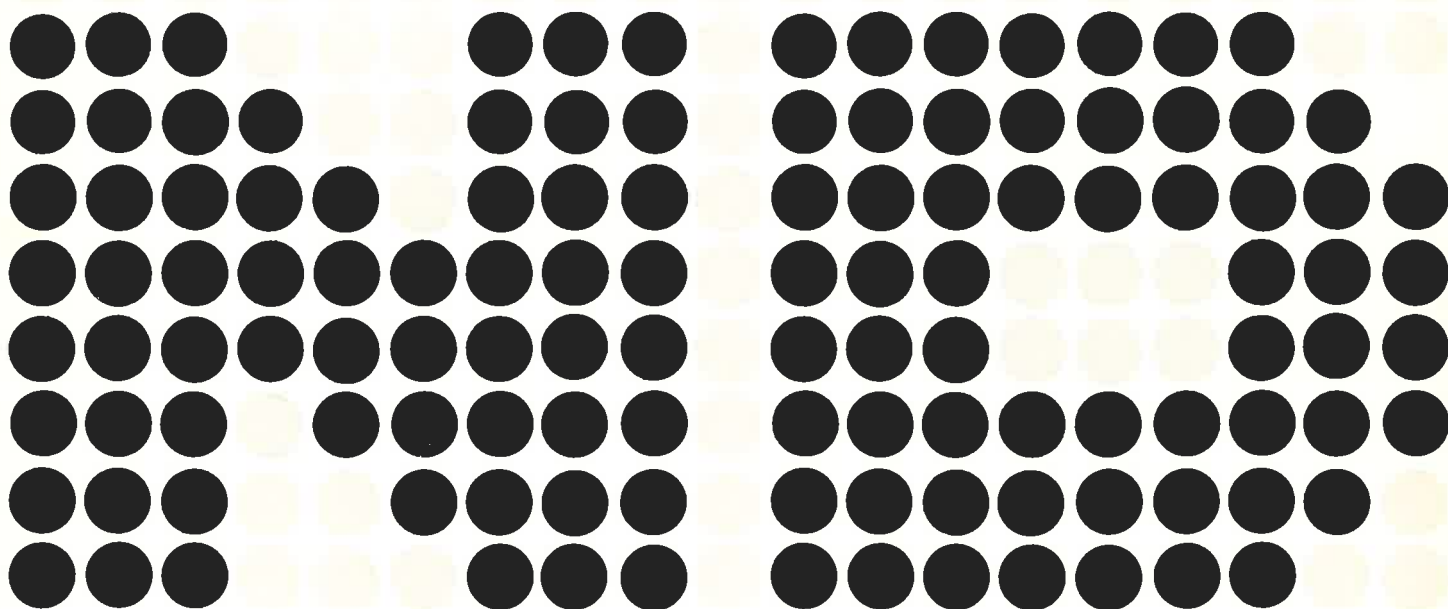


NORD IDT NTR

User's Guide

**NORSK DATA A.S**



# **NORD IDT NTR**

## **User's Guide**

[illegible]

A 10x10 grid of dots forming the letters 'N' and 'C'. The 'N' is on the left and the 'C' is on the right. Each letter is composed of a pattern of black dots on a white background.

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## 1 INTRODUCTION

NORD NTR is a program system in a NORD-10 or NORD-12 computer for remote batch communication to a Univac 1100-series computer where NORD is regarded as the batch terminal and 1100 as the central site.

The communication procedure conforms to the standard Univac NTR (Nine Thousand Remote Full Duplex Communication), and the NTR handler in 1100 is supplied by Univac.

In addition to the original NTR specifications, a real console function is implemented in NORD NTR to ease the operation of the terminal.

## 2

## SYSTEM FEATURES

NORD NTR has the following main features:

- Console keyboard and printer used for:
  1. Local and remote commands
  2. Local and remote messages
  3. Dialogue with the central site operator
- Up to 14 batch channels (input or output). Each channel may be connected to a peripheral device or to a mass storage file in NORD. Such connections are set up and changed by local commands.
- Data may be transmitted on one or more channels in both directions at the same time.
- All channels run at their own speed, independent of other channels. Therefore, a slow printer will not slow down a file transfer, and if a printer is stopped, all active channels will continue data transmission. The line speed may, of course, reduce the total transmission throughput.
- Data compression on input and output.
- Record blocking, i.e., more than one record (print line or card image) in each transmission block.
- Any data or control message may be acknowledged by another data or control message. A new message may be sent before the previous message is acknowledged. This feature will speed up the transmission in cases when the receiving computer is overloaded.
- Data is transmitted in standard ASCII code. Received data may be ASCII or field data (FD). The detection is automatic, and field data is converted to ASCII before output to the connected device or file.
- Supports half-duplex communication lines.

## 4 LOCAL COMMAND PROCESSING

A standard operator command may contain at least 4 characters terminated by space or carriage return. If more than 4 characters are used, only the first 4 are checked. Each command may have up to 5 octal parameters separated by space and terminated by carriage return. If a command with parameters is terminated by carriage return after the command itself, all parameters will get the value "0".

For some commands one parameter may be a character string.

A command may be deleted by typing ctrl Q. The symbol ← will be displayed, and the command processor is ready for another command.

If the command is unknown, the message

**\*\*ILLEGAL COMMAND**

is displayed.

If an error is detected in any parameter the message

**\*\*ILLEGAL PARAMETER**

is displayed.

Other messages may occur. See description of the different commands in Appendix E.

## 5 SYSTEM INITIALIZATION

NORD NTR is started by starting the program IPR0. For a disk operating system, the operator has to log in with user name SYSTEM or RT (see SINTRAN III, User's Guide). Then type the command

RT IPR0 (immediate start)

The program will try to reserve Teletype 2 for the console function (SINTRAN device number  $11_8 = 9_{10}$ ). If it is not free, the program will wait until it is released (logged out). If it is free, its input part will be reserved permanently by IPR0 and a start up message is displayed on the console:

\*\*\*NTR OPCOM IS READY\*\*\*

The output part of the console will be reserved and released for each message and sometimes for each character. This means that it is possible to display messages from other real time programs while NTR is running if the same reserve/release sequence is applied.

After the start up message, the NTR operator communication is ready and commands may be typed in to set the system to initial state.

The communication line may be a 4 wire private line or a 2 wire public telephone line. When using a public line, the terminal operator has to dial up the central computer. The connection will be established by the central site operator. A private line is assumed to be permanently connected.

To start the communication on the line, the SITE ID in the terminal has to be correct. Commands are implemented to examine and change the SITE ID. (Refer to Chapter 6.)

It may be convenient to define the connection between channels and default I/O devices before the communication is started. Commands for this purpose are described in Chapter 7.



## 6

## EXAMINE AND DEFINE SITE IDENTIFICATION

To start the communication, a site identification message has to be sent from the terminal. This SITE ID must be defined previously in the central computer.

A local command is implemented to define or change the SITE ID in the terminal. The command is DEFID followed by 5 characters and carriage return.

If the number of characters is less than 5, the SITE ID is partly changed. If the number of characters is greater than 5, the first 5 characters are significant.

Example:

Type:

```
DEFID 30001
```

The SITE ID is changed to 30001 and the message

```
CURRENT SITE ID IS: 30001
```

is displayed on the console.

This message will also be displayed after the command LISTID (list SITE ID).

When the terminal is to be used in half-duplex mode, the form of the SITE ID will be '3HDxx' rather than '300xx'.

NOTE: The SITE ID is *not* sent to central site by the DEFID command.

The SITE ID is always five characters and preceded by the digit "9". This digit is fixed in the terminal package and will never be displayed when the SITE ID is listed, and it will never be included in the DEFID command.

## 7

## CONNECTING BATCH CHANNELS TO I/O UNITS

As previously stated, the system may contain up to 15 batch channels. A channel in NORD NTR is in Univac terminology referred to as a "device". However, in NORD NTR, such a "device" may be used more flexibly. Therefore, it is convenient to call it a "channel" and a channel may be connected to a (peripheral) device in NORD or to a mass storage file if the File System is installed.

Each channel will have one default device connected and one actual device or file. The default device will be used as actual device after system start. Then the default device and the actual device is the same. Local commands are implemented to change the connected device temporarily by changing the actual device. When making a permanent change both the default and the actual device are changed.

The following commands are used:

CIDDEV N D S	Connect to input channel N the device with SINTRAN device number = D as a default and actual device. The parameter S may normally be omitted, but must be non-zero if the device is a card reader with device number not = 4.
	NOTE: Device number D = 4 will always be assigned as card reader.
CODDEV N D	Connect to output channel N device D as a default and actual device.
CIADDEV N D S	Connect to input channel N device D as actual device. The default connection is not changed. Parameter S is described in the CIDDEV command above.
COADDEV N D	Connect to output channel N device D as actual device. The default connection is not changed.
CIFILE N <FILE NAME>	Connect to input channel N the specified file as actual file. The default connection is not changed. The command will open the file for read access.
COFILE N <FILENAME>	Connect to output channel N the specified file as actual file. The default connection is not changed. The command will open the file for write access.

NOTE: It is not possible to connect a file as default. The reason for this should be obvious.

If the file name in the COFILE command contains a user name different from the name used at "log in" time (SYSTEM OR RT), SYSTEM or RT should be defined as "FRIEND" to the user in the filename. (See NORD File System.) This should be done before the terminal is started or from another terminal in background mode.

COSP N <FILENAME>

Connect to output channel N the specified file as a spooling file. The file will *not* be opened by the command rather than by the data itself. The file will be closed when the output ends.

The file <filename> must have the same name as the spooling files in SINTRAN III and the spooling system must be initiated by the SINTRAN command:

@START-SPOOLING <FILENAME>.

To turn the NTR spooling off, replace the <FILENAME> by an octal number.

## 8. RUNNING THE TERMINAL

### 8.1 *SIGN ON (START COMMUNICATION)*

When the initiating procedure is through (line connected, SITE ID correct and operator communication started), the SITE ID should be sent to central site.

Type:

SSID,

and the current SITE ID (defined by the DEFID command) will be sent to central site. When this SITE ID is recognized and accepted, the central computer will respond with "resume site". This will cause the console message

**\*\*NORD NTR IS ONLINE\*\***

to be displayed, and the system is ready for normal traffic (batch input and output and console communication).

If the SITE ID is not defined before the command

SSID

is typed, the message

**\*\*SITE ID IS NOT DEFINED!**

will be displayed and the operator must use the command

DEFID

before beginning communication.

When the SITE ID is sent, all buffers in the NTR package are initiated, transmission sequence numbers are reset and default devices for the I/O channels are connected as actual devices. All previous temporary connections are released.

## 8.2 *BATCH INPUT*

### 8.2.1 *Batch Input on Channel N from Device D*

The device has to be connected by the proper connect command.

Then type

START N

when N is the channel number.

Attempt is made to reserve the device and, if OK, an "Initialize device" control message is sent to central site. Upon the response "resume site", the input device will start, and data is transmitted until the device halts (card reader and tape reader empty or stopped by error).

When the device halts, a console message is displayed and the following sequences are possible:

1. Correct the error or reload the device and continue the transmission by another START N command.
2. Change to another device or file and continue transmission from this new unit on the same channel by typing the START N command.
3. Terminate the channel by the command TERM N.

### 8.2.2 *Batch Input on Channel N from a File F*

The file is specified and opened by the CIFILE command.

Transmission is started by typing

START N

where N is the channel number. When the file is ended a console message is displayed, the file is closed and the default device will be connected as the new actual device. In this situation the following sequences are possible:

1. Load the default device and start it by typing START N
2. as for input from a device after halt.
3. as for input from a device after halt.

### 8.3 *BATCH OUTPUT*

A batch output channel may be defined as a printer channel or as a punch channel (must conform to the definition on central site). In output on a printer channel, control characters for printers will be included in the text (form feed, carriage return and one or more line feed). These control characters are included even though the actual connected device is not a printer. Printer output may, therefore, be saved temporarily on a file and later simply copied to the printer.

Output on a punch channel will only contain one carriage return and one line feed between each record. It is recommended to apply a punch channel if the output represents data to a file intended for use by other local programs. The records are separated by carriage return/line feed, and if all records have the same length, they may be found by random access from the application program.

The handling of output may depend on the type of the connected unit. Often, when a printer is used, the operator wants the output that is printed as soon as it is ready. In this case, the central computer transmits output files in the sequence they are ready without operator intervention.

In other cases it may be convenient to give the control to the terminal operator when a output file on a channel is finished.

To solve this problem, any **output** channel in NORD NTR may be set to the two modes: Lock output after EOF or Continue output after EOF (Lock and Continue Modes).

The command

LEOF N

will set channel N to Lock mode after NTR has received an end-of-file.

The command

CONT N

will set channel N to Continue mode.

This command will send an "unlock" message to central site, and if any output files are queued for this channel, the output is resumed.

For a printer channel in Continue mode it is normally not necessary to use the **START** command. However, the channel may be locked for any reason, and the operator may use the **START** command to solicit queued output.

Local commands are implemented to backspace or skip printer output. The commands are:

BACK N P J

where N is the output channel number and P the number of print pages or punch records to be reprinted. If the actual number of reprinted pages does not agree with the parameter P, this has to do with the system on central site.

SKIP N P J

where N is the output channel number and P the number of print pages or punch records to be skipped. The last digit of the parameter P is always taken to be zero. Therefore, SKIP 3 19 is equal to SKIP 3 10.

Console messages are displayed when output starts and ends.

\*\*OUTPUT ON CHANNEL:N

and

\*\*END OF OUTPUT CHANNEL:N

Connections between output channels and devices or files are made by the commands described in Chapter 7.

If the operator wants to restart the whole printing, the following command must be given:

REQUE N

where N is the output channel number.

If the output channel is to be locked, the command

LOCK N

must be given. To continue, the command

CONT N

must be given. The output will then be restarted.

If the SINTRAN system is generated with the output spooling system, the line-printer is looked upon as a disk file, not as a peripheral device. That means that for each output file the command

COFILE N <output file>

must be given.

However, in many cases, it is more convenient to let the next output file be printed automatically. To meet this demand, a command has been implemented:

COSP N <spooling file>

where N = output channel, e.g. COSP 4 L-P

The new spooling file will be opened each time the message:

\*OUTPUT ON CHANNEL:N

is displayed. The previous spooling file will be closed and the printing started when the message

\*\*END OF OUTPUT CHANNEL:N

is displayed.

To avoid unnecessary error messages, the command must be given before the terminal is signed on.

The output spooling system in NTR is turned off by the command:

COSP N 0.



#### 8.4 *CONSOLE TO CONSOLE COMMUNICATION*

All data messages from central site addressed to channel 0 will be output on the console. If the console to console function is implemented on central site, the central site operator may send messages to the remote console.

To send text from the terminal console to central site console type the command:

```
MESS ↘ followed by
LINE 1 ↘
LINE 2 ↘

LINE N ↘
ctrl W ↘
```

The succeeding text until ctrl W is typed in on the console and will be sent to central site. Ctrl W will set the console back to command mode.

## 8.5 *SIGN OFF (TERMINATE COMMUNICATION)*

Use the command

ABORT SITE ID

The site ID is checked against the current site id in the terminal. If match, a "terminate site" message is sent, a console message is displayed, and all RT programs in the NTR package are aborted. If the segment has been set FIX in core, the operator should log in with user name SYSTEM or RT and set the segment UNFIX (Refer to SINTRAN III User's Guide).

When the 1100 acknowledges this message, the message:

\*NORD NTR TERMINATED!!

is displayed.

If the message is not acknowledged, the message

\*\*NO REPLY

will occur.

In the latter case, the command EXIT is necessary to abort the RT programs.

## 8.6 *SPECIAL COMMANDS IN NTR*

A number of message types in NTR gives the terminal operator a great deal of control over the remote devices. In the NORD NTR there are implemented a set of local commands for the most usual message types. Local commands for skip and backspace print output are already mentioned.

Other commands are:

DIFILE N

where N is the output channel number. A message will be displayed concerning files queued to channel N.

DIQUEUE N

where N is the output channel number. A message will be displayed indicating the number of files queued to output channel N.

If N = 17, there will be displayed a message concerning files queued to the remote itself.

In addition, there are several other message types which are not implemented yet at the central site. Therefore, there are no local command in NORD NTR for each of them. Instead, there is a general command which may be used:

SEMT N M D

where N is channel number, M is message type (MT) and D is a detail byte (DET).

A summary of message types and explanation may be found in Appendix D.

## 9

## REMOTE BATCH

The traditional way of using a terminal package is to read the program by means of a card reader. When something has to be changed, new cards must be punched. This is, however, a rather cumbersome method. It is more convenient to have the program on a disk file, both to edit and to handle. The transmitting of the job may be done in the same way as from the card reader (refer to Section 8.2.2).

The job may be transmitted automatically by means of the Remote Batch facility. The owner of the file simply types a SINTRAN command

```
@APPEND-REMOTE <host computer> <input file>
```

where <host computer> is a peripheral file which name may be chosen (e.g. UNIVAC:REM), but the device number must be 541 (octal) for NTR.

The only command the NTR operator must give is

```
RBAT
```

which sets the NTR in a remote batch mode. Then, all jobs which are queued for the terminal, are transmitted.

To return to the normal input mode, the command

```
SBAT
```

must be given, even if the remote batch queue is empty.

If something goes wrong during the remote batch mode, the file name together with the message

```
**JOB ABORTED: <file name>
```

will be displayed and the next job in the queue will be transmitted. Together with the message, there will also be displayed a file system error code, which will describe the error type.



## APPENDIX A

### *COMMUNICATION LOG FUNCTION*

The communication log function is implemented for debugging purposes. The function is enabled by typing SLOG on the console and disabled by typing RLOG.

When log is on, one line will be written on the console each time a block is sent or received on the communication line.

The formats are:

For sent block

S: AAABBB CCCDDD EEEFFF

AAA	- last sent msg number (0 for ACK/NAK)
BBB	- last sent ACK number (0 if no ACK)
CCC	- last sent MT (msg type, 3 if data msg)
DDD	- last sent device number (channel number)
EEE	- last sent detail byte
FFF	- last sent data character count (0 if not data msg)

For received block

R: AAABBB CCCDDD EEEFFF

AAA	- last received msg number (0 for ACK/NAK)
BBB	- last received ACK number (0 if no ACK)
CCC	- last received MT (msg type, 3 if data msg)
DDD	- last received device number (channel number)
EEE	- last received detail byte
FFF	- internal read switch (RSW) for last received msg.

All the fields AAA - FFF are in octal representation.



## APPENDIX B

*ERROR MESSAGES AND RECOVERY*

<u>Error Message:</u>	<u>Explanation/Recovery:</u>
**ILLEGAL COMMAND	The operator has typed a command which is not found in the command table.
**ILLEGAL PARAMETER	The parameter connected to a local command is illegal, e.g., the channel number is outside range.
**LAST COMMAND IS NOT SENT	The operator has typed a command to the 1100 before the previous command was sent. Retype the last command.
**INPUT CHANNEL: N ACTIVE	The input channel N was active when the operator tried to change device number for this channel. Wait for the input channel to time out before changing device numbers.
**OUTPUT CHANNEL: N ACTIVE	The output channel N was active when the operator tried to change device number for this channel. Wait for end of output before changing device numbers.
**OUTPUT CHANNEL: N INACTIVE	The output channel N was inactive (not started) when the operator tried to skip or backspace print.
**DEVICE NOT AVAILABLE	This message is displayed in connection with the START N command when the device connected to channel N is reserved by another user.
**OPEN FILE ERROR: X	The operator has tried to connect a mass storage file to an output or input channel without success. See Appendix C for explanation of the number X.
**CLOSE FILE ERROR: X	This message is displayed when the mass storage file connected to an input/output channel is closed and an error occurs. See Appendix C for explanation of the number X.



Error Message:	Explanation/Recovery:
**UNIT NOT STARTED	This message is displayed in connection with the message **OUTPUT ON CHANNEL:N. This means that the device which is connected to channel N is reserved by another user. To continue, change to another unit and type: START N.
**THE CHANNEL IS LOCKED	This message may occur when an output channel is in locked mode (refer to Chapter 8.3), when the 1100 sends an "initiate output" control message. To continue, set the channel in continuous mode (CONT N) and type START N.
**OUTPUT UNIT: D IS ILLEGAL	This message indicates that the device D is not defined in the SINTRAN III file system.
**OUTPUT UNIT:D NOT RESERVED	This message indicates that the device D is not reserved when the RT-program tries to output a character.
**OUTPUT UNIT: D ERROR CODE: X	This message indicates some other errors in connection with the output channel. See Appendix C for explanation of the error code X.
**INPUT UNIT: D IS ILLEGAL	This message indicates that the device D is not defined in the SINTRAN III file system.
**INPUT UNIT: D NOT RESERVED	This message indicates that the device D is not reserved when the RT-program tries to read a character. To continue, change to another input unit and type.
**INPUT UNIT: D ERROR CODE: X	This message indicates some other errors in connection with the input channel. See Appendix C for explanation of the error code X.
**INPUT UNIT: D **REREAD LAST CARD	This message indicates a card reader error when the card is read. Reload last card, start the card reader and type START N.

<u>Error Message:</u>	<u>Explanation/Recovery:</u>
**INPUT UNIT: D **NEXT CARD IS BAD	This message indicates an illegal code in the last read card. Correct the card, reload it and type START N.
**INPUT UNIT: D **BAD CODE IN CARD COL: X (OCTAL)	This message indicates an illegal code in the last read card. Correct the card, reload it and type START N.
**INPUT UNIT: D TOO LONG RECORD	This message indicates that the last read record on unit D contains more than 80 characters.
**BAD INPUT CHAR- ACTER FROM UNIT: D	This message indicates that a non-print character was read from unit D.
**MAX NAK1 SENT!**	The terminal has sent 63 NAK messages without acknowledging. The line must be extremely bad. A new log-in is necessary.
**NO REPLY	No reply from central site. The communication will normally continue.
**SITE ID NOT DEFINED!	The DEFID command must be given before the SSID command after each new load of the program.



## APPENDIX C

*ERROR CODES RETURNED FROM THE FILE SYSTEM MONITOR CALLS*

## Error Code:

0	NOT USED
1	NOT USED
2	BAD FILE NUMBER
3	END OF FILE
4	CARD READER ERROR (CARD READ)
5	DEVICE NOT RESERVED
6	NOT USED
7	CARD READER ERROR (CARD NOT READ)
10	NOT USED
11	NOT USED
12	END OF DEVICE (TIME OUT)
13	NOT USED
14	NOT USED
15	NOT USED
16	NOT USED
17	NOT USED
20	NOT USED
21	ILLEGAL CHARACTER IN PARAMETER
22	NO SUCH PAGE
23	NOT DECIMAL NUMBER
24	NOT OCTAL NUMBER
25	YOU ARE NOT AUTHORIZED TO DO THIS
26	DIRECTORY NOT ENTERED
27	AMBIGUOUS DIRECTORY NAME

## Error Code:

30	NO SUCH DEVICE NAME
31	AMBIGUOUS DEVICE NAME
32	DIRECTORY ENTERED
33	NO SUCH LOGICAL UNIT
34	UNIT OCCUPIED
35	MASTER BLOCK TRANSFER ERROR
36	BIT FILE TRANSFER ERROR
37	NO MORE TRACKS AVAILABLE
40	DIRECTORY NOT ON SPECIFIED UNIT
41	FILES OPENED ON THIS DIRECTORY
42	MAIN DIRECTORY NOT LAST ONE RELEASED
43	NO MAIN DIRECTORY
44	TOO LONG PARAMETER
45	AMBIGUOUS USER NAME
46	NO SUCH USER NAME
47	NO SUCH USER NAME IN MAIN DIRECTORY
50	ATTEMPT TO CREATE TOO MANY USERS
51	USER ALREADY EXISTS
52	USER HAS FILES
53	USER IS ENTERED
54	NOT SO MUCH SPACE UNRESERVED IN DIRECTORY
55	RESERVED SPACE ALREADY USED
56	NO SUCH FILE NAME
57	AMBIGUOUS FILE NAME
60	WRONG PASSWORD
61	USER ALREADY ENTERED
62	NO USER ENTERED

## Error Code:

63	FRIEND ALREADY EXISTS
64	NO SUCH FRIEND
65	ATTEMPT TO CREATE TOO MANY FRIENDS
66	ATTEMPT TO CREATE YOURSELF AS FRIEND
67	CONTINUOUS SPACE NOT AVAILABLE
70	NOT DIRECTORY ACCESS
71	SPACE NOT AVAILABLE TO EXPAND FILE
72	SPACE ALREADY ALLOCATED
73	NO SPACE IN DEFAULT DIRECTORIES
74	NO SUCH FILE VERSION
75	NO MORE PAGES AVAILABLE FOR THIS USER
76	FILE ALREADY EXISTS
77	ATTEMPT TO CREATE TOO MANY FILES
100	OUTSIDE DEVICE LIMITS
101	NO PREVIOUS VERSION
102	FILE NOT CONTINUOUS
103	FILE TYPE ALREADY DEFINED
104	NO SUCH ACCESS CODE
105	FILE ALREADY OPENED
106	NOT WRITE ACCESS
107	ATTEMPT TO OPEN TOO MANY FILES
110	NOT WRITE AND APPEND ACCESS
111	NOT READ ACCESS
112	NOT READ, WRITE AND COMMON ACCESS
113	NOT READ AND WRITE ACCESS
114	NOT READ AND COMMON ACCESS
115	FILE RESERVED BY ANOTHER USER

## Error Code:

116	FILE ALREADY OPENED FOR WRITE
117	NO SUCH USER INDEX
120	NOT APPEND ACCESS
121	ATTEMPT TO OPEN TOO MANY MASS STORAGE FILES
122	ATTEMPT TO OPEN TOO MANY FILES
123	NOT OPENED FOR SEQUENTIAL WRITE
124	NOT OPENED FOR SEQUENTIAL READ
125	NOT OPENED FOR RANDOM WRITE
126	NOT OPENED FOR RANDOM READ
127	FILE NUMBER OUT OF RANGE
130	FILE NUMBER ALREADY USED
131	NO MORE BUFFER SPACE
132	NO FILE OPENED WITH THIS NUMBER
133	NOT MASS STORAGE FILE
134	FILE USED FOR WRITE
135	FILE USED FOR READ
136	FILE ONLY OPENED FOR SEQUENTIAL READ OR WRITE
137	NO SCRATCH FILE OPENED
140	FILE NOT RESERVED BY YOU
141	TRANSFER ERROR
142	RESERVED BY RT-PROGRAM
143	NO SUCH BLOCK
144	SOURCE AND DESTINATION EQUAL
145	ILLEGAL ON TAPE DEVICE
146	END OF TAPE
147	TAPE ALREADY IN USE

Error Code:

150	NOT RANDOM ACCESS ON TAPE FILES
151	NOT LAST FILE ON TAPE
152	NOT TAPE DEVICE
153	ILLEGAL ADDRESS REFERENCE IN MONITOR CALL
154	NOT LAST RECORD ON TAPE
155	FILE ALREADY OPEN BY ANOTHER USER
156	FILE ALREADY OPEN FOR WRITE BY ANOTHER USER
157	MISSING PARAMETER





## APPENDIX D

## MESSAGE TYPES

All message types apply to devices (channels) numbered one to fourteen, unless otherwise noted. An asterisk (\*) means that the message applies only to the site itself (DN = 17). A plus (+) means that the message may apply to the site itself (DN = 17) or to a device (channel), (DN < 17).

MT	Name:	Direction:	Explanation:
002	OUTPUT REQUEST	9 to 11	The 9000 requests data for output device DN. DN = 0 implies the console printer. DET specifies the number of data messages requested, or "one" if DET = 0.
003	DATA TRANSFER	either	The text part of the message contains data images for device DN. DN = 0 implies the console printer.
004	TERMINATE	9 to 11	9000 directs 1100 symbiont to take an end-of-file on device DN = n. For card readers, no further data messages will be sent. For printers and punches, output requests will continue to be sent.
		11 to 9	1100 responds to previous 9000 terminate requests where no further data messages (containing an EOF) will be sent.
005	SUSPEND DEVICE	9 to 11	9000 directs 1100 symboint to suspend itself.
			1100 directs 9000 to suspend input device DN.
006	RESUME DEVICE	9 to 11	9000 directs 1100 to resume a previously suspended device.

MT	Name:	Direction:	Explanation:
		11 to 9	1100 directs 1100 to resume a previously suspended input device.
007	LOCK AND TERM	9 to 11	9000 directs 1100 to take an end-of-file and lock out the output device DN = n.
010	REQUEUE	9 to 11	9000 directs 1100 to requeue the file for output device DN = n. The file is restarted from the beginning.
011	LOCK AND REQUEUE	9 to 11	9000 directs 1100 to lockout the device DN = n and requeue the file. The device halts and the file is saved.
012	REPRINT	9 to 11	9000 directs 1100 symboint to reprint or repunch xx pages or cards on output device DN = n.
013	SKIP AHEAD	9 to 11	As above, except that ten times pp pages or cards are skipped.
:	:	:	Message types 014 through 066 unassigned.
014	DISPLAY FILES	9 to 11	9000 directs 1100 to send a script (printer) display concerning files queued to device DN = n. This key-in is not yet implemented. It is analogous to the on-site SQ SMNAME= key-in.
015	DISPLAY QUEUE	9 to 11	9000 directs 1100 to send a script display indicating the number of files queued to output device DN = n. This key-in is not yet implemented. It is analogous to the on-site SQ SMNAME key-in.

MT	Name:	Direction:	Explanation:
067	ILLEGAL MSG	either	This message responds to a previous message which had an undefined MT, or specified an MT and DN combination which did not make sense. The DET byte echoes the previous MT; the DN byte is copied from the DN byte of the illegal message.
070	DEVICE STATUS		This message is currently not implemented. A possible sequence:
		11 to 9	1100 queries 9000 about logical status of device DN.
		9 to 11	9000 responds with DET specifying logical device status for device DN.
070	TERM SITE	11 to 9	The 1100 responds to the various site terminate requests made by the 9000. This sign-off is the last message sent.
071	UNLOCK	9 to 11	9000 directs 1100 to unlock and initiate output device DN = n. If any files are queued, the 1100 will send an "initialize device" message.
071*	REQUEUE AND TERM SITE	9 to 11	All active devices will terminate and the site will go inactive. Output files are requeued (saved) but card readers take an end-of-file.
072*	COMPLETE ACTIVE DEVICES AND TERM SITE	9 to 11	All devices which are currently active will complete their file normally. When all devices finish, the site will terminate. Card readers read all cards in the hopper.

MT	Name:	Direction:	Explanation:
073*	COMPLETE QUEUE AND TERM SITE	9 to 11	9000 directs 1100 to terminate the site when all devices go inactive. All files queued to output devices will be output until the queues are emptied.
074*	ROLLOUT TO TAPE	9 to 11	9000 directs 1100 to roll out all files queued to the device DN = n, or all files queued to all devices on the site when DN = 017. This key-in is not yet implemented. It is analogous to the on-site SV key-in.
075	LOCKOUT	9 to 11	9000 directs 1100 to lock out output device DN = n. If the device is active when the key-in is made, the current file will be completed normally.
076	INITIALIZE DEVICE	9 to 11	9000 informs 1100 that cards are ready to be read in an input device DN = n.
		11 to 9	1100 informs 9000 that an output file is available for output device DN.
076*	INITIALIZE SITE	11 to 9	The 1100 responds to the unsolicited sign-on of the 9000. This is the first message sent to the 9000.
077*	DISPLAY	9 to 11	9000 sends message will DN = n and DET = dd. Depending on 1100 configuration, either "dd" is displayed on the console or a message reference by "dd" is displayed. The site defined all messages to be displayed and the meaning of "dd".

## APPENDIX E

## COMMAND SUMMARY

ABORT <SITE ID>	Send an abort site message to the 1100. When this message is acknowledged, the NTR terminates with a message! **NORD NTR TERMINATED!
BACK N P	Backspace P pages on channel N.
CIADDEV N D S	Connect device D to input channel N as an actual device S may be omitted, but if the input device is a card reader with device number unequal to 4, S must be non-zero.
CIDDEV N D S	Connect device D to input channel N as a default and actual device. Parameter S is described under the command CIADDEV.
CIFILE N <FILE NAME>	Connect the specified file to input channel N as an actual device.
CLOSE D	Close or release device D.
COADDEV N D	Connect device D to output channel N as an actual device.
CODDEV N D	Connect device D to output channel N as a default and actual device.
COFILE N <FILE NAME>	Connect the specified file to output channel N as an actual device.
CONT N	Set output channel N in continuous mode.
COSP N <FILE NAME>	Connect the specified file to output channel N as a spooling file.
DEFID <SITE ID>	Define site id for the terminal. Note that the first number (9) is fixed in the program and must not be specified.

DIFILE N	Display files queued to output channel N.
DIQUEUE N	Display number of files queued to output channel N.
EXIT	Terminate NORD NTR without sending an abort message to 1100. This command may be used when the communication lines are broken.
LICH	Display actual and default devices connected to input and output channels.
LIST	Display the site id.
LOCK N	Set output channel N in lock mode.
LOOK	Examine the following locations.
MESS	Everything typed on the console after this command is sent to the console on central site. The session terminates with control W.
RBAT	Start remote batch
RESET	Reset retransmission counters.
RLOG	Reset log function. This is the inverse command of SLOG.
RNEGL N	Reset neglect mode for input channel N. The inverse command of SNEGL N.
SBAT	Stop remote batch.
SEMT N M D	Send message type M for channel N to the 1100. D denotes the detail byte. See Appendix D for description of the various message types.

SKIP N P	Skip P pages on output channel N.
SLOG	Set NORD NTR in log mode. This mode is reset by RLOG.
SNEGL N	Set input channel N in neglect mode, i.e., illegal characters are submitted by spaces. This mode is reset by RNEGL N.
SSID	Set site id to 1100.
START N	Start reading from input channel N if N is an input channel. If N is an output channel send request to 1100 for data for output on channel N.
STATUS	Display numbers of retransmission to and from the terminal.
TERM N	Send end-of-file if N is an input channel. If N is an output channel, terminate output channel N.





## APPENDIX F

## LOADING THE NORD NTR

The NORD NTR is delivered on a paper tape in a Binary Relocatable Format and is to be loaded by the Real-time loader in a SINTRAN III system.

Example 1:

Loading the NORD NTR into a SINTRAN III mass storage system (operator's commands are underlined):

```
08.41.34      12 MAY 1976      (press the escape button to log in)
VERSION 76.02.15C
ENTER SYSTEM
PASSWORD:
OK
@COPY-FILE "NTR:BRF" T-R (place the tape in the tape reader)

END OF DEVICE (TIMEOUT)
@RT-LOADER
```

REAL-TIME LOADER 76.10.08

```
*N-LOAD NTR,,,
NEW SEGMENT NO: 42
*WRITE-PROGRAMS,,
```

NTRSP	30251	42	0
UPR7	30217	42	0
UPR5	30165	42	0
UPR4	30133	42	0
XPR1	30101	42	0
UPR0	30047	42	0
IPR0	30015	42	0
NTR	27763	42	0

```
*END-LOAD
NEGLECTING REFERENCES? Y
*EXIT
```

@RT IPR0

```
08.44.29      12 MAY 1976
--EXIT--
```

\*\*\*NTR OPCOM IS READY\*\*\*

For further explanation, refer to the SINTRAN III Real-Time Loader Manual.

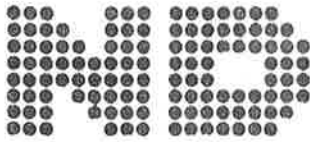
Example 2:

Loading the NORD NTR into a SINTRAN III core system (operator's commands are underlined):

<u>400\$</u>	(place the tape of the SINTRAN III-C in the tape reader)
SINTRAN III-C RUNNING —	
00.00.05      0 JANUARY	(press the escape button)
ENTER	
<u>@UPDAT 1 9 12 5 1976</u>	
<u>@RT-LOADER</u>	
SINTRAN III—C	(place the tape of the NTR in the tape reader)
BINARY LOADER	
<u>L*W1</u>	
@	(these values depend on the system configuration)
*:033064	
C:177777	
<u>L*L 34000</u>	(set the load address of the NTR to the next 'thousand' over the highest address in SINTRAN)
<u>L*A2</u>	
<u>L*W1</u>	
NTR   = 017443	
IPR0   = 017467	
UPR0   = 017513	
XPR1   = 017537	
UPR4   = 017563	
UPR7   = 017607	
@	
*:053776	
C:177777	
<u>L*H</u>	
<u>@RT IPR0</u>	
<u>@LOG</u>	
09.05.11      12 MAY 1976	
--EXIT--	

\*\*\*NTR OPCOM IS READY\*\*\*

For further explanation, refer to the SINTRAN III Core System Users Guide (Appendix H).



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## COMMENT AND EVALUATION SHEET

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NORD IDT NTR - User's Guide

In order for this manual to develop to the point where it best suits your needs, we must have your comments, corrections, suggestions for additions, etc. Please write down your comments on this pre-addressed form and post it. Please be specific wherever possible.

FROM:

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