ND SOFTWARE LIBRARY DISKETTE

Containing :
SINTRAN III K VSX
GENERATION 500, CONF.D
SMD/SCSI disks only

Directory Name :
N-250306K05--01D

User Name : SYSTEM

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	MACM-1718L	BPUN	A	NONE	RWACD	RWACD	20	39271
1	SINTRAN	DATA	A	NONE	RWACD	RWACD	574	730551

2 files using 594 pages. 610 pages reserved out of 610 pages.

ND SOFTWARE LIBRARY DISKETTE

Containing :
SINTRAN III K VSX
GENERATION 500, CONF. D
SMD/SCSI disks only

Directory Name :
N-250306K05--02D

User Name : SYSTEM

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	NEW-SYSTEM	PROG	C	NONE	RWACD	RWACD	21	43008
1	DMAC-1915F	BPUN	C	NONE	RWACD	RWACD	19	37000
2	F32-FMAC-1920C	PROG	C	NONE	RWACD	RWACD	15	28791
3	F48-FMAC-1408D	PROG	C	NONE	RWACD	RWACD	15	28791
4	FILSYS-SYMBOLS	SYMB	C	NONE	RWACD	RWACD	21	41192
5	RTLO-SYMBOLS	SYMB	C	NONE	RWACD	RWACD	24	47898
6	COS-TADADM	BPUN	C	NONE	RWACD	RWACD	4	8035
7	LIBRARY-MARKS	SYMB	C	NONE	RWACD	RWACD	7	13521
8	SYMBOL-1-LIST	SYMB	C	NONE	RWACD	RWACD	38	75980
9	SYMBOL-2-LIST	SYMB	C	NONE	RWACD	RWACD	30	60022
10	N500-SYMBOLS	SYMB	C	NONE	RWACD	RWACD	38	75786

11 files using 232 pages. 610 pages reserved out of 610 pages.

3

Product	Name SINTRAN III/VSX version K generation 500	Reg.no. 210575K 210576K	Category STPR

ND-210575K (SINTRAN III/VSX for ND-100) is usually generated individually for each system.
ND-210576K (SINTRAN III/VSX-500) may be generated individually for each system, but is normally delivered as one of the standard configurations:
ND-250304K05 (standard system B)
ND-250305K05 (standard system C) refer to pages 20-21
ND-250306K05 (standard system D) for more details on
ND-250307K05 (standard system M) each configuration.

Reason

. New product
x Change/Addition
. Error Correction
x Different Environment

Documentation

Title	ND-no.
SINTRAN III Release Information K-version	60.230.5 EN
SINTRAN III Commands Reference Manual	60.128.5 EN
SINTRAN III Monitor Calls	60.228.1 EN
SINTRAN III System Supervisor	30.003.7 EN
SINTRAN III Real Time Guide	60.133.2A EN
SINTRAN III Real Time Loader	60.051.8 EN
SINTRAN III User Guide	60.264.1 EN
SINTRAN III Quick Reference Card	99.020.2 EN

Purpose

Operating system on: ND-100/CX, ND-110, ND-120, ND-500 or ND-5000.

Prerequisites

Computer	Type	Floating format
ND-100	CX	32-bit / 48-bit w/Memory Management II
ND-110	any	32-bit / 48-bit
ND-120	any	32-bit / 48-bit

with or without ND-500 or ND-5000 CPU

Reg. no.	Product name	
210373 K	XMSG (version K or later versions)	
211305 A	ND-500/5000 System Package for SINTRAN III/VSX, ver. K, gen. 500	Required only if ND-500/ ND-5000
containing	the following required products:	
210333 J	ND-500/5000 Background Monitor	
211034 J	ND-500/5000 Swapper	
211072 A	ERS/SINTRAN III Watchdog	
210614 C	ND-500/5000 Place Library	

Minimum mass storage resources for installation:

User	Userspace	Number of files
SYSTEM	7300 pages on	25 files

The mass storage requirements depend on configuration.
The numbers are intended as guidelines only.

Minimum permanent mass storage resources:

User	User space	Number of files
SYSTEM	7000 pages on	10 files

The mass storage requirements depend on configuration.
The numbers are intended as guidelines only.

Max/Min number of segments: Max 1100 Min 60
Space required on segment file(s) is 6712 pages

These requirements depend on configuration.
The numbers are intended as guidelines only.

4

Product	Name	Category
	SINTRAN III/VSX version K generation 500	STPR

SINTRAN III/VSX is delivered on either 2 double-density/double-sided 8-inch or 5¼-inch diskettes, with the following layout:

Directory name: N-25030xK05--01D User name: SYSTEM

File name	Type	T	Pages	Containing
MACM-1718L	BPUN	A	20	MACM
SINTRAN	DATA	A	574	SINTRAN:DATA

Directory name: N-25030xK05--02D User name: SYSTEM

File name	Type	T	Pages	Containing
NEW-SYSTEM	PROG	C	21	NEW-SYSTEM program
DMAC-1915F	BPUN	C	19	DMAC
F32-FMAC-1920C	PROG	C	15	FMAC for 32-bit floating format
F48-FMAC-1408D	PROG	C	15	FMAC for 48-bit floating format
FILSYS-SYMBOLS	SYMB	C	21	File system symbol list
RTLO-SYMBOLS	SYMB	C	24	RT-Loader symbol list
COS-TADADM	BPUN	C	4	COSMOS TADADM
LIBRARY-MARKS	SYMB	C	6	Library marks
SYMBOL-1-LIST	SYMB	C	38	Symbol list, config. independent
SYMBOL-2-LIST	SYMB	C	29	Symbol list, config. dependent
N500-SYMBOLS	SYMB	C	45	Symbol list, ND-500 Monitor

or, on 6 single-density/single-sided 8-inch diskettes, with the following layout:

Directory name: N-25030xK05--01S User name: SYSTEM

File name	Type	T	Pages	Containing
MACM-1718L	BPUN	A	20	MACM
SINTRAN-I	DATA	A	127	SINTRAN:DATA

Directory name: N-25030xK05--02S User name: SYSTEM

File name	Type	T	Pages	Containing
SINTRAN-II	DATA	A	147	SINTRAN:DATA

Directory name: N-25030xK05--03S User name: SYSTEM

File name	Type	T	Pages	Containing
SINTRAN-III	DATA	A	147	SINTRAN:DATA

Directory name: N-25030xK05--04S User name: SYSTEM

File name	Type	T	Pages	Containing
SINTRAN-IV	DATA	A	147	SINTRAN:DATA

Directory name: N-25030xK05--05S User name: SYSTEM

File name	Type	T	Pages	Containing
NEW-SYSTEM	PROG	C	21	NEW-SYSTEM program
DMAC-1915F	BPUN	C	19	DMAC
F32-FMAC-1920C	PROG	C	15	FMAC for 32-bit floating format
F48-FMAC-1408D	PROG	C	15	FMAC for 48-bit floating format
FILSYS-SYMBOLS	SYMB	C	21	File system symbol list
RTLO-SYMBOLS	SYMB	C	24	RT-Loader symbol list
COS-TADADM	BPUN	C	4	COSMOS TADADM

Directory name: N-25030xK05--06S User name: SYSTEM

File name	Type	T	Pages	Containing
LIBRARY-MARKS	SYMB	C	6	Library marks
SYMBOL-1-LIST	SYMB	C	38	Symbol list, config. independent
SYMBOL-2-LIST	SYMB	C	29	Symbol list, config. dependent
N500-SYMBOLS	SYMB	C	45	Symbol list, ND-500 Monitor

Product	Name	Category
	SINTRAN III/VSX version K generation 500	STPR

CHANGED PREREQUISITES

The SINTRAN III/VSX requires:
- ND-100/CX CPU with ECO 100-522 (48-bit floating representation)
  or ECO 100-523 (32-bit floating representation)
- Memory management II (16 PITs) with ECO 100-534 (level N)
- ND-110/CX CPU (CPU and memory management on one card) (level L)
- ND-120/CX CPU (CPU and memory management on one card) (level G)
- if SMD disk controller (10 MHz) is used, ECO level BD is required
- if Dual Disk Channel Switch is present, ECO level H is required

CHANGES TO THE HENT-MODE AND LOAD-MODE FILES

The following changes must be made to the mode file to be run after cold start (usually called HENT-MODE:MODE):

- Remove the commands used to load the ND-500 System Monitor explicitly.

- Ensure that all @ENTER-DIRECTORY commands on disks conform to the new parameter syntax - note that UNIT is now always required.

- Include @DEFINE-MASS-STORAGE-UNIT commands to take care of disk units without a fixed mounted pack, as well as magnetic-tape drives and floppy-disk drives.

- Remove any DEFINE-MEMORY-CONFIGURATION commands to the ND-500 Monitor.

- IF your system is an ND-500 or ND-5000 and you have installed the ERS/SINTRAN III Watchdog, include a command to run the mode file used to load and initialize the watchdog program (@MODE ER-S3WD-LOAD-A:MODE). Place this command together with commands used to dump subsystems reentrant.

The following changes must be made to the batch file to be run after warm start (usually called LOAD-MODE:BATC):

- Ensure that all @ENTER-DIRECTORY commands on disks conform to the new parameter syntax - note that UNIT is now always required.

- Include @DEFINE-MASS-STORAGE-UNIT commands to take care of disk units without a fixed mounted pack, as well as magnetic-tape drives and floppy-disk drives.

- Include the necessary *REMOVE-SPOOLING-HEADER commands to the SINTRAN-Service-Program (previously used only each time SINTRAN was loaded from diskette).

- IF your system is an ND-500 or ND-5000 and you have installed the ERS/SINTRAN III Watchdog, include the commands @RT ERS3WD (to start the watchdog program) and @ABORT RTERR (to stop the standard error program).

3 SUBSYSTEMS AFFECTED BY SINTRAN III K-VERSION

- The A-version of the ND-500/5000 System Package for SINTRAN III/VSX, version K; generation 500 (ND-211305) contains the required versions of the ND-500/5000 Swapper, ND-500/5000 Background Monitor, ERS/SINTRAN III Watchdog and ND-500 Place Library.

- The D-version of the SINTRAN III Configuration Program (ND-211024) must be used on systems using SCSI devices.

- Only version J of ND-500/5000 Background Monitor (ND-210333, part of ND-211305) may be used when running SINTRAN III version K generation 500.

- Only version J of ND-500 Swapper (ND-211034, part of ND-211305) may be used when running SINTRAN III version K generation 500.

- Only version K or later of XMSG (ND-210373) can be used when running SINTRAN III version K.

- Version D of COSMOS Basic Module (ND-210374) is required when running XMSG version K or later.
  To be able to use 8-bit I/O on TADs, version E of COSMOS Basic Module is required.

- Version H of the Backup System (ND-210337) is required to handle files with index > 255 (more than 256 files per user).
  Version I is required to handle SCSI streamer tape drives.
  Revision I05 of the Backup System and revision I02 of the DMA Server are required for SCSI optical disks and magnetic tape.

- The ERS/SINTRAN III Watchdog, (ND-211072, part of ND-211305) may be used to get reports of error conditions on ND-500/5000 systems.

- Versions A or B of the File Manager (part of ND-210518) will not handle files with index > 255 (more than 256 files per user).
  Version C of the File Manager (ND-211075) will handle this.

- Version O of the File System Investigator (part of ND-210628) is required to handle files with index > 255 (more than 256 files per user).

- Version H of the Linkage Loader (ND-210319) is required for communication with RT-programs due to the changed RTFIL format.

- The ND-Linker (ND-211224, version A) is required to load the new domain files.

- The conversion program, Convert Domain (ND-211229) is used to convert an "old" domain (built by the Linkage Loader) to a domain file without having to reload the domain.

- Version F of the Symbolic Debugger (ND-210336) can be used when running SINTRAN III version K to debug RT-programs. Version H is required to handle ND-500 domains stored on domain files (by the ND-Linker).

- Revision B02 of the LED Debugger (ND-211157) is required to handle ND-500 domains stored on domain files (by the ND-Linker).

- Version C01 of Telefix Local (ND-210775) is required.

- Version B of User Environment (ND-210518) must be changed slightly to run under the VSX-version of SINTRAN III version K. Version C of User Environment offers a highly improved performance when used under the K-version of SINTRAN.

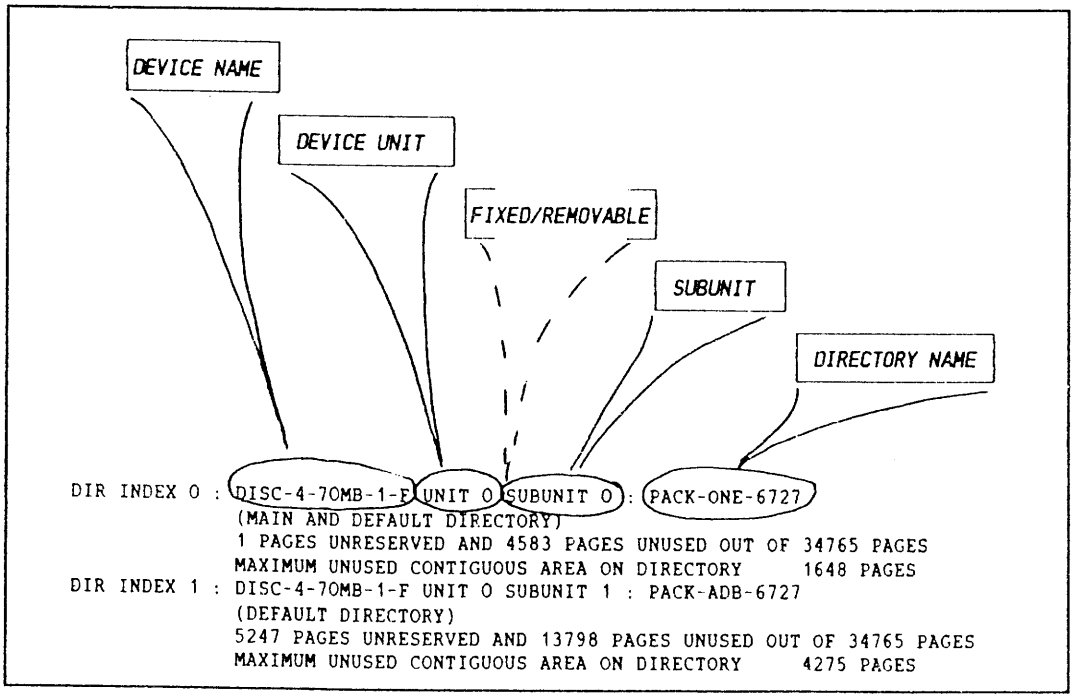
4 INSTALLATION PROCEDURES

BEFORE STARTING

To load SINTRAN III you need some information about the main directory. Type:

```
@DIRECTORY-STATISTICS↵
DIRECTORY NAME:↵
OUTPUT FILE:↵
```

Look for the directory marked as (MAIN AND DEFAULT DIRECTORY). Note the device name, the unit number, whether it is fixed or removable, the subunit number and the directory name.



Also, use the LIST-TITLE command to get the CPU number of your system. Type:

@LIST-TITLE↵

and note the number of your CPU.

- -

At this point, you can install any new versions required of the following software:

XMSG	(version ≥ K required)
COSMOS Basic Module	(version ≥ D required)
ND-500/5000 System Package - containing:	
- ND-500/5000 Background Monitor	(version J)
- ND-500/5000 Swapper	(version J)
- ERS/SINTRAN III Watchdog	(version A)

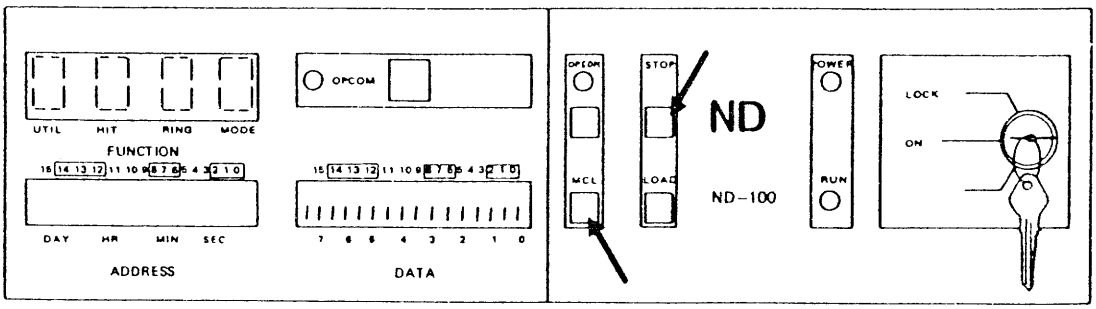
or you can install these products after installing SINTRAN III as shown below.

- -

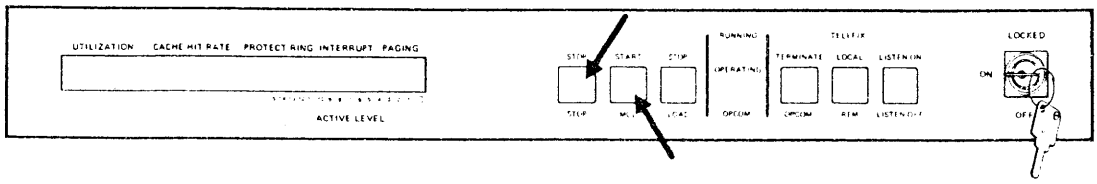
Now, stop the system in a controlled way as described in the SINTRAN III System Supervisor manual.

Finally, turn the panel key to the ON position and stop the system by pressing the STOP button. Then press the MCL button.

Old panel:



New panel:



You should now have a # on your terminal.

- -

In the following text, underlined words are commands that must be typed by you. Commands typed without the @ sign on the screen must be typed without pressing the carriage return key!

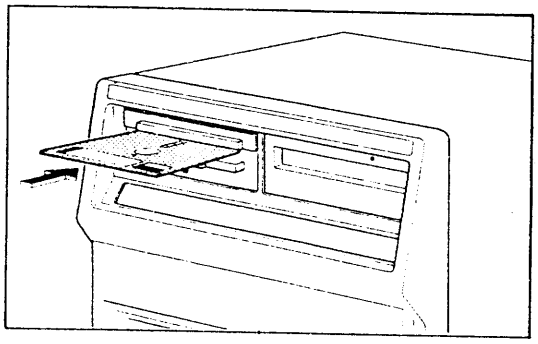
9

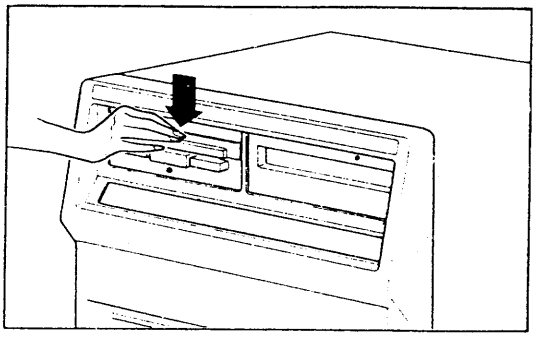
START

If you make any mistakes during the loading of SINTRAN III, make a restart from this point.

- -

Place the SINTRAN diskette-I in FLOPPY-DISC-1 UNIT 0:





Type without giving carriage return: 1560&

Respond to the prompts you get on the terminal, with the information you got about your main directory and CPU number. First, you will get the prompt:

GIVE DISK TYPE AS ONE OF THE FOLLOWING OCTAL NUMBERS:

```
 0: DISC-14MB
 1: DISC-21MB
 2: DISC-23MB
 3: DISC-28MB
 4: DISC-30MB     (DISC-60MB/DISC-90MB)
 5: DISC-33MB
 6: DISC-38MB
 7: DISC-45MB
10: DISC-66MB
11: DISC-70MB
12: DISC-74MB     (BUTTERFLY: DISC-36MB-C, DISC-49MB, DISC-77MB)
13: DISC-75MB
14: DISC-140MB    (DISC-2-70MB)
15: DISC-2-75MB
16: DISC-288MB-R  (DISC-225MB-R/DISC-3-75MB/DISC-4-70MB-R)
17: DISC-288MB-F  (DISC-225MB-F/DISC-4-70MB-F)
20: DISC-450MB-F  (DISC-2-225MB-F/DISC-6-70MB-F)
21: DISC-288MB-E  (DISC-225MB-E/DISC-4-70MB-E)
22: DISC-450MB-N  (DISC-2-225MB-N/DISC-6-70MB-N)
23: DISC-288MB-N  (DISC-225MB-N/DISC-4-70MB-N)
24: SCSI
```

DISK TYPE:

Find the disk type of your main directory and enter the corresponding number.

You will then get a message telling you which disk type is selected, and then a summary of further commands.

Wait until:	TYPE ANY MACM COMMAND:
Type without giving carriage return:	10,0$
Wait until:	**** 000000 DIAGNOSTICS ****
Check:	Make sure that you got 000000 diagnostics. If not, make a restart from START.

If you have a system delivered on single-sided/single-density diskettes, you must now remove diskette-I and repeat this procedure on diskette-II, diskette-III and diskette-IV, each time giving the command 10,0$ (without return) when a new diskette is entered in FLOPPY-DISC-1 unit 0.

- -

Type without giving carriage return:	22!
Wait until:	PAGES FOR SWAPPING (OCT.): ‹number of pages for swapping›

Then do the following:

Enter main directory

- Press ESCAPE.
- After ENTER give carriage return.
- After PASSWORD give carriage return.
- The message NO MAIN DIRECTORY will be typed.
- Enter the main directory by typing:

  @ENTER-DIRECTORY↵

  Answer the questions with the information you noted about the main directory before you started.

- Log out.
- Log in as user SYSTEM

Now, replace diskette-I with diskette-II (or diskette-IV with diskette-V) in FLOPPY-DISC-1 UNIT 0.

@ENTER-DIRECTORY,,FLOPPY-DISC-1,0↵

Start the program NEW-SYSTEM from the floppy by typing:

@(N:SYSTEM)NEW-SYSTEM↵

This program will guide you through the copying of the symbol list and start the patch file.
You may get two unfamiliar questions:

Give CPU number (in decimal):
and
Give CPU type (in decimal):

Answer the questions by giving the CPU number from the LIST-TITLE command.

When the NEW-SYSTEM program is finished, you may want to change the configuration of your system by using the S3-CONFIG program. If you have installed Net/One, you may also want to install the NOTS configuration program, which is found on the same diskette.

You must first copy the program(s) to disk, the procedure is as follows:

Replace the SINTRAN III diskette (or the patch file) with the diskette containing the S3-CONFIG program.

@ENTER-DIRECTORY 211024,FLOPPY-DISC-1,0↵

@COPY-FILE "S3-CONFIG:PROG" (211024:FL-U)S3-CONFIG:PROG↵

@COPY-FILE "NOTS-SERVICE:PROG" (211024:F)NOTS-SERVICE:PROG↵

@RELEASE-DIRECTORY 211024↵

You can then start the S3-CONFIG program by typing:

@S3-CONFIG↵

and follow the instructions (you will also find a description of S3-CONFIG in SINTRAN III Release Information, K-version).

You should at least adjust the number of background processes, spooling programs and ND-500 processes, and set the spooling device numbers and define line printer parameters.

If your system needs any special or local patches, run your local (system-specific) patch file at this point.

If your installation does not include Net/One, you can skip the following two pages.

The Net/One Service Program is a program used by system supervisors on ND machines using Net/One terminal servers.

Before you can connect to ND machines via Net/One, the system supervisor must set the configuration on the ND machine in SINTRAN. This is done in the save or image area for each NOTS (Net/One terminal server) on the machine. In another words, the system supervisor only needs to define the configuration on a machine each time SINTRAN is installed.

The first time you use Net/One, you can use the NOTS Service program manually when you install SINTRAN, for example, just after you give the generate command in the SINTRAN Configuration program, and just before @COLD-START. Here is an example of a first time NOTS installation:

- Install Net/One hardware in ND machine
- Install SINTRAN III/VSX version K, generation 500 and run patch file.
- Use generate command in SIII-Configuration.
- Run NOTS-SERVICE and use save and image areas.
- Do a cold-start.

To be sure that Net/One is configured each time you install SINTRAN, we suggest the following line(s) be included in your HENT-MODE file:

This example assumes that you have 2 controllers (0 & 1), your computer name is ND, you have 2 outgoing lines, no controller bits are set, and you store this info in the save and image areas of SINTRAN:

```
@NOTS-SERVICE set-nots-configuration 0 ND 2 0 SI
@NOTS-SERVICE set-nots-configuration 1 ND 2 0 SI
```

It does not matter where you put this in the HENT-MODE file. A comparable operation might be initialising XMSG, since that only needs to be done each time you install SINTRAN.

The NOTS-Service program has the following commands:

```
EXIT
GET-LINE-INFORMATION
GET-NOTS-CONFIGURATION
RELOAD-NOTS
RESTART-NOTS
SET-NOTS-CONFIGURATION
```

Used from a mode file, all parameters should be given on one line. In interactive use, the program will prompt for each parameter. When a command is completed, the program will exit.

SET-NOTS-CONFIGURATION <NOTS no.>,<NOTS name>,<no. out. lines>,
<contr. flag>,<area>

Set configuration parameters for a NOTS. Only the image and save areas of SINTRAN III can be changed.

NOTS number : This is the device number of the controller to be configured. It is set by a thumbwheel on the NOTS controller. The numbers start with 0.

NOTS name : This is the name of the ports to be used by network resources (NIU's). Default setting is 'ND'. Normally, you should use the name of your computer (the same name as you use in @CONNECT-TO).

No. of outgoing lines : Specify the number of ports to be reserved for outgoing calls. Such ports are intended for printers and cannot be connected from the network

Controller flag : Flag to set some options for the server.
Bit 0 = 1 : disconnect line on logout.
Bit 1 = 1 : do not set terminal type to 0 when establishing a connection
Bit 2 = 1 : 8-bit I/O on incoming lines.
Bit 3 = 1 : 8-bit I/O on outgoing lines.
Other bits not assigned, should be zero.

Area (S,I) : Update save (S) or image (I) or both (SI).

GET-NOTS-CONFIGURATION <NOTS number>,<area>

List the configuration parameters for a controller.
The parameters can be listed for save, image or memory.

GET-LINE-INFORMATION <NOTS number>

This function lists the information about all ports for the specified controller.

RESTART-NOTS <NOTS number>

The restart function can be used to stop all terminals connected to the specified server.

RELOAD-NOTS <NOTS number>

The reload function sends a 'load request' to the network manager, which reloads the controller.
Use RELOAD if you get a new release of the MBNIU software.

Now initialise XMSG to your system, run the mode file XMSG-INIT:MODE usually installed on user UTILITY:

```
@MODE (UTILITY)XMSG-INIT:MODE,,↵
```

When finished, restart (cold start) the system by typing:

```
@COLD-START↵
```

Then do the following:

Enter main directory

Follow the previous routines.

Now install the required new versions of:

ND-500/5000 Background Monitor
ND-500/5000 Swapper
ERS/SINTRAN III Watchdog

These are distributed as one product, the ND-500/5000 System Package for SINTRAN III/VSX, version K, generation 500.

Insert the diskette containing the ND-500/5000 System Package for generation 500 (ND-211305) in FLOPPY-DISC-1 unit 0

Give the command: `@ENTER-DIRECTORY,,FLOPPY-DISC-1,0↵`

Delete any old version of the ND-500 Background Monitor and copy the new version to disk:

```
@DELETE-FILE ND-500-MON:PROG↵
@COPY-FILE "ND-500-MON-J:PROG" (211305:F-U)ND-500-MON-J:PROG↵
```

Delete any old version of the ND-500 Swapper and copy the new version to disk:

```
@DELETE-FILE SWAPPER:PSEG↵
@DELETE-FILE SWAPPER:DSEG↵
@COPY-FILE "SWAPPER-J:PSEG" (211305:F-U)SWAPPER-J:PSEG↵
@COPY-FILE "SWAPPER-J:DSEG" (211305:F-U)SWAPPER-J:DSEG↵
```

Install the ERS/SINTRAN III Watchdog:

If you have an ND-5000 system, give the command:

```
@MODE (211305:F-U)ER-S3WD-5K-A:INST,,↵
```

If you have an ND-500 system, give the command:
@MODE (211305:F-U)ER-S3WD-500-A:INST,,↵

Give the command: @RELEASE-DIRECTORY 211305↵

Remove the diskette containing the ND-500/5000 System Package from FLOPPY-DISC-1 unit 0.

The following points (until "Run the mode file HENT-MODE:MODE") below only concern ND-5000 systems and should be ignored for all other installations.

Now install the correct version of the microprogram for your ND-5000 system.

Insert the diskette containing the ND-5000 microprogram for the type of ND-5000 system you have (ND-5200, ND-5400, ND-5500, ND-5700 or ND-5800) in FLOPPY-DISC-1 unit 0.

Give the command: @ENTER-DIRECTORY,,FLOPPY-DISC-1,0↵

Copy the new version of the microprogram to disk:

If you have an ND-5200, ND-5400, ND-5500, ND-5700 or ND-5800, do as follows:
@COPY-FILE CONTROL-STORE:DATA (211:)MICRO-5xxx-B27:DATA↵
and substitute xxx with 200, 400, 500, 700 or 800 depending on the type of ND-5000 you have

If you have an ND-5900, do as follows:
@COPY-FILE CONTROL-1-STORE:DATA (211:)MICRO-5800-B27:DATA↵
and repeat this command, copying to CONTROL-2-STORE:DATA, etc. depending on which model of ND-5900 you have.

Give the command: @RELEASE-DIRECTORY 211↵

Remove the diskette containing the ND-5000 microprogram from FLOPPY-DISC-1 unit 0.

Finally, run the HENT-MODE file by typing:

@MODE↵
INPUT FILE: HENT-MODE:MODE↵
OUTPUT FILE: ↵

5 MODIFICATIONS

A detailed description of new and modified commands and monitor calls is found in the SINTRAN III Release Information, K-version (ND-60.230.5 EN).

5.1 HIGHLIGHTS

- New hardware supported, for example Net/One and SCSI magnetic disk drives, streamer tape drives, magnetic tape drives and optical disk drives.

- The ND-500 System Monitor is now a part of SINTRAN III/VSX and is installed together with SINTRAN.

- Systems can now be tailored to fit one particular installation by using a configuration program (S3-CONFIG).

- The number of files for each user can be increased from the previous maximum of 256 to 4096. The limit is set for each user individually, and can be changed in steps of 256 files.

- The commands LIST-FILES, FILE-STATISTICS, COPY, COPY-FILE, APPEND-SPOOLING-FILE, DELETE-SPOOLING-FILE, REMOVE-FROM-SPOOLING-QUEUE and MOVE-SPOOLING-QUEUE-ENTRY can now specify remote files.

- Reentrant subsystems and ND-500 standard domains can now be protected by command protection in just the same way as commands.

- The default file access when a user is created can now be changed. The same applies to default friend access.

- ND-Net is no longer supported.

- The internal structures of SINTRAN III/VSX are changed considerably to allow larger configurations. The number of segments available has increased considerably.

- Due to the change in the internal structure, private patches will, in general, have to be revised completely.

5.2 COMMANDS REMOVED

- COMMUNICATIONS-LINE-STATUS

- COMMUNICATIONS-STATUS

- LOCAL

- REMOTE

- REMOTE-LOAD

- REMOTE-PASSWORD

- START-COMMUNICATION

- STOP-COMMUNICATION

.3 MODIFIED COMMANDS

- APPEND-SPOOLING-FILE
  The first and second parameters (PERIPHERAL FILE NAME and FILE NAME) can now specify files on remote systems.

- CHANGE-DIRECTORY-ENTRY
  The second parameter, DEVICE UNIT, is now always a required parameter.

- COPY
  The two parameters can now specify files on remote systems.

- COPY-DEVICE
  The two parameters DEVICE UNIT are now always required parameters.

- COPY-FILE
  The two parameters can now specify files on remote systems.

- CREATE-DIRECTORY
  The third parameter, DEVICE UNIT, is now always a required parameter.

- DELETE-SPOOLING-FILE
  The second parameter (FILE NAME) can now specify a file on a remote system.

- DEVICE-FUNCTION
  Subfunction CLEAR-DEVICE is not allowed on floppy disk.
  Two new subfunctions, LOAD and RESET-DEVICE, have been introduced for SCSI streamer tapes.

- DUMP-DIRECTORY-ENTRY
  The second parameter, DEVICE UNIT, is now always a required parameter.

- ENTER-DIRECTORY
  The third parameter, DEVICE UNIT, is now always a required parameter.

- FILE-STATISTICS
  The first parameter, FILE NAME, can now specify files on remote systems.

- INITIALIZE-ERROR-LOG
  If the standard error program (RTERR) is stopped and replaced by the ERS/SINTRAN III Watchdog (ERS3WD), this command will not work.

- LIST-DEVICE-FUNCTIONS
  A new parameter, COMMAND, is introduced as the first parameter.

- LIST-FILES
  The first parameter, FILE NAME, can now specify files on remote systems.

- LIST-TITLE
  Information shown is extended to include version, generation and revision level and configuration status.

- LOOK-AT
  Changed first parameter (space reference).

- MOVE-SPOOLING-QUEUE-ENTRY
  The second and last parameters (FILE NAME and FILE NAME) can now specify files on remote systems.

- PRINT-ERROR-LOG
  If the standard error program (RTERR) is stopped and replaced by the ERS/SINTRAN III Watchdog (ERS3WD), this command will not work.

- RELEASE-DEVICE-UNIT
  The second parameter, DEVICE UNIT, is now always a required parameter.

- REMOVE-FROM-SPOOLING-QUEUE
  The second parameter (FILE NAME) can now specify a file on a remote system.

- RENAME-DIRECTORY
  The fourth parameter, DEVICE UNIT, is now always a required parameter.

- RENAME-FILE
  Files which are open, cannot be renamed.

- RESERVE-DEVICE-UNIT
  The second parameter, DEVICE UNIT, is now always a required parameter.

- STOP-TERMINAL
  Terminals in 'waiting' or 'escape-off' state can now be stopped.

5.4 NEW COMMANDS

- DEFINE-MASS-STORAGE-UNIT
  Define a mass storage device in the directory table.

- DELETE-MASS-STORAGE-UNIT
  Delete a definition of a mass storage device from the directory table.

- GIVE-OBJECT-BLOCKS
  Make it possible to create more than 256 files for a single user.

- LIST-MASS-STORAGE-UNITS
  List all mass storage units and corresponding directory index.

- SET-INITIAL-FILE-ACCESS
  Set default file access to be used for all users created.

- SET-INITIAL-FRIEND-ACCESS
  Set default friend access to be used for all users created.

- SET-MASS-STORAGE-SIZE
  Set the size of a directory to be entered on a mass storage device.

- TAKE-OBJECT-BLOCKS
  Restricts the number of files for a single user.

- UNLOCK-DIRECTORY
  Unlock a directory which was entered but not released on an other system.

5.5 MODIFIED MONITOR CALLS

- WCI MON 20
  Changed error return.

- N500M MON 60
  Several new functions to support the ND-5000 systems.

- ABSTR MON 131
  The restriction that parameters had to reside on PIT 0 is removed. In function 43 (read format table) and 44 (write format table), the third parameter (disk address) is changed.
  Some functions now support SCSI devices.

- MAGTP MON 144
  Function 21 (clear device) is only allowed from RT-programs running on hardware protection ring 2.
  Function 23 (set density and parity) is changes for SCSI magnetic tape compared to STC magnetic tape.

- ENTSG MON 157
  MON ENTSG (MON 157) is changed to "remember" which segments are entered and reenter these after a power fail restart.

- DEBUG MON 205
  Functions for multi-segment debugger have been added to this monitor call.

- APSPF MON 240
  The parameters containing file name to be appended to spooling file (X-register) and peripheral file (A-register) can now contain remote file specification.

- SUSCN MON 241
  If originally logged in as user RT, it is no longer possible to set user context to user SYSTEM.

- DEABF MON 256
  The parameters containing abbreviated file name (X-register) and full file name (A-register) can now contain remote file specification.

- CPUST MON 262
  The ND-110/CX CPU is now supported and some new values are returned.

- GDEVT MON 263
  Net/One and MTAD devices are now supported and some new values are returned.

- MLAMU MON 315
  Two new function, functions 9 and 10 are introduced.

- FSMTY MON 327
  Three new functions introduced: 2 (return block size), 3 (get file name) and 4 (get file/device information)

- UDMA MON 333
  Function 62 (Wait on interrupt/DMA finish) now has two new subfunctions.

- IOMTY MON 336
  MON IOMTY is totally revised.

5.6 NEW MONITOR CALLS

- RSREC MON 340
  Read system record (RT-description or Segment table entry).

- SGMTY MON 341
  MON SGMTY is used to change the active segments of a program and/or the page index tables.

- ADP MON 342
  MON ADP is reserved for internal use by ND.

- CONFG MON 343
  MON CONFG is used to read and/or change configuration parameters for a "standard system" SINTRAN III.

- PERFO MON 344
  MON PERFO is used for performance measurements. Only available in generation 301 and later, but NOT in generation 406.

- MTAD MON 345
  MON MTAD is used for handling Mailbox Terminal Devices. It is intended to be used from the MTAD library (ND-250222). Only available in generation 312 and later.

- AttachSegment MON 440
  MON AttachSegment is used to map a logical ND-500 data segment onto shared ND-100/ND-500 memory.

- 5MTRANS MON 515
  MON 5MTRANS is used for fast disk transfer from the ND-500. Only available in generation 301 and later.

5.7 SINTRAN-SERVICE-PROGRAM

Changes and new commands in the SINTRAN-SERVICE-PROGRAM are found in the SINTRAN III Release Information, K-version (ND-60.230.5 EN).

5.8 RT-LOADER

Changes to the RT-Loader are found in the SINTRAN III Release Information, K-version (ND-60.230.5 EN).

6 STANDARD CONFIGURATIONS

A list of options included in the SINTRAN III/VSX version K generation 500 standard systems B, C, D and M is given below:

		B	C	D	M
SMD/ECC disk controllers (max. 4 units/each):		4	2	2	2
ST-506 (Winchester) disk (max. 2 units/each):		2	1	0	0
SCSI host adaptor (controller):		0	0	3	2
SCSI disk units (per system):		0	0	8	4
SCSI streamer units (per system):		0	0	1	1
SCSI magnetic tape units (per system):		0	0	2	2
SCSI optical disk units (per system):		0	0	1	1
Bootstrap driver for SMD disk controller:		Yes	Yes	Yes	Yes
Bootstrap driver for Winchester disk contr.:		Yes	Yes	No	No
Bootstrap driver for SCSI disk controller:		No	No	Yes	Yes
Floppy/streamer contr. (max. 3 units/each): (both types of floppy drives supported)		2	2	2	2
Magnetic tape contr. (max. 4 units/each): (Cipher, Pertec, STC)		2	2	2	2
Terminals:		116	132	132	132
Communication:	HDLC + synchronous modem:	12	6	6	6
	HDLC interfaces:	10	4	4	4
	Synchronous modem interface:	2	2	2	2
	PIOC interfaces:	4	4	4	4
	GPIB interface:	1	0	0	0
	MPM IV option:	Yes	Yes	Yes	Yes
	I/O bus extensions:	2	2	2	2
	X.21 interfaces:	2	2	2	2
	X.25 option:	Yes	Yes	Yes	Yes
	X.29 option:	Yes	Yes	Yes	Yes
	CAMAC:	16	0	0	0
	Universal DMA:	4	4	4	4
	Vicom interfaces:	2	2	2	2
	Fast UDMA on ND-500:	Yes	Yes	Yes	Yes
	Ethernet interfaces:	2	2	2	2
	TELEFIX:	1	1	1	1
	HASP DMA interface:	1	1	1	1
	Net/One controllers:	0	2	2	2
Line printers:	Parallel or DMA interfaces:	2	2	2	2
	Versatec printer/plotter DMA:	1	1	2	1
	Versatec printer/plotter I/O:	0	0	0	0
	Extra spooling processes:	10	20	16	17
	LP device nos (5,15,0,0,22,0):	Yes	No	No	Yes
	LP device nos (5,15,0,0,22,23):	No	No	Yes	No
	COSMOS spooling:	Yes	Yes	Yes	Yes

23

Product	Name	Category
	SINTRAN III/VSX version K generation 500	STPR

		B	C	D	M
ftware tions:	Terminal/TAD background tasks:	128	150	116	116
	Terminal access devices (TADs):	50	50	30	30
	Batch processes:	10	10	10	10
	Segments	750	500	500	500
	Free RT-descriptions for users:	128	128	110	110
	ND-500 processes:	128	200	150	120
	SIBAS processes:	12	12	12	12
	Semaphores:	50	50	50	50
	Internal device (byte-oriented):	30	30	30	10
	Internal device (block-oriented):	2	2	2	2
	CX-CPU:	Yes	Yes	Yes	Yes
	ND-500:	Yes	Yes	Yes	Yes
	ND-500 CPUs:	1	1	1	1
	ND-5000 CPUs:	1	1	4	4
	XMSG:	Yes	Yes	Yes	Yes
	Device buffers:	64	64	64	64
	Symbolic Debugger tasks:	8	32	8	8
	Remote file access segments:	32	50	30	24
	CONNECT-TO:	Yes	Yes	Yes	Yes
	RT and I/O accounting:	Yes	Yes	Yes	Yes
	Remote Job Entry queues:	All	All	All	All
	Logging facilities:	All	All	All	All
	RT-Common:	6	6	6	6
	TPS:	1	1	1	1
	LAMU:	Yes	Yes	Yes	Yes
	MON ADP:	Yes	Yes	Yes	Yes
	MON 5MTRANS:	Yes	Yes	Yes	Yes
	Background allocation:	Yes	Yes	Yes	Yes
	Read segment:	Yes	Yes	Yes	Yes
	Disk optimization:	Yes	Yes	Yes	Yes
	Direct task:	Yes	No	No	No
	RT-programs from direct task:	25	0	0	0
	Magnetic Tape from direct task:	Yes	No	No	No
	Direct transfer on magnetic tape:	Yes	Yes	Yes	Yes
	Connect data fields:	16	10	10	10
	Extended open file table:	1	0	0	0
	Fault Tolerant eXtension:	Yes	Yes	Yes	Yes
	Disk Mirroring version D	No	No	No	Yes
	Paper tape punch:	Yes	Yes	Yes	Yes
	Allocated areas:	64	64	64	64
	Programmable RT-clock driver:	Yes	No	No	No
	Standard bootstrap drivers:	Yes	Yes	Yes	Yes

ND SOFTWARE LIBRARY DISKETTE

Containing :
ND-5500 Microprogram

Directory Name :
211274A01-XX-01D

User Name : **SYSTEM**

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	MICRO-5500-A27	DATA	I	R	R	RWACD	129	262144
1	MICRO-5500-A27	LABE	I	R	R	RWACD	39	76272
2	MICRO-5500-B27	DATA	I	R	R	RWACD	129	262144
3	MICRO-5500-B27	LABE	I	R	R	RWACD	42	82272
4	ND-5000-AF-SIM-A	NRF	I	R	R	RWACD	23	44588
5	ND-5000-AD-SIM-A	NRF	I	R	R	RWACD	7	12096
6	ND-500-RTC-LIB-A	NRF	I	R	R	RWACD	2	180
7	MICRO-11274A01-P	TEXT	I	R	R	RWACD	5	7632

8 files using 376 pages. 610 pages reserved out of 610 pages.

Product	Name	ND-no.	Category
	ND-5500 Microprogram	211274A	SPEC

Reason

x New product
Other:

Error Correction

Documentation

Title	ND-no.
ND-500 Reference Manual.	05.009.04 EN
ND-500 Single Precision Array Processing Functions.	05.013.03 EN
ND-500 Double Precision Array Processing Functions.	05.018.01 EN
ND-5000 Design Information	05.021.01 EN

Purpose

Implement the ND-5000 instruction set.

Prerequisites

Computer	Type	Floating format	Op. system Version
ND-5500	CX	32 and 64 bits.	SIN III VSX K WM406 or newer

Eco level
5000-36 All ECOs up to and including this ECO must be done.

ND-no.	Product name.
210333	ND-500-MONITOR version I01
211034	ND-500/5000 SWAPPER version I03 or newer

Minimum permanent mass storage resources

User	Userspace	Number of files
SYSTEM	128 pages on	1 file
SYSTEM	22 pages on	1 file
SYSTEM	6 pages on	1 file
SYSTEM	1 pages on	1 file

ND-no. for Source
250291A

File Name	Type	Containing
MICRO-5500-A27	DATA	ND-5500 microprogram.
MICRO-5500-B27	DATA	ND-5500 microprogram.
ND-5000-AF-SIM-A	NRF	ND-5000 SAX library.
ND-5000-AD-SIM-A	NRF	ND-5000 DAX library.
ND-500-RTC-LIB-A	NRF	Real Time Clock library.

1 INSTALLATION PROCEDURE

Insert the floppy disk, log in on the system as user SYSTEM and copy the microprogram file to the file CONTROL-STORE:DATA.

The A version of the microprogram is to be used on a ND-5500 system with SINTRAN III VSX K and work mode 406 (single CPU configurations). The B version of the microprogram is to be used on a ND-5500 with SINTRAN III VSX K and work mode 500 (single CPU configurations). The SINTRAN III command : LIST-TITLE may be used to verify the work mode revision on your system.

```
ENTER SYSTEM
PASSWORD:<password>
@OK
@ENTER-DIRECTORY,211274A,FLOPPY-DISC-<drive-no.>,<floppy-unit>↵
@LIST-TITLE↵
SINTRAN III VSX/500 K

STANDARD CONFIGURATION:
GENERATION (WORK MODE NO):    xxx
REVISION (PATRCH FILE NO.):
CPU TYPE:
CPU NUMBER:
GENERATED:  nn.nn.nn      nn  month 1988
```

If GENERATION (WORK MODE NO.) : xxx=406 then copy the A version

```
@COPY-FILE CONTROL-STORE:DATA,(211274A:SYSTEM)MICRO-5500-A27:DATA↵
```

If GENERATION (WORK MODE NO.) : xxx=500 then copy the B version

```
@COPY-FILE CONTROL-STORE:DATA,(211274A:SYSTEM)MICRO-5500-B27:DATA↵

@COPY-FILE ND-5000-AF-SIM-A:NRF,(211274A:SYSTEM)ND-5000-AF-SIM-A:NRF↵
@COPY-FILE ND-5000-AD-SIM-A:NRF,(211274A:SYSTEM)ND-5000-AD-SIM-A:NRF↵
@COPY-FILE ND-500-RTC-LIB:NRF,(211274A:SYSTEM)ND-500-RTC-LIB-A:NRF↵
@RELEASE-DIRECTORY 211274A↵
```

The microprogram is loaded to the ND-5500 writeable control store by the ND-500-MONITOR using the command :

```
LOAD-CONTROL-STORE CONTROL-STORE:DATA,0,40000↵
```

Default parameters may be used in the command LOAD-CONTROL-STORE, causing the entire microprogram to be loaded from the file CONTROL-STORE:DATA.

The command LOAD-CONTROL-STORE is only necessary when the microprogram is changed. Later restarts of the system will cause the microprogram to be loaded automatically.

2 THE RTC LIBRARY

The ND-5000 has a built in Real Time Clock. This may be handled by the ND-500-RTC-LIB. Note that when the entry CLRCLK is called, the domain must be privileged. If not, Illegal Instruction Code is generated.

The entries in the library with function are :

- CLINT : Generate external interupt. No parameters in the CALL.
- CLRCLK : Reset RTC. No parameters in the CALL.
- RDCLK : Read RTC. Value returned is 32 bits integer.

ND SOFTWARE LIBRARY DISKETTE

Containing :
ND-500/5000 System Package for SINTRAN III/VSX, ver. K, gen. 500

Directory Name :
211305A00-XX-01D

User Name : **FLOPPY-USER**

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	ND-500-MON-J02	PROG	I	R	R	RWA	125	253260
1	SWAPPER-J20	PSEG	I	R	R	RWA	17	31026
2	SWAPPER-J20	DSEG	I	R	R	RWA	89	179205
3	ER-S3WD-LOAD-A03	MODE	I	R	R	RWA	2	577
4	ER-S3WD-5K-A03	INST	I	R	R	RWA	2	938
5	ER-S3WD-500-A03	INST	I	R	R	RWA	2	939
6	ER-S3WD-5KDE-A03	EDAT	I	R	R	RWA	21	40938
7	ER-S3WD-500D-A03	EDAT	I	R	R	RWA	21	40936
8	ER-S3WD-A03	PROG	I	R	R	RWA	70	227328
9	PLACE-1BANK-C01	BRF	I	R	R	RWA	6	10127
10	PLACE-2BANK-C01	BRF	I	R	R	RWA	7	10281
11	PLACE-BIG-1B-C01	BRF	I	R	R	RWA	18	34745
12	PLACE-BIG-2B-C01	BRF	I	R	R	RWA	19	36236
13	PLACE-SML-1B-C01	BRF	I	R	R	RWA	5	7136
14	PLACE-SML-2B-C01	BRF	I	R	R	RWA	5	7928

15 files using 409 pages. 610 pages reserved out of 610 pages.

Product	Name ND-500/5000 System Package for SINTRAN III/VSX, version K, generation 500	Reg. no. 211305A	Category STPR

Reason

. New Product . Error Correction
X Change/Addition X Different Environment
. Other:

Documentation

Title	Reg. no.
SINTRAN III Release Information, K-version	60.230.5
SINTRAN III Commands Reference Manual	60.128.5

Purpose

Control and supervision of ND-500(0) processes.

Prerequisites

Computer Type
ND-5000 or ND-500 series (ND-100 part must be a CX-CPU)

Operating system	Version	Generation
SINTRAN III/VSX 500	K	500

Reg.no.	Product name
210786	Micro program ver. 15211 for ND-550/560/570.
210787	Micro program version 15311 for ND-530.
210701	Micro program version 15111 for ND-580.
211272	Micro program version 11527 for ND-5200.
211273	Micro program version 11627 for ND-5400.
211274	Micro program version 11727 for ND-5500.
211275	Micro program version 11827 for ND-5700.
211276	Micro program version 11927 for ND-5800.
	or later versions (...28, etc.)

Minimum mass storage resources for installation

User	User space	Number of files
SYSTEM	108 pages on	3 files
ND-OPERATIONS or SYSTEM	21 pages on	1 file
SYSTEM or :PROG-file user	195 pages on	2 files
SYSTEM or :BRF-file user	60 pages on	6 files

Minimum permanent mass storage resources

User	User space	Number of files
SYSTEM	108 pages on	3 files
ND-OPERATIONS or SYSTEM	21 pages on	1 file
SYSTEM or :PROG-file user	195 pages on	2 files
SYSTEM or :BRF-file user	60 pages on	6 files

Number of RT-descriptions: 1
Maximum/Minimum number of segments: Max: 2 Min: 1
Max space requirements on segment file(s) is 195 pages

Product consists of:

Name		Reg. no. Source
ND-500/5000 Monitor	(version J)	
ND-500/5000 Swapper	(version J)	
ERS/SINTRAN III Watchdog	(version A)	250290A
ND-500 Place-Library	(version C)	

Product	Name	Reg. no.	Category
	ND-500/5000 System Package for SINTRAN III/VSX, version K, generation 500	211305A	STPR

Directory name: 211305A<rev>-XX-01 User name: FLOPPY-USER

File name	Type	Containing
ND-500-MON-J<rev>	PROG	The ND-500/5000 Background Monitor
SWAPPER-J<rev>	PSEG	The ND-500/5000 Swapper
SWAPPER-J<rev>	DSEG	The ND-500/5000 Swapper
ER-S3WD-A<rev>	PROG	ERS/SINTRAN III Watchdog
ER-S3WD-5KDE-A<rev>	EDAT	ERS/SINTRAN III Watchdog for ND-5000
ER-S3WD-500D-A<rev>	EDAT	ERS/SINTRAN III Watchdog for ND-500
ER-S3WD-5K-A<rev>	INST	ERS/SINTRAN III Watchdog for ND-5000
ER-S3WD-500-A<rev>	INST	ERS/SINTRAN III Watchdog for ND-500
ER-S3WD-LOAD-A<rev>	MODE	ERS/SINTRAN III Watchdog
PLACE-1BANK-C<rev>	BRF	ND-500 Place-Library (1-bank)
PLACE-2BANK-C<rev>	BRF	ND-500 Place-Library (2-bank)
PLACE-BIG-1B-C<rev>	BRF	ND-500 Place-Library (1-bank)
PLACE-BIG-2B-C<rev>	BRF	ND-500 Place-Library (2-bank)
PLACE-SML-1B-C<rev>	BRF	ND-500 Place-Library (1-bank)
PLACE-SML-2B-C<rev>	BRF	ND-500 Place-Library (2-bank)

(<rev> in file name and directory name above means revision number)

1. INSTALLATION

- Enter the directory on the diskette (if you use single-sided/ single-density diskettes, enter diskette number 1):

```
@ENTER-DIRECTORY↵
 DIRECTORY NAME: 211305↵
 DEVICE NAME: FLOPPY-DISC-<controller>↵
 DEVICE UNIT: <unit>↵
```

1.1 ND-500/5000 MONITOR (background part)

- Log into the SINTRAN III user area where you keep :PROG files to be dumped as reentrant subsystems (or user SYSTEM).

- Copy the file containing the ND-500 Background Monitor to disk:

```
@COPY-FILE↵
 DESTINATION FILE: "ND-500-MON-J<rev>:PROG"↵
 SOURCE FILE: (211305:FLOPPY-USER)ND-500-MON-J<rev>:PROG↵
```

- Log out and log in as user SYSTEM

- If you already have a version of the ND-500 Monitor reentrant, you should delete it:

```
@DELETE-REENTRANT↵
 NAME: ND-500-MONITOR↵
```

- Dump the ND-500 Background Monitor as a reentrant subsystem:

```
@DUMP-PROGRAM-REENTRANT↵
 NAME: ND-500-MONITOR↵
 FILE NAME: (<user-name>)ND-500-MON-J<rev>:PROG,N5MON↵
```

- You should insert this command in the mode file you run after a cold start (or replace the commands already used to dump a previous version of the ND-500 Monitor reentrant).

1.2 ND-500/5000 SWAPPER

- Log in as user SYSTEM.

- If you use single-sided/single-density diskettes, release diskette number 1 and enter diskette number 2:

```
@RELEASE-DIRECTORY↵
 DIRECTORY NAME: 211305↵

@ENTER-DIRECTORY↵
 DIRECTORY NAME: 211305↵
 DEVICE NAME: FLOPPY-DISC-<controller>↵
 DEVICE UNIT: <unit>↵
```

- Delete the old version of the ND-500 Swapper:

```
@DELETE-FILE↵
 FILE NAME: SWAPPER:PSEG↵
@DELETE-FILE↵
 FILE NAME: SWAPPER:DSEG↵
```

- Copy the files containing the ND-500 Swapper to disk:

```
@COPY-FILE↵
 DESTINATION FILE: "SWAPPER-J<rev>:PSEG"↵
 SOURCE FILE: (210305:FLOPPY-USER)SWAPPER-J<rev>:PSEG↵
@COPY-FILE↵
 DESTINATION FILE: "SWAPPER-J<rev>:DSEG"↵
 SOURCE FILE: (210305:FLOPPY-USER)SWAPPER-J<rev>:DSEG↵
```

1.3 ERS/SINTRAN III WATCHDOG

- Log in as user SYSTEM.

- If you use single-sided/single-density diskettes, release diskette number 2 and enter diskette number 3:

```
@RELEASE-DIRECTORY↵
 DIRECTORY NAME: 211305↵

@ENTER-DIRECTORY↵
 DIRECTORY NAME: 211305↵
 DEVICE NAME: FLOPPY-DISC-<controller>↵
 DEVICE UNIT: <unit>↵
```

- If your system is an ND-5000 system, run the installation file "ER-S3WD-5K-A<rev>:INST":

```
@MODE↵
 FILE NAME: (211305:FLOPPY-USER)ER-S3WD-5K-A<rev>:INST↵
 OUTPUT FILE: ↵
```

This installation file copies the following files to disk:

ER-S3WD-5KDE-A<rev>:EDAT	(ND-5000 messages - the file is called ER-S3WD-DESC-A<rev>:EDAT on disk)
ER-S3WD-A<rev>:PROG	(Watchdog program)
ER-S3WD-LOAD-A<rev>:MODE	(:MODE-file to be inserted in HENT-MODE:MODE)

The file ER-S3WD-5KDE-A<rev>:EDAT is normally copied to the user area ND-OPERATIONS, but can instead be placed on user SYSTEM; if you want this to be done, edit the :INST file accordingly.

The file ER-S3WD-A<rev>:PROG is normally copied to the user area SYSTEM, but can instead be placed on the user area where you usually keep :PROG files; if you want this to be done, edit the :INST file and the file ER-S3WD-LOAD-A:MODE accordingly.

- If your system is an ND-500 system, run the installation file "ER-S3WD-500-A<rev>:INST":

```
@MODE↵
 FILE NAME: (211305:FLOPPY-USER)ER-S3WD-500-A<rev>:INST↵
 OUTPUT FILE: ↵
```

This installation file copies the following files to disk

ER-S3WD-500D-A<rev>:EDAT	(ND-500 messages - the file is called ER-S3WD-DESC-A<rev>:EDAT on disk)
ER-S3WD-A<rev>:PROG	(Watchdog program)
ER-S3WD-LOAD-A<rev>:MODE	(:MODE-file to be inserted in HENT-MODE:MODE)

The file ER-S3WD-500D-A<rev>:EDAT is normally copied to the user area ND-OPERATIONS, but can instead be placed on user SYSTEM; if you want this to be done, edit the :INST file accordingly.

The file ER-S3WD-A<rev>:PROG is normally copied to the user area SYSTEM, but can instead be placed on the user area where you usually keep :PROG files; if you want this to be done, edit the :INST file and the file ER-S3WD-LOAD-A:MODE accordingly.

- The command @MODE ER-S3WD-LOAD-A:MODE should be inserted in the file you run after a cold start (usually called HENT-MODE:MODE).

- The commands @RT ERS3WD and @ABORT RTERR should be inserted in the file you run after a warm start, (usually called LOAD-MODE:BATC).

1.4 ND-500/5000 PLACE-LIBRARY

- The ND-500/5000 Place Library is only required if you have users who write programs manipulating (starting, stopping, etc.) ND-500/5000 domains.
  If your system does not require the ND-500/5000 Place Library, you may skip this section.

- Log in as user SYSTEM or the user area where you want the Place-Library files to be stored.

- If you use single-sided/single-density diskettes, release diskette number 2 and enter diskette number 3:

```
@RELEASE-DIRECTORY↵
 DIRECTORY NAME: 211305↵

@ENTER-DIRECTORY↵
 DIRECTORY NAME: 211305↵
 DEVICE NAME: FLOPPY-DISC-<controller>↵
 DEVICE UNIT: <unit>↵
```

- Copy the files of the ND-500 Place-Library:

```
@COPY-FILE↵
 DESTINATION FILE: "PLACE-1BANK-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-1BANK-C<rev>:BRF↵
@COPY-FILE↵
 DESTINATION FILE: "PLACE-2BANK-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-2BANK-C<rev>:BRF↵
```

```
@COPY-FILE↵
 DESTINATION FILE: "PLACE-SML-1B-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-SML-1B-C<rev>:BRF↵
@COPY-FILE↵
 DESTINATION FILE: "PLACE-SML-2B-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-SML-2B-C<rev>:BRF↵
```

- If you use single-sided/single-density diskettes, release diskette number 3 and enter diskette number 2:

```
@RELEASE-DIRECTORY↵
 DIRECTORY NAME: 211305↵

@ENTER-DIRECTORY↵
 DIRECTORY NAME: 211305↵
 DEVICE NAME: FLOPPY-DISC-<controller>↵
 DEVICE UNIT: <unit>↵
```

to continue copying:

```
@COPY-FILE↵
 DESTINATION FILE: "PLACE-BIG-1B-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-BIG-1B-C<rev>:BRF↵
@COPY-FILE↵
 DESTINATION FILE: "PLACE-BIG-2B-C<rev>:BRF"↵
 SOURCE FILE: (210305:FLOPPY-USER)PLACE-BIG-2B-C<rev>:BRF↵
```

1.5 FINISHING INSTALLATION

- When all files are copied, release the diskette.

```
@RELEASE-DIRECTORY↵
 DIRECTORY NAME: 211305↵
```

2. ND-500/5000 MONITOR

2.1 MODIFICATIONS

2.1.1 COMMANDS REMOVED

- RESTART-PROCESS

2.1.2 MODIFIED COMMANDS

- FIX-SEGMENT-CONTIGUOUS
  The command name is changed from FIX-SEGMENT-CONTIGOUS.

- LOAD-CONTROL-STORE
  The parameter <File name> has changed default value from the file CONTROL-STORE:DATA to a file name selected by the SINTRAN III system monitor according to CPU-type (single- or multi-CPU):

  - CONTROL-1-STORE:DATA is default on CPU 1 of a multi-CPU system,
  - CONTROL-2-STORE:DATA is default on CPU 2 of a multi-CPU system,
  - CONTROL-STORE:DATA is default on a single-CPU system (unless the file CONTROL-1-STORE:DATA is found).

  Note: These defaults apply if you run SINTRAN III/VSX generation 500 only, for systems running generation 406 there is no default file name.

- PROCESS-LOG-ALL
  The order of parameters is changed to conform to the command PROCESS-LOG-ONE (<Process number> first, <Interval> second).

- The default radix for numeric input is changed for some commands. The following command parameters are changed to default decimal input:

Command:	Parameter:
ABORT-PROCESS	process number
ATTACH-PROCESS	process number
BREAK	count
GET-FLAG	process number
INSERT-IN-TIME-SLICE	process number
LIST-ACTIVE-SEGMENTS	process number
LIST-EXECUTION-QUEUE	interval
LIST-PROCESS-TABLE-ENTRY	process number
LIST-TIME-QUEUE	interval
LOGOUT-PROCESS	process number
PRINT-PROCESS-LOG	first process
PROCESS-LOG-ALL	first process & interval
PROCESS-LOG-ONE	process number & interval
REMOVE-FROM-TIME-SLICE	process number
SET-FLAG	process number
START-PROCESS-LOG-ONE	process number & interval
SWAPPING-LOG	interval
TEMPORARY-BREAK	count

2.1.3 NEW FACILITIES

- Further decoding performed on hardware fault and protect violation trap messages.

- CPU-type listed in VERSION. Applies only to the ND-5000 series. For systems running SINTRAN III generation 406, only "5000" will be given.

- On a "trap-handler missing" trap, the trap number is now reported.

2.1.4 ERRORS CORRECTED

- OWN trap enable mask was wrong when defining standard domain (new domain format).

- Parameter buffer for defining standard domain expanded.

- DOMAIN-STATUS did not list domain numbers above 31.

- ABORT-BATCH-ON-ERROR had the wrong default value. Default is OFF.

- Error interpreter did not accept error codes from Octobus, NDIX and codes in the range 301_8-377_8.

2.2 NOTES and HINTS

- Dump the ND-500 Monitor as a reentrant subsystem, as indicated in "Installation" on page 3, to improve its performance (especially if used by many users at the same time).

- You may also define an extra entry point at address 31 for entering the Symbolic Debugger without first entering the monitor by using the command:

```
@DEFINE-REENTRANT-PROGRAM↵
 NAME: DEBUGGER-500↵
 START ADDRESS (OCT): 31↵
 RESTART ADDRESS (OCT): 31↵
 SEGMENT (NAME OR NUMBER (OCT)): N5MON↵
```

  This command should also be inserted in the mode file you run after a cold start.

3. ND-500/5000 SWAPPER

3.1 MODIFICATIONS

3.1.1 IMPROVED FUNCTIONALITY

- The new domain format (using :DOM and :SEG files), is supported in this version of the ND-500 Swapper.

3.1.2 IMPROVED PERFORMANCE

- Improved utilisation of the CPU (TSB handling, Cache handling).
- Improved utilisation of multi-CPU systems (ND-5000 systems only).
- Improved performance when a segment is fixed contiguous or allocated.

3.2 POSTMORTEM DUMP OF ND-500/5000 SWAPPER

- After a fatal error from the swapper (Message 'SWAPPER STOPPED'), the swapper's data segment may be dumped to file for later analysis by ND.
- The error flag in the ND-500 data field must be reset first. The address of the data field is found in B-register of the RT-program 5SWAP. The error flag has displacement 13_8 within the data field. Use the following procedure to reset the error flag:

  Log in as user SYSTEM

  @LIST-RT-DESCRIPTION 5SWAP↵

```
ACTIVE    I/O-WAIT  ......  ....  ....  .....  .....  .....  .....

          SEGMENTS 1  AND  2     REENT  NPIT APIT RING PRIORITY
INITIAL   :         0B        0B              5B   7B   2      100B
ACTUAL    :         0B        0B              5B   7B   2      100B

START ADDRESS:  35533B   LAST STARTED:  5928 MINS   28 SECS
ND-100 CPU TIME USED:   51 SECS

   P       X       T       A       D       L       S       B
034511 061411 000062 000004 042031 035577 000001 021422

RESERVED    DATAFIELDS  LOGICAL UNIT          FIRST WAITING
              100655B
```

In this example, the B-register = 21422_8
The address of the error flag is thus $21422_8 + 13_8 = 21435_8$
Calculate the address on your installation.

```
@ND-500-MONITOR↵

ND-500 MONITOR  Version H00 86. 5. 6 / 86. 5.14
N500: SET-ND-500-UNAVAILABLE↵

N500: @LOOK-AT S3DPIT↵
READY:
21435/   2047  0↵
177777 .↵
-END
N500:
```

The swapper may now be dumped as follows.
The dump file will normally require between 100 and 180 pages, depending on the system configuration.

```
N500: DUMP-SWAPPER↵
File name: "SWAP-DUMP"↵

Dumping physical segment no. : 1
Octal byte address for physical segment table = 210000
  Logical page : 0   -   Physical page : 1
     .
     .
     .
  Logical page : 726 -   Physical page : 1770
N500:
```

The dump is completed. Copy the file to a diskette and send it to ND along with a description of the error situation.

The ND-500/5000 must be restarted before it can be used :

```
N500: STOP-ND-500↵

@ND-500-MONITOR↵

ND-500 MONITOR  Version H00 86. 5. 6 / 86. 5.14
N500: START-SWAPPER↵
        .
        .
   .
   .
N500: EXIT↵

@
```

Product	Name	Reg. no.	Category
	ND-500/5000 System Package for SINTRAN III/VSX, version K, generation 500	211305A	STPR

.3 ERROR CODES RETURNED FROM THE ND-500/5000 SWAPPER

1 Trying to release a bitbuffer that is already free.
3 Bad segment links.
4 Illegal owner of a bitbuffer.
5 Trying to read/write from/to a page not belonging to ND-500 or not accessible from ND-100.
15₈ The number of pages in a physical segment ≥ maximum number of pages for the segment. Occurs when no page is obtained from cleaning the segment.
20₈ Logical page number ≠ 0 when updating index of direct indexed segment.
21₈ A memory map element not in the right memory map link.
25₈ Illegal segment number found in capability table.
26₈ Error in contiguous memory area.
27₈ Domain number ≠ 0 on a single domain system.
30₈ Too many memory intervals. Bad memory configuration or bad definition of the memory configuration.
31₈ A page given from ND-100 to ND-500 does not belong to ND-100.
32₈ The data segment and the program segment of the swapper have different versions. :DSEG or :PSEG file not copied?
34₈ A file pointer is zero.
35₈ Error in buffer link.
40₈ Error in an index page.
41₈ Error return from MON 377.
42₈ Overlap between global data and tables.
45₈ Trying to expand a non-expandable segment.
47₈ No such page on a write access.
50₈ Number of pages of physical segment is -1.
55₈ Illegal message type to the swapper.
56₈ Illegal of a process segment.
57₈ Error in the file system. Directory page address 0 returned.
60₈ Error in the file system. Bad file pointer returned.
61₈ Index in before image log (BIMLOG) buffer corrupted.
62₈ Before image log (BIMLOG) descriptor not released when the process is deleted.
63₈ Internal error.
64₈ Inconsistency in reference information.
66₈ Request for a function not available in this version.
70₈ MIN_COMMON_PAGE is not ok.
72₈ Illegal function code in MON 510
73₈ No free page found in prefetch buffer.
74₈ Segment using prefetch is direct.
100₈ The number of pages of a physical segment field is wrong.
106₈ Domain number ≠ 0 on a single domain system
110₈ Illegal version of system monitor.
200₈ Error in CPU link. More CPUs in link than is available.
201₈ Error in CPU data field. No active CPU found.
202₈ Time out. No response from microprogram in other CPUs on request for 15 s.
207₈ Lock time out. General system semaphore reserved > 15 s.

4. ERS/SINTRAN III WATCHDOG

4.1 FUNCTIONALITY

- The ERS (Event Report System) SINTRAN III Watchdog is used to report errors from the ND-500 and ND-5000 systems.
  It may also be used to get a better error report form ND-100 systems.

- All errors are reported from the ND-500 System Monitor to the Watchdog program which will print error information on the error device.

- To activate the Watchdog, use the SINTRAN III commands:

  @RT ERS3WD↵
  @ABORT RTERR↵

  or, include these commands in the file you run after a warm start (usually called LOAD-MODE:BATC).

4.2 RESTRICTIONS

- The ERS/SINTRAN III Watchdog cannot be used on a system running the FTX Error Logger (the RT-program FTXWD cannot be running).

- When the standard error program RTERR is stopped, error messages will no longer be available from the SINTRAN III error log (handled by the commands @INITIALIZE-ERROR-LOG and @PRINT-ERROR-LOG).

5. ND-500 PLACE-LIBRARY

5.1 NEW FUNCTIONS

PLANC routine:

```
ND500_X( <domain name>, <priority function>,
         <priority operand>, <cpu number> )
```

FORTRAN routine:

```
ERR = ND500F_X( <domain name>, <priority function>,
                <priority operand>, <cpu number> )
```

FORTRAN reentrant routines:

```
ERR = ND500R( <domain name>, <priority> )

ERR = ND500R_X( <domain name>, <priority function>,
                <priority operand>, <cpu number> )
```

Parameter description:

domain name:	Directory and user can be omitted or abbreviated. Domain name can be abbreviated as long as it is unambiguous.
priority function:	= 1 Set fixed priority. = 2 Insert in time-slice. = 3 Remove from time-slice.
priority operand:	Priority value for priority-function = 1. Time-slice class for priority-function = 2. Dummy, not used for priority-function = 3.
cpu number:	= 0 Use CPU with smallest load. > 0 Use specified CPU number.

5.2 IMPROVED FUNCTIONALITY

Modified to accept domains containing the new domain-format.