

LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-01D

User Name : FLOPPY-USER

No	File name	Type T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN I	R	R	R	29	56182
1	CACHE-1X0-A00	TEST I	R	R	R	13	23040
2	CACHE-100-A00	NEXT I	R	R	R	7	11264
3	CACHE-110-A00	NEXT I	R	R	R	16	30720
4	CACHE-120-A00	NEXT I	R	R	R	12	20992
5	COLOUR-TERM-A00	TEST I	R	R	R	10	17920
6	CONFIGURATIO-D04	TEST I	R	R	R	22	41472
7	DISC-TEMA-I11	TEST I	R	R	R	36	71680
8	FLOPPY-STREA-C02	TEST I	RWA	RWACD	RWACD	24	47104
9	GRAPHIC-TERM-B00	TEST I	R	R	R	30	58368
10	GRAPHIC-TERM-B00	FONT I	R	R	R	3	3082
11	HDLIC-MEGALIN-D00	TEST I	R	R	R	11	19456
12	INSTRUCTION-C03	TEST I	R	R	R	18	34816
13	LP-TEST-E01	TEST I	R	R	R	6	10240
14	MAGTAPE-B00	TEST I	R	R	R	8	13824
15	MEMORY-D04	TEST I	R	R	R	18	33792
16	NET-ONE-A00	TEST I	RWA	RWACD	RWACD	18	34304
17	OCTOBUS-B00	TEST I	RWA	RWACD	RWACD	32	62976
18	PAGING-C02	TEST I	R	R	R	19	35328
19	PIOC-ETHER-B01	TEST I	R	R	R	35	68608
20	PIOC-ETHER-B01	NEXT I	R	R	R	35	68096
21	POWER-FAIL-A01	TEST I	R	R	R	5	7680
22	PRINTERS-B00	TEST I	R	R	R	36	70656
23	PRINTERS-001-B00	NEXT I	R	R	R	3	3584
24	PRINTERS-002-B00	NEXT I	R	R	R	3	3584
25	PRINTERS-003-B00	NEXT I	R	R	R	3	3584
26	PRINTERS-004-B00	NEXT I	R	R	R	3	3584
27	PRINTERS-005-B00	NEXT I	R	R	R	3	3584
28	PRINTERS-006-B00	NEXT I	R	R	R	3	3584
29	PRINTERS-007-B00	NEXT I	R	R	R	3	3584

CONTINUED

ND SOFTWARE LIBRARY DISKETTE

PAGE 2

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-01D

User Name : FLOPPY-USER

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
30	PRINTERS-008-B00	NEXT	I	R	R	R	3	3584
31	SYNC-MODEM-B00	TEST	I	R	R	R	7	12288
32	TERMINAL-ASY-F01	TEST	I	R	R	R	14	26112
33	UNIVERS-DMA-C01	TEST	I	R	R	R	23	44032

34 files using 511 pages. 610 pages reserved out of 610 pages.

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-02D

User Name : FLOPPY-USER

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN	I	R	R	R	29	56182
1	DISK-MM-B00	TEST	I	RWA	RWACD	RWACD	37	72192
2	SCSI-TV-B00	TEST	I	RWA	RWACD	RWACD	37	72704
3	SCSI-TV-OVL1-B00	NEXT	I	RWA	RWACD	RWACD	20	37376
4	SCSI-TV-OVL2-B00	NEXT	I	RWA	RWACD	RWACD	17	31232
5	SCSI-TV-OVL3-B00	NEXT	I	RWA	RWACD	RWACD	20	37376
6	SCSI-TV-OVL4-B00	NEXT	I	RWA	RWACD	RWACD	19	36352
7	files using 179 pages. 610 pages reserved out of 610 pages.							

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-01S

User Name : FLOPPY-USER

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN	I	R	R	R	29	56182
1	CONFIGURATIO-D04	TEST	I	R	R	R	22	41472
2	DISC-TEMA-I11	TEST	I	R	R	R	36	71680
3	MEMORY-D04	TEST	I	R	R	R	18	33792
4	POWER-FAIL-A01	TEST	I	R	R	R	5	7680
5	TERMINAL-ASY-F01	TEST	I	R	R	R	14	26112

6 files using 124 pages. 148 pages reserved out of 148 pages.

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-02S

User Name : FLOPPY-USER

[illegible]

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-03S

User Name : FLOPPY-USER

No	File name	Type T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN C	R	R	R	28	56182
1	HDLC-MEGALIN-D00	TEST C	R	R	R	10	19456
2	PIOC-ETHER-B01	TEST C	R	R	R	34	68608
3	PIOC-ETHER-B01	NEXT C	R	R	R	34	68096
4	SYNC-MODEM-B00	TEST C	R	R	R	6	12288
5	OCTOBUS-B00	TEST I	RWA	RWACD	RWACD	32	62976
6	files using 144 pages. 148 pages reserved out of 148 pages.						

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-04S

User Name : FLOPPY-USER

No	File name	Type	T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN	I	R	R	R	29	56182
1	COLOUR-TERM-A00	TEST	I	R	R	R	10	17920
2	GRAPHIC-TERM-B00	TEST	I	R	R	R	30	58368
3	GRAPHIC-TERM-B00	FONT	I	R	R	R	3	3082
4	LP-TEST-E01	TEST	I	R	R	R	6	10240
5	PRINTERS-B00	TEST	I	R	R	R	36	70656
6	PRINTERS-001-B00	NEXT	I	R	R	R	3	3584
7	PRINTERS-002-B00	NEXT	I	R	R	R	3	3584
8	PRINTERS-003-B00	NEXT	I	R	R	R	3	3584
9	PRINTERS-004-B00	NEXT	I	R	R	R	3	3584
10	PRINTERS-005-B00	NEXT	I	R	R	R	3	3584
11	PRINTERS-006-B00	NEXT	I	R	R	R	3	3584
12	PRINTERS-007-B00	NEXT	I	R	R	R	3	3584
13	PRINTERS-008-B00	NEXT	I	R	R	R	3	3584
14	files using 138 pages. 148 pages reserved out of 148 pages.							

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-05S

User Name : FLOPPY-USER

No	File name	Type T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN I	R	R	R	29	56182
1	DISK-MM-B00	TEST I	RWA	RWACD	RWACD	37	72192
2	FLOPPY-STREA-C02	TEST I	RWA	RWACD	RWACD	24	47104
3	MAGTAPE-B00	TEST I	R	R	R	8	13824

4 files using 98 pages. 148 pages reserved out of 148 pages.

ND SOFTWARE LIBRARY DISKETTE

PAGE 1

Containing :
Test programs for ND-100/110/120

Directory Name :
210523G02-XX-06S

User Name : FLOPPY-USER

No	File name	Type T	Public	Friend	Own	Pages	Bytes
0	TPE-MON-100-B00	BPUN I	R	R	R	29	56182
1	SCSI-TV-B00	TEST I	RWA	RWACD	RWACD	37	72704
2	SCSI-TV-OVL1-B00	NEXT I	RWA	RWACD	RWACD	20	37376
3	SCSI-TV-OVL2-B00	NEXT I	RWA	RWACD	RWACD	17	31232
4	SCSI-TV-OVL3-B00	NEXT I	RWA	RWACD	RWACD	20	37376
5	SCSI-TV-OVL4-B00	NEXT I	RWA	RWACD	RWACD	19	36352

6 files using 142 pages. 148 pages reserved out of 148 pages.

NOTE: <rev> is to be replaced by the current revision of the DIRECTORY or FILE. The revision is found on the "ND SOFTWARE LIBRARY DISKETTE" pages.

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Product	Name Test programs for ND-100/110/120	Reg. no. 210523G	Category STPR

1 NEW PROGRAMS

1.1 CACHE-1X0-A<rev>

1.1.1 Purpose

The purpose of this program is to have one single CACHE test program for all ND-100 series CPU's.

1.1.2 General description

The program is based on the exsisting CACHE test programs for ND-100 and ND-110. A new program module handles the ND-120 CPU. The program consists of 4 files, they are as follows:

CACHE-1X0-A<rev>:TEST	Main program
CACHE-100-A<rev>:NEXT	Tests for ND-100
CACHE-110-A<rev>:NEXT	Tests for ND-110
CACHE-120-A<rev>:NEXT	Tests for ND-120

At program start, the correct test file will be loaded automatically. The different tests have the same name/number for all CPU types. Due to the different CACHE design on the 3 CPU's, some tests will be skipped for the various CPUs.

1.1.3 Changed tests

Some of the tests from the "old" CACHE test programs have been changed to reduce the test execution time, without loss of functionality.

1.2 NET-ONE-A<rev>

1.2.1 Purpose

This program tests the NET/ONE interface controller, also refered to as the NOTS controller.

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1.2.2 Command descriptions

>SELECT-DEVICE

Selects NOTS controller to be tested (1:8).

>LIST-ALL-DEVICES

Prints a list of the defined NOTS controllers.

>LIST-DEVICES-PRESENT

Prints a list of all present NOTS controllers.

>RUN <test number>

This command makes it possible to execute one specific test, or a subset of all tests in a specified sequence.

Tests available:

Test number	Test name
1	REGISTER-IOX TEST
2	TIMER-IDENT TEST
3	MEMORY-PATTERN TEST
4	MEMORY-ADDRESS TEST
5	MBNIU-DIAGNOSTIC-1
6	MBNIU-DIAGNOSTIC-2

Test 1 : Register-iox test

Tests the NOTS registers, i.e. after writing to a control register, the corresponding status register must contain the expected value.

Test 2 : Timer-ident test

Tests the NOTS timer. The returned ident code must have the expected value.

Test 3 : Memory-pattern test

Tests the MBNIU memory by writing known values, read back and compare.

Test 4 : Memory-address test

This test uses a 'address in address' pattern when writing to the MBNIU memory, detects memory addressing errors.

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Test 5 : MBNIU-diagnostics 1

This test runs the self-test diagnostic number 1 on the MBNIU board.

Test 6 : MBNIU-diagnostics 2

This test runs the self-test diagnostic number 2 on the MBNIU board. (It takes about 4 minutes to run this test)

MBNIU : MultiBus Network Interface Unit.

Note: The error messages reported from Test 5 and Test 6 are a copy of the LED pattern on the MBNIU card.

>SET-PARAMETERS

Defines how the program should run the tests.

Syntax:

```

SET-PARAMETERS  <loop mode (<loops>)>
                  <abort mode (<errors>)>
                  <suppress mode>
                  <debug mode>

<loop mode>    : YES or No.
                  YES means the test or tests is
                  repeated.
                  NO means that the test is run only
                  once.
                  Default : NO

<loops>        : Number of times the test is to be
                  repeated.
                  Default : Infinite

<abort mode>   : YES or NO
                  YES means that the test(s) is
                  aborted when maximum number of
                  errors is reached.
                  NO means that the test(s) will
                  never abort.
                  Default : NO

<errors>       : Maximum errors allowed before
                  abortion.
                  Default : 10

<suppress mode> : YES or NO
                  YES means that the error messages
                  are suppressed.
                  NO means that the error messages are
                  printed.
                  Default : NO

```


Product	Name Test programs for ND-100/110/120	Reg. no. 210523G	Category STPR
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<debug mode> : YES or NO
 YES turns the debug mode on.
 NO turns the debug mode off.
 Default : NO

>NOTS-DEBUG

This command is only available when the debug mode is on (see SET-PARAMETERS). The command has several subcommands which are listed below.

List-debug-parameters

Shows the current debug parameters.

Timer-units

Changes the timer value used for the Timer/Ident test.

Address-range

Specifies from/to addresses used when testing the NOTS memory.

Edit-test-patterns

Makes it possible to change the test patterns used by the memory pattern test.

Operations: CR : display next pattern
 <pattern number>/ : jump to specified pattern number
 <value> (cr) : change pattern
 space : delete entry
 . (point) : exit

Modifier (Yes/No)

When turned on the memory address test will add a displacement factor when computing the test pattern.

Look-at-NOTS-memory <bank number>

The user may examine and change contents of memory locations within one bank.

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Operations: CR : display contents of next
memory location
 <address>/ : jump to specified
 address
 <value> (cr) : change contents of
 current memory location
 space : delete entry
 lower<upper : dump memory block
 . (point) : exit

1.2.3 Known, but not corrected errors

Test 2 will fail if Timer-Units (see NOTS-DEBUG) are greater than 7.

2 REMOVED PROGRAMS

The programs CACHE-100 and CACHE-110 are removed from the product. They are replaced by the new program CACHE-1X0.

3 CHANGES IN EXISTING PROGRAMS

3.1 TPE-MON-100-B<rev>

3.1.1 Corrected Errors

Some errors concerning MODE files and TPE running as RT under SIN-TRAN are corrected.

3.2 CONFIGURATIO-D<rev>

3.2.1 Corrected Errors

- For some configurations, the RUN command did erroneously report: "X ERRORS DETECTED" , without any other error message given.
- On computers with 32 Mbytes memory, the memory size printed was rubbish.

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- Customer Designed Interfaces was not detected by the program, or caused error message(s) for non present HDLC/MEGALINK interface(s).
- If Memory Out of Range or Parity error interrupts occurred, the program would stop.

3.2.2 Changes

- The program now supports the ND-120 CPU.
- The TOKEN RING interface, and HDLC/MEGALINK 17 - 32 are supported.
- Customer designed interfaces and possible overlap with HDLC/MEGALINK devices are handled.
- All devices are cleared after investigation.
- Improved error handling and error messages.

3.3 INSTRUCTION-C<rev>

3.3.1 Changes

The program now supports the ND-120 CPU.

3.4 MEMORY-D<rev>

3.4.1 Corrected Errors

- On computers with 32 Mbytes memory, the memory size printed was rubbish.
- Some other minor errors corrected.

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3.4.2 Changes

- The program now supports the ND-120 CPU's onboard memory and the TOKEN RING interface's memory.
- Improved error messages.

3.4.3 Known but not corrected errors

- The program does not check for buffered printer mode. The printer buffer will be overwritten by the test patterns, unless the command "DEFINE-TEST-AREA" is used to define the test area as starting after the printer buffer in memory. (Normally the first 16Kwords in bank 1 are used as the printer buffer).
- The program does not restart after power fail.

3.5 PAGING-C<rev>

3.5.1 Changes

The program now supports the ND-120 CPU.

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3.6 PIOC-ETHER-B<rev>

3.6.1 Corrected errors

- Test 12 (System timing controller test) did occasionally report timer error.
- Test 25 (ECC - Parity-test from MC68000) did occasionally fail with ND-120 CPU.

3.7 POWER-FAIL-A<rev>

3.7.1 Corrected errors

- The program did occasionally miscalculate the "Power absent time". This caused false error messages to be reported.

3.8 FLOPPY-STREA-C<rev>

3.8.1 Corrected errors

- The SCOPE-LOOP command SET-STOP-ON-ERROR did not always work, corrected.

3.8.2 Modifications

- Implemented Floppy/SCSI card 3204.

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4 Loading procedure - STAND ALONE

The machine must be in STOP. Press MASTER CLEAR and type 1560& on the console.

If autoloading is not disabled (see description of FLOPPY-MON-H), TPE-MONITOR will start up and give the prompt:

TPE>

Manual loading:

FLOPPY-MON-H02
*LOAD TPE-MON-100

When TPE-MONITOR is started, use the command LOAD-PROGRAM to load the desired program:

TPE>LOAD-PROGRAM <program name>

or just:

TPE><program name>

The program is loaded if no error messages appear.

To list the programs available on diskette, use the command LIST-FILES

TPE>LIST-FILES <file-name>

5 INSTALLATION PROCEDURE on-line

The TPE-MONITOR can execute under SINTRAN in different modes.

Installation on-line:

- 1) Log in under the user where you want to execute the programs.
- 2) Place the floppy diskette in floppy controller 1 unit 0.
- 3) Type the command:

@ENTER-DIRECTORY 210523G FLOPPY-DISC-1 0

- 4) Start the TPE-MONITOR with the command:

@LOAD-BINARY (210523G:FLOPPY-USER)TPE-MON-100-BJ

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The TPE-MONITOR now starts and you can load the different test programs by using the command LOAD-PROGRAM.

TPE>LOAD-PROGAM (210523G:FLOPPY-USER)<program name>

Permanent installation in the system can be done like this.

1) Log in as user SYSTEM.

2) Place the floppy diskette in floppy controller 1 unit 0.

3) Type the command:

@ENTER-DIRECTORY 210523G FLOPPY-DISC-1 0

4) Copy the TPE-MONITOR to the disk by the command COPY-FILE

@COPY-FILE

DESTINATION FILE: "TPE-MON-100-B<rev.>:BPUN"

SOURCE FILE: (210523G:FLOPPY-USER)TPE-MON-100-B<rev.>:BPUN

5) Dump the TPE-MONITOR by the command DUMP-REENTRANT

@DUMP-REENTRANT

NAME: TPE-MON-100-B<rev.>

START ADDRESS: 0

RESTART ADDRESS: 20

FILE-NAME: TPE-MON-100-B<rev.>:BPUN

The TPE-MONITOR is now installed. You can start it by typing:

@TPE-MON-100

The test programs can now be started by using the LOAD-PROGRAM command in the TPE-MONITOR.

@TPE-MON-100 <program name>

Product	Name Test programs for ND-100/110/120	Reg. no. 210523G	Category STPR
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6 Where to find the different programs

Programs	Diskette
CACHE-1X0-A<rev>	01D/02S
COLOUR-TERM-A<rev>	01D/04S
CONFIGURATIO-D<rev>	01D/01S
DISC-TEMA-I<rev>	01D/01S
DISK-MM-B<rev>	02D/05S
FLOPPY-STREA-C<rev>	01S/05S
GRAPHIC-TERM-B<rev>	01D/04S
HDLIC-MEGALIN-D<rev>	01D/03S
INSTRUCTION-C<rev>	01D/02S
LP-TEST-E<rev>	01D/04S
MAGTAPE-B<rev>	01D/05S
MEMORY-D<rev>	01D/01S
NET-ONE-A<rev>	01D/02S
OCTOBUS-B<rev>	01D/03S
PAGING-C<rev>	01D/02S
PIOC-ETHER-B<rev>	01D/03S
POWER-FAIL-A<rev>	01D/01S
PRINTERS-B<rev>	01D/04S
SCSI-TV-B<rev>	02D/06S
SYNC-MODEM-B<rev>	01D/03S
TERMINAL-ASY-F<rev>	01D/01S
UNIVERS-DMA-C<rev>	01D/02S

1 DISK-MM-B<rev>

1.1 Purpose

The DISK Media Maintenance program is used to format, initialize and verify SCSI disks connected to the ND-100 SCSI host adaptor.

1.2 Target devices

The program is designed to handle the

Micropolis 1375 SCSI disk drive.
CDC EMD 97201 SCSI disk drive.

1.3 Command description

>SELECT-DEVICE <Adaptor> <Id number>

This command will select a device for use by other commands. Commands that use a device for operations will ask for it if it is not defined by this command.

Legal answers for Adaptor are :

- Adaptor name (ADAPTOR-n, n=1:4).
- Adaptor number (1:4).
- Logical device number for adaptors data field (2202B:2205B).
- Hardware device number for adaptor (144300B, 144400B, 144500B, 144600B)

Legal answers for ID number are 0:7. ID number 7 is normally the SCSI host adaptor, and ID 0 is normally equivalent to "DISC-SCSI-1" which is the boot disk.

The default adaptor is "ADAPTOR-1" or the last selected adaptor, and the default ID is "0" or the last selected ID number.

>CONVERT-DISK-ADDRESS <Address type> <Address>

This command will convert a disk to different address modes and numeric systems.

The address type could be "Media", "Logical-SINTRAN" or "page".

- Media address

A media address is the address used on basis of the disk drives sector size.

- Logical-SINTRAN;

A logical-SINTRAN address is the address used on basis of SINTRAN's block size, which always is 1024 bytes/sector.

- Page

A page address is the address used on basis of SINTRAN filesystem's block size, which always is 2048 bytes/sector.

>FORMAT-INITIALIZE

Formats and initializes the disk.

Special for Micropolis 1375:

Before format starts, MODE-SENSE default page 3 and 4 is set to current, and cylinder skew and track skew is optimized.

Operation times:

Disk type	Size	Time used (approx.)
Micropolis 1375	60Mb	2:00 Min.
Micropolis 1375	125Mb	4:00 Min.
CDC EMD 97201	310Mb	10:00 Min.
CDC EMD 97201	630Mb	20:00 Min.

>INITIALIZE

Prepares the disk for use under SINTRAN.

>LIST-DISK-INFORMATION

This command will print out various static and dynamic information concerning the selected disk.

>LIST-PARAMETERS

This command will print out the setting of all parameters available in the command "SET-PARAMETERS".

>LIST-REASSIGN-TABLE

This command will print out all sectors reassigned with the command "REASSIGN". The sectors is listed in historical order.

>LIST-REFRESH-TABLE

This command will print out all sectors refreshed with the command "REFRESH-DATA". The sectors is listed in historical order.

>REASSIGN <Media address>

This command will reassign one single sector and its data on the disk to a different physical area, but to the same logical area.

The <Media address> parameter is the disk address of the sector containing a flaw. The address could be in any partition.

Reassigning a sector means to relocate it physical or the entire physical track. This is done by the disk drive itself and the program has no control over physical actions on media. After the reassign operation, the physical area earlier used for the sector will no longer be used.

On successful reassign, the reassign operation will be logged in the table partition and can later on be listed with the command "LIST-REASSIGN-TABLE".

If the program is not able to read the sector addressed, a confirmation question has to be answered.

>REFRESH-DATA <Media address>

This command will try to read one sector and write it back trying to cure temporary parity errors.

The <Media address> parameter is the disk address of the sector to be read and written. The address could be in any partition.

If the physical space on media holding the sector contains flaws it will probably not be possible to refresh a sector. In such cases a medium error will be reported and it is advised to reassign the sector.

On successful refresh, the refresh operation will be logged in the table partition and can later on be listed with the command "LIST-REFRESH-TABLE".

If the program is not able to read the sector addressed, a confirmation question has to be answered.

>SET-PARAMETERS <Parameter> <Value>

This command can be used for setting of special parameters for device operation.

The parameters are :

- BUS-RESET

This parameter decides whether a SCSI bus reset can be done by the program or not.

In multi host systems this parameter should be set to "No" if the other hosts are running.

- RESET-TIMEOUT

This parameter setts the timeout after bus reset. The timeout must be larger than the time needed for disk power up selftest to compleate. This parameter is only significant if the "BUS-RESET" is "Yes".

- ADDRESS-INPUT-RADIX

This parameter setts the radix for disk address inputs. Possible values are "Octal", "Decimal", "Binary" and "Hexadicimal". The program has initially default "Decimal".

- FIRST-PHYSICAL-BUFFER-PAGE

This parameter setts the first page in physical memory that should be used by the program for all DMA access to the selected adaptor.

- LAST-PHYSICAL-BUFFER-PAGE

This parameter setts the last page in physical memory that should be used by the program for all DMA access to the selected adaptor.

>VERIFY <From> <To>

Data verification.

- The addresses are given in media blocks.
- Default range: <0,LastBlock>.

Operation times:

Disk type	Size	Time used (approx.)
Micropolis 1375	60Mb	1:00 Min.
Micropolis 1375	125Mb	2:00 Min.
CDC EMD 97201	310Mb	3:30 Min.
CDC EMD 97201	630Mb	7:00 Min.

1.4 Known, but not corrected errors

- The program does not clean properly up after errors messages from MPM4.

If the error message :

MPM4 Memory out of range

appear, reload the program and use the commands :

>SET-PARAMETERS,FIRST-PHYSICAL-BUFFER-PAGE,<MPM5 first page>
>SET-PARAMETERS,LAST-PHYSICAL-BUFFER-PAGE,<MPM5 last page>

for setting of correct buffer limits before selecting the device.

If one of the error messages :

MPM4 Parity error
MPM4 Power fail

appear, please reload the program before you continue.

2 OCTOBUS-B<rev>

The Octobus Test Program runs stand alone in the ND-100, controlled by the TPE-monitor. The program must be downloaded from floppy. It's basic functions are:

- Test the Octobus controller in the ND-100 Line Driver.
- Test the Octobus communication between the Octobus controller in the ND-100 Line Driver and the present Domino controllers.
- The Octobus communication between the ND-100, the MFBus controller and the ACCP can be tested manually by using the Octobus Test Program, the MFBus Test and Maintenance program and the ACCP Console Monitor.
- Find the Octobus configuration.

2.1 Requirement

Following requirements must be fulfilled to run the program satisfactory:

- The configuration of the Octobus must follow the specification: A Domino controller may have Octobus station number from 10b to 67b.
- Test 4, test 5 and test 6 require Domino prom version not older than version C (Domi-Opcom, 73100C).

2.2 Commands

The commands available for the user are:

- SET-PARAMETERS <loop> <abort> <supress> <error report level> <test all> <max message length>
- SELECT-DEVICE <Octobus controller number>
- SELECT-OCTOBUS-STATION <Octobus station number>
- LIST-HARDWARE-CONFIGURATION
- LIST-OCTOBUS-DEVICES
- DECODE-STATUS-REGISTER <transmit/receive> <register content>
- RUN <test sequence>
- OCTOBUS-FACILITIES

2.2.1 SET-PARAMETERS

The user may set parameters which decide the behaviour of the RUN command. The parameters are listed below, and their default values are shown in paranthesis.

- | | |
|------------------------------------|-------|
| - Loop mode | (No) |
| - Abort mode | (Yes) |
| - After how many errors | (10) |
| - Supress error messages | (No) |
| - Define error reporting level | (No) |
| - Test all present Octobus devices | (No) |
| - Maximum message length (bytes) | (255) |

The parameter 'Maximum message length' specify the size of the largest multibyte message echoed between the ND-100 and a Domino controller in test 6 (Echo multibyte message). Cannot be greater than 255.

The user may specify the appearance of the error messages. This is

done by answering 'Yes' to the question 'Define error reporting level'. The following questions must then be answered (default values in paranthesis):

- Controller number (Yes)
The number of the failing Octobus Controller.
- Hardware device number (Yes)
The hardware device number for the failing Octobus controller.
- Type of error (Yes)
Specify what is wrong.
- Error information (Yes)
This information depends on type of error. It may be register contents, or found and expected values.
- Decoding of status (Yes)
Decoding of register contents shown under 'Error information'.

2.2.2 SELECT-DEVICE

The user has the possibility to choose which Octobus device to test, if there are more than one Octobus controller present. Default is that the device with the lowest Octobus controller number is tested.

If one wants to test all present Octobus devices, this may be specified under SET-PARAMETERS. Default is that only one Octobus controllers is tested.

2.2.3 SELECT-OCTOBUS-STATION

In test 4, 5 and 6 the Octobus communication between ND-100 and the Domino controllers is tested. Default is that the communication between ND-100 and all possible Octobus stations is tested. If you want to test the communication between ND-100 and one specified Octobus station, you have to specify this station by using this command.

2.2.4 LIST-HARDWARE-CONFIGURATION

Will find present Octobus controllers, and all the Octobus stations present for each controller. These stations may be the MFBus controller, the ACCP and/or the Domino modules. Before returning to TPE, a configuration table is shown. This table consists of, from left to right:

- Octobus controller number.
- Octobus hardware device number.
- Receive ident code (level 13).

- Transmit ident code (level 13).
- The Octobus controller's station number.
- Stations seen by the Octobus controller.

2.2.5 LIST-OCTOBUS-DEVICES

This command presents a table showing all devices defined for the ND-100 Octobus interface, by Norsk Data. This table consists of, from left to right:

- Octobus controller number.
- Octobus hardware device number.
- Receive ident code (level 13).
- Transmit ident code (level 13).

2.2.6 DECODE-STATUS-REGISTER

It presents a decoding of a given Octobus status register. The status register may be transmit or receive.

2.2.7 RUN

Using this command, you can run all tests (default), only one test or a sequence of tests. The available tests are:

- 1) Check transmit - receive loop.
- 2) Loop all possible patterns.
- 3) Check receive fifo length.
- 4) Check Octobus configuration.
- 5) Echo single word messages.
- 6) Echo multi word messages.

Test 1: The controller will send one byte to itself. The transmit and receive parts are tested.

Test 2: The controller will send all possible bit patterns to itself, and compare the transmitted and received patterns. It is tested whether the controller is able to transmit and receive all possible bit patterns in different order.

Test 3: The controller will send several bytes to itself, and detect when the receive fifo is full. The size of the receive fifo is checked.

- Test 4: The controller communicates with the present Octobus stations which are Domino controllers, via the Octobus. Each Domino controller answers an "Identify-yourself" message. The responses are compared with the hardware configuration list found without activating the Octobus stations. Each Domino controller is then asked to present a list showing the Octobus stations it "sees". All the incoming lists are compared to see whether "all can see all".
- Test 5: The controller communicates with the present Octobus stations which are Domino controllers, via the Octobus. Small multibyte messages (8 bytes) containing a varying word pattern are echoed between the controller and the Domino controllers.
- Test 6: The controller communicates with the present Octobus stations which are Domino controllers, via the Octobus. Multibyte messages with varying lengths are echoed between the controller and the Domino controllers.

The program will always test the following items, without user intervention:

- Status registers.
- Interrupt and ident codes.
- The combination RFT (Ready For Transfer), IE (Interrupt Enabled) and ID (Interrupt Detected).

2.2.8 OCTOBUS-FACILITIES

New command level. It gives the user the possibility to use the Octobus manually.

Corresponding commands exist in the MFBus Test and Maintenance program and in the ACCP Console Monitor. The Octobus can be tested manually by connecting a terminal via ASYL to the MFBus controller and the ACCP, and sending messages between the ND-100 Line Driver, the MFBus controller and the ACCP.

In addition there are some commands sending emergency messages which are decoded by the hardware at the destination Octobus station.

Following commands are available:

- ACCESS-OCTOBUS-REGISTER <function> <register contents>
- RESTART <dest>
- CONTINUE <dest>
- STOP <dest>
- INT7 <dest>

- RESET-COUNTER <dest>
- POWER-UP <dest>
- POWER-DOWN <dest>
- READ-OCTOBUS-TRANSMIT-STATUS
- RECEIVE-FROM-OCTOBUS <loop>
- TRANSMIT-ON-OCTOBUS <dest> <control> <broadcast>
 <no of bytes> <byte no 1> .. <byte no n>
- SELECT-DEVICE <Octobus controller number>

2.2.8.1 ACCESS-OCTOBUS-REGISTER

The user has direct access to all the Octobus registers. The available functions are:

- READ-RECEIVE-DATA
- READ-RECEIVE-STATUS
- WRITE-RECEIVE-CONTROL
- WRITE-TRANSMIT-DATA
- READ-TRANSMIT-STATUS
- WRITE-TRANSMIT-CONTROL

Dependent of the function (read or write), the register content is presented to the user, or the user must specify the content.

2.2.8.2 RESTART

Hardware decoded message to specified Octobus station. Activates the RESET signal and restarts the controller after a total reset.

2.2.8.3 CONTINUE

Hardware decoded message to specified Octobus station. Deactivates the HALT signal.

2.2.8.4 STOP

Hardware decoded message to specified Octobus station. Activates the HALT signal. Halt must remain active until the CONTINUE message is received.

2.2.8.5 INT7

Hardware decoded message to specified Octobus station. Generates a level 7 interrupt. Force the processor out of a hang situation.

2.2.8.6 RESET-COUNTER

Hardware decoded message to specified Octobus station. Resets the time reference counter.

2.2.8.7 POWER-UP

Hardware decoded message to specified Octobus station. Power up.

2.2.8.8 POWER-DOWN

Hardware decoded message to specified Octobus station. Power down.

2.2.8.9 READ-OCTOBUS-TRANSMIT-STATUS

The content of the Octobus transmit status register is presented to the user, and decoded.

2.2.8.10 RECEIVE-FROM-OCTOBUS

If the Octobus receive fifo is not empty, one byte from the fifo is presented to the user. The presentation is in table form, one column showing the transmitter of the message, and one column showing the byte transmitted. It is possible to loop this command.

2.2.8.11 TRANSMIT-ON-OCTOBUS

It is possible to transmit maximum five bytes on the Octobus at a time. The user must specify destination station number, control- and broadcast-bit, how many bytes to transmit and their content.

2.2.8.12 SELECT-DEVICE

The behaviour of this command is the same as for the SELECT-DEVICE command of the above command level (TPE command level).

3 SCSI-TV-B<rev>

Test program for the Floppy/SCSI print (SCSI part only) and SCSI devices connected to the bus.

3.1 Products supported by version B

Vendor	Product	Device type
NDMICROP	1375	Direct
TANDBERG	TDC 3600	Sequential (streamer)
OSI	LD 1200 SCSI	Write Once (optical disk)
NDCDC	EMD 97201 (736)	Direct
NDCDC	EMD 97201 (368)	Direct
NDSTK	2925	Sequential (magtape)
ARCHIVE	VIPER 150 21247	Sequential (streamer)

3.2 Command description

>CLEAR-DEVICE

This command will perform a bus reset on the selected SCSI bus.
Can be used in "hang" situations.

>DECODE <Item>

This command can decode some SCSI items. These are:

INTERFACE-REGISTER <Register> <Value>

Decodes the different bits and codes in the ND-100 interface.

MESSAGE-CODE <Value>

Decodes the SCSI message code.

EXTENDED-MESSAGE-CODE <Value>

Decodes the extended SCSI message code.

COMMAND-CODE <Value>

Decodes the SCSI command operation code.

SENSE-KEY <Value>

Decodes the SCSI sense key.

ADDITIONAL-SENSE-CODE <Value>

Decodes the SCSI extended sense key.

STATUS-CODE <Value>

Decodes the SCSI status byte.

MEMORY-ADDRESS <Value>

Decodes a physical memory address in bank, page in bank and

displacement in page.

>DUMP-SENSE-DATA

Gives a hex dump of the contents of the sense block from the last request sense (i.e. the last error message reported from the SCSI device). The operator could then use the reference manual to decode the different field in the sense block.

>LIST-DEVICES

This command will list all SCSI host adaptors in ND-100 and the connected devices along with some important device information.

>PRINT-TAPE-STATISTICS

Prints the statistic data which are collected while running the magtape/streamer tests. (Only available when a sequential device is selected).

>RUN-ADAPTOR-TESTS <Test list>

This command will execute all or a specified sequence of tests for the ND-100 SCSI host adaptor.

>RUN-DEVICE-TESTS <Test list>

This command will execute all or a specified sequence of tests for the SCSI device(e.g. disk or streamer).

>SELECT-DEVICE <Adaptor name> <Id number>

This command selects the SCSI host adaptor and the SCSI ID number to operate on. The commands "RUN-ADAPTOR-TESTS" and "RUN-DEVICE-TESTS" will use this selected device.

Legal answers for Adaptor are :

- Adaptor name (ADAPTOR-n, n=1:4).
- Adaptor number (1:4).
- Logical device number for adaptors data field (2202B:2205B).
- Hardware device number for adaptor (144300B, 144400B, 144500B, 144600B).

Legal answers for SCSI ID number are 0:7. ID number 7 is normally the SCSI host adaptor, and ID number 0 is normally equivalent to "DISC-SCSI-1" which is the boot disk.

>SET-BUFFER-LIMITS

The operator may set first and last memory page for the DMA buffer (only used when the host adaptor is placed in MULTIPORT-4).

>SET-PARAMETERS <Loop mode> (<Loop count>) <Abort mode>
(<Abort count>) <Supress mode>

This command will set parameters for execution of the commands "RUN-ADAPTOR-TESTS" and "RUN-DEVICE-TESTS".

>SET-TAPE-PARAMETERS

Change the default parameters for the write/read magtape test (test number 20) and the write/read streamer test (test number 30). (Only available when a sequential device is selected).

>TAPE-SERVICES

This command performs some useful magtape/streamer services (LOAD, UNLOAD and REWIND). (Only available when a sequential device is selected).

>PROGRAM-STATUS (TPE command)

This will include the values of some flags in the program.

3.3 Host adaptor tests

Adaptor tests available:

- 1: Registers write/read back
- 2: Control/Status
- 3: DMA in test mode
- 4: Interrupt at level 11
- 5: NCR chip self diagnostic test
- 6: NCR chip SCSI commands/status

Test 1 : Registers write/read back

All interface registers which may be written and read back without triggering any special logic functions are tested with several bit patterns. The registers are:

- Memory address
- Data
- SCSI data
- SCSI control
- Destination ID
- Transfer counters

Test 2 : Control/Status

The interface status registers is checked when the following bits are activated and reset in the interface control register:

- Bit 0 : Enable interrupt
- Bit 2 : Activate
- Bit 4 : Clear device
- Bit 10 : SCSI bus reset

Test 3 : DMA in test mode

The interface's test mode is used for DMA transfers. The test se-

quence is like this:

- 1) Basic check on some of the control register bits (Test mode (Bit 3), DMA enable(Bit 5), Write enable(Bit 6)).
- 2) Dynamic memory address register test.
- 3) Several DMA transfers to and from memory.

Test 4 : Interrupts at level 11

The test verifies that interrupt on Read For Transfer behaves ok with the correct IDENT code on level 11. It also verifies that the NCR chip interrupt is detected, and that this interrupt in turn will generate the interface interrupt.

Test 5 : NCR chip self diagnostic test

The self diagnostics results on a device reset are verified at the NCR chip level, and the data turnaround tests are executed and verified with different patterns.

Test 6 : NCR chip SCSI commands/status

Some basic functions for the NCR chip are verified, as well as the internal registers:

- Pause bit in the auxilliary status.
- Illegal select or reselect function using own ID.
- All commands which are illegal in the disconnected state.

3.4 Device tests

Device tests available:

- | | | |
|---|---|----------------------------------|
| 1. Drive contact | } | Device controller tests |
| 2. Basic drive self test | | |
| 3. Extended drive self test | | |
| 4. SCSI bus data transport | | |
| 5. SCSI bus stress | | |
| 10. Seek min/max | } | Disk tests
(none destructive) |
| 11. Random seek | | |
| 12. Write/read scratch | | |
| 13. Random read | | |
| 14. Random read data partition
- write scratch | | |
| 20. Write/read magtape | } | Magtape tests |
| 21. BOT test | | |
| 22. Wear test | | |
| 23. Filemark test | | |
| 30. Write/read streamer | } | Streamer tests |
| 31. Over/under run | | |
| 32. Filemark/space test | | |

Note: The NDSTK 2925 magtape drive must be in 'select mode' (selected with the density key on the operator panel) when running the tests 20:23.

Test 1 : Drive contact

A SCSI inquiry command is executed on the selected drive to verify contact with the drive and to test it's identification.

NB This test will disable other tests in the test link if the drive found does not support some commands.

NB This test is always executed initially in every device test.

Test 2 : Basic drive self test

This test uses the SCSI command "Send Diagnostic" with only the self test bit set. For most drives this will activate the power-up self test.

Test 3 : Extended drive self test

This test activates a more extended self test in the drive (if available).

Test 4 : SCSI bus data transport

This test will verify the SCSI bus data transport to the selected drive. It uses the SCSI commands "Write Data Buffer" and "Read Data Buffer". The drive buffer length is found and the test sequence is repeated with different test patterns. The test sequence is:

- Write a test pattern to the buffer.
- Clear the ND-100 memory buffer.
- Read data back from drive.
- Test the data and report errors.

The test patterns used are:

- All bits zero.
- All bits set.
- Walking bit set.
- Walking bit cleared.
- One byte zero and next byte with all bit set.
- Every second bit set.
- Every second bit set in one byte and the opposite bits set in the next byte.

Test 5 : SCSI bus stress

This test is similar to test 4 except that the data read back is not tested, and the same buffer is read 40 times.

Test 10 : Seek min/max

Performs continuous seek between address zero and the (logical) last address on the selected disk.

Test 11 : Random seek

Performs random seek on the whole disk.

Test 12 : Write/read scratch

Writes different patterns with different transfer lengths to the scratch partition on the disk.

Test 13 : Random read

Performs random read on the whole disk.

Test 14 : Random read data partition - write scratch

Reads data from the data partition and writes it to the scratch partition. The scratch block and the original block in the data partition are then read into memory and compared.

Test 20 : Write/read magtape

This tests simulates normal use of the magtape drive (see also SET-TAPE-PARAMETERS).

Test 21 : BOT test

This test checks correct positioning at BOT for various rewind conditions.

Test 22 : Wear test

The purpose of this test is to try to detect a deterioration due to repeated writing and reading.

Test 23 : Filemark test

The purpose of this test is to check the detection of a filemark under various circumstances.

Test 30 : Write/read streamer

This tests simulates normal use of the drive (see also SET-TAPE-PARAMETERS).

Test 31 : Over/under run

Writes and reads data with delay between the next data transfer to provoke over/under run.

Test 32 : Filemark/space test

Writes and reads data with different number of records for each operation, after a write operation a filemark is written. Space over filemark, space over records and space to end-of-recorded-data are also tested.

3.5 Known but not Corrected Errors

- Device test 3 (Extended drive self test) executed on TANDBERG TDC 3600 will perform no operation.
- Early versions of the MICROPOLIS disk 1370 for 60MB will not be recognized by the test program.
- The program does not clean properly up after errors messages from

the error message :

MPM4 Memory out of range

appear, reload the program and use the commands :

>SET-BUFFER-LIMITS <MPM5 first page>,<MPM5 last page>

for setting of correct buffer limits before selecting the device.

If one of the error messages :

MPM4 Parity error

MPM4 Power fail

appear, please reload the program before you continue.