardware error
8: address mismatch

9: parity error
10: compare error
11: DMA channel error

12: transfer complete
13: transfer on
14: on cylinder

15: loaded by previous control-word

G.9 Status word for 45 MB Micropolis and 21 MB Finch disks

bit 0: controller not active interrupt enabled
1: error interrupt enabled
2: controller active

3: controller finished with a device operation
4: inclusive or of errors (bits 5-11)
5: Finch: 0 (not used),
micropolis: trying to read or write while performing rtz.

6: timeout
7: disk fault or missing clocks
8: address mismatch

9: CRC error
10: compare error
11: FIFO over/under-run or DMA channel error

12: Finch: Serious error (or of status bits 6, 7 and 8).
Micropolis: Track 0.
13: Finch: Read or write gate active. Micropolis: Always 1.
14: on cylinder

15: 0, used to distinguish from 10 Mb controller

INDEX

Page numbers of pages containing the description of the command or error message are printed in bold.

SINTRAN III command names are prfixed by: @
SINTRAN-Service Program command names are prefixed by: *
ND-500 Monitor command names are prefixed by: 5

SINTRAN III Commands

SINTRAN-Service-Program Commands

ND-500 Monitor Commands

SINTRAN III monitor calls

RT-Loader Commands

CONNECT-TO Commands

Error messages - SINTRAN III File System

Error messages - SINTRAN III Monitor

UPDATING

Manuals can be updated in two ways, new versions and revisions. New versions consist of a completely new manual which replaces the old one, and incorporate all revisions since the previous version. Revisions consist of one or more single pages to be merged into the manual by the user, each revised page being listed on the new printing record sent out with the revision. The old printing record should be replaced by the new one.

New versions and revisions are announced in the ND Customer Support Information and can be ordered from the address below.

The reader's comments form at the back of this manual can be used both to report errors in the manual and give an evaluation of the manual. Both detailed and general comments are welcome.

PRINTING RECORD	
PRINTING	NOTES
06/80	Version 1 EN
10/81	Version 2 EN
02/83	Version 3 EN
02/84	Version 4 EN
07/85	Revision A
02/87	Version 5 EN

SINTRAN III COMMANDS Reference Manual
Publ.No. ND–60.128.5 EN

RING BINDER OR PLASTIC COVER

The manual can be placed in a ring binder for greater protection and convenience of use. Ring binders may be ordered at a price of NKr. 45.- per binder.

The manual may also be placed in a plastic cover. This cover is more suitable for manuals of less than 100 pages than for larger manuals.

Please send your order, as well as all types of inquiries and requests for documentation to the local ND office, or (in Norway) to:

Graphic Center
Norsk Data A.S
P.O.Box 25 BOGERUD
N-0621 OSLO 6 - Norway

I would like to order

..... Ring Binders, B5, at NOK 35,- per binder

..... Ring Binders, A4, at NOK 45.- per binder

..... Plastic Covers, A4, at NOK 10.- per cover

Name: .....

Company: .....

Address: .....

********** SEND US YOUR COMMENTS!!! **********

Are you frustrated because of unclear information in this manual? Do you have trouble finding things? Why don't you join the Reader's Club and send us a note? You will receive a membership card — and an answer to your comments.

Please let us know if you
- * find errors
- * cannot understand information
- * cannot find information
- * find needless information

Do you think we could improve the manual by rearranging the contents? You could also tell us if you like the manual!

********** HELP YOURSELF BY HELPING US!! **********

Manual name: SINTRAN III COMMANDS Reference Manual Manual number: ND--60.128.5 EN

What problems do you have? (use extra pages if needed) _____

_____

_____

_____

_____

Do you have suggestions for improving this manual ? _____

_____

_____

_____

_____

_____

Your name: _____ Date: _____

Company: _____ Position: _____

Address: _____

_____

What are you using this manual for ? _____

_____

NOTE!
This form is primarily for documentation errors. Software and system errors should be reported on Customer System Reports.

Send to:
Norsk Data A.S
Documentation Department
P.O. Box 25, Bogerud
0621 Oslo 6, Norway

Norsk Data's answer will be found on reverse side

Answer from Norsk Data

Answered by Date

Norsk Data A.S
Documentation Department
P.O. Box 25, Bogerud
0621 Oslo6, Norway