
CONTROL DATA[®]
1700 COMPUTER SYSTEMS

MSOS VERSION 4
ORDERING BULLETIN

CONTENTS

| | | |
|---|---------------------------------|-----|
| 1 | INTRODUCTION | 1-1 |
| 2 | HARDWARE CONFIGURATION | 2-1 |
| 3 | SOFTWARE CONFIGURATION | 3-1 |
| 4 | MEMORY SIZE WORKSHEET | 4-1 |
| 5 | LOGICAL UNIT WORKSHEET | 5-1 |
| 6 | 1500 SERIES EQUIPMENT WORKSHEET | 6-1 |
| 7 | MSOS 4 ORDER FORM | 7-1 |
| 8 | ORDER FORM EXAMPLES | 8-1 |

INTRODUCTION

1

The CONTROL DATA® 1700 Mass Storage Operating System may be used in a wide range of applications, from a stand-alone batch processor to high-speed data acquisition and industrial process control. Because the 1700 MSOS is flexible and can support a large number of peripheral devices, it is possible to configure a great variety of 1700 computer systems.

The Control Data 1700 MSOS ordering system is designed to aid the 1700 user in defining an MSOS system that can:

- Meet the applications requirements
- Be easily installed
- Be verified as containing reliable software, without requiring a high degree of knowledge of 1700 MSOS.

This document is the first step in this process and contains the order form that specifies the desired system. Although a high degree of knowledge is not required, it is assumed that the reader has some understanding of the 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 for configuring the system. Section 7 contains the order form and Section 8 contains useful examples.

The following is a summary of the 1700 MSOS ordering system:

1. The MSOS order form is completed and mailed to the Control Data address indicated on the form.
2. When received by Control Data, the order is verified and processed.
3. This results in an installable system that is configured specifically for the order.
4. The system is installed on 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 Reference Manual for a complete description of this standard.

- Only 16 communications adapter channels may be ordered for the 364-4/5 Communications Multiplexer. Since the 361-4 adapters require two channels, the number of terminal units will be 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 are supported under MSOS, but 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 1700 IMPORT/Graphics product is ordered, the 1747 Data Set Controller requires a dedicated 1706, which is automatically configured as number 3. If the 274 interactive graphics terminals are included with 1700 IMPORT/Graphics, the 1744 Graphics Controller also requires a dedicated 1706, which is automatically configured as number 2. It is recommended that other peripheral devices that require a buffered data channel use 1706 number 1. If the system contains a 1745-211 Display Controller, it requires the use of a dedicated 1706.
- 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 1700 MSOS systems, this does not imply that additional capabilities cannot be achieved by customization. The Control Data analyst and the 1700 MSOS Customization Manual should also be consulted.

The 1700 Mass Storage Operating System consists of a Monitor, peripheral device drivers, and the following standard modules:

- Job Processor
- Macro Assembler 3
- Small Computer Maintenance Monitor
- 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 1700 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 Core** — Two forms of memory management are available under MSOS: allocatable and partitioned core. Allocatable core 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 core reside on mass memory and must be coded in such a way that they may be executed at any memory address. Partitioned core 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 core also reside on mass memory and may only be executed in the partition to which they are assigned. In general, allocatable core 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 core and can result in more complex systems in terms of the interaction between mass-resident programs. Partitioned core 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 core are easier to design and code than those written for allocatable core. While partitioned core does require less system overhead, partitioned programs may be less responsive than allocatable programs, particularly if a highly active partition is used. Finally, partitioned core requires additional main memory for the partitioned core processor.
- **File Manager** — This is an optional feature of MSOS. 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.

- Magnetic Tape Emulation — This is an optional MSOS feature which 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 which 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 1700 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 run-time libraries are fully compatible with the 1781-1 hardware floating point unit.

- **TIMESHARE 2** — This is an optional product that runs under 1700 MSOS, and that requires a separate software license. It allows concurrent background, timesharing, and foreground operations, and will process up to 15 remote terminals. It is composed of a Text Editor, two calculation packages, a BASIC language compiler, and a general utility package. This product requires the MSOS File Manager and the FORTRAN product together with its re-entrant run-time library. Use of the TIMESHARE product in a system which does not contain a hardware timing unit will prevent concurrent background and timesharing operations.
- **1700 IMPORT HIGH SPEED/274 IGS 2** — This is an optional product that runs under 1700 MSOS 4, and requires a separate software license. It is designed to allow the 1700 to simulate a batch terminal that can be used to submit jobs to a 6000/CYBER 70 system, and to provide support of 274 interactive graphics.

MEMORY SIZE WORKSHEET

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 will satisfy 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 only intended 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 will be automatically assigned as foreground allocatable core in the ordered system.
- Any mass memory that remains on the library unit after system requirements are met will be automatically assigned as background scratch storage in the ordered system.

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

| | |
|--------------------|--------------|
| MSOS requirements | 17,000 |
| MSOS File Manager | 2,800 |
| A variant compiler | 3,000 |
| Re-entrant library | <u>5,300</u> |
| | 28,100 words |

or 28K of main memory. The mass storage requirements are:

| | |
|-------------------|---------------|
| MSOS requirements | 6,000 |
| FORTTRAN | <u>1,250</u> |
| | 7,250 sectors |

MEMORY SIZE WORKSHEET

| <u>System Element</u> | <u>Main Memory Requirement</u> | <u>Remarks</u> |
|-----------------------------|--------------------------------|-------------------------------------|
| Required MSOS | 17,000 | Note 1 |
| MSOS File Manager | 2,800 | |
| Partitioned core | 600 | |
| Total partitioned core size | ----- | |
| Total system common size | ----- | |
| Message buffering | 400 | |
| FORTTRAN A variant | 3,000 | |
| FORTTRAN B variant | 10,000 | |
| Re-entrant FORTRAN library | 5,300 | |
| Re-entrant FORTRAN library | 4,500 | With the 1781-1 Floating point unit |
| Double-precision option | 2,550 | Note 2 |
| TIMESHARE System | 3,750 | With the A variant FORTRAN |
| TIMESHARE System | 1,750 | With the B variant FORTRAN |
| IMPORT/Graphics | 13,000 | |

| <u>System Element</u> | <u>Mass Memory Words</u> | <u>Requirement Sectors</u> | <u>Remarks</u> |
|---------------------------|--------------------------|----------------------------|----------------|
| Required MSOS | 576K | 6000 | Note 3 |
| Message buffering | 32K | 350 | Note 4 |
| FORTTRAN Compiler/Library | 120K | 1250 | |
| TIMESHARE System | 58K | 600 | |
| File space | | ---- | Note 5 |
| Magnetic tape simulator | | ---- | Note 6 |

- Notes:
1. The requirement for a system with a typical amount of peripheral devices. This value can range from 16,000 to 18,000 words.
 2. The foreground library requirement. The background library can exceed 10,000 words when the double-precision option is included, which will reduce the amount of memory available to the FORTRAN program. The actual size of the background library will depend on the functions required for execution.
 3. This is the requirement of a typical system and includes a reasonable amount of scratch storage: 480K words for minimum systems. The amount of available scratch will be reduced as the system is used and new programs are loaded into the system and program libraries.
 4. The maximum requirement for each buffered logical unit.
 5. Refer to the File Manager Reference Manual for the methods that may be used to determine this value.
 6. As an aid in estimation, a 2400-foot 7-track magnetic tape, written at 556 bits per inch, may be simulated by use of approximately 12,000 sectors.

LOGICAL UNIT WORKSHEET

5

Every peripheral device in the 1700 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:

| <u>Logical Unit</u> | <u>Function</u> |
|---------------------|-------------------------|
| 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 will be 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 will be 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 will be 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

| <u>Logical Unit</u> | <u>Device or Function</u> | <u>Unit Number</u> |
|---------------------|---------------------------|--------------------|
| 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 | ----- | |

LOGICAL UNIT WORKSHEET (Continued)

| <u>Logical Unit</u> | <u>Device or Function</u> | <u>Unit Number</u> |
|---------------------|---------------------------|--------------------|
| 26 | ----- | ----- |
| 27 | ----- | ----- |
| 28 | ----- | ----- |
| 29 | ----- | ----- |
| 30 | ----- | ----- |
| 31 | ----- | ----- |
| 32 | ----- | ----- |
| 33 | ----- | ----- |
| 34 | ----- | ----- |
| 35 | ----- | ----- |
| 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. 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 present locally.
- Although the 1572-1 timer 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 will be required when using the system order form. Note that the assignment of equipment on this worksheet will correspond exactly to the actual equipment location in the 1500 controllers.

1500 SERIES EQUIPMENT WORKSHEET

Local Module 0 (CIU)

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

Local Module 1 (CIE 1)

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

Local Module 2 (CIE 2)

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

Local Module 3 (CIE 3)

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

1500 SERIES EQUIPMENT WORKSHEET (Continued)

Local Module 4 (CIE 4)

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

Local Module 5 (CIE 5)

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

Local Module 6 (CIE 6)

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

Local Module 7 (CIE 7)

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

1500 SERIES EQUIPMENT WORKSHEET (Continued)

Remote Module 0 (CIU)

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

Remote Module 1 (CIE 1)

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

Remote Module 2 (CIE 2)

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

Remote Module 3 (CIE 3)

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

1500 SERIES EQUIPMENT WORKSHEET (Continued)

Remote Module 4 (CIE 4)

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

Remote Module 5 (CIE 5)

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

Remote Module 6 (CIE 6)

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

Remote Module 7 (CIE 7)

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

MSOS 4 ORDER FORM

7

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

- The order form must be filled out completely and accurately. Failure to do this will result 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 employed as an aid in the specification of the system.
- Every order item has a number in the left-hand column which 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 Section 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

0

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION

FORM REVISION

1- 1 (-----)

MSOS (C)

INSTALLATION MEDIUM

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

SYSTEM LINE FREQUENCY

| | | |
|------|----------|----------|
| | 50 HERTZ | 60 HERTZ |
| 1- 3 | () | () |

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

| | | | | |
|------|------|------|------|------|
| | 1704 | 1714 | 1774 | 1784 |
| 2- 1 | () | () | () | () |

MAIN MEMORY SIZE

2- 2 (--) K WORDS

(3) SYSTEM TIMING DEVICE

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

(4) SYSTEM COMMENT DEVICE

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

0

0

(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 | 856-2/4 | 0 | 1 | 2 | 3 | | | | |
| 5- 5 | 856-2 | () | () | () | () | | | | |
| 5- 6 | 856-4 | () | () | () | () | | | | |
| 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 | | () | () | () | () | () | () | () | () |

0

0

(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 | 616-73/93/95 | 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 | (--) | (--)(--)(--)(--)(--)(--)(--)(--) |

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

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

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

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 | | 1728-430 | |
| 9- 3 | PUNCH LOGICAL UNIT | | (--) | | (--) | |
| 9- 4. | 1706 NUMBER FOR 1726-405 | | 1 | 2 | 3 | |
| | | | () | () | () | |

(10) SYSTEM PAPER TAPE DEVICE

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

0

0

(11) SYSTEM COMMUNICATIONS DEVICES

| | | 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 | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) |

0

0

(12) SYSTEM ANALOG - DIGITAL DEVICES

LOCAL 1500 EQUIPMENT ASSIGNMENTS

| | | BEGINNING MODULE | 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) | |

0

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(12) SYSTEM ANALOG-DIGITAL DEVICES

REMOTE 1500 SERIES EQUIPMENT ASSIGNMENTS

| | | BEGINNING MODULE | 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 | (--) | (--) | (--) | (--) | (--) | (--) |
| 13- 3 | 1706 NUMBER FOR 1745 | 1 | 2 | 3 | | | |
| | | () | () | () | | | |

0

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(14) SYSTEM H/W FLOATING POINT UNIT

14- 1 1781-1 UNIT ()

(20) MAIN MEMORY ALLOCATION

SYSTEM COMMON

| | DECIMAL LENGTH |
|-------|----------------|
| 20- 1 | (-----) WORDS |

PARTITIONED CORE

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

0

0

(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 | 1721/23 | 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 | (--) | (--) |

0

0

(23) MSOS FILE MANAGER

| | 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 | BACKGROUND 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 | (-----) | (-----) | (-----) | (-----) |

0

0

(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 | () |

(31) MSOS TIMESHARE 2

| | | | | | | | | | |
|-------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | COMMUNICATIONS UNIT | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31- 1 | TIMESHARE UNIT | () | () | () | () | () | () | () | () |

| | | | | | | | | | |
|-------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| | COMMUNICATIONS UNIT | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 31- 2 | TIMESHARE UNIT | () | () | () | () | () | () | () | () |

31- 3 NUMBER OF FILES (-----)

31- 4 LOGICAL UNIT (--) FOR PERMANENT FILES

31- 5 LOGICAL UNIT (--) FOR SCRATCH FILES

(32) MSOS IMPORT / GRAPHICS

32- 1 1700 IMPORT SYSTEM ()

32- 2 INTERACTIVE GRAPHICS ()

| | | | |
|-------|--------------------|-----|-----|
| | | 0 | 1 |
| 32- 3 | 274 GRAPHICS UNITS | () | () |

0

1-1 System Identification

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

1-2 Installation Medium

One of these items must be selected and will establish the medium on which all MSOS materials are supplied. All seven-track tapes will be supplied at 556 bpi, and all nine-track tapes will be at 800 bpi. Punched cards will be 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 two decimal digits representing the number of 1,024-word memory increments included with the mainframe. Any increment between 16 and 65 is allowed.

3-1, 2 System Timing Device

One of these items must be selected and will 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 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 timer 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 is allowed only on 1784 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
- 5-6 856-4
- 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 or the -4 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, and will cause the tape to be specified 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 bpi 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 seven-track or the nine-track selection, but not both. The nine-track selection specifies both the 800 and 1600 bpi 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 will be 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 Punch 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 device 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 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. 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 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 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.

12-29 1553 Digital Output

This entry is required if the system contains remote 1553-1 through 1553-6 Digital Output Units. All digital 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 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.

13-3 1706 Number

The 1745 requires the use of a dedicated 1706. This 1706 number must be specified here.

(14) System Hardware Floating Point Unit

If the system does not contain a 1781-1 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 20,000 words may be specified.

20-2
through

20-17 Partitioned Core

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 340 ninety-six-word 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 is a decimal value that defines the size of the buffer. Up to 800 40-word 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 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 specifies the size of the buffer. Up to 340 ninety-six-word 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**

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 will be 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 30,000 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 100 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.

(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 will be 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 will be included in both the foreground and background libraries if it is selected.

(31) MSOS TIMESHARE 2

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

31-1, 2 TIMESHARE Unit

A unit must be selected for every communications device that is to be used as a TIMESHARE terminal. Any or all of these units may be selected. The system comment device is always specified as a TIMESHARE terminal, so these entries need not be specified. TIMESHARE will operate with any of the devices contained in section 11 of the order form.

31-3 Number of Files

A decimal entry is required to specify the total number of user-permanent files in the TIMESHARE system. These file numbers will be automatically assigned as the highest available numeric block of file numbers in the system.

31-4 Logical Unit

This entry must be specified if the permanent files space is on a logical unit other than the library unit. This will allow an improvement in file access time.

31-5 Logical Unit

This entry must be specified if the scratch file space is on a logical unit other than the library unit. This will allow an improvement in file access time.

(32) MSOS IMPORT/Graphics

If the system does not require the IMPORT/Graphics product, this section may be ignored.

32-1 1700 Import System

This entry should be selected if the system is to contain the IMPORT capability only.

32-2 Interactive Graphics

This entry is selected if the 1700 IMPORT System also contains interactive graphics.

32-3 274 Graphics Units

This specifies the number of 274 graphics units to be included in the system.

This section contains sample order forms for the 1700 Mass Storage Operating System.

Example 1

This system will contain the following equipment:

- 1704 Mainframe with 28K of memory
- 1713 Teletype
- 1738 Disk Controller
- One 853 Disk Drive
- 1742-1 Line Printer
- 1732-1 Magnetic Tape Controller, buffered through a 1706
- One 608 Tape Drive
- One 609 Tape Drive

The line frequency at the computer installation will be 60 Hertz.

In addition to the standard MSOS software, the application requires 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 will require approximately 25,300 words of storage if the A variant compiler is selected. Note that the B variant selection should require 32,300 words in this application. Since the system contains 28K of memory, approximately 3,400 words will be available for applications use, and will be automatically included with the allocatable core in the system. The operating system will require approximately 700K words of mass storage, and since the 853 disk contains about 1,500K words, approximately 800K words will be 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 order form are included in this example. Note that a selection is made for every item in group 1 through 4, and that 1706 number 1 is selected in item 8-8.

MEMORY SIZE WORKSHEET

| <u>System Element</u> | <u>Main Memory Requirement</u> | <u>Remarks</u> |
|-----------------------------|--------------------------------|-------------------------------------|
| Required MSOS | 17,000 | Note 1 |
| MSOS File Manager | 2,800 | |
| Partitioned core | 600 | |
| Total partitioned core size | ----- | |
| Total system common size | ----- | |
| Message buffering | 400 | |
| FORTRAN A variant | 3,000 | |
| FORTRAN B variant | 10,000 | |
| Re-entrant FORTRAN library | 5,300 | |
| Re-entrant FORTRAN library | 4,500 | With the 1781-1 Floating point unit |
| Double-precision option | 2,550 | Note 2 |
| TIMESHARE System | 3,750 | With the A variant FORTRAN |
| TIMESHARE System | 1,750 | With the B variant FORTRAN |
| IMPORT/Graphics | 13,000 | |

17,000
 3,000
 5,300

 25,300

28K = 28,672
 25,300

 3,372

| <u>System Element</u> | <u>Mass Memory Words</u> | <u>Requirement Sectors</u> | <u>Remarks</u> |
|--------------------------|--------------------------|----------------------------|----------------|
| Required MSOS | 576K | 6000 | Note 3 |
| Message buffering | 32K | 350 | Note 4 |
| FORTRAN Compiler/Library | 120K | 1250 | |
| TIMESHARE System | 58K | 600 | |
| File space | --- | --- | Note 5 |
| Magnetic tape simulator | --- | --- | Note 6 |

576
 120

 696 K

- Notes:
1. This is the requirement of a system with a typical amount of peripheral devices. This value can range from 16,000 to 18,000 words.
 2. This is the foreground library requirement. The background library can exceed 10,000 words when the double-precision option is included, which will reduce the amount of memory available to the FORTRAN program. The actual size of the background library will depend on the functions required for execution.
 3. This is the requirement of a typical system and includes a reasonable amount of scratch storage. This value can be approximately 480K words in minimum systems. However, the amount of available scratch may be reduced as new programs are loaded into the system and program libraries.
 4. This is the maximum requirement for each buffered logical unit.
 5. Refer to the File Manager Reference Manual for the methods that may be used to determine this value.

LOGICAL UNIT WORKSHEET

| <u>Logical Unit</u> | <u>Device or Function</u> | <u>Unit Number</u> |
|---------------------|---------------------------|--------------------|
| 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 | | |

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION

FORM REVISION

(1-1) (EXAMPLE SYSTEM NO. 1)

MS05 (C)

INSTALLATION MEDIUM

| | | | |
|-------|---------------|---------|-------|
| | MAGNETIC TAPE | PUNCHED | PAPER |
| (1-2) | 7-TRACK | CARDS | TAPE |
| | (X) | () | () |

SYSTEM LINE FREQUENCY

| | | |
|-------|----------|----------|
| (1-3) | 50 HERTZ | 60 HERTZ |
| | () | (X) |

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

| | | | | |
|-------|------|------|------|------|
| (2-1) | 1704 | 1714 | 1774 | 1784 |
| | (X) | () | () | () |

MAIN MEMORY SIZE

(2-2) (28) K WORDS

(3) SYSTEM TIMING DEVICE

| | | | | |
|-----|------|--------|--------|------|
| | TYPE | 1572-1 | 1572-1 | 1573 |
| | | LST | SRG | LST |
| 3-1 | | () | () | () |

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

(4) SYSTEM COMMENT DEVICE

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

(5) SYSTEM DISK MASS STORAGE DEVICE

* 1739-1 0 DISK UNIT
 5- 1 LOGICAL UNIT (--)

* 173A 853/854 0 1
 5- 2 853 (X) ()
 5- 3 854 () ()
 5- 4 LOGICAL UNIT (~~3~~) (--)

* 1733-2 856-2/4 0 1 2 3
 5- 5 856-2 () () () ()
 5- 6 856-4 () () () ()
 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) | () | (X) | () | () |

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

| | | |
|-------|-------|--------|
| | INPUT | OUTPUT |
| (8-1) | (X) | (X) |

| | | TAPE | UNIT | | | | | | |
|----------|------------------------|------|------|------|------|------|------|------|------|
| * 1732-3 | 616-73/93/95 | 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) | (--) | (--) | (--) | (--) | (--) | (--) |
| (8-11) | 1706 NUMBER FOR 1732-1 | | | | (X) | () | () | | |
| * 1731 | 601 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8-12 | LOGICAL UNIT | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) |
| 8-13 | 1706 NUMBER FOR 1731 | | | | () | () | () | | |

(9) S Y S T E M C A R D D E V I C E

CARD CONVERSION FORMAT

| | ASCII-63 () | ASCII-68 () | | | | |
|------|--------------------------|-----------------|----------|----------|----------|----------|
| 9- 1 | | | 1729-2 | 1729-3 | 1728-430 | 1726-405 |
| 9- 2 | READER LOGICAL UNIT | | (--) | (--) | (--) | (--) |
| | | | 1725-1 | | 1728-430 | |
| 9- 3 | PUNCH LOGICAL UNIT | | (--) | | (--) | |
| 9- 4 | 1706 NUMBER FOR 1726-405 | | 1 () | 2 () | 3 () | |

(10) S Y S T E M P A P E R T A P E D E V I C E

| | | | | | | |
|---------|---------------------|--|--------------------------------|------|---------|--------|
| | | | 1713 | 1777 | 1721/24 | 1720-1 |
| (10- 1) | READER LOGICAL UNIT | | (¹³ 3) | (--) | (--) | (--) |
| (10- 2) | PUNCH LOGICAL UNIT | | (¹⁴ 4) | (--) | (--) | (--) |

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

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

(31) M S O S T I M E S H A R E 2

COMMUNICATIONS UNIT 0 1 2 3 4 5 6 7
31- 1 TIMESHARE UNIT () () () () () () () ()

COMMUNICATIONS UNIT 8 9 10 11 12 13 14 15
31- 2 TIMESHARE UNIT () () () () () () () ()

31- 3 NUMBER OF FILES (-----)

31- 4 LOGICAL UNIT (--) FOR PERMANENT FILES

31- 5 LOGICAL UNIT (--) FOR SCRATCH FILES

(32) M S O S I M P O R T / G R A P H I C S

32- 1 1700 IMPORT SYSTEM ()

32- 2 INTERACTIVE GRAPHICS ()

32- 3 274 GRAPHICS UNITS 0 1
() ()

Example 2

This system will contain the following equipment:

- 1784 Mainframe with 65K of memory
- 713 CRT
- 1733-2 Disk Controller
- One 856-2 Disk Drive
- One 856-4 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 will be 60 Hertz.

This application requires partitioned core and 1,000 words of system common. In addition, the MSOS TIMESHARE product is desired, which means that the FORTRAN product and the MSOS File Manager must also be used. The system will also contain two pseudo magnetic tape units, one COSY Interface Unit, and message buffering on the card punch.

The memory size worksheet shows that if the B variant compiler is chosen, 20,000 words of partitioned core may be specified, and approximately 6,700 words will remain for applications use. The mass storage requirement of this system is approximately 786K words on the library unit. If the 856-2 Disk is used, about 14,730 sectors are available for other uses. Although the 856-4 will be 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 will be specified on the 856-4, which will still leave storage available for message buffering.

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 appears as logical 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 Communication 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 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

| <u>System Element</u> | <u>Main Memory Requirement</u> | <u>Remarks</u> |
|-----------------------------|--------------------------------|-------------------------------------|
| Required MSOS | 17,000 | Note 1 |
| MSOS File Manager | 2,800 | |
| Partitioned core | 600 | |
| Total partitioned core size | 20,000 | |
| Total system COMMON size | 1,000 | |
| Message buffering | 400 | |
| FORTTRAN A variant | 3,000 | |
| FORTTRAN B variant | 10,000 | |
| Re-entrant FORTTRAN library | 5,300 | |
| Re-entrant FORTTRAN library | 4,500 | With the 1781-1 Floating point unit |
| Double-precision option | 2,550 | Note 2 |
| TIMESHARE System | 3,750 | With the A variant FORTTRAN |
| TIMESHARE System | 1,750 | With the B variant FORTTRAN |
| IMPORT/Graphics | 13,000 | |

17,000
 2,800
 600
 20,000
 1,000
 400
 10,000
 5,300
 1,750
58,850

65K = 65,536
 58,850

 6,686

| <u>System Element</u> | <u>Mass Memory Words</u> | <u>Requirement Sectors</u> | <u>Remarks</u> |
|---------------------------|--------------------------|----------------------------|----------------|
| Required MSOS | 576K | 6000 | Note 3 |
| Message Buffering | 32K | 350 | Note 4 |
| FORTTRAN Compiler/Library | 120K | 1250 | |
| TIMESHARE System | 58K | 600 | |
| File space | | 4000 | Note 5 |
| Magnetic tape simulator | | ---- | Note 6 |

576
 32
 120
 58

 786K

2200K
 786K

 1414K = 14,730 SECTORS
 4,000

 10,730 (SCRATCH)

- Notes:
1. This is the requirement of a system with a typical amount of peripheral devices. This value can range from 16,000 to 18,000 words.
 2. This is the foreground library requirement. The background library can exceed 10,000 words when the double-precision option is included, which will reduce the amount of memory available to the FORTRAN program. The actual size of the background library will depend on the functions required for execution.
 3. This is the requirement of a typical system and includes a reasonable amount of scratch storage. This value can be approximately 480K words in minimum systems, however, the amount of available scratch may be reduced as new programs are loaded into the system and program libraries.
 4. This is the maximum requirement for each buffered logical unit.
 5. Refer to the File Manager Reference Manual for the methods that may be used to determine this value.

LOGICAL UNIT WORKSHEET

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

(1) GENERAL SYSTEM INFORMATION

SYSTEM IDENTIFICATION

FORM REVISION

(1-1) (EXAMPLE SYSTEM NO. 2)

MSOS (C)

INSTALLATION MEDIUM

| | | | |
|-------|---------------|---------|-------|
| | MAGNETIC TAPE | PUNCHED | PAPER |
| (1-2) | 7-TRACK | CARDS | TAPE |
| | () | (X) | () |

SYSTEM LINE FREQUENCY

| | | |
|-------|----------|----------|
| (1-3) | 50 HERTZ | 60 HERTZ |
| | () | (X) |

(2) COMPUTER MAINFRAME

MAINFRAME TYPE

| | | | | |
|-------|------|------|------|------|
| (2-1) | 1704 | 1714 | 1774 | 1784 |
| | () | () | () | (X) |

MAIN MEMORY SIZE

(2-2) (~~65~~) K WORDS

(3) SYSTEM TIMING DEVICE

| | | | | |
|-----|------|--------|--------|------|
| | TYPE | 1572-1 | 1572-1 | 1573 |
| | | LST | SRG | LST |
| 3-1 | | () | () | () |

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

(4) SYSTEM COMMENT DEVICE

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

(5) SYSTEM DISK MASS STORAGE DEVICE

| | | DISK | | MASS | | STORAGE | | DEVICE | |
|------------------|--------------|------------------|-------------------|------|------|---------|------|--------|------|
| | | | | DISK | | UNIT | | | |
| * 1739-1 | | 0 | | | | | | | |
| 5- 1 | LOGICAL UNIT | (--) | | | | | | | |
| * 1739 853/854 | | 0 | 1 | | | | | | |
| 5- 2 | 853 | () | () | | | | | | |
| 5- 3 | 854 | () | () | | | | | | |
| 5- 4 | LOGICAL UNIT | (--) | (--) | | | | | | |
| * 1733-2 856-2/4 | | 0 | 1 | 2 | 3 | | | | |
| 5- 5 | 856-2 | (X) | () | () | () | | | | |
| 5- 6 | 856-4 | () | (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 | | () | () | () | () | () | () | () | () |

(7) SYSTEM LINE PRINTER

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

(8) SYSTEM MAGNETIC TAPE DEVICE

STANDARD SYSTEM UNITS

| | | |
|-----|--------------|---------------|
| 8-1 | INPUT () | OUTPUT () |
|-----|--------------|---------------|

| | | | | | |
|-----|-----------------------|------|------|------|------|
| | | | TAPE | UNIT | |
| | * 1732-3 616-73/93/95 | 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 | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) |

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

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

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

(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 | | 1728-430 | |
| (9- 3) | PUNCH LOGICAL UNIT | | (--) | | (11) | |
| 9- 4 | 1706 NUMBER FOR 1726-405 | | 1 | 2 | 3 | |
| | | | () | () | () | |

(10) SYSTEM PAPER TAPE DEVICE

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

(11) SYSTEM COMMUNICATIONS DEVICES

| | | COMMUNICATIONS UNIT | | | | | | | |
|---------------------|---------------|---------------------|------|------|------|------|------|------|------|
| * 364-4 MULTIPLEXER | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| <u>11-1</u> | 361-1 ADAPTER | () | () | () | (X) | () | () | () | () |
| <u>11-2</u> | 361-4 ADAPTER | (X) | (X) | (X) | () | () | () | () | () |
| <u>11-3</u> | 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 | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) |

(20) M A I N M E M O R Y A L L O C A T I O N

SYSTEM COMMON

(20-1) DECIMAL LENGTH
(-1000) WORDS

PARTITIONED CORE

| | | DECIMAL LENGTH |
|--------|--------------|----------------|
| (20-2) | PARTITION 1 | (-1000) WORDS |
| (20-3) | PARTITION 2 | (-1000) WORDS |
| (20-4) | PARTITION 3 | (-2000) WORDS |
| (20-5) | PARTITION 4 | (-2000) WORDS |
| (20-6) | PARTITION 5 | (-8000) WORDS |
| (20-7) | PARTITION 6 | (-6000) WORDS |
| 20-8 | PARTITION 7 | (-----) WORDS |
| 20-9 | PARTITION 8 | (-----) WORDS |
| 20-10 | PARTITION 9 | (-----) WORDS |
| 20-11 | PARTITION 10 | (-----) WORDS |
| 20-12 | PARTITION 11 | (-----) WORDS |
| 20-13 | PARTITION 12 | (-----) WORDS |
| 20-14 | PARTITION 13 | (-----) WORDS |
| 20-15 | PARTITION 14 | (-----) WORDS |
| 20-16 | PARTITION 15 | (-----) WORDS |
| 20-17 | PARTITION 16 | (-----) WORDS |

(21) M E S S A G E B U F F E R I N G

| 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 | 1721/23 | 1720-1 |
|-------------------------|---------------------|-------|-------|---------|--------|
| 21- 7 | OUTPUT LOGICAL UNIT | (--) | (--) | (--) | (--) |
| 21- 8 | MASS MEMORY L. UNIT | (--) | (--) | (--) | (--) |
| 21- 9 | MESSAGE RECORDS | (---) | (---) | (---) | (---) |

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

| C O S Y UNIT | | 0 | 1 |
|--------------|--------------|-----|------|
| 22- 1 | LOGICAL UNIT | (5) | (--) |

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

| | FILE SPACE UNIT | LOGICAL UNIT | DECIMAL LENGTH |
|---------|-----------------|-------------------|------------------------------|
| (23- 1) | UNIT 0 | (8) | (4000) SECTORS |
| (23- 2) | UNIT 1 | (13) | (30000) 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 | (-----) | (-----) | (-----) | (-----) |

(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 ()

(31) M S O S T I M E S H A R E 2

COMMUNICATIONS UNIT 0 1 2 3 4 5 6 7
31- 1 TIMESHARE UNIT (X) (X) (X) (X) () () () ()

COMMUNICATIONS UNIT 8 9 10 11 12 13 14 15
31- 2 TIMESHARE UNIT () () () () () () () ()

31- 3 NUMBER OF FILES (~~2~~⁵⁰⁰⁰)
31- 4 LOGICAL UNIT (~~2~~¹³) FOR PERMANENT FILES
31- 5 LOGICAL UNIT (~~2~~¹³) FOR SCRATCH FILES

(32) M S O S I M P O R T / G R A P H I C S

32- 1 1700 IMPORT SYSTEM ()

32- 2 INTERACTIVE GRAPHICS ()

32- 3 274 GRAPHICS UNITS 0 1
() ()

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