9. DOS6800 UTILITIES

9.1 Introduction

The DOS6800 Utilities are as follows:

CPLGEN	– writes IPL segments onto a cassette
DMPGEF	– generates a memory dump program (DUMPFD) on a flexible disk
DMPGEN	– generates a memory dump program (DUMPER) on cassette
DUMPA	– lists cassette or magnetic tape blocks, or flexible disk sectors on the line printer
JESPER	– copies programs from disk load-modules to a program loading cassette
OBX	– produces a cross-reference listing of the references between a specified number of object modules, on the line printer
PM6800	– formats a disk pack
PRDUMP	– lists a cassette produced by DUMPER or a flexible disk produced by DUMPFD
RUM	– restores a userid or disk from magnetic tape
SUM	– saves a userid or disk
SYSGEN	– generates control commands which are used to create a TOSS monitor
XRF	– produces a cross-reference listing of a source module, on the line printer

The utilities are held in the system library and are called into execution by the control command RUN, with the exception of XRF, which is called by the control command XRF. The commands may be used during a user or system session. The RUN command is described in detail in section 6.1.

CPLGEN and JESPER may be executed one after the other by invoking the DOS6800 catalogued procedure $PCAS. The remainder must be executed by keying in the RUN command, except XRF (see above), or by invoking a user-written catalogued procedure.

9.2 CPLGEN

CPLGEN is used to write a TOSS IPL onto cassette, prior to the writing of a load module from disk.

The creation of Monitor and/or Application program cassettes is normally carried out by executing the $PCAS catalogued procedure, but CPLGEN may be executed separately, if required.

The following steps must be taken to execute the CPLGEN utility:

Insert the cassette to be written to in the left-hand drive

Key in the control command RUN CPLGEN xxxxxx, where xxxxxx is the name of the Monitor that is to be copied after the IPL.

9.3 DMPGEF

DMPGEF is used to generate a memory dump program (DUMPFD) on a flexible disk, that can be used to dump the contents of memory onto another flexible disk. The flexible disk may then be printed using the PRDUMP utility.

No IPL is written to the flexible disk, because the dump program is loaded and started directly by bootstrap.

Because the dump program is loaded into memory and runs as a free standing program, it may be used even when the memory resident Monitor is inoperable. However, the dump program will be loaded into memory locations /0 – /21A if the flexible disk drive is connected on a multiplex channel, or locations /0 – /27E if it is connected on a programmed channel. The original contents of this part of memory will therefore be overwritten.

The following steps must be taken to produce a memory dump using the DMPGEF utility:

Insert the flexible disk to be written by DMPGEF in a flexible disk drive

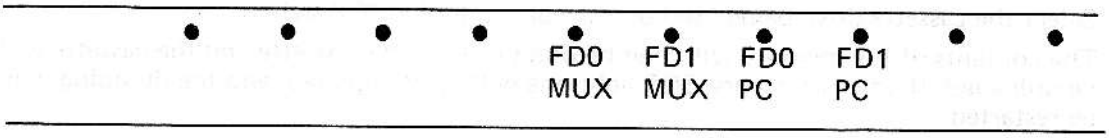
Assign file code /3 to the output device

Key in the control command RUN DMPGEF

If the Terminal Computer has a Full Panel and a SOP, press the RST button, then the MC button, and then the IPL button (see diagram in section 2.3)

If the Terminal Computer has a SOP only, press the IPL button

Press the appropriate SOP switch to load the program from flexible disk, depending on the disk drive on which the disk is mounted, and whether the drive is connected on a multiplex or programmed channel (see diagram below)



The dump program will then be loaded into memory, after which the leftmost SOP light will be illuminated

Insert a blank flexible disk in a drive and close the door

Select the disk drive being used for the dump, and press the appropriate SOP switch, where SOP switches 1 to 4 correspond to flexible disk drives 0 to 3

The contents of memory will then be dumped onto the flexible disk, after which the leftmost SOP light will be illuminated. If an error occurs, the second SOP light from the left will be illuminated, and the dumping must be repeated.

Run the PRDUMP utility to obtain a listing of the memory dump from the flexible disk (see section 9.9)

9.5 DUMPA

This utility is used to list on the device with file code /2 (standard for printer) the contents of the input device with file code /E1 (standard for cassette).

The following questions should be answered on the device with code /1 (standard for console typewriter).

- ASCII or EBCDIC : Specify the character representation on the tape by keying-in A for ASCII or E for EBCDIC

If the answer to the first question is A(ASCII), the following qeustion is output:

- ASCII or HEXA/ASCII : Specify the format of the dump by keying-in A for ASCII or H for HEXA/ASCII

If the answer to the first question is E(EBCDIC), the following question is output:

- EBCDIC or HEXA/EBCDIC : Specify the format of the dump by keying in E for EBCDIC or H for HEXA/EBCDIC

After this question/answer sequence DUMPA types out the prompt C: and starts printing. The user may then key-in one of the following commands:

- S Stop dump
- SX Skip X blocks and print
- S–X Skip to block X and print

An example tape dump follows:

```
                TAPE/CASSETTE DUMP

                DATE:          : :
                TIME:          00:05:35
                FORMAT:        ASCII

BLOCK NO:  1.1.1        SIZE:  32
1 S L 0 2 L 0 T I N P _ _ 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

END OF FILE

BLOCK NO:  2.1.1        SIZE:  240
1 2 2 0 0 4 0 1 8 0 2 1 _ _ _ _ _ _ _ _ 1 5 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
1 2 2 0 0 4 0 2 7 9 0 1 _ 3 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

BLOCK NO:  2.1.2        SIZE:  240
1 2 2 0 0 4 0 2 9 8 8 1 _ _ _ _ _ _ _ 3 0 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
1 2 2 0 0 4 0 3 0 8 7 1 _ _ _ _ _ _ _ 1 5 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
1 2 2 0 0 4 0 3 1 8 6 1 _ _ _ _ _ _ _ 1 5 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

BLOCK NO:  2.1.3        SIZE:  240
1 2 2 0 0 4 0 6 5 5 2 1 _ _ _ _ _ _ _ 1 5 0 - - - - - - - - - - - - - - - - - - -
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
1 2 2 0 0 4 0 6 6 5 1 1 _ 3 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
1 2 2 0 0 4 0 7 2 4 5 1 _ _ _ _ _ _ _ 1 5 0 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
```

The format of the BLOCK NO is TEB, where

T = the file number
E = = the segment number in the file
B = the block number in the file

The flexible disk sector numbering is standard logical, i.e.

Track 00, Sector 01 is standard logical sector 0
Track 76, Sector 26 is standard logical sector 2001

The following error messages may be output by the utility, and the table shows the causes and the actions taken by the utility in each case:

Message	Cause	Action
PARITY ERROR	Read error on input	Utility continues
UNKNOWN STATUS WORD = status word		Faulty record ignored, processing continues
NO DATA		
REWINDING		Utility continues

9.6 JESPER

JESPER is used to copy a program load module from disk onto a cassette in a form suitable for loading into memory during a TOSS system start.

If the load module is the TOSS Monitor, it must be preceded on the cassette by an IPL, and this is written using the CPLGEN utility (see 9.2).

The creation of the Monitor and/or Application cassette is normally carried out by using the catalogued procedure $PCAS, but JESPER may be executed separately if required.

The following steps must be taken to execute the JESPER utility:

Insert the cassette to be written in the left-hand cassette drive.

Key in the control command RUN JESPER xxxxxx, where xxxxxx is the name of the application load module to be copied to the cassette.

In the case of errors, the folowing messages may be output by the utility:

Message	Cause
ERROR CT <status-code>	Write failure on cassette
ERROR DK <status-code>	Read failure on disk
ERROR FM <status-code>	Format error in load module

9.7 OBX

OBX is used to obtain a cross-reference listing, on the Line printer, of the reference between a number of specified object modules on disk. It can be used for both CREDIT and ASSEMBLER modules.

The listing produced is in three sections, the module section, the symbol section and the run statistics section.

Module section – the first heading on this section is ENTRY REFERRED FROM MODULE(S) and under this heading appear, for each module, the symbols declared as ENTRY in the module, and for each ENTRY symbol, the names of the modules which refer to that symbol as EXTERNAL. If the symbol is not referred to by any other module, the word UNREFERENCED is shown by the symbol name. For each module that has no symbols declared as ENTRY, the words NO ENTRIES IN THIS MODULE are printed.

– the second heading in this section is EXTRN DEFINED IN MODULE and under this heading appear, for each module, the symbols that are declared as EXTERNAL in the module, and the name of the module where that symbols is referred to as ENTRY. If the symbol is not referred to as ENTRY in any other module, the word UNDEFINED is shown on the listing. If the symbol is referred to by more than one other module as ENTRY, the word MULTIDEFINED is printed, and below this the names of all the modules that refer to that symbol as ENTRY. For each module that has no EXTERNAL symbols, the words NO EXTERNAL REFERENCES appear.

Symbol section – the heading for this section is SYMBOL DEFINED REFERRED, and under this heading are printed, for all modules, all the symbols declared as ENTRY or EXTERNAL, and for each symbol the name of the module in which it is defined as ENTRY, and the names of all the modules that refer to it as EXTERNAL. If a symbol is undefined or multidefined, the listing shows *UD* or *MD* respectively, under the heading DEFINED. If multidefined, this is followed by the names of all the modules in which the symbol is declared as ENTRY.

Run Statistics section – this section shows the number of symbols and the number of modules in the listing, the available and unused number of list items, and the available and unused number of name items in the OBX work area in memory.

The following steps must be taken to execute the OBX utility:

Key in the control command /0

Key in the control command INC XXXXXX, where XXXXXX is the first object module to be included in the run.

Key in further INC commands, for the other modules to be included in the run.

Key in the control command ASG 3, DK

Key in the control command POB

Key in the control command RUN OBX

The following error messages may be output by the utility, in which case only the run statistics part of the report is produced.

DOUBLE DEFINED MODULE <module-name>
NAMES AREA OVERFLOW <name>
CHAIN ITEM AREA OVERFLOW <name>
INPUT I/O ERROR <name>

9.8 PM6800

This utility is used to format a disk for the PTS6875 or PTS6876 disk drive. The utility performs two disk passes, as follows:

On the first pass the disk is divided into sectors and a cylinder number is written in the first word of each sector. At the same time the volume label, granule allocation table (empty), IPL, userid catalogue (containing only SAG) and file directory for SAG (empty) are written to granules 0 and 1. A string of test characters is written to the remaining granules of the disk.

On the second pass the entire disk is re-read to check for faulty granules. The granule allocation table is updated so that any faulty granules will not be used for data. If either granule 0 or granule 1 is faulty an error report will be output. If granule 0 is faulty the disk is unuseable. If granule 1 is faulty the disk may not be used as a system disk.

The following steps must be taken to process the PM6800 utility:

Type in the command RUN PM6800

The following questions are then output by the utility on the console typewriter;

DISC FILE CODE =	type in a two digit code to specify on which drive the disk to be formatted is mounted, e.g. F0, F1, F2 or F3 (with no/preceding)
VOLUME LABEL nnnn OK?	Type in YES if the name represented by nnnn above is the volume label of the disk to be formatted, otherwise NO. If NO is entered, the question DISC FILE CODE is repeated.
DISC TYPE =	Type in 6875 or 6876
LABEL =	Type in a volume name of up to eight characters, with no embedded blanks, to be given to the disk
DATE =	Type in the date in the format DDMMYY
PACKNBR =	Type in a pack number up to three digits long
SYSTEM USERID =	Type in SAG

When the formatting of the disk is completed, the following question is output on the console typewriter:

RUN AGAIN =	Type in YES if another disk is to be formatted, otherwise NO. If NO is entered, the following message is output to the console typewriter; END OF PM6800, and processing is terminated.

9.9 PRDUMP

PRDUMP is used to print the memory dump from cassette or flexible disk resulting from the execution of the DMPGEN or DMPGEF utility. The utility reads data from the device assigned file code /E1, so this must be assigned with the ASG command prior to the execution of the utility.

Up to nine areas of memory may be selected for printing, or the entire dump cassette or disk may be printed. If areas are selected, the user must key in the hexadecimal limits of these areas on the console typewriter. The areas need not be supplied in any particular sequence.

The following steps must be taken to execute the PRDUMP utility:

Assign file code /E1 to the device containing the dump data set

Key in the control command RUN PRDUMP

The following questions are output on the console typewriter by the utility, and must be answered as follows:

SELECTION OF MEMORY DUMP AREAS?	Key in NO if the entire memory dump is required, otherwise YES followed by (CR)

If YES is answered to the previous question, the following is output:

MEMORY DUMP AREA 1	Key in the hexadecimal limits of the area required, as two sets of four digits separated by a hyphen, e.g. 4360-79BE, followed by (CR). The utility will then output a prompt for the next area definition. When all areas required have been entered, reply to the next prompt with a (CR) only.

After the dump has been printed, the utility will then output the following question:

MORE AREAS WANTED?	Key in NO if no further areas are required on the dump, or YES: if YES, the MEMORY DUMP AREA prompt will be repeated for the entry of further area definitions.

At the end of processing the utility outputs the message END OF PROMPT on the console typewriter.

An example of the output from PRDUMP is shown on the following page.

Example listing from PRDUMP

CASSETTE DUMP PRINTOUT PAGE: 1

P R D U M P R E L 2.1

PRINTOUT OF MEMORY DUMP FROM CASSETTE.

DATE OF PRINTING:77:03:18
TIME :00:01:20

CASSETTE DUMP PRINTOUT PAGE: 2

0000	3153	4030	3240	4F54	494E	5020	2030	3130	"1SL02L0TINP 010"
0010	3030	3030	3030	3030	3030	3030	3030	3030	"0000000000000000"
0020	993B	2344	0086	0781	E898	1966	4821	DF33	".,#D . . . . . .H1.3"
0030	8864	3FDA	7F80	D0DA	79DC	4042	68D6	300E	". . ?. . . . . B8 . . 0 ."
0040	3D3E	1810	832D	C1BD	7BAF	0094	3460	7F71	" = ... 4 . . ."
0050	00B2	7504	F89E	6DA6	505A	C934	8250	3080	" . . . . . PZ.4.P0"
0060	0278	C274	38DE	220C	4404	909E	F063	B8C4	" . . . .8 .". D . . . ."
0070	25AF	0E86	909E	7106	B866	9447	9A40	8840	"% . . . . . G.B.2"

FINIS.
THERE WAS 1 BLOCK IN DUMP.
PROG ELAPSED TIME: 00H-00M-15S-040MR-

In the case of an error, a message will be output by the utility, in the following format:
<TK/FL> ERROR STATUS WORD: <status-word>
In this case the utility is terminated abnormally, as a read error has occurred on the input device. The utility must then be restarted.

9.10 RUM

RUM is used to restore a complete disk or the disk library of a single userid from magnetic tape, on which the data has been saved by the utility SUM.

During execution, an optional listing of file names, etc. may be printed on the line printer. This listing includes, for each file, the file name, file type, number of occupied granules, and addresses of occupied granules, together with the letters A or R indicating whether a file has been added to the output disk or replaced on the disk.

If RUM is executed during a system session, the disk file code must be specified (see below). RUM will then restore each library from the tape until two consecutive tape marks are encountered. Any libraries that are present on the disk before execution are **deleted.**

If RUM is executed during a user session, files will be restored from the tape up to the first tape mark. Files which exist on the tape but not in the disk library are added to the library as new files. Files that exist on both input and output are replaced in the output library.

The user may execute RUM a number of times under selected userids, and thus restore a selection of libraries from the tape. Before running RUM the user must position the tape at the start of the appropriate library, if necessary by using the control commands FBS, FFS, REF and/or REW.

The following steps must be taken to process the RUM utility:

Position the tape if necessary as described above

Type in the command RUN RUM

The following question is then output to the console typewriter:

LISTING OF FILE NAMES ETC?	Type in Y if the listing is required, or N if it is not required.

If executing in a system session, the following question is then output to the console typewriter;

DISK FILE CODE?	Type in the disk number (e.g. F2) for the disk on which the files are to be restored. Note that the number must not be preceded by a slash.

The utility will then output details of the label, date and pack number of the disk specified, followed by the following:

OK?	Type in Y if this is the correct disk, or N if it is not correct. In the latter case, the utility outputs the disk file code question again, for the operator to specify a different disk.

9.11 SUM

SUM is used to save a complete disk or the disk library of a single userid on magnetic tape. During execution, an optional list of file names, etc. may be printed on the line printer. This listing includes, for each file, the file name, file type, number of occupied granules and addresses of occupied granules.

If SUM is executed during a system session a complete disk will be saved. The disk-number (F0, F1, F2 or F3) must be specified in response to the question "DISK FILE CODE? " (a back slash must **not** precede the disk number). The disk will be saved one library at a time. Each library will be separated by a tape mark. An extra tape mark will be written after the last library. The magnetic tape will remain positioned after the last tape mark.

If SUM is executed during a user session only the library of the current userid will be saved. This will be followed by a tape mark and the magnetic tape will remain positioned after this mark. The user can execute SUM a number of times under selected userids and thus save a selection of libraries on the magnetic tape. An extra tape mark should be written (WEF) after the last library if the tape is to be restored during a system session(see below).

If SUM is executed under userid SAG only the library belonging to SAG will be saved. That is, SUM will **not** behave as if this was a system session.

The following steps must be taken to process the SUM utility:

Type in the command RUN SUM

The following question is then output by the utility on the console typewriter;

LIST OF FILE NAMES ETC?	Type in Y if the listing described above is required, or N if it is not.

9.12 SYSGEN

9.12.1 *Introduction*

It is the users responsibility to generate a version of the TOSS Monitor suited to the needs of his particular PTS6000 configuration. This process may be made simpler by using the utility SYSGEN.

The user must supply this utility with certain parameters describing the PTS6000 configuration. SYSGEN will then generate a file of control commands. If the user then assigns file code /E0 (standard for control command input) to this file the required version of the Monitor will be automatically generated.

The entire TOSS Monitor is stored on the system disk as a set of Assembler language source and object modules. The Monitor is not supplied to the user in load module form. The control commands generated by SYSGEN must, therefore, achieve the following:

Update selected source modules by inserting the parameters specified by the user.

Re-assemble any updated modules.

Selected the subset of TOSS Monitor object modules required for the specified configuration (including those which have been re-assembled).

Link edit the selected object modules to produce the Monitor load module.

The Monitor is generated as a load file on disk. It is the users responsibility to copy the Monitor onto a cassette or disk in a form suitable for loading directly into memory. This is done via the DOS6800 utility $PCAS which is described in section 10.6 or by the TOSS utility CPP (see TOSS Utilities Manual M08).

9.12.2 *Deferred binding*

The parameters to be supplied to SYSGEN are described in section 9.12.5 below. Occasionally it may be necessary to change certain parameters in an existing TOSS Monitor (for example a new type of device may be added to the hardware configuration). In such circumstances it is normally necessary to re-generate the TOSS Monitor and supply all the parameters again.

However, in the case of "task definition" and "common device definition" this is not so. The user can "defer the binding" of these parameters into the Monitor until TOSS System start.

During task definition the user supplies the task identification and priority of each task together with the device classes used by the tasks. During common device definition the user specifies the device classes included in the common device class. These parameters are described in sections 9.12.5.26 and 9.12.5.27.

If the user wishes to defer binding of these parameters he must answer "Y" to the SYSGEN question "MONITOR CONFIGURATION PROGRAM:" (described in section 9.12.5.4). If this is done the TOSS Monitor will execute the Monitor Configuration Program during the system start process. This program will read in the required parameters from a Monitor configuration cassette supplied by the user. The format and content of this cassette are described in the CREDIT PRM (M04) and in the Assembler PRM (M06).

The objective of deferred binding is to provide the user with a quick and simple method of supplying certain parameters which are likely to change frequently. However, if in a particular installation these parameters are not likely to change frequently it may be simpler for the user to answer "N" to the question "MONITOR CONFIGURATION PROGRAM:" and to supply the parameters directly to SYSGEN.

It should be noted that deferred binding is not available if a Monitor containing data management is being generated. That is if "Y" is answered to the question "MONITOR CONFIGURATION PROGRAM:" then "N" must be answered to the question "DATA MANAGEMENT:" (see 9.12.5.12).

9.12.3 *Running SYSGEN*

The following sequence of actions is required to run SYSGEN:

Ensure that the current userid has an empty file directory i.e. declare a new userid or delete all files in an existing userid.

Assign file code /CA to the device being used for the output control command file. This device may be disk (DK), magnetic tape (MT0C) or cassette (TK0E).

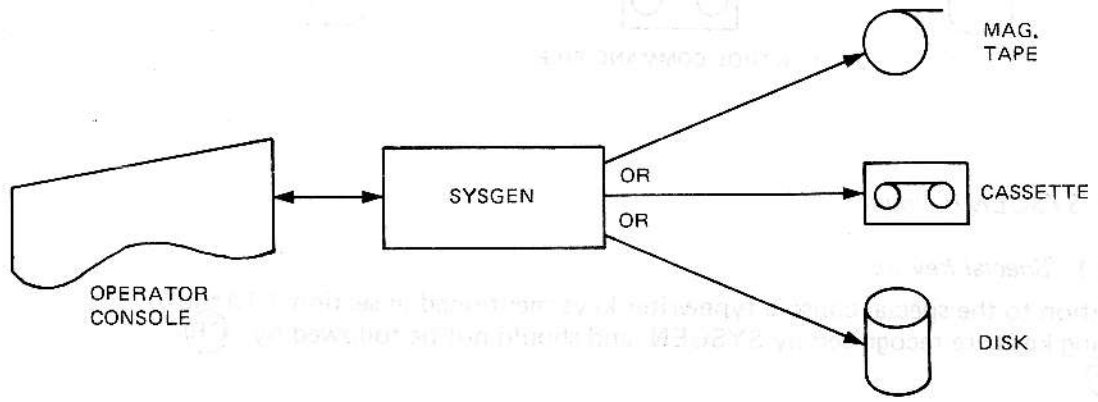
Call SYSGEN into execution in the normal way using the RUN control command.

Key-in parameters in response to questions typed out by SYSGEN. The permitted key-ins are described in section 9.12.5. At the end of this dialogue SYSGEN will close the output file and terminate.

If file code /CA is assigned to disk the file must be made permanent (control command KPF).

At the end of the above sequence the control command file is ready to be used to generate a TOSS Monitor.

The above procedure is summarised in the following diagram:



9.12.4 *Generating the TOSS Monitor*

The following sequence of actions is required to generate the TOSS Monitor:

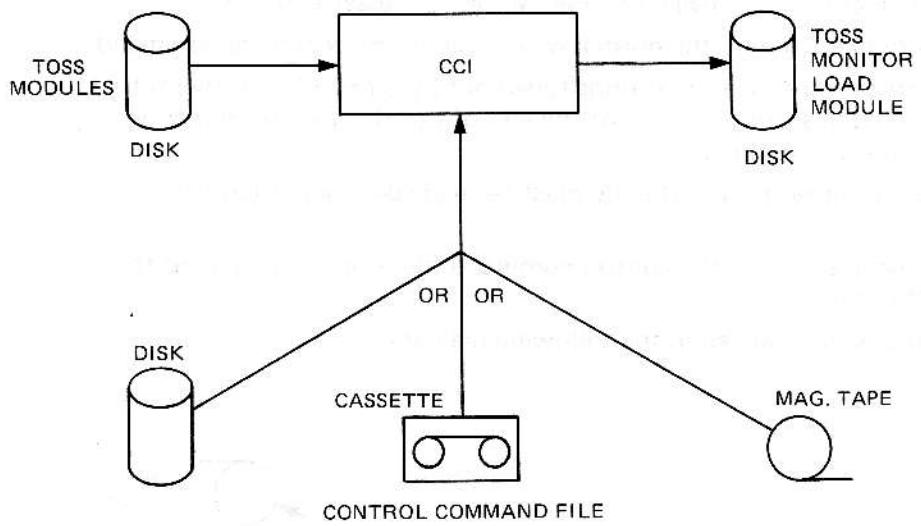
Ensure that the current userid has an empty file directory (apart from the control command file if this is on disk).

- Assign file code /E0 (standard for control command input) to the control command file produced by SYSGEN. This file may be on disk, magnetic tape or cassette.

The control commands in the input file will update and reassemble selected TOSS Monitor source modules, will select the object modules required for the specified configuration and will link edit the Monitor load module. The file containing the load module will be made permanent (control command KPF) and will be given the name specified by the user during the SYSGEN dialogue. Assembly listings will be produced if they have been requested during the SYSGEN dialogue. A map listing will also be produced by the Linkage Editor.

When all commands in the control command file have been obeyed control is handed back to the typewriter and the prompt S: is typed out.

The above process is summarised in the following diagram:



9.12.5 *SYSGEN dialogue*

9.12.5.1 *Special key-ins*

In addition to the special console typewriter keys mentioned in section 1.10 the following keys are recognised by SYSGEN, and should not be followed by (CR) or (LF) :

Normal PTS6862 Symbol	Hexadecimal Code	Meaning
^	/5E	Erase current answer: the next line is printed with an asterisk (*), and a new answer may be entered.
– (Shift zero)	/5F	Erase previous character, i.e. backspace one character.

Normal PTS6862 Symbol	Hexadecimal Code	Meaning
#	/23	Abort. Terminate SYSGEN immediately.
$	/24	Erase current section of dialogue. This key-in may be used when entering conditional assembly parameters, LKM processor parameters, task definition parameters or common device parameters. The current section of dialogue is discarded and parameters may be input again. The sections of dialogue discarded are defined below.

Note that the above symbols may be different if a non standard keyboard is used on the PTS6862 console typewriter. However, the hexadecimal codes for those symbols must be the ones shown above. Note also that the hexadecimal code /A (normally (LF)) is ignored when given in reply to a SYSGEN question.

The following sections describe the key-ins permitted during the SYSGEN/ user dialogue. Each question/response in this dialogue has the following format:

SYSGEN-question: [user-response] (CR)

In certain circumstances the user may choose a default response by keying-in a (CR) immediately after the question. The values of these defaults are given in the following sections.

The syntax of the parameters used in user responses is defined in appendix A. The notation conventions are described in section 1.9.

9.12.5.2 *Assembly listing*

ASSEMBLY LIST: {Y / N}

Specify if an assembly listing of the Monitor modules is required. If N, no device is assigned to the print unit file code /02. Operations on this file will therefore have no effect.

9.12.5.3 *Monitor name*

MONITOR NAME: file-name

Specify the name which will be given to the new monitor load module, to a maximum of six characters. It is the file name which is specified in the keep file (KPF) command at the end of TOSS Monitor generation.

9.12.5.4 *Monitor Configuration Program*

MONITOR CONFIGURATION PROGRAM: {Y / N}

If "Y" is keyed-in, the questions in sections 9.12.5.26 and 9.12.5.27 will not be typed out by SYSGEN. The parameters in these sections will be supplied by the user on a monitor configuration cassette during TOSS system start. The format and content of this cassette are described in the CREDIT PRM (M04) and the Assembly PRM (M06).

If "Y" is keyed-in to the above question "Y" must also be keyed-in to the question "MONITOR AND APPL. ON SAME CAS:" (see section 9.12.5.7).

9.12.5.5 *Memory Management*

MEMORY MANAGEMENT: {Y / N}

Specify whether memory management (overlaying) is to be included in the Monitor. At present only assembler programs are able to use the memory management facilities. It is usual, therefore, to key-in "N" to the above question if the Monitor is to be used with a CREDIT application (see 9.12.5.11).

If "Y" is keyed-in two further questions will be asked by SYSGEN:

PARTITION LENGTH: hexadecimal-number
NUMBER OF PARTITIONS: decimal-number

where:

hexadecimal-number	is four digits specifying the partition length in bytes.
decimal-number	is three digits specifying the number of segments.

If memory management is to be used both the Monitor and application program must be held on a TOSS formatted disk (see CREDIT Reference Manual M04 and section 9.12.5.6 below).

9.12.5.6 *Program Loading from Disk*

PROGRAM LOADING FROM DISK: {Y / N}

Specify whether the Monitor and application program should be loaded from disk. If so the Monitor and application program must be held on a TOSS formatted disk (see CREDIT Reference Manual M04).

9.12.5.7 *Monitor and Application on Same Cassette*

MONITOR AND APPL. ON SAME CAS: {Y / N}

Specify whether the monitor and application programs will be output on the same or separate cassettes (i.e. by $PCAS). "Y" must be keyed-in if "Y" was answered to the question "MONITOR CONFIGURATION PROGRAM" (see section 9.12.5.4).

If "Y" is keyed-in SYSGEN will type out a further question:

CONFIGURATION DATA ON PROGRAM CASSETTE: {Y / N}

Specify whether the CREDIT configuration data will be held on the same cassette as the Monitor and application program.

9.12.5.8 *Monitor Initialization Program*

MONITOR INITIALIZATION PROGRAM: {Y / N}

This program development facility which allows the operator to restart the System at address /90 without having to reload the TOSS Monitor. It is not normally included in production systems.

5.12.5.9 *Assembler Debugger*

DEBUGGER: {Y / N}

Specify whether or not the Assembler Debugging Program is to be included. This is not usually included in production systems.

9.12.5.10 *Subroutine Call Interpreter*

SUBROUTINE CALL INTERPRETER: {Y / N}

This routine which reduces subroutine calls (CF A14, LABEL) to one word by using the illegal instructions /C001—/C0FF. The right byte of the instruction is an index (1, 2, 3 .....), used to fetch the subroutine address from an address table, pointed to by the contents of address /8E in the communication vector table.

Its inclusion is dependent upon the number of subroutines in the application.

9.12.5.11 *CREDIT Application*

CREDIT APPLICATION: {Y / N}

Specify whether the application is written in CREDIT. If YES, a CREDIT-adapted teller terminal printer driver, DRTP02, is included in the Monitor. All other drivers included are updated to accept CREDIT order codes only.

9.12.5.12 *Data Management Functions*

DATE MANAGEMENT: {Y / N}

Specify whether data management routines should be included.
Note: "N" must be keyed-in if "Y" was keyed-in to the question "MONITOR CONFIGURATION PROGRAM:" (see 9.12.5.4).

If data management is included disk units one and two or flexible disk drives one and two are set as a common device. File codes /F0 to /F3 are assigned to fixed/cartridge units 1 and 2 respectively, or file codes /F8 to /FB to left/right flexible units. The choice is dependent on the answers to the following section, Device Definition. One task table is generated for each disk unit with task identifiers D0 and D1. For flexible disk, a table with task identifier D2 is generated. These task identifiers must not be used by the application program.

9.12.5.13 *Device List:* {Y / N}

Specify if a list of device abbreviations is required, for use in the device specification (see below) (N).

9.12.5.14 *Define Devices*

DEFINE DEVICES: letter ‖ letter [,letter ‖ letter]....

Specify the types of device to be used by keying-in a selection of the following mnemonics, separated by a comma between each one.

- KB keyboard
- TP teller terminal printer
- GP general printer
- DN numeric display
- DI indicator display/keyboard lamps
- DY video/plasma display

LT	local terminals
RT	local and remote terminals
FD	flexible disk
MS	magnetic stripe unit
OD	optical document reader
II	intertask communication input
IO	intertask communication output
CT	customer operated teller
TC	tape cassette
SI	SOP input
SO	SOP output
MT	magnetic tape unit
TW	typewriter
DU	disk unit
LP	line printer
CR	card reader
CC	cassette changer
D1	data communication driver DRDC07
D2	data communication driver DRDC15
D3	data communication driver DRDC17
D4	data communication driver DRDC81
D5	data communication driver DRDC82
D6	users data communication driver 1
D7	users data communication driver 2

The following note explains the use of device types LT and RT.

Devices KB, TP, GP, DN, DI, DY and CT must be connected to the Terminal Computer via a Channel Unit for Local Terminals (CHLT) and/or a Channel Unit for Remote Terminals (CHRT). Devices which are used locally (i.e. not via modems) must be connected to the CHLT. Devices which are used remotely (i.e. via modems) must be connected to the CHRT.

One of two drivers may be used to control devices attached to the CHLT and CHRT. Driver DRLT01 is used to control devices attached to the CHLT. Driver DRRT01 is used to control devices attached either to the CHLT or CHRT. That is driver DRLT01 controls locally connected devices only, and driver DRRT01 controls both locally and remotely connected devices. Only one of these drivers may be included in the Monitor.

If DRLT01 is required then LT must be included in the device list. If DRRT01 is required then RT must be included in the device list. LT and RT cannot both be included in a device list.

If neither are specified, DRLT01 is automatically included by SYSGEN.

9.12.5.15 Data Communication Driver Name

DC-DRIVER NAME (USER ID)

TOSS Monitor is generated. The driver name must be in the format DRDCnn and the work table name in the format DWnn01.

LT local terminals
RT local and remote terminals
FD flexible disk
MS magnetic stripe unit
OD optical document reader
II intertask communication input
IO intertask communication output
CT customer operated teller
TC tape cassette
SI SOP input
SO SOP output
MT magnetic tape unit
TW typewriter
DU disk unit
LP line printer
CR card reader
CC cassette changer
D1 data communication driver DRDC07
D2 data communication driver DRDC15
D3 data communication driver DRDC17
D4 data communication driver DRDC81
D5 data communication driver DRDC82
D6 users data communication driver 1
D7 users data communication driver 2

The following note explains the use of device types LT and RT.

Devices KB, TP, GP, DN, DI, DY and CT must be connected to the Terminal Computer via a Channel Unit for Local Terminals (CHLT) and/or a Channel Unit for Remote Terminals (CHRT). Devices which are used locally (i.e. not via modems) must be connected to the CHLT. Devices which are used remotely (i.e. via modems) must be connected to the CHRT.

One of two drivers may be used to control devices attached to the CHLT and CHRT. Driver DRLT01 is used to control devices attached to the CHLT. Driver DRRT01 is used to control devices attached either to the CHLT or CHRT. That is driver DRLT01 controls locally connected devices only, and driver DRRT01 controls both locally and remotely connected devices. Only one of these drivers may be included in the Monitor.

If DRLT01 is required then LT must be included in the device list. If DRRT01 is required then RT must be included in the device list. LT and RT cannot both be included in a device list.

If neither are specified, DRLT01 is automatically included by SYSGEN.

9.12.5.15 *Data Communication Driver Name*

DC-DRIVER NAME, USERID: file-name, userid

SYSGEN asks the above question only if D6 or D7 has appeared in the device list described in 9.7.5.14.

File-name and userid identify a library file containing the driver, in source language form. The same library must also contain a data communication device work table (DWT) adapted to the specified driver. The specified library should be on-line when the TOSS Monitor is generated. The driver name must be in the format DRDCnn and the work table name in the format DWnn01.

9.12.5.16 *PTS6236 Keyboard in use*

KEYBOARD 6236 IN SYSTEM: {Y / N}

Specify whether or not a PTS6236 keyboard is in use in the system (N).

9.12.5.17 *Only PTS6236 (only if Y was answered to the preceding question).*

ONLY PTS6236: {Y / N}

Specify if only PTS6236 is in use within the system (N).

9.12.5.18 *PTS6805 Monitor required*

MONITOR FOR PHILIPS 6805: {Y / N}

Specify if the monitor is required for a PTS6805 Terminal Computer (N).

9.12.5.19 *Conditional Assembly Parameters for Drivers*

Conditional assembly parameters for each driver in the device list (9.7.5.13) must be specified. Each driver is listed in turn. If "S" is keyed-in as a response, standard values are assumed, except for data communication drivers, where the values **must** be supplied by the operator. If only a (CR) is entered, the operator must specify the parameters for that driver as requested. (For more detailed driver information see Assembler PRM M06).

Each driver is detailed below; the standard parameter values (which will be assumed if S is specified) are shown in parenthesis. In the case of data communication drivers, the values shown in parenthesis are not standard, but suggested values: values must be supplied by the operator.

If the operator makes an incorrect key-in, he may type $, whereupon all questions concerning current driver are repeated.

DRKB01 Keyboard (or DRKB03 if PTS6236 Keyboard)

- KEYBOARD TIME OUT: {Y / N}

  Specify if time-out function should be included (Y).

- ECHO FUNCTION: {Y / N}

  Specify if echo function should be included (Y).

- STANDARD READ: {Y / N}

  Specify if order /02, standard read, should be included (Y).

- NUMBER OF ZEROES FOR MULTIPLE ZERO KEY: decimal-digit
  Specify the number of zeroes for multiple zero key by typing one digit (2).

- COMPLETION OF READ REQUEST AT POWER ON: {Y / N}

  Specify if completion of read request is wanted at power on (N).

- CIRCULAR INPUT BUFFER SIZE: decimal-digit||decimal digit
  Specify the circular input buffer size, in characters, by typing two decimal digits (08).

- CODE CONVERSION/8-BIT SETTING: {Y / N}

  Specify if code conversion or 8 bit setting should be included (N).

DRTP01 (Assembler) Teller Terminal Printer

- WRITE TALLY ROLL: {Y / N}

  Specify if order /07, write tally roll, should be included (Y).

- CUT/PERFORATE JOURNAL TAPE: {Y / N}

  Specify if the functions cut/perforate journal tape should be included (N).

- SPECIAL CHARACTER/13: {Y / N}

  Specify if special character /13 should be included (N).

- SPECIAL CHARACTER/14: {Y / N}

  Specify if special character /14 should be included (N).

- COMPLETION OF REQUEST IF PRINT OBJECT IS REMOVED: {Y / N}

  Specify if order /08, print voucher/passbook, should be completed if print object is removed (N).

- INDICATION OF RECOVERY IN RETURN CODE (/80): {Y / N}

  Specify if indication of recovery is wanted in return code (/80) (N).

- ROOMLESS POINT CODES: { S / hexadecimal-number-1, hexadecimal-number-2, hexadecimal-number-3, hexadecimal-number-4, hexadecimal-number-5 }

  If " S " is keyed-in standard values will be assumed for roomless point codes. These values are 2122, 2426, 3B3C, 3E40, 5E5F. Alternately a list of roomless point codes may be specified. In this case, hexadecimal-number-N comprises four hexadecimal digits specifying the ISO-7 codes for the number pairs 0 and 1, 2 and 3, 4 and 5, 6 and 7, 8 and 9. For example, if hexadecimal-number-1 has the value 2122 the ISO-7 code for 0. would be 21 and the ISO-7 code for 1. would be 22. The actual codes used depend upon the type of keyboard to be used.
- END OF REQUEST WHEN SELECTOR UNIT OR PRINTER INACTIVE: {Y / N}

  Specify if I/O request should be ended if selector unit or printer is inactive (N).

DRTP02 (CREDIT) Teller Terminal Printer

- RETURN CODE UPON RECOVERY: {Y / N}

  Specify if indication of recovery is wanted in return code (/80) (N).
- CUT/PERFORATE JOURNAL TAPE: {Y / N}

  Specify if the functions cut/perforate journal tape should be included (N).
- SPECIAL CHARACTER /13: {Y / N}

  Specify if special character /13 should be included (N).
- SPECIAL CHARACTER /14: {Y / N}

  Specify if special character /14 should be included (N).
- COMPLETION OF REQUEST IF PRINT OBJECT IS REMOVED: {Y / N}

  Specify if printing of voucher/passbook should be completed if print object is removed (N).
- END OF REQUEST WHEN SELECTOR UNIT OR PRINTER IS INACTIVE: {Y / N}

  Specify if I/O request should be ended if selector unit or printer is inactive (N).
- ROOMLESS POINT CODES: { S / hexadecimal-number-1, hexadecimal-number-2, hexadecimal-number-3, hexadecimal-number-4, hexadecimal-number-5 }

  Specify roomless point codes as described for DRTP01 above.

DRGP01 General Terminal Printer

- ROOMLESS POINT CODES: { N / S / hexadecimal-number-1, hexadecimal-number-2, hexadecimal-number-3, hexadecimal-number-4, hexadecimal-number-5 }

  Specify roomless point codes as described for DRTP01 with the following exceptions:
  "N" specifies that no roomless point is to be included.
  Standard codes are 2122, 2324, 3B3C, 3E40, 5E5F.

- SPECIAL CHARACTER /13: {Y/N}

  Specify if special character /13 should be included (N).

- SPECIAL CHARACTER /14: {Y/N}

  Special if special character /14 should be included (N).

- ECHOING OF EXTRA SPACE BETWEEN CHARACTERS: {Y/N}

  Specify if echoing of an extra space is wanted between characters (N).

- ECHO OF EOR KEY: {Y/N}

  Specify if echo of EOR key is wanted (N).

- SUPPRESSION OF TRAILING BLANKS: {Y/N}

  Specify if trailing blanks should be suppressed (N).

- END OF REQUEST WHEN SELECTOR UNIT OR PRINTER INACTIVE: {Y/N}

  Specify if I/O request should be ended if selector or printer is inactive (N).

DRDN01 Numeric Display

- ORDER, WRITE NUMERIC DISPLAY: {Y/N}

  Specify if the order write numeric display, should be included (Y).

DRD101 Signal Display and Lamps on Keyboards

- ORDER, WRITE PROGRAM DISPLAY: {Y/N}

  Specify if the order write program display, should be included (N).

- FLASH FUNCTION: {Y/N}

  Specify if the flash function should be included (N).

DRDY01 Displays Videc and Plasma

- GRAPHIC MODE: {Y/N}

  Specify if graphic mode must be included in system (N).

- ONLY PTS6344: {Y/N}

  Specify if Video Display PTS6344 only is to be used (Y).

- PTS6351 INCLUDED: {Y/N}

  Specify if Plasma Display PTS6351 is to be used (N). This question is not asked if "Y" was keyed-in to the previous question.

- LOWER CASE CHARACTERS: {Y/N}

  Specify if lower case characters are to be used (N).

- ECHO OF EOR-KEY: {Y / N}

  Specify if echo of EOR key is wanted (N).

- SUPPRESSION OF TRAILING BLANKS: {Y / N}

  Specify if trailing blanks should be suppressed (Y).

- CURSOR STEADY ON 6386 (ELSE TWINKLING): {Y / N}

  Specify if cursor on PTS6386 is to be steady light (N).

DRLT01 Local Terminals

- LOGG FUNCTION FOR INPUT/OUTPUT CHRS: {Y / N}

  Specify if a logg function for input and output characters should be included (Y).

- NUMBER OF LOCAL CHANNEL UNITS: decimal-digit

  Specify the number of local channel units by keying-in one digit (1)

- ACCUMULATORS FOR NAK, RETRANSMISSION FAULT AND UNDEFINED CONTROL CHRS: {Y / N}

  Specify if accumulators for NAK, retransmission fault and undefined control characters should be included (Y).

- SOFTWARE TIME OUT HANDLING MISSING DATA REQUESTS FROM PRINTERS: {Y / N}

  Specify if a software time-out, handling missing data requests from printers, should be included (Y).

- ECHO FUNCTION: {Y / N}

  Specify if the echo function should be included (Y).

DRRT01 Local and Remote Terminals

- LOGG FUNCTION FOR INPUT/OUTPUT CHRS: {Y / N}

  Specify if a logg-function for input and output characters should be included (Y).

- NUMBER OF LOCAL CHANNEL UNITS: decimal-digit

  Specify the number of local channel units (1).

- ACCUMULATORS FOR NAK, RETRANSMISSION FAULT AND UNDEFINED CONTROL CHRS: {Y / N}

  Specify if accumulators for NAK, retransmission fault and undefined control characters should be included (Y).

- NUMBER OF REMOTE CHANNEL UNITS: decimal-digit

  Specify the number of remote channel units (2).

- REMOTE TEST FILE CODE: decimal-digital decimal-digit
  Specify remote test file code by keying-in two digits (15).

- ECHO FUNCTION: {Y / N}

  Specify if the echo function should be included (N).

DROD01 Optical Document Reader

- COMPLETION OF READ REQUEST AT POWER ON: {Y / N}

  Specify if completion of read request is wanted at power on (N)
- CIRCULAR INPUT BUFFER SIZE: decimal-digit ‖decimal-digit
  Specify the circular input buffer size, in characters, by keying in two decimal digits (80)

DRTC01 Digital Cassette Recorder

- NUMBER OF CASSETTE DRIVES: decimal-digit
  Specify the number of cassette drives on the Terminal Computer (1).

- ORDERS LOCK, ERASE AND REVERSE ONE BLOCK: {Y / N}

  Specify if these functions must be included (N).

DRSOP1 System Operators Panel

- EXTRA SOP INPUT DWT: {Y / N}

  Specify if the facility to handle two simultaneous read requests, each with its own file code should be included in the driver (N). This is used to stop CREDIT Debugging Program dumps.

- FLASH FUNCTION: {Y / N}

  Specify if the flash function should be included (N).

DRTW01 Console Typewriter

- KEYBOARD TIME OUT: {Y / N}

  Specify if a keyboard time-out function should be included (N).

- COMPLETION OF READ REQUEST AT POWER ON: {Y / N}

  Specify if completion of read request is wanted at power on (N).

DRDC07 Data Communication Driver

- RECEIVE BUFFER LENGTH: decimal-digit‖decimal-digit.‖decimal-digit

  Specify the number of words in the receive buffer by keying in three decimal digits (130).

- TRANSMIT BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit.

  Specify the number of words in the transmit buffer by keying in three decimal digits (0).

- DC–TASK DATCOM FILE CODE: file-code

  Specify the file code to be used for data communication. The file code must not be preceded by a slash (60).

- INTERRUPT LOGGING: $\left\{\begin{matrix}Y\\N\end{matrix}\right\}$

  Specify if interrupt logging is required to be included (Y).

- POLL TIMEOUT VALUE: decimal-digit‖decimal-digit‖decimal-digit.

  Specify poll timeout value by keying in three decimal-digits (300).

- NUMBER OF RECEIVE BUFFERS (3–14): decimal-digit‖decimal-digit.

  Specify the number of receive buffers required by keying in two decimal-digits.

- FULL DUPLEX: $\left\{\begin{matrix}Y\\N\end{matrix}\right\}$

  Specify if full duplex mode is to be included (N).

- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit.

  Specify physical line number to be used by keying in two decimal-digits.

DRDC15 Data Communication Driver

- RECEIVE BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit

  Specify the number of words in the receive buffer by keying-in three decimal-digits.

- TRANSMIT BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit.

  Specify the number of words in the transmit buffer by keying-in three decimal-digits.

- DC–TASK DATCOM FILE CODE: file-code.

  Specify the file-code to be used for data communication. The file-code must not be preceded by a slash (60).

- INTERRUPT LOGGING: $\left\{\begin{matrix}Y\\N\end{matrix}\right\}$

  Specify if interrupt logging is required to be included (Y).

- POLL TIMEOUT VALUE: decimal-digit‖decimal-digit‖decimal-digit

  Specify poll timeout value by keying-in three decimal-digits (600).

- STATUS AND RVI HANDLING: $\left\{\begin{matrix}Y\\N\end{matrix}\right\}$

  Specify if status and RVI handling should be included (Y).

DRDU01 Disk Drive

- READ AFTER WRITE: {Y / N}

  Specify if the Read after Write check is to be included (N).

- NUMBER OF DISK UNITS: decimal digit

  Specify the number of disk drives connected (1).

- UNIT 1 PTS6876: {Y / N}

  Specify if the first disk unit is a PTS6876 type (N).

  If more than one unit has been specified, the above question is repeated for each unit connected.

DRLP01 Line Printer

- LP ON PROGRAMMED CHANNEL (ELSE MUX): {Y / N}

  Specify if the line printer is connected to the programmed channel (N).

DRFD01 Flexible Disk Drive

- FD ON PROGRAMMED CHANNEL (ELSE MUX): {Y / N}

  Specify if the flexible disk units are connected to the programmed channel or the multiplexer (Y).

- FD ADAPTED FOR DATA MANAGEMENT: {Y / N}

  Specify if the flexible disk units are adapted for data management (N).

- IBM LABELLED DISK HANDLING: {Y / N}

  Specify if IBM labelled flexible disks are to be handled by the system (N).

- FD ADAPTED FOR INIMON: {Y / N}

  Specify if the flexible disk driver is to be adapted to include the monitor initialisation module, see 9.12.5.8 (N).

DRCR01 Card Reader

- CR ON PROGRAMMED CHANNEL (ELSE MUX): {Y / N}

  Specify if the card reader is connected to the programmed channel or the multiplexer (Y).

- READ COMMAND HANDLING: {Y / N}

  Specify if read command handling should be included (Y).
- TRANSMIT BLOCK LENGTH: decimal-digit‖decimal-digit‖decimal-digit

  Specify transmit block length by keying-in three decimal-digits (254).
- EBCDIC CODE (IF NO ASCII): {Y / N}

  Specify if EBCDIC code is to be used (Y).
- SPECIFIC POLL HANDLING: {Y / N}

  Specify if specific poll handling should be included (N).
- LINE SPEED HIGH: {Y / N}

  Specify if line speed is high (Y).
- SIEMENS MSV1 PROCEDURE: {Y / N}

  Specify if Siemens MSV1 procedure should be included (N).
- NUMBER OF RECEIVE BUFFERS: decimal-digit

  Specify the number of receive buffers by keying-in one decimal-digit (2)
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit

  Specify the physical line number to be used by keying-in two decimal-digits.

DCDC17 Data Communication Driver

- NUMBER OF LINES: decimal-digit.

  Specify the number of lines by keying in one decimal-digit (1) .
- BSC PROCEDURE (ELSE SIEMENS MSV2): {Y / N}

  Specify if BSC procedure should be included (Y).
- EBCDIC CODE (IF NO ASCII): {Y / N}

  Specify if EBCDIC code is to be used (Y).
- EBCDIC TRANSPARENCY: {Y / N}

  Specify if EBCDIC transparency should be included (N).

- BID TIMEOUT VALUE: decimal-digit‖decimal-digit
  Specify the BID timeout value by keying-in two decimal-digits (10).
- LOGG AREA LENGTH PER LINE: decimal-digit‖decimal-digit‖decimal-digit.
  Specify the logg area length per line by keying-in three decimal-digits (500).
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit.
  Specify physical line number to be used by keying-in two decimal-digits.

DRDC81 Data Communication Driver

- NUMBER OF LINES: decimal-digit‖decimal-digit.
  Specify the number of lines by keying-in the two decimal-digits.
- POLL LIST LENGTH: decimal-digit‖decimal-digit
  Specify the length of the poll list by keying-in two decimal-digits.
- P852 INSTRUCTION SET: {Y / N}

  Specify if the P852 Instruction set is to be included.
- MAX BLOCK LENGTH: decimal-digit‖decimal-digit‖decimal-digit.
  Specify the length of the maximum block by keying in three decimal-digits.
- INTERRUPT LOGGING: {Y / N}

  Specify if interrupt logging should be included (Y).
- RETRY LIMIT: decimal-digit‖decimal-digit
  Specify the retry limit by keying-in two decimal-digits.
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit.
  Specify the physical line number to be used by keying-in two decimal-digits.

DRDC82 Data Communication Driver

- NUMBER OF LINES: decimal-digit‖decimal-digit.
  Specify the number of lines by keying-in two decimal-digits.
- POLL LIST LENGTH: decimal-digit‖decimal-digit.
  Specify the length of the poll list by keying in two decimal-digits.
- P852 INSTRUCTION SET: {Y / N}

  Specify if the P852 instruction set is to be included.
- MAX BLOCK LENGTH: decimal-digit‖decimal-digit‖decimal-digit
  Specify the length of the maximum block by keying-in three decimal-digits.
- INTERRUPT LOGGING: {Y / N}

  Specify if interrupt logging should be included (Y).

- RETRY LIMIT: decimal-digit‖decimal-digit

  Specify the retry limit by keying-in two decimal digits.
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit.

  Specify the physical line number to be used by keying-in two decimal-digits.

DRDCXX Data Communication Driver

- TRANSMIT BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit

  Specify the number of words in the transmit buffer by keying-in three decimal-digits.
- RECEIVE BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit.

  Specify the number of words in the receive buffer by keying-in three decimal-digits.
- DC-TASK DATCOM FILE CODE: file-code

  Specify the file code to be used for data communication. The file code must not be preceded by a slash.
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit .

  Specify the physical line number to be used by keying-in two decimal-digits.

DRDCYY Data Communication Driver

- TRANSMIT BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit

  Specify the number of words in the transmit buffer by keying-in three decimal-digits.
- RECEIVE BUFFER LENGTH: decimal-digit‖decimal-digit‖decimal-digit

  Specify the number of words in the receive buffer by keying-in three decimal-digits.
- DC–TASK DATCOM FILE-CODE: file-code

  Specify the file code to be used for data communication. The file code must not be preceded by a slash.
- PHYSICAL LINE NUMBER: decimal-digit‖decimal-digit

  Specify the physical line number to be used by keying-in two decimal-digits.

DRCG01 Customer Operated Teller

The questions in this section are not typed-out by SYSGEN if "Y" was answered to the question "CREDIT APPLICATION" (see section 9.12.5.11).

- PIN CALCULATION FIELDS: S1E1, S2E2, S3E3, S4E4.

  Specify the personal identification number calculation fields by keying-in the start positions of the Nth field (SN) and the end positions of the Nth field (EN).

  A COT transaction card contains 104 positions. A PIN calculation field is a contiguous subset of these positions. If the start position is given a higher value than the end position, for a PIN calculation field, this field is omitted.

  The standard values are: 3035, 0310, 0100, 0100.
- SWALLOW CARD TIMEOUT (MULTIPLES OF 2.56 MS): decimal-digit .....

  Specify the time after which the transaction card will be swallowed (2).
- TRANSMISSION TIMEOUT (MULTIPLES OF 2.56 MS): decimal-digit .....

  Specify the transmission timeout (32).

- PIN LOADING TIMEOUT (MULTIPLES OF 2.56 MS): decimal-digit .....
  Specify the PIN loading timeout (20).
- BUZZER TIMEOUT (MULTIPLES OF 10 MS): decimal-digit .....
  Specify the buzzer timeout (10).
- NOTE LENGTH TIMEOUT (MULTIPLES OF 10 MS): decimal-digit .....
  Specify the note length timeout (16).
- STANDARD KEYBOARD LAYOUT: {Y / N}

  Specify if the standard keyboard layout will be used (Y).

  Standard layout:

7	8	9
4	5	6
1	2	3
F0	0	F1

  Non standard layout

1	2	3
4	5	6
7	8	9
F0	0	F1

9.12.5.20 *LKM Processors*

Various LKM processors may be included in the system: optional LKM processors are as follows:

- DELAY/DELAY AND ACTIVATION: {Y / N}

  Specify if the timing functions above are required.
- DYNAMIC BUFFER ALLOCATION: {Y / N}

  Specify if dynamic buffer allocation is required.
- ABORT FUNCTION: {Y / N}

  Specify if the abort function is required.
- GET/SET TIME: {Y / N}

  Specify if the get/set time requests are required.
- ATTACH/DETACH: {Y / N}

  Specify if the attach/detach function is required.

If the operator wishes to change the answers after replying, he may key-in $, and the above questions are then repeated.

There are three types of device class:

- Terminal device class
- Echo device class
- Special device class

One or more of each of these device classes may be defined.

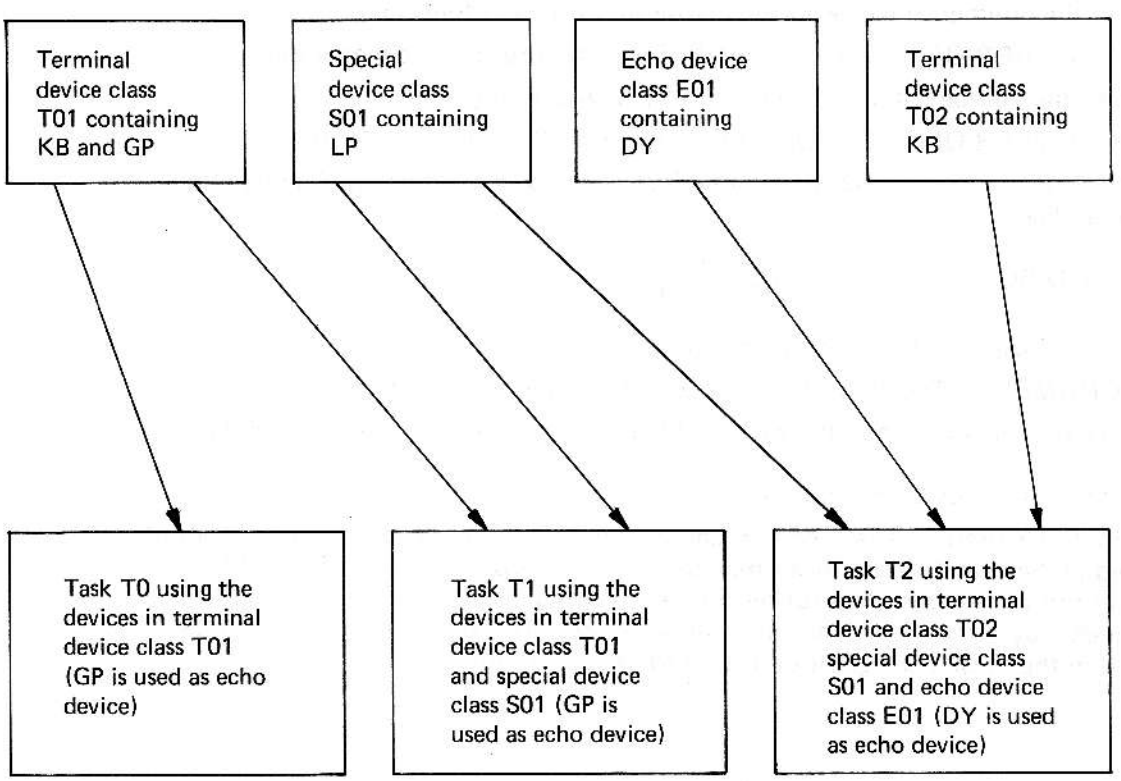
A terminal device class must contain one or more devices that are connected to a single CHLT or CHRT line (i.e. device types KB, TP, GP, DN, DI, DY and/or CT).

An echo device class must contain **one** device that is connected to a CHLT or CHRT line and is to be used as an echo device to a keyboard (i.e. device types GP or DY). Echo devices may be specified in a terminal device class. However, if the echo device is not connected to the same CHLT/CHRT line as the keyboard, it should be defined in a separate echo device class.

A special device class must contain one or more devices that are **not** connected to a CHLT or CHRT (i.e. device types SO, SI, TC, DU, LP, TW, MT and/or CC).

The present section describes the definition of terminal device classes. Sections 9.7.5.23 and 9.7.5.24 respectively describe the definition of echo device classes and special device classes.

The following diagram illustrates the use of device classes.



9.12.5.21 *Data Management*

If Data Management has been requested (see 9.12.5.12), the following questions are asked:

- MAX NUMBER OF DISK FILES: decimal-digit‖decimal-digit

  Key-in two digits specifying the maximum number of data files assigned at the same time.

- MAX NUMBER OF COMMON DISK-FILE FILE CODES: decimal-digit‖decimal-digit.

  Key-in two digits specifying the maximum number of file codes used for data files.

- MAX NUMBER OF DISK BUFFERS: decimal-digit‖decimal-digit.

  Key-in two digits specifying the number of sector buffers (2).

- EXCLUSIVE ACCESS HANDLING: {Y / N}

  The exclusive access check is included if Y is keyed-in.

- INDEXED ACCESS: {Y / N}

  Specify if indexed access is required. If Y is answered to this question, the following two questions are asked, in addition to those following, which are always asked.

- MAX KEY LENGTH IN BYTES: decimal-digit‖decimal-digit .....

  Key in up to three digits to specify the maximum key length.

- NUMBER OF WORDS IN MASTER INDEX AREA: decimal-digit‖decimal-digit‖ decimal-digit‖decimal-digit

  Key in the number of words in the master index area in four digits.

- MAX NUMBER OF CURRENCY BUFFERS: decimal-digit‖decimal-digit

  Specify the number of currency buffers by keying-in two digits.

- MAX NUMBER OF RECORDS WITH EXCLUSIVE ACCESS: decimal-digit

  Specify the number of records with exclusive access (maximum) by keying-in one decimal-digit.

- LOCAL DISC-FILE FILE CODES: {Y / N}

  Specify if local disk file codes are required for this task.

- MAX NUMBER OF LOCAL DISC-FILE FILE CODES: decimal-digit

  Specify the maximum number of local file codes by keying in one decimal-digit.

9.12.5.22 *Terminal Device Classes*

For each device used by a task certain parameters (e.g. file code, device address) must be keyed-in. Several different tasks may use the same types of device. To avoid keying-in the same parameters for several tasks during task definition (9.7.5.22) these parameters may be keyed-in once in a "device class". This device class may then be included in the "task configuration list" during task definition.

- T01: {Y / N}

  A "T" followed by terminal device class number is output. By answering Y/N the operator declares if he wants to define the terminal device class or not. If N, terminal device class definition is ended.

- DEVICE–ABBREVIATIONS: {Y / N}

  For each CHLT/CHRT device-type chosen (see 9.12.5.14), the two character device abbreviations is output. The device-type is included in the terminal device class if the operator replies Y, else not (N).

  If the device is included in the terminal device class, the operator has to specify some of the device parameters described below.

- FILE CODE: file-code [,file-code].....

  Note there is no slash (/) before the file code.
  Normally only one file code is specified for a device.

  If n file codes are specified, the first one is assigned to the device. n-1 **extra terminal device classes** is then generated, containing this device only, but with the file code replaced with the 2nd, 3rd, ... , nth file code in the file code list. It is possible to declare several file codes for only one of the devices in a terminal device class.

  If the device is a "CREDIT printer", each print station on the printer should have its own file code. The 1st file code, in the file code list, is then assigned to journal tape, the 2nd to voucher/passbook and the 3rd to tally roll.

  Since one terminal device class is generated for each file code in the file code list, a "CREDIT printer", with the three print stations, is built up by three terminal device classes. At task definition time (see below) these three terminal device classes must be defined in the task configuration list.

- DEVICE ADDRESS: hexadecimal-digit [,hexadecimal-digit]

  Hexadecimal-digit is the device address. This must not be zero. Normally one device address is assigned to a device.

  It is however possible to define two device addresses together with the same file code for keyboards. Thus the different keyboards are assigned to the same device work table (DWT).

  Recommended device addresses:

  KB : 1
  GP, TP : 2
  DI : 3
  DN, DY : 4

- PTS NUMBER: decimal-number

  Key-in the four digit PTS product number. This question is only asked if there is more than one PTS product available within the current device type. For example, if the device type is MT the model of magnetic tape unit must be specified by keying in 6164, 6168 or 6872. A list of these device types and product numbers is given below:

Keyboard	(KB)	:	PTS6231/6232/6233/6234/6236/6331
Teller terminal printer	(TP)	:	PTS6221/6222/6224
Signal display	(DI)	:	PTS6232/6233/6234/6241/6242/6331
Video/plasma display	(DY)	:	PTS6342/6344/6351
Magnetic tape	(MT)	:	PTS6164/6168/6872

Note: The product numbers for magnetic tape may only be used in special device classes.

- PIN CHARACTER: hexadecimal-digit‖hexadecimal-digit

  This question is only output for driver DRCG01 (Customer Operated Teller). Specify the hexadecimal code for the ISO-7 character that should be output on the COT display when entering personal identification number (PIN).

The following questions are only asked for displays:

- NUMBER OF LINES ON DISPLAY: decimal-digit‖decimal-digit
- NUMBER OF CHARACTERS/LINE: decimal-digit‖decimal-digit

  One of the following should be keyed-in:

  Video Display Unit: 20 lines of 64 characters
  Plasma Display Unit: 08 lines of 36 characters

The following questions are asked for keyboards only:

- BACKSPACE KEY: hexadecimal-digit‖hexadecimal-digit
- CANCEL KEY: hexadecimal-digit‖hexadecimal-digit
- TRIPLE ZERO KEY: hexadecimal-digit‖hexadecimal-digit
- MULTIPLE ZERO KEY: hexadecimal-digit‖hexadecimal-digit

  Specify the hexadecimal codes for the ISO-7 characters to be used for the above functions. If a function is not required FF should be keyed-in.

- ECHO DEVICE: GP|DN|DY|N|E

  Specify the device on which the input characters will be echoed. GP, DN and DY are explained in section 9.12.5.14. N means that no echo device will be used. E means that the echo device is defined later in the echo device class.

  If the operator answers GP, DN or DY the echo device must be defined in the same terminal device class as the keyboard and hence connected to the same CHLT/CHRT line.

  Type E if the echo device is connected to another line on the CHLT/CHRT than the keyboard. If so, the terminal device class must be followed by an echo device class (containing echo device) in the task configuration list (see below).

  If the operator detects that a terminal device class (as well as an echo device class or special device class) has been incorrectly defined, he defines a new class. The incorrect class is thereafter not used by the operator at task/common device definition time.

- CODE CONVERSION: $\left\{\begin{matrix}Y\\N\end{matrix}\right\}$

  Specify if code conversion is required.

If code conversion is included, ISO-7 code columns that should be changed, must be specified in the following way:

COLX (CR) [COLY (CR) . . . . . COLZ (CR)] (CR)

where:

COLX: : = X : CODES
CODES: : = CODE1 ‖ CODE2, ... , CODE15‖CODE16

X	digit between 0—7 specifying ISO-7 code column number.
CODE1 CODE2	four hexadecimal digits specifying the first and second code word in the ISO-7 code column X.
(CR)	carriage return.

Note that the above question is not output if only PTS6236 keyboards are included in the system: in this case, it is the responsibility of the programmer to supply a code conversion table, if required (see Assembler Programmers Manual M06 Part 2).

- 8-BIT SETTING: {Y / N}

Specify if eight bit setting is to be included.
If 8-bit setting is included, bit 0 is set to 1 for all characters, except digits. If two device addresses are specified, 8-bit setting is implemented for the first keyboard (first device address). 8-bit setting is automatically included for keyboard PTS6234.

- KEYBOARD TIMEOUT: {Y / N}

Specify if a 30 sec. timeout should be used for read requests on keyboards.

9.12.5.23 *Echo Device Classes*

An echo device class contains **one** CHLT/CHRT device that could be used as echo device to a keyboard. The echo device should be defined in an echo device class if it is connected to another CHLT/CHRT line than the keyboard (see 9.12.5.22). Note that echo device classes are not supported by the Monitor Configuration Program.

Echo device classes are declared in the same way as terminal device classes.

9.12.5.24 *Special Device Classes*

A special device class is a group of devices other than CHLT/CHRT devices (see 9.12.5.22).

For CREDIT applications both tape cassette units must be included (used by the Configurator). Each unit must be included in a different special device class.

If MONCON is to be used, a special device class must be specified to read the cassette containing the Monitor configuration data.

For each device included, some of the parameters below should be defined.

Devices are included in a special device class in the same way as for terminal device classes.

- FILE CODE: file-code[,file-code]. . . .

  Note that there is no slash (/) before the file code.

  It is only allowed to specify one file code, in the file code list, for disk unit and typewriter. For these devices two questions are output, to allow the operator to specify the file codes for cartridge disk, fixed disk and keyboard printer respectively.

If several file codes are defined, in the file code list, the meaning is the same as described in 9.12.5.22.

As an option the System Operators Panel may handle two simultaneous read requests, each with its own file code. If this facility is included in the driver the first file code in the above file code list refers to the first device work table; the second file code refers to the second device work table. This facility is used to stop CREDIT debugging program dumps. The second file code should be 14.

If the application program is written in CREDIT and the trace facility of the CREDIT Debugging Program is to be used, file code 16 should be devoted to the trace device.

- UNIT NUMBER: decimal-digit

Unit number is only used for cassette tape drives and magnetic tape units.

Cassette tape:

1 = left cassette drive
2 = right cassette drive

Magnetic tape:

1 1 st mag. tape unit
2 2 nd mag. tape unit
. .
. .
. .
. .
. .
8 8 th mag. tape unit

9.12.5.25 *Extra Monitor Modules*

- EXTRA MONITOR MODULES: {Y / N}

Specify if extra monitor modules should be included in the Monitor.

If Y, extra modules are declared in a module list. SYSGEN types out a series of asterisks, each on a new line. The format of each module declaration is as follows:

* file-name, userid

The above response may be repeated on successive lines following the * prompt typed out by SYSGEN. The last * in the list should be followed by a response of (CR) only.

It should be noted that if a monitor module should be replaced by another module, the name of the replaced and replacing modules should be the same.

9.12.5.26 *Task Definition*

The questions in this section are not typed out by SYSGEN if "Y" was answered to the question "MONITOR CONFIGURATION PROGRAM:" (see 9.12.5.4).

TASK 01: {Y / N}

By replying Y or N to the question TASK XX : (XX = task number), the operator declares if he wants to define task XX.
If N, task definition is ended.

For each task, the operator has to specify task identification and task configuration list.

- TASK IDENTIFICATION: alphanumeric character‖alphanumeric character
  [,alphanumeric-character‖alphanumeric-character] . . . .

The alphanumeric character pairs are task identifiers.
The task identifier is considered as a decimal number and converted to binary, if the characters input are decimal digits, else as a two character ISO-7 string.

If n task-identifiers are specified n-1 extra tasks are generated, with the 2 nd, 3 rd, ... ,n th task identifiers respectively. All n tasks will get the configuration defined in the configuration list below, but with the CHLT/CHRT devices connected to different lines.

If a terminal class is connected to CHLT/CHRT line x, in the configuration list below, this class will be connected to CHLT/CHRT line, x, x + 1, . . . , x + n for the 1 st, 2 nd . . . . , n th task defined in the task identification list respectively.

- TASK LEVEL: 51|52|53|54|55|56|57|58|59|60|61|62

Priority level is defined by typing one of the decimal level numbers between 51–62. Normal level is 60.

If the CREDIT Debugging Program is to be used a special task must be specified. The task identification is TB and it runs on priority level 55. It uses a task with a special device class in which the typewriter device is included.

The input file code is then : 21
output file code : 31
backspace key : 5F
cancel key : 5E
end of record key : 0D

- TASK CONFIGURATION LIST: $\left\{\begin{matrix}T\\E\\S\end{matrix}\right\}$ CLANBR [LINBR $\left\{\begin{matrix}L\\R\end{matrix}\right\}$]

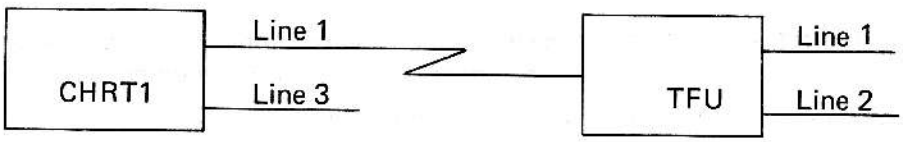
The above response may be repeated on successive lines following the * prompt typed out by SYSGEN. The last item in the list should be followed by a response of (CR) only.

A task configuration is built up by connecting a number of terminal device classes, echo device classes and special device classes to the task. This is done by defining these classes in the task configuration list.

T	terminal device class
E	echo device class
S	special device class
CLANBR	decimal class number, one/two decimal-digits
LINBR	decimal line number on CHLT/CHRT, one/two decimal-digits 1 – 8 for CHLT1 9 – 16 for CHLT2 1 – 4 for CHRT1 5 – 8 for CHRT2
L	devices connected to local channel unit
R	devices connected to remote channel unit

If the operator answers just (CR) , no devices are attached to the task.

Note: CHRT1 may have a Transfer Unit connected to each line, giving effectively four lines (see diagram below):



If an odd line number is specified, the line operates in block mode. If an even number is specified, the pair of lines operate in character mode.
Example: Specification of lines 2 and 3 gives lines 1 and 2 operating in character mode and line 3 operating in block mode.
If no Transfer Unit is connected, then the two lines available are considered to be numbered 1 and 3.

The first task defined, is always started by the Monitor after program loading.

The task configuration list for the first task in a CREDIT program must contain a special device class in which the System Operators Panel input (and optionally output) is defined. It should be noted that it it has been declared in 9.12.5.22) that the echo device is later defined in an echo device class, the concerned terminal device class must be immediately followed by that echo device class, in the task configuration list.

If the operator detects an error in task definition, he may type $, whereupon task definition is restarted.

Example:

A task containing

KB	on CHLT-line 1
DN	numeric display as echo device on CHLT-line 2
TP	on CHLT-line 1
MT	one magnetic tape unit

This task may be defined in the following way.

T1	declare terminal device class T1 containing KB and TP. Echo device is defined by answering "E" (see 9.12.5.22)
E1	declare echo device class E1 containing DN
S1	declare special device class S1 containing MT

Task configuration list should then be specified in the following way:

T1, 1L (CR)	terminal device class 1 on CHLT line 1
E1, 2L (CR)	echo device class 1 on CHLT line 2
S1 (CR)	special device class 1
(CR)	

(Line feed is made by SYSGEN).

9.12.5.27 *Common Device Definition*

The questions in this section are not typed out by SYSGEN if "Y" was answered to the question "MONITOR CONFIGURATION PROGRAM;" (see section 9.12.5.4).

- COMMON DEVICES: {Y / N}

By replying Y or N the operator declares if he wants to define common devices, i.e. devices that are common to all tasks in the System.

Common device configuration is built up by a number of terminal device classes, echo device classes and special device classes defined in 9.12.5.22 to 9.12.5.24.

These classes are defined in a configuration list, with the same syntax as described in 9.12.5.26.

If the application is written in CREDIT and the trace facility of the CREDIT Debugging Program is to be used, the special device class containing the trace device should be included.

If the $ key is depressed, common device definition is restarted.

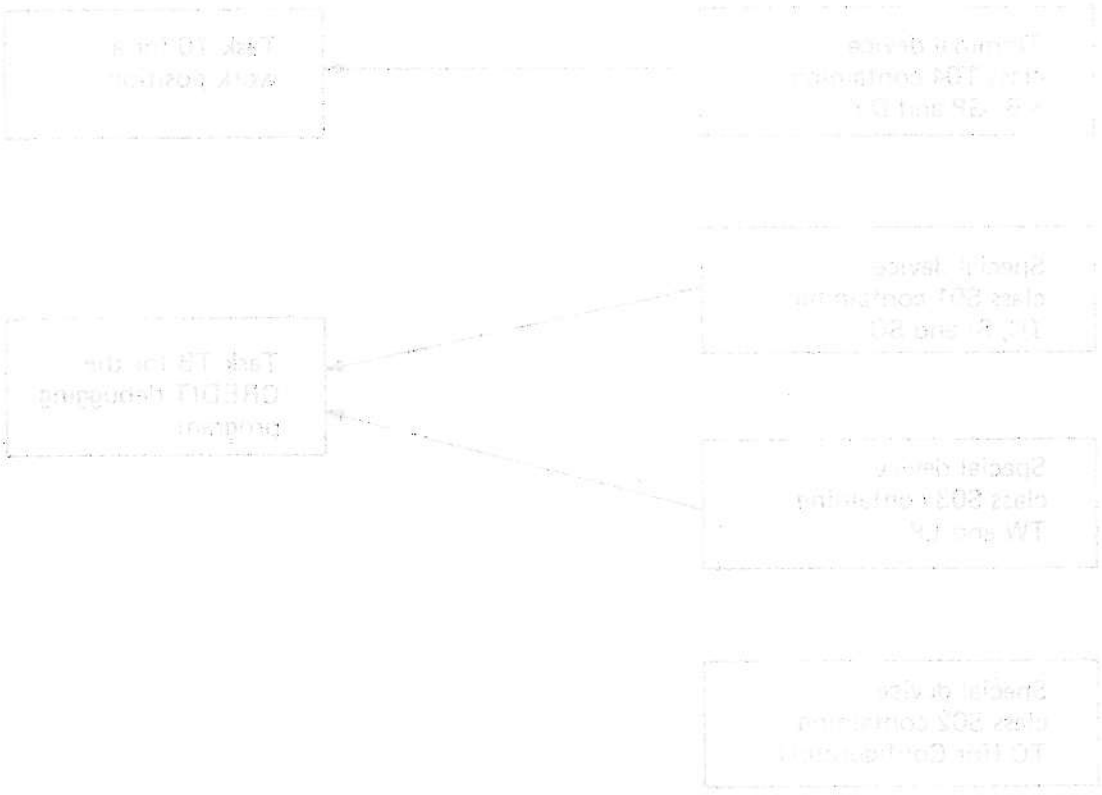
9.12.5.28 *SYSGEN End*

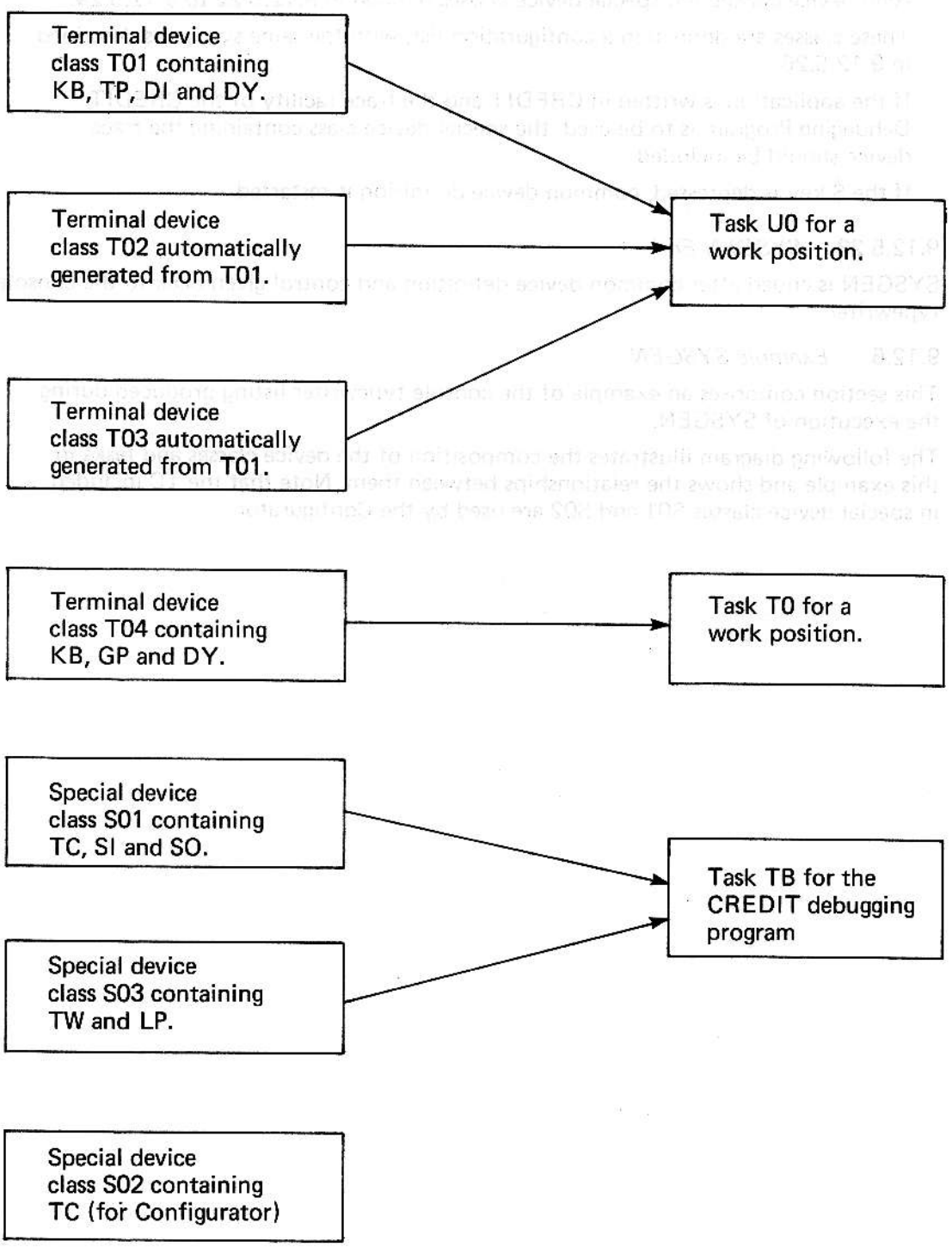
SYSGEN is ended after common device definition and control given back to the console typewriter.

9.12.6 *Example SYSGEN*

This section comprises an example of the console typewriter listing produced during the execution of SYSGEN.

The following diagram illustrates the composition of the device classes and tasks in this example and shows the relationships between them. Note that the TC included in special device classes S01 and S02 are used by the Configurator.




Terminal device class T01 containing KB, TP, DI and DY.
Terminal device class T02 automatically generated from T01.
Terminal device class T03 automatically generated from T01.
Task U0 for a work position.
Terminal device class T04 containing KB, GP and DY.
Task T0 for a work position.
Special device class S01 containing TC, SI and SO.
Special device class S03 containing TW and LP.
Task TB for the CREDIT debugging program
Special device class S02 containing TC (for Configurator)

```
S:ASG    /CA, DK
S:RUN    SYSGEN

S Y S G E N
SYSTEM GENERATION PROGRAM 6800
RELEASE # 3.1
SUPPORTING TOSS RELEASE # 8.1
****************************************

ASSEMBLY LIST : N
MONITOR NAME : BTMON2
MONITOR CONFIGURATION PROGRAM : N
MEMORY MANAGEMENT : N
PROGRAM LOADING FROM DISK : Y
MONITOR INITIALIZATION PROGRAM : Y
DEBUGGER : N
SUBROUTINE CALL INTERPRETER : N
CREDIT APPLICATION : Y
DATA MANAGEMENT : Y
******************** DEVICE ABBREVIATIONS ********************
DEVICE LIST (Y/N) : Y
KB      KEYBOARD
TP      TELLER TERMINAL PRINTER
GP      GENERAL PRINTER
DN      NUMERIC DISPLAY
DI      INDICATOR DISPLAY/KEYBOARD LAMPS
DY      VIDEO/PLASMA DISPLAY
LT      LOCAL TERMINALS
RT      LOCAL AND REMOTE TERMINALS
CT      CUSTOMER OPERATED TELLER
MS      MAGNETIC STRIPE UNIT
OD      OPTICAL DOCUMENT READER
TC      TAPE CASSETTE
SI      SOP INPUT
SO      SOP OUTPUT
MT      MAGNETIC TAPE UNIT
TW      TYPEWRITER
DU      DISK UNIT
```

```
LP      LINE PRINTER
FD      FLEXIBLE DISC
CR      CARD READER
II      INTERTASK COMMUNICATION INPUT
IO      INTERTASK COMMUNICATION OUTPUT
D1      DATA COM DRIVER DRDC07
D2      DATA COM DRIVER DRDC15
D3      DATA COM DRIVER DRDC17
D4      DATA COM DRIVER DRDC81
D5      DATA COM DRIVER DRDC82
D6      USER OWN DATA COM DRIVER 1
D7      USER OWN DATA COM DRIVER 2
CC      CASSETTE CHANGER

DEFINE DEVICES :  KB, TP, GP, DI, DY, RT, TC, SI, SO, TW, DU, LP
KEYBOARD 6236 IN SYSTEM : N
**********D R I V E R S**********

********** DRKB01 :

KEYBOARD TIMEOUT :  N
ECHO FUNCTION :  Y
STANDARD READ:  Y
NUMBER OF ZEROES FOR MULTIPLE ZERO KEY  :  2
COMPLETION OF READ REQUEST AT POWER ON  :  N
CIRCULAR INPUT BUFFER SIZE:  24
CODE CONVERSION/8-BIT SETTING :  Y

**********DRTP02 :  S
**********DRGP01 :  S
**********DRDI01 :  S
**********DRDY01 :

GRAPHIC MODE  :  N
ONLY PTS 6344 :  N
LOWER CASE CHARACTERS  :  N
ECHO OF EOR-KEY  :  N
SUPPRESSION OF TRAILING BLANKS  :  N
CURSOR STEADY ON 6386 (ELSE TWINKLING)  :  Y
**********DRRT01 :  S
**********DRTC01 :
```

```
NUMBER OF CASSETTE DRIVES: 2
ORDERS LOCK, ERASE AND REVERSE ONE BLOCK : Y

**********DRSOP1 :

EXTRA SOP INPUT DWT : Y
FLASH FUNCTION : N
**********DRTW01 : S
**********DRDU01 :

READ AFTER WRITE : Y
NUMBER OF DISK UNITS: 1
UNIT 1 PTS 6876 DISC : N
**********DRLP01:

LP ON PROGRAMMED CHANNEL (ELSE MUX) : N

********** LKM-PROCESSORS **********

DELAY/DELAY AND ACTIVATION: Y
DYNAMIC BUFFER ALLOCATION : Y
ABORT FUNCTION : Y
GET/SET TIME : Y
ATTACH/DETACH: N

********** DATA MANAGEMENT PARAMETERS**********

MAX NUMBER OF DISK FILES : 20
MAX NUMBER OF COMMON DISK-FILE FILE CODES : 20
MAX NUMBER OF DISK BUFFERS : 5
EXCLUSIVE ACCESS HANDLING : Y
INDEXED ACCESS: N
MAX NUMBER OF CURRENCY BUFFERS : 2
MAX NUMBER OF RECORDS WITH EXCLUSIVE ACCESS : 9
LOCAL DISC FILE CODES : Y
MAX NUMBER OF LOCAL DISC FILE CODES : 2
********** DEFINE TERMINAL DEVICE CLASSES**********

**********T01 : Y
********* KB : Y
```

```
FILE CODE : 20
DEVICE ADDRESS: 1,5
PTS NUMBER : 6234
BACKSPACE KEY : FF
CANCEL KEY : FF
TRIPLE ZERO KEY : FF
MULTIPLE ZERO KEY : 3A
ECHO DEVICE : DY
CODE CONVERSION : N

********* TP : Y

FILE CODE : 30, 31, 32
DEVICE ADDRESS : 2
********* GP: N
********* DI : Y

FILE CODE : 20
DEVICE ADDRESS: 1
PTS NUMBER : 6234
********* DY : Y

FILE CODE : 50
DEVICE ADDRESS: 4
PTS NUMBER : 6351
NUMBER OF LINES : 08
NUMBER OF CHARACTERS/LINE : 36
**********T04 : Y
********* KB : Y

FILE CODE : 20
DEVICE ADDRESS : 1,5
PTS NUMBER : 6234
BACKSPACE KEY : FF
CANCEL KEY : FF
```

```
TRIPLE ZERO KEY : FF
MULTIPLE ZERO KEY: 3A
ECHO DEVICE  : DY
CODE CONVERSION :  N
********* TP  : N
********* GP  : Y

FILE CODE :  30
DEVICE ADDRESS:  2
********* DI  : N
********* DY  : Y

FILE CODE :  50
DEVICE ADDRESS:  4
PTS NUMBER :  6344
NUMBER OF LINES  :  24
NUMBER OF CHARACTERS/LINE  :  80
********************  T05 :  N

********************  DEFINE ECHO DEVICE CLASSES  ********************
********************  E01 :  N

********************  DEFINE SPECIAL DEVICE CLASSES  ********************

********************  S01 :  Y
********* TC  : Y

FILE CODE :  12
UNIT NUMBER  :  1
********* SI :  Y

FILE CODE :  10, 14
********* SO  : Y
```

```
FILE CODE : 11
********* TW  : N
********* LP  : N
********************  S02 : Y
********* TC  : Y

FILE CODE : 13
UNIT NUMBER  : 2
********* SI : N
********* SO  : N
********* TW  : N
********* LP  : N
********************  S03 : Y
********* TC  : N
********* SI : N
********* SO  : N
********* TW  : Y

INPUT FILE CODE : 21
OUTPUT FILE CODE : 31
BACKSPACE KEY  : 5F
CANCEL KEY : 5E
END OF RECORD KEY : 0D
********* LP  : Y

FILE CODE : 16
********************  S04: N

EXTRA MONITOR MODULES  : N
```

```
**********TASK DEFINITION**********

**********TASK 01 : Y

TASK IDENTIFICATION : TB
TASK LEVEL : 55
TASK CONFIGURATION LIST : S1
*S3
*

**********TASK 02 : Y

TASK IDENTIFICATION : T0
TASK LEVEL : 60
TASK CONFIGURATION LIST : T4, 1L
*

**********TASK 03 : Y

TASK IDENTIFICATION : U0
TASK LEVEL : 60
TASK CONFIGURATION LIST : T1, 1R
* T2, 1R
* T3, 1R
*

********** TASK 04: N

COMMON DEVICES : Y
CONFIGURATION LIST : S1
* S2
*

SYSTEN ENDED
S:KPF /CA,BTMON2
S:ASG /D0,DK,BTMON2
```

9.13 XRF

XRF is used to obtain a listing, on the line printer, of cross-references within a source module on disk, i.e. a listing of symbols used in the module, including line numbers of both their definition and references. The utility can be used for both CREDIT and ASSEMBLER modules.

The listing produced is headed SYMBOL DEF REFERENCES, and under this heading are listed the symbol names, with line numbers as described above. Where a symbol is referred to more than once, the line numbers are printed in ascending sequence. If a symbol is undefined (i.e. referred to but not defined), three asterisks appear on the listing under the DEF column heading. If a symbol is multidefined, only the lowest line number of the definition appears under DEF. The remaining line numbers for the definition statements appear under the REFERENCES, together with the line numbers of the references, but with a plus sign (+) printed after the line number.

The following steps must be taken to execute the XRF utility:

Key in the control command XRF xxxxxx,	where xxxxxx is the name of the source module for which the cross-reference list is required.