```
*********************************
*                               *
*       MP/AOS RDOS UTILITY      *
*                               *
*********************************
```

The RDOS Utility allows MP/AOS users to dump and load RDOS format tapes, transfer files between RDOS and MP/AOS disks, and list information about RDOS disk files.

The utility performs 'flat' dumps (i.e. no directory structure is maintained on the tape), although files from subdirectories of the current directory may be dumped as long as the subdirectory matches a template argument specified in the command line. When loading back an RDOS dump format tape, all files are ,therefore, loaded into the current directory. When subdirectories are included in the argument list, several files with the same name may be dumped to tape, but only one will be loaded back, dependent on whether or not the delete switch is set. Also, link files are resolved, if possible, and renamed to the name of the link when being dumped. Link files whose resolutions are directories are not dumped, just as files of type directory are not dumped.

Files may be read from any partition or subdirectory of an RDOS disk and are placed in the current working directory on the MP/AOS disk (subordinate directories will be created on the MP/AOS disk, if necessary). When writing to an RDOS disk, only one partition (primary or secondary) or subdirectory may be specified as the destination (i.e. the RDOS Utility will NOT create secondary partitions or subdirectories on an RDOS disk). Files of type directory or link will NOT be transferred onto an RDOS disk. The default RDOS directory for both reading and writing is the primary partition.

```
RDOS UTILITY COMMAND FORMAT:
============================


X RDOS command[switch(es)]  [ argument[switch] ] ...


NOTES:  1) There are no switches on the actual 'RDOS' argument.
        2) Arguments may be either filenames or templates.
        3) If you do not specify any filename arguments, the Utility assumes a
           default template of "#" for the DUMP and LOAD functions, and "+" for
           the LIST, GET, and PUT functions.


    ARGUMENT SWITCHES:
    -----------------

        /C              when used with the LOAD or GET command, converts
                        carriage returns to newlines; when used with the DUMP
                        or PUT command, converts newlines to carriage returns

                        NOTES:  1) This switch is only valid for either
                                   text files or user data files.
                                2) This switch may be used with templates.


    COMMON COMMAND SWITCHES:
    -----------------------

        /L              list files on lineprinter

        /L=pathname     list files on pathname specified

        /V              verify


    COMMANDS / COMMAND SPECIFIC SWITCHES:
    ------------------------------------

        DUMP  -  Dump one or more files to tape in RDOS dump format.  Link
                 files will be resolved, if possible, and files of type
                 directory will NOT be dumped.

            ex.  X RDOS DUMP[switch(es)] @MTAx:y [ argument[switch] ] ...


        LOAD  -  Load one or more files from an RDOS format tape.


                /D              load new file after deleting any
                                existing file having the same name

                /N              no load, just verify filename(s)

            ex.  X RDOS LOAD[switch(es)] @MTAx:y [ argument[switch] ] ...


        where   x = tape drive number
                y = tape file number
```

```
         LIST  -  List information about files on RDOS disk.


                   /DISK=rdos-diskunit  RDOS disk being referenced (MUST be
                                        present for command to be valid)

                   /T                   list contents of all directories
                                        designated in command line


            ex.  X RDOS LIST/DISK=rdos-diskunit[switch(es)] [ argument ] ...



         GET   -  Transfer one or more files from any partition or subdirectory
                  of the RDOS disk to the working directory of the MP/AOS disk
                  (subdirectories will be created, if necessary)


                   /DISK=rdos-diskunit   RDOS disk being referenced (MUST be
                                         present for command to be valid)

                   /N                    no load, just verify filenames

                   /T                    transfer the contents of all RDOS
                                         directories designated in the command
                                         line


            ex.  X RDOS GET/DISK=rdos-diskunit[switch(es)] [ arg[switch] ] ...



         PUT   -  Transfer one or more files from the MP/AOS disk to a specific
                  partition or subdirectory of the RDOS disk.  Files of type
                  link or directory will NOT be transferred, and subdirectories
                  and secondary partitions will NOT be created on the RDOS disk.


                   /DIR=rdos-subdirectory   transfer files to the specified RDOS
                                            subdirectory or secondary partition
                                            (default is the primary partition)

                   /DISK=rdos-diskunit      RDOS disk being referenced (MUST be
                                            present for command to be valid)


            ex.  X RDOS PUT/DISK=rdos-diskunit[switch(es)] [ arg[switch] ] ...



   NOTES:  1) Filename extensions may not exceed 2 characters, with the total
              length of the name not being more than 13 characters.  Only 1
              extension is permitted per filename.

           2) Filenames without extensions must not exceed 10 characters.

           3) Underscores and question marks are illegal RDOS filename
              characters.
```

```
LOADing an RDOS FORMAT TAPE:
===========================

     When loading an RDOS formatted tape (made under RDOS) onto MP/AOS,
the following types of block must be checked for:

          Name Block                      377r8

          Data Block                      376r8

          Error Block                     375r8

          End Block                       374r8

          Time Block                      373r8

          Link Data Block                 372r8

          Link Access Attributes Block    371r8


These blocks should occur in the following order for each file dumped:

          Name Block
          ----------

        < Link Data Block - links only >
          ---------------

          Time Block
          ----------

        < Link Access Attributes Block - optional>
          ---------------------------

          Data BlockS
          ----------

            < Error Blocks - put out if an error occurs w/in a specific file >
              -----------

with an End Block to indicate the end of the dump for this tape file.
          ---------


     MP/AOS will ignore information in the following type blocks when
loading a file dumped under RDOS:

          Link Data Blocks

          Time Blocks

          Link Access Attributes Block.


     If an Error Block is encountered while loading a file, that file will
be skipped over.  Any portion of the file already written to disk will be
deleted, and the load will continue with the next file.


     The above information holds for loading dumps made under MP/AOS and AOS,
with the exception that only Name, Time, Data, and End Blocks will be found.
```

```
DUMPing an RDOS FORMAT TAPE:
===========================


     When creating an RDOS dump format tape, MP/AOS will put out only the
following blocks:


        Name Block               377r8

        Data Block               376r8

        End Block                374r8

        Time block               373r8.

These blocks will occur in the following order per file:


        Name Block
        ----------

        Time Block
        ----------

        Data BlockS
        ----------

with an End Block occurring at the end of the dump to this tape file.
        ---------


NOTE:   The day last modified will be substituted for the day of
        creation in the Time Block (since MP/AOS does not maintain the
        time of creation for its files).
```

```
BLOCK FORMATS:  ( for RDOS format tapes )
=============


      NAME BLOCK:
      ----------

            -------------------
            !       377       !   1 byte
            -------------------
            !    attributes   !   2 bytes
            -------------------
            !       # of      !   2 bytes     (only present if contiguous file)
            ! contiguous blocks!
            -------------------
            !     filename    !   variable
            -------------------
            !       null      !   1 byte
            -------------------


      DATA BLOCK:
      ----------

            -------------------
            !       376       !   1 byte
            -------------------
            !    byte count   !   2 bytes
            -------------------
            !     checksum    !   2 bytes     (checksum = data byte length +
            -------------------                 sum of data WORDS -- odd bytes
            !                 !                 are written, but not calculated
            !                 !                 into the checksum             )
            ~       data      ~   <= 256 bytes
            ~                 ~
            !                 !
            !                 !
            -------------------


      ERROR BLOCK:
      -----------

            -------------------
            !       375       !   1 byte     (causes the file currently being
            -------------------                loaded to be read through to
                                               the end, but not written      )


      END BLOCK:
      ---------

            -------------------
            !       374       !   1 byte
            -------------------


      TIME BLOCK:
```

```
   ----------

   -------------------
   !      373        !   1 byte
   -------------------
   ! day last accessed!   2 bytes      (# days since 12/31/67)
   -------------------
   ! day of creation  !   2 bytes      (# days since 12/31/67)
   -------------------
   ! time of creation !   2 bytes      (left byte = hrs.,
   -------------------                        right byte = mins.)


LINK DATA BLOCK:
---------------

   -------------------
   !      372        !   1 byte
   -------------------
   !    dirname       !   variable     (alternate directory name, if any)
   -------------------
   !      null        !   1 byte
   -------------------
   ! resolution name  !   variable     (resolution name)
   -------------------
   !      null        !   1 byte
   -------------------

   NOTE:  If no alternate directory or resolution name, will be 2 NULLs.


LINK ACCESS ATTRIBUTES BLOCK:
----------------------------

   -------------------
   !      371        !   1 byte
   -------------------
   !   attributes     !   2 bytes      (link access attributes)
   -------------------
```

```
SAMPLE RDOS FORMAT TAPE DUMP:      ( 1 file dumped under MP/AOS )
============================


                                <contig. files only>
  -----------------------------------------------------------\\-------
  !   377    !     attri!butes    !   # conti!guous    ! filename !
  ! name blk !        !           !        blocks      !          !
  -----------------------------------------------------------\\-------



-----------------------------------------------------------------------
  !   null   !   373    !      day ! last     !      day ! last     !
  !          ! time blk !      accessed       !      modified       !
-----------------------------------------------------------------------



-----------------------------------------------------------------------
  !   hour   ! minutes  !   376    !       by!te        !      chec!
  !          !          ! data blk !       count        !          !
-----------------------------------------------------------------------



----------------------\\-----------------------------------------------
  !ksum      !         256 bytes    !   376    !        by!te        !
  !          !          of data     ! data blk !        count        !
----------------------\\-----------------------------------------------



-----------------------------------\\----------------------------------
  !      chec!ksum      !       256 bytes      !   376    !        by!
  !          !          !        of data       ! data blk !        co!
-----------------------------------\\----------------------------------

                                                              (EOT)
---------------------------------------\\--------------------------
  !te       !       chec!ksum      !        <= 256       !   374    !X!X!
  !unt      !          !           !        bytes data   ! end blk  !X!X!
---------------------------------------\\--------------------------


                    ------------
                    !          !
       NOTES:  1) !          !  represents 1 byte of data.
                    ------------

                 2) The symbols \\ represent a variable length block.

                 3) In this example, if more than 1 file had been dumped to
                    this tape file, they would have been of the same format as
                    the one shown, and would have preceded the END BLOCK (374).

                 4) A tape made under RDOS may include blocks other than
                    those displayed here.  See the above section on
                    LOADING an RDOS FORMAT TAPE for more details.

                 5) Under MP/AOS, the only attributes included in the attribute
                    word are whether the file is random or contiguous, and the
                    SAV attribute, which is required for all executable files
                    on RDOS (i.e. program files).

                 6) Under RDOS (and AOS), the day of creation will be dumped
                    in place of the day last modified in the TIME BLOCK.
```

GETting FILES FROM AN RDOS DISK:
===============================

     RDOS disk files may be organized randomly, contiguously, or sequentially.
The RDOS Utility is capable of reading any of these three types of files, but,
since MP/AOS does not create sequentially organized files, both randomly and
sequentially organized RDOS files will be created as random files when
transferred to the MP/AOS disk. Contiguously organized files will remain
unchanged when moved. The RDOS GET command will not delete existing files
having the same name on the MP/AOS disk, but will create directories
subordinate to the MP/AOS working directory, if necessary. Link files will be
transferred to the MP/AOS disk unresolved.

PUTting FILES ONTO AN RDOS DISK:
===============================

     MP/AOS disk files may be transferred to any existing RDOS partition or
subdirectory, provided that sufficient file space exists in the chosen section
of the RDOS disk. All files created on the RDOS disk will be either randomly
or contiguously organized, since MP/AOS has no sequentially organized files.
MP/AOS files of type link or directory will not be PUT onto the RDOS disk by
the RDOS Utility.

LISTing RDOS DISK FILE INFORMATION:
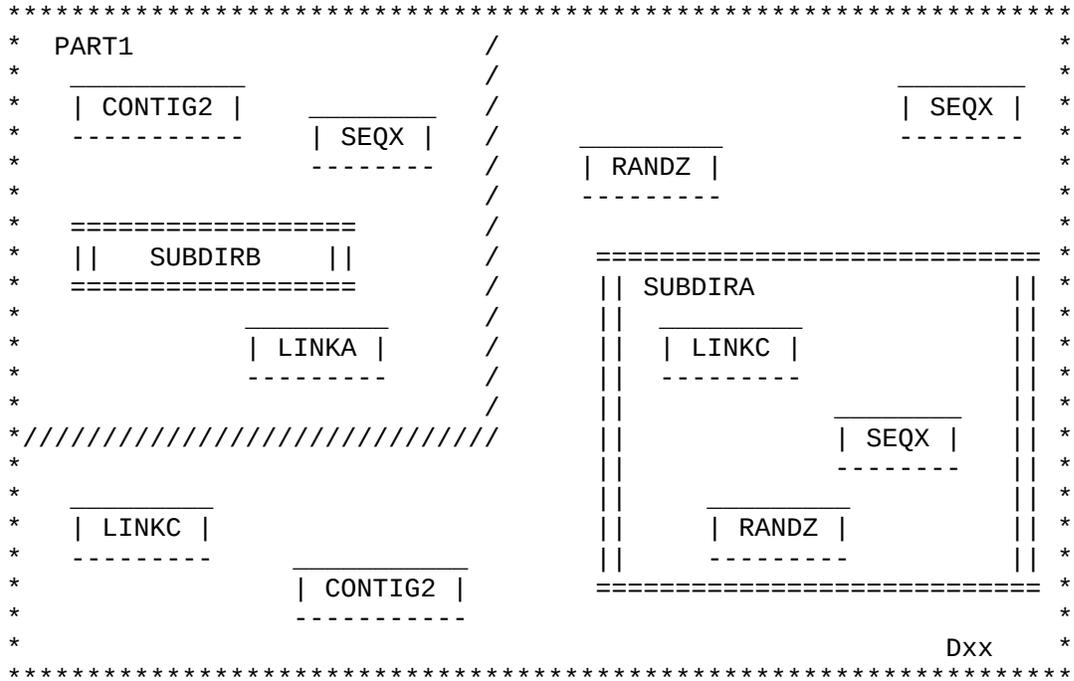==================================

     Information about any file on the RDOS disk may be obtained through the
use of the RDOS Utility LIST function. The following file information will
be displayed in the order shown: FILENAME, BYTE LENGTH (decimal), ATTRIBUTES,
DAY OF CREATION, TIME OF CREATION, DAY LAST ACCESSED, STARTING BLOCK ADDRESS
(octal), and FILE USE COUNT. Subdirectories and secondary partitions will be
listed in the manner described above, however, if the contents of a secondary
partition or subdirectory are to be displayed as well, that information will
immediately follow the directory description, starting with a directory header,
such as "DIRECTORY @DPH1:DIR1", and ending with several blank lines. Display
will resume where it left off before the listing of the contents of that
subdirectory or secondary partition. The display for a link file will consist
of the link's name and resolution. The RDOS Utility LIST command corresponds
to the RDOS CLI LIST/E/A command.

```
SAMPLE RDOS LIST DISPLAY:
=========================


    Sample Disk Space Apportioning:
    -------------------------------


        ********************************************************************
        *  PART1                       /                                   *
        *   _____                 /                         _____  *
        *  | CONTIG2 |      _____   /                         | SEQX |  *
        *  -----------    | SEQX |   /          _____        --------  *
        *                  -------   /         | RANDZ |                   *
        *                           /          ---------                   *
        *   =================      /                                       *
        *  ||   SUBDIRB   ||      /        ============================== *
        *   =================    /        || SUBDIRA                   || *
        *                _____ /        ||  _____                || *
        *               | LINKA | /        ||  | LINKC |                || *
        *                --------- /       ||  ---------                || *
        *                        /         ||               _____    || *
        *//////////////////////////////   ||              | SEQX |    || *
        *                                  ||               --------    || *
        *    _____                     ||                          || *
        *   | LINKC |                       ||   _____              || *
        *   ---------        _____    ||  | RANDZ |              || *
        *                   | CONTIG2 |    ||  ---------              || *
        *                    -----------    ============================== *
        *                                                                  *
        *                                                          Dxx    *
        ********************************************************************


        where

                ********
                *      *        represents the PRIMARY PARTITION,
                ********

                /////////
                /       /       represents a SECONDARY PARTITION,
                /////////

                =========
                ||     ||       represents a SUBDIRECTORY, and
                =========

                 _____
                |       |       represents a FILE.
                ---------


        NOTE:  In the diagrams above, each partition and subdirectory also
               has its own SYS.DR file, each partition has its own MAP.DR
               file, and each subdirectory has a copy of its parent partition's
               MAP.DR file.
```

Command Line:

  X RDOS LIST/DISK=@Dxx/T

Screen Display:

  SEQX   628   11/10/83 10:51 11/10/81 [000315] 0
  SYS.DR   29184   APWDY   03/09/83 15:53 11/10/83 [000006] 0
  SUBDIRA   512   DY   07/14/83 11:43 11/10/83 [000322] 0

  DIRECTORY @Dxx:SUBDIRA

  SEQX   628   11/10/83 10:51 11/10/83 [002767] 0
  SYS.DR   2560   APWDY   07/14/83 11:43 11/10/83 [000322] 0
  LINKC   :UTIL:FILEA
  MAP.DR   1222   APWC   07/14/83 11:43 11/10/83 [000017] 0
  RANDZ   2406   SD   10/20/83 14:10 10/20/83 [002774] 0

  LINKC   :UTIL:FILEA
  MAP.DR   1222   APWC   03/09/83 10:53 11/10/83 [000017] 0
  PART1   761856   CTY   08/17/83 16:01 11/10/83 [004305] 0

  DIRECTORY @Dxx:PART1

  SEQX   628   APWDY   11/10/83 10:51 11/10/83 [004434] 0
  SYS.DR   2560   APWDY   08/17/83 16:01 11/10/83 [004305] 0
  SUBDIRA   512   DY   10/22/83 12:30 10/22/83 [004440] 0
  LINKA   @Dxx:RANDZ
  MAP.DR   186   APWC   08/17/83 10:51 11/10/83 [004316] 0
  CONTIG2   250   C   11/02/83 17:36 11/02/83 [004420] 0

  RANDZ   2406   SD   10/20/83 14:10 10/20/83 [000265] 0
  CONTIG2   250   C   11/02/83 17:36 11/02/83 [000204] 0