M T S D I S T R I B U T I O N 5.0

August 1981

General Notes

Note: Installations receiving this distribution of MTS should obtain approval from the University of Michigan Computing Center before distributing any part of the distribution to any installation other than one of those listed at the end of these notes. In addition some parts of the distribution are copyrighted, either by the University of Michigan or by other organizations. Conditions on the use of copyrighted material varies, but redistribution or redistribution to installations other than those listed at the end of these notes is often restricted.

In addition to the general information contained in this writeup, there are two other writeups which give more specific information about installing MTS, one for new and one for existing installations. A hardcopy of the appropriate writeup is included; both are available on the tapes as components 461/20 and 461/21.

MTS, the Michigan Terminal System, is distributed using three types of tapes: (1) dump/restore tapes for a single pack MTS system designed to be used as the base system for new installations or for testing and conversion for existing installations, (2) a tape with several utility programs that can be used with the dump/restore tapes to build a single pack system at new installations where no working version of MTS is available, and (3) tapes generated by the MTS *FS program which contain the source, object, command, data, and print files for the system. The dump/restore tapes are unlabeled, the utility tape uses standard labels (VOL=MTSUTL), and the *FS tapes are "volume label only" tapes which must be mounted using the keyword LBLTYPE=VLO (VOL=5.0T1, VOL=5.0T2, ...).

Throughout the distribution, reference is made to the components of the distribution. Generally these references consist of a 3- or 4-digit component number, usually followed by a slash and a subcomponent number. For example, the MTS accounting system has been assigned component number 104. However, the accounting system actually has many "pieces" and so it consists of well over 100 subcomponents, beginning with number 104/1. From distribution to distribution, a component will almost always have the same number, but subcomponent numbers may be changed. Thus, for example, something may have

been distributed on D4.0 with the number 104/15, while on D5.0 it may be 104/16 (this could happen if a subcomponent containing an update were inserted between source and object). New component numbers are assigned by each MTS installation in ranges. The number of a component doesn't necessarily indicate which installation is responsible for its maintenance (there is an installation code for that), just which installation originally assigned the number.

The installation assignment ranges are as follows:

Range	Code	Installation Name
0001-0999	UM	University of Michigan
1000-1199	UBC	University of British Columbia
2000-2199	UNE	University of Newcastle upon Tyne
3000-3199	UQV	University of Alberta
4000-4199	WSU	Wayne State University
4200-4399	RPI	Rensselaer Polytechnic Institute
4400-4599	SFU	Simon Fraser University
4600-4799		Unused (was EMBRAPA)
4800-4999	RIO	CNPq/CBPF/GPD (Rio de Janeiro)
9000-9999	UM	Used for redistributions only

The *FS tapes are generated by the MTS *FS program based on information contained in a data file (known as a driver file), each line of which describes a component (or subcomponent) of the system. Each component has a name, an optional subcomponent name, an installation code, a type code (source, object, MTS commands, etc.), a location (the file name or tape from which it was obtained), a contact person at the installation principally responsible for its maintenance, a locally responsible person (optional), an optional disk name (which gives the file name, if any, on the dump/restore pack where this component is also located), and an optional revision level. If a file name in the disk name field has the string "@E" appended, an empty file is moved to the test pack. This is handy for log files which are usually not included on the *FS tapes, but which must be present on the test pack.

Revision level "A" denotes subcomponents which have been changed in the UM production system since D4.3 (May 1980) (these may, however, have been included in a redistribution since D4.3). Subcomponents with revision level "C" are completely new for D5.0, i.e., they have never been seen by other installations before, either on a distribution or a redistribution. Revision level "D" is used to flag preliminary versions that are available for testing, but which may still contain many "bugs" or which may change significantly.

The driver file editor program, *DEDIT (461/2), may be used to manipulate a driver file. The D5.0 version of *DEDIT is considerably different than the D4.3 version. Indexing

information is now kept in the driver file, which makes the line numbers in the driver file and its associated comment file very important. Care should be used when copying or changing the file. Finally, only the D5.0 version of *DEDIT should be used to change the D5.0 driver file.

In the distributed driver file, the local persons, when given, are UM people for non-UM components; each other installation should use *DEDIT to fill in its own local names for components assigned to other installations. In this way, a printout may be produced (using the *DEDIT PLIST command) for each programmer, showing the components for which he or she is responsible. This is also a convenient way to inform other installations of who is currently responsible for various components at your installation.

Some of the components in the driver file have the letters "UNSP" in the field that indicates the person who is responsible for the component. The ID UNSP exists on the University of Michigan system to provide a common location from which unsupported programs and subroutines can be made available. Most UNSP software is not actively supported by the University of Michigan Computing Center. This means that there are no guarantees about its reliability, performance, or continued availability. UNSP software has received a minimal amount of testing to insure that it operates correctly for most common cases. A complete list of UNSP programs is available in component 685/1.

A number of "dummy" driver file entries have been added for components from other MTS installations that are not installed as part of the production system at UM. These entries are simply an aid in assigning component numbers.

As *FS generates the distribution tapes, it adds additional information to each line in the driver file, such as the name of the distribution tape on which it has written the component (tapes are named 5.0Tn), the file number on the distribution tape, a unique name for the component (known as the FS name), information about the file size or tape blocking information if the component was obtained from a regular (non-FS) tape, and the time and date when the file was saved. Components may be obtained from the *FS tapes using the *FS RESTORE command, either by reference to the FSname or to the file number. Starting with the D5.0 version, *FS generates checksum information as it saves files on the distribution tape. Previous versions of *FS should accept this checksum information even though they don't normally generate it themselves.

A printed copy of the driver file listing is included in the distribution. Additional copies of this listing may be printed using the LIST command in *DEDIT. The listing is ordered by component number and includes descriptive comments about each component. The driver file and its associated

comment file are on the *FS tapes and on the dump/restore pack (in the files DIST:DRIVER and DIST:COMM).

A printed copy of the driver file index is also included. It provides an alphabetized list of the components, facilitating use of the driver file listing (which is in numerical order). Additional copies of the index may be printed by copying the appropriate file to *PRINT*. The index is component 461/17 or 461/18 (DIST:INDEX6250 and DIST:INDEX1600 on the dump/restore pack).

MTS Distribution 4.1 was the last distributed system which included support for the IBM System/360 Model 67; it was designed in such a way that it could be used on either a 360/67, System 370, or Amdahl 470. MTS distributions beginning with D4.2 support only the IBM 370 and Amdahl 470 systems.

Support for IBM 2250 displays was dropped starting with D4.2 of MTS.

The MTS file system was converted to use the VAMX disk format rather than the TSS VAM2 format starting with D4.3, although some MTS installations were a slightly different VAMX format prior to D4.3.

Components 792-799 are new since D4.3 (but were sent out on D4.3A), components 800-825, 1038, 1050 and 1070 are new since redistribution D4.3A.

The following components have become obsolete since D4.3 157, 271, 453, 564, 611, 691, 692, and 764.

DESCRIPTION OF THE DRIVER FILE LISTING

The following is a description of the driver file listing produced by the LIST and PLIST commands in *DEDIT (461/1). A printed copy of the listing is included in the distribution. For each component (or subcomponent), two or three lines of output are printed, followed by any comments associated with the component.

LINE 1

Num - component number and subcomponent number (if any)
R - revision level (if any) of the component or subcomponent:
A, C, or D for D5.0
Component Name - name of the component
Subname - name (if any) of the subcomponent
Type - component type as follows:
B - binary (non-360/370) object
C - commands
D - data
L - listing
M - messages
O - object (OC=cards, OE=linkedited, OL=library, OV=VSS loadable OS object)
P - printed output (PF=FORMAT, PT=TEXT360, PX=TEXTFORM)
S - source code (SA=assembler, SC=COBOL, SF=FORTRAN, SG=GOM, SP=PL/I, SS=SNOBOL4, SM=assembler macros, SX=XPL, S3=PL360, S6=Algol68, SQ=PLUS, SW=PASCAL, S*=SNOSTORM)
U - update deck (UC=*CDUPDATE, UU=*UPDATE, UI=*IEBUPDAT, UE=$EDIT commands)
W - writeup input (WF=FORMAT, WT=TEXT360, WX=TEXTFORM)
G - "goodness" code (G=good, O=OK, S=shaky (has bugs), B=bad (needs rewrite))
Seq ID - sequence id applied to component as it was saved (if any)
S - save control (blank means normal, "#" means not distributed, "@" means information incomplete, "=" means temporary hold, ">" means very large component)
Location - file or tape from which the component was obtained. For tapes, the first parameter is the rack number, the second and third are the volume name (if labeled) and the tape id (if different from the volume name), then follow keywords for the label type, blocking format, and DSNAME (if any).
File - the file number if the component was obtained from tape (optional for labeled or *FS tapes)

LINE 2

6250 Tape - name of 6250 bpi distribution tape on which the component was saved
6250 File - *FS file number on the 6250 bpi distribution tape
FS Name - FS name assigned to component as it was saved
Ver - *FS version number assigned to component as it was saved
Ftype - the file type (LINE or SEQ)
LRECL - the maximum record length of the component
Size - the size of the component (in pages if the DevT field is PAGE, in tracks if DISK)
DevT - the device type from which the component was obtained (PAGE for non-FS tapes and files, DISK for items obtained from older (before the page-formatted file system) *FS tapes)
Inst - installation code for the installation responsible for maintenance
Person - the person responsible for the component at the installation given in the SHARE field
Local Per - the person responsible for the component at the local installation
Date and Time - date and time component was saved

LINE 3

1600 Tape - name of 1600 bpi distribution tape on which the component was saved
1600 File - *FS file number on the 1600 bpi distribution tape
Disk Name - name of the file (if any) on the dump/restore pack where component is located (the save control field controls whether it is also on the *FS tapes)

USE OF DASDI, DUMP/RESTORE and DISKCOPY

Two different disks formats are currently used in MTS: new VAMX and SAM. New VAMX or simply VAMX format is used by the MTS file system. It is slightly different than the TSS VAM2 format that was used in the MTS file system for many years or the old VAMX format which was used by several MTS installations when they first began using 3350 type disks. SAM format is used by HASP for its spool pack(s).

Four programs are provided to initialize and restore disks. The MTS program FILE:DASDI (598) may be used to initialize VAM2 and VAMX format 2311, 2314, 3330-1, 3330-11, and 3350 disks (although the program has never been tested with 2311s, 2314s or real 3330-1s). The MTS program FILE:DISKCOPY (724) may be used to dump, restore or copy VAM2 and VAMX format 3330-1, 3330-11, and 3350 disks (although the program has never been tested with real 3330-1s). FILE:DISKCOPY could be used with 2311 and 2314 disks if the proper unit check routines were developed. The IBM TSS DASDI and DUMP/RESTORE programs are stand-alone programs that may be used to initialize, dump, restore or copy VAM2 and SAM format 2311, 2314, 3330-1 and 3330-11 disks. The IBM TSS DASDI and DUMP/RESTORE programs can not be used with 3350 or VAMX format disks.

The MTS programs FILE:DASDI and FILE:DISKCOPY are located on the *FS tapes, the dump/restore tapes, and the utility tape. These programs require a working version of MTS to run. For existing MTS installations this should be no problem. New installations must use a special version of MTS that will work without a disk subsystem to run these programs (see the instructions for new installations for details).

The MTS program FILE:DASDI will initialize a pack in either VAM2 or VAMX format. Directions for running FILE:DASDI are given in the MTS Operator's Manual (592), item 20016, and in comments at the beginning of the source program.

MTS file system volumes are normally labeled MTS001, MTS002, etc. and must be VAMX (VX) format. The public volume number for the first pack in the system must be 1 and go up by one for each additional pack. No two packs at an installation should have the same volume label **and** the same public volume number. If you are running DASDI or DISKCOPY on your production system, the SLOW option may be used to keep the program from monopolizing the disk system.

The following example initializes the pack on D001 as a VAMX pack with volume label MTS501 and public volume 1.

```
$run file:dasdi
EXECUTION BEGINS
MTS DASDI PROGRAM (version).  ENTER INPUT
d001 mts501 vx 1 slow ipl
D001 CURRENTLY LABELED AS "NEW001".  PLEASE CONFIRM.
ok
PAT TO BE WRITTEN ON PAGES X'009178' THRU X'00918A'.
NEXT?
$endfile
EXECUTION TERMINATED
```

The following example initializes the pack on D002 as a VAMX pack with volume label PAG001 for use as a paging volume.

```
$run file:dasdi
EXECUTION BEGINS
MTS DASDI PROGRAM (version).  ENTER INPUT
d002 pag001 vx paging slow
D002 CURRENTLY LABELED AS "NEW002".  PLEASE CONFIRM.
ok
PAT TO BE WRITTEN ON PAGES X'009178' THRU X'00918A'.
NEXT?
$endfile
EXECUTION TERMINATED
```

The MTS program FILE:DISKCOPY may be used to copy VAM2 and VAMX disk data from pack to pack as well as to and from tapes. The program will not convert VAM2 format data to VAMX format or vice-versa. It will copy from one disk type to another (3330 to 3350 or 3330-11 to 3330-1 for example) as long as the "to" volume is large enough to hold all of the data and there is sufficient space in the PAT for any relocation entries needed. VAM2 format tapes produced by FILE:DISKCOPY can be restored using the IBM TSS DUMP/RESTORE program and FILE:DISKCOPY will restore from VAM2 format tapes produced by the IBM TSS DUMP/RESTORE program.

Instructions for running FILE:DISKCOPY may be found as comments at the beginning of the source. The following example shows a tape-to-disk restore:

```
$run file:diskcopy
EXECUTION BEGINS
Enter "FROM" device type (DISK/TAPE):
tape
Enter tape device or pseudo-device names(s):
>T908
Enter "TO" device type (DISK/TAPE):
disk
Enter device name and volume label (Dxxx MTSyyy):
d008 mts501
Enter options (SLOW, SWAP, IPL):
slow swap ipl
Volume copied: 29453 data pages copies, 2 relocations
Enter "FROM" device type (DISK/TAPE):
$endfile
EXECUTION TERMINATED
```

The SLOW option keeps the program from monopolizing the disk system. The SWAP option causes the volume label on the "TO" device to be replaced with the volume label from the "FROM" device (in a disk-to-disk copy both labels would be changed). The IPL option causes any IPL records to be copied. IPL records are always included on a disk-to-tape copy, but are not normally included on a tape-to-disk or disk-to-disk copy. These IPL records should not be confused with the IPLAREA data used by the IPLREADER, both types of IPL data are needed. More than one tape device may be specified at a time, but this is not required even when the dump/restore data spans more than one tape reel.

The IBM TSS (Release 3.0) DASDI, DUMP/RESTORE, and VAM2 UTILITIES programs are at the beginning of the dump/restore tapes following the IPLREADER and friends as well as on the *FS tapes (730/1). Starting with D4.3 of MTS the dump/restore tapes are in MTS VAMX format which is not supported by the TSS utility programs, but the TSS utilities must still be used to format the HASP spool pack(s). A printed copy of the writeup for TSS DASDI is included in the distribution sent to new installations as item 20015.

The TSS DASDI program (stand-alone) on the dump/restore tapes will initialize a pack in either VAM2 or SAM format; it has been modified at UM to accept device addresses as high as FFF. IPLing a dump/restore tape once will load the IPLREADER. IPLing again will load TSS DASDI.

The HASP spooling pack(s) should be initialized as SAM pack(s) with volume label(s) SPOOL1, SPOOL2, etc. The following are sample control cards for a HASP DASDI:

```
JOB     INITIALIZE 3330-1 AS SPOOL1
MSG     TODEV=1052,TOADDR=53F
DADEF   TODEV=3330,TOADDR=440,FORMTYPE=SAM,                X
        VOLID=SCRATCH,FLAGTEST=NO
VLD     NEWVOLID=SPOOL1
VTOCD   STRTADR=1,EXTENT=1
END
LASTCARD
```

PATCHING THE SYSTEM

Patching shared memory:

Find out where the deck to be patched is loaded by checking a current map, by checking the file SEG2:S2MAP, or by using the LOADINFO CLS (enter the MTS command "#CLS W009:I" from a privileged user id, i.e., an id that can set PROT=OFF).

Use the System Status Routine (SSRTN) command

```
DISPLAY   loc[+disp[+disp ...]]  [n]
```

to display memory and the SSRTN command

```
MODIFY  loc[+disp[+disp ...]]  value[[,]value ...]
```

to change it. For example

```
DISPLAY 218500+6DBA
MODIFY  218500+6DBA  47F0
```

These SSRTN commands are legal from the 3270 operator's console when prefixed with a slash (/), as input to the JOBS job which may be run from any operator's console, or as input to the $SYSTEMSTATUS command when signed on using a privileged MTS user id. For a complete description of these and the other privileged SSRTN commands see the MTS Operator's Manual (592), item 20016.

SDS may also be used to modify shared memory when used from a privileged id. In addition, the supervisor commands DIS and MOD may be used to display and modify routines loaded into unpaged memory (segment 0), but these commands are not legal when issued from a 3270 operator's console.

The IPLREADER has commands which allow a system to be patched at IPL time, see the IPLREADER description (item 20012) for more information.

Patching the System Object Deck:

Using RAMROD (MTS:RAMROD), CREATE a new system from the current system or GET a previously created system which has not yet been made current, but which will become the current system after the patches are made. Item 20013 (1019/9), contains a description of the use of RAMROD. Enter enough comments so that other people can tell what you've been up to. You will have been prompted for comments if you created a new system, otherwise you may use the ANNOTATE command to add comments.

Add REP cards to the deck(s) using the PATCH command.

RENAME the new system with the correct version name and make it CURRENT.

For example:

```
 # run mts:ramrod
 # EXECUTION BEGINS
   Using file "MTS:ROD"
   Proceed.
   list current
   UG117 created from UG057 23:06:01 08-11-77
     08-11 23:00 REPLACED UMMPS TO FIX BUG IN GETSTK//SETSTK
   create newsys from ug117
   Enter comments :
 ? 08-24 21:05 Just an example
 ?
   Done.
   patch taskstat
   Address Esdid Text <comments> :
 ? 30 01 58F0 just an example patch
 ?
   Enter comments :
 ? 08-24 just an example patch
 ?
    REP  000030  0158F0 example patch 21:15:25 08-24-77 W163
   OK  ? ok
   Done.
   rename newsys ug247
   "NEWSYS" is a system.
   ** RENAME system "NEWSYS" as "UG247" :
   OK  ? ok
   Done.
   current
   There are 3 IPL files with prefix "*IPL.   "
   Loading system "UG247"
   LOAD: Resident: 1000-27D80 UMLOAD Psect: 58000
         Pageable: 6C000-ACD90 End: AFFFF
   Contents of IPL file "*IPL.2":
   UL177 ENTRY=26E08 PSECT=100008 VIRTUAL=58000...ACD90
   WRITTEN BY ID MTA. AT 06:24:38 07-17-77
   COM 07-14 20:00 CHANGED CONFIG.CARD TO GIVE MORE SPACE TO
                   SEGMENT 0 FOR BIG MACHINES
   COM 07-14 21:59 REPLACE TASKSSTAT, MINOR CHANGES.
   COM 07-15 13:35 NEW TABLES TO ADD MORE JOB TABLES.
   COM 07-17 06:20 REPLACED PDP WITH WHAT I HOPE IS THE D4.0
                   VERSION.
   ** Write system "UG247" to IPL file "*IPL.2":
   OK  ? ok
   System "UG247" has been written to  IPL file "*IPL.2"
   IPL file stacked has been pushed.
   System "UG247" is now the current system.
   "UG247" : Released.
   System "UG247" has been Frozen.
   Done.
   stop
 # EXECUTION TERMINATED
```

Remember to Change the Source:

It seems almost silly to mention this, but ....

Patching Decks Loaded by PISTLE:

Decks loaded into shared VM by PISTLE (the post IPL system loader) can be patched in memory as described above. REP cards are added to the files from which PISTLE loads the object, generally using *OBJUTIL's PATCH command. It is a good idea to use PISTLE without specifying PAR=NOTEST to make sure the patched version will load.

PISTLE can also be used to load complete new versions of a deck into shared VM so long as all references to the module are made using a low core symbol table rather than external references that are already resolved, i.e., if the IPL option is not used to load it. PISTLE allows the automatic replacement of symbols in the low core symbol table LCSYMBOL; other low core symbol tables must be patched by hand.

PRINTED DOCUMENTATION IN THE DISTRIBUTION

The following lists all of the paper-copy documentation included in D5.0. Of course, all of the documents listed below are available on the *FS tapes except for those marked with an asterisk (*), which indicates that only a paper copy was shipped (no machine readable copy is available). In addition, there are many more writeups on the *FS tapes for which paper copies have not been shipped. Using the MTS editor on the driver file to match for the letters "W" or "P" in column 45 will produce a complete list of all the machine readable documentation.

Since some paper-copy items are not distribution components (do not appear on the *FS tapes) and hence don't have component numbers, hard-copy "item" numbers (see the list below) have been assigned. The component number for all items on tape is given in parentheses after the items in the list. The paper copy which is sent with the distribution is stamped with both numbers (if applicable). To make them readily distinguishable, component numbers are less than 10000; the printed documentation item numbers start with 20000 and go up.

Printed copies of many items have been omitted from this distribution for existing installations when machine readable versions are available on the *FS tapes or when the material has not changed from that included in a previous distribution of MTS. If your installation needs a printed copy of any of the omitted items, send a request to:

Elizabeth A. Sweet
The University of Michigan
Computing Center
1075 Beal Avenue
Ann Arbor, MI 48109
USA

Printed copies of the following items are included with D5.0 for both **new** and **existing** installations.

	20000.	General Notes, what you are reading now. (461/19)
*	20001.	List of D5.0 tapes.
	20002.	Driver file listing (LIST command output from *DEDIT).
	20003A.	Driver file index (6250 bpi); a listing sorted by component names which serves as an index for 20002. (461/17)
	20003B.	Driver file index (1600 bpi). (461/18)
	20004.	Installation instructions for New Installations. (461/20)
	20005.	Installation instructions for Existing Installations. (461/21)
*	20006.	UM Machine Configuration Chart.

* 20007. Computing Center Newsletter (v10n8 through v11n14).
    20008. List of current CCMemos (461/22).
* 20009. Permission to reproduce Computing Center publications.

Printed copies of the following items are included with D5.0 for **new** installations only, but are available to existing installations upon request.

    20010. TABLES writeup. (004/3)
    20011. Description of D5.0 System Object Deck. (468/7)
    20012. Documentation for the IPLREADER and friends. (1021/12)
    20013. Documentation for the RAMROD System Maintenance Utility. (1019/10)
    20014. DECKGEN instructions. (004/7)
* 20015. TSS DASDI instructions.
    20016. MTS Operator's Manual. (592)
    20017. HASP Operator's Guide. (387/22)
* 20018. HASP Remote 360/20 Operator's Guide.
* 20019. HASP Remote 360/non-20 Operator's Guide.
* 20020. HASP Remote 1130/1800 Operator's Guide.
* 20021. HASP Remote System/3 Operator's Guide.
* 20022. HASP 2780 Remote Workstation Operator's Guide.
    20023. HASP Notes. (387/25)
    20024. CCMemos which are still current.
    20025. List of Computing Center Publications (711/2) and the publications themselves.
* 20026. MTS Reference Summary.
* 20027. Documentation to supplement the machine readable documentation for the FLECS FORTRAN preprocessor (673).

The following items are not automatically included with D5.0 of MTS for either existing or new installations, but copies are available upon request.

* 20028. Audio tapes of 33 system lectures given by the UM staff during 1973.
* 20029. Documentation for the QUIC (584) program.
* 20030. Documentation for the KWIC (583) program.

COMPONENTS WHICH DEPEND ON THE SYSTEM CONFIGURATION

1. The TABLES (004) assembly depends almost completely on the hardware configuration being used. It is described in a separate write-up (004/3).

2. There are two disk file backup processes available to save files on tape: the weekly FILE SAVE and the daily online FILE SAVE. There are command files associated with the weekly file save which will have to be changed at each installation so that they indicate correctly which disk volumes are to be saved. See the driver file comments for these components (067).

3. DINIT (085) - the program that initializes a 2301 drum - assumes two drums called DRM1 and DRM2. If you have fewer it will complain but work anyway, but if you have more you must change it. The distributed system assumes that 2305s (rather than 2301s) are used for paging. The file INIT:INITCMD (097) should be changed to run DINIT (instead of FMT2305) if this is not the case (see also the words about the PDP below).

4. INIT:INITCMD (097) runs FMT2305 to initialize four 2305s (or 4305s). If you have fewer it will complain but work anyway, but if you have more you must change it.

5. The PDP (044) assumes no more than ten 2305s, one 3805, and two 3330 disks. It will work with fewer (even zero if necessary), but must be reassembled for more. The PDP will automatically grab any 2305 or 3805 that is online and not in use when it is started so if one is not to be used, OFFLINE it before the PDP is started (before giving the reason for reloading). Note: the PDP has an assembly parameter which determines whether 2301s or 2305s are to be used; the distributed version assumes 2305s. It can be reassembled for 2301s. The PDP can also be reassembled with the 3805 and/or disk support removed, making it a bit smaller.

6. MOUNT (101) includes support for mounting paper tape readers and punches, audio response units, floppy disks and connections on the Merit Computer Network in addition to magnetic tapes. Assembly parameters allow support for these other (non mag tape) devices to be deleted. Support for the Adage Graphics terminal may be included, but UM doesn't have one so this code has never been fully tested.

7. In MTS (042) the subroutine NEXTJOB will do a binary read from a 2540 or 2501 when it is looking for the next job in a batch stream. Since a 2540 without binary feature ("card image" feature) will accept the command and treat it as an EBCDIC read, NEXTJOB will never find a job. This affects only non-HASP batch (rarely, if ever, used).

8. HASP (387) contains several assembly parameters that depend on the machine configuration. A separate description of these is included with component 387. Both HASP and the HASPLING (388) have assembly parameters related to RJE support. The HASP master source is for the UM RJE configuration, but the distributed object has less RJE support. The distributed listing of HASP is for this smaller version.

9. TAPERTN (135) - the magnetic tape routines - has several assembly parameters (see comments in the source). In addition, the local system name used in the data set labels generated by MTS is obtained from the CIINAME field in the CNFGINFO table described above.

10. TSFO (038) has a built-in table of the device names of hardwired 2703/1270 lines. All other lines are assumed to be dial-up. This table should be updated and TSFO reassembled as appropriate.

11. The file COPY:GLOBALSETS (1026) has global set symbols for various hardware and software features. In most cases, this file is copied by system components which are dependent on these features.

12. The 3270 DSR (629) has several global set symbols that may be used to tailor the DSR for use at a given installation.

13. The GRAB3270 table (629) has entries for 32 displays. It will work for fewer, but must be reassembled if more displays are allowed to GRAB and FLIP.

LISTINGS IN THE DISTRIBUTION

Listings have been included on the *FS tapes for the following components of the system.

Comp #	Component Name
0042/5	MTS
0045/4	SUPERVISOR
0046/4	CONFIG
0198/4	GUINFO/CUINFO
0354/4	LLXU
0387/10	HASP
0400/7	SSCN SUBR
0464/4	PLIMIT
0513/4	DYSSUB
0531/4	CMDSTAT
0539/4	TIMNTRP
0578/4	RSF
0635/4	FSUB
0636/4	CMDS
0637/5	DSRS
0638/4	USUB
0639/4	DSRI
0668/3	TAXIR
0765/15	DAVE/M
1042/5	PLUS-470
1042/53	PLUS-470 LIBRARY
4000/4	GATE

PEOPLE LIST FOR THE UNIVERSITY OF MICHIGAN COMPUTING CENTER

The following is a list of UM Computing Center people whose names appear in the "person" field of the driver file listing. An asterisk (*) before a name means that the phone number is (313) 764-9595, otherwise it is (313) 764-2121. All correspondence should be addressed to:

The University of Michigan
Computing Center
1075 Beal Avenue
Ann Arbor, MI 48109
USA

	BAUSHKE	Baushke, Mark D.
	BODWIN	Bodwin, James M.
	BRILL	Brill, Robert C.
	BURLING	Burling, Steven R.
	CASHMAN	Cashman, Brian
	DONNELLY	Donnelly, Stephen M.
*	DWB	Boettner, Donald W.
	EADIE	Eadie, Gavin R.
*	EMERY	Emery, Allan R.
*	ENGLE	Engle, Charles F.
*	FLANIGAN	Flanigan, Larry K.
	FLOWER	Flower, David S.
	FRONCZAK	Fronczak, Edward J.
	GREENING	Greening, Daniel
	H YOUNG	Young, Howard B.
	HANSEN	Hansen, James H.
*	HARDING	Harding, Leonard J.
*	HELFFRICH	Helffrich, George R.
*	LIFT	Lift, Gail H.
	LUBBERS	Lubbers, Clark E.
	MANUAL	(see SALISBURY)
*	MTA	Alexander, Michael T.
	MTS	(see HELFFRICH, OGDEN, MTA)
*	OGDEN	Ogden, Jeffrey C.
	PICKELMAN	Pickelmann, Paul
*	PIRKOLA	Pirkola, Gary C.
*	SALISBURY	Salisbury, Richard A.
*	SHERRY	Sherry, Patrick M.
*	STERKEN	Sterken, James J.
	SWARTZ	Swartz, Fred G.
*	SWEET	Sweet, Elizabeth A.
	TOKARSKI	Tokarski, Dennis
	TIFFANY	Tiffany, L. Bernard
	UNSP	(see PICKELMANN)
*	VALERIO	Valerio, Thomas
*	WOLFSON	Wolfson, Genie R.
*	WSG	Gerstenberger, W. Scott

Correspondence related to the administration of the UM Computing Center should be sent to the director:

Dr. Aaron Finerman, Director
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DISTRIBUTION 5.0 INITIAL MAILING LIST

The following is a list of persons to whom the initial shipments of MTS Distribution 5.0 have been sent.

UBC	Computing Centre ATTN: Ron Hall 6356 Agricultural Road University of British Columbia Vancouver, B. C. V6T 1W5 CANADA	6250 bpi
UNE	Computing Laboratory ATTN: Program Librarian The University Newcastle upon Tyne NE1 7RU ENGLAND	6250 bpi
UQV	Computing Services ATTN: Garry Jackson The University of Alberta Edmonton, Alberta T6G 2H1 CANADA	6250 bpi
WSU	Computing Services Center ATTN: Tony Falzon Wayne State University 5925 Woodward Ave., Room 284 Detroit, MI 48202	6250 bpi
RPI	Office of Computer Services ATTN: Wilson Dillaway Rensselaer Polytechnic Institute Troy, NY 12181	6250 bpi
SFU	Computing Centre ATTN: Charlie Benet Simon Fraser University Burnaby, B. C. V5A 1S6 CANADA	6250 bpi
AMD	Amdahl Corporation ATTN: Bill Ehrman 1250 East Arques Avenue Sunnyvale, CA 94086	6250 bpi
RIO	LCC/CNPq Attn: Julio L. Botelho Av. Wenceslau Bras, 71 - fundos 22290 Rio de Janeiro - RJ BRAZIL	1600 bpi

INSTALLATION INSTRUCTIONS FOR EXISTING INSTALLATIONS

September 1981

Starting with distribution 4.3 the MTS file system uses the VAMX disk format rather than the IBM TSS VAM2 format employed in previous distributions. If your installation has not yet converted from the VAM2 or old VAMX formats, you must perform this conversion before installing most of the major components of Distribution 5.0. See the installation instructions that were included with D4.3 together with additional comments that were included in the D4.3A driver file for more information on the conversion process. The rest of this writeup assumes that the conversion has already been done.

The following steps give the basic procedure to be followed to install this distribution at installations which are currently running the previously distributed system. At installations where substantial changes have been made to that system or where it is not desired that all of this distribution be installed at once, this procedure will have to be modified accordingly.

1. Restore DASDI (598/3) and DISKCOPY (724/3) to your current system from the D5.0 FS tapes (the D4.3 versions of these programs might work, but several problems have been fixed in the D5.0 versions). Note that component 724/3 is a special version of the D5.0 DISKCOPY that will work in a D4.3 system. You should consult the appropriate distribution driver file index (item 20003A or 20003B) for the object files for these components. The index will indicate on which tape each is located and what the file numbers are.

2. Use DASDI to initialize a VAMX disk pack as public volume 1 with a unique volume name; MTS501 would be a good choice. See the General Notes for instructions on using FILE:DASDI. The following commands illustrate the use of this program:

```
RUN FILE:DASDI
Dxxx MTS501 VX 1 IPL SLOW
$ENDFILE
```

   where "Dxxx" is the device name of the disk to be initialized and "MTS501" is the volume name to be used for the disk pack.

3. Use DISKCOPY to restore the D5.0 system from the distributed VAMX dump/restore tape(s). You should specify the IPL option, but SWAP isn't necessary. You may wish to specify the SLOW option to lessen the interference with your normal operation. See the General Notes for information on running DISKCOPY. The following commands illustrate the use of this program:

```
RUN D4.3DISKCOPY
TAPE
>Tnnn    (or *pdn*)
DISK
Dxxx MTS501
IPL SLOW
$ENDFILE
```

where >Tnnn (or *pdn*) is the device (or pseudo-device) name on which the first D5.0 VAMX dump/restore tape is mounted. If you received the 1600 bpi distribution, you will be prompted to enter a second tape device name when DISKCOPY is ready for the second tape.

4. You will need a new set of TABLES for your D5.0 system. If you maintain your TABLES in assembly language form, you should consult the D5.0 TABLES description (4/3). Be sure to use the D5.0 version of COPY:FILE.MACROS (482/45) when you assemble your new version. This version of TABLES should only contain one disk volume, MTS501.

   If you wish to use DECKGEN (4/6) to build your D5.0 TABLES, IPL from the D5.0 test pack. This can be done using either a real or a virtual machine and will probably put that machine into wait state (unless you have a 3066, 3270, or 1052-compatible device at address 009). To get the IPLREADER (1021) to talk to you, press "request" on a 1052 or "enter" on a 3066 or 3270 (i.e., cause an attention interrupt). When it asks if you want to run the current system, reply "NO" and enter the commands:

```
LOAD NAME=*IPL.DECKGEN
START
```

   See the DECKGEN writeup (4/7) for information on how to proceed from here. Since DECKGEN was loaded by the IPLREADER (instead of from tape) and therefore is told where the console is, it is not necessary to give an attention interrupt on the console to wake it up. You should include only one public volume, MTS501, in the generated tables. The deck produced should be written to tape (or cards) for use in step 5.

5. If a pre-D5.0 virtual machine is to be used to run the D5.0 system, the CMDS assembly must be patched so that all user programs are run as if PROT=OFF had been specified on the $RUN command. This is necessary because the D5.0 system requires support for the monitor call instruction which is not available in pre-D5.0 virtual machines or UMMPS. To further complicate matters the D5.0 version of the UBC virtual machine does support the monitor call instruction, but requires changes included in the D5.0 version of MTS and UMMPS.

   It may also be necessary to reduce the size of the resident system so that it will load, if your pre-D5.0

virtual machine won't support real memories larger than 256 pages. The decks MCHSUBR, CCHSUBR, A#VCCH47, TTTABLES, CHECKFE, FESNIFF, PAGEDJDE and ICOSTTAB can all be deleted from the resident system to save space. You can set up a version of tables with a fairly small number of job tables and pool entries, reduce the number of CMDSTAT drop areas and cut down the size of the shared file table to save a bit more space.

Using either a real or virtual machine IPL from the D5.0 pack and again reply "NO" when asked if you want the current system. This time enter the commands:

```
LOAD NAME=*IPL.D5.0
REPLACE TABLES FROM xxx
(Reply to the prompt for a printer address for a map)
```

where xxx is the address of the tape written by DECKGEN (or containing the object deck for your assembled TABLES). If you are working from a virtual rather than a real machine you should patch CMDS so that PROT=OFF is implied for all $RUN commands:

```
DISPLAY V(CMDS)+2286
(You should see X'4780A4C8')
MODIFY  V(CMDS)+2286  4700
```

Finally enter

```
START
```

The D5.0 system should now be running.

6. When initialization finishes, you should run RAMROD (1019) and create a new system from the D5.0SYS system, replace the deck TABLES.DUMMY in that new system with the TABLES created in step 4, rename TABLES.DUMMY to be TABLES, and delete the decks SEG0.NCA and SEG1.NCA. You may also want to delete one or more of the following decks depending on your machine configuration, (leaving them in won't hurt anything): A#VCCH47, IGFC60, IGFC70, and IGFC80. The decks PAGEDJDE, CHECKFE and FESNIFF can probably be deleted by everyone except UM and perhaps WSU. Having made these changes, you should then make this new system current.

7. Use this pack to get the new version of MTS working to your satisfaction. This will require making any local modifications to the resident system in the RAMROD file on the pack. This pack contains almost all of the public and semi-public files, but not all of the utility programs you may want. If additional programs are needed, move them from your production packs to the test pack using FM (1020) on your production system or by restoring them from the D5.0 *FS tapes. Be sure to use the D5.0 version of FM and a private copy of the D5.0 file routines (482/46) when

doing this.

This is the first distribution to include a working version of the Disk Manager (769). Before installing D5.0 as your production system you should probably take a careful look at the DMGRSTAT writeup which may be found toward the end of the Operator's Manual (I'm not sure why it isn't at the front with the rest of the job programs, but it isn't) and at the comments generated by the ANNOTATE macro that is included in COPY:DM.MACROS (these comments aren't completely up to date). While it is possible to run without using the Disk Manager, it won't work very well (not even as well as the D4.3 system) under a heavy disk load. This is because certain checks made by the supervisor in an attempt to improve disk throughput now assume the disk manager is being used. A few utility programs (VAMREC, DISKCOPY, IPLINIT, ...) won't work with disks that are under Disk Manager control. The DMGRSTAT job or the *-file *DSK can be used to remove a disk from and return a disk to Disk Manager Control. You should also read about the FAKEDMGR job in the Operator's Manual and understand its relationship to the real Disk Manager.

A side effect of the switch to the disk manager is that jobs that go into disk I/O wait are treated just as if they were in page-wait -- that is they can't do anything. In theory this can cause deadlocks in some cases where it wasn't a problem before. In practice the only trouble spot was the 3270 DSR and the D5.0 version fixes the problem.

Because terminal buffers are now allocated in shared paged VM rather than shared unpaged VM, any absolute jobs that call BUFFALLOC and aren't part of the distributed system will have to be changed. In addition all routines that call BUFALLOC must now supply the address of a standard 18 word save area in GR13.

The format of the page control block has changed slightly, so if you don't plan to use the distributed version of the PDP you will need to modify your local version.

The RJBFREEZ bit in the job table has moved. If you don't use the distributed version of HASP you should check to make sure your local version references the correct bit.

The D5.0 supervisor uses a new CPU scheduling scheme which requires some changes to HASP and the HASPLINGs. The distributed version of the HASPLINGs now use SVC HASPHERE to let the supervisor know who they are. Also loops using SVC DORMANT and the Test and Set instruction were changed into SVC WAYTs or SVC SLEEPs. If you don't use the distributed version of HASP you should probably make similar changes to your local version.

The D5.0 supervisor allows tasks to obtain more than 11 devices. As a side effect of this change a task's device list pointers are no longer kept in the job table. The following routines that looked into the job table to locate device list entries were changed: BROADCST, CONFIG, FESNIFF, FIDCQ, MOUNT, MTS, PRINTDUMP, SSRTN, TASKS, and TASKSTAT. If you don't use the distributed versions of these routines or if you have other routines that get this information from the job table, you will need to modify your local versions.

The file that holds the $ACCOUNTING CLS must be permitted to the PKEY=*SYS.GETIN rather than PKEY=*ACC?.

The supervisor's support for virtual machines has changed. If you don't use the distributed virtual machine or if you use other virtual machines, you will need to change the local versions. As mentioned above MTS requires the D5.0 virtual machine because the GATE assembly issues monitor call instructions and because the distributed system requires more than 256 real pages to load.

The D5.0 version of MTS includes calls to the MTS message facility during signon processing so the message facility must be installed (it's a simple patch to disable these calls).

The D5.0 supervisor will no longer run on machines that don't support Channel Indirect Data Addressing (CIDA). So if your machine doesn't, you'll need to buy a new one.

The codes and strings returned by the TASKSTAT subroutine have changed somewhat, so local programs that use this information will need to be changed (the PW program at UBC for example).

The format of the disk and tape unit check records logged using CMDSTAT has changed, so any local programs used to post process this information will also require changes. A more modern version of EREP (FER1110) is included with D5.0 as well.

There are certainly other changes that should be mentioned here if we could only remember them all. See the list of changes included in the Tables writeup as well as the various CDUPDATE decks for more information. The file MTS:CHANGES (42/8) contains a list of all changes to the MTS assemblies since D4.2.

8. Add any local modules to *LIBRARY. Do not simply replace the new *LIBRARY with your old one, but rather merge the two.

9. Add any local messages to *SMDS. Again, do not just replace the new file with your old one, as there are several new messages in it.

10. Add any local changes to *SYSMAC. Again, these must be merged with the distributed version.

11. You should always use the D5.0 IPLREADER with the D5.0 system and the D4.3 IPLREADER with the D4.3 system. At some point you will want to replace the IPLREADER on your production IPL pack with the D5.0 version. Follow the procedure in the IPLREADER writeup (1021/12) making sure that you **run** it from the D5.0 pack (so you get the new IPLREADER), but **write** it on your production IPL pack. Remember that it is possible to IPL from one pack and then load a system from and run on a different pack(s). Thus you may not want to replace your production IPLREADER with the D5.0 version until you are sure you have a stable system and won't need to revert to an older version or you may want to keep a copy of your production IPLREADER on a second test pack.

12. Many files on your production system need to be updated to contain programs or data for the new system. This should be done by using FM on the MTS501 pack to move the files to your regular packs. A complete list of all the files on the MTS501 pack is available in the file DIST:MTS501.FILES. A list of those files that have changed since D4.3 is included at the end of these instructions. Make a list in a file of all the files to be moved. Then enter the command:

```
RUN FILE:FM+FILE:FILERTNS(1,99)+tables+COPY:SYSDEFS -
      PROT=OFF
```

    where tables contains the D5.0 TABLES for your **production** system. When FM reads from the terminal enter a $CONTINUE WITH line to read the list of files you produced above. FM will ask if it is OK to destroy some files, tell it OK or ALLOK.

13. You should also move your resident system for this distribution (as modified on your test pack) to *IPL.0 (or some other file) on your production IPL pack. Make sure that this system has a D5.0 version of TABLES which corresponds to your production system.

14. You are now ready to IPL the new production system.

15. Signon at the operator's console under userid MTS and enter:

```
RUN FILE:FILEUPD 0=*DUMMY* 1=-EMPTY
```

This will update file storage records for all userids. It is important that this be done, since the file space for some userids will be incorrect as a result of running FM. It may be necessary to change some of the file names on $CONTINUE WITH lines at the end of FILE:FILEUPD to correspond to the names used in your system:

```
FILE:ACATALOG.FAST
FILE:REALACATSUB
RSTR:VTOCREAD
FILE:DSACC
ACC:ACCLIB
COPY:SYSDEFS
```

The following is a list of public, semi-public, and major private files on the test pack which have been added, deleted or changed since D4.3. A word of caution is needed here. The following list is based on the revision levels in the driver file. While we have tried to set the revision levels correctly for all components, doing this for a full distribution is a huge job and we have certainly made some mistakes. Therefore the following list will include some files that haven't changed and some files that have changed will be omitted. We've tried to make the first type of mistake more common then the second. Some of the files that are listed as being deleted have only been renamed. Others have been removed from the test pack to save disk space. Finally some are obsolete and no longer exist in the production system at UM.

*ACCRESTORE	changed	*COMPARE	added
*ALGOLW	changed	*CPW	changed
*ASMTIDY	changed	*CPW	added
*ASSIST	changed	*DCALC	changed
*BBS	changed	*DEDIT	changed
*BNCHRTN	changed	*DLG	changed
*CCL	changed	*DMP	changed
*CCMEMOS	changed	*DMP	added
*CCMEMOS	added	*DWB	changed
*CCPUBLICATIONS	changed	*EBCDASC	changed
*CCPUBLICATIONS	added	*ENCRYPT	changed
*CCQUEUE	changed	*EXCOM	changed
*CCT	changed	*EXPL	changed
*CDUPDATE	changed	*EXPLBNF	changed
*CKID	changed	*EXPLIB	changed
*CKSIG	changed	*EXSKELETON	changed
*CKSIG	added	*FAKEOS	changed
*CLK	changed	*FDSKRTN	changed
*CLK	added	*FDSKRTN	added
*CLN	changed	*FILESCAN	changed
*CLN	added	*FILESCAN	added
*CLR	changed	*FLOPDSECT	changed
*CLR	added	*FLOPDSECT	added
*CLSACC	changed	*FS	changed
*CLSED	changed	*FSC	changed
*CLSFILESTATUS	changed	*FSM	changed
*CLSMESSAGESYS	changed	*FTNTIDY	changed
*CLSMESSAGESYS	added	*GFINFODSECT	changed
*CLSMOUNT	changed	*GOM	changed
*CLSMSG	deleted	*GTU	changed
*CLSNET	changed	*HLG	changed
*CLSPERMIT	changed	*HLG	added
*CLSPMF	changed	*HUH	changed
*CLSSDS	changed	*HUH	added
*CLSSSTA	changed	*HYPHDICT	changed
*CMB	changed	*IEHMOVE	changed
*CMD	changed	*IF	changed
*CNFGINFODSECT	changed	*IG	changed
*COBLIB	changed	*IG.AJ830	changed
*COMPARE	changed	*IG.CCMP	changed

*IG.CK400	changed	*LIBRARY	changed
*IG.CRT	changed	*LOGPURGE	changed
*IG.CRT	added	*LOGPURGE	added
*IG.DDRXF	changed	*MACUTIL	changed
*IG.DDRXF	added	*MCS650XASR	changed
*IG.DEBUG	changed	*MCS650XASR	added
*IG.DEBUG	added	*MESSAGES	changed
*IG.DTC300	changed	*MESSAGES	added
*IG.DTC302	changed	*MESSSUBS	changed
*IG.GT40	changed	*MESSSUBS	added
*IG.HIDP11	changed	*MLD	changed
*IG.HIDP11	added	*MLD	added
*IG.HP2648A	changed	*MND	changed
*IG.HP2648A	added	*MND	added
*IG.HP7203	changed	*MNETRTN	changed
*IG.HP7221	changed	*MNETTOPDS	changed
*IG.HUGHES	changed	*MNS	changed
*IG.MX12000	changed	*MNS	added
*IG.PEP	changed	*MOUNTSUB	changed
*IG.PICK	changed	*MOUNTSUB	added
*IG.PICK	added	*MSG	changed
*IG.PRINTER	changed	*MSG	added
*IG.PRINTER	added	*MSGINFDSECT	changed
*IG.PRNT	deleted	*MSGINFDSECT	added
*IG.QUMES5	changed	*MSGUTIL	changed
*IG.SAVE	changed	*MSGUTIL	added
*IG.TD4000	changed	*MTSUSERS	changed
*IG.TTY	deleted	*MTSUSERS	added
*IG.TX4002	changed	*MTSUSERS.CCID	changed
*IG.TX4006	changed	*MTSUSERS.CCID	added
*IG.TX4010	changed	*MTSUSERS.NAMEID	changed
*IG.TX4014	changed	*MTSUSERS.NAMEID	added
*IG.TX4025	changed	*MTSUSERS.OTHER	changed
*IG.TX4027	changed	*MTSUSERS.OTHER	added
*IG.TX4027	added	*MTSUSERS.PROJ	changed
*IG.TX4662	changed	*MTSUSERS.PROJ	added
*IG.TX4663	changed	*M6800ASR	changed
*IG.TX4663	added	*M6800ASR	added
*IG.XX1620	changed	*M6809ASR	changed
*IG.3270	changed	*M6809ASR	added
*IG.339	changed	*OBJSCAN	changed
*INDEX	changed	*PASCALTIDY	changed
*IPL.DECKGEN	changed	*PASCALTIDY	added
*IPL.D4.3	deleted	*PDL	deleted
*IPL.D5.0	changed	*PDP8RTN	changed
*IPL.D5.0	added	*PDSTOMNET	changed
*IPL.0	changed	*PERSUB	changed
*IPL.1	changed	*PEXIT	changed
*IPL.2	changed	*PEXIT	added
*IPL.3	changed	*PLOTSEE	changed
*I8080ASR	changed	*PLOTSYS	changed
*I8080ASR	added	*PL1SCAN	changed
*LABEL	changed	*PL360	changed
*LABELSNIFF	changed	*PL360LIB	changed
*LALRGEN	changed	*PRINT	changed
*LBL	changed	*RATEFILE	changed

*RDC.LESSON1	changed	*UNLINKER	changed
*RDC.LESSON1	added	*USERDIRECTORY	changed
*RDC.LESSON2	changed	*USERDIRECTORY	added
*RDC.LESSON2	added	*VALIDATEFILE	changed
*RDC.LESSON3	changed	*Z80ASR	changed
*RDC.LESSON3	added	*Z80ASR	added
*RDC.LESSON4	changed	*1052RTN	changed
*RDC.LESSON4	added	*2260RTN	changed
*RDC.LESSON5	changed	*2741RTN	changed
*RDC.LESSON5	added	*3270RTN	changed
*REDUCE2	changed	ACC.:ACCERRORSCAN	changed
*REDUCE2EXAMP	changed	ACC.:ACCFILCHARGE	changed
*RESTORE	changed	ACC.:ACCMAINT	changed
*RST	changed	ACC.:ACCRETRIEVE	changed
*SAV	changed	ACC.:PROJECTMAINT	changed
*SCRIPT1	changed	ACC.:REBATE	changed
*SCRIPT1M	changed	ACC.:STAPROJECT	changed
*SCRIPT1M	added	APL.:001NEWS	changed
*SCRIPT2M	changed	APL.:005SNOBOL	changed
*SCRIPT2M	added	APL.:999TESTS	changed
*SCRIPT3M	changed	BNCH:BATCH.SCR	changed
*SCRIPT3M	added	BNCH:BM00	changed
*SCRIPT4	changed	BNCH:CMDS	changed
*SCRIPT6	changed	BNCH:CREFMINPUT	changed
*SCRIPT7	changed	BNCH:DRIVER	changed
*SCRIPT8	changed	BNCH:DSR.S	changed
*SDM	changed	BNCH:GLOBALDEFS	changed
*SENSEDSECT	changed	BNCH:GLOBALDEFS	added
*SFSAVSUB	changed	BNCH:GLOBALS	changed
*SKEYSUB	changed	BNCH:GLOBALS	added
*SMDS	changed	BNCH:GLOBALSETS	changed
*SORT	changed	BNCH:GLOBALSETS	added
*SORTLM	changed	BNCH:LISTFILES	changed
*SPITERR	changed	BNCH:LISTFILES.S	changed
*SPITERR	added	BNCH:LLMPSEQU	changed
*SPRIVSUB	changed	BNCH:LLMPSEQU	added
*STA	changed	BNCH:MIDAS_1_DATA	changed
*STATUS	changed	BNCH:MIDAS_1_DATA	added
*STI	changed	BNCH:MONITOR	changed
*SVS	changed	BNCH:MONITOR.S	changed
*SVS	added	BNCH:SCR	changed
*SVW	changed	BNCH:SUBMIT	changed
*SV7	changed	BNCH:SUBMIT.S	changed
*SV7	added	COPY:BNCHSTATDSCT	added
*SYSMAC	changed	COPY:BNCHSTATDSCT	changed
*S2L	changed	COPY:CC.MACROS	changed
*TAPECOPY	changed	COPY:CCDEFS	changed
*TAPERTN	changed	COPY:CCDEFS	added
*TASKS	changed	COPY:CCSYMBOL	changed
*TAXIR	changed	COPY:CCSYMBOL	added
*TEXTFORM	changed	COPY:CLSTV.SG	changed
*TEXT360	changed	COPY:CMDAREADSECT	changed
*TSH	changed	COPY:CPSCNPAR	deleted
*TSH	added	COPY:DEFS	changed
*UDROUTINES	changed	COPY:DEFS	added
*UDROUTINES	added	COPY:DM.MACROS	changed

COPY:DM.MACROS	added	DUMP:DUMP.CMDS	changed
COPY:DRDSECT	changed	DUMP:DUMP.CMDS	added
COPY:ED.MACROS	changed	DUMP:DUMPER	changed
COPY:FILE.MACROS	changed	DUMP:DUMPER	added
COPY:GLOBALDEFS	changed	DUMP:LOG	changed
COPY:GLOBALSETS	changed	DUMP:LOG	added
COPY:IG.COPY.M	deleted	DUMP:SIGFILE	changed
COPY:IT.MACROS	changed	DUMP:SIGFILE	added
COPY:IT.MACROS	added	DUMP:TAPES	changed
COPY:JOBSTA	changed	DUMP:TAPES	added
COPY:JONFMT.FNLIB	added	DWB.:CHGFORMNOTE	deleted
COPY:JONFMT.FNLIB	changed	DWB.:CMDCHECKTIME	deleted
COPY:JONMACLIBFMT	added	DWB.:CMDPROC.O	deleted
COPY:JONMACLIBFMT	changed	DWB.:CMDPROC.S	deleted
COPY:LLMPSEQU	changed	DWB.:CMDSTAT.CF	deleted
COPY:MISC.MACROS	changed	DWB.:CMDSTAT.D	deleted
COPY:MNTR.MACROS	added	DWB.:CMDTAPE.370	deleted
COPY:MNTR.MACROS	changed	DWB.:CMDUTIL	deleted
COPY:MNTRDEFS	changed	DWB.:CMDXTRACT	deleted
COPY:MNTRDEFS	added	DWB.:CMDXTRACT3	deleted
COPY:MTS.MACROS	changed	DWB.:CMDXTRACT4	deleted
COPY:PCBDSECT	changed	DWB.:GOM.O	changed
COPY:PSA	changed	DWB.:GOM.OG	changed
COPY:RATEVEC	changed	DWB.:GOM.PRSLT	changed
COPY:RM.MACROS	deleted	DWB.:GOM.RDATA	changed
COPY:STATDSECT.SG	changed	DWB.:GOM.SEQS.O	changed
COPY:UC.MACROS	changed	DWB.:PUNUC	deleted
COPY:UC.MACROS	added	DWB.:VOLUME99.S	deleted
COPY:UMMPS.MACROS	changed	ETC.:ASMGF1	changed
COPY:ZDEFS	changed	ETC.:BASICHELPC	changed
COPY:ZDEFS	added	ETC.:BASICSIGNONM	changed
DIST:COMM	changed	ETC.:CNVTEREP	changed
DIST:DISTINDEX	changed	ETC.:CNVTEREP	added
DIST:DRIVER	changed	ETC.:CREPHELP	changed
DIST:DRIVER	added	ETC.:CREPHELP	added
DIST:DRIVERSCAN	changed	ETC.:EREPBLDL	deleted
DIST:DRIVERSCAN	added	ETC.:EREPCMDS	changed
DIST:DRIVER1600	deleted	ETC.:EREPCMDS	added
DIST:DRIVER6250	deleted	ETC.:EREPLIB	deleted
DIST:GENNOTES.WF	changed	ETC.:EREPLIB.VSS	changed
DIST:INDEX1600	changed	ETC.:EREPLIB.VSS	added
DIST:INDEX6250	changed	ETC.:EREP470LIB	deleted
DIST:MTS431.FILES	deleted	ETC.:FIX.EXPLAIN	changed
DIST:MTS501.FILES	changed	ETC.:FMTLIB	changed
DIST:MTS501.FILES	added	ETC.:GENASMERR	changed
DIST:NEWSYS.WF	changed	ETC.:GENASMERR	added
DIST:OLDSYS.WF	changed	ETC.:IF.DUMP	changed
DIST:RESSYS.WF	changed	ETC.:IF.ELMQQSV	changed
DIST:SPITLIB	changed	ETC.:IF.EXPLAIN	changed
DIST:SPITLIB	added	ETC.:IG.FONTS	changed
DMGR:MNTRMMSG	changed	ETC.:IG.STAT	changed
DMGR:MNTRMMSG	added	ETC.:M6800ASRERR	deleted
DUMP:DMPMSG	changed	ETC.:OLTEPBLDL	changed
DUMP:DMPMSG	added	ETC.:OLTEPCDSLIB	changed
DUMP:DUMP.BATCH	changed	ETC.:OLTEPLIB	changed
DUMP:DUMP.BATCH	added	ETC.:OLTEPTSTLIB	changed

ETC.:PASCALERRS	deleted	FILE:FLINE	changed
ETC.:PASCALINFO	deleted	FILE:FM	changed
ETC.:PL1LINKLIB	changed	FILE:FM.S	changed
ETC.:PMF.HELP	changed	FILE:FM.W	changed
ETC.:PMF.HELP	added	FILE:FSTEST	changed
ETC.:RDC2.CKPT	changed	FILE:GETDSK	changed
ETC.:RDC2.LISP	changed	FILE:GETFINF	changed
ETC.:READ3330LOG	added	FILE:GTUNIT	changed
ETC.:READ3330LOG	changed	FILE:MACROS	changed
ETC.:SYS1.LINKLIB	added	FILE:MACROS	added
ETC.:SYS1.LINKLIB	changed	FILE:MOVE	changed
ETC.:TAXIRMONITOR	added	FILE:MOVE.O	deleted
ETC.:TAXIRMONITOR	changed	FILE:OPEN	changed
ETC.:TAXMONITOR	deleted	FILE:PDLIST	deleted
ETC.:TXTFODS	changed	FILE:PM	changed
ETC.:UD.HELP	changed	FILE:PM.S	deleted
ETC.:UD.HELP	added	FILE:PROTECTPAPR	deleted
ETC.:UD.MESSAGES	changed	FILE:READI	changed
ETC.:UD.MESSAGES	added	FILE:READL	changed
ETC.:VSS	changed	FILE:REALACATSUB	added
ETC.:VSS	added	FILE:REALACATSUB	changed
ETC.:VSSLOG	changed	FILE:RECATALOG	changed
ETC.:VSSLOG	added	FILE:RECOVERING	changed
ETC.:3330LOCK	deleted	FILE:RWSEQ	changed
FILE:ACATALOG	changed	FILE:SCRATCHSIZES	changed
FILE:ACATALOG.FAS	added	FILE:SFDESTRY	changed
FILE:ACATALOG.FAS	changed	FILE:SODSECT	deleted
FILE:ACATSUB	deleted	FILE:STARFILES	changed
FILE:AMALGAMATE	changed	FILE:TABLMOD.W	changed
FILE:CALLDR	changed	FILE:TABLTST	changed
FILE:CALLRELDSK	changed	FILE:TRAK	changed
FILE:CATALOG	changed	FILE:UCDISK	changed
FILE:CATDSCBCOMP	added	FILE:UC3330	changed
FILE:CATDSCBCOMP	changed	FILE:VAMREC	changed
FILE:CATSCAN	changed	FILE:VNTD	changed
FILE:CCATL	changed	FILE:VOLGET	changed
FILE:CHKFILE	changed	FILE:WRITEI	changed
FILE:CHKVTOC	changed	FIX.:FIX	changed
FILE:CHKVTOC.W	changed	HASP:D/A	added
FILE:CHONID	changed	HASP:HASPSTAT	added
FILE:CONVERTING	changed	INIT:CLEAN	changed
FILE:CONVV2VX	changed	INIT:INIT	changed
FILE:CONVV2VX.AS	changed	INIT:INITCHK	changed
FILE:DASDI	changed	INIT:INITCMD	changed
FILE:DASDI.S	deleted	MAIL:EXPLAINFILE	added
FILE:DISKCOPY	changed	MAIL:EXPLAINFILE	changed
FILE:DISKCOPY.AS	changed	MAIL:MCLS.DUMPS	changed
FILE:DISKDUMP	changed	MAIL:MCLS.DUMPS	added
FILE:DSECTLIST	deleted	MAIL:MCLS.SKELS	changed
FILE:DSECT2	deleted	MAIL:MCLS.SKELS	added
FILE:DSKMAN	changed	MAIL:MESSCLS	changed
FILE:DSKMAN.W	changed	MAIL:MESSCLS	added
FILE:FILEUPD	changed	MAIL:MESSSUB	changed
FILE:FIXCAT	changed	MAIL:MESSSUB	added
FILE:FIXEH	changed	MAIL:MSG.LOG	changed
FILE:FIXSD	changed	MAIL:MSG.LOG	added

MAIL:MSGUTIL	changed	MTA.:FOS.TESTQSAM	deleted
MAIL:MSGUTIL	added	MTA.:FOS.TESTTIME	deleted
MAIL:MSUB.DUMPS	changed	MTA.:FOS.TRACE	deleted
MAIL:MSUB.DUMPS	added	MTA.:FOS.TSTUPDAT	deleted
MAIL:MSUB.SKELS	changed	MTA.:FOS.UPDATES	deleted
MAIL:MSUB.SKELS	added	MTA.:FOS.WTOTST	deleted
MNET:AUTH	changed	MTA.:HOGS	changed
MNET:AUTH	added	MTA.:INITJOB	changed
MNET:RELOAD	changed	MTA.:INITLOG	deleted
MNET:RELOAD	added	MTA.:IT.JOBPGM.S	changed
MNET:SETDATE	changed	MTA.:IT.S	deleted
MNET:SETDATE	added	MTA.:LOADCLAS	deleted
MNET:11LOAD	changed	MTA.:LOADCLAS.S	deleted
MNET:11LOAD	added	MTA.:MCHCCH.S	changed
MTA.:ACATALOG	deleted	MTA.:MCHMAC	changed
MTA.:ASMHDIR	changed	MTA.:MCHSUBR	changed
MTA.:ASMHMACUPD	changed	MTA.:OLTEPCDS	changed
MTA.:ASMHUPD	changed	MTA.:OLTEPCDSBLDL	changed
MTA.:ASMHUPDBUGS	changed	MTA.:OLTEPCMD	changed
MTA.:ASMHUPDEXTEN	changed	MTA.:OLTEPOBJCVT	changed
MTA.:ASMHUPDMTS	changed	MTA.:OLTEPTSTBLDL	changed
MTA.:ASMHUPDNEW	changed	MTA.:PAGLOAD	changed
MTA.:ASMHUPDNUM	changed	MTA.:PDP.S	deleted
MTA.:ASMHUTIL	changed	MTA.:PDPBUG	changed
MTA.:CNVTEREP	changed	MTA.:PRINTTRACE	changed
MTA.:COBOL.BLDLIN	deleted	MTA.:PRINTUC	changed
MTA.:COBOLU	deleted	MTA.:PRINTUC3330	changed
MTA.:COBTEST	deleted	MTA.:PRNTCNTS	changed
MTA.:COBTEST2	deleted	MTA.:PRUC3330	changed
MTA.:COBTEST3	deleted	MTA.:PUC	changed
MTA.:CONFIG.U	changed	MTA.:READRESTP	changed
MTA.:DMPLST	deleted	MTA.:READRESTP	added
MTA.:DMPLST.ADUMP	deleted	MTA.:READ3330LOG	deleted
MTA.:DMPLST.ICSTA	deleted	MTA.:SPIE	deleted
MTA.:DMPLST.ICTAB	deleted	MTA.:TESTIOMAC	changed
MTA.:DMPLST.LOADC	deleted	MTA.:TESTPROTSVC	deleted
MTA.:DMPLST.MACRO	changed	MTA.:TESTSETSTK	deleted
MTA.:DMPLST.SYSAD	deleted	MTA.:TESTSTIO	deleted
MTA.:DMPLST.TSTAT	deleted	MTA.:TESTTI	deleted
MTA.:DMPLST.VMFIN	deleted	MTA.:TIMESUBRS	deleted
MTA.:DPBJ	deleted	MTA.:TTPRINT	changed
MTA.:DRUMSTAT	changed	MTA.:UMMPS.U	changed
MTA.:EREP.ALIPGM	deleted	MTA.:UNITS.O	changed
MTA.:EREPBLDLIN	deleted	MTA.:UNITS.S	deleted
MTA.:EREPCMD	deleted	MTA.:VMN.S	changed
MTA.:EREPINFO	changed	MTA.:VSS.CNVTPDS	added
MTA.:EREPINFO	added	MTA.:VSS.CNVTPDS	changed
MTA.:EXIT	changed	MTA.:VSS.DRIVER	changed
MTA.:FOS.CREBLDL	deleted	MTA.:VSS.DRIVER	added
MTA.:FOS.EXCP	deleted	MTA.:VSS.PDSBUILD	changed
MTA.:FOS.IERR.TES	deleted	MTA.:VSS.PDSBUILD	added
MTA.:FOS.IERRCO00	deleted	MTA.:VSS.WRITEUP	changed
MTA.:FOS.LPA	deleted	MTA.:VSS.WRITEUP	added
MTA.:FOS.OLTSEXCP	deleted	MTA.:V370	changed
MTA.:FOS.SVC59	deleted	MTA.:V370DEV.MAC	changed
MTA.:FOS.TESTBSAM	deleted	MTA.:V370DEV.UM	changed

MTS.:BROADCST	changed	MTS.:LLXUUPD	deleted
MTS.:BUFSTAT	changed	MTS.:LOADCLAS	changed
MTS.:BUFSTAT	added	MTS.:LOADCLAS	added
MTS.:CCDEFS	changed	MTS.:MACROSUPD	deleted
MTS.:CCDEFS	added	MTS.:MTSASM	deleted
MTS.:CCSYMBOL	changed	MTS.:MTSUPD	deleted
MTS.:CCSYMBOL	added	MTS.:PDP.S	changed
MTS.:CFDUB	deleted	MTS.:PDP.S	added
MTS.:CHGFORMDATA	changed	MTS.:PERMIT.S	deleted
MTS.:CKID.S	changed	MTS.:PLIMUPD	changed
MTS.:CLSDUMMY.S	deleted	MTS.:PRINTDUMP	changed
MTS.:CMDSTATUPD	deleted	MTS.:PWC	changed
MTS.:CMDSUPD	deleted	MTS.:RAMROD	changed
MTS.:CONSOLE	changed	MTS.:RAMROD.GSFS	added
MTS.:CREP	changed	MTS.:RAMROD.GSFS	changed
MTS.:CREP	added	MTS.:RAMROD.SR.S	changed
MTS.:CREPDIR	changed	MTS.:RNBRUPD	changed
MTS.:CREPDIR	added	MTS.:ROD	changed
MTS.:CREPLOG	changed	MTS.:RSFUPD	changed
MTS.:CREPLOG	added	MTS.:SDUMP	deleted
MTS.:DBJP	changed	MTS.:SELECTCMD	changed
MTS.:DCKPCHR	changed	MTS.:SSCNUPD	deleted
MTS.:DCKPCHR	added	MTS.:STDDMP	changed
MTS.:DCKPCHR.O	deleted	MTS.:SVC.W	changed
MTS.:DCKPCHR.S	deleted	MTS.:SYSDEFS	changed
MTS.:DCKPCHR.W	changed	MTS.:TESTPERSUB	deleted
MTS.:DPBJ	changed	MTS.:TIMTUPD	deleted
MTS.:DPBJ	added	MTS.:TMTSJLE	deleted
MTS.:DSRIUPD	deleted	MTS.:TSS/REL2.UTL	deleted
MTS.:DSRSUPD	deleted	MTS.:TTMAP	changed
MTS.:DTYPE	changed	MTS.:TTMAP	added
MTS.:DTYPE	added	MTS.:TTPRINT	changed
MTS.:DYSUPD	deleted	MTS.:TTPRINT	added
MTS.:FILESTATUS.S	deleted	MTS.:TTTABLES	changed
MTS.:FLOATEST	deleted	MTS.:TTTABLES	added
MTS.:FLOATEST.O	deleted	MTS.:UBCUPDATE.S	deleted
MTS.:FNAMETRT	deleted	MTS.:UBCUPDATE.W	deleted
MTS.:FS.S	changed	MTS.:UBCUPDATE.W2	deleted
MTS.:FS.SNIFF	deleted	MTS.:UBCUPDATE.W3	deleted
MTS.:FSCON.S	deleted	MTS.:USUBUPD	changed
MTS.:FSUBUPD	deleted	NEW.:CKSIG	deleted
MTS.:GATEUPD	deleted	NEW.:LOGPURGE	deleted
MTS.:GETRATES	changed	NEW.:PLUS	changed
MTS.:HASP.D/A	deleted	NEW.:PLUS.OBJLIB	changed
MTS.:INFOUPD	deleted	NEW.:PLUS.SOURCEL	changed
MTS.:IPLBOOT.O	changed	PLUS:PARSER.HELP	added
MTS.:IPLBOOT.S	changed	PLUS:PARSER.HELP	changed
MTS.:IPLGTUM.S	deleted	PLUS:PARSER.OL	changed
MTS.:IPLINIT.O	changed	PLUS:PARSER.OL	added
MTS.:IPLINIT.S	changed	RSTR:AUTOREST	changed
MTS.:IPLREAD.O	changed	RSTR:DEADFILEDES	changed
MTS.:IPLREAD.S	changed	RSTR:DEADSAVE	changed
MTS.:IPLREAD.W	changed	RSTR:DEADUCATDES	changed
MTS.:IT	changed	RSTR:DSF	changed
MTS.:IT	added	RSTR:FASTRESTORE	changed
MTS.:LECTURE1	deleted	RSTR:FASTRSTR	changed

RSTR:FILEDSCB	deleted	STRT:MNS	added
RSTR:FILESAVE	changed	SYS.:ACCKILL	changed
RSTR:FILESAVEOBJ	changed	SYS.:ACCKILL	added
RSTR:FS.MACROS	changed	SYS.:BABYSIT	changed
RSTR:FSJOURNAL	changed	SYS.:BABYSIT	added
RSTR:FSJOURNAL	added	SYS.:CCP	changed
RSTR:FSS	changed	SYS.:CCPINIT	changed
RSTR:FSTAPECOPY	changed	SYS.:CCT	changed
RSTR:LFS.RESTART	changed	SYS.:CLOCKWATCHER	added
RSTR:MERGE	changed	SYS.:CLOCKWATCHER	changed
RSTR:OLFSOBJ	changed	SYS.:CMDPIKUP	changed
RSTR:REGENERATE	changed	SYS.:CPW	changed
RSTR:RESTORE	changed	SYS.:CPW	added
RSTR:RST	changed	SYS.:DSK	changed
RSTR:RSTFMT0	changed	SYS.:DUMP	deleted
RSTR:RSTFMT1	changed	SYS.:EREP	changed
RSTR:RSTFMT2	changed	SYS.:EREP	added
RSTR:SAVEFILE	changed	SYS.:FIXFEP	changed
RSTR:SCANFILES	changed	SYS.:FNDLBL	changed
RSTR:SVSTART	changed	SYS.:GETDUMP	deleted
RSTR:TAPEDIRLIST	changed	SYS.:HASPSTAT	deleted
RSTR:TAPEOUT	changed	SYS.:INTCLASS	deleted
RSTR:VALIDATEFILE	changed	SYS.:INTDOCDATA	deleted
RSTR:VTOCREAD	changed	SYS.:NEWSTA	changed
SEG2:ALGOLW	changed	SYS.:PLT	changed
SEG2:BASIC	changed	SYS.:PURGE	changed
SEG2:CRYPT	changed	SYS.:PURGE	added
SEG2:CRYPT	added	SYS.:SDM	changed
SEG2:DISMOUNT	changed	SYS.:STATISTICS	changed
SEG2:DISMOUNT	added	SYS.:STATISTICS	added
SEG2:FIX	changed	SYS.:VOLUME99	deleted
SEG2:GPID	changed	TAPE:TAPE	changed
SEG2:GPID	added	TAPE:TAPE	added
SEG2:IF	deleted	TAPE:UCTAPE	changed
SEG2:IG	changed	TAPE:UCTAPE	added
SEG2:IG	added	TMTS:DSPLIBRARY	changed
SEG2:OBJUTIL	changed	TMTS:DSPLIBRARY	added
SEG2:PRINTMAP	changed	TMTS:LOADMTS	changed
SEG2:SCREENRTNS	changed	TMTS:MTSSSCN	deleted
SEG2:SCREENRTNS	added	TMTS:PRINTDUMP	deleted
SEG2:S2APL	changed	TMTS:TMTSLIB	changed
SEG2:S2FILES	changed	TMTS:VDVLIBRARY	changed
SEG2:S2L	changed	TMTS:VDVLIBRARY	added
SEG2:TAPEQ	changed	TMTS:VMN	changed
SEG2:TAPEQ	added	TMTS:VMN	added
SEG2:TEXTFORM	deleted	UNSP:APPEND	deleted
SEG2:TIM.RTNS	changed	UNSP:ASMTIDY	deleted
SEG2:TIM.RTNS	added	UNSP:COMPARE	deleted
SEG2:TIME	changed	UNSP:CSNOOP.O	changed
SEG2:TRTABLES	changed	UNSP:FTNRE*	changed
SEG2:TWAIT	changed	UNSP:FTNRE*	added
SEG2:TWAIT	added	UNSP:I8080ASR	deleted
STRT:HWTPRINT	deleted	UNSP:JONMACLIBFMT	deleted
STRT:MND	changed	UNSP:LISTER	changed
STRT:MND	added	UNSP:MACSCAN.360	changed
STRT:MNS	changed	UNSP:MACSCAN.370	changed

```
UNSP:MCS650XASR    deleted
UNSP:M6800ASR      deleted
UNSP:OBJREP        deleted
UNSP:PAS.BC.LIB    changed
UNSP:PAS.SB        changed
UNSP:PAS.SB.LINK   changed
UNSP:PAS.SB.RUN    changed
UNSP:PAS.8000      changed
UNSP:PAS.8000.ERR  changed
UNSP:PAS.8000.RUN  changed
UNSP:PASCAL.GN     deleted
UNSP:PFILES        deleted
UNSP:PLM           deleted
UNSP:PLM81         deleted
UNSP:PLM82         deleted
UNSP:RG            changed
UNSP:RG.W          deleted
UNSP:SIDEBYSIDE    changed
UNSP:SIDEBYSIDE    added
UNSP:SIGSETUP      changed
UNSP:SIGSETUP      added
UNSP:TAPEDRIVES    changed
UNSP:TAPESHARE     changed
UNSP:TESTIO        changed
UNSP:TESTIO        added
UNSP:WRITEUPS      deleted
UNSP:Z80ASR        deleted
WSG.:BBSIT         deleted
WSG.:BUFSTAT       deleted
WSG.:DCSTAT        deleted
WSG.:DEDIT         changed
WSG.:FM.GEN        changed
WSG.:MOUNTCMD      deleted
WSG.:PDP8          changed
WSG.:SSRTN         changed
WSG.:SSRTN.DOC     deleted
WSG.:SSTA.CLS      deleted
WSG.:SSTA.VEC      deleted
WSG.:SURVEY        changed
WSG.:SURVEY        added
WSG.:SURVEY.LIB    changed
WSG.:SURVEY.LIB    added
WSG.:TABLES        changed
WSG.:TABLES.WF     deleted
WSG.:TAPE          deleted
WSG.:TAPECOPY      deleted
WSG.:TAPEDUMP      deleted
WSG.:TAPEUC        deleted
WSG.:TT            deleted
W009:ABSLDR        deleted
W009:CLSINFO.S     changed
W009:CLSINFO.W     changed
W009:CLSINFO.X     changed
W009:I             changed
W009:PISTLE.S      changed
W009:SYMBOL.S      deleted
W009:UMLOAD.S      changed
W009:UMLOAD.S      added
W009:UMLOAD.U      changed
W009:UPDATE.U      deleted
W170:KWIC          deleted
W170:KWIC.SPELL    deleted
W170:STAT.JOB      changed
W170:STAT.PROG     changed
W170:STOR          changed
W170:UCSYNC        changed
W170:UCSYNC        added
```

In addition, the following decks must be changed in, deleted from or added to the RAMROD resident system:

BJPMOD	changed	MONITOR UCRTNTAB	added
BROADCST	changed	MONITOR UNND	added
BUFALLOC	changed	MONITOR WAIT	added
CAT	changed	MSG	changed
CCDEFS	added	MTS	changed
CCSYMBOL	added	OPEN	changed
CHECKFE	added	OPERATOR	changed
CMDS	changed	PAGEDJDE	added
CMDSTAT	changed	PATH DEVICE	added
CONFIG	changed	PDP	changed
CONFIG.CARD	changed	PLIM	changed
CONSIO	changed	PN	changed
DMGR DISKXF	added	PTRUC	changed
DMGR DISPATCH	added	P11	changed
DMGR ITSKXF	added	QN	changed
DMGR LOCK	added	RATEVEC	changed
DMGR MAIN	added	READ	changed
DMGR MISC	added	REDL	changed
DMGR MNTR	added	RSF	changed
DMGRSTAT	added	SSRTN	changed
DSRI	changed	STARTUP/SHUTDOWN	changed
DSRS	changed	STATJOB	changed
DYS	changed	STDDMP	changed
EXIT	changed	STOR	changed
FAKE DISK MANAGER	added	SYSDEFS	changed
FESNIFF	added	TAPEUC	deleted
FIDCQ	changed	TASKS	changed
FLINE	changed	TASKSTAT	changed
FNAMETRT	changed	TIMT	changed
FSUB	changed	TN	changed
GATE	changed	TPMOVE	changed
GETD	changed	TRAK	changed
GETFINF	changed	TTTABLES	added
GETRATES	changed	T11	added
G11	changed	UCDISK	changed
INFO	changed	UCTAPE	added
INITJE	changed	UC3330	changed
INTERTSK	chanded	UMLOAD	changed
ITJOB	changed	UMMPS	changed
JBRP	changed	UNITS	changed
JOBLST.ENTRIES	changed	USUB	changed
JOBSTA	changed	VOLG	changed
KWIC	changed	WRIT	changed
LLXU	changed		
MCHCCH	changed		
MCHSUBR	changed		
MONITOR GTFR	added		
MONITOR MNTR	added		
MONITOR MTS WAIT	added		
MONITOR ONUN	added		
MONITOR PRV	added		
MONITOR SERVICE	added		

INSTALLATION INSTRUCTIONS FOR NEW INSTALLATIONS

August 1981

1. Run DECKGEN to prepare a set of TABLES for your machine. To load DECKGEN, IPL from the Dump/Restore tape. This will probably put the machine into wait state (unless you have a 3066, 3270, or 1052-compatable device at address 009). To get the IPLREADER to talk to you, press "request" on a 1052 or "enter" on a 3066 or 3270 (i.e., cause an attention interrupt). When it asks if you want to run the current system, reply "NO" and enter the commands:

```
LOAD NAME=*IPL.DECKGEN ADDR=xxx
START
```

where xxx is the device address of a tape drive on which the MTS Utility tape is mounted. See item 20012 for more information about the IPLREADER.

See the DECKGEN writeup (item 20014) for information on how to proceed from here. Since DECKGEN was loaded by the IPLREADER and therefore is told where the console is, it is not necessary to give an attention interrupt on the console to wake it up. It is a good idea to run DECKGEN from a hardcopy terminal if this is possible. If not, you should take notes as you go along because you may need to rerun DECKGEN if you make a mistake and you can save some time if you keep a record of what you've done. You should include at least one public volume, MTS001, in these tables. The tables you produce should be written to tape for use in steps 2 and 15 below.

2. You are now ready to load MTS itself. Rewind the Dump/Restore tape and IPL from it again. Reply NO when asked if you want the current system. This time enter the commands:

```
LOAD  NAME=*IPL.NDSKSYS  ADDR=xxx
REPLACE  TABLES  FROM  yyy
(Reply to the prompt for a printer address for a map)
START
```

where xxx is the address of the MTS Utility tape and yyy is the address of the tape written by DECKGEN in step 1. The no disk version of MTS should now be running.

3. Proceed with the start-up procedures described in the MTS operators' manual (item 20016). Some additional points not mentioned in the operators' manual are:

A. The prompt for the time and date will occur only if the TOD clock is not set. For example, entering the time and date as

```
2 41 pm 5 23 81 EDT
```

will set the time and date to 14:41 Eastern Daylight Time on 23 May 1981. The timezone need not be given if you gave the correct timezone when you ran DECKGEN, i.e., MTS will use that one by default.

B. MTS keeps GMT in the TOD clock. Although this agrees with the standard set by IBM for the use of the TOD clock, some IBM systems do not do this. This means that even if the clock has been set by another system, it may be off by several hours and you will want to reply "NO" when asked if the time is correct. You can then enter the correct local time, which MTS will use to load the TOD clock with GMT.

4. At this point you will be told that MTS001 (or whatever name(s) you told DECKGEN to use) couldn't be found (which is reasonable since we haven't restored it yet) and you should respond by entering CANCEL. This will result in a fairly serious looking message about an error in catalog initilization which can be ignored.

5. Start the job status master job by typing

```
JOBS  MAS
```

at the operator's console.

6. The following steps can be done from the operator's console or from a 1052, 3066, 3036, 3277, 3278 or 3279 terminal. If you are going to work from the operator's console you'll need to start an MTS job by typing

```
MTS  NDSK  OPER
```

at the console. If you are going to work from a terminal you'll need to start an MTS job on that terminal by typing

```
MTS  NDSK  xxxx
```

at the operator's console, where xxxx is the device name of the terminal to be used. The NDSK parameter tells MTS to avoid using the file system.

7. Next signon by entering

```
SIGNON  ccid
ccid     (the password)
```

where ccid is any four character string. If you are working at the operator's console you won't be asked to enter a password. If you are working from a terminal you will need to enter a password and because you are using the no disk system the password will be the same as the ccid used on the signon command.

8. Next attach the MTS Utility tape to your job by entering

```
$SET  PROT=OFF
$GET  >Txxx
$CONTROL  *AFD*  VOLUME=MTSUTL
```

where Txxx is the device name of the tape drive where the MTS Utility tape is mounted.

9. If you have 2305s or 4305s to use for paging, you must format them by entering

```
$CONTROL  *AFD*  POSN=FMT2305
$RUN  *AFD*
FFnn
FFnn
 .
 .
 .
$ENDFILE
```

10. If you are going to use 2301s for paging, format them by entering

```
$CONTROL  *AFD*  POSN=DRUMINIT
$RUN  *AFD*
```

11. If you have 2305s, 3805s, 4305s or 2301s to use for paging, start the paging device processor by typing

```
PDP
```

at the operator's console.

12. Next DASDI a paging disk and at least one public volume by entering

```
$CONTROL  *AFD*  POSN=DASDI
$RUN  *AFD*
Dxxx PAG001 VX PAGING
Dyyy MTS001 VX 1 IPL
.  .  .
$ENDFILE
```

where Dxxx is the name of the device where the new paging pack is mounted and Dyyy is the name of the device where the new file system volume(s) is mounted. See the General Notes (item 20000) for instructions on using FILE:DASDI.

13. If you started the PDP in step 11, add the paging disk by typing

```
PGET  Dxxx
```

at the operator's console. If you didn't start the PDP before, start it now by typing

```
PDP
```

at the console.

14. Use DISKCOPY to restore the D5.0 system from the distributed dump/restore tape(s). You should specify the IPL option, but SLOW and SWAP aren't necessary. See the General Notes (item 20000) for information on running DISKCOPY.

```
$CONTROL  *AFD*  POSN=DISKCOPY
$RUN *AFD*
TAPE
>Tnnn
DISK
Dyyy MTS001
IPL
$ENDFILE
```

where >Tnnn is the name of the device on which the D5.0 dump/restore tape is mounted and Dyyy is the name of the disk drive to which the data will be restored. If you received the 1600 bpi distribution, you will be prompted to enter a second tape device name when DISKCOPY is ready for the second tape.

15. Stop your machine, and IPL from the new disk. Again reply NO when asked if you want to run the current system and enter the commands:

```
LOAD NAME=*IPL.D5.0
REPLACE TABLES FROM xxx
(Reply to the prompt for a printer address for a map)
START
```

where xxx is the address of the tape written by DECKGEN in step 1. The D5.0 version of MTS should now be running.

16. Proceed with the start-up procedures described in the MTS operators' manual (item 20016). This time you shouldn't be told that MTS001 couldn't be found.

    After initilization is complete you should do the following from the operator's console or a terminal

```
SIGNON  MTS
password     (see below)
$RUN  RAMROD
CREATE  xxxxx  FROM  D5.0SYS
enter comments if desired
REPLACE  TABLES.DUMMY  FROM  >Tyyy
enter comments if desired
enter null line or date when prompted for version
reply "OK" to confirmation request
DELETE  SEG0.NCA.TABLES
reply "OK" to confirmation request
DELETE  SEG1.NCA.TABLES
reply "OK" to confirmation request
RENAME  TABLES.DUMMY TABLES
reply "OK" to confirmation request
CURRENT
reply "OK" to confirmation request
```

    The passwords for most of the userids on the distributed test pack are the same as the userids, e.g., the password for MTS is MTS. The only userids for which the passwords are different are the terminal benchmark IDs (Bnnn) since the passwords for these are irrelevant. (Note that a password is not required if you are using the operator's console as your terminal.) The xxxxx on the CREATE command is a name for the new system, which normally would be the MTS "model number" for the date, e.g., UG151 for August 15, 1981. Tyyy is the name of the tape drive containing the tape written by DECKGEN.

    This procedure will cause the "current" system on your MTS001 pack to correspond to your machine configuration so that the next time you IPL you can reply "YES" (or enter a null line) when asked if you want to run the current system. See the RAMROD (item 20013) and IPLREADER (item 20012) writeups for more information.

17. You now have a working D5.0 version of MTS (presumably). You can start to run user programs after you've created some user IDs. To do this, see the description of the accounting maintenance procedures (104/118), which you should obtain from the *FS tapes.

    There are several things that you will probably want to do to clean up a few loose ends before going much further. Some of these are:

    A. Fix HASP for whatever local options you desire. See

the description of these options (item 20023). You may also want to change some of the commands in STRT:HSP, the command file for *HSP, which can be used by the operators to issue the appropriate HASP $START commands after starting HASP.

B. You will also want to change the contents of STRT:LAS, the command file for *LAS, which can be used by the operators to start up the terminal lines.

C. Fix TSFO (the 2703/1270 MTS Device Support Routine) to agree with whatever hardware is available. There are several assembly parameters described in the source.

D. Fix up the command statistics directory file SYS:CMDDIR for the appropriate tapes. If you don't do this, the system will occasionally mount a tape with rack number CMDTP (which must be labeled CMD001) to dump the command statistics data. Eventually this tape will fill up with command statistics data and the system will get mad unless you have fixed up SYS:CMDDIR to give it more tapes to use. A writeup describing the structure of this file is available (531/40) on the *FS tapes.

E. Write new versions of the IPLBOOT and IPLREADER programs to the system pack with the correct device address for your system console (see the IPLREADER description, item 20012).

F. In the tables produced by DECKGEN none of the file system disks are flagged as being under disk manager control. You can place them under disk manager control using the DMGRSTAT job program or the *-file job *DSK. This will need to be done after each IPL until you hand-code a version of tables for your configuration.

18. General things new installations should know.

A. How to sign on using the operator's console:

1. Enter "MTS OPER" on the operator's console
2. It will come back immediately for input.
3. Enter the signon command.
4. You are now signed on if the ID exists. No password is required for signon from OPER and SIGFILEs are not processed. Also the "last signon" message and the "signed on at" message are not printed.

B. A 2301 drum must have device name DRM1. If you have a second 2301, it must be named DRM2. Similarly, 2305s must be named FF00 to FF07 for the first one, FF08 to

FF0F for the second one, FF10 to FF17 for the third, etc.

C. A "privileged" ID is one with X'80' on in the second byte (byte 1) of the accounting record (set by accounting maintenance program on request). If the ID is privileged then no checking for maximum money, etc., is made. The expiration date and maximum file space, however, **are** checked. Also this bit allows the user to run programs with PROT=OFF, allows "public file privilege" (see next), and allows privileged SYSTEMSTATUS commands to be given.

D. A "public file privileged" ID is one with X'08' on in the second byte of the accounting record. This allows the user to create a public file.

E. A user with the ACCPUSE bit on in his accounting record can also declare a program to be run with PROT=OFF and can issue privileged SYSTEMSTATUS commands.

F. A user with either ACCTLB or ACCPLB on in his accounting record can set LSS (Limited-Service State) off even if the load is too high.

G. Certain IDs are used automatically during the start-up sequence (INIT, SEG2, SYS., STRT). These IDs must be part of project WOPN on the test pack system so that they can signon even if the "in use" bit in the accounting record is set. The project number used for this test in your production system may be changed by using a different project or project substring (or set of them) on the &IPLPROJ SETC symbol in COPY:GLOBALSETS.

H. MTS makes certain checks to be sure that only IDs that belong to individuals that work for the computing installation can perform certain "privileged" operations. This check is made by checking the project number associated with the ID. At UM only projects that start with "W" are assumed to belong to installation staff. This may be changed by altering the setting of the SETC symbol &SYSPROJ in COPY:GLOBALSETS and assembling and installing a new version of MTS.

Because some of the steps outlined above require running a version of MTS without a file system, some error messages that would normally be obtained from the file *SMDS will not be available and an error number will be printed instead. The various error numbers and their associated text is given here.

10 SOURCE and SINK are same file.
11 You have not signed on yet.
13 No more logical device numbers available.
14 Non-zero return code from output subroutine.
15 Output file or device same as input file or device.
List terminated.
16 Too many system components loaded. Command terminated.
17 Input line is too ling. Line truncated to 255 characters.
18 Password incorrect. Try again.
22 Can't rename: is SOURCE, SINK, MSOURCE, or MSINK.
23 First parameter must be FDname.
25 Control command not available for this device type.
26 Illegal parameters
27 Illegal SOURCE file or device.
28 Illegal SINK file or device.
29 SOURCE or SINK file or device must be specified.
30 There is no previous SOURCE or SINK.
31 Insufficient space available.
32 Illegal size parameter.
33 Illegal file name specified.
34 "Pseudodevice names" cannot be created.
35 *...* nnnnnn {CANCELLED|RELEASED ...}
36 Invalid or missing parameter.
37 Invalid "$ENDFILE" line encountered.
38 HELP: RC=4 from SDUMP.
39 Device specified is not an output device.
40 You must give display parameters.
41 Last parameter did not request output.
42 Invalid parameters gave RC=4 from sdump.
43 Questionable use of "from" or "to"
44 Questionable use of "on"
45 Error return from GDINFO
48 Device specified for input is not an input device.
49 Device specified for output is not an output device.
50 There is no active file to use.
51 Inconsistent or improper line number parameters
52 Can't destroy: is SOURCE, SINK, MSOURCE, or MSINK.
53 Can only renumber line files
55 The data cells have been removed.
Sequential disk file assumed.
57 But that's not a file...
58 Help - unit exception on SSF.
59 Help - unit exception on punch.
61 Hardware error or software inconsistency in create
possibly due to bad volume name.
63 Illegal old filename in rename
64 Illegal new filename in rename
65 You must sign on as a library file.

```
 66   There is no active file to put that in.
 67   You have already signed on.
 68   Illegal user id
 69   Too many parameters were given.
 71   Illegal or missing address.
 72   Improper boundary alignment.
 74   Hex number too long or not valid.
 75   Invalid register designation.
 76   Enter user password.
 78   Password incorrect.
 79   Illegal command for this signon id
 80   No interaction is possible in batch mode.
 81   Missing comma.
 82   Attempt to change msource using "$continue with".
 83   Illegal file name for create command.
 84   Illegal blank before left parenthesis.
 85   Hardware error or software inconsistency in rename
 86   File to be destroyed must be specified.
 87   Warning: Specifying PW=password or PASSWORD=password
        on the $SIGNON command is a risky practice.
 89   Invalid file or device name for control command.
 92   Enter "OK", "YES", or "!" to confirm; "NO" or return
        to decline; or "CANCEL" to cancel.
 94   File already exists
 95   Line files are not allowed on data cell
 96   Unable to get input record length
 97   Current size n pages, n pages recovered.
 98   nP, nP recovered.
100   No more storage index numbers
101   Too many levels of link
103   You must destroy some files before you can create more.
104   You have exceeded your allotted space.
        You must destroy some files before you can create more.
107   Enter replacement or "CANCEL".
108   Cancel what?
109   You must give receipt number
110   Can't cancel at this time.  Try again later.
111   Is *SINK*; will not be cancelled until released.
112   Illegal line number or delimiter.
114   Illegal or missing parameter
115   Number has too many digits after decimal point
116   Number has too many digits before decimal point
117   System error -- can't open the new file.
118   Invalid parameter
119   Illegal command for limited-service state (LSS)
120   This is a limited signon:  Execution time limited to
        .25 sec. per run.
121   LSS is already on
122   LSS is already off
123   Can't set LSS off now - load too high
124   But for you I'll do it anyway
125   Libsrch string contains null library name
126   Loader tables not available
129   Can't "control" that
130   No space
132   Not input device
```

133 Not output device
135 Command terminated due to previous error in SDS.
136 Illegal CANCEL command in batch job
137 Incorrect use of I on COPY or LIST command.
140 Enter "CONTINUE" to continue what was interrupted;
Enter "MTS" to return to MTS command mode.
142 Unable to read project sigifle.
143 LSS mode has been turned off.
144 .25 sec. time limit imposed due to LSS.
145 Time estimate too big for LSS mode.
146 Execpkey may not be prefixed by a userid
other than your own.
147 Program key has been set to default value (*EXEC).
148 There is no loaded program.
149 "LIBSRCH=" library not searched because of nondefault
program key.
150 Program key of loaded program has been set to
default value.
151 Enter "OK" or "YES" to confirm; "CANCEL" to cancel.
152 System error in attention interrupt handling.
153 System error in program interrupt handling.
154 ILLEGAL FILE NAME FOR DESTROY COMMAND.
155 No jobs are waiting for this file.
156 This job has no files open or locked and is not waiting
for any file.
157 None.
158 Error return from "ICSTAT" (System error).
159 Illegal file name specified for LSTATUS command.
160 Illegal job number "xxx" specified for LSTAT command.
161 Illegal MTS command while a Run-Only program is loaded
162 Password has been changed.
163 Protection has been enabled.
164 Run-only program has been unloaded.
165 WARNING: Program being run with no local time limit.
166 Due to concatenation or replacement the output file
is the same as the input file. List terminated.
168 Line number ranges, I/O modifiers and concatentaton
may not be used
169 Invalid "$CONTINUE WITH" line encountered.
170 Once PWCONFIRM has been set on during a given session
it may not be set off again during that session.
172 I/O call from xxxx uses illegal parameters,
part of parameter list is not addressable.
173 I/O call from xxxx uses illegal parameters,
parameter list is not addressable.
174 I/O call from xxxx uses illegal parameters,
FDUB pointer is invalid.
175 I/O call from xxxx uses illegal parameters,
FDUB is invalid.
176 I/O call from xxxx uses illegal parameters,
unit parameter is not addressable.
177 I/O call from xxxx uses illegal parameters,
I/O modifiers are not addressable.
178 I/O call from xxxx uses illegal parameters,
line number is not addressable.
179 I/O call from xxxx uses illegal parameters,

```
       Input/Output buffer is not addressable.
180    I/O call from xxxx uses illegal parameters,
       length halfword is not addressable.
181    I/O call from xxxx uses illegal parameters,
       output request specifies negative length.
182    I/O call from xxxx uses illegal parameters,
       unit parameter is invalid.
183    Reading line xxxx from "Fdname".
184    New passwords do not agree - password not changed.
185    Giving a password on the $SET command is a bad practice.
       The preferred method is:
          $SET PW
          newpw
187    Enter new user password.
188    Password too short - Passwords must be between 1 and
       12 characters long with no embedded blanks or commas.
190    Reenter new user password to confirm.
191    Password not changed.
192    Enter old user password.
193    Password incorrect - password not changed.
194    Enter new PW.
195    Reenter new PW.
196    Enter old PW.
197    Password too long - Passwords must be between 1 and 12
       characters long.
198    Password too long.
199    File "xxxx" is to be destroyed.  Please confirm.
200    File "xxxx" is to be emptied.  Please confirm.
201    File "xxxx" is to be renamed as "yyyy".  Please confirm.
202    OK?  "filename"
203    OK?  "file1" as "file2"
204    Command Cancelled.
205      $SET PW
206      newpw
207    $ENDFILE may not be used as a password.
208    EXPRESS TERMINAL:  Please limit your session to 5 minutes.
209    EXPRESS TERMINAL:  You have used more than 5 minutes.
       Please signoff now if others are waiting for the termina
215    Default *PRINT* route is xxxx, Default *PUNCH* route is CN
216    Default *PRINT* and *PUNCH* routes are xxxx.
217    LOAD call uses illegal parameters.
218    Warning:  PRINT=xx may not be used with ROUTE=xxxx,
       PRINT=ANY will be assumed unless ROUTE is changed.
219    I/O call from xxxx uses illegal parameters,
       I/O buffer is not convertible to upper case.
220    CLS can't be executed due to loading errors.
222    Error in program interrupt processing:
       Exit area unaddressable.
223    Error in attention interrupt processing:
       Exit area unaddressable.
224    No previous $RUN command.
225    Edited $RERUN text too long (>255 characters).
226    Max. signons exceeded, Job xxxx re-queued. CCID=xxxx
227    Error during GETIN call,
       please show this to a CC staff member.
228    Attempt to run a null program.
```

```
229   Too many parameters or invalid confirmation.
230   Use "OK" or "YES" to confirm.
231   Too many parameters or invalid confirmation.
232   Enter "OK" or "YES" to confirm; "NO" or "CANCEL" to cancel
233   MESSSUBS RC n. Show this to CC staff.
234   Software or hardware error while searching the
        *Userdirectory database.  No user name could be set.
236   System error in {program interrupt | SVC intercept}
        processing.
237   Unaddressable exit region in
        {program interrupt | SVC intercept} processing.
500   Program will be run with protection enabled.
501   Program will be $DEBUGged with protection enabled.
502   LIBSRCH is being ignored.
504   Error occurred within system subroutine
        $RESTART inadvisable.
505   Try again after a few minutes.
506   $SIGNON command is a risky practice.
507   User passwords may no longer be specified on the
        $SIGNON or $CANCEL commands.
509   File does not exist.
510   Job not found.
511   Warning: Linenumber wrap-around has occured.
```

From MTSDist-v3-21Dec2004/ReadMe by Mike Alexander

Distribution 5.0 consisted of three sets of tapes: dump/restore tapes for a one pack system, a utility tape used to get MTS up and running initially, and several *FS format tapes. Only the *FS format tapes have been preserved. They are in d5.0t1.aws through d5.0t4.aws as VLO labeled tapes with volume IDs of 5.0T1 through 5.0T4. There were no problems copying these tapes and they are checksumed *FS tapes so they are probably ok. The documentation for this distribution is similar to the previous ones.

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