

**Satellite Installation  
and Operation Guide**

**NORSK DATA A.S**



# **Satellite Installation and Operation Guide**

**ND-30.024.02**

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New versions and revisions are announced in the ND Bulletin and can be ordered as described below.

The reader's comments form at the back of this manual can be used both to report errors in the manual and to give an evaluation of the manual. Both detailed and general comments are welcome.

These forms, together with all types of inquiry and requests for documentation should be sent to the local ND office or (in Norway) to:

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Oslo 10

## Preface:

### THE PRODUCT

The ND Satellite Computer System (Satellite/5 and Satellite/9) is a compact minicomputer based on the design and technology of the well-known ND-100. Satellites can either operate alone, if they have sufficient capacity to meet the needs of the company or the department, or they can be a remote Satellite to an ND-100 or ND-500 system. The ND Satellite can handle administrative and scientific/technical dataprocessing.

### THE READER

This manual is written mainly for those who are not yet familiar with the ND Satellite. A typical readers will be the System Supervisors at the users site or occasionally Norsk Data personnel installing the system.

### PREREQUISITE KNOWLEDGE

Although no knowledge of computers is necessary to understand this manual, the System Supervisor must become familiar with terminology and routines not described in the manual to efficiently supervise a Satellite system.

### THE MANUAL

This manual provides a guide to all the stages, from unpacking the system, to actually using it. The manual describes installation, how to connect terminals and printers, the start-up procedure and the loading of the operating system. It also outlines some important points that users should be aware of to fully benefit from the Satellite System.

The appendix contains information useful to service and hardware personnel.

### CHANGES FROM PREVIOUS VERSION

This manual replaces the manual ND SATELLITE SYSTEM ND-30.024.01. Four chapters and an INDEX are added,

6. "How to get the Satellite operating the first time"
7. "The backup system"
8. "Personal backup - writing to and reading from floppies"
9. "Hints for the system supervisor"

Chapter 7 in the previous version, "Guidelines for diskettes" is moved and is now chapter 5.

The new chapters mainly describe the software side of installation and operation.

RELATED MANUALS

ND-60.132 SINTRAN III Timesharing/Batch Guide  
ND-60.128 SINTRAN III Reference Manual  
ND-30.003 SINTRAN III System Supervisor  
ND-60.181 SINTRAN III Utilities Manual  
ND-30.005 Test Program Description for ND 100/10S, Volume 1  
ND-13.014 Site Preparation and Installation Manual

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### 1 A TYPICAL CONFIGURATION

The ND Satellite Computer System has built-in all the equipment necessary except terminals and printer(s)

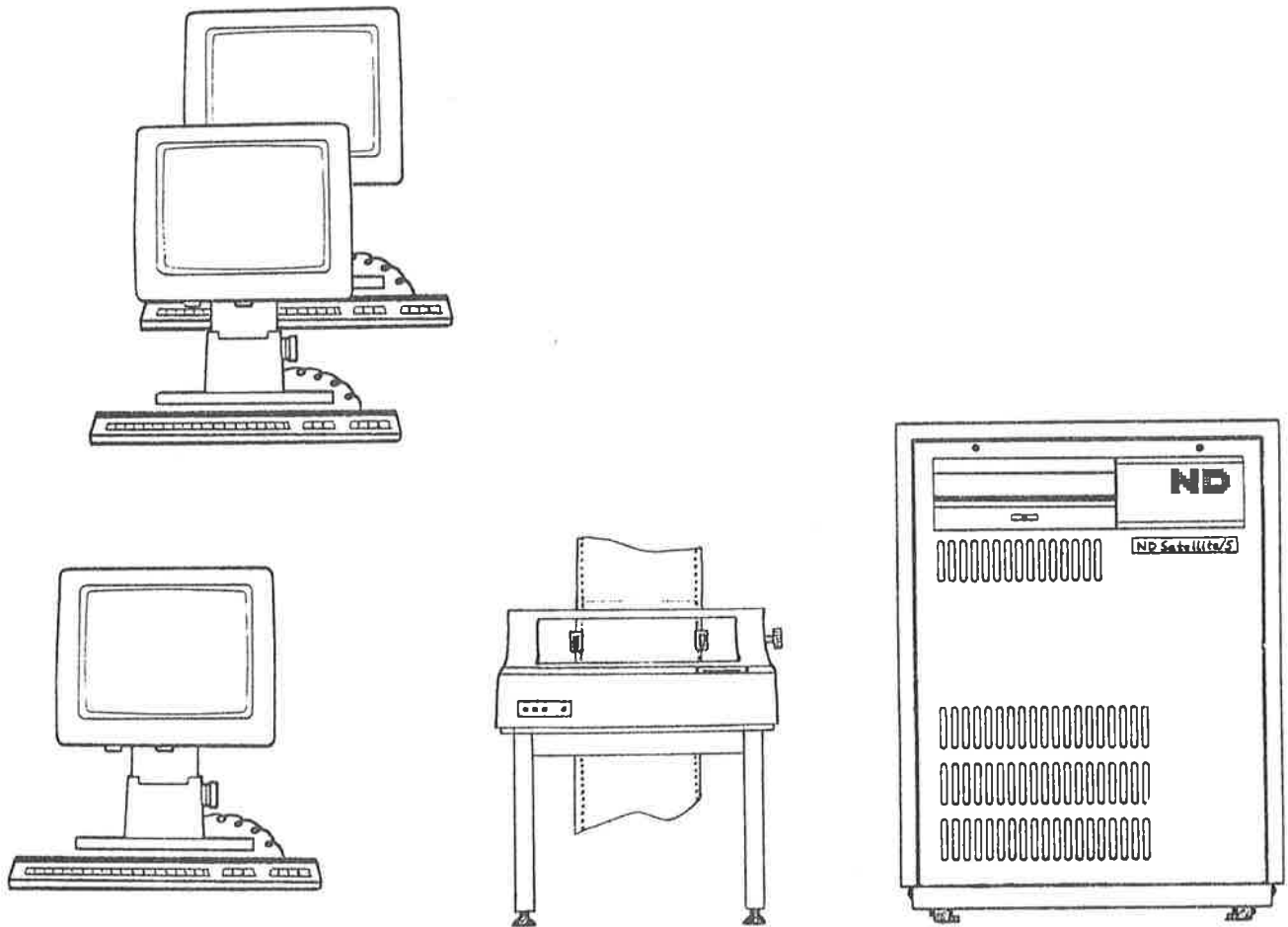


Fig. 1. Typical Satellite system

To install your system you therefore need to connect:

- Cables between terminals/printer(s) and Satellite
- Power cable to Satellite, terminals and printer(s)

All the other units in a typical computer system are housed in the Satellite cabinet:

- |                         |                                        |
|-------------------------|----------------------------------------|
| - CPU                   | - Memory and Memory Management System  |
| - Operator Panel        | - Mass Storage disk drive (Winchester) |
| - Interfaces to devices | - Backup disk drive (Floppy)           |
| - Power supplies        |                                        |



## 2 ND Satellite USERS

A Satellite System should have a System Supervisor responsible for the daily operation of the system as a resource person for all other users. The System Supervisor is responsible for:

- Starting up the system and installing programs
- Creating users and giving them space on the disk
- Taking regular backup of the disk
- Handling error situations.
- Knowing the conditions in the service contract, if any.
- Being ND's contact person.

This knowledge can be obtained by attending courses in ND's Education Department and from the SINTRAN III System Supervisor Manual ND-30.003.

Other users of the ND Satellite do not need to worry about these tasks, but should be aware of the following:

Normally you talk to the computer via a terminal and the computer responds by sending a message back to the terminal or to the printer; in between it carries out the job you asked for.

The ND Satellite computer shares its time amongst all the terminals connected, so they can all be used simultaneously. Each user feels they have the computer to themselves because of this timesharing system.

Besides handling requests from users, the Satellite makes sure that users are put in a queue when requiring access to the printer(s) and disk(s). The rule is 'FIRST COME FIRST SERVED'. This is called 'spooling'.



### 3 INSTALLATION

#### 3.1 Requirements for the Satellite site

The Satellite should be placed in clean surroundings, eg., an office or a laboratory. It should NOT be placed where it will be subjected to a lot of dust, extreme temperatures, vibration or smoke.

The cabinet must be level to ensure the best operating reliability for the disk.

- The operating temperature must be between +10 and +30 deg.C (between +50 and +86 deg.F)
- Max temperature variation is +/- 3 deg.C (+/- 5.4 deg.F) per hour
- Satellite needs a separate circuit with a 10 A fuse, 'slow' or 'G' characteristic
- The power line requirements: 230 VAC (+/- 10%), 50 Hz (+/- 1%)  
or 120 VAC (+/- 10%), 60 Hz (+/- 1%)

Operation reliability is also dependent on a stable power-line. If electrical disturbances are known to occur, it might be necessary to protect the equipment against such phenomena. Refer to 'PRECAUTIONS AGAINST ELECTRICAL DISTURBANCES' on page 57.

The Satellite cabinet is best placed under a desk near the System Supervisor's terminal. The cabinet fits under a normal size desk which provides a reasonable amount of protection.

**Please note that there must be some free space behind and on both sides of the Satellite for unimpeded air flow through the cabinet air-slots.**

The terminals can be placed on users desks, preferably on furniture designed so they can be correctly positioned. The printer can be placed anywhere, but the noise may make a special room or a cover necessary.



### 3.2 Unpacking and installing the units

Unpack the units carefully, making sure you do not leave any of the smaller parts (cables, etc.) in the boxes.

-----  
| When moving the Satellite always lift it by the bottom |  
edge of the cabinet, and NEVER by the cabinet cover itself.

- Install the terminal(s) and printer(s) and connect the cables to the communication outlets at the back of the cabinet.
- Check that all devices are switched OFF and connect them to grounded mains outlets.

All connections between the Satellite and peripheral devices are made by plugging the supplied cables into the Satellite rear connectors. Fig. 2 is a rear view and fig. 3 shows the communication connectors.

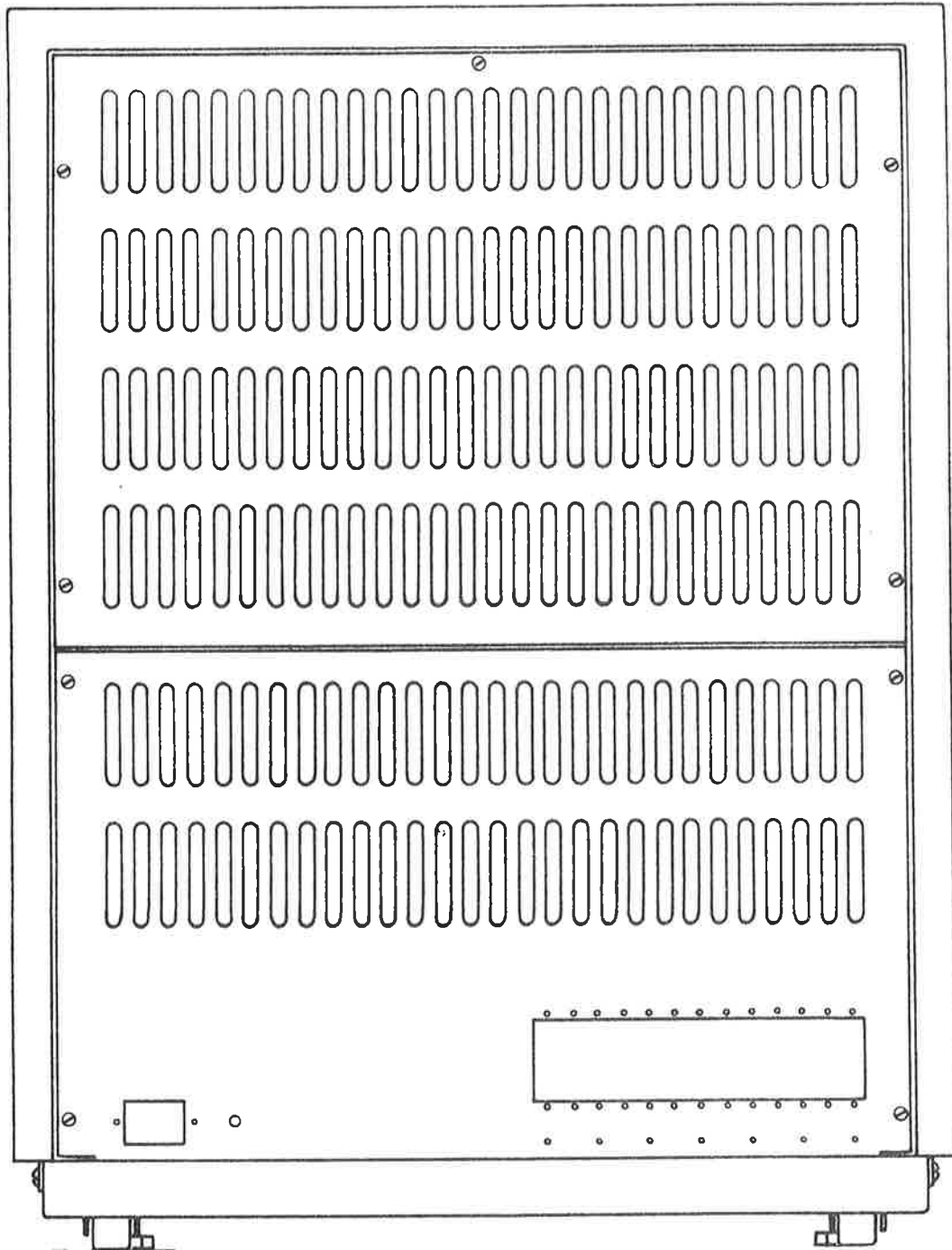


Fig. 2. Satellite Rear View

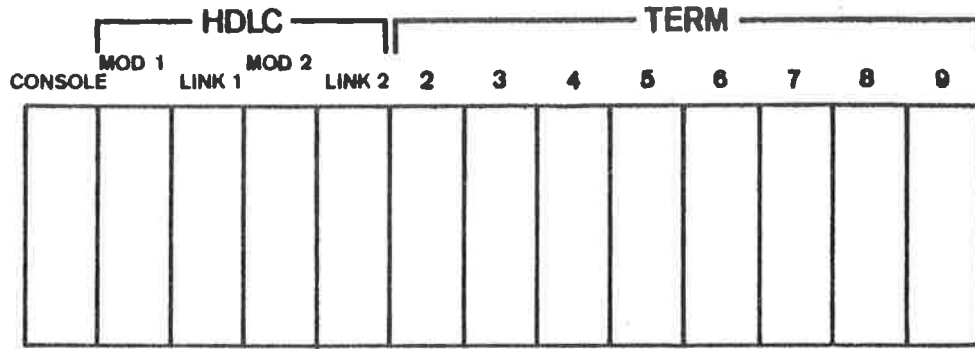


Fig. 3. Satellite Communication Connectors

The following two chapters describe how to connect the terminals and printer(s) to the Satellite.

From now on, the System Supervisors terminal will be referred as the CONSOLE.

The next section concerns Satellite/9 systems only, if you are installing a Satellite/5 system, turn to Section 3.4.

3.3 Terminal connections on Satellite/9 System

The Satellite/9 System can have a maximum of 9 devices connected to its terminal connectors. These usually consist of a printer plus 8 terminals, including the CONSOLE.

- Connect the printer cable to connector labelled TERM 2.
- Connect the CONSOLE cable to connector labelled CONSOLE.
- Connect the other terminal cables in sequence following table 1.

Device type	LABEL above connector
Term. 8	TERM 9
Term. 7	8
Term. 6	7
Term. 5	6
Term. 4	5
Term. 3	4
Term. 2	3
Printer	2
	LINK 2
	MOD 2
	LINK 1
	MOD 1
CONSOLE (Term. 1)	CONSOLE

Table 1. Communication connectors Satellite/9

The CONSOLE cable MUST be connected to the CONSOLE connector.

For example if you have only six terminals, connect them to connectors labelled CONSOLE, TERM 3,4,5,6,7 and leave the connectors labelled TERM 8,9 unused. The printer is connected to the connector labelled TERM 2.

The following section concerns Satellite/5 only, for Satellite/9 turn to section 3.5.

### 3.4 Terminal connections on Satellite/5 System

The Satellite/5 System can have a maximum of 5 devices connected to its terminal connectors. These usually consist of a printer plus 4 terminals, including the CONSOLE.

- Connect the printer cable to connector labelled TERM 2.
- Connect the CONSOLE cable to connector labelled CONSOLE.
- Connect the other terminal cables in sequence following table 2.

Device type	LABEL above connector
unused	TERM 9
unused	8
unused	7
unused	6
Term. 4	5
Term. 3	4
Term. 2	3
Printer	2
	LINK 2
	MOD 2
	LINK 1
	MOD 1
CONSOLE (Term. 1)	CONSOLE

Table 2. Communication connectors Satellite/5

The CONSOLE cable MUST be connected to the CONSOLE connector.

For example if you have only three terminals, connect them to the connectors labelled CONSOLE, TERM 3,4 and leave the connector labelled TERM 5 unused. The printer is connected to the connector labelled TERM 2.

### 3.5 Preparing the floppy disk drive

The floppy disk drive is on the front panel to the left. See fig. 4 and fig. 5.

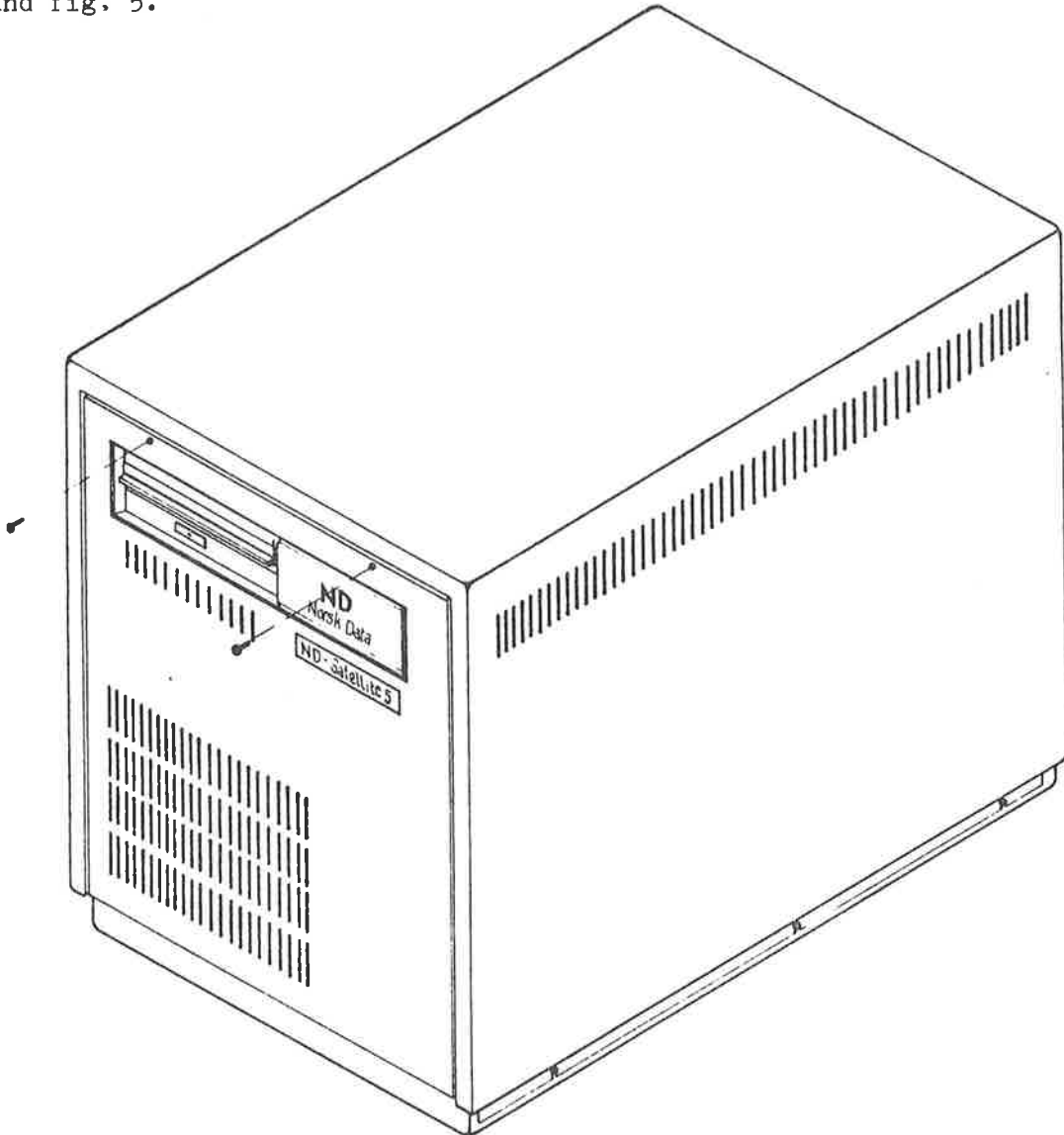


Fig. 4. Satellite System showing screws to loosen front cover

- Open the floppy unit by pushing the button with the red lamp in it.
- Remove the dummy paper diskette.
- Close the door by pushing it downwards until you hear a 'click'.

When you insert/remove a diskette later, you follow the same procedure

- Open the door - insert/remove the diskette - close the door.

Use approved diskettes only. Refer to chapter 5 for details.

### 3.6 Preparing the fixed disk (Winchester drive)

- To reach the fixed disk you need to turn the two screws in the upper front corners (shown on fig. 4) and remove the front cover.

When the front cover is removed you will see the disk drive below the floppy disk drive. (Fig 5.)

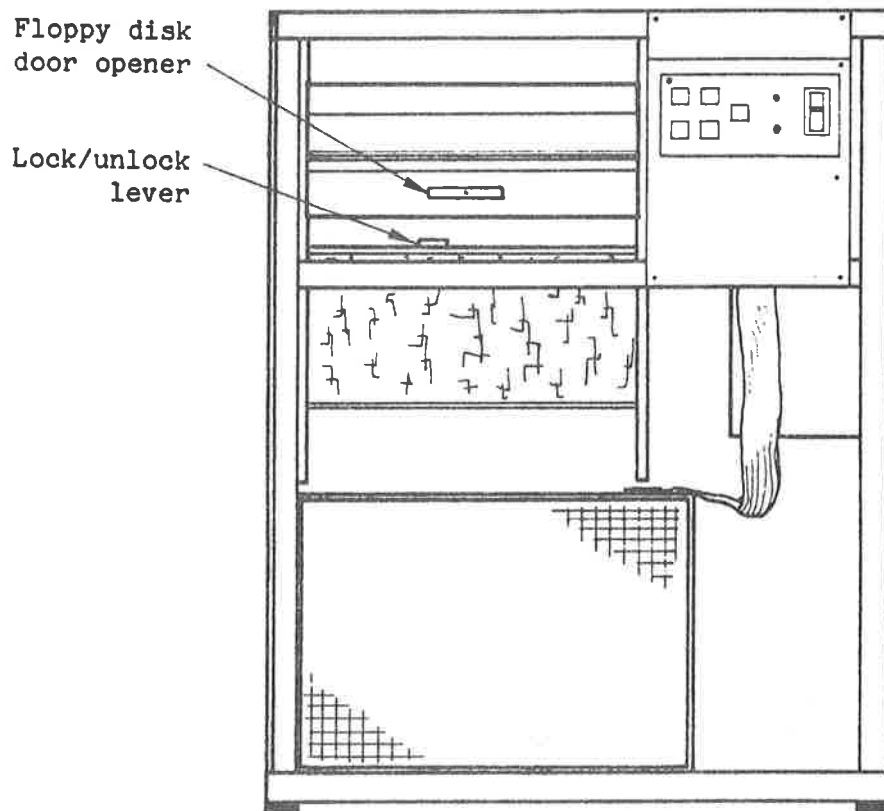


Fig. 5. Satellite front view with front cover removed

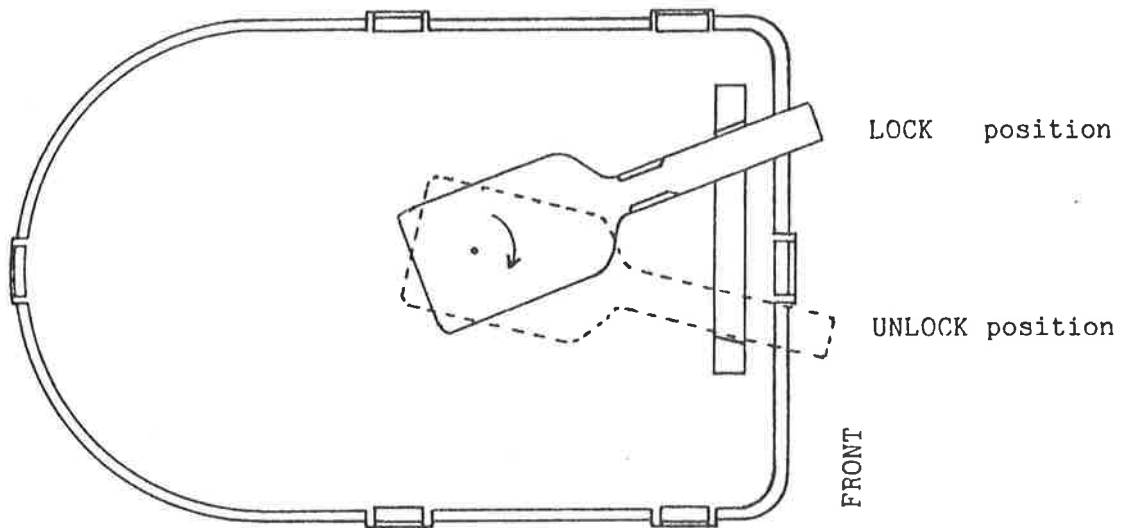


Fig. 6. Top view of disk drive with lock/unlock lever

- Move the lock/unlock lever carefully from the right to the left, from lock to unlock position. Make sure you move it correctly. See fig. 6 for detailed drawing of lever.
- Replace the front cover and the two screws.

The Satellite System should now be ready for POWER-ON, but use the following check-list to make sure everything necessary has been done so far.



3.7 Check-list BEFORE setting MAINS switch to ON

Checkpoint no.	Task	Done ?	Ref. chpt.
1	Are all parts delivered according to the order and the packing list ?		If not, please contact your ND office
2	Is the Satellite cabinet placed in satisfactory surroundings ?		3.1
2a	Is the Satellite cabinet in level ?		3.1
3	Are all devices switched OFF ?		3.2
4	Are printer(s) and terminals installed and connected to grounded mains outlets ?		3.2
5	Is the printer connected to connector labelled TERM 2 ?		3.3/ 3.4
6	Are the terminals sequentially connected to connectors labelled CONSOLE, TERM 3,4,5 ... ?		3.3/ 3.4
7	IF NO COMMUNICATION TO OTHER COMPUTER: Are rear panel connectors labelled MOD1, LINK1, MOD2, LINK2 unused ?		Termin. are wrongly conn.
8	Is dummy paper floppy removed ?		3.5
9	Is the disk lock/unlock lever inside the cabinet front in unlock (left) position ?		3.6

Table 3. Checklist

If the answer to all these questions is YES you can proceed, otherwise take the necessary action as advised.

### 3.8 Connecting the Satellite to the mains supply

The ND Satellite MUST BE CONNECTED TO EARTH, so you must use grounded outlets for Satellite, terminals and printer(s).

- Make sure the MAINS switch on the upper right corner of the front panel is switched to OFF.
- Connect the POWER CORD supplied to the AC-LINE connector at the lower left corner of the rear panel and plug into the (grounded) mains socket.
- Turn the MAINS switch to ON.

You should now hear the fans running and the green POWER lamp on the front panel should light.

The MAINS switch also turns ON the backup battery. This battery saves the Satellite memory contents in cases when the power voltage drops to a critical level for shorter periods, or if the power goes down.

- Turn ON the MAINS to the CONSOLE.

If all the instructions in this chapter have been carried out the Satellite System is ready to start loading and running the SINTRAN Operating System.



4 THE OPERATOR PANEL

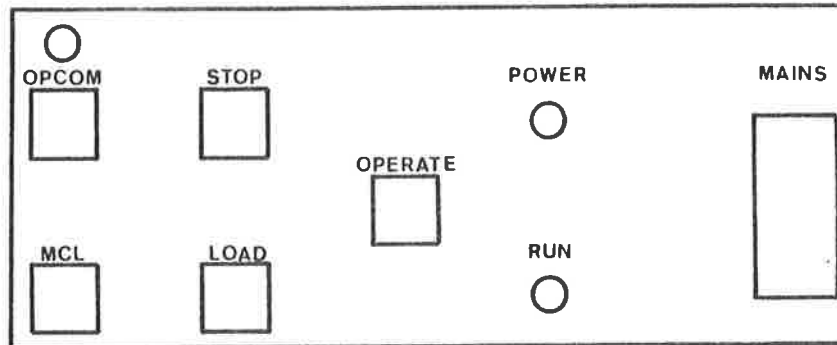


Fig. 7. The Satellite Operator Panel

Fig. 7 shows the operator panel, hidden behind the plastic cover when you access the floppy disk drive. Other users than the System Supervisor should not touch the five leftmost buttons on the front panel.

Keep the plastic cover in position, hiding the operator panel but giving access to the floppy disk drive.

At the operator panel you find:

- MAINS : A switch to turn the Satellite ON/OFF.
- POWER : A lamp indicating Satellite is switched ON at the MAINS.
- RUN : A lamp indicating the Operating System or a program is running.
- OPERATE : A switch which activates STOP, LOAD, OPCOM, MCL switches. The OPERATE button is pressed simultaneously with one of the other four buttons.
- OPCOM : Enter OPCOM (Operator Communication) mode.
- STOP : Stop program or operating system and enter OPCOM mode.
- MCL : Generate Master Clear.
- LOAD : Load program according to ALD code. The ALD code is set with a switch, deciding from which device to LOAD.



5 GUIDELINES FOR DISKETTES

The Satellite 1.2 MBytes floppy disk drive requires

8 inch, dual density, double sided diskettes.

Norsk Data advises you to use quality diskettes of type

- DYSAN 800 - 850
- or - MAXELL FD2 - XDM - 1200

To make these diskettes convenient mass storage media, the data is stored on both sides and is very efficiently packed on the surface. For extended media and read/write head life, you must treat the diskettes carefully. Dual density/double sided diskettes are far more sensitive to pollution and damage than single sided/single density diskettes.

Good habits will minimize the risk of losing data.  
For your own benefit, always follow these rules:

1. **HANDS OFF THE DISKETTE SURFACE!**
2. **KEEP DISKETTE AWAY FROM MAGNETIC FIELDS!**
3. **BENDING AND FOLDING MAY DAMAGE DISKETTE!**
4. **INSERT CAREFULLY IN FLOPPY-DRIVE!**
5. **KEEP DISKETTE IN JACKET WHEN NOT IN USE!**

Please also note that the diskette must never be left half-out through the open door. Insert the diskette and close the door or remove it and keep it in its jacket.



6 How to get the Satellite operating the first time

When the Satellite is properly installed, and you have become familiar with the topics discussed earlier in this manual, it is time to bring the Satellite into an operating state.

The Satellite must, like all other computers have an 'operating system' which gives the computer the intelligence to handle all types of possible requests from users or programs. In ND computers, the operating system is called SINTRAN III, and is in principle a program which attempts this intelligence.

A preloaded running version of SINTRAN is delivered, along with the Satellite, on a set of diskettes (the number varies from installation to installation). These diskettes must be copied to the disk with the backup program FTOWI (Floppy-TO-Winchester) which is on a diskette with directory name: SAT and user name: FLOPPY-USER.

Backup programs are discussed in chapter 7, so please read about FTOWI in section 7.7 before you proceed with this chapter.



6.1 How to initially load and start SINTRAN III

As described in chapter 3.8, MAINS should now be turned ON.

6.1.1 Copy SINTRAN from the SINTRAN diskettes

The loading procedure is carried out as follows:

- Press the front panel buttons OPERATE and STOP simultaneously.
- Press the buttons OPERATE and MCL simultaneously.
- Insert the diskette containg the FTOWI program in the floppy disk drive and close the door.
- Type 1560& on the CONSOLE (terminal no. 1)

A \* sign should after a short while appear on the CONSOLE.

- Type LOAD FTOWI CR on the CONSOLE.

The program will now be read in and started. As soon as the heading

'THIS PROGRAM COPIES .....

is written on the CONSOLE, you

- Remove the floppy from the floppy disk drive.

The program will ask you some questions:

IS THIS A Satellite/5 OR A Satellite/9 (ANSWER 5 OR 9) ?

Answer and terminate with CR.

INSERT ONE OF THE BACKUP DISKETTES AND TYPE ANY CHARACTER.

Since the task is to copy SINTRAN to the disk, you insert the first SINTRAN diskette and hit the CR key.

... The program outputs a verification on which diskette you have inserted.

DO YOU WANT TO COPY THIS BACKUP ONTO THE THE DISK (YES OR NO) ?

Answer YES followed by CR.

...  
...

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER.

Remove SINTRAN diskette number 1, insert number 2.  
When the message appears again, change SINTRAN diskette number 2 with number 3, and so on until the messages

COPYING OF BACKUP DISKETTES ONTO DISK IS COMPLETE.  
PROGRAM HAS STOPPED.

REMOVE THE LAST DISKETTE.

SINTRAN is now copied to the disk, remove the last SINTRAN diskette. The next section explains how to start SINTRAN.

6.1.2 After loading, you must start SINTRAN

- Press the buttons OPERATE and STOP simultaneously.
- Press the buttons OPERATE and MCL simultaneously.

Wait for at least 1 second, then

- Press the buttons OPERATE and LOAD simultaneously.

SINTRAN is now loaded into the Satellite memory and automatically started. When the message:

```
'SINTRAN IS RUNNING'  
'PAGES FOR SWAPPING (OCT): xxxx'
```

appears on the CONSOLE you are ready to 'log-in', which is necessary to do before you can give SINTRAN any commands.

6.2 How to LOG-IN in SINTRAN

To LOG-IN means to give Satellite an 'awake' signal so that SINTRAN becomes responsive to input from your terminal keyboard. The opposite is to log-out. The log-in procedure implies that you give the computer two parameters:

'user name' on the question ENTER  
'password' on the question PASSWORD:

User name is each user's personal identification, and s/he may also have a password to prevent other users from logging-in falsely under another user's identification. Note that the password will NOT be written on the terminal as you type it.

Initially the system only knows one user name: user SYSTEM, and this user does not (yet) have a password

Log-in is initiated by hitting the ESC key on the keyboard.

ESC	(Start log-in procedure)
13.02.25	28 OCTOBER 1982
SINTRAN III - VSE H	
ENTER <u>SYSTEM</u> CR	(Log-in as user SYSTEM)
PASSWORD: CR	(SYSTEM has no password)
OK	(SINTRAN has accepted your
@	input as legal)

SINTRAN prompts with the character @. The @, called 'commercial at', indicates that SINTRAN is ready to accept your commands. All SINTRAN commands must be terminated with the CR key.

To illustrate what it means to give SINTRAN a command, try this example:

@ <u>WHO-IS-ON</u> CR	(You ask SINTRAN who is logged-in at which terminal).
-----------------------	-------------------------------------------------------

If everything is done properly so far, SINTRAN should answer:

===> 1 SYSTEM	(Answer: User SYSTEM is logged-in at the CONSOLE, which is terminal no. 1).
@	

The @ indicates that a new command may be given. But still there is more to prepare....

### 6.3 How to start the spooling for the printer(s)

As mentioned in chapter 2, the users must share the processing resources and processing capacity of the Satellite. This is called 'time-sharing'. SINTRAN will apportion the machine resources so that all users get the feeling that the Satellite is always listening to them. This is possible because the Satellite normally only needs some microseconds or milliseconds to execute a command. However, when someone sends data to a printer, which, in comparison to a disk, is a 'slow' device, the printer is occupied for several seconds or minutes and other users who want access to the printer must be put in a queue.

We will now start using the words spooling-process, spooling-device and spooling-file. A spooling-device is typically a printer to which Satellite users must be queued to avoid conflicts. A spooling-file is a file which belongs to this printer. The spooling-file must be given a name ,i.e., LINE-PRINTER, PRINTER, DIABLO. Users who want to use the printer send their data to the printer's spooling-file. This file queues the data for the spooling-process which in turn transmits the data to the printer at a speed suitable for it.

You must tell SINTRAN which device(s) in your system is/are spooling-device(s); a maximum of 3 is allowed. By using a special spooling program supplied with your Satellite this should be a rather straight-forward job. The program generates spooling-files and is found on a floppy together with the backup-programs.

- Insert this floppy in the floppy disk drive and follow the example below:

The program halts for user input. The input in this example (typed on the CONSOLE keyboard) is underlined.

```
@ENTER-DIR,,F CR
@PERFORM (ND-:F-U)INIT START-SPOOLING CR

PERFORM 2412E

NUMBER OF SPOOLING DEVICES: 1 CR      (In this example: spooling for
                                         1 printer)

@MODE MACRO1:MODE,TERMINAL
@CC PERFORM (ND-:)FIRST2,INIT-SPOOLING-1

@DELETE-FILE RUN:PROG
NO SUCH FILE NAME                       (This message only appears
                                         when this program is used
                                         for the first time.)

@COPY "RUN:PROG" (ND-:)RUN:PROG

@OPERATOR TYPE RUN

***13.14.00  TERMINAL      1:
TYPE RUN TO CONTINUE PROGRAM

RUN CR

PERFORM 2412E
```

## EXPLANATION OF DEVICE NUMBERS;

```

;
----- GROUP 1 -----;
TERMINAL 2 IS DEVICE 44;
TERMINAL 3 IS DEVICE 45;
TERMINAL 4 IS DEVICE 46;
TERMINAL 5 IS DEVICE 47;
----- GROUP 2 -----;
TERMINAL 6 IS DEVICE 60;
TERMINAL 7 IS DEVICE 61;
TERMINAL 8 IS DEVICE 62;
TERMINAL 9 IS DEVICE 63;
-----;
;

```

(TERM n refers to the physical connector at the Satellite rear panel labelled TERM 2 - 9.

In this example:

A printer is connected to TERM 2. The table shows that it is DEVICE 44 belonging to GROUP 1. We simply give it the name PRINTER.)

```

IS SPOOLING DEVICE(S) IN GROUP 1 OR 2 ? 1 CR
NAME OF SPOOLING DEVICE FILE (Default = PRINTER-1) ? PRINTER CR
DEVICE NUMBER OF SPOOLING DEVICE ? 44 CR
DEVICE SPEED (Baud Rate) ? 1200 CR

```

(The Baud Rate given here must match the baud rate physically set on the printer.)

```

@MODE MACRO1:MODE,TERMINAL
@CC PERFORM (ND-:)ZS1,ZS1,PRINTER,44,1200

```

```
@OPERATOR TYPE RUN TO CONTINUE PROGRAM
```

```

***13.14.57 TERMINAL      1:
TYPE RUN TO CONTINUE PROGRAM

```

```
@RUN CR
```

```

.
. (no user input in this part of the routine)
.
TYPE RUN TO CONTINUE PROGRAM

```

```
@RUN CR
```

```

.
. (no user input in this part of the routine)
.
*
@EXIT

```

(The program has stopped, indicated by @EXIT and the single @)

```
@RELEASE-DIR ND- CR (DO THIS before the floppy is removed
from the floppy disk drive !)
```

- Remove the floppy containing the spooling-program.

The next step is to do a 'warm-start'. Section 6.4 describes this. Since SINTRAN is running (you recently executed the SINTRAN command RELEASE-DIR), use method 1, then continue reading in section 6.5.

#### 6.4 How to do a warm-start (RESTART)

'Warm-start' may be done from the Satellite front panel as well as from the CONSOLE. There are two equivalent methods:

Warm-start method	Comments
=====	
1. @RESTART-SYSTEM CR	SINTRAN must be running, user must be logged-in as SYSTEM and the Satellite must react upon input from the CONSOLE keyboard.
2. Press OPERATE and STOP simultaneously. Press OPERATE and MCL simultaneously. - wait for at least 1 second Press OPERATE and LOAD simultaneously	This method is used when SINTRAN is not running, or if is impossible to communicate with the Satellite from the CONSOLE.
=====	

After a warm-start you must wait until the messages

```
'SINTRAN IS RUNNING'  
'PAGES FOR SWAPPING (OCT): xxxx'
```

appear on the CONSOLE before you can log-in by pressing the ESC key. Section 6.2 gives a detailed description on how to log-in.

### 6.5 How to create users and give them space on the disk

The next step is to tell SINTRAN who is going to use the Satellite..., but

```
=====
If your system requires special hardware or software, such as SIBAS,
ACCESS, NORD NET II, COSMOS etc., more preparations have to be carried
out. This manual does not discuss these tasks. You must consult the
appropriate manuals or ask for support at Norsk Data to install these
products correctly.
=====
```

If your Satellite system is not affected of the above exceptions, continue by answering the following questions:

- Have you loaded SINTRAN?
- Have you started SINTRAN?
- Have you created spooling-file(s) for the spooling device(s)?
- Did you do a warm-start after you ran the spooling-program?

If you can answer YES to these four questions you are ready to create users and give them space on the disk.

1. Log-in as user SYSTEM at the CONSOLE.
2. Find out how much space is unreserved on the disk.

```
@DIR-STAT CR                (abbreviated DIRECTORY-STATISTICS)
DIRECTORY NAME: P-O CR      (the disk is named PACK-ONE)
OUTPUT FILE: TERM CR       (TERMINAL. CR only is sufficient)
```

```
DIR INDEX 1: DISC-21MB UNIT 0 : PACK-ONE
              (MAIN AND DEFAULT DIRECTORY)
              X PAGES UNRESERVED AND Y PAGES UNUSED OUT OF Z PAGES
```

The X PAGES UNRESERVED tells you how much space it is possible to give to the other users.

3. Reserve approximately half of these pages (X) for future use.

This is to avoid getting into trouble with lack of disk space later on. It's better to spare some pages now, - later, user SYSTEM or another user certainly will need more user space.

Example:

If X is 3200, reserve 1600 pages now, - the other 1600 pages may be divided on the number of users you want to create. Each user who permanently or occasionally works at a Satellite terminal should have her/his own user name and a user area on the disk.

If you have 10 users, they may be given 160 pages each.

4. Create the users and give them space by repeating the commands @CREATE-USER and @GIVE-USER-SPACE.

First find out: - How many users do you need to create?  
- Which names do they want? ASK THEM?  
- How much space can be given to each?  
Remember  $X/2/\text{no. of users}$ ,  
in example:  $3200/2/10 = 160$

Then:

@CREATE-USER CR  
USER NAME: ANNE CR (user ANNE is created)

@GIVE-USER-SPACE CR  
USER NAME: ANNE CR  
NUMBER OF PAGES: 160 CR (she is given 160 pages user space)

@CREATE-USER CR  
USER NAME: RAY CR (user RAY is created)

@GIVE-USER-SPACE CR  
USER NAME: RAY CR  
NUMBER OF PAGES: 160 CR (he is given 160 pages user space)

Repeat this until all users are created and given user space.



6.6 Protect user SYSTEM with a password

Since the operating system, SINTRAN III, now knows several user names, the other users may log-in at their terminals. It is therefore important that you protect user SYSTEM and the files belonging to user SYSTEM. In case someone should log-in as user SYSTEM and should accidentally delete one or several of SYSTEM's files, the system supervisor, in most cases would have a hard time repairing the situation. SINTRAN may in some cases be loaded from diskettes again.

Avoid this by giving user SYSTEM a PASSWORD now!! You must remember this password to be able to log-in as user SYSTEM next time!!

```
@CHANGE-PASSWORD CR
OLD PASSWORD: CR          (the user had no password)
NEW PASSWORD: PASSWORD CR (use a password that you will
                           remember. Use your fantasy)

@
```

```
=====
For your own benefit, write the password on a sheet of paper and hide
it in a secure place !!
=====
```

### 6.7 Nothing is achieved by turning the Satellite off

It is a common practise to turn off electrical instruments after use. However, this is not the case for computers. In fact, Norsk Data advises you NOT to turn the Satellite, the terminals, the printer(s) and other hardware devices off during week-ends and holidays. Remember that the temperature and temperature variations must satisfy the given requirements even during these periods.

If the operating conditions exceed any of the given limits, (i.e., the temperature is automatically reduced to less than 10 degrees C (50 degrees F) during the weekends), the Satellite must be turned OFF at the MAINS switch. Refer to Appendix A, section 'TECHNICAL SPECIFICATION FOR Satellite' for more information about operating condtions.

If stopped, the Satellite is started again this way:

- 1) Turn the MAINS switch ON.
- 2) Give the Satellite time to warm-up, ca. 30 seconds.
- 3) Do a warmstart: OPERATE and STOP simultaneously  
OPERATE and MCL simultaneously  
OPERATE and LOAD simultaneously  
(also described in section 6.4)

### 6.8 The Satellite is installed and you may start using it

If you have read this manual from the beginning, the Satellite should be properly installed and ready for use by you and the other users.

CONGRATULATIONS !

You should be familiar with the rest of this manual too. It contains information of interest for future daily operation. It's your responsibility as the Satellite system supervisor to aid the other users, and the next chapters will give you a good foundation for this.



## 7 THE BACKUP SYSTEM

The SATELLITE backup programs are used to regularly copy the contents of the disk, and to put the saved content back to the disk whenever required. There are two separate programs available, one for copying from disk to diskettes (only used pages on the disk are copied), the other for copying from a set of diskettes back to the disk. Since the disk has a much larger storage capacity than any diskette, the backup procedure will ask the operator to insert one diskette after the other.

Remember always to label the diskettes so there never is any doubt about what they contain. An example of a typical diskette label:

SATELLITE/9 disk backup  
of October 22, 1982  
Diskette no.: 3 of 9  
Responsible: H. Smith

### 7.1 The FTOWI program erases current disk content

Please notice that the FTOWI (Floppy-TO-Winchester) program overwrites what currently is stored on the disk, and replaces it with the contents of the diskettes, normally the last backup taken. This means that the files created or modified after the last backup was taken are lost and can never be retrieved. The FTOWI program should therefore only be used if for any reason, the disk contents are totally destroyed, and NOT if someone by has accidentally deleted one or several files from hers/his own user area. In such cases the files should be retrieved from each user's personal backups. Each user should be responsible for taking regular personal backups on floppy diskettes of hers/his own files, using the BACKUP-SYSTEM available when SINTRAN is running.

ND advises you to regularly take backups of the disk using the WITOF program, at least once a week. A fresh backup means that less changes are lost if you for once need to use the FTOWI program.

#### 7.1.1 The test program DISC-TEMA

DISC-TEMA may give useful information about the disk contents, such as parity faults, address mismatch, etc. It may be run alternatively to copying a backup from diskettes onto the disk. Refer to the manual 'Test Program Description for ND 100/10S', ND-30.005 for more information.

## 7.2 Controlled stop of SINTRAN

Before you start the disk backup program, SINTRAN must be stopped, but there should be no other activity ongoing while stopping SINTRAN. This is called a controlled stop of the machine and is carried out while logged in as user SYSTEM at the CONSOLE:

You type (underlined)

@SET-UNAVAILABLE \$\$BACKUP\$\$ CR

Users trying to log in at their terminal get the message BACKUP and are refused access.

@MAIL CR

Enter the MAIL subsystem.

\*DIRECT-BROADCAST CR

Prepare for broadcast to all terminals that are turned on.

TYPE YOUR MESSAGE, TERMINATED BY CTRL L:

\$\$Due to disk backup, system is stopped in 5 minutes. Log out, please!  
! \$\$System Supervisor\$\$ CTRL and L simultaneously.

EXIT CR

Leave the MAIL subsystem.

@

In addition Batch process(es), SIBAS and other applications should be stopped correctly. These tasks are installation dependant and the system supervisor must obtain the knowledge about what to do by reading the application documentation, the SINTRAN III System Supervisor Manual or by attending the appropriate courses at Norsk Data.

## 7.3 How to start a stand-alone program

The test programs and the backup programs are 'stand-alone' programs, meaning that they execute independently of the SINTRAN operating system. SINTRAN must therefore be stopped and the desired program started.

To start a stand-alone program, use the following procedure:

- Stop SINTRAN by pressing the buttons OPERATE and STOP simultaneously
- Next press OPERATE and MCL simultaneously.
- Insert the diskette containing the stand-alone-program(s).
- Type 1560& on the CONSOLE.
- Wait until the \* sign appears on the CONSOLE.
- Then type LOAD program name CR

The program with the given name will now be read in and started.

#### 7.4 Use the FILE-SYSTEM-INVESTIGATOR test program before backup

A set of test programs are delivered together with your system. One of them, FILE-SYSTEM-INVESTIGATOR, is advisable to run in conjunction with the regular backup. Run the test program immediately before you take backup. This test program verifies the disk contents, finds eventual user page conflicts, etc. It should be run before backup, to detect conflicts that may be necessary to solve after the backup is taken. The manual 'Test Program Description for ND 100/10S', ND-30.005 version 02, describes the program in detail. Refer to this manual and the documentation supplied with the test program diskettes for information on how to use it.

#### 7.5 How to use the backup programs

The two backup programs are found on a separate diskette. They are named 'WITOF' (Winchester-TO-Floppy) and 'FTOWI' (Floppy-TO-Winchester), reflecting the purpose of the programs. Start the backup program as described in section 7.3. Wait until the standard heading

'THIS PROGRAM COPIES .....

appears on the CONSOLE before you

- Remove the floppy from the floppy disk drive.

The program now prompts the operator to give various input, asks for a new diskette when the current is one full or completely read, and so on. The number of diskettes needed varies from just a few up to 18 for a full 21 Mbytes disk. The time needed to fill one diskette is approximately 105 seconds.

The following show two examples, one per program.

7.6 WITOF (Winchester-TO-Floppy) - example

To copy from the disk onto a set of diskettes you use the program WITOF

In the following example, what appears underlined and the CR's are user input.

- Press OPERATE and STOP, then OPERATE and MCL simultaneously.  
 - Insert the diskette with the backup programs.  
 - Start typing on the CONSOLE:  
 #1560&  
 \*LOAD WITOF CR

THIS PROGRAM COPIES THE SATELLITE DISK CONTENTS TO A SET OF DISKETTES FOR BACKUP PURPOSES.

TERMINATE ALL ANSWERS WITH CR.

=====  
 NEW DISKETTES ARE AUTOMATICALLY FORMATTED.  
 CONTENTS OF USED DISKETTES ARE ERASED.  
 =====

DATE OF ISSUE: OCTOBER 22, 1982

IS THIS A SATELLITE/5 OR A SATELLITE/9 (ANSWER 5 OR 9) ? 9 CR

ENTER TODAY'S DATE (MAX. 50 CHARACTERS)

.....1.....:.....2.....:.....3.....:.....4.....:.....5  
Backup of SAT/9, OCT 22 1982, 9.00am by H. Smith CR

NUMBER OF USED DISK PAGES : 3771

NUMBER OF DISKETTES NEEDED: 7

INSERT THE FIRST BACKUP DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
 DISKETTE 1 IS NOW FULL.  
 THE LAST DISK PAGE COPIED (OCTAL) : 001137  
 NUMBER OF DISK PAGES NOT YET COPIED: 3136

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
 DISKETTE 2 IS NOW FULL.  
 THE LAST DISK PAGE COPIED (OCTAL) : 002277  
 NUMBER OF DISK PAGES NOT YET COPIED: 2555

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
DISKETTE 3 IS NOW FULL.  
THE LAST DISK PAGE COPIED (OCTAL) : 003437  
NUMBER OF DISK PAGES NOT YET COPIED: 1947

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
DISKETTE 4 IS NOW FULL.  
THE LAST DISK PAGE COPIED (OCTAL) : 011777  
NUMBER OF DISK PAGES NOT YET COPIED: 1339

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
DISKETTE 5 IS NOW FULL.  
THE LAST DISK PAGE COPIED (OCTAL) : 013340  
NUMBER OF DISK PAGES NOT YET COPIED: 731

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
DISKETTE 6 IS NOW FULL.  
THE LAST DISK PAGE COPIED (OCTAL) : 024534  
NUMBER OF DISK PAGES NOT YET COPIED: 139

INSERT A NEW DISKETTE AND TYPE ANY CHARACTER. CR

COPYING IN PROGRESS...  
DISKETTE 7 IS NOW FULL.  
THE LAST DISK PAGE COPIED (OCTAL) : 024747

BACKUP OF DISK IS COMPLETE. PROGRAM HAS STOPPED.

REMOVE THE LAST DISKETTE !  
#

To bring the SATELLITE back to a normal operating situation, a 'warm-start' must be done. This is described as method 2 in section 6.4



7.7 FTOWI (Floppy-TO-WInch) - example

To copy from a set of diskettes to the disk you use the program

FTOWI

The program is also used when the operating system SINTRAN III is loaded for the very first time.

```
*****
Remember that this program erases the current contents on the disk,
and that files created or modified since the last backup are lost.
*****
```

To copy from a set of diskettes onto the disk you use the program  
FTOWI

In the following example, what appears underlined and the CR's are user input.

- Press OPERATE and STOP, then OPERATE and MCL simultaneously.
- Insert the diskette with the backup programs.
- Start typing on the CONSOLE:

#1560&

\*LOAD FTOWI CR

THIS PROGRAM COPIES A SET OF DISKETTES ONTO THE SATELLITE DISK.

TERMINATE ALL ANSWERS WITH CR.

```
=====
CURRENT CONTENTS ON THE SATELLITE DISK ARE ERASED WHEN
BACKUP IS COPIED ONTO IT FROM A SET OF DISKETTES.
=====
```

DATE OF ISSUE: OCTOBER 22, 1982

IS THIS A SATELLITE/5 OR A SATELLITE/9 (ANSWER 5 OR 9) ? 9 CR

INSERT ONE OF THE BACKUP DISKETTES AND TYPE ANY CHARACTER. CR

THIS IS NO. 1 OF A SET OF 7 DISKETTES.

THE DIRECTORY NAME AND DATE OF BACKUP SAVED ON THE DISKETTES ARE:

PACK-ONE

Backup of SAT/9, OCT 22 1982, 9.00am by H. Smith

```
=====
DO YOU WANT TO COPY THIS BACKUP ONTO THE DISK (YES OR NO) ?
=====
```

YES CR

COPYING IN PROGRESS...

DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 2 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 3 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 4 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 5 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 6 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

INSERT ANOTHER DISKETTE AND TYPE ANY CHARACTER. CR

THIS IS NO. 7 OF A SET OF 7 DISKETTES.  
COPYING IN PROGRESS...  
DISKETTE HAS BEEN COPIED TO DISK.

COPYING OF BACKUP DISKETTES ONTO DISK IS COMPLETE.  
PROGRAM HAS STOPPED.

REMOVE THE LAST DISKETTE !

#

To bring the SATELLITE back to a normal operating situation, a 'warm-start' must be done. This is described as method 2 in section 6.4



## 8 Personal backup - writing to and reading from diskettes

As mentioned in chapter 7 each user should be responsible for taking personal backups of her/his user files. Each user has a 'user area' which means space allocated on the disk where the user's personal files are stored. If there is a user which SINTRAN recognizes as user ANNE, ANNE's files are stored in ANNE's user area on the disk. When ANNE takes personal backup she copies one or more of ANNE's files from the disk to a floppy.

### 8.1 Preparing the floppy diskette for backup

This section is only of interest if you intend to

- Use a brand new floppy diskette, or if you
- Want to erase the contents of an already used one.

Floppy diskettes supplied by Norsk Data are 'formatted' for use in the Satellite floppy disk drive. Diskettes from other vendors may not be possible to use before they have been formatted. Floppy formatting is described in the SINTRAN III Reference Manual, ND.60.128. If you don't know which floppy diskettes the drive requires, see chapter 5.

Insert the diskette you want to prepare and close the door, and follow the example below. User input is underlined.

```
ESC                                (Hit the ESC key)

ENTER FLOPPY-USER CR              (log-in as FLOPPY-USER)
PASSWORD: CR                       (no password)
OK

@CREATE-DIRECTORY CR              (Ask SINTRAN to create a directory)
DIRECTORY NAME: DIR-NAME CR      (You choose the name of it)
DEVICE NAME: F-D CR              (Abbreviation for FLOPPY-DISK)

@ENTER-DIRECTORY CR              (Ask SINTRAN to enter the directory)
DIRECTORY NAME: DIR-NAME CR      (Give the same name here as above)
DEVICE NAME: F-D CR              (Tell SINTRAN to search for the
                                directory in the floppy-disk drive)

@CREATE-USER CR                  (To write to a diskette, a user
USER-NAME: DIR-NAME:FLOPPY-USER CR must be created on its directory,
                                here user F-U on directory DIR-NAME.)
```

@GIVE-USER-SPACE CR (The user needs space on DIR-NAME)  
USER-NAME: DIR-NAME:FLOPPY-USER CR (FLOPPY-USER is now given  
NO. OF PAGES: 610 CR permission to store up to 610 pages  
of data on the floppy-diskette)

If you want to make a personal backup right now, skip the rest of this section and jump to section 8.2.1, number 3.

@RELEASE-DIRECTORY CR (Make the drive accessible for  
other users).

- When the red floppy disk drive door lamp is no longer lit, you may remove the floppy diskette.

@LOG-OUT CR (Remember to log-out before you  
leave the terminal or CONSOLE).

EXIT

You probably wonder why FLOPPY-USER was used above. Floppy-user (often abbreviated to 'F-U') is a user name that all users can log-in as. There should be no password for it. F-U is a useful convention for all users at your installation to use.

610 pages was chosen because this is the maximum number of pages you may store on a dual density, double sided floppy-diskette.

## 8.2 BACKUP-SYSTEM, used for personal backup

### 8.2.1 Writing to a floppy diskette

```
- Log-in as FLOPPY-USER.
- Insert the diskette.
- Enter the floppy diskette directroy      (@ENTER-DIR,F-D CR)
- Suppose user ANNE wants to take a backup of her file 'LETTER:TEXT'
  from her user area on the disk to a diskette:

@BACKUP-SYSTEM CR                      (or just BA-SY CR)

BACKUP-SYSTEM / VERSION: B.
BASY: COPY-USERS-FILES CR                (or just C-U-F CR)
      DESTINATION TYPE: DIR CR
                        DEST. DIRECTORY-NAME: DIR-NAME CR
                        DEST. USER-NAME      : F-U CR
      SOURCE TYPE: DIR CR
                        SOURCE DIRECTORY-NAME: P-O CR (The Satellite
                                                         disk is called
                                                         PACK-ONE)
                        SOURCE USER-NAME      : ANNE CR
                        SOURCE FILE-NAME      : LETTER:TEXT CR
                        MANUAL CHECK         : YES CR (If NO the
                                                         copying starts)

FILE      8: (P-O:ANNE)LETTER:TEXT;1
          INDEXED-FILE      : 7 PAGES.  MODIFIED: 28/10-82 ? YES CR
                                                         (If NO the
                                                         file is not
                                                         copied)

BA-SY: EXIT CR                          (Back to SINTRAN)
```

@

Note that the even though the file is copied to the floppy diskette it is still present in ANNE's user area. If you want to copy more than one file you must give a name which matches all the files you want to copy. If ANNE had answered :TEXT CR on the question SOURCE FILE-NAME:, all files of the type :TEXT would be copied. If CR only was given as answer to the question SOURCE FILE-NAME, all ANNE's files would be copied to the floppy diskette.

8.2.2 Reading from a floppy diskette

- Log-in as user ANNE (Log-in as yourself)
- Insert the diskette.
- Enter the floppy diskette directory (@ENTER-DIR,F-D CR)
- Suppose ANNE want to read the file 'LETTER:TEXT' from a diskette with directory name DIR-NAME and user name F-U. She want the file stored in her own user area.

@BACKUP-SYSTEM CR (or just BA-SY CR)

BACKUP-SYSTEM / VERSION: B.

BASY: COPY-USERS-FILES CR (or just C-U-F CR)

DESTINATION TYPE: DIR CR

DEST. DIRECTORY-NAME: P-O CR

DEST. USER-NAME : ANNE CR

SOURCE TYPE: DIR CR

SOURCE DIRECTORY-NAME: DIR-NAME CR

SOURCE USER-NAME : F-U CR

SOURCE FILE-NAME : LETTER:TEXT CR

MANUAL CHECK : YES CR

FILE 1: (DIR-NAME:F-U)LETTER:TEXT;1  
INDEXED-FILE : 7 PAGES. MODIFIED: 28/10-82 ? YES CR

BA-SY: EXIT CR (Back to SINTRAN)

@

If CR only was given as answer to the question SOURCE FILE-NAME, all the floppy diskette files would be copied to ANNE's user area on the disk.

## 9 Hints for the system supervisor

This chapter contains some useful hints for the Satellite system supervisor. Hopefully you will find information that will both prevent trouble and hints on how to handle error situations.

### 9.1 Keep the System diskettes in order

Together with your Satellite system you received several diskettes: the preloaded SINTRAN, the backup programs, utility programs, etc. These diskettes are called system diskettes. You should make copies of them, store the originals in a secure place (never together with the copies). Label the copies so there never is any doubt whether a system diskette is the original or your copy of it.

Make sure that at least one other person knows where to find the system diskettes and the copies, and knows how and when to use them.

### 9.2 You MUST protect user SYSTEM with a password

As discussed in section 6.5 user SYSTEM should always have a password. Write this password on a sheet of paper and keep it together with the system diskette originals. If later on you find it necessary to change the user SYSTEM password, remember to update the password on the sheet of paper too!

### 9.3 User SYSTEM can clear other users password

Since the SINTRAN command @CHANGE-PASSWORD only affects the password for the user you currently is logged in as, all users can use this command. Let the users themselves set a password for their own user name if they want to.

If you need to log in as another user and don't know her/his password, or if the user has forgotten her/his password, user SYSTEM may delete the password with the command @CLEAR-PASSWORD. Remember to tell the actual user to set a new password if s/he wants one.



#### 9.4 Weekly backup and monthly directory test

##### BACKUP once a week

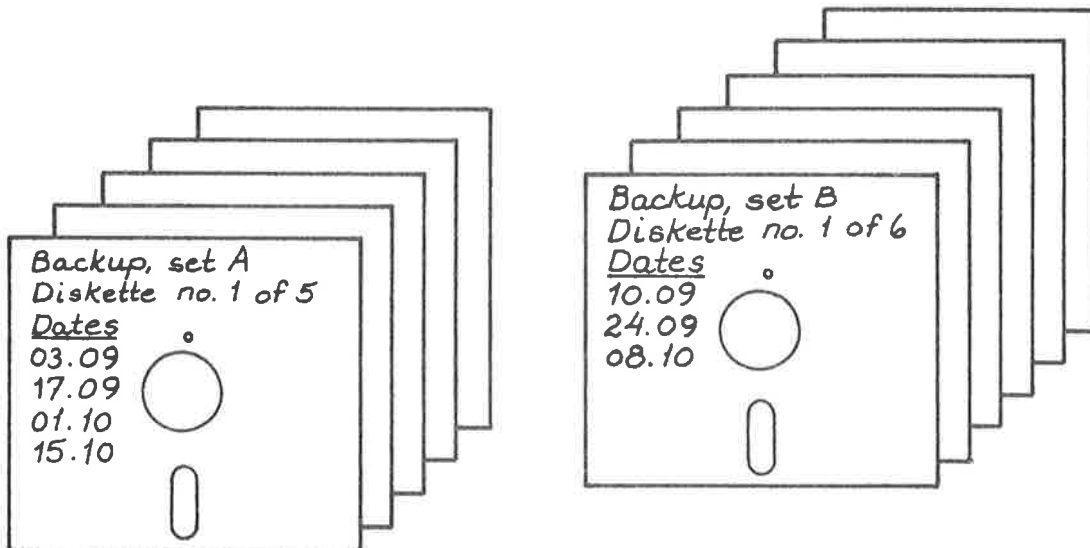
=====

As discussed in chapter 7 you should take a backup of the disk at least once a week, using the WITOF stand-alone program. Use at least two sets of backup diskettes and always use the least recently used set for the next backup.

##### Example:

When you take a backup the first time, use brand new diskettes and label them backup-diskettes, set A. The next week you also use brand new diskettes. Label these backup-diskettes, set B. The third time you take backup you might use the A-set again.

If, for some reason, the backup program should fail half way through the backup, the content of the A-set is changed, but since you have two sets and always use the least recently used one, you still have the newest valid backup on the other set. To gain extra safety you might even choose to have three or four sets. A set of diskettes used in an earlier backup might have to be supplemented with one or more diskettes to be able to store the current amount of used disk pages. Remember to label the additional diskettes with the same identification code (i.e., A, B, C, ...) as the others.



DIRECTORY TEST once a month  
=====

Before you execute any of the commands discussed below, you should be familiar with them. Consult the SINTRAN III System Supervisor/SINTRAN III Reference Manual.

Each month, or every fourth week, you must perform a directory test using the command @TEST-DIRECTORY. Its function is to test the disk directory for conflicting references to pages, incorrect bit file, etc. If any conflicts are found, error messages will confirm this.

NEVER PRESS ESC when this command executes. If aborted, it might cause serious damage to the bit file.

If the directory test detects serious conflicts it might be necessary to go further and use the command @REGENERATE-DIRECTORY.

9.5 Someone has forgotten to RELEASE-DIRECTORY

From time to time you will experience that users forget to terminate their session with the backup-system with the @REL-DIR command. The next user who tries to use the @ENTER-DIR command on the floppy disk drive gets the error message UNIT OCCUPIED. How to solve this problem?

- 1) If you know who used the floppy-diskette last time, you enter her/his diskette with the correct directory on it and just release it with the @REL-DIR command. The next user may then insert her/his diskette and enter its directory.

or

- 2a) Find out which directory is entered in the floppy-disk drive:

```
@LIST-DIR-ENTERED,,, CR
```

```
DIR INDEX 1 : DISC-21MB UNIT 0 : PACK-ONE
DIR INDEX 2 : FLOPPY-DISK-1 UNIT 0 : FLOP-DIR
```

The directory FLOP-DIR was entered in the floppy disk drive and must be released

- 2b) Insert a blank (unused or scratch) diskette.
- 2c) Release the directory, even if the 'wrong' floppy is in the drive:

```
@RELEASE-DIR FLOP-DIR CR
```

```
NO SUCH DIRECTORY
```

In spite of this error message, the FLOP-DIR directory became released.

- 2d) Now it is possible to enter the new directory:

- insert the diskette containing the new directory.

```
@ENTER-DIR,,F-D CR
```

It's not necessary to specify the directory name, if the physical unit, in which the diectory can be found, is given as the second parameter (F-D).

### 9.6 One terminal is "dead"

If a terminal is dead, there are several ways to bring it 'back to life' again. Sometimes a method may work, sometimes not, and you may have to try one method after the other. Use the following order and observe if the terminal wakes up after after each try.

- 1) Check that the terminal is on line, the LINE lamp should light.  
Is the terminal alive?
- 2) Hit the ESC key on the terminal keyboard  
Is the terminal alive?
- 3) Reset the terminal by pressing its reset button (on some terminals under the screen housing, on some a combination of keystrokes).  
Is the terminal alive?
- 4) Log in as user SYSTEM on another terminal and use the command @WHO to verify the device number (the number to the left of the user name of the user who was logged in at the 'hanging' terminal).

Use the command @STOP-TERMINAL no. , where no. is the number you found with WHO. Normally the result is a forced log-out at the 'hanging' terminal, ABORTED BY SYSTEM appears on the screen. Hopefully the situation is now repaired and the unlucky user may log-in again.

Is the terminal alive?

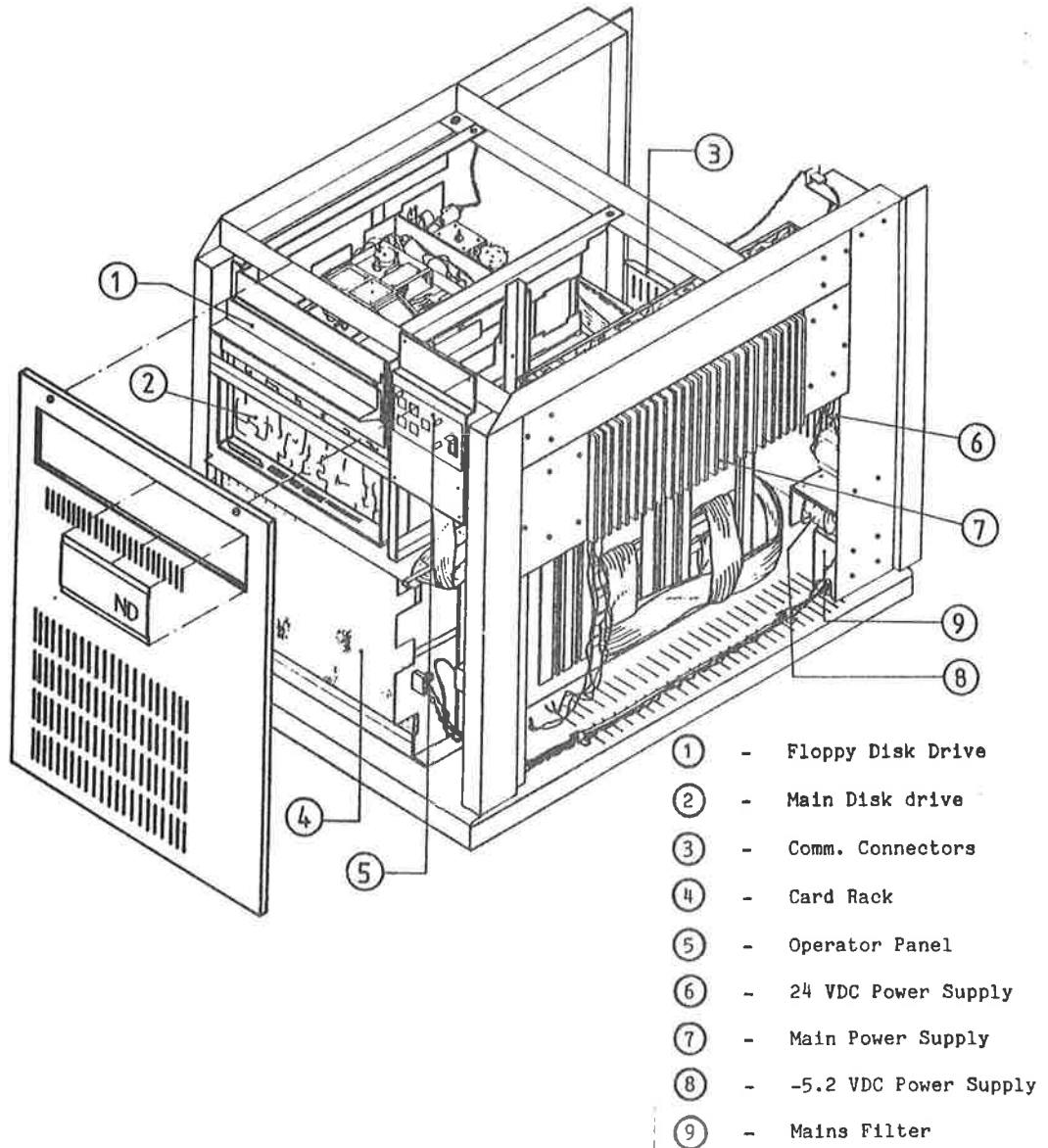
- 5) Try to send a message to the 'hanging' terminal from another terminal, using the \*SEND-DIRECT-MESSAGE subcommand in the MAIL subsystem. If the message arrives, the physical communication line between the Satellite and the terminal is probably faultless.  
Is the terminal alive?
- 6) There might be a hardware failure on the terminal itself. Check that all connectors are properly connected. If this does not help, you may try to connect another terminal to the troublesome terminals communication cable. If this works successfully, the failing terminal probably must be repaired.
- 7) The last, and least convenient method is to start SINTRAN again. You must do a controlled stop of SINTRAN, see section 7.2, and then a warm-start, see section 6.4.

### 9.7 The power line connector is no ON/OFF switch

The MAINS power switch at the front panel is also a switch for the backup battery (see section 3.8). As long as the MAINS switch is in the ON position, the battery is connected. If you disconnect the power line connector from the wall outlet, the battery starts supplying current to the machine, as in a 'normal' power failure situation. Obviously this leads to a 'flat' battery if disconnected for longer periods. If the power connector is disconnected, remember therefore to turn the MAINS switch off.

A P P E N D I X A

HARDWARE INFORMATION

Satellite CABINET LAYOUTFig. 8. Cabinet Layout

THE POWER SUPPLY

The ND Satellite System has three power supplies.

The main Power Supply (7) is the same as in the ND-100 and supplies the modules 5 VDC.

The second power Supply (6) is a 24 VDC supply for the Winchester disk and floppy disk drive.

The third Power Supply (8) is a -5.2 VDC supply for the Winchester disk and floppy disk drive.



THE MODULES

The card modules (4) are at the bottom left of the ND Satellite.

The modules are mounted horizontally and to access them, the cabinet cover has to be removed.

All modules except Disk Controller are the same as in ND-100.

They are placed as shown in table 4.

Position	Module type	Satellite/9	Satellite/5
top 8	Memory	512 Kb	512 Kb
7	Term. Interface	8 term	4 term
6	Floppy Controller	1.2 Mb	1.2 Mb
5	Disk Controller	21 Mb	14 Mb
4	HDLC (opt.)		
3	HDLC (opt.)		
2	MMS (Mem. Mgmt. Sys.)		
bottom 1	CPU - Module	1 term.	1 term.

Table 4. Satellite modules

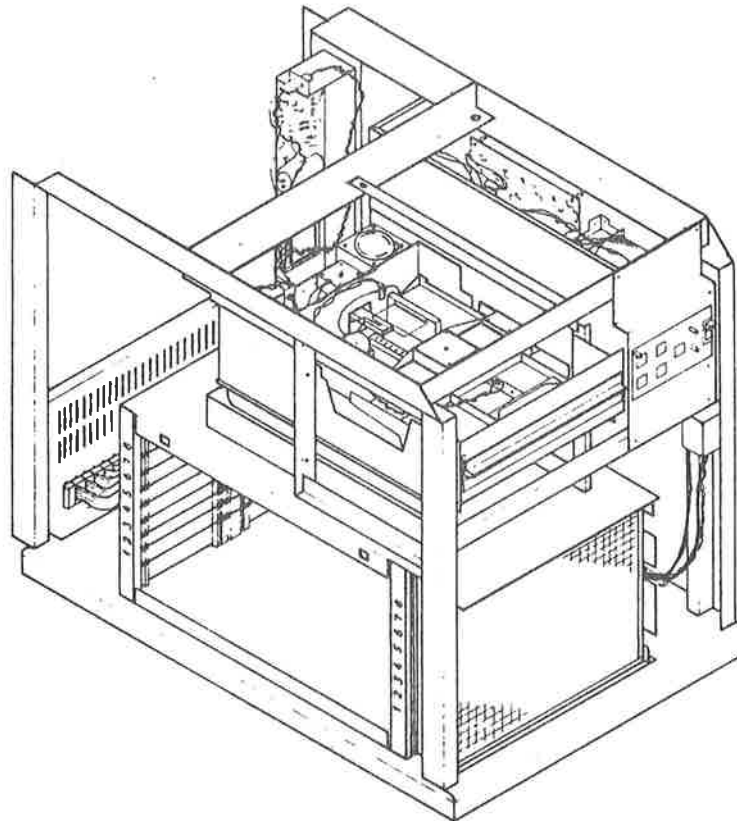


Fig. 9. Cabinet Layout showing Card Rack on left

Satellite CHARACTERISTICS

THE Satellite System consists of:

	Satellite/9	Satellite/5
* CPU and Memory Management System		
* MOS memory with error correction	512 KBytes	512 KBytes
* Fixed Winchester Disk	21 MBytes	14 MBytes
* Floppy Diskette Drive	1.2 MBytes	1.2 MBytes
* Terminal Ports	9	5
* Power Supplies	3	3
* Power Failure Backup Battery		
* SINTRAN III/VS Operating System		
* Spooling for queuing to printer(s)	max. 3	max. 3
* SINTRAN Utility Programs		
* Subsystem Package		
* Resource usage Accounting System		
* Backup System		
* NOTIS Word Processing System		

Options:

- Terminal(s)
- Printer(s)
- Communication Interfaces
- Software and hardware not mentioned above

TECHNICAL SPECIFICATIONS FOR Satellite

Cabinet height ..... 630 mm  
Cabinet depth ..... 660 mm  
Cabinet width ..... 480 mm  
Gross weight ..... ca. 75 kg

Power ..... 230 (120) VAC +/- 10%  
50 (60) Hz, +/- 1 %  
370 W

Start peak current ..... 50 (60) A - 30 ms  
Main Fuse ..... 10 A - 'slow'/'G' characteristic

Operating temperature ..... +10 to +30 deg.C (+50 to +86 F)  
Max. temp.gradient per hour .. 3 deg.C (5.4 deg.F)

Noise level in normal office  
environment ..... 52 dB(A)

PRECAUTIONS AGAINST ELECTRICAL DISTURBANCES

In this section you will find an excerpt from the manual SITE PREPARATION AND INSTALLATION, ND-13.014. This manual concerns computer systems placed in special computer rooms. It can be ordered at Norsk Data

The following types of electrical disturbances may cause damage or unreliable operation.

- Lightning
- Electrostatic discharge
- Electromagnetic interference and power-line noise

Some precautions can be taken to give protection against these phenomena.

Against LIGHTNING

Install VARISTORS between each phase and ground on the riser cable in the main exchange. These must be checked at regular intervals.

Against STATIC DISCHARGE

- Use conductive or semiconductive floor covering.
- Ionize the air.
- Use antistatic spray on carpets and on floor covering.
- Keep the relative humidity above 40%.
- Avoid easily chargeable shoes and clothes.

Against EMI (ElectoMagnetic Interference) and POWER-LINE NOISE

- Isolation transformers.
- Special ground system.
- Shielding of mains distribution.
- Voltage stabilization devices.
- Mains filters.



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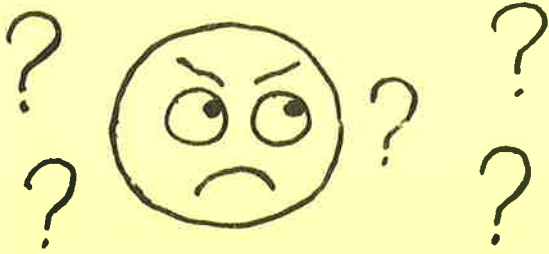


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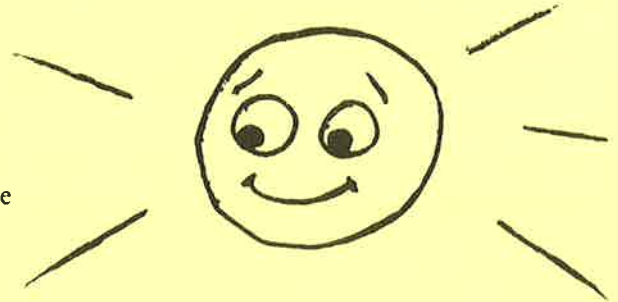


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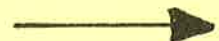
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