REPORT

SINTRAN-III I-VERSION GENERAL INFORMATION

Author: ND Development Department

Written: 25 January 1984

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VALID FOR:

- SINTRAN III VSE - ALL ND-100
- SINTRAN III VSE/500 - ALL ND-100
- SINTRAN III VSX - ONLY ND-100/CX
- SINTRAN III VSX/500 - ONLY ND-100/CX

VERSION I

MODIFIED 83.11.24

NOTE!

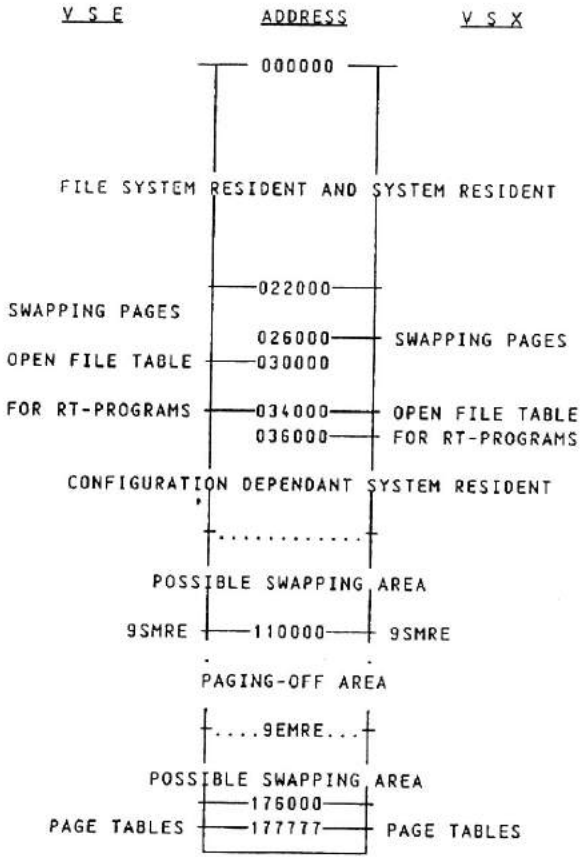
SINTRAN-III VERSION H IS THE LAST VERSION AVAILABLE ON NORD-10

1 INTRODUCTION

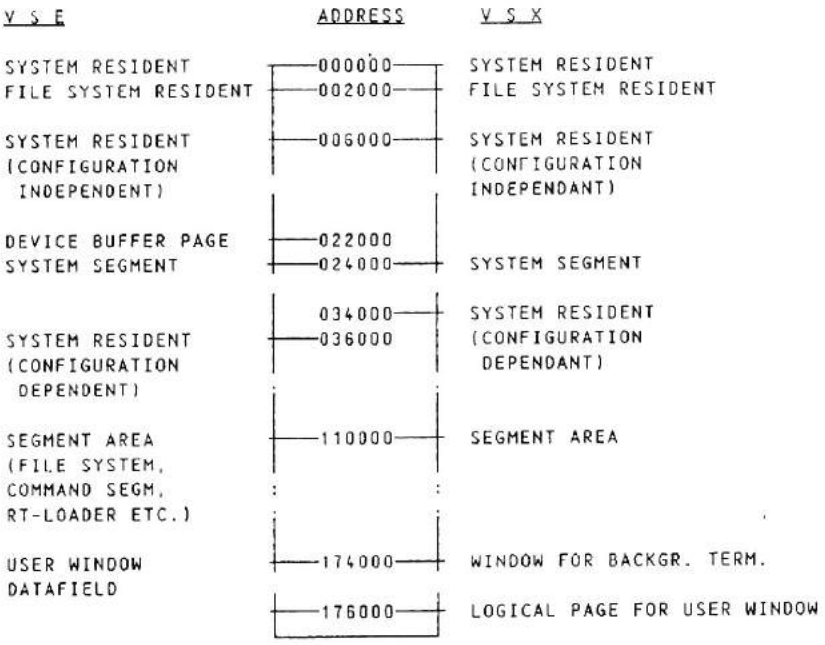
The following pages are a brief description of the differences between the H- and the I-versions of the SINTRAN-III operating system.

2 SINTRAN III I-VERSION SYSTEM LAYOUT

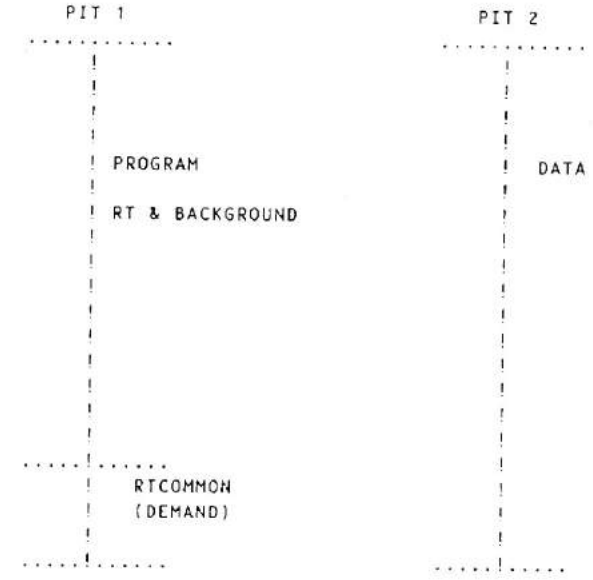
2.1 PHYSICAL MEMORY



2.2 PAGE INDEX TABLE 0

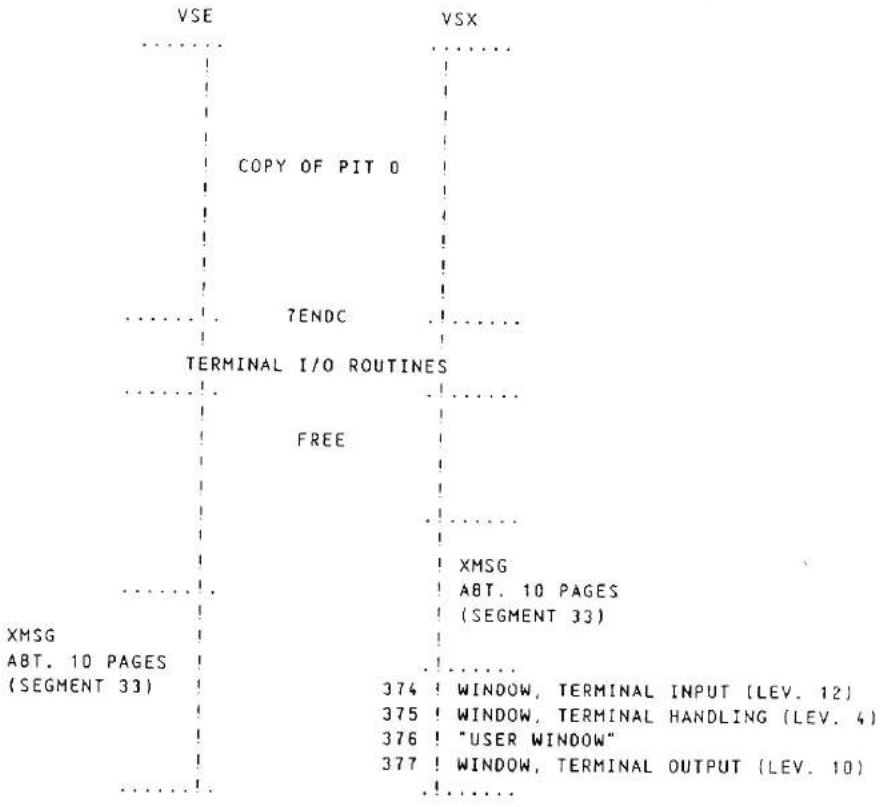


2.3 PAGE INDEX TABLE 1 AND 2



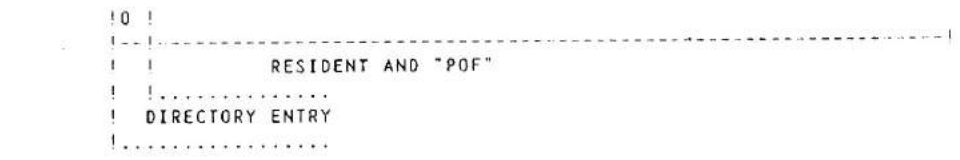
If the program does not use RTCOMMON, this logical address area will be available for the program.

2.4 PAGE INDEX TABLE 3



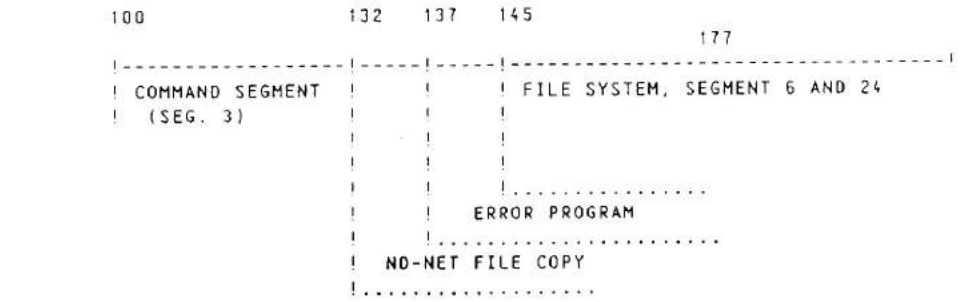
2.5 SYSTEM LAYOUT ON DISK

2.5.1 SINTRAN:DATA



2.5.2 MACM-AREA:DATA

2.5.2.1 LAYOUT



2.5.2.2 DISPLACEMENTS WHEN PATCHING

```
Command segment:          -110000
File system seg. 6 + 24:     2000
```

2.5.3 SEGFIL0:DATA

Other segment files may reside in any directory at any disk address, as 32 bits addresses are used in segment adm. and file system.

2.6 SINTRAN-III SEGMENTS

2.6.1 SYSTEM INCLUDED SEGMENTS

SEG. NO.	ADDRESS RANGE	PIT	DESCRIPTION
2	0000000 - 1757777B	1	MEMORY IMAGE & POF
3	1100000B - 1737777B	0	COMMAND SEGMENT
4	1100000B - 1737777B	0	RT-LOADER
5	0220000B - 0257777B	0	ERROR PROGRAM "SYSTEM SEGMENT"
6	1100000B - 1377777B	0	FILE SYSTEM COMMON SEGMENT
7	1100000B - 1537777B	0	DMAC SEGMENT
10	0000000 - 1777777B	2	RTFIL SEGMENT
11	0000000 - 0177777B	1	ERROR LOG SEGMENT
12	1400000B - 1737777B	0	INITIAL REENTRANT FILE SYS SEG #2
13	0560000B - 1437777B	1	INITIAL RT-LOADER (RT-L "SAVE" AREA)
14	1100000B - 1237777B	0	ERROR PROGRAM SEGMENT
15	1100000B - 1477777B	0	INITIAL SERVICE-PROGRAM AND MAIL
16	1600000B - 1677777B	0	INITIAL NORD-NET SEGMENT
17	1640000B - 1737777B	0	FILE USER DATA SEGMENT FOR RT-PROG.
20	0000000 - 1777777B	2	ND-500 STANDARD DOMAIN TABLE
21	0000000 - 1777777B	2	ND-500 TABLE SEGMENT (NAME SEGMENT)
22	1100000B - 1637777B	0	REENTRANT FILE USER SEGMENT NO.1
23	1100000B - 1477777B	0	SERVICE PROGRAM AND MAIL
24	1100000B - 1637777B	0	FILE SYSTEM REENTRANT SEGMENT NO. 1
25	1400000B - 1737777B	0	FILE SYSTEM REENTRANT SEGMENT NO. 2
26	1100000B - 1637777B	0	REENTRANT FILE USER SEGMENT NO. 2
27	1600000B - 1677777B	0	NORD-NET SEGMENT
30	1220000B - 1737777B	0	ND-500 SYSTEM MONITOR SEGMENT NO. 1
31	1220000B - 1737777B	0	ND-500 SYSTEM MONITOR SEGMENT NO. 2
32	1100000B - 1277777B	0	RT-ACCOUNTING SEGMENT
33	1500000B - 1677777B	2	XMSG POF SEGMENT
34	0000000 - 0317777B	2	XMSG DEMAND SEGMENT (XROUT)
35	0000000 - 0477777B	2	RESERVED FOR XMSG
36	1100000B - 1337777B	0	TADADM SEGMENT
37	0000000 - 1777777B	1	RT-LOADER DATA SEGMENT

2.6.2 OTHER SEGMENTS

SPOOLING : 2 SEGMENTS FOR EACH SPOOLING PROCESS
BACKGROUND : 2 SEGMENTS FOR EACH BACKGROUND PROCESS
ND-500 : 2 SEGMENTS FOR EACH ND-500 PROCESS
+ 1 "WHEN NO PROCESS TO COMMUNICATE WITH
SYMBOLIC DEBUGGER: 1 SEGMENT FOR THE DEBUGGER PROGRAM AND
1 SEGMENT FOR EACH BACKGROUND PROCESS USING IT

REMOTE FILE ACCESS DATA SEGMENT: MAX. 64 SEGMENTS. NUMBER OF SEGMENTS EQUALS THE NUMBER OF USERS WHO CAN USE REMOTE FILE ACCESS SIMULTANEOUSLY

MAX. NUMBER OF SEGMENTS: 255

2.7 FORMAT OF PROG-FILES

BLOCK NO	WORD NO	I-VERSION	PREVIOUS VERSIONS
0	0	START ADDRESS	START ADDRESS
	1	RESTART ADDRESS	RESTART ADDRESS
	2	LOWER PROGRAM ADDRESS	LOWER PROGRAM ADDRESS
	3	UPPER PROGRAM ADDRESS	UPPER PROGRAM ADDRESS
	4	LOWER DATA ADDRESS	RANDOM
	5	UPPER DATA ADDRESS	RANDOM
	6	2BANK FLAG (=0 2BANK)	RANDOM
1-400		PROGRAM	
401-1000		DATA	

BLOCK SIZE=400 WORDS (OCTAL)

When starting an old prog-file the following message might occur:

```
WARNING: NO SUCH PAGE IN DATABANK PROGRAM STARTS AS 1BANK
```

The reason for this is that the contents of word 4 (in block 0) is less or equal the contents of word 5 and word 6 contains a zero.

FMAC may be used to get rid of this message:

```
EXAMPLE:
@FMAC
IMAGE FILE:  MYPROG:PROG
6/    0 1 (CR)              ! SET THE 2BANK-FLAG TO A NON-ZERO VALUE
!9EXIT
@
```

2.8 SYSTEM INCLUDED RT-PROGRAMS

PROGRAM	PURPOSE
1SWAP	QUEUING PROGRAM REQUESTS FOR SWAPPING
5SWAP	PERFORMS ABSTR IN ND-100 FOR THE 500-SWAPPER
ACCRT	RT ACCOUNTING
BAK(NN)	BACKGROUND PROCESS FOR TERMINAL (BAK01-BAK99)
BK(NNN)	" " " (BK100-BK128)
BCH(NN)	BATCH PROCESS
BC(XY)	ND-NET. BACKGROUND PROCESS FOR REMOTE TERMINAL (X=CHANNEL NO.,Y=LINE NUMBER)
COSPO	COSMOS SPOOLING SERVER
CR(XY)	READ/WRITE VIA ND-NET CHANNELS WITHOUT BACKGROUND
CW(XY)	(X=CHANNEL, Y=LINE). DF(XY) AND DR(XY) DATAFIELDS.
DUMM2	DUMMY PROGRAM USED BY THE SPOOLING SYSTEM
DUMMY	DUMMY PROGRAM TO PREVENT EMPTY EXECUTION QUEUE
FDRT1	TRANSFER DATA BETWEEN INTERFACE BUFFER AND MEMORY. FLOPPY FORMATTING.(FLOPPY-1)
FDRT2	TRANSFER DATA BETWEEN INTERFACE BUFFER AND MEMORY. FLOPPY FORMATTING.(FLOPPY-2)
FIXRT	MONITOR CALL/COMMAND FIXC EXECUTION
FSART	ADMINISTRATION OF THE FILE SERVERS (COSMOS - REMOTE FILE ACCESS)
RCOM(N)	RECEIVE PROGRAM FOR LINE NUMBER N. (ND-NET)
RTERR	OUTPUT ERROR MESSAGES
RTRFA	SETS REMOTE FILE ACCESS FOR RT-PROGRAMS (COSMOS - REMOTE FILE ACCESS)

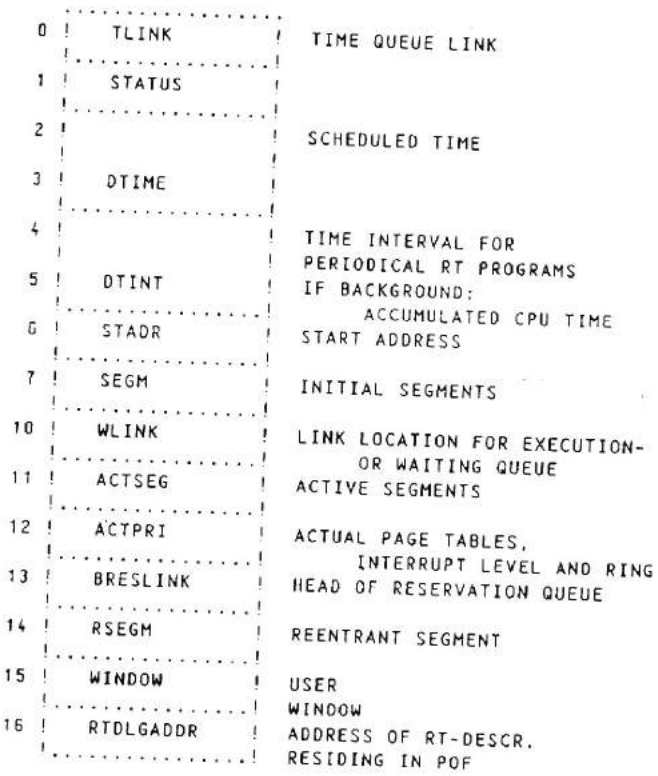
RTSLI	TIME SLICER. CHANGES PRIORITY ON BACKGROUND PROCESSES.
RU(XY)	RT PROGRAM TO HANDLE OUTPUT FOR A REMOTE CONNECTED TERMINAL. (X=CHANNEL, Y=LINE). (ND-NET)
RWRT1	BLOCK DATA TRANSFER. ACTIVATED WHEN RFILE,WFILE,RPAGE,WPAGE
RWRT2	OPEN FILE FROM RT-PROGRAMS
RWRT3	BLOCK TRANSFER ON MAGTAPE-1 (MAGTP)
RWRT4	CASETTE
RWRT5	VERSATEC-1 DMA
RWRT6	CDC-DMA LINK
RWRT7	MAGTAPE-2
RWRT8	VERSATEC-2 DMA
RWRT9	FLOPPY DISK 1
RWRT10	FLOPPY DISK 2
RWRT11	LINE PRINTER/VERSATEC -1 I/O
RWRT12	LINE PRINTER/VERSATEC -2 I/O
RWRT13	BLOCK ORIENTED INTERNAL DEVICE 1 INPUT
RWRT20	BLOCK ORIENTED INTERNAL DEVICE 1 OUTPUT
RWRT14	BLOCK ORIENTED INTERNAL DEVICE 2 INPUT
RWRT21	BLOCK ORIENTED INTERNAL DEVICE 2 OUTPUT
RWRT15	BLOCK ORIENTED INTERNAL DEVICE 3 INPUT
RWRT22	BLOCK ORIENTED INTERNAL DEVICE 3 OUTPUT
RWRT16	BLOCK ORIENTED INTERNAL DEVICE 4 INPUT
RWRT23	BLOCK ORIENTED INTERNAL DEVICE 4 OUTPUT
RWRT17	BLOCK ORIENTED INTERNAL DEVICE 5 INPUT
RWRT24	BLOCK ORIENTED INTERNAL DEVICE 5 OUTPUT
RWRT25	HASP DMA 1 INPUT
RWRT26	HASP DMA 1 OUTPUT
RWRT27	HASP DMA 2 INPUT
RWRT28	HASP DMA 2 OUTPUT
RWRT29	HASP DMA 3 INPUT
RWRT30	HASP DMA 3 OUTPUT
RWRT31	HASP DMA 4 INPUT
RWRT32	HASP DMA 4 OUTPUT
RWRT33	HASP DMA 5 INPUT
RWRT34	HASP DMA 5 OUTPUT
RWRT35	HASP DMA 6 INPUT
RWRT36	HASP DMA 6 OUTPUT
SCOM(N)	SEND PROGRAM FOR LINE NUMBER N. (ND-NET)
SPRT(N)	SPOOLING PROGRAMS (1-9)
SPR(NN)	SPOOLING PROGRAMS (10-15)
STSIN	INITIALIZE SINTRAN AND START SYSTEMS RT PROGRAMS
TAD(NN)	TERMINAL ACCESS DEVICE
TADAD	ADMINISTRATES CONNECTIONS TO TAD'S FROM REQUESTING USERS.
TERMP	STARTS THE USER DEFINED "CLEAN-UP" RT-PROGRAM WHEN RT-PROGRAMS ARE ABORTED (IF ENABLED)
TIMRT	TIMER RT PROGRAM.START TIMEOUT-ROUTINE FOR ALL DEVICES IN TIMER-TABLE.
XROUT	XMSG ROUTING PROGRAM
XTRACE	XMSG TRACE PROGRAM
XFTRA	COSMOS FILE TRANSFER SERVER

3 DATA STRUCTURES

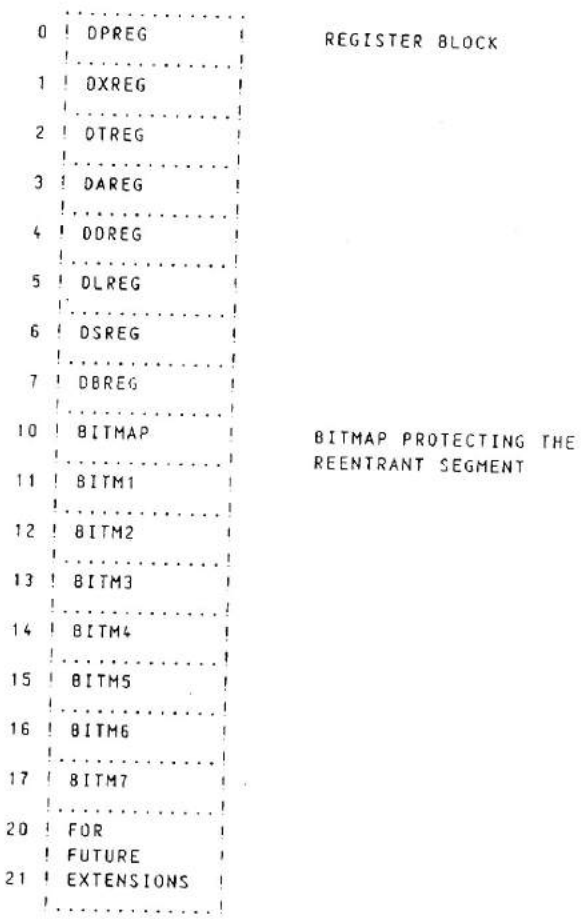
3.1 RT DESCRIPTION

New format valid for both VSE and VSX

3.1.1 RESIDENT PART



3.1.2 PAGING OFF PART



3.2 DATAFIELD FOR TERMINALS

This is valid for VSX version only.

3.2.1 RESIDING IN MEMORY

-4	TDFPHPAGE	PHYS. PAGE OF DF. OUTSIDE RESIDENT
-3	TDFLGADDR	LOG. ADDR WITHIN WITHIN THIS PAGE
-2	STDRIV	DRIVER'S START ADDR.
-1	DRIVER	DRIVER'S RESTART ADDR.
0	RESLINK	RESERVATION LINK
1	RTRES	RESERVING RT PROGRAM
2	BWLINK	HEAD OF WAITING QUEUE
3	TYPRING	DEVICE TYPE & RING
4	ISTATE	0=IDLE, 1=BUSY -1=NOWAIT MODE
5	MLINK	LINK LOC., MONITOR QUEUE

3.2.2 RESIDING ON IMAGE/SAVE

-4	ZDBPROG	BACKGROUND PROGRAM
-3		
-2		
-1	ZDFLAG	DEVICE FLAG
0	ZROUSPEC	SPECIAL ROUTINE WHICH MAY BE CALLED FROM THE DRIVE
1	ZCTTYP	TERMINAL TYPE
2	ZCESCP	ESCAPE CHARACTER
3	TYPRING	DEVICE TYPE AND RING
4	ZTSPEED	TERMINAL SPEED
5	ZCNTREG	CONTROL REGISTER

3.3 FILE SYSTEM

3.3.1 THE DIRECTORY TABLE

The directory table has two words added to the end (25, 26). It's layout is shown below.

DISP	NAME	DESCRIPTION
0	DIRFL	FLAG WORD
1	DUNIT	PHYSICAL/LOGICAL UNIT AND DEVICE NUMBER BIT 17-14: UNIT NUMBER BIT 13-0 : LOGICAL DEVICE NUMBER
2	LUNIT	LOGICAL SUBUNIT AND NAME INDEX BIT 7-0 :NAME INDEX IF SMD DISK: BIT 17-11: LOGICAL SUB-UNIT IF CARTRIDGE DISK: BIT 17-11: SUB-UNIT BIT 10: 0:REMOVABLE,1:FIXED IF FLOPPY: BIT 17-14: SECTOR SIZE MULTIPLY FACTOR BIT 13-10: DEVICE SIZE MULTIPLY FACTOR
3	DLOCK	LOCK NUMBER FOR DIRECTORY
4	DRESE	RESERVE NUMBER FOR DIRECTORY
5-14	DNAME	DIRECTORY NAME <----------.
15	OBFIL	OBJECT FILE POINTER !
17	USFIL	USER FILE POINTER ! MASTER BLOCK
21	BIFIL	BIT FILE POINTER ! FROM DIRECTORY
23	PLEFT	PAGES LEFT (NOT RESERVED) <-------'
25	NMUSM =SURUS	NO. OF USERS LOGGED IN WITH THIS DIRECTORY AS THEIR MAIN DIR. CUSER OF USER RESERVING DIRECTORY FOR SPECIAL USE.
26	NMUSD =SURTM	NO. OF USERS LOGGED IN WITH THIS DIRECTORY AS THEIR DEFAULT DIR. TERM. NO. OF USER RESERVING DIRECTORY FOR SPECIAL USE

BITS IN DIRFL:

DENTE=17	DIRECTORY ENTERED BIT
DMAIN=16	MAIN DEVICE BIT
DTAPE=15	TAPE FLAG BIT
DDAUF=14	DEFAULT DIRECTORY BIT
DTUSE=13	DIRECTORY RESERVED FOR SPECIAL USE BIT
BIT 0-12:	FILE OPEN COUNT

3.3.2 USER ENTRY

The user entry has two additional displacements defined (25, 26).

DISP	NAME	DESCRIPTION
0	UENTE	ENTER COUNT AND USED FLAG
1	UNAME(10)	USER NAME (16 BYTES) TERMINATED BY ' IF < 16
11	UPASS	PASSWORD
12	UDATE	DATE AND TIME CREATED
14	UDENT	DATE AND TIME LAST ENTERED
16	UPAVA	PAGES AVAILABLE FOR THIS USER
20	UPUS1	
	=UPUSE	PAGES USED BY THIS USER
21	UPUS2	
22	UNDEX	USER INDEX OF THIS ENTRY
23	MAILF	MAIL FLAG
24	DFIAC	DEFAULT FILE ACCESS
25	USPRV	PREVIOUS USER ENTRY
26	USNXT	NEXT USER ENTRY
27	UFREE	NOT USED
30	UFRIE	FRIEND TABLE FOR 8 FRIENDS

BITS IN UENTE:
UUSED=17: USED FLAG BIT
UOFLG=10: USER/OBJECT ENTRY FLAG

BITS IN MAILFL:
MESSF=0: MESSAGE FLAG BIT
BROADCAST FLAG BIT

4 SINTRAN III MONITOR CALLS

4.1 CHANGED MONITOR CALLS

4.1.1 LASTC (MON 26)

Callable from background, but for user "SYSTEM" only.

4.1.2 ABSTR (MON 131)

3 new function codes are implemented:

CODE	FLOPPY/DISK	MAG.TAPE
60	READ, USING 32 BITS DISK ADDR.	READ, 32 BITS WORD COUNT
61	WRITE,USING 32 BITS DISK ADDR.	WRITE,32 BITS WORD COUNT
63	COMPARE, USING 32 BITS DISK ADDR.	COMPARE, 32 BITS WORD COUNT

4.1.3 WHDEV (MON 140)

Is also available from background programs.

4.1.4 DROBJ (MON 215)

To execute this read or write access is all that is required.

4.1.5 GNAEN (MON 245)

Additional bits are defined in the flag word.

4.1.6 REDIR (MON 246)

This is only possible if no users are logged on with the specified directory as their main or default directory, except for the main and default directories of user SYSTEM and user RT.

4.1.7 COPAG (MON 251)

The file number of source and destination for mag tapes and floppy disks should be the LDN of the unit.

4.1.8 RDPAG (MON 270)

It is only possible to execute these from an RT-program, or a user and terminal having reserved the directory for special use.

4.1.9 WDPAG (MON 271)

It is only possible to execute these from an RT-program, or a user and terminal having reserved the directory for special use.

4.2 MONITOR CALLS CHANGED ACCORDING TO ACHIEVE REMOTE FILE ACCESS

Some monitor calls have a user name as parameter, which for remote access is prefixed by a <SYSTEM-ACCESS-ID>. The monitor calls are:

4.2.1 FDFDI (MON 250)

Find user's default directory.

Input parameters:
X= ADDRESS TO CHARACTER STRING CONTAINING USER NAME TERMINATED BY AN APOSTROPHE. IF IT IS A USER NAME ON A REMOTE COMPUTER, THE USER NAME IS PREFIXED BY A SYSTEM-ACCESS-ID:
<SYSTEM-ID>[<REM-USER>[<PASSWORD>:<PROJ.PASSW>]].<USER-NAME>

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK
T= DIRECTORY INDEX
A= USER INDEX OF USER IN DEFAULT DIRECTORY

4.2.2 MUIDI (MON 213)

Get directory and user index.

Input parameters:
X= MEMORY ADDRESS TO A USER NAME STRING
<SYSTEM-ACCESS-ID>. <DIRECTORY>: <USER-NAME>

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: T= DIRECTORY INDEX (LEFT BYTE)
AND USER INDEX (RIGHT BYTE)

4.3 MONITOR CALLS HAVING AN EXTRA PARAMETER IF REMOTE REQUEST

4.3.1 GUSNA (MON 214)

Get user name.

Input parameters:
A= MEMORY ADDRESS TO WHICH USER NAME SHOULD BE WRITTEN
X= DIRECTORY INDEX (LEFT BYTE) AND USER INDEX (RIGHT BYTE)

If the most significant bit in DIRECTORY INDEX is set, it is a remote request and an additional parameter is contained in T-register:
T= MEMORY ADDRESS TO SYSTEM-ACCESS-ID STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK

4.3.2 DROBJ (MON 215)

Read object entry specified by directory,user and object index.

Input parameters:
A= MEMORY ADDRESS OF DESTINATION OBJECT ENTRY.
T= DIRECTORY INDEX (LEFT BYTE) AND USER INDEX (RIGHT BYTE)
X= OBJECT INDEX

If the most significant bit in directory index is set, it is a remote directory and an additional parameter is found in D-register:
D= MEMORY ADDRESS TO SYSTEM-ACCESS-ID STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK

4.3.3 DWOBJ (MON 216)

Write parts of object entry.

Input parameters:
A= MEMORY ADDRESS OF SOURCE OBJECT ENTRY
T= DIRECTORY INDEX (LEFT BYTE) AND USER INDEX (RIGHT BYTE)
X= OBJECT INDEX

If the most significant bit in directory index is set, it is a remote directory and D-reg. contains an extra parameter:
D= MEMORY ADDRESS OF SYSTEM-ACCESS-ID STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK

4.3.4 GUIOI (MON 217)

Get dir., user and object indices from open file number.

Input parameters:
A= OPEN FILE NUMBER
D= MEMORY ADDRESS TO WHICH SYSTEM IDENTIFIER IS WRITTEN IF THE FILE IS OPENED ON A REMOTE COMPUTER. THIS PARAMETER IS ONLY USED IF THE FILE IS ON A REMOTE COMPUTER.

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK
T= DIRECTORY INDEX (LEFT BYTE)
AND USER INDEX (RIGHT BYTE)
X= OBJECT INDEX

If the most significant bit in directory index is set, it is a remotely opened file.

4.3.5 GDIEN (MON 244)

Get directory entry.

Input parameters:
X= MEMORY ADDRESS OF BUFFER FOR DIRECTORY ENTRY
T= DIRECTORY INDEX

If the most significant bit in directory index is set, it is a remote directory, and D-reg. contains an extra parameter:
D= MEMORY ADDRESS OF SYSTEM-ACCESS-ID STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK

4.3.6 MGFIL (MON 273)

Get file name.

Input parameters:
X= MEMORY ADDRESS OF BUFFER TO RECEIVE FILE NAME
T= DIRECTORY INDEX (LEFT BYTE) AND USER INDEX (RIGHT BYTE)
A= OBJECT INDEX

If the most significant bit in directory index is set, it is a remote directory and D-reg. contains an extra parameter:
D= MEMORY ADDRESS OF SYSTEM-ACCESS-ID STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN: OK

4.4 NEW MONITOR CALLS

4.4.1 PIOC (MON 255)

NOTE! Only included when ordered (libr.mark=8PIOC).

A general monitor call to access PIOC functions and processes. The function specified T-register will be performed. Common for all functions is that X-register must contain the PIOC logical device number. On return T-register contains errorcode if ANY.
All functions are fully described in PIOC software guide ND-60.161.01.

4.4.2 SRUSI (MON 314)

Function as the command SET-DEFAULT-REMOTE-SYSTEM.

Input parameters:
X= MEMORY ADDRESS TO REMOTE SYSTEM NAME
T= MEMORY ADDRESS TO REMOTE USER IDENTIFIER STRING
A= MEMORY ADDRESS TO REMOTE USER PASSWORD STRING
D= MEMORY ADDRESS TO REMOTE PROJECT PASSWORD STRING

Output parameters:
ERROR RETURN: A= ERROR NUMBER
SKIP RETURN : OK

If the parameter strings are empty, the monitor call acts as the command RESET-DEFAULT-REMOTE-SYSTEM.

4.4.3 MLAMU (MON 315)

Will operate on the LAMU-system which may be regarded as an extension to segment structure in SINTRAN-III, making it possible for RT-programs and background programs to address more space than covered by the 3 available segments and to address memory shared by several CPU's.

A-register points to the parameter list.

Input parameters:
1. FUNCTION : SPECIFIES THE ACTUAL OPERATION
   1: CREATE LAMU
   2: DELETE LAMU
   3: CONNECT LAMU
   4: DISCONNECT LAMU
   5: LAMU PAGES TO NOTHING
   6: LAMU PAGES TO SWAPPING

2. LAMU-ID : IS THE LAMU IDENTIFIER
3. PROG : THE PROGRAM THE LAMU IS CONNECTED/DISCONNECTED FROM. 0 MEANS OWN PROGRAM.
4. SIZE : IS THE NUMBER OF PAGES IN LAMU
5. LOG.ADDR. : SPECIFIES THE FIRST LOGICAL ADDRESS THE LAMU COVERS LEGAL RANGE: 100(8) - 277(8).

6. PHYS.ADDR.: SPECIFIES THE START OF PHYSICAL MEMORY THE LAMU WILL COVER. LEGAL VALUE: ALL EXISTING PHYSICAL PAGES CURRENTLY DEFINED AS LAMU AREAS.

Output parameters:
SKIP RETURN: OK
NORMAL RETURN: ERROR. A-REG HOLDS THE ERROR CODE.

4.4.4 SRLMO (MON 316)

Functions as the commands SET-LOCAL-MODE/SET-REMOTE-MODE.

Input parameters:
A-REG: = 0: LOCAL MODE
><0: REMOTE MODE

Output parameters:
NONE

4.4.5 UECOM (MON 317)

Monitor call to execute SINTRAN commands. Parameter setup is the same as for COMND (MON 70). If the command is in error, the calling program will not abort.

RULES:
Callable from background only.

4.4.6 UELOG (MON 320)

RULES:

4.4.7 UEADM (MON 321)

Reserved for exclusive use by ND subsystems.

4.4.8 GSGNO (MON 322)

Get the segment number from a segment name. A-register points to the parameter list.

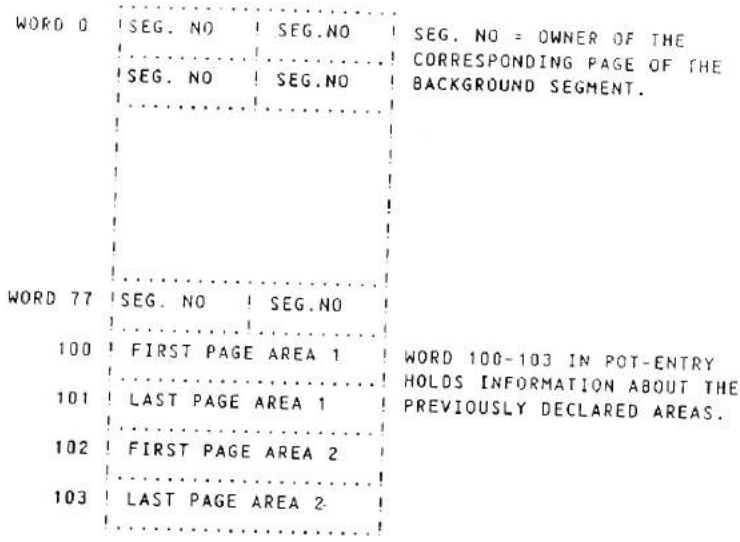
Input parameters:
SEGMENT NAME

Output parameters:
A>0: SEGMENT NUMBER
A<0: NO SEGMENT WITH THIS NAME

4.4.9 SPLRE (MON 323)

Monitor call for making advanced reentrant overlay-systems. the routine works on a table called page owner table (POT) which has the size of 1048 worus.

There is one entry per BAK-program:



A-register holds the address of the parameter list.

Input parameters:

1. SEGMENT NUMBER
2. FIRST PAGE IN LOGICAL AREA 1 TO OVERLAP BACKGROUND SEGMENT
3. NUMBER OF PAGES IN LOGICAL AREA 1
4. FIRST PAGE IN LOGICAL AREA 2 TO OVERLAP BACKGROUND SEGMENT
5. NUMBER OF PAGES IN LOGICAL AREA 2
6. CLEARFLAG. IF >< 0, CLEAR PAGE-OWNER-TABLE.

Rules:
Callable from BACKGROUND only.

4.4.10 MBECH (MON 325)

To control echo of input/output in BATCH or MODE jobs.

Input parameters:
A-REGISTER HOLDS A BITMASK DEFINING THE REQUIREMENTS:

BIT 0 : NO ECHO	VALID FOR: BATCH/MODE
BIT 1 : OUTPUT ON TERMINAL	MODE ONLY
BIT 2 : INPUT FROM TERMINAL	MODE ONLY

Rules:
Callable from BACKGROUND only

4.4.11 MLOGI (MON 326)

NOTE! Only included when ordered (libr.mark=8MOLI)

To log in a user on a terminal and start a subsystem. A-register holds the address of the parameter list.

Input parameters:

1. TERMINAL NUMBER
2. USER NAME
3. PASSWORD
4. PROJECT PASSWORD
5. SUBSYSTEM
6. USER PARAMETERS (SAME AS FOR MON PASET)
7. STATUSWORD (TO RECEIVE STATUS INFORMATION FROM THIS CALL)

Return:

IF LOGIN WITH SPECIFIED PARAMETERS DID NOT SUCCEED, THEN THE STATUSWORD IS SET EQUAL -1.

Rules:
Callable from RT and BACKGROUND.

5 SINTRAN-III COMMANDS

5.1 REMOVED COMMANDS

5.1.1 @DEFINE-SPOOLING-FILE-MESSAGE

5.1.2 @GET-ALTERNATIVE-RT-LOADER

5.1.3 @GET-ALTERNATIVE-SYSTEM

5.1.4 @MAKE-ALTERNATIVE-RT-LOADER

5.1.5 @MAKE-ALTERNATIVE-SYSTEM

5.1.6 @NORD-50

5.2 CHANGED COMMANDS

5.2.1 @BATCH

Parameters: <BATCH NUMBER> (Added)

An optional parameter has been added to be able to start up a spesific batch processor. If no batch number is given the first passive batch processor will be started.

5.2.2 @DIRECTORY-STATISTICS

Also lists the maximum unreserved contiguous area on the directory.

5.2.3 @DUMP-REENTRANT

Parameters: <PROGRAM NAME>
<START ADDRESS>
<RESTART ADDRESS>
<FILE NAME>
<SEGMENT NAME> (Added)

The optional parameter "SEGMENT NAME", will name the segment. Segment names must not exceed 7 characters.

5.2.4 @ENTER-DIRECTORY

Can only be performed on hard disks by user system.

5.2.5 @LIST-DEVICE-FUNCTION

Parameters: <OUTPUT FILE>
<COMMAND>

A new optional parameter, "COMMAND", has been added; thus making it possible to get a selection of the commands.

5.2.6 @RESERVE-DIRECTORY

Can only be performed if no user is logged in with this directory as main or default directory, except for user SYSTEM and RT.

5.2.7 @SET-MEMORY-CONTENTS

Parameters: <CONTENTS>
<LOWER ADDR>
<UPPER ADDR>

If @ALTON has been executed, the data area is set, if @ALTOFF the program area will be set.

5.2.8 @STOP-TERMINAL

Parameters: <LDN>

In case that the termination handler for USER-ENVIRONMENT is enabled, the command will not be executed, but cause that the termination handler for U-E is activated.

5.2.9 @TERMINAL-STATUS

Parameters: <LDN>
<TIME INTERVAL>

The last command executed by a batch processor will only be displayed when user system uses the command. other users may get this information if the user index for the currently logged on user in the batch process equals own user index.

5.3 NEW COMMANDS

5.3.1 @ALTON/@ALTOFF

Set/reset 2bank-mode. No parameters are required.

5.3.2 @CLEAR-DEFAULT-DIRECTORY

Parameters: <DIRECTORY NAME>

Marks the directory as not default. Only user SYSTEM can perform the command on hard disks. Can only be performed if the directory is not main and there are no users logged on with this directory as their default directory.

5.3.3 @CLEAR-MAIN-DIRECTORY

Parameters: <DIRECTORY NAME>

Marks the directory as not being a main directory. Only permitted for user SYSTEM. Can only be performed if no user is logged on with this directory as main.

5.3.4 @CLEAR-REENTRANT-SEGMENT

Parameters: <SEGMENT NAME/NUMBER>

Similar to the CLEAR-SEGMENT command in the RT-loader.

5.3.5 @COLD-START

Performs a cold start. Similar to a)HENT and 22' in MACM.

5.3.6 @DEFINE-REENTRANT-PROGRAM

Parameters:
<PROGRAM NAME>
<START ADDR.>
<RESTART ADDR>
<SEGMENT NO./NAME>

Define a new entry in a already built segment.

5.3.7 @DUMP-PROGRAM-REENTRANT

Parameters:
<SUBSYSTEM NAME>
<FILE NAME>
<SEGMENT NAME>

Loads a :PROG file as a reentrant subsystem. Segment name is optional.

5.3.8 @LOAD-REENTRANT-SEGMENT

Parameters:
<FILE NAME>
<SEGMENT NAME>

To build a reentrant segment.

5.3.9 @MEMORY-LIMITS

Parameters: <LOWER PROGRAM ADDR>
<LOWER DATA ADDR.>
<UPPER PROGRAM ADDR>
<UPPER DATA ADDR.>

Defines the virtual memory area of both banks to be saved by the dump command.

5.3.10 @PLACE-PROGRAM

Parameters: <FILE NAME>;

Load a program in :PROG format, but do not start it.

5.3.11 @SET-DEFAULT-REMOTE-SYSTEM

Parameters: <SYSTEM NAME>
<USER NAME>
<PASSWORD>
<PROJECT PASSWORD>

Defines a prefix for remote files, which will be used as default for subsequent remote file accesses. The user will also get owner access rights to the files on the specified remote system. If no parameters are given, the default user id will be reset to the id of the local user.

5.3.12 @RESET-DEFAULT-REMOTE-SYSTEM

The default user id is reset to the id of the local user.

5.3.13 @SET-REMOTE-MODE

Sets the file system into a remote-modus, i.e. for later file references the file system will first search the local directory for the file, and if not found it will automatically search for the file on the default remote system.

5.3.14 @SET-LOCAL-MODE

Sets the file system into normal mode, i.e. only local file access if no
remote prefix IO's specified.

5.3.15 @RESERVE-OPEN-FILE-ENTRIES

Parameters: <SYSTEM-ID>
<ACCESS-ID>
<NO-OF-ENTRIES>

For BACKGROUND-programs. For further description see the next command.

5.3.16 @RTRESERVE-OPEN-FILE-ENTRIES

Parameters: <SYSTEM-ID>
<ACCESS-ID>
<NO-OF-ENTRIES>

For RT-programs.

<ACCESS-ID> consist of 3 parameters:
1. REMOTE USER NAME
2. REMOTE PASSWORD
3. REMOTE PROJECT PASSWORD

Used to reserve the specified number of open file table entries, preventing that jobs working on remote files will be aborted, because there are no free entries.

If there are not sufficient free entries, the command will give an error message.

5.3.17 @RELEASE-OPEN-FILE-ENTRIES

To release the resources reserved by the previously described command, BACKGROUND-program.

5.3.18 @RTRELEASE-OPEN-FILE-ENTRIES

To release the resources reserved by the previously described command, RT-program.

6 SINTRAN-SERVICE-PROGRAM

6.1 REMOVED COMMANDS

6.1.1 *DEFINE-BASIC-TIME-UNIT

6.2 CHANGED COMMANDS

6.2.1 *HELP

Parameters: <OUTPUT FILE>
<COMMAND>

By the new optional parameter COMMAND, you may select commands matching this parameter.

6.2.2 *CHANGE-DATAFIELD

NOTE! VSX-version only.

If the logical device number is a terminal, only symbolic displacements should be used to investigate the standard locations, i.e. displ. 0 - 6.

6.3 NEW COMMANDS

6.3.1 *PAGES-TO-LAMU

Parameters: <NO OF PAGES TO BE REMOVED FROM THE SWAPPING AREA>
<FIRST PHYSICAL PAGE>

6.3.2 *PAGES-FROM-LAMU

Parameters: <FIRST PHYSICAL PAGE>

6.3.3 *LAMU-AREAS

Parameters: <OUTPUT FILE>

Lists the memory areas reserved for the LAMU.

6.3.4 *CREATE-LAMU

Parameters: <LAMU ID>
<SIZE>
<PHYSICAL ADDRESS>

6.3.5 *DELETE-LAMU

Parameters: <LAMU-ID>

6.3.6 *LAMU-INFORMATION

Parameters: <LAMU-ID>
<OUTPUT FILE>

List all relevant LAMU information.

6.3.7 *SET-LAMU-CONSTANTS

Parameters: <NO. OF LAMUS PER RT PROGRAM>
<TOTAL NUMBER OF LAMUS>

The system must be restarted to get the command effective.

6.3.8 *LIST-LAMU-CONSTANTS

6.3.9 *DEFINE-HDLC-BUFFER

Parameters: <LOGICAL DEVICE NUMBER>
<BUFFER SIZE>

7 RT-LOADER

7.1 NEW COMMANDS

A eneral rule for all commands in the RT-loader:
If segment number is used as parameter it may be replaced by a segment name (max 7chrs). I.e. if segment name is input parameter to the command NEW-SEGMENT you will get the first free segment, which may later be refereced by this segment number or by the segment name.

7.1.1 *DEFINE-SEGMENT-NAME

Parameters: <NAME>
<SEGMENT NUMBER>

7.1.2 *LIST-SEGMENT-NAMES

Parameters: [<OUTPUTFILE>]

7.1.3 *NEW-BACKGROUND-SEGMENT

Parameters: As for the *NEW-SEGMENT command.

7.1.4 *DEFINE-COMMON-BLOCK-ADDRESS

Parameters: <COMMON BLOCK>
<ADDRESS>
[]

Example:
```
CALL SRUSI,4,REMSYS,REMUSR,REMPASS,REMPP
IF K GO ERROR
```

8.2.4 SRLMO (316)

Parameters: <MODE>

Set local/remote mode. MODE = 0: local mode.
MODE >< 0: remote mode.

Example:
```
CALL SRLMO,1,ONE              % SET REMOTE MODE
```

8.2.5 UECOM (317)

Parameters: <COMMAND>

Same as COMND (70), but all commands are legal.

Example:
```
CALL UECOM,1,COMMAND     % COMMAND IS ADDR. OF DESCRIPTOR
```

8.2.6 UELOG (320)

Parameters: <COMMAND>

Reserved for exclusive use by ND subsystems.

8.2.7 UEADM (321)

Parameters: <FUNCTION CODE>
<LOGICAL DEVICE NUMBER>
<STRING>

Reserved for exclusive use by ND subsystems.

8.2.8 GSGNO (322)

Parameters: <SEGMENT NAME>

Segment number will be returned in I1.

Example:
```
CALL GSGNO,1,NAME             % NAME IS DESCRIPTOR
W1 =: SEGNO
```

8.2.9 MBECH (325)

Parameters: <BITMASK>

Set echo control information for INPUT/OUTPUT in BATCH or MODE.

BITMASK DESCRIPTION:

BIT 0: NO ECHO	BATCH/MODE
BIT 1: OUTPUT ON TERMINAL	MODE ONLY
BIT 2: INPUT FROM TERMINAL	MODE ONLY

Example:

```
W1 := 3                    ! NO ECHO, OUTPUT ON TERMINAL
W1 =: MASK
CALL MBECH,1,MASK
```

8.3 CHANGED MONITOR CALLS

8.3.1 FSCNT (412)

The file number parameter can now also be an open file number of a file opened in SINTRAN (the same number cannot be used by the ND-500-MONITOR of the ND-500 process). I.e. The scratch file (usually 1008) can now be connected as a segment with this monitor call.

9 COSMOS

9.1 TERMINAL ACCESS

9.1.1 GENERAL INFORMATION

COSMOS terminal access is provided with COSMOS basic module. TERMINAL-ACCESS consists of three main parts using XMSG for communication:

- TERMINAL ACCESS DEVICE (TAD)
- TADADM (TAD ADMINISTRATOR RT-PROGRAM)
- CONNECT-TO (SUBSYSTEM)

The floppies ND-103748-PART1 and ND-103748-PART2 contains:

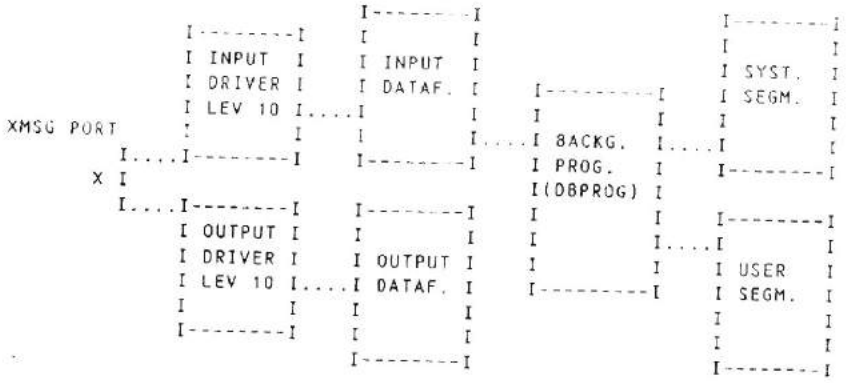
- NECCESSARY SINTRAN CODE FOR TAD.
- TADADM IN BPUN FORMAT.
- CONNECT-TO IN BPUN FORMAT.

Installation is performed with the modefile COS-INSTALL-TAD provided on the part1 floppy. TADADM and CONNECT-TO files must be copied to the disk.

Space requirement for installation in SINTRAN:

RESIDENT:	1441	(OCTAL WORDS)
PAGING OFF:	4557	(OCTAL WORDS)

9.1.2 TERMINAL ACCESS DEVICE (TAD)



As the figure shows, the difference between a TAD and a terminal is that instead of a terminal interface an XMSG port is used. In case of a terminal there is a fixed connection between the terminal data-fields and a spesific terminal interface. In case of a TAD the connection exists between a given XMSG port and the XMSG port in the TAD. Since the connection is port to port, any system and terminal in the net may make a connection to this TAD.

9.1.3 SPESIFIC TAD CODE

TAD code is not included in SINTRAN at generation time. TAD code is added to SINTRAN by the modefile COS-INSTAL-TAD. Data structure and interface points to the code are however included in SINTRAN.
This includes:

- TAD datafields, BACKGROUND programs and segments.
- TADADM RT-description and segment (seg 36).
- tests on TAD and space for calls on TAD routines.

TAD routines are accessed both via pointers in TAD datafields and in direct calls from SINTRAN. An initial TAD datafield will have pointers to EXIT or EXITA routines. These are modified to correct addresses during COS-INSTALL-TAD. Direct calls from SINTRAN will initially contain two dummy locations to be changed to the correct call during installation. Each of these calls are marked by a global symbol to make linking simple.

Calls from PART-ONE:

- T1P01 -------- ISIZE MONITOR CALL.
- T1P02 -------- OSIZE MONITOR CALL.
- T1P03 -------- BREAK AND ECHO MONITOR CALLS.
- T1P04 -------- TERMINAL-TYPE MONITOR CALL.
- T1P05 -------- NOWAIT AND TNOWAIT MONITOR CALLS.
- T1P06 -------- TERMINAL-MODE MONITOR CALL.
- T1P07 -------- ENABLE/DISABLE ESCAPE MONITOR CALLS.
- T1P08 -------- CHANGE-ESCAPE MONITOR CALL.
- T1P09 -------- TERMINAL-MODE COMMAND.
- T1P10 -------- DEFINE-ESCAPE COMMAND.

- T1P11 -------- ENABLE/DISABLE ESCAPE COMMAND.
- T1P12 -------- ESC-RESPONSE FROM MESACAPE ROUTINE.
- T1P13 -------- ESC-RESPONSE FROM ESCON ROUTINE.

Calls from PART-TWO:

- T2P01 -------- B8OUT MONITOR CALL.
- T2P02 -------- M8OUT MONITOR CALL.
- T2P03 -------- 88IN8 MONITOR CALL.
- T2P04 -------- B4INW MONITOR CALL.
- T2P05 -------- T8INP MONITOR CALL.
- T2P06 -------- IBRSIZ MONITOR CALL.
- T2P07 -------- ESC-RESPONSE FROM ELON ROUTINE.

9.1.4 TADADM

TADADM administrates connection to TADS from requesting users.

TADADM is a privileged RT-program on pit 0 ring 2. An RT-description and segment is included in SINTRAN. Note that the segment number for TADADM in I-version is segment 36. The file COS-TADADM:BPUN contains the TADADM code. The code is loaded to segment 36 by READ-BINARY in the RT-LOADER.

The file COS-TADADM:BPUN for I-version is a general file for all I-version configurations. Linking to SINTRAN will be done by TADADM when started. TADADM will also check that started only on I-version and that COSMOS-BASIC module is correctly installed.

@START-TADADM
Starts the TADADM RT-program, opens the *TADADM port and performs linking to SINTRAN.

@STOP-TADADM
Closes *TADADM port.
News in I-version is that a small watchdog routine is left running in TADADM. This routine logs out active TADs if XMSG is stopped.

@TADADM
TAD status.

EXAMPLE:

```
@TADADM
TAD NO RESERV  ESCAP PORTNO - PORTNO TERMNO USER                 SYSTEM
   768  46114  ENAB       7 -      4     50 FLOPPY USER         DONALD
   769  46133  DISAB DISCON -
   770  46152  ENAB       8 -      4     36 UTILLITY            MAIL
   771  46171  ENAB       5 - **THIS TAD HAS NO CORRESPONDING PAD.
   772  46210  ENAB       6 -      3     48 SYSTEM              OBELIX
   773    No   ENAB  DISCON -
```

9.1.5 CONNECT-TO

```
@CONNECT-TO

COSMOS CONNECT-TO PROGRAM  VERSION -B  SEPTEMBER 5, 1983

C-T: HELP,,
THE ASCII CHARACTER : 0 OCTAL, WILL TERMINATE YOUR CONNECTION IF
TYPED TWICE WITHIN 3 SECONDS. AFTER LOGOUT THE REMOTE CONNECTION
CAN BE TERMINATED BY TYPING THIS CHARACTER ONCE.

        HELP  <COMMAND: >
        LIST-SYSTEMS  <SYSTEM-NAME: >
        CONNECT-TO  <SYSTEM NAME: >
        LIST-LOCAL-CHARACTER
        LIST-TIMEOUT-VALUES
        EXIT
        SERVICE-PROGRAM

C-T: SERV
CONNECT-TO SERVICE PROGRAM - VERSION B.
CT-SERV: HELP,,
       HELP  <COMMAND: >
(SYSTEM): SET-COMMAND-PROTECTION  <COMMAND: >
                                  <PROTECTION (SYSTEM, RT OR PUBLIC):>
(SYSTEM): RECONNECT-TAD  <TAD LOGICAL UNIT NO: >
                         <SYSTEM-NAME: >
          CHANGE-LOCAL-CHARACTER  <ASCII VALUE: >
(SYSTEM): SET-TIMEOUT-VALUES  <NOT LOGGED IN: >
                              <NOT ACTIVE: >
(RT):     TIMEOUT-OFF
(RT):     TIMEOUT-ON
          INITIALIZE-SCRIPT  <SCRIPT-FILE: >
          DUMP-PROGRAM  <BPUN-FILE: >
          EXIT
CT-SERV: EX
C-T: EX
     RETURNING TO: OBELIX , AS USER: SYSTEM
@
```

9.1.6 HOW TO USE OF SCRIPTS IN CONNECT-TO PROGRAM

```
      *SCRIPT: /SINGLE/
               *INPUT: CONNECT-TO LYNET
               *MACRO: LOGGIN-DEFAULT,/MYSELF/,,FLOPPY-USER
               *ADDIN: ND-500-MONITOR
      *ENDSCRIPT: /SINTRAN/

@C-T

COSMOS CONNECT-TO PROGRAM  VERSION - B  SEPTEMBER 5, 1983
C-T: SER
CONNECT-TO SERVICE-PROGRAM - VERSION B.
CT-SERV: INITIALIZE-SCRIPT SING-MODU
         --- SCRIPT NAME ..... : /SINGLE/
             DISPLAY SCRIPT COMMANDS: NO.
             REMOTE COMMAND MODE .. : NOT ALLOWED.
```

```
              COMMAND MODE RETURN TO : LOCAL COMMAND MODE.

CT-SERV: DUMP-PROGRAM ND-500-LYNET
C-T: EX
RETURNING TO: OBELIX , AS USER: SYSTEM
@
@DUMP-REE ND-500-MONITOR 0 0 ND-500-LYNET

@ND-500-MON PLANC-500

COSMOS CONNECT-TO PROGRAM  VERSION - B  SEPTEMBER 5, 1983


CONNECTED TO: LYNET, T.A.D.NO: 769, AS USER: FLOPPY-USER
(ALLOWED IDLE TIME: 30 MINUTES)
LYNET@ND-500-MONITOR PLANC-500
- ND-500 PLANC COMPILER - JULY 4, 1983
*EX
-- DISCONNECTED FROM: LYNET --
RETURNING TO: OBELIX , AS USER: SYSTEM
@
```

9.2 REMOTE FILE ACCESS

9.2.1 REMOTE FILE ACCESS COMMANDS IN SINTRAN

```
@RECOVER <FILE NAME>
@DUMP <FILE NAME>.......
@DUMP-REENTRANT <SUBSYST.NAME> <ST> <RST> <BINARY FILE NAME>
@LOAD-BINARY <FILE NAME>
@PLACE-BINARY <FILE NAME>
@RFILE <FILE NO>
@WFILE <FILE NO>
@CREATE-FILE <FILE NAME> <NO OF PAGES>
@CREATE-NEW-VERSION <FILE NAME> <NO OF PAGES>
@ALLOCATE-FILE <FILE NAME> <PAGE ADDRESS> <NO OF PAGES>
@ALLOCATE-NEW-VERSION <FILE NAME> <PAGE ADDRESS> <NO OF PAGES>
@DELETE-FILE <FILE NAME>
@RENAME-FILE <OLD FILE NAME> <NEW OBJECT NAME> <:NEW TYPE>
@EXPAND-FILE <FILE NAME>
@OPEN-FILE <FILE NAME> <ACC>
@CONNECT-FILE <FILE NAME> <FILE NO> <ACC>
@CLOSE-FILE <FILE NO>
@SCRATCH-OPEN <FILE NAME> <ACC>
@RTOPEN-FILE <FILE NAME>
@RTCONNECT-FILE <FILE NAME>
@RTCLOSE-FILE <FILE NO>
@SET-PERMANENT-OPENED <FILE NO>
@SET-TEMPORARY-FILE <FILE NAME>
@SET-PERIPHERAL-FILE <FILE NAME> <LOG.NO>
@LIST-OPENED-FILES  (INCLUDES FILES OPENED ON REMOTE SYSTEMS)
@LIST-RTOPENED-FILES  (INCLUDES FILES OPENED ON REMOTE SYSTEMS)
@SET-BLOCK-SIZE <FILE NO> <BLOCK SIZE>
@SET-BLOCK-POINTER <FILE NO> <BLOCK NO>
@SET-BYTE-POINTER <FILE NO> <BLOCK NO>
```

The parameter <FILE-NAME> specifies a remote file if the local file name is preceeded by a system prefix while <FILE NO> is the octal number returned by the open command.

9.2.2 REMOTE FILE ACCESS FROM USER PROGRAMS

The following monitor calls may access the file system on remote computers:

RDISK	(MON 5)	READ SCRATCH FILE
WDISK	(MON 6)	WRITE SCRATCH FILE
RPAGE	(MON 7)	READ DISK PAGE
WPAGE	(MON 10)	WRITE DISK PAGE
SPCLO	(MON 40)	WORKS LIKE MON CLOSE
ROBJE	(MON 41)	READ OBJECT ENTRY
CLOSE	(MON 43)	CLOSE FILE
OPEN	(MON 50)	OPEN FILE
MDLFI	(MON 54)	DELETE FILE AND RELEASE ITS PAGES
RMAX	(MON 62)	READ MAXIMUM BYTE POINTER
SMAX	(MON 73)	SET MAXIMUM BYTE POINTER
SETBT	(MON 74)	SET BYTE POINTER
REABT	(MON 75)	READ BYTE POINTER
SETBS	(MON 76)	SET BLOCK SIZE
SETBL	(MON 77)	SET BLOCK POINTER
RFILE	(MON 117)	READ FILE
WFILE	(MON 120)	WRITE FILE
MAGTP	(MON 144)	
MUIDI	(MON 213)	GET DIRECTORY AND USER INDEX
GUSNA	(MON 214)	GET USER NAME
DROBJ	(MON 215)	READ OBJECT ENTRY
DWOBJ	(MON 216)	WRITE OBJECT ENTRY
GUIOI	(MON 217)	GET DIRECTORY, USER AND OBJECT INDICES.
DOPEN	(MON 220)	OPEN FILE
CRALF	(MON 221)	CREATE, ALLOCATE FILE
EXPFI	(MON 231)	EXPAND FILE
RENFI	(MON 232)	RENAME FILE
STEFI	(MON 233)	SET TEMPORARY FILE
SPEFI	(MON 234)	SET PERIPHERAL FILE
SCROP	(MON 235)	OPEN FILE AND DEFINE IT AS SCRATCH FILE
SPERO	(MON 236)	SET PERMENENT OPEN
GDIEN	(MON 244)	GET DIRECTORY ENTRY
FDFDI	(MON 250)	FIND USER'S DEFAULT DIRECTORY
BCLOS	(MON 252)	BACKUP CLOSE
CRALN	(MON 253)	CREATE, ALLOCATE NEW VERSION
DELPG	(MON 272)	DELETE PAGES OF A FILE
MGFIL	(MON 273)	GET FILE NAME
FOBJN	(MON 274)	FIND DIRECTORY, USER AND OBJECT INDEX
STRFI	(MON 275)	SET TERMINAL FILE

To distinguish between a call to the local or a remote system, these monitor calls require different kind of parameters, which can be grouped in four categories:

- FILE OR USER NAME
- OPEN FILE NUMBER
- DIRECTORY, USER AND/OR OBJECT INDEX
- LOGICAL DEVICE NUMBER

9.2.3 FILE OR USER NAME

The file name is expanded by a SYSTEM-ACCESS-ID as to the local file name:

```
<SYSTEM-ID>  (<REM.-USER-NAME> (<REM.-PASSW> :<PROJ.-PASSW> ) ) .
      ( <DIRECTORY>: <USER>) <OBJECT> :<TYPE>  :<VERSION> )
```

Only OBJECT-NAME is necessary, the other components may be defaulted.

The maximum length of a remote file name is:

SYSTEM-ID	16 BYTES	
REMOTE-USER-NAME	32 "	<DIRECTORY:USER-NAME>
REMOTE-PASSWORD	16 "	
PROJECT-PASSWORD	16 "	
DIRECTORY	16 "	
USER	16 "	
OBJECT	16 "	
TYPE	4 "	
VERSION	3 "	
DELIMITERS (MAX)	14 "	
TOTAL	149 BYTES	

9.2.4 OPEN FILE NUMBER

The file number has been returned from an open-file monitor call, which, if it was a remote request, has established a connection to the remote system. Subsequent calls to the opened file will be routed to that connection. From the user's point of wiew, there is no difference on calls to the local or a remote system for these monitor calls.

9.2.5 LOGICAL DEVICE NUMBER

MAGTP uses logical device number as parameter. If it is a an operation on a local device, the device number can be used directly. On a remote operation, the peripheral file must be opened first and the returned open file number (range 2500 - 2577) can be used in the MAGTP monitor call. It is recommended to use the same sequence on a local device in order to get the same procedures on both local and remote operations.

10 IS-XMSG

Version H of IS-XMSG is the only one that can run under SINTRAN-III Version-I.

11 BACKUP-SYSTEM

Version D of the BACKUP-SYSTEM will make use of the remote file access facilities, i.e. files may be copied between remote computers. There is no new command for doing so, but necessary remote information must be added in some parameters:

Source or destination directory name in the COPY-USERS-FILES command, device name in the various volume commands, parameter-file-name and file-names in the parameter-file, different list-files, etc. The remote-information syntax, and other details are explained in the command describe-all-commands.

The command DESCRIBE-ALL-COMMANDS gives a detailed explanation of all commands in the BACKUP-SYSTEM.

11.1 NEW COMMANDS

11.1.1 DELETE-VOLUME-FILES

Parameters: <VOLUME-NAME>,
<DEVICE-NAME>,
<DEVICE-UNIT>,
<GENERATION OF FIRST FILE TO DELETE>,
<FILE-NAME>

11.2 SUB-COMMANDS IN SERVICE-PROGRAM-CUF

11.2.1 SET-VOLUME-ACCESS

Parameters: <GENERAL PUBLIC ACCESS>

11.2.2 SET-MATCHING-MODE

Parameters: <EXACT MATCHING CASES>

11.2.3 SHRINKING-MODE

Parameters: <SHRINKING>