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CONTROL DATA CORPORATION

MSOS VERSION 5 ORDERING BULLETIN

CDC® COMPUTER SYSTEMS
CYBER 18 MODELS 17 AND 20
1700 COMPUTER SYSTEMS

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or use Comment Sheet in the back of this manual.

LIST OF EFFECTIVE PAGES

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PREFACE

This manual helps the user of the CONTROL DATA® CYBER 18-17/CYBER 18-20/1700 Mass Storage Operating System (MSOS) Version 5 to configure his own MSOS system based on his needs. This manual contains the order forms that specify the desired system.

Although a high degree of knowledge is not required, it is assumed that the reader has some understanding of the CYBER 18-17/CYBER 18-20/1700 hardware, peripheral devices, and operating system.

The first two sections contain brief descriptions of some hardware and software features that must be understood to complete the order form. The next three sections consist of worksheets that are useful in configuring the system. Sections 7 through 9 contain the order forms and some useful examples.

The following related manuals are available through Control Data Corporation:

Publication	Publication Number
MSOS 5 Reference Manual	96769400
File Manager Reference Manual	39520600

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or unidentified parameters.

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INTRODUCTION 1

The CONTROL DATA® CYBER 18-17/CYBER 18-20/1700 Mass Storage Operating System (MSOS) Version 5 may be used in a wide range of applications, from a stand-alone batch processing to high-speed data acquisition and industrial process control. Because the MSOS is flexible and can support a large number of peripheral devices, it is possible to configure a great variety of CYBER 18-17/CYBER 18-20/1700 Computer Systems.

The Control Data MSOS ordering system is designed to aid the CYBER 18-17/CYBER 18-20/1700 user in defining an MSOS system that can:

- Meet the applications requirements
- Be easily installed
- Contain reliable software that does not require the user to have a high degree of knowledge of MSOS.

The following is a summary of the MSOS ordering system:

1. The appropriate MSOS order form is completed and mailed to the Control Data address indicated on the form.
2. The order is verified and processed by Control Data.
3. An installable system is configured specifically for the order.
4. The system is installed on a CYBER 18-20, CYBER 18-17, or a 1700 Computer with a similar configuration, and a set of standard MSOS verification tests are run to establish the correctness of the software.
5. The system is shipped to the user, together with all applicable software materials.
6. When the system is received, it can be installed and verified as in step 4.
7. After verification, the system may be put to use directly or used as the basis for further customization.

The following items should be noted when specifying the system hardware for the order form:

- In order to standardize hardware equipment addresses and interrupt lines, only one peripheral controller of each type listed below may be ordered in a system:

  -Disk mass storage

  -Drum mass storage

  -Magnetic tape

  -Card reader

  -Card punch

  -Paper tape

  -Communications devices

  Refer to the MSOS Version 5 Reference Manual for a complete description of this standard.

  The 1833-5 Flexible Disk Drive Controller and the 1832-5 Magnetic Tape Cassette are not considered to be the system standard disk mass storage controller and the standard magnetic tape controller. Therefore, the preceding restriction on the system hardware does not affect selection of these devices.

- Only 16 communications adapter channels may be ordered for the 364-4/5 Communications Multiplexer. Since the 361-4 Communications Adapter requires two channels, the number of terminal units is less than 16 in systems containing this type of adapter.

- Only two 1744/274 Graphics Consoles may be ordered in a system.

- The 1713-1 through 1713-3 Teletype Paper Tape Units may not be used as input to the system initializer.

- The 1713-4 and 1713-5 Teletype Paper Tape Units are not supported under MSOS.

- Up to three 1706 Buffered Data Channels may be included in a system. Each of these may service up to eight peripheral controllers, so that one 1706 may be used for several buffered devices, or a device may use a dedicated 1706. If the system contains a 1745-211 Display Controller, it requires the use of a dedicated 1706, which is automatically configured as number 1.

- The MSOS software that supports the 1500 Series analog-digital equipment does not allow data transmission to be synchronized by a signal from an external device. All 1547 Events Counters are treated as 16-bit counters and are input in an events-per-unit-time mode under MSOS. These counters require the dedicated use of the sample rate generator portion of the 1572-1 Sample Timing Unit.

Although there are restrictions in the ordering of MSOS systems, this does not imply that additional capabilities cannot be achieved by customization. The Control Data analyst should also be consulted.

The Mass Storage Operating System consists of a monitor, peripheral device drivers, and the following standard modules:

- Job Processor
- Small Computer Maintenance Monitor (1700 Series computers only)
- Debugging and checkout routines
- System utilities
- System Initializer

There are also several optional features that may be selected as a part of MSOS and several software products that run under the Mass Storage Operating System. A brief description of these optional features and software products is provided here, but the appropriate reference manual should be consulted if more detailed information is required.

- Partitioned memory - Two forms of memory management are available under MSOS: allocatable and partitioned memory. Allocatable memory is a required feature of the system in which memory is dynamically assigned to requesters on an as-needed basis, by priority level. Programs executing in allocatable memory reside on mass memory and must be coded in such a way that they may be executed at any memory address. Partitioned memory is an optional feature in which memory is divided into fixed segments, and programs are assigned to one or more of these during installation. Programs executing in partitioned memory also reside on mass memory and may only be executed in the partition to which they are assigned. In general, allocatable memory makes more efficient use of the amount of available memory and can allow parallel execution of programs in the system. It requires slightly more system overhead than partitioned memory and can result in more complex systems in terms of the interaction between mass-resident programs. Partitioned memory allows systems to be designed in a more structured way and tends to cause serial execution of program functions. In general, programs written for partitioned memory are easier to design and code than those written for allocatable memory. While partitioned memory does require less system overhead, partitioned progams may be less responsive than allocatable programs, particularly if a highly active partition is used. Finally, partitioned memory requires additional main memory for the partitioned memory processor.

- File manager - This is an optional product that runs under MSOS and requires a separate software license. It consists of a general-purpose file management package that allows the creation and maintenance of both sequential and indexed files. The file manager offers a variety of methods for record retrieval: both random and ordered. File records may be of any length, and file manager requests may be made by both protected and unprotected programs. A general purpose text editor is included with the file manager.

- Magnetic tape emulation - This is an optional MSOS feature that utilizes mass memory to emulate magnetic tapes. This feature may be configured in two different ways:

  - Pseudo tapes make use of the MSOS file manager to create sequential files with the characteristics of magnetic tape units. When a pseudo tape is used in conjunction with the MSOS job files, a file structure is created that allows a single pseudo tape logical unit to reference any number of user-defined pseudo tapes. The job files are accessible only by unprotected background programs and job processor commands are available to define, release, open, and close these files. When a pseudo tape is specified for foreground access, it becomes in effect a single magnetic tape that may be used by any program in the system.

  - The magnetic tape simulator makes use of a predefined area on mass memory to provide the capabilities of a magnetic tape unit. This type of tape emulation does not require the use of the MSOS file manager.

  Only one of these two types of magnetic tape emulation can be ordered in a system.

- COSY interface - The COSY program is a standard feature of MSOS that provides a means of compressing Hollerith source information by removing blank characters, which reduces the amount of storage required to contain the data. The COSY interface is an optional feature that allows direct compression or expansion of data by the use of a pseudo device logical unit. For example, if the user wishes to assemble a compressed program, the source input to the assembler may be specified as the COSY interface. This avoids the intermediate step of expanding the program to Hollerith prior to assembly. The COSY correction feature is not allowed when using the COSY interface.

- Message buffering - This is an optional MSOS feature that allows improved allocated memory utilization in situations where programs require output of data to slow-speed devices. This feature requires a logical unit for message buffering in addition to the device logical unit. When a request is made to the buffered logical unit, the message records are immediately transferred to a mass memory buffer and the request is completed, allowing the program to release the memory that it occupies. At the same time, the transfer of data is initiated to the device associated with the buffered logical unit. In this way, a program need not remain in memory until the entire message is output. The message record size, and hence the buffer size, is dependent on the type of device that is buffered.

- FORTRAN 3.3 - This is an optional product that runs under MSOS, and that requires a separate software license. This product consists of the following elements:

  -A variant FORTRAN compiler

  -B variant FORTRAN compiler

  -Run-time library

  -Re-entrant run-time library

  -Double-precision option

  Both variants of the FORTRAN compiler process source statements identically and generate similar object code. Their major difference lies in compilation speed and memory requirements. The A variant is slower in compilation speed, but requires less memory for execution. It is recommended for systems that have limited main memory. Only one compiler variant may be present in an MSOS system and a different software license is required for each. The run-time library is always included with the FORTRAN product. This is a collection of routines that allows FORTRAN program execution in unprotected background, and includes arithmetic, input/output, and data format processors. The re-entrant run-time library is an optional feature of the FORTRAN product. This library allows FORTRAN execution in protected foreground and contains the same type of features as the background library. It has the ability to process several system priority levels simultaneously, thus allowing multiprogramming with FORTRAN. The double-precision option is a set of additional library routines for both the foreground and background that extends precision of real-type data to approximately 11.5 decimal digits. Both compiler variants and all runtime libraries are fully compatible with the 1781-1 Hardware Floating Point Unit. Programs compiled with FORTRAN 3.2 execute properly only with the software floating point FORTRAN 3.3 run-time.

- Magnetic tape utility 2 - This is an optional product that runs under MSOS and requires a separate software license. This utility allows the user to copy magnetic tape, dump from tape in selected format, write tape labels, print tape listings, select specific records, verify data, handle blocked records, select data conversion, direct tape positioning, and specify record formats.

- RPG II (Report Program Generator) - This is an optional product that runs under MSOS and requires a separate software license. This product provides the user with the ability to generate reports and modify files. RPG II consists of a compiler, an interpreter, run-time routines, a data manager, and Sort/Merge and utility packages. This product is intended to allow application programs written in RPG II for IBM System 3 to be easily transported to the CYBER 18-17/CYBER 18-20/1700 product line. This product requires the MSOS file manager and the Sort/Merge package.

- Sort/Merge 1 - This is an optional product that runs under MSOS and requires a separate software license. This package is capable of sorting unsorted files, merging pre-sorted files, and copying files. Sort/Merge handles an infinite number of key fields and input files. Each key field may separately be ascending or descending. This product requires the MSOS file manager.

- Pseudo disks - This is an optional MSOS feature that allows a physical mass memory drive to be segmented into a number of logical mass memory units. This feature provides MSOS with the capability of addressing all sectors on a mass storage device whose capacity exceeds 32,767 sectors.

- Extended memory driver - This is an optional feature that allows MSOS to address the extended memory modules above 128 K. This option requires that the last 4096 decimal bytes of the system, resident in the lowest 128K memory bank, be reserved for use by the driver.

- Macro Assembler 3 - This is an optional product that runs under MSOS and requires a separate software license. This product consists of a 3-pass assembler that can convert source language input, including macro instructions, to relocatable output and generate list output. The assembler allows full utilization of the CYBER 18-20 enhanced instruction set.

MEMORY SIZE WORKSHEET 4

The memory size worksheet is provided to aid in the determination of the proper amount of main memory and mass storage that is required to support the MSOS configuration that is being ordered. The worksheet may be used to determine the minimum amount of memory that satisfies the system requirements or to determine the amount of memory that is available for additional assignment, such as system common or mass-resident file space. The following items should be noted when making use of the worksheet:

- All memory requirements are approximate and are intended only as a guide in estimating the size of a system. These values are all incremental and are not necessarily the stand-alone size of the element.
- Any main memory that remains after all system requirements are met is automatically assigned as unprotected memory in the ordered system.
- Any mass memory that remains on the library unit after system requirements are met is automatically assigned as background scratch storage in the ordered system.
- In the remarks column on the worksheet, there are references to notes that immediately follow the memory size worksheet.

For example, a typical MSOS system would have the following minimum requirements:

MSOS requirements	40,000
MSOS file manager	6,600
A-variant compiler	6,600
Re-entrant library	10,600
	63,800 bytes

or 64K of main memory. The mass storage requirements are:

MSOS requirements	6,000
FORTRAN	1,650
	7,650 sectors

MEMORY SIZE WORKSHEET

System Element	Main Memory Requirement in Bytes	Remarks
Required MSOS	40,000	Note 1
MSOS File Manager	6,600	
Partitioned memory	1,200	
Total partitioned memory size	------	
Total system common size	------	
Message buffering	800	
FORTRAN A-variant	6,600	
FORTRAN B-variant	19,900	
Re-entrant FORTRAN library	9,000	With the 1781-1 Hardware Floating Point Unit
Re-entrant FORTRAN library	10,600	With software floating point
Double-precision option	3,500	With the 1781-1 Hardware Floating Point Unit. See note 2.
Double-precision option	5,800	With software floating point. See note 2.
Extended memory driver	4,426	
RPG II	6,200	Note 3

System Element	Mass Memory Bytes	Requirement Sectors	Remarks
Required MSOS	1152K	6000	Note 4
Message buffering	64K	350	Note 5
FORTRAN compiler/library	318K	1650	
File space		----	Note 6
Magnetic tape simulator		----	Note 7
RPG II	412K	2150	
Sort/Merge	16K	100	

Note: Two bytes are equivalent to one 16-bit word.

Mass Memory Sector Restrictions

To allow for standard system configurability, the following limitations have been placed on the total file space, software buffering, and magnetic tape simulation for each logical mass memory device.

Mass Memory Device	Total Number of Sectors Available for Each Unit		Remarks
	Library Unit (LU8)	Nonlibrary Unit	
1739-1	11775	11775	
1738/1733-1/853	8000	15999	
854	16000	32479	
1733-2/856-2	11775	11775	
856-4†	9221	9221	See footnote
1751-A	-----	683	
-C	-----	1365	
-D	-----	2048	
-E	-----	2731	
-F	-----	3413	
-G	-----	4096	
-H	-----	4779	
-J	-----	5461	
1752-1	-----	2048	
-2	-----	6144	
-3	approximately 6000	12288	
-4	approximately 10000	16384	
1833-3/1867-10†	16000	32767	See footnote
1867-20†	16000	32767	See footnote
1833-5/1865-1/2	-----	1399	Note 8

† Additional sectors may be allocated for file manager space, software buffering, and magnetic tape simulation on this mass storage device by assigning one pseudo disk drive for each additional block of up to 32,767 sectors on the physical unit. Sector 1 of the first pseudo disk unit on each mass memory unit is biased to begin at physical sector 32,768. (192 bytes are equivalent to one sector.) Appropriate space may then be allocated on the assigned pseudo disk units. See example 3 in section 9 for further clarification of this procedure.

Mass Memory Device	Additional Number of Sectors Available Per Unit Using Pseudo Disk Drives
1733-2/856-4	1 x 14325
1833-3/1867-10	3 x 32767
1867-20	7 x 32767

NOTES:

1. The requirement for a system with a typical amount of peripheral devices. This value can range from 38,000 to 42,000 bytes. A minimal MSOS 5 system with limited peripherals and capabilities may be configured in 32,000 bytes. The hardware configuration for a 32K byte minimum system is restricted to include only one console device (teletypewriter, conversational display terminal), one input device (paper tape, cards, magnetic tape), one output device (paper tape, cards, magnetic tape), and one mass storage drive.

2. The foreground library requirement. The background library can exceed 20,000 bytes when the double-precision option is included, which reduces the amount of memory available to the FORTRAN program. The actual size of the background library depends on the functions required for execution.

3. Use this minimum RPG II compiler requirement for unprotected memory only if no FORTRAN compiler variant has been selected. Additional unprotected memory is necessary to execute a typical RPG II object program and exceeds this minimum requirement by approximately 18K bytes when no FORTRAN compiler has been selected. If a FORTRAN compiler variant has been ordered, the additional memory required to execute a typical RPG II object program is 17.6K bytes and 4.3K bytes for the A- and B-variants, respectively.

4. This is the requirement of a typical system and includes a reasonable amount of scratch storage: 960K bytes for minimum systems. The amount of available scratch is reduced as the system is used and new programs are loaded into the system and program libraries.

5. The maximum requirement for each buffered logical unit. See also the mass memory sector restrictions table in this section.

6. Refer to the File Manager Reference Manual for the methods that may be used to determine this value. See also the mass memory sector restrictions table in this section.

7. As an aid in estimation, a 2400-foot, seven-track magnetic tape written at 800 bits per inch may be simulated by use of approximately 17,000 sectors. See also the mass memory sector restrictions table in this section.

8. A standard system does not support file space or software buffering on the 1833-5/1865-1/2 Flexible Disk Drive subsystem.

Every peripheral device in MSOS is addressed by a logical unit that must be assigned when ordering a system. In addition to hardware devices, certain software functions are also referenced as logical units.

To standardize MSOS systems and to allow transportability of MSOS software, the first 12 logical units in the system have restricted usage, as indicated below:

Logical Unit	Function
01	Core allocator
02	Dummy device
03	Dummy device
04	Comment input/output
05	COSY interface - unit 0
06	Magnetic tape - unit 0
07	Tape emulation - unit 0
08	System library unit
09	Standard list unit
10	Standard input unit
11	Standard output unit
12	FORTRAN list unit

The following logical units may be specified when the system is ordered:

- COSY interface - An optional MSOS feature, which is described in the software configuration section of this document. If it is selected, COSY unit 0 must be specified as logical unit 5.

- Magnetic tape - If the ordered system contains a magnetic tape controller, the logical unit of tape unit 0 must be specified as 6.

- Tape emulation - An optional MSOS feature, which is described in the software configuration section of this document. If it is selected, unit 0 must be specified as logical unit 7.

- Library unit - The mass memory device that contains all MSOS software. If the system mass memory device is a disk, unit 0 must be specified as logical unit 8. If the system mass memory device is a drum, it must be specified as logical unit 8. If the system contains both a drum and disk units, one of these devices must be assigned as the library unit in the manner described above. The other device may be assigned to any other available logical unit.

- Standard input unit - The device from which job processing control statements and data are normally read under MSOS. The following devices are eligible for this assignment:

  -Card reader
  -Magnetic tape unit 0
  -Paper tape reader

- Standard output unit - The device on which binary object code is normally written by the job processor under MSOS. The following devices are eligible for this assignment:

  -Card punch
  -Magnetic tape unit 0
  -Magnetic tape unit 1
  -Paper tape punch

The logical unit worksheet is provided to aid in specifying the logical units required. The following items should be noted when using the worksheet:

1. Usage restrictions for the first 12 logical units must be adhered to when ordering the system. Logical units 1, 2, 3, and 4 are automatically configured in the system. Logical units 5, 6, and 7 are optionally required, depending on system needs and configuration, and dummy entries are substituted if not selected. Logical units 8, 10, and 11 must be specified when ordering the system, while logical units 9 and 12 are automatically assigned to the system's line printer. The comment device is specified in systems with no line printer.

2. Any desired logical unit assignment may be made for the remaining devices in the system. Up to 50 logical units may be specified on the order form.

3. Logical units may be reserved for future expansion or other uses by leaving gaps in the logical unit assignments. Any logical unit that is unassigned in this manner is automatically specified as a dummy device in the ordered system.

To fill out the logical unit worksheet, enter the device or function associated with every logical unit required in the ordered system. This information will be required when using the system order form.

LOGICAL UNIT WORKSHEET

Logical Unit	Device or Function	Unit Number
04		
05		0
06		0
07		0
08		0
09		
10		
11		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		

LOGICAL UNIT WORKSHEET (Contd)

Logical Unit	Device or Function	Unit Number
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

This worksheet is provided as an aid for configuring and ordering the 1500 Series analog/digital equipment. This equipment is only available on the 1700 Series mainframes. If this equipment is not included in the system, this section may be ignored. The following items should be noted when making use of the worksheet:

- Station 0 has restricted usage and may only be selected for the 1544 Digital Input Unit, 1553 Digital Output Unit, 1555 Relay Output Unit, 1566 Analog Output Unit, or the 1590 Remote 1500 Series Controller. No other equipment may use station 0.

- One local and one remote 1500 Series controller may be ordered. If a remote 1500 is included, two adjacent stations must be reserved in the local controller for communication with the remote controller. The 1595 Serial Input/Output Interface may be only specified on the local 1500 controller.

- Each of the equipment types listed below must be arranged so that it occupies a contiguous group of stations in the local 1500 controller and, if required, a contiguous group of stations in the remote controller:

  -1544 Digital Input Unit
  -1553 Digital Output Unit
  -1555 Relay Output Unit
  -1566 Analog Output Unit

- The 1555 Relay Output Unit may be operated in either latching or momentary mode. Each mode must be independently specified as a contiguous group of stations.

- The 1501 High-Speed Analog Multiplexer and the 1547 Events Counter Unit must also be arranged in contiguous groups, but must not use station 0. Accordingly, two groups are allowed for each of these equipments. This provides for a maximum of 480 high-speed analog inputs and 30 events counters.

- If the 1547 Events Counter Unit is required as a remote device, a 1572-1 Sample Timing Unit must also be included on the remote controller, even if one is pesent locally.

- Although the 1572-1 Sample Timing Unit and the 1595 Serial Input/Output Interface are not ordered as analog/digital devices on the order form, they must be included in the worksheet if required in the system.

To fill out the worksheet, enter the 1500 Series equipment to be assigned to each module and station in the system. This information is required when using the system order form. Note that the assignment of equipment on this worksheet corresponds exactly to the actual equipment location in the 1500 controllers.

1500 SERIES EQUIPMENT WORKSHEET

Local Module 0 (Computer Interface Unit)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 1 (Computer Interface Expander 1)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 2 (Computer Interface Expander 2)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 3 (Computer Interface Expander 3)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 4 (Computer Interface Expander 4)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 5 (Computer Interface Expander 5)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 6 (Computer Interface Expander 6)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Local Module 7 (Computer Interface Expander 7)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 0 (Computer Interface Unit)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 1 (Computer Interface Expander 1)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 2 (Computer Interface Expander 2)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 3 (Computer Interface Expander 3)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

1500 SERIES EQUIPMENT WORKSHEET (Contd)

Remote Module 4 (Computer Interface Expander 4)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 5 (Computer Interface Expander 5)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 6 (Computer Interface Expander 6)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

Remote Module 7 (Computer Interface Expander 7)

Station	
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

The following items should be noted when completing the order form:

- The MSOS 1700 Series order form should only be completed if the system mainframe is a 1704, 1714, 1774, 1784, or CYBER 18-17. The MSOS CYBER Series order form in section 8 should be completed when the system is a CYBER 18-20.
- The 1784, System 17, and CYBER 18-17 all designate the same mainframe type.
- The order form must be filled out completely and accurately. Failure to do this results in delays in processing and shipping the system.
- This publication should be carefully reviewed before using the order form. In particular, the attached worksheets should be used in the specification of the system.
- Every order item has a number in the left-hand column that references an explanation that immediately follows the form itself.
- Entry of an alphanumeric or numeric item is specified by dashes enclosed in parentheses: (--). The number of enclosed dashes indicates the maximum number of characters or digits that are allowed.
- Selection of a multiple choice item is specified by a set of parentheses: ( ). This entry may be an X, a check mark, or any similar identifier.
- To aid the processing of this form, it is suggested that a circle is placed around each order reference item selected.
- The entries in sections 1 through 4 are required; all remaining items are optional.
- When the form is complete, it should be removed from this document and mailed together with a data form or CRAF to:

  G. J. Ferber - ARH230
  Control Data Corporation
  4201 Lexington Avenue North
  Arden Hills, Minnesota 55112

1700 SERIES

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION — FORM REVISION

1- 1 (----------) 1700 SERIES — MSOS (D)

INSTALLATION MEDIUM

	MAGNETIC TAPE 7-TRACK	MAGNETIC TAPE 9-TRACK	PUNCHED CARDS
1- 2	( )	( )	( )

SYSTEM LINE FREQUENCY

	50 HERTZ	60 HERTZ
1- 3	( )	( )

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

	1704	1714	1774	1784/18-17
2- 1	( )	( )	( )	( )

MAIN MEMORY SIZE

2- 2 (---) K BYTES

(3) SYSTEM TIMING DEVICE

TYPE	1572-1 LST	1572-1 SRG	1573 LST	
3- 1	( )	( )	( )	
TYPE	1572 SRG	364-4 MUX	10336-1 CLOCK	NONE
3- 2	( )	( )	( )	( )

(4) SYSTEM COMMENT DEVICE

TYPE	1711 TTY	1713 TTY	713-10 CRT	1811-1 CRT
4- 1	( )	( )	( )	( )

(5) SYSTEM DISK MASS STORAGE DEVICE

		DISK UNIT							
*	1739-1	0							
5- 1	LOGICAL UNIT	(--)							
*	1738 853/854	0	1						
5- 2	853	( )	( )						
5- 3	854	( )	( )						
5- 4	LOGICAL UNIT	(--)	(--)						
*	1733-2 856	0	1	2	3				
5- 5	856-2/12	( )	( )	( )	( )				
5- 6	856-4/14	( )	( )	( )	( )				
5- 7	LOGICAL UNIT	(--)	(--)	(--)	(--)				
*	1733-1 853/854	0	1	2	3	4	5	6	7
5- 8	853	( )	( )	( )	( )	( )	( )	( )	( )
5- 9	854	( )	( )	( )	( )	( )	( )	( )	( )
5-10	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

(6) SYSTEM DRUM MASS STORAGE DEVICE

6- 1	LOGICAL UNIT	(--)							
*	1752 DRUM SIZE	1	2	3	4				
6- 2		( )	( )	( )	( )				
*	1751 DRUM SIZE	A	C	D	E	F	G	H	J
6- 3		( )	( )	( )	( )	( )	( )	( )	( )

(7) SYSTEM LINE PRINTER

	1740-501	1742-1	1742-30	1742-120
7- 1	( )	( )	( )	( )

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

	INPUT	OUTPUT
8- 1	( )	( )

		TAPE UNIT			
*	1732-3 616-72/92/95	0	1	2	3
8- 2	7-TRACK	( )	( )	( )	( )
8- 3	9-TRACK	( )	( )	( )	( )
8- 4	LOGICAL UNIT	(--)	(--)	(--)	(--)

*	1732-2 615-73/93	0	1	2	3
8- 5	7-TRACK	( )	( )	( )	( )
8- 6	9-TRACK	( )	( )	( )	( )
8- 7	LOGICAL UNIT	(--)	(--)	(--)	(--)

*	1732-1 608/609	0	1	2	3	4	5	6	7
8- 8	7-TRACK	( )	( )	( )	( )	( )	( )	( )	( )
8- 9	9-TRACK	( )	( )	( )	( )	( )	( )	( )	( )
8-10	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

		1	2	3
8-11	1706 NUMBER FOR 1732-1	( )	( )	( )

*	1731 601	0	1	2	3	4	5	6	7
8-12	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

		1	2	3
8-13	1706 NUMBER FOR 1731	( )	( )	( )

(9) SYSTEM CARD DEVICE

CARD CONVERSION FORMAT

		ASCII-63	ASCII-68
9- 1		( )	( )

		1729-2	1729-3	1728-430	1726-405
9- 2	READER LOGICAL UNIT	(--)	(--)	(--)	(--)

		1725-1	1729-430
9- 3	PUNCH LOGICAL UNIT	(--)	(--)

		1	2	3
9- 4	1706 NUMBER FOR 1726-405	( )	( )	( )

(10) SYSTEM PAPER TAPE DEVICE

		1713	1777	1721/24	1720-1
10- 1	READER LOGICAL UNIT	(--)	(--)	(--)	(--)
10- 2	PUNCH LOGICAL UNIT	(--)	(--)	(--)	(--)

(11) S Y S T E M C O M M U N I C A T I O N S D E V I C E S

		COMMUNICATIONS UNIT							
*	364-4 MULTIPLEXER	0	1	2	3	4	5	6	7
11- 1	361-1 ADAPTER	( )	( )	( )	( )	( )	( )	( )	( )
11- 2	361-4 ADAPTER	( )	( )	( )	( )	( )	( )	( )	( )
11- 3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

		COMMUNICATIONS UNIT							
	364-4 MULTIPLEXER	8	9	10	11	12	13	14	15
11- 4	361-1 ADAPTER	( )	( )	( )	( )	( )	( )	( )	( )
11- 5	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

*	1595 SERIAL I/O	0	1	2	3	4	5	6	7
11- 6	MODULE	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
11- 7	STATION	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
11- 8	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

	1595 SERIAL I/O	8	9	10	11	12	13	14	15
11- 9	MODULE	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
11-10	STATION	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
11-11	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

*	1743-2 CONTROLLER	0	1	2	3	4	5	6	7
11-12	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

	1743-2 CONTROLLER	8	9	10	11	12	13	14	15
11-13	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

(12) SYSTEM ANALOG-DIGITAL DEVICES

LOCAL 1500 EQUIPMENT ASSIGNMENTS

		BEGINNING MODULE	BEGINNING STATION	NUMBER OF STATIONS	LOGICAL UNIT
12- 1	REMOTE 1500 EQUIPMENT	(-)	(--)	(2)	
12- 2	1572-1 SAMPLE TIMING UNIT	(-)	(--)	(1)	
12- 3	1536 RELAY ANALOG MUX	(-)	(--)	(1)	(--)
12- 4	1525 CONVERTER FOR 1536	(-)	(--)	(1)	
12- 5	1501 HIGH SPEED ANALOG MUX	(-)	(--)	(--)	
12- 6	1501 HIGH SPEED ANALOG MUX	(-)	(--)	(--)	
12- 7	1525 CONVERTER FOR 1501	(-)	(--)	(1)	
12- 8	1547 EVENTS COUNTER	(-)	(--)	(--)	
12- 9	1547 EVENTS COUNTER	(-)	(--)	(--)	
12-10	1544 DIGITAL INPUT	(-)	(--)	(---)	
12-11	1553 DIGITAL OUTPUT	(-)	(--)	(---)	
12-12	1555 LATCHING RELAY OUTPUT	(-)	(--)	(---)	
12-13	1555 MOMENTARY RELAY OUTPUT	(-)	(--)	(---)	
12-14	1566 ANALOG OUTPUT	(-)	(--)	(---)	
12-15	1576 STALL ALARM	(-)	(--)	(1)	

(12) SYSTEM ANALOG-DIGITAL DEVICES

REMOTE 1500 SERIES EQUIPMENT ASSIGNMENTS

		BEGINNING MODULE	BEGINNING STATION	NUMBER OF STATIONS	LOGICAL UNIT
12-20	1572-1 SAMPLE TIMING UNIT	(-)	(--)	(1)	
12-21	1536 RELAY ANALOG MUX	(-)	(--)	(1)	(--)
12-22	1525 CONVERTER FOR 1536	(-)	(--)	(1)	
12-23	1501 HIGH SPEED ANALOG MUX	(-)	(--)	(--)	
12-24	1501 HIGH SPEED ANALOG MUX	(-)	(--)	(--)	
12-25	1525 CONVERTER FOR 1501	(-)	(--)	(1)	
12-26	1547 EVENTS COUNTER	(-)	(--)	(--)	
12-27	1547 EVENTS COUNTER	(-)	(--)	(--)	
12-28	1544 DIGITAL INPUT	(-)	(--)	(---)	
12-29	1553 DIGITAL OUTPUT	(-)	(--)	(---)	
12-30	1555 LATCHING RELAY OUTPUT	(-)	(--)	(---)	
12-31	1555 MOMENTARY RELAY OUTPUT	(-)	(--)	(---)	
12-32	1566 ANALOG OUTPUT	(-)	(--)	(---)	

(13) SYSTEM DISPLAY DEVICE

		DISPLAY UNIT					
	1745-211 DISPLAY	0	1	2	3	4	5
13- 1	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)

		DISPLAY UNIT					
	1745-211 DISPLAY	6	7	8	9	10	11
13- 2	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)

(14) SYSTEM H/W FLOATING POINT UNIT

14- 1	1781-1 UNIT	( )

(20) MAIN MEMORY ALLOCATION

SYSTEM COMMON

DECIMAL LENGTH

20- 1 (-----) BYTES

PARTITIONED MEMORY

DECIMAL LENGTH

20- 2 PARTITION 1 (-----) BYTES

20- 3 PARTITION 2 (-----) BYTES

20- 4 PARTITION 3 (-----) BYTES

20- 5 PARTITION 4 (-----) BYTES

20- 6 PARTITION 5 (-----) BYTES

20- 7 PARTITION 6 (-----) BYTES

20- 8 PARTITION 7 (-----) BYTES

20- 9 PARTITION 8 (-----) BYTES

20-10 PARTITION 9 (-----) BYTES

20-11 PARTITION 10 (-----) BYTES

20-12 PARTITION 11 (-----) BYTES

20-13 PARTITION 12 (-----) BYTES

20-14 PARTITION 13 (-----) BYTES

20-15 PARTITION 14 (-----) BYTES

20-16 PARTITION 15 (-----) BYTES

20-17 PARTITION 16 (-----) BYTES

(21) MESSAGE BUFFERING

	CARD PUNCH DEVICE	1728-430	1725-1		
21- 1	OUTPUT LOGICAL UNIT	(--)	(--)		
21- 2	MASS MEMORY L. UNIT	(--)	(--)		
21- 3	MESSAGE RECORDS	(---)	(---)		
	TELETYPE KEYBOARD	1711/713	1713		
21- 4	OUTPUT LOGICAL UNIT	(--)	(--)		
21- 5	MASS MEMORY L. UNIT	(--)	(--)		
21- 6	MESSAGE RECORDS	(---)	(---)		
	PAPER TAPE PUNCH DEVICE	1713	1777	1723/24	1720-1
21- 7	OUTPUT LOGICAL UNIT	(--)	(--)	(--)	(--)
21- 8	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
21- 9	MESSAGE RECORDS	(---)	(---)	(---)	(---)

(22) COSY INTERFACE

	COSY UNIT	0	1
22- 1	LOGICAL UNIT	(--)	(--)

(23) MSOS FILE MANAGER 1

	FILE SPACE UNIT	LOGICAL UNIT	DECIMAL LENGTH
23- 1	UNIT 0	(8)	(-----) SECTORS
23- 2	UNIT 1	(--)	(-----) SECTORS
23- 3	UNIT 2	(--)	(-----) SECTORS
23- 4	UNIT 3	(--)	(-----) SECTORS
23- 5	UNIT 4	(--)	(-----) SECTORS
23- 6	UNIT 5	(--)	(-----) SECTORS
23- 7	UNIT 6	(--)	(-----) SECTORS
23- 8	UNIT 7	(--)	(-----) SECTORS
23- 9	UNIT 8	(--)	(-----) SECTORS

(24) MAGNETIC TAPE EMULATION

	* PSEUDO MAGNETIC TAPE UNIT	0	1	2	3	4	5	6	7
24- 1	JOB FILE ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24- 2	FOREGROUND ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24- 3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
24- 4	NUMBER OF JOB FILES	(----)							

	* MAGNETIC TAPE SIMULATION UNIT	0	1	2	3
24- 5	LOGICAL UNIT	(--)	(--)	(--)	(--)
24- 6	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24- 7	NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

	MAGNETIC TAPE SIMULATION UNIT	4	5	6	7
24- 8	LOGICAL UNIT	(--)	(--)	(--)	(--)
24- 9	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-10	NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

(25) PSEUDO DISK DRIVES

	PSEUDO DISK DRIVE UNIT	0	1	2	3
25- 1	LOGICAL UNIT	(--)	(--)	(--)	(--)
25- 2	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)

(30) MSOS FORTRAN 3.3

30- 1	COMPILER VARIANT 'A'	( )
30- 2	COMPILER VARIANT 'B'	( )
30- 3	RE-ENTRANT LIBRARY	( )
30- 4	DOUBLE PRECISION OPTION	( )

(33) OPTIONAL MSOS PRODUCTS

33- 1	MAGNETIC TAPE UTILITY 2	( )
33- 2	MACRO ASSEMBLER 3	( )
33- 3	SORT MERGE 1	( )
33- 4	RPG II 1	( )

1-1 System Identification

This is a required entry that consists of one to 28 alphanumeric characters that uniquely identify the system. This information is included as a comment in the system installation file, the SYSDAT program, and is output during every system autoload.

1-2 Installation Medium

One of these items must be selected to establish the medium on which all MSOS materials are supplied. All 7-track tapes are supplied at 556 bits per inch, and all 9-track tapes are at 800 bits per inch. Punched cards are supplied in either ASCII-63 or ASCII-68 format, depending on the selection made for item 9-1.

1-3 System Line Frequency

One of these items must be selected.

2-1 Mainframe Type

One of these items must be selected.

2-2 Main Memory Size

This is a required entry of three decimal digits representing the number of 1024 byte memory increments included with the mainframe. Any increment between 32 and 130 is allowed.

3-1, 2 System Timing Device

One of these items must be selected to establish the type of system timer. LST refers to a line synchronized timing device and SRG refers to a sample rate generator. LST is preferable for maintenance of time-of-day information, since it is synchronized to the wall clock. The SRG, 364-4 Communications Multiplexer, and 10336-1 Clock utilize internal oscillators that may appear to drift with respect to the wall clock. If no timer is chosen, a software pseudo timer is provided to allow hardware device timeouts and approximate system time delays. If a 1572-1 Sample Timing Unit is selected, its module and station assignment must be specified by item 12-2.

4-1 System Comment Device

One of these items must be selected. The 1711 entry specifies models 1711-1 through 1711-5, and the 1713 specifies models 1713-1 through 1713-5. The 713-10 and 1811-1 are allowed only on 1784 and CYBER 18-17 Computer Systems.

(5) System Disk Mass Storage Device

Only one of the types of disk devices indicated by the asterisk (*) may be selected. If the system does not contain a disk mass storage device, this section may be ignored.

5-1 Logical Unit

This entry is required if the system disk controller is a 1739. If the disk is the system library unit, the entry must be an 8.

5-2 853
5-3 854
5-4 Logical Unit

These entries are required if the system disk controller is a 1738. Every disk unit contained in the system must have an entry in either the 853 or the 854 selection, but not both. Every disk unit must have a logical unit assignment, as specified by the logical unit worksheet. If the disk is the system library unit, the unit 0 entry must be an 8.

5-5 856-2/12
5-6 856-4/14
5-7 Logical Unit

These entries are required if the system disk controller is a 1733-2. Every disk unit contained in the system must have an entry in either the -2/12 or the -4/14 selection, but not both. Every disk unit must have a logical unit assignment, as specified by the logical unit worksheet. If the disk is the system library unit, the unit 0 entry must be an 8.

5-8 853
5-9 854
5-10 Logical Unit

These entries are required if the system disk controller is a 1733-2. Every disk unit contained in the system must have an entry in either the 853 or the 854 selection, but not both. Every disk unit must have a logical unit assignment, as specified by the logical unit worksheet. If the disk is the system library unit, the unit 0 entry must be an 8.

(6) System Drum Mass Storage Device

Only one of the types of drum devices indicated by the asterisk (*) may be selected. If the system does not contain a drum mass storage device, this section may be ignored.

6-1 Logical Unit

This is a required entry and is specified by the logical unit worksheet. If the drum is the system library unit, the entry must be an 8.

6-2 1752 Drum Size

One of these entries is required if the system drum is a 1752. The specified model number indicates the storage capacity of the drum.

6-3 1751 Drum Size

One of these entries is required if the system drum is a 1751. The specified model number indicates the storage capacity of the drum.

7-1 System Line Printer

One of these items must be selected if the system contains a line printer. This section may be ignored if a line printer is not included.

(8) System Magnetic Tape Device

Only one of the types of tape devices indicated by the asterisk (*) may be selected. If the system does not contain a magnetic tape device, this section may be ignored.

8-1 Standard System Units

These are optional entries, as specified by the logical unit worksheet. Either or both of these items may be selected to specify the tape as logical unit 10 and/or 11 in the ordered system.

8-2 Seven-Track
8-3 Nine-Track
8-4 Logical Unit

These entries are required if the system tape controller is a 1732-3. Every tape unit contained in the system must have an entry in either the seven-track or the nine-track selection, but not both. The nine-track selection specifies both the 800 and 1600 bits per inch as well as the phase encode options. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6.

8-5 Seven-Track
8-6 Nine-Track
8-7 Logical Unit

These entries are required if the system tape controller is a 1732-2. Every tape unit contained in the system must have an entry in either the seven-track or the nine-track selection, but not both. The nine-track selection specifies both the 800 and 1600 bits per inch options. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6.

8-8 Seven-Track
8-9 Nine-Track
8-10 Logical Unit
8-11 1706 Number

These entries are required if the system tape controller is a 1732-1. Every tape unit contained in the system must have an entry in either the seven-track or nine-track selection, but not both. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6. If the tape controller is operated through a 1706 Buffered Data Channel, the 1706 number must be specified.

8-12 Logical Unit
8-13 1706 Number

These entries are required if the system tape controller is a 1731. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6. If the tape controller is operated through a 1706 Buffered Data Channel, the 1706 number must be specified.

(9) System Card Device

If the system does not contain a punched card device, this section may be ignored.

9-1 Card Conversion Format

This is a required entry that specifies whether the cards are read and punched under the ASCII-63 format or the ASCII-68 (EBCDIC) format. The ASCII-63 format is the standard for MSOS.

9-2 Reader Logical Unit

Only one of these items may be selected, as specified by the logical unit worksheet. If the reader is the standard input unit, the entry must be 10.

9-3 Punched Logical Unit

This item is based on the logical unit worksheet. If the punch is the standard output device, this entry must be 11.

9-4 1706 Number for 1726/405

This entry is required only if the system card reader is a buffered 1726/405.

(10) System Paper Tape Device

If the system does not contain a paper tape device, this section may be ignored. The column labeled 1713 specifies the 1713-1 through 1713-3 only. The column labeled 1721/24 specifies the 1721, 1722, 1723, and 1724 Paper Tape Units.

10-1 Reader Logical Unit

Only one of these items may be selected, as specified by the logical unit worksheet. If the reader is the standard input unit, the entry must be 10.

10-2 Punch Logical Unit

Only one of these items may be selected, as specified by the logical unit worksheet. If the punch is the standard output device, this entry must be 11.

(11) System Communications Device

Only one of the types of communications devices indicated by the asterisk (*) may be selected. If the system does not contain a communications device, this section may be ignored.

11-1, 4 361-1 Adapter
11-2 361-4 Adapter
11-3, 5 Logical Unit

These entries are required if the system communications adapter is a 364-4. Every communications adapter contained in the system must have an entry in either the 361-1 or the 361-4 selection, but not both. Since each 361-4 requires two channels in the multiplexer, these selections should be made first. Every adapter must have a logical unit assignment, as specified by the logical unit worksheet.

11-6, 9 Module
11-7, 10 Station
11-8, 11 Logical Unit

These entries are required if the system communications device is a 1595. Every communications unit in the system must have a local 1500 controller module and station assignment, as specified by the 1500 Series equipment worksheet. Station 0 is not allowed for this equipment. Every unit must also have a logical unit assignment, as specified by the logical unit worksheet.

11-12, 13 Logical Unit

These entries are required if the system communications device is a 1743-2. Every unit must have a logical unit assignment, as specified by the logical unit worksheet.

(12) System Analog/Digital Devices

If the system does not contain any 1500 Series analog or digital input/output devices, this section may be ignored. Each equipment is specified by its module and station number, as determined from the 1500 Series equipment worksheet. Modules are entered as decimal values between 0 and 7, and stations are entered as decimal values between 0 and 15.

12-1 Remote 1500 Equipment

This entry is required only if the system contains a remote 1500 Series equipment controller. Two adjacent stations must be reserved for this item.

12-2 1572-1 Sample Timing Unit

This entry is required only if the system contains a local 1572-1 Sample Timing Unit. Station 0 may not be used for this equipment. If this equipment is to be the system timing device, an entry must also be made in section 3 of the order form.

12-3 1536 Relay Analog Mux

This entry is required only if the system contains a local 1536-2 Relay Analog Multiplexer. In addition to the module and station assignment, this device must be assigned a logical unit, as specified by the logical unit worksheet. Station 0 may not be used for this equipment. One station allows up to 1024 analog inputs.

12-4 1525 Converter for 1536

This entry is required if item 12-3 is selected. It specifies the assignment of the 1525-3 Analog-to-Digital Converter to be used with the 1536. Station 0 may not be used for this equipment.

12-5
12-6 1501 High-Speed Analog Mux

This entry is required only if the system contains a local 1501-10/11 Analog Input Multiplexer. One or two contiguous groups of stations may be specified for this equipment, but station 0 may not be used. A maximum of 15 stations may be assigned to each group. Group 2 may not be selected unless group 1 is selected.

12-7 1525 Converter for 1501

This entry is required if item 12-5 or 12-6 is selected. It specifies the assignment of the 1525-3 Analog-to-Digital Converter to be used with the 1501. Station 0 may not be used for this equipment.

12-8
12-9 1547 Events Counter

This entry is required only if the system contains local 1547-1 or 1547-2 Events Counters. One or two contiguous groups of stations may be specified for this equipment, but station 0 may not be used. Each station designates one 16-bit counter, and a maximum of 15 stations may be assigned to each group. Group 2 may not be selected unless group 1 is selected. The 1547 requires the dedicated use of the sample rate generator portion of the 1572-1 Sample Timing Unit.

12-10 1544 Digital Input

This entry is required if the system contains local 1544-1 through 1544-4 Digital Input Units. All digital inputs must be specified in a single contiguous group of stations, and station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1544.

12-11 1553 Digital Output

This entry is required if the system contains local 1553-1 through 1553-6 Digital Output Units. All digital output must be specified in a single contiguous group of stations; station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1553.

12-12 1555 Latching Relay Output
12-13 1555 Momentary Relay Output

This entry is required if the system contains local 1555-1 through 1555-3 Relay Output Units. The 1555 is supported in either latching or momentary operation under MSOS; each type must be specified in a single contiguous group of stations. Station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1555. The 1555-1 or 1555-2 specifies latching output, and the 1555-3 specifies momentary.

12-14 1566 Analog Output

This entry is required if the system contains local 1566-20 through 1566-23 Analog Output Units. All analog output must be specified in a single contiguous group of stations; station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1566.

12-15 1576 Stall Alarm

This entry is required only if the system contains a 1576-1 Stall Alarm. Station 0 may not be used for this equipment.

12-20 1572-1 Sample Timing Unit

This entry is required only if the system contains a remote 1547 Events Counter. Station 0 may not be used for this equipment.

12-21 1536 Relay Analog Mux

This entry is required only if the system contains a remote 1536-2 Relay Input Analog Multiplexer. In addition to the module and station assignment, this device must be assigned a logical unit, as specified by the logical unit worksheet. Station 0 may not be used for this equipment.

12-22 1525 Converter for 1536

This entry is required if item 12-16 is selected, and specifies the assignment of the 1525-3 Analog-to-Digital Converter to be used with the 1536. Station 0 may not be used for this equipment.

12-23
12-24 1501 High-Speed Analog Mux

This entry is required only if the system contains a remote 1501-10/11 Analog Input Multiplexer. One or two contiguous groups of stations may be specified for this equipment, but station 0 may not be used. A maximum of 15 stations may be assigned to each group.

12-25 1525 Converter for 1501

This entry is required if item 12-18 or 12-19 is selected. It specifies the assignment of the 1525-3 Analog-to-Digital Converter to be used with the 1501. Station 0 may not be used for this equipment.

12-26
12-27 1547 Events Counter

This entry is required only if the system contains remote 1547-1 or 1547-2 Events Counters. One or two contiguous groups of stations may be specified for this equipment, but station 0 may not be used. Each station designates one 16-bit counter, and a maximum of 15 stations may be assigned to each group. The 1547 requires the dedicated use of the sample rate generator portion of the remote 1572-1 Sample Timing Unit.

12-28 1544 Digital Input

This entry is required if the system contains remote 1544-1 through 1544-4 Digital Input Units. All digital inputs must be specified in a single contiguous group of stations, and station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1544.

1229 1553 Digital Output

This entry is required if the system contains remote 1553-1 through 1553-6 Digital Output Units. All digital outputs must be specified in a single contiguous group of stations, and station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1553.

12-30 1555 Latching Relay Output
12-31 1555 Momentary Relay Output

This entry is required if the system contains remote 1555-1 through 1555-3 Relay Output Units. The 1555 is supported in either latching or momentary operation under MSOS, and each type must be specified in a single contiguous group of stations. Station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1555. The 1555-1 or 1555-2 specifies latching output, and the 1555-3 specifies momentary.

12-32 1566 Analog Output

This entry is required if the system contains remote 1566-20 through 1566-23 Analog Output Units. All analog output must be specified in a single contiguous group of stations, and station 0 may be used for this equipment. A maximum of 128 stations may be assigned to the 1566.

(13) System Display Device

If the system does not contain the 1745-211 Display Controller, this section may be ignored.

13-1, 2 Logical Unit

A logical unit must be defined for each 211 Display Unit in the system. These logical units are specified by the logical unit worksheet.

(14) System Hardware Floating Point Unit

If the system does not contain a 1781-1 Hardware Floating Point Unit, this section may be ignored.

14-1 1781-1 Unit

Select the floating point unit here.

20-1 System Common

This is an optional entry of a decimal value that defines the amount of blank (system) common required in the system. Any value up to 40,000 bytes may be specified.

20-2
through
20-17 Partitioned Memory

These are optional entries of decimal values that specify the size of each main memory partition. Only as many partitions as are required in the system need be specified, but they must be contiguously defined from partition 1. Programs may reside in several adjacent partitions.

(21) Message Buffering

If the system does not require message buffering, this section may be ignored.

21-1 Output Logical Unit
21-2 Mass Memory Logical Unit
21-3 Message Records

These entries are required if the card punch device is to include message buffering. The output logical unit is the logical unit used to address the buffered card punch; it is specified by the logical unit worksheet. The mass memory logical unit is the mass storage device that contains the buffered messages. The message records is a decimal value that defines the size of the buffer. Up to 335 192-byte records may be specified.

21-4 Output Logical Unit
21-5 Mass Memory Logical Unit
21-6 Message Records

These entries are required if the system comment output unit is to include message buffering. The output logical unit is the logical unit used to address the buffered comment device and is specified by the logical unit worksheet. The mass memory logical unit is the mass storage device that contains the buffered messages. The message records value is a decimal number that defines the size of the buffer. Up to 800 80-byte records may be specified. Message buffering cannot be used for input devices.

21-7 Output Logical Unit
21-8 Mass Memory Logical Unit
21-9 Message Records

These entries are required if the paper tape punch device is to include message buffering. Only one type of punch device may be selected. The column labeled 1713 specifies the 1713-1 through 1713-3 only. The output logical unit is the logical unit used to address the buffered paper tape punch; it is specified by the logical worksheet. The mass memory logical unit is the mass storage device that contains the buffered messages. The message records value is a decimal number that specifies the size of the buffer. Up to 335 192-byte records may be specified.

(22) COSY Interface

If the system does not require a COSY interface, this section may be ignored.

22-1 Logical Unit

Up to two COSY interface logical units may be included in a system. The unit 0 entry must always be a 5, and the unit 1 entry may be any available value, as specified by the logical unit worksheet.

(23) MSOS File Manager 1

If the system does not require an MSOS file manager, this section may be ignored.

23-1 through 23-9 Logical Unit Decimal Length

A decimal entry is required for each mass storage device that contains file space. An entry for the library unit (logical unit 8) is required. The amount of file space is a function of the type of files that are specified in the system. Large record lengths and indexed files tend to require larger amounts of space. The amount of mass storage available on any given unit may be estimated from the memory size worksheet, but cannot exceed 32,767 sectors. In general, it is advisable to retain some unused mass memory for use as spare storage until some experience has been gained with the system. If the majority of the system file space is specified on a device other than the library unit, a minimum amount must be reserved on the library unit for file information blocks. This amount may be as small as 1000 sectors. The logical unit entries are obtained from the logical unit worksheet.

(24) Magnetic Tape Emulation

Only one of the types of emulated magnetic tape indicated by the asterisk (*) may be selected. If the system does not contain magnetic tape emulation, this section may be ignored.

24-1 Job File Access
24-2 Foreground Access
24-3 Logical Unit

Every pseudo tape unit in the system must have an entry in either the job file or foreground access selection, but not both. Every pseudo tape must have a logical unit assignment, as specified by the logical unit worksheet. All file space required for pseudo tapes must be contained on the system library unit, so that space must be allocated accordingly. The unit 0 logical unit entry must always be a 7, as specified by the logical unit worksheet.

24-4 Number of Job Files

A decimal entry is required if any of the pseudo tapes in the system have job file access. It specifies the total number of independent files that may be referenced by the pseudo tapes.

24-5, 8 Logical Unit
24-6, 9 Mass Memory Logical Unit
24-7, 10 Number of Sectors

Every magnetic tape simulation unit in the system must have a logical unit assignment, as specified by the logical unit worksheet. The unit 0 logical unit entry must always be 7, as specified by the logical unit worksheet. The mass memory logical unit specifies the mass storage device that contains the simulated magnetic tape records. The number of sectors is a decimal value that defines the amount of simulated magnetic tape available to the unit.

(25) Pseudo Disk Drives

If the system does not contain a 1733-2/856-4 Cartridge Disk Unit, this section should be ignored. If this unit is present, this section becomes optional.

25-1 Logical Unit
25-2 Mass Memory Logical Unit

Every pseudo disk unit in the system must have a logical unit assignment, as specified by the logical unit worksheet. The mass memory logical unit specifies the 1733-2/856-4 Cartridge Disk Unit that contains the space allocated to the pseudo disk drive. Note that only four pseudo disk units may be ordered for the 1733-2/856-4 mass storage devices. The first sector of the first pseudo disk unit on each 856-4 Cartridge Disk Unit is biased to physical sector 8000_{16}. Each pseudo disk unit addresses 14,325 sectors.

(30) MSOS FORTRAN 3.3

If the system does not require the MSOS FORTRAN product, this section may be ignored.

30-1 Compiler Variant A

This entry should be selected if the A-variant of the FORTRAN compiler is desired. The A-variant requires the minimum amount of memory for execution.

30-2 Compiler Variant B

This entry should be selected if the B-variant of the FORTRAN compiler is desired. The B-variant requires a larger amount of memory for execution.

30-3 Re-entrant Library

This item should be selected if the system requires FORTRAN programs to be executed in the protected foreground. If this item is selected, system priority levels 4, 5, and 6 are specified for FORTRAN execution.

30-4 Double Precision Option

This item should be selected if the system requires extended precision for real-type FORTRAN variables. This option is included in both the foreground and background libraries if it is selected.

(33) Optional MSOS Products

If the system does not require the optional MSOS products listed under this heading, the section may be ignored. A separate software license is required for each of these optional products.

33-1 Magnetic Tape Utility 2

This entry should be selected if the magnetic tape utility package is desired.

33-2 Macro Assembler 3

This entry should be selected if the macro assembler is desired.

33-3 Sort Merge 1

This entry should be selected if the sort/merge package is desired.

33-4 RPG II 1

This entry snould be selected if RPG II 1 is desired. Two hundred RPG file numbers are always reserved from the highest available numeric block of file numbers in the system.

The following information should be noted when completing the order form:

- The MSOS CYBER 18 Series order form should be completed only if the system mainframe is a CYBER 18-10M or 18-20. The MSOS 1700 Series order form in section 7 should be completed when the system mainframe is a 1704, 1714, 1774, 1784, or CYBER 18-17.
- The order form must be filled out completely and accurately. Failure to do so results in delays in processing and shipping the system.
- This manual should be carefully reviewed before using the order form; the attached worksheets should be employed as an aid in the specification of the system.
- Every order item has a number in the left-hand column that references an explanation immediately following the form itself.
- Entry of an alphanumeric or numeric item is specified by dashes enclosed in parentheses: (--). The number of enclosed dashes indicates the maximum number of characters or digits allowed.
- Selection of a multiple-choice item is specified by a set of parentheses: ( ). This entry may be an X, a check mark, or any similar identifier.
- To aid the processing of this form, it is suggested that a circle be placed around each order reference item selected.
- The entries in sections 1, 2, 4, 5, and 8 are required; all remaining items are optional.
- When the form is complete, it should be removed from this document and mailed together with a data form or CRAF to:

G. J. Ferber - ARH230
Control Data Corporation
4201 Lexington Avenue North
Arden Hills, Minnesota 55112

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CYBER SERIES

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION FORM REVISION

1- 1 (----------) CYBER SERIES MSOS (2)

INSTALLATION MEDIUM

MAGNETIC TAPE

9-TRACK

1- 2 ( )

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

18-20 18-10M

2- 1 ( ) ( )

MAIN MEMORY SIZE

2- 2 (---) K BYTES

(4) SYSTEM COMMENT/PANEL DEVICE

1811-1/2

CRT

4- 1 ( )

0

0

(5) S Y S T E M D I S K M A S S S T O R A G E D E V I C E

			DISK			UNIT				
*	STORAGE MODULES		0	1	2	3	4	5	6	7
5-	1	1867-10 (25MB)	( )	( )	( )	( )	( )	( )	( )	( )
5-	2	1867-20 (50MB)	( )	( )	( )	( )	( )	( )	( )	( )
5-	3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

	1833-5	1865-1/2	0	1
5-	4	LOGICAL UNIT	(--)	(--)

			DISK		UNIT	
*	CARTRIDGE DISKS		0	1	2	3
5-	5	1866-12	( )	( )	( )	( )
5-	6	1866-14	( )	( )	( )	( )
5-	7	LOGICAL UNIT	(--)	(--)	(--)	(--)

(7) S Y S T E M L I N E P R I N T E R

1827-30/31/32/60/90

7- 1 ( )

0

0

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

		INPUT	OUTPUT
8-	1	( )	( )

			TAPE UNIT			
	1860-1/2/3/4		0	1	2	3
8-	2	7-TRACK NRZI	( )	( )	( )	( )
8-	3	9-TRACK NRZI	( )	( )	( )	( )
8-	4	LOGICAL UNIT	(--)	(--)	(--)	(--)

			TAPE UNIT			
	1860-5/6		0	1	2	3
8-	5	9-TK DUAL MODE	( )	( )	( )	( )
8-	6	LOGICAL UNIT	(--)	(--)	(--)	(--)

(9) SYSTEM CARD DEVICE

			1829-30/60
9-	2	READER LOGICAL UNIT	(--)

0

(10) SYSTEM COMMUNICATIONS DEVICES

1843-2

10- 1 LOGICAL UNIT (--)

		COMMUNICATIONS CHANNEL							
	752 CRT	1	2	3	4	5	6	7	8
10- 2	PORT L. U.	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

		COMMUNICATIONS CHANNEL							
	752 CRT	9	10	11	12	13	14	15	16
10- 3	PORT L. U.	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

0

(20) MAIN MEMORY ALLOCATION

SYSTEM COMMON

			DECIMAL LENGTH
20-	1		(-----) BYTES

PARTITIONED MEMORY

			DECIMAL LENGTH
20-	2	PARTITION 1	(-----) BYTES
20-	3	PARTITION 2	(-----) BYTES
20-	4	PARTITION 3	(-----) BYTES
20-	5	PARTITION 4	(-----) BYTES
20-	6	PARTITION 5	(-----) BYTES
20-	7	PARTITION 6	(-----) BYTES
20-	8	PARTITION 7	(-----) BYTES
20-	9	PARTITION 8	(-----) BYTES
20-	10	PARTITION 9	(-----) BYTES
20-	11	PARTITION 10	(-----) BYTES
20-	12	PARTITION 11	(-----) BYTES
20-	13	PARTITION 12	(-----) BYTES
20-	14	PARTITION 13	(-----) BYTES
20-	15	PARTITION 14	(-----) BYTES
20-	16	PARTITION 15	(-----) BYTES
20-	17	PARTITION 16	(-----) BYTES

0

0

(22) COSY INTERFACE

	COSY UNIT	0	1
22-	1 LOGICAL UNIT	(--)	(--)

(23) MSOS FILE MANAGER 1

	FILE SPACE UNIT	LOGICAL UNIT	DECIMAL LENGTH
23-	1 UNIT 0	(8)	(-----) SECTORS
23-	2 UNIT 1	(--)	(-----) SECTORS
23-	3 UNIT 2	(--)	(-----) SECTORS
23-	4 UNIT 3	(--)	(-----) SECTORS
23-	5 UNIT 4	(--)	(-----) SECTORS
23-	6 UNIT 5	(--)	(-----) SECTORS
23-	7 UNIT 6	(--)	(-----) SECTORS
23-	8 UNIT 7	(--)	(-----) SECTORS
23-	9 UNIT 8	(--)	(-----) SECTORS

0

0

(24) MAGNETIC TAPE EMULATION

		PSEUDO MAGNETIC TAPE UNIT	0	1	2	3	4	5	6	7
24-	1	JOB FILE ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24-	2	FOREGROUND ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24-	3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
24-	4	NUMBER OF JOB FILES	(----)							

		MAGNETIC TAPE SIMULATION UNIT	0	1	2	3
24-	5	LOGICAL UNIT	(--)	(--)	(--)	(--)
24-	6	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-	7	NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

		MAGNETIC TAPE SIMULATION UNIT	4	5	6	7
24-	8	LOGICAL UNIT	(--)	(--)	(--)	(--)
24-	9	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-10		NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

		MAGNETIC TAPE SIMULATION UNIT	8	9	10	11
24-11		LOGICAL UNIT	(--)	(--)	(--)	(--)
24-12		MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-13		NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

0

(25) PSEUDO DISK DRIVES

	PSEUDO DISK DRIVE UNIT	0	1	2	3	4	5	6	7
25- 1	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
25- 2	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

	PSEUDO DISK DRIVE UNIT	8	9	10	11	12	13
25- 3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)
25- 4	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)	(--)	(--)

0

(26) EXTENDED MEMORY DRIVER

26- 1 LOGICAL UNIT (--)

(30) MSOS FORTRAN 3.3

30- 1 COMPILER VARIANT 'A' ( )

30- 2 COMPILER VARIANT 'B' ( )

* SOFTWARE FLOATING POINT

30- 3 SOFTWARE OPTION ( )

* FIRMWARE FLOATING POINT

30- 4 FIRMWARE OPTION ( )

FORTRAN RUNTIME LIBRARIES

30- 5 RE-ENTRANT - SINGLE PREC. ( )

30- 6 RE-ENTRANT - DOUBLE PREC. ( )

30- 7 NON-RE-ENTRANT - SINGLE PREC. ( )

30- 8 NON-RE-ENTRANT - DOUBLE PREC. ( )

(33) OPTIONAL MSOS PRODUCTS

33- 1 MAGNETIC TAPE UTILITY 2 ( )

33- 2 MACRO ASSEMBLER 3 ( )

33- 3 SORT MERGE 1 ( )

33- 4 RPG II 1 ( )

0

1-1 System Identification

This is a required entry that consists of 1 to 28 alphanumeric characters that uniquely identify the system. This information is included as a comment in the system installation file, the SYSDAT program, and is output during every system autoload.

1-2 Installation Medium

This item must be selected to establish the medium on which all MSOS materials are supplied. All 9-track tapes are supplied at 800 bits per inch. Tapes having a density of 1600 bits per inch will not be provided as part of the standard installation materials. The standard installation medium is defined as 9-track tape. If the system contains only 7-track tape, it may be selected as the installation medium by hand entry of this designation. As with 9-track tape, all 7-track tapes will be supplied at 800 bits per inch.

2-1 Mainframe Type

One of these items must be selected.

2-2 Main Memory Size

This is a required entry of three decimal digits representing the number of 1024-byte memory increments included with the mainframe. Any increment between 32 and 256 is allowed.

4-1 System Comment/Panel Device

This item must be selected. A standard CYBER series configuration requires that at least one 1811-1 or 1811-2 unit be selected to serve as the system comment and maintenance device.

(5) System Disk Mass Storage Device

Only one of the types of disk devices indicated by the asterisk is required. If the 1833-3 or 1867-10/20 is selected, each of the following entries is required.

5-1 1867-10
5-2 1867-20
5-3 Logical Unit

Every disk unit contained in this section must have an entry in either the -10 or the -20 selection, but not both. Every disk unit must have a logical unit assignment, as specified by the logical unit worksheet. If the disk is the system library unit, the unit 0 entry must be an 8.

5-4 Logical Unit

This entry may be selected if the 1833-5 Flexible Disk Controller is present in the system. Every 1865-1/2 Flexible Disk Unit must have a logical unit assignment as specified by the logical unit worksheet. The 1865-1/2 disk is not allowed to be the system library unit; therefore, the logical unit entry must never be 8.

5-5 1866-12
5-6 1866-14
5-7 Logical Unit

These entries are required if the system disk controller is an 1833-4. Every disk unit contained in the system must have an entry in either the -12 or the -14 selection, but not both. Every disk unit must have a logical unit assignment, as specified by the logical unit worksheet. If the disk is the system library unit, the unit 0 entry must be an 8.

7-1 System Line Printer

This item must be selected if the system contains a line printer. This section may be ignored if a line printer is not included.

(8) System Magnetic Tape Device

This section must be selected to establish the system installation medium.

8-1 Standard System Units

These are optional entries, as specified by the logical unit worksheet. Either or both of these items may be selected to specify that the tape is logical unit 10 and/or 11 in the ordered system. These entries apply only to the 1860-1/2/3/4 NRZI or 1860-5/6 Dual Mode Magnetic Tape Units.

8-2 Seven-track
8-3 Nine-track
8-4 Logical Unit

These entries are required if the system magnetic tape is an 1860-1, -2, -3, or -4. Every tape unit contained in the system must have an entry in either the 7-track or the 9-track selection, but not both. The 7-track selection specifies 800 bits per inch. The 9-track selection specifies 800 bits per inch. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6.

8-5 Nine-track
8-6 Logical Unit

These entries are required if the system magnetic tape is an 1860-5 or 1860-6. Every tape unit contained in the system must have an entry in the 9-track selection. The 9-track selection specifies 800 bits per inch. Every tape unit must have a logical unit assignment, as specified by the logical unit worksheet. Tape unit 0 must always be logical unit 6.

(9) System Card Device

If the system does not contain a punched card device, this section may be ignored.

9-2 Reader Logical Unit

This item may be selected, as specified by the logical unit worksheet. If the reader is the standard input unit, the

entry must be 10. A system selectable option is the format under which cards will be read. The ASCII-63 format is the standard for MSOS while the ASCII-68 format is EBCDIC.

(10) System Communications Devices

If the system does not contain an 1843-2 Communications Line Adapter, this section must be ignored. If the 1843-2 CLA is present, this section becomes optional.

10-1 Logical Unit

The 1843-2 CLA must have a logical unit assignment, as specified by the logical unit worksheet.

10-2 Port Logical Unit
10-3 Port Logical Unit

Every communications device associated with the 1843-2 CLA must have a logical unit assignment specification. Refer to the logical unit worksheet for number assignments.

20-1 System Common

This is an optional entry of a decimal value that defines the amount of blank (system) common required in the system. Any value up to 40,000 bytes may be specified.

20-2
through
20-17 Partitioned Memory

These are optional entries of decimal values that specify the size of each main memory partition. Only as many partitions as are required in the system need be specified, but they must be contiguously defined from partition 1. Programs may reside in several adjacent partitions.

(22) COSY Interface

If the system does not require a COSY interface, this section may be ignored.

22-1 Logical Unit

Up to two COSY interface logical units may be included in a system. The unit 0 entry must always be a 5, and the unit 1 entry may be any available value, as specified by the logical unit worksheet.

(23) MSOS File Manager 1

If the system does not require an MSOS file manager, this section may be ignored.

23-1
through Logical Unit
23-9 Decimal Length

A decimal entry is required for each mass storage device that contains file space. An entry for the library unit (logical unit 8) is required. The amount of file space is a function of the type of files that are specified in the system. Large record lengths and indexed files tend to require larger amounts of space. The amount of mass storage available on any given unit may be estimated from the mass memory sector restrictions table and cannot exceed 32,767 sectors. In general it is advisable to retain some unused mass memory for use as spare storage until some experience has been gained with the system. If the majority of the system file space is specified on a device other than the library unit, a minimum amount must be reserved on the library unit for file information blocks. This amount may be as small as 1000 sectors. The logical unit entries are obtained from the logical unit worksheet. Note that file space is not allowed on the 1833-5 Flexible Disk Drive Controller or the 1865-1/2 Flexible Disk Drive.

(24) Magnetic Tape Emulation

If the system does not contain magnetic tape emulation, this section may be ignored.

24-1 Job File Access
24-2 Foreground Access
24-3 Logical Unit

File manager 1 must be present in the system if pseudo tape is selected. Every pseudo tape unit in the system must have an entry in either the job file or foreground access selection, but not both. Every pseudo tape must have a logical unit assignment, as specified by the logical unit worksheet. All file space required for pseudo tapes must be contained on the system library unit, so that space must be allocated accordingly. The unit 0 logical unit entry must always be a 7, as specified by the logical unit worksheet.

24-4 Number of Job Files

A decimal entry is required if any of the pseudo tapes in the system have job file access. It specifies the total number of independent files that may be referenced by the pseudo tapes.

24-5, 8, 11 Logical Unit
24-6, 9, 12 Mass Memory Logical Unit
24-7, 10, 13 Number of Sectors

Every magnetic tape simulation unit in the system must have a logical unit assignment, as specified by the logical unit worksheet. The unit 0 logical unit entry must always be 7, as specified by the logical unit worksheet. However, if both pseudo tape and magnetic tape simulation are selected in the same system configuration, the unit 0 logical unit entry for only one of the two emulators must be 7. The other unit 0 logical unit assignment is selectable, as specified by the logical unit worksheet. It should be noted that magnetic tape simulation may be defined on pseudo disk drives. In this case, the tape simulator mass memory logical unit would be the logical unit of the pseudo disk to which it has been assigned.

(25) Pseudo Disk Drives

If the system does not contain the 1833-3 and 1867-10/20 Storage Module units, this section must be ignored. If this unit is present, this section becomes optional.

25-1, 3 Logical Unit
25-2, 4 Mass Memory Logical Unit

Every pseudo disk unit in the system must have a logical unit assignment, as specified by the logical unit worksheet. The mass memory logical unit specifies the 1833-3 and 1867-10/20 that contain the space allocated to the pseudo disk drive. It should be noted that only one non-pseudo and three pseudo disk units may be ordered for each 1833-3 and 1867-10 Storage Module Drive units. Only one non-pseudo and seven pseudo disk units may be ordered for each 1833-3 and 1867-20 Storage Module Drive unit. The first sector of the first pseudo disk unit on each storage module drive is biased to physical sector 8000_{16}. Each pseudo disk unit addresses 32,767 ($7FFF_{16}$) sectors.

(26) Extended Memory Driver

If the system contains more than 128K bytes of memory, this section may be selected.

26-1 Logical Unit

A logical unit must be defined for the extended memory driver, as specified by the logical unit worksheet.

(30) MSOS FORTRAN 3.3

If the system does not require the MSOS FORTRAN product, this section may be ignored.

30-1 Compiler Variant A

This entry should be selected if the A-variant of the FORTRAN compiler is desired. The A-variant requires the minimum amount of memory for execution, but runs substantially slower than the B-variant.

30-2 Compiler Variant B

This entry should be selected if the B-variant of the FORTRAN compiler is desired. The B-variant requires a larger amount of memory for execution, but runs substantially faster than the A-variant.

30-3 Software Floating Point

Only one of the floating-point packages, indicated by the asterisk, may be selected. If the software floating-point option is desired, this item should be selected.

30-4 Firmware Floating Point

If the firmware floating-point option is desired, this item should be selected.

FORTRAN Runtime Libraries
30-5 Re-entrant - Single Precision

This item should be selected if the system requires FORTRAN programs to be executed in the protected foreground in single-precision mode. If this item is selected, system priority levels 4, 5, and 6 are specified for FORTRAN execution.

30-6 Re-entrant - Double Precision

This item should be selected if the system requires FORTRAN programs to be executed in the protected foreground and if the system requires extended precision for real-type FORTRAN variables. If this item is selected, system priority levels 4, 5, and 6 are specified for FORTRAN execution.

30-7 Non Re-entrant - Single Precision

This item should be selected if the system allows FORTRAN programs to be run in the unprotected background in single-precision mode.

30-8 Non Re-entrant - Double Precision

This item should be selected if the system allows FORTRAN programs to be run in the unprotected background, but also requires extended precision for real-type FORTRAN variables.

(33) Optional MSOS Products

If the system does not require the optional MSOS products listed under this heading, this section may be ignored. A separate software license is required for each of these optional products.

33-1 Magnetic Tape Utility 2

This entry should be selected if the magnetic tape utility package is desired.

33-2 Macro Assembler 3

This entry should be selected if the macro assembler is desired.

33-3 Sort Merge 1

This entry should be selected if the sort/merge package is desired.

33-4 RPG II 1

This entry should be selected if RPG II 1 is desired. There are 200 RPG file numbers reserved from the highest available numeric block of file numbers in the system.

Special Notes:

In addition to the software items and products listed in the MSOS 5 CYBER software ordering bulletin, the

following is available on a QSS basis:

- 1861-1 Cassette Tape:

  This entry may be selected if the 1832-5 Magnetic Tape Controller is present in the system. Every cassette tape unit must have a logical unit assignment, as specified by the logic unit worksheet. The 1861-1 Cassette Tape is not allowed to be the system install device.

- 1862-1 Paper Tape Reader and Punch:

  If there is no card reader in the system and this selection is made, it is possible to assign the 1862-1 reader as the standard input device. It is also possible to assign the 1862-1 punch as the standard output device. To order this item, make a notation on the MSOS 5 CYBER software ordering bulletin, listing both reader and punch logical units and follow the QSS ordering procedures listed below.

- COMM-18 under MSOS 5:

  COMM-18 is a communications package that supports a combination of two workstations (up to two UT200 workstations, two HASP workstations, or one UT200 and one HASP workstation). To order this item, make a notation on the MSOS 5 CYBER software ordering bulletin, listing UT200, HASP or both and follow the QSS ordering procedures listed below.

System configurations requiring optional products such as the 1861-1, 1862-1, or COMM-18 package require QSS customization and must have the QSS work defined and quoted in advance. Contact your local Control Data representative for information regarding QSS procedures.

This section contains sample order forms for the CYBER 18-17/CYBER 18-20/1700 Mass Storage Operating System.

EXAMPLE 1

This system contains the following equipment:

- 1704 Mainframe with 64 K bytes of memory
- 1713 Teletypewriter
- 1738 Disk Drive Controller
- One 853 Cartridge Disk Drive
- 1742-1 Line Printer
- 1732-1 Magnetic Tape Controller, buffered through a 1706 Buffered Data Channel
- One 608 Magnetic Tape Transport
- One 609 Magnetic Tape Transport

The line frequency at the computer installation is 60 Hertz.

In addition to the standard MSOS software, the application requires the magnetic tape utility, the macro assembler, a FORTRAN compiler and the re-entrant run-time library. The double-precision option is not desired.

Reference to the attached memory size worksheet shows that the system software requires approximately 57,200 bytes of storage if the A-variant compiler is selected. Note that the B-variant selection should require 70,500 bytes in this application. SInce the system contains 64K of memory approximately 8,300 bytes are available for applications use and are automatically included with the unprotected core in the system. The operating system requires approximately 1,470K bytes of mass storage, and since the 853 disk contains about 3,000K bytes, approximately 1,530 bytes are available as additional scratch storage or other uses.

The attached logical unit worksheet shows the arrangement of logical units in the system. Note that the magnetic tapes appear twice in the list, since they are specified as the standard input and standard output units, in addition to their selected assignments.

Only the pertinent pages of the 1700 Series order form are included in this example. Note that a selection is made for every item in groups 1 through 4, and that 1706 number 1 is selected in item 8-8.

MEMORY SIZE WORKSHEET

System Element	Main Memory Requirement in Bytes	Remarks
Required MSOS	40,000	Note 1
MSOS File Manager	6,600	
Partitioned memory	1,200	
Total partitioned memory size	------	
Total system common size	------	
Message buffering	800	
FORTRAN A-variant	6,600	
FORTRAN B-variant	19,900	
Re-entrant FORTRAN library	9,000	With the 1781-1 Hardware Floating Point Unit
Re-entrant FORTRAN library	10,600	With software floating point
Double-precision option	3,500	With the 1781-1 Hardware Floating Point Unit. See note 2.
Double-precision option	5,800	With software floating point. See note 2.
Extended memory driver	4,426	
RPG II	6,200	Note 3

40,000
6,600
10,600
57,200

64K = 65,536
- 57,200
8,336

System Element	Mass Memory Bytes	Requirement Sectors	Remarks
Required MSOS	1152K	6000	Note 4
Message buffering	64K	350	Note 5
FORTRAN compiler/library	318K	1650	
File space		----	Note 6
Magnetic tape simulator		----	Note 7
RPG II	412K	2150	
Sort/Merge	16K	100	

Note: Two bytes are equivalent to one 16-bit word.

1152
318
1470 K

NOTES:

1. The requirement for a system with a typical amount of peripheral devices. This value can range from 38,000 to 42,000 bytes. A minimal MSOS 5 system with limited peripherals and capabilities may be configured in 32,000 bytes. The hardware configuration for a 32K byte minimum system is restricted to include only one console device (teletypewriter, conversational display terminal), one input device (paper tape, cards, magnetic tape), one output device (paper tape, cards, magnetic tape), and one mass storage drive.

2. The foreground library requirement. The background library can exceed 20,000 bytes when the double-precision option is included, which reduces the amount of memory available to the FORTRAN program. The actual size of the background library depends on the functions required for execution.

3. Use this minimum RPG II compiler requirement for unprotected memory only if no FORTRAN compiler variant has been selected. Additional unprotected memory is necessary to execute a typical RPG II object program and exceeds this minimum requirement by approximately 18K bytes when no FORTRAN compiler has been selected. If a FORTRAN compiler variant has been ordered, the additional memory required to execute a typical RPG II object program is 17.6K bytes and 4.3K bytes for the A- and B-variants, respectively.

4. This is the requirement of a typical system and includes a reasonable amount of scratch storage: 960K bytes for minimum systems. The amount of available scratch is reduced as the system is used and new programs are loaded into the system and program libraries.

5. The maximum requirement for each buffered logical unit. See also the mass memory sector restrictions table in this section.

6. Refer to the File Manager Reference Manual for the methods that may be used to determine this value. See also the mass memory sector restrictions table in this section.

7. As an aid in estimation, a 2400-foot, seven-track magnetic tape written at 800 bits per inch may be simulated by use of approximately 17,000 sectors. See also the mass memory sector restrictions table in this section.

8. A standard system does not support file space or software buffering on the 1833-5/1865-1/2 Flexible Disk Drive subsystem.

LOGICAL UNIT WORKSHEET

Logical Unit	Device or Function	Unit Number
04	1713 KEYBOARD	
05	—	0
06	1732-1/608	0
07	—	0
08	1738/853	0
09	1742-1	
10	1732-1/608	0
11	1732-1/609	1
13	1713 READER	
14	1713 PUNCH	
15	1732-1/609	1
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

1700 SERIES

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION — FORM REVISION

1-1: (EXAMPLE SYSTEM No. 1) 1700 SERIES — MSOS (D)

INSTALLATION MEDIUM

1-2:

MAGNETIC TAPE 7-TRACK	MAGNETIC TAPE 9-TRACK	PUNCHED CARDS
(X)	( )	( )

SYSTEM LINE FREQUENCY

1-3:

50 HERTZ	60 HERTZ
( )	(X)

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

2-1:

1704	1714	1774	1784/18-17
(X)	( )	( )	( )

MAIN MEMORY SIZE

2-2: (64) K BYTES

(3) SYSTEM TIMING DEVICE

3-1:

TYPE	1572-1 LST	1572-1 SRG	1573 LST
	( )	( )	( )

3-2:

TYPE	1572 SRG	364-4 MUX	10336-1 CLOCK	NONE
	( )	( )	( )	(X)

(4) SYSTEM COMMENT DEVICE

4-1:

TYPE	1711 TTY	1713 TTY	713-10 CRT	1811-1 CRT
	( )	(X)	( )	( )

```
0

(5)   S Y S T E M   D I S K   M A S S   S T O R A G E   D E V I C E
      -----------   -------   -------   -------------   -----------

                                DISK      UNIT
  * 1739-1                      0

 5- 1     LOGICAL UNIT        (--)


  * 1739 853/854               0     1
 (5- 2)    853                (X)   ( )
 5- 3      854                ( )   ( )

 (5- 4)    LOGICAL UNIT       (8-)  (--)


  * 1733-2 856                 0     1     2     3
 5- 5      856-2/12           ( )   ( )   ( )   ( )
 5- 6      856-4/14           ( )   ( )   ( )   ( )

 5- 7      LOGICAL UNIT       (--)  (--)  (--)  (--)


  * 1733-1 853/854             0     1     2     3     4     5     6     7
 5- 8      853                ( )   ( )   ( )   ( )   ( )   ( )   ( )   ( )
 5- 9      854                ( )   ( )   ( )   ( )   ( )   ( )   ( )   ( )

 5-10      LOGICAL UNIT       (--)  (--)  (--)  (--)  (--)  (--)  (--)  (--)



(6)   S Y S T E M   D R U M   M A S S   S T O R A G E   D E V I C E
      -----------   -------   -------   -------------   -----------

 6- 1     LOGICAL UNIT        (--)


  * 1752 DRUM SIZE             1     2     3     4
 6- 2                         ( )   ( )   ( )   ( )


  * 1751 DRUM SIZE             A     C     D     E     F     G     H     J
 6- 3                         ( )   ( )   ( )   ( )   ( )   ( )   ( )   ( )




0
```

0

(7) SYSTEM LINE PRINTER

	1740-501	1742-1	1742-30	1742-120
7-1	( )	(X)	( )	( )

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

	INPUT	OUTPUT
8-1	(X)	(X)

		TAPE UNIT			
	* 1732-3 616-72/92/95	0	1	2	3
8-2	7-TRACK	( )	( )	( )	( )
8-3	9-TRACK	( )	( )	( )	( )
8-4	LOGICAL UNIT	(--)	(--)	(--)	(--)
	* 1732-2 615-73/93	0	1	2	3
8-5	7-TRACK	( )	( )	( )	( )
8-6	9-TRACK	( )	( )	( )	( )
8-7	LOGICAL UNIT	(--)	(--)	(--)	(--)

	* 1732-1 608/609	0	1	2	3	4	5	6	7
8-8	7-TRACK	(X)	( )	( )	( )	( )	( )	( )	( )
8-9	9-TRACK	( )	(X)	( )	( )	( )	( )	( )	( )
8-10	LOGICAL UNIT	(6)	(15)	(--)	(--)	(--)	(--)	(--)	(--)

	1706 NUMBER FOR 1732-1	1	2	3
8-11		(X)	( )	( )

	* 1731 601	0	1	2	3	4	5	6	7
8-12	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

	1706 NUMBER FOR 1731	1	2	3
8-13		( )	( )	( )

0

0

(9) SYSTEM CARD DEVICE

CARD CONVERSION FORMAT

		ASCII-63	ASCII-68
9- 1		( )	( )

		1729-2	1729-3	1728-430	1726-405
9- 2	READER LOGICAL UNIT	(--)	(--)	(--)	(--)
		1725-1		1729-430	
9- 3	PUNCH LOGICAL UNIT	(--)		(--)	

		1	2	3
9- 4	1706 NUMBER FOR 1726-405	( )	( )	( )

(10) SYSTEM PAPER TAPE DEVICE

		1713	1777	1721/24	1720-1
10- 1	READER LOGICAL UNIT	(13)	(--)	(--)	(--)
10- 2	PUNCH LOGICAL UNIT	(14)	(--)	(--)	(--)

0

0

(25) PSEUDO DISK DRIVES

	PSEUDO DISK DRIVE UNIT	0	1	2	3
25- 1	LOGICAL UNIT	(--)	(--)	(--)	(--)
25- 2	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)

(30) MSOS FORTRAN 3.3

30- 1	COMPILER VARIANT 'A'	(X)
30- 2	COMPILER VARIANT 'B'	( )
30- 3	RE-ENTRANT LIBRARY	(X)
30- 4	DOUBLE PRECISION OPTION	( )

0

0

(33) OPTIONAL MSOS PRODUCTS

33- 1	MAGNETIC TAPE UTILITY 2	(X)
33- 2	MACRO ASSEMBLER 3	(X)
33- 3	SORT MERGE 1	( )
33- 4	RPG II 1	( )

0

EXAMPLE 2

This system contains the following equipment:

- 1784 Mainframe with 128 bytes of memory
- 713 CRT
- 1733-2 Cartridge Disk Controller
- One 856-2 Cartridge Disk Drive
- One 856-4 Cartridge Disk Drive
- 1742-120 Line Printer
- 1728-430 Card Reader/Punch
- 364-4 Communications Multiplexer
- Three 361-4 Communications Adapters
- One 361-1 Communications Adapter

The line frequency at the computer installation is 60 Hertz.

This application requires partitioned memory and 2,000 bytes of system common. In addition, FORTRAN and the MSOS file manager are desired. The system also contains two pseudo magnetic tape units, one COSY interface unit, message buffering on the card punch, the magnetic tape utility, and the macro assembler.

The memory size worksheet shows that if the B-variant compiler is chosen, 40,000 bytes of partitioned memory may be specified, and approximately 9972 bytes remain for applications use. The mass storage requirement of this system is approximately 1534 bytes on the library unit. If the 856-2 Cartridge Disk Drive is used, about 14,927 sectors are available for other uses. Although the 856-4 Cartridge Disk Drive is specified as the primary data storage device in this system, some file space must be reserved on the library unit for file tables and the pseudo tapes. The maximum allowable file space and message buffering (9221 sectors) is specified on the 856-4 Cartridge Disk Drive.

The logical unit worksheet shows the arrangement of the system logical units. Note that pseudo tape unit 0 is specified for job file access, while unit 1 will be used by the foreground. The 1728-430 Card Reader/Punch appears as logic units 10 and 11, since this device performs the function of both the standard input and standard output devices. Note that the dual-channel 361-4 Communications Adapters are assigned as the first communications units, and the 361-1 as the last. Also note the assignment of the message buffered logical unit for the 1728-430 Card Reader/Punch.

Only the pertinent pages of the order form are included in this example. Note that the 364-4 Communications Multiplexer is selected as the system timing device.

MEMORY SIZE WORKSHEET

System Element	Main Memory Requirement in Bytes	Remarks
Required MSOS	40,000	Note 1
MSOS File Manager	6,600	
Partitioned memory	1,200	
Total partitioned memory size	40000	
Total system common size	2000	
Message buffering	800	
FORTRAN A-variant	6,600	
FORTRAN B-variant	19,900	
Re-entrant FORTRAN library	9,000	With the 1781-1 Hardware Floating Point Unit
Re-entrant FORTRAN library	10,600	With software floating point
Double-precision option	3,500	With the 1781-1 Hardware Floating Point Unit. See note 2.
Double-precision option	5,800	With software floating point. See note 2.
Extended memory driver	4,426	
RPG II	6,200	Note 3

128 K = 131,072
-121,100
9,972

40,000
6,600
1,200
40,000
2,000
800
19,900
10,600
121,100

System Element	Mass Memory Bytes	Requirement Sectors	Remarks
Required MSOS	1152K	6000	Note 4
Message buffering	64K	350	Note 5
FORTRAN compiler/library	318K	1650	
File space		4000	Note 6
Magnetic tape simulator		----	Note 7
RPG II	412K	2150	
Sort/Merge	16K	100	

Note: Two bytes are equivalent to one 16-bit word.

1152
64
318
1534K

4400 K
1534 K
2866 K = 14,927 SECTORS
4,000
10,927 (SCRATCH)

Mass Memory Sector Restrictions

To allow for standard system configurability, the following limitations have been placed on the total file space, software buffering, and magnetic tape simulation for each logical mass memory device.

Mass Memory Device	Total Number of Sectors Available for Each Unit		Remarks
	Library Unit (LU8)	Nonlibrary Unit	
1739-1	11775	11775	
1738/1733-1/853	8000	15999	
854	16000	32479	
1733-2/856-2	11775	11775	
856-4†	9221	9221	See footnote
1751-A	-----	683	
-C	-----	1365	
-D	-----	2048	
-E	-----	2731	
-F	-----	3413	
-G	-----	4096	
-H	-----	4779	
-J	-----	5461	
1752-1	-----	2048	
-2	-----	6144	
-3	approximately 6000	12288	
-4	approximately 10000	16384	
1833-3/1867-10†	16000	32767	See footnote
1867-20†	16000	32767	See footnote
1833-5/1865-1/2	-----	1399	Note 8

9,221 TOTAL SECTORS
- 300 MESSAGE BUFFERING
8,921 FILE SPACE

† Additional sectors may be allocated for file manager space, software buffering, and magnetic tape simulation on this mass storage device by assigning one pseudo disk drive for each additional block of up to 32,767 sectors on the physical unit. Sector 1 of the first pseudo disk unit on each mass memory unit is biased to begin at physical sector 32,768. (192 bytes are equivalent to one sector.) Appropriate space may then be allocated on the assigned pseudo disk units. See example 3 in section 9 for further clarification of this procedure.

Mass Memory Device	Additional Number of Sectors Available Per Unit Using Pseudo Disk Drives
1733-2/856-4	1 x 14325
1833-3/1867-10	3 x 32767
1867-20	7 x 32767

NOTES:

1. The requirement for a system with a typical amount of peripheral devices. This value can range from 38,000 to 42,000 bytes. A minimal MSOS 5 system with limited peripherals and capabilities may be configured in 32,000 bytes. The hardware configuration for a 32K byte minimum system is restricted to include only one console device (teletypewriter, conversational display terminal), one input device (paper tape, cards, magnetic tape), one output device (paper tape, cards, magnetic tape), and one mass storage drive.

2. The foreground library requirement. The background library can exceed 20,000 bytes when the double-precision option is included, which reduces the amount of memory available to the FORTRAN program. The actual size of the background library depends on the functions required for execution.

3. Use this minimum RPG II compiler requirement for unprotected memory only if no FORTRAN compiler variant has been selected. Additional unprotected memory is necessary to execute a typical RPG II object program and exceeds this minimum requirement by approximately 18K bytes when no FORTRAN compiler has been selected. If a FORTRAN compiler variant has been ordered, the additional memory required to execute a typical RPG II object program is 17.6K bytes and 4.3K bytes for the A- and B-variants, respectively.

4. This is the requirement of a typical system and includes a reasonable amount of scratch storage: 960K bytes for minimum systems. The amount of available scratch is reduced as the system is used and new programs are loaded into the system and program libraries.

5. The maximum requirement for each buffered logical unit. See also the mass memory sector restrictions table in this section.

6. Refer to the File Manager Reference Manual for the methods that may be used to determine this value. See also the mass memory sector restrictions table in this section.

7. As an aid in estimation, a 2400-foot, seven-track magnetic tape written at 800 bits per inch may be simulated by use of approximately 17,000 sectors. See also the mass memory sector restrictions table in this section.

8. A standard system does not support file space or software buffering on the 1833-5/1865-1/2 Flexible Disk Drive subsystem.

LOGICAL UNIT WORKSHEET

Logical Unit	Device or Function	Unit Number
04	713 CRT	
05	COSY	0
06	—	0
07	PSEUDO TAPE (JOB FILE)	0
08	1733-2/856-2	0
09	1742-120	
10	1728-430	
11	1728-430	
13	1733-2/856-4	1
14	364/361-4	0
15	361-4	1
16	361-4	2
17	361-4	3
18	PSEUDO TAPE (FOREGROUND)	1
19	1728/430	BUFFERED
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		

0

1700 SERIES

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION — FORM REVISION

1-1 (EXAMPLE SYSTEM No. 2) 1700 SERIES — MSOS (D)

INSTALLATION MEDIUM

1-2

MAGNETIC TAPE 7-TRACK	MAGNETIC TAPE 9-TRACK	PUNCHED CARDS
( )	( )	(X)

SYSTEM LINE FREQUENCY

1-3

50 HERTZ	60 HERTZ
( )	(X)

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

2-1

1704	1714	1774	1784/18-17
( )	( )	( )	(X)

MAIN MEMORY SIZE

2-2 (128) K BYTES

(3) SYSTEM TIMING DEVICE

TYPE	1572-1 LST	1572-1 SRG	1573 LST	
3-1	( )	( )	( )	
TYPE	1572 SRG	364-4 MUX	10336-1 CLOCK	NONE
3-2	( )	(X)	( )	( )

(4) SYSTEM COMMENT DEVICE

TYPE	1711 TTY	1713 TTY	713-10 CRT	1811-1 CRT
4-1	( )	( )	(X)	( )

0

0

(5) SYSTEM DISK MASS STORAGE DEVICE

		DISK 0	UNIT 1	2	3	4	5	6	7
* 1739-1		0							
5- 1	LOGICAL UNIT	(--)							
* 1738	853/854	0	1						
5- 2	853	( )	( )						
5- 3	854	( )	( )						
5- 4	LOGICAL UNIT	(--)	(--)						
* 1733-2	856	0	1	2	3				
5- 5	856-2/12	(X)	( )	( )	( )				
5- 6	856-4/14	( )	(X)	( )	( )				
5- 7	LOGICAL UNIT	(8)	(13)	(--)	(--)				
* 1733-1	853/854	0	1	2	3	4	5	6	7
5- 8	853	( )	( )	( )	( )	( )	( )	( )	( )
5- 9	854	( )	( )	( )	( )	( )	( )	( )	( )
5-10	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

(6) SYSTEM DRUM MASS STORAGE DEVICE

6- 1	LOGICAL UNIT	(--)							
* 1752	DRUM SIZE	1	2	3	4				
6- 2		( )	( )	( )	( )				
* 1751	DRUM SIZE	A	C	D	E	F	G	H	J
6- 3		( )	( )	( )	( )	( )	( )	( )	( )

0

0

(7) S Y S T E M L I N E P R I N T E R

	1740-501	1742-1	1742-30	1742-120
7- 1	( )	( )	( )	(X)

(8) S Y S T E M M A G N E T I C T A P E D E V I C E

STANDARD SYSTEM UNITS

	INPUT	OUTPUT
8- 1	( )	( )

TAPE UNIT

* 1732-3 616-72/92/95		0	1	2	3				
8- 2	7-TRACK	( )	( )	( )	( )				
8- 3	9-TRACK	( )	( )	( )	( )				
8- 4	LOGICAL UNIT	(--)	(--)	(--)	(--)				
* 1732-2 615-73/93		0	1	2	3				
8- 5	7-TRACK	( )	( )	( )	( )				
8- 6	9-TRACK	( )	( )	( )	( )				
8- 7	LOGICAL UNIT	(--)	(--)	(--)	(--)				
* 1732-1 608/609		0	1	2	3	4	5	6	7
8- 8	7-TRACK	( )	( )	( )	( )	( )	( )	( )	( )
8- 9	9-TRACK	( )	( )	( )	( )	( )	( )	( )	( )
8-10	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
	1706 NUMBER FOR 1732-1				1	2	3		
8-11					( )	( )	( )		
* 1731 601		0	1	2	3	4	5	6	7
8-12	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
	1706 NUMBER FOR 1731				1	2	3		
8-13					( )	( )	( )		

0

0

(9) SYSTEM CARD DEVICE

CARD CONVERSION FORMAT

		ASCII-63	ASCII-68
9-1		(X)	( )

		1729-2	1729-3	1728-430	1726-405
9-2	READER LOGICAL UNIT	(--)	(--)	(10)	(--)
		1725-1		1729-430	
9-3	PUNCH LOGICAL UNIT	(--)		(11)	

		1	2	3
9-4	1706 NUMBER FOR 1726-405	( )	( )	( )

(10) SYSTEM PAPER TAPE DEVICE

		1713	1777	1721/24	1720-1
10-1	READER LOGICAL UNIT	(--)	(--)	(--)	(--)
10-2	PUNCH LOGICAL UNIT	(--)	(--)	(--)	(--)

0

0

(11) S Y S T E M C O M M U N I C A T I O N S D E V I C E S

		COMMUNICATIONS UNIT							
* 364-4 MULTIPLEXER		0	1	2	3	4	5	6	7
11- 1	361-1 ADAPTER	( )	( )	( )	(X)	( )	( )	( )	( )
11- 2	361-4 ADAPTER	(X)	(X)	(X)	( )	( )	( )	( )	( )
11- 3	LOGICAL UNIT	(14)	(15)	(16)	(17)	(--)	(--)	(--)	(--)

		COMMUNICATIONS UNIT							
364-4 MULTIPLEXER		8	9	10	11	12	13	14	15
11- 4	361-1 ADAPTER	( )	( )	( )	( )	( )	( )	( )	( )
11- 5	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

* 1595 SERIAL I/O		0	1	2	3	4	5	6	7
11- 6	MODULE	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
11- 7	STATION	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
11- 8	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
1595 SERIAL I/O		8	9	10	11	12	13	14	15
11- 9	MODULE	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
11-10	STATION	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
11-11	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

* 1743-2 CONTROLLER		0	1	2	3	4	5	6	7
11-12	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
1743-2 CONTROLLER		8	9	10	11	12	13	14	15
11-13	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)

0

(20) MAIN MEMORY ALLOCATION

SYSTEM COMMON

		DECIMAL LENGTH
20- 1		(2000) BYTES

PARTITIONED MEMORY

		DECIMAL LENGTH
20- 2	PARTITION 1	(2000) BYTES
20- 3	PARTITION 2	(2000) BYTES
20- 4	PARTITION 3	(4000) BYTES
20- 5	PARTITION 4	(4000) BYTES
20- 6	PARTITION 5	(16000) BYTES
20- 7	PARTITION 6	(12000) BYTES
20- 8	PARTITION 7	(-----) BYTES
20- 9	PARTITION 8	(-----) BYTES
20-10	PARTITION 9	(-----) BYTES
20-11	PARTITION 10	(-----) BYTES
20-12	PARTITION 11	(-----) BYTES
20-13	PARTITION 12	(-----) BYTES
20-14	PARTITION 13	(-----) BYTES
20-15	PARTITION 14	(-----) BYTES
20-16	PARTITION 15	(-----) BYTES
20-17	PARTITION 16	(-----) BYTES

0

(21) MESSAGE BUFFERING

	CARD PUNCH DEVICE	1728-430	1725-1
21- 1	OUTPUT LOGICAL UNIT	(19)	(--)
21- 2	MASS MEMORY L. UNIT	(13)	(--)
21- 3	MESSAGE RECORDS	(300)	(---)

	TELETYPE KEYBOARD	1711/713	1713
21- 4	OUTPUT LOGICAL UNIT	(--)	(--)
21- 5	MASS MEMORY L. UNIT	(--)	(--)
21- 6	MESSAGE RECORDS	(---)	(---)

	PAPER TAPE PUNCH DEVICE	1713	1777	1723/24	1720-1
21- 7	OUTPUT LOGICAL UNIT	(--)	(--)	(--)	(--)
21- 8	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
21- 9	MESSAGE RECORDS	(---)	(---)	(---)	(---)

(22) COSY INTERFACE

	COSY UNIT	0	1
22- 1	LOGICAL UNIT	(5)	(--)

0

```
0

(23) M S O S   F I L E   M A N A G E R   1

     FILE SPACE UNIT      LOGICAL UNIT   DECIMAL LENGTH
23- 1   UNIT 0               ( 8)        (-4000) SECTORS
23- 2   UNIT 1               (13)        (-8921) SECTORS
23- 3   UNIT 2               (--)        (-----) SECTORS
23- 4   UNIT 3               (--)        (-----) SECTORS
23- 5   UNIT 4               (--)        (-----) SECTORS
23- 6   UNIT 5               (--)        (-----) SECTORS
23- 7   UNIT 6               (--)        (-----) SECTORS
23- 8   UNIT 7               (--)        (-----) SECTORS
23- 9   UNIT 8               (--)        (-----) SECTORS


(24) M A G N E T I C   T A P E   E M U L A T I O N

     * PSEUDO MAGNETIC TAPE UNIT      0    1    2    3    4    5    6    7
24- 1   JOB FILE   ACCESS            (X)  ( )  ( )  ( )  ( )  ( )  ( )  ( )
24- 2   FOREGROUND ACCESS            ( )  (X)  ( )  ( )  ( )  ( )  ( )  ( )
24- 3   LOGICAL UNIT                (-7) (18) (--) (--) (--) (--) (--) (--)
24- 4   NUMBER OF JOB FILES         (-100)

     * MAGNETIC TAPE SIMULATION UNIT  0          1          2          3
24- 5   LOGICAL UNIT                (--)       (--)       (--)       (--)
24- 6   MASS MEMORY L. UNIT         (--)       (--)       (--)       (--)
24- 7   NUMBER OF SECTORS           (-----)    (-----)    (-----)    (-----)

     MAGNETIC TAPE SIMULATION UNIT  4          5          6          7
24- 8   LOGICAL UNIT                (--)       (--)       (--)       (--)
24- 9   MASS MEMORY L. UNIT         (--)       (--)       (--)       (--)
24-10   NUMBER OF SECTORS           (-----)    (-----)    (-----)    (-----)

0
```

0

(25) P S E.U D O D I S K D R I V E S

	PSEUDO DISK DRIVE UNIT	0	1	2	3
25- 1	LOGICAL UNIT	(--)	(--)	(--)	(--)
25- 2	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)

(30) M S O S F O R T R A N 3 . 3

30- 1	COMPILER VARIANT 'A'	( )
30- 2	COMPILER VARIANT 'B'	(X)
30- 3	RE-ENTRANT LIBRARY	(X)
30- 4	DOUBLE PRECISION OPTION	( )

0

(33) OPTIONAL MSOS PRODUCTS

33- 1	MAGNETIC TAPE UTILITY 2	(X)
33- 2	MACRO ASSEMBLER 3	(X)
33- 3	SORT MERGE 1	( )
33- 4	RPG II 1	( )

EXAMPLE 3

This system contains the following equipment:

- CYBER 18-20 Mainframe with 256K bytes of memory
- 1811-1 CRT
- 1833-3 Storage Module Drive Controller
- One 1867-20 Storage Module Drive
- 1833-5 Flexible Disk Controller
- One 1865-1 Flexible Disk Drive
- 1827-32/60 Line Printer
- 1860-4 Magnetic Tape Subsystem
- 1860-72 Magnetic Tape Subsystem
- 1829-30/60 Card Reader

In addition to the standard MSOS software, the application requires the MSOS file Manager, two magnetic tape simulator units, the magnetic tape utility, the macro assembler, and the extended memory driver. The application also requires that seven pseudo disk drives be specified on the 1833-3/1867-20 so that the entire disk unit may be addressed by MSOS. The system also contains one COSY interface unit, the FORTRAN compiler, and the re-entrant run-time library. The double-precision option is not desired.

Reference to the attached memory size worksheet shows that the system software requires approximately 81,526 bytes of storage if the B-variant compiler is selected. Note that the A-variant selection should require 68,226 bytes in this application. Since the system contains 256K of memory, approximately 180,618 bytes are available for applications use. Note that the main memory requirement must be satisfied from a maximum of 128K (131,072) bytes. Additional MOS memory that increases the CPU capacity above this limit is not available to satisfy these MSOS requirements. Extra main memory up to the 128K limit is automatically included with the unprotected memory in the system. This particular application has an additional 49,546 bytes of unprotected memory. Extra main memory above the 128K limit is automatically reserved as an applications scratch area. In this application, a full 131,072 bytes of main memory are available for this use.

The mass storage requirement of this system is approximately 23,650 sectors, which includes file space and magnetic tape simulator space of 16,000 sectors. The attached mass memory sector restrictions table prevents the file space and magnetic tape simulator space total from exceeding this limit on the 1833/1867-20 library unit. Since MSOS can address 32,767 sectors on the 1867-20 Storage Module Drive, approximately 9,117 sectors are available as additional scratch storage or other uses. Additional sectors on the 1867-20 are utilized for file space and pseudo disk drives by assigning the maximum of seven pseudo disk drives to the 1867-20 library unit. Each pseudo disk drive unit addresses a nonoverlapping range of 32,767 sectors on the physical unit, which is then specified as the mass memory unit for the remaining file space and pseudo disk drive requirements.

The logical unit worksheet shows the arrangement of the system logical units. The 1860-1 Magnetic Tape Unit appears as logical units 11 and 16 since the device performs the additional function of the standard output device. Note the assignment of the logical units for the pseudo disk units.

All pages of the order form are included in this example. An entry is made for each selection in items 1, 2, 4, 5, and 8. Note the assignments of the pseudo disk drives to the 1833-3/1867-20 Storage Module Drive.

MEMORY SIZE WORKSHEET

System Element	Main Memory Requirement in Bytes	Remarks
Required MSOS	(40,000)	Note 1
MSOS File Manager	(6,600)	
Partitioned memory	1,200	
Total partitioned memory size	------	
Total system common size	------	
Message buffering	800	
FORTRAN A-variant	6,600	
FORTRAN B-variant	(19,900)	
Re-entrant FORTRAN library	9,000	With the 1781-1 Hardware Floating Point Unit
Re-entrant FORTRAN library	(10,600)	With software floating point
Double-precision option	3,500	With the 1781-1 Hardware Floating Point Unit. See note 2.
Double-precision option	5,800	With software floating point. See note 2.
Extended memory driver	(4,426)	
RPG II	6,200	Note 3

40,000
6,600
19,900
10,600
4,426
81,526

256K = 262,144
- 81,526
180,618

128K = 131,072
- 81,526
49,546
(UNPROTECTED)

System Element	Mass Memory Bytes	Requirement Sectors	Remarks
Required MSOS	1152K	(6000)	Note 4
Message buffering	64K	350	Note 5
FORTRAN compiler/library	318K	(1650)	
File space	SEE MASS MEMORY SECTOR RESTRICTIONS	8000	Note 6
Magnetic tape simulator		8000	Note 7
RPG II	412K	2150	
Sort/Merge	16K	100	

Note: Two bytes are equivalent to one 16-bit word.

6000
1650
8000
8000
23,650 SECTORS

32,767 SECTORS
- 23,650
9,117 (SCRATCH)

Mass Memory Sector Restrictions

To allow for standard system configurability, the following limitations have been placed on the total file space, software buffering, and magnetic tape simulation for each logical mass memory device.

Mass Memory Device	Total Number of Sectors Available for Each Unit		Remarks
	Library Unit (LU8)	Nonlibrary Unit	
1739-1	11775	11775	
1738/1733-1/853	8000	15999	
854	16000	32479	
1733-2/856-2	11775	11775	
856-4	9221	9221	See footnote†
1751-A	-----	683	
-C	-----	1365	16,000 − 8,000 (FILE SPACE) = 8,000
-D	-----	2048	
-E	-----	2731	8,000 − 8,000 (MAGNETIC TAPE SIMULATION) = 0
-F	-----	3413	
-G	-----	4096	
-H	-----	4779	
-J	-----	5461	
1752-1	-----	2048	
-2	-----	6144	
-3	approximately 6000	12288	
-4	approximately 10000	16384	
1833-3/1867-10	16000	32767	See footnote†
1867-20	16000	32767	See footnote†
1833-5/1865-1/2	-----	1399	Note 8

†Additional sectors may be allocated for file manager space, software buffering, and magnetic tape simulation on this mass storage device by assigning one pseudo disk drive for each additional block of up to 32,767 sectors on the physical unit. Sector 1 of the first pseudo disk unit on each mass memory unit is biased to begin at physical sector 32,768. (One sector is the equivalent of 192 bytes.) Appropriate space may then be allocated on the assigned pseudo disk units. See example 3 in section 9 for further clarification of this procedure.

Mass Memory Device	Additional Number of Sectors Available Per Unit Using Pseudo Disk Drives
1733-2/856-4	1 x 14325
1833-3/1867-10	3 x 32767
1867-20	7 x 32767

NOTES:

1. The requirement for a system with a typical amount of peripheral devices. This value can range from 38,000 to 42,000 bytes. A minimal MSOS 5 system with limited peripherals and capabilities may be configured in 32,000 bytes. The hardware configuration for a 32K byte minimum system is restricted to include only one console device (teletypewriter, conversational display terminal), one input device (paper tape, cards, magnetic tape), one output device (paper tape, cards, magnetic tape), and one mass storage drive.

2. The foreground library requirement. The background library can exceed 20,000 bytes when the double-precision option is included, which reduces the amount of memory available to the FORTRAN program. The actual size of the background library depends on the functions required for execution.

3. Use this minimum RPG II compiler requirement for unprotected memory only if no FORTRAN compiler variant has been selected. Additional unprotected memory is necessary to execute a typical RPG II object program and exceeds this minimum requirement by approximately 18K bytes when no FORTRAN compiler has been selected. If a FORTRAN compiler variant has been ordered the additional memory required to execute a typical RPG II object program is 17.6K bytes and 4.3K bytes for the A- and B-variants, respectively.

4. This is the requirement of a typical system and includes a reasonable amount of scratch storage: 960K bytes for minimum systems. The amount of available scratch is reduced as the system is used and new programs are loaded into the system and program libraries.

5. The maximum requirement for each buffered logical unit. See also the mass memory sector restrictions table in this section.

6. Refer to the File Manager Reference Manual for the methods that may be used to determine this value. See also the mass memory sector restrictions table in this section.

7. As an aid in estimation, a 2400-foot, seven-track magnetic tape written at 800 bits per inch may be simulated by use of approximately 17,000 sectors. See also the mass memory sector restrictions table in this section.

8. A standard system does not support file space or software buffering on the 1833-5/1865-1/2 Flexible Disk Drive subsystem.

LOGICAL UNIT WORKSHEET

Logical Unit	Device or Function	Unit Number
04	1811-1	0
05	COSY	0
06	1860-4	0
07	MAG TAPE SIMULATOR	0
08	1833-3 1867-20	
09	1827-32/60	
10	1829-80/60	
11	1860-1	1
13	1833-5 1865-1	0
14	EXTENDED MEMORY DRIVER	
15	MAG TAPE SIMULATOR	1
16	1860-72	1
17	1860-4	2
18		
19	PSEUDO DISK	0
20	PSEUDO DISK	1
21	PSEUDO DISK	2
22	PSEUDO DISK	3
23	PSEUDO DISK	4
24	PSEUDO DISK	5
25	PSEUDO DISK	6
26		
27		
28		
29		
30		

CYBER SERIES

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION FORM REVISION

1- 1 (EXAMPLE SYSTEM NO. 3) CYBER SERIES MSOS (2)

INSTALLATION MEDIUM

MAGNETIC TAPE

9-TRACK

1- 2 (X)

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

	18-20	18-10M
2- 1	(X)	( )

MAIN MEMORY SIZE

2- 2 (256) K BYTES

(4) SYSTEM COMMENT/PANEL DEVICE

1811-1/2

CRT

4- 1 (X)

0

0

(5) SYSTEM DISK MASS STORAGE DEVICE

			DISK 0	1	2	3	UNIT 4	5	6	7
*	STORAGE MODULES									
5- 1	1867-1 (25MB)		( )	( )	( )	( )	( )	( )	( )	( )
5- 2	1867-2 (50MB)		(X)	( )	( )	( )	( )	( )	( )	( )
5- 3	LOGICAL UNIT		(8)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
	1833-5	1865-1/2	0	1						
5- 4	LOGICAL UNIT		(13)	(--)						

		DISK 0	1	2	UNIT 3
*	CARTRIDGE DISKS				
5- 5	1866-12	( )	( )	( )	( )
5- 6	1866-14	( )	( )	( )	( )
5- 7	LOGICAL UNIT	(--)	(--)	(--)	(--)

(7) SYSTEM LINE PRINTER

	1827-30/31/32/60/90
7- 1	(X)

0

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

	INPUT	OUTPUT
8- 1	( )	(X)

		TAPE 0	TAPE 1	UNIT 2	UNIT 3
1860-1/2/3/4					
8- 2	7-TRACK NRZI	( )	(X)	( )	( )
8- 3	9-TRACK NRZI	(X)	( )	(X)	( )
8- 4	LOGICAL UNIT	(6)	(16)	(17)	(--)

		TAPE 0	TAPE 1	UNIT 2	UNIT 3
1860-5/6					
8- 5	9-TK DUAL MODE	( )	( )	( )	( )
8- 6	LOGICAL UNIT	(--)	(--)	(--)	(--)

(9) SYSTEM CARD DEVICE

		1829-30/60
9- 2	READER LOGICAL UNIT	(10)

0

(22) C O S Y I N T E R F A C E

	COSY UNIT	0	1
22- 1	LOGICAL UNIT	(5)	(--)

(23) M S O S F I L E M A N A G E R 1

	FILE SPACE UNIT	LOGICAL UNIT	DECIMAL LENGTH
23- 1	UNIT 0	(8)	(8000) SECTORS
23- 2	UNIT 1	(19)	(32767) SECTORS
23- 3	UNIT 2	(20)	(32767) SECTORS
23- 4	UNIT 3	(21)	(32767) SECTORS
23- 5	UNIT 4	(22)	(32767) SECTORS
23- 6	UNIT 5	(23)	(32767) SECTORS
23- 7	UNIT 6	(24)	(32767) SECTORS
23- 8	UNIT 7	(--)	(-----) SECTORS
23- 9	UNIT 8	(--)	(-----) SECTORS

0
0

(24) MAGNETIC TAPE EMULATION

	PSEUDO MAGNETIC TAPE UNIT	0	1	2	3	4	5	6	7
24- 1	JOB FILE ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24- 2	FOREGROUND ACCESS	( )	( )	( )	( )	( )	( )	( )	( )
24- 3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)	(--)	(--)
24- 4	NUMBER OF JOB FILES	(----)							

	MAGNETIC TAPE SIMULATION UNIT	0	1	2	3
24- 5	LOGICAL UNIT	(7)	(15)	(--)	(--)
24- 6	MASS MEMORY L. UNIT	(8)	(25)	(--)	(--)
24- 7	NUMBER OF SECTORS	(8000)	(2919)	(-----)	(-----)

	MAGNETIC TAPE SIMULATION UNIT	4	5	6	7
24- 8	LOGICAL UNIT	(--)	(--)	(--)	(--)
24- 9	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-10	NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

	MAGNETIC TAPE SIMULATION UNIT	8	9	10	11
24-11	LOGICAL UNIT	(--)	(--)	(--)	(--)
24-12	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)
24-13	NUMBER OF SECTORS	(-----)	(-----)	(-----)	(-----)

0
0

(25) P S E U D O D I S K D R I V E S

	PSEUDO DISK DRIVE UNIT	0	1	2	3	4	5	6	7
25- 1	LOGICAL UNIT	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(--)
25- 2	MASS MEMORY L. UNIT	(-8)	(-8)	(-8)	(-8)	(-8)	(-8)	(-8)	(--)

	PSEUDO DISK DRIVE UNIT	8	9	10	11	12	13
25- 3	LOGICAL UNIT	(--)	(--)	(--)	(--)	(--)	(--)
25- 4	MASS MEMORY L. UNIT	(--)	(--)	(--)	(--)	(--)	(--)

(26) EXTENDED MEMORY DRIVER

26- 1 LOGICAL UNIT (14)

(30) MSOS FORTRAN 3.3

30- 1 COMPILER VARIANT 'A' ( )

30- 2 COMPILER VARIANT 'B' (X)

* SOFTWARE FLOATING POINT

30- 3 SOFTWARE OPTION (X)

* FIRMWARE FLOATING POINT

30- 4 FIRMWARE OPTION ( )

FORTRAN RUNTIME LIBRARIES

30- 5 RE-ENTRANT - SINGLE PREC. (X)

30- 6 RE-ENTRANT - DOUBLE PREC. ( )

30- 7 NON-RE-ENTRANT - SINGLE PREC. ( )

30- 8 Non-RE-ENTRANT - DOUBLE PREC. ( )

(33) OPTIONAL MSOS PRODUCTS

33- 1 MAGNETIC TAPE UTILITY 2 (X)

33- 2 MACRO ASSEMBLER 3 (X)

33- 3 SORT MERGE 1 ( )

33- 4 RPG II 1 ( )

COMMENT SHEET

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