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Product Code:	DEC-12-UR3A-D
Product Name:	AIPOS BUILD/INIT Internal Description
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LDP BUILD/INIT Internal Description

The program building and volume initialization functions of the LDP system are performed by the program BUILD, and its alias, INIT.

1.0 Assembly Instructions

The source for this program is named BØ1 (version 1), and is a DIAL-MS[1] source. It contains a LISTAPE CREF statement, where CREF=14, so that the output may be processed by CREF12. The source is assembled by the following sequence of DIAL-MS commands:

```
→ ZE )
→ AS BØ1,u )
→ SB BØ1,u,PØ4ØØØ )
```

2.0 Binary File Structure

Every binary file in the LDP system can be considered as having four parts:

header
primary binary
secondary binaries
scratch area

The header, which is one block long, is the first block in the file and contains information for the loader, as follows:

location (words)	information
Ø-353	unused
354-356	starting information
357	number of blocks in primary binary
36Ø-377	bit map indicating primary

---

1 LAP6-DIAL-MS is referred to as DIAL-MS in this manual.

The primary binary is the main code for the program and is loaded entirely by the loader, except for the field Ø locations reserved for the Monitor. Binary code that is used by the program, but is not loaded by the loader, is referred to as the secondary binaries. Overlays and help frames are typically secondary binaries. Programs that do not require this type of code will have no secondary binaries. A user specified number of blocks is reserved for use by the program in the scratch area, generally for swapping under control of the program. The scratch area is optional and should only be allocated for programs requiring such a facility.

Because the specific program can better define its requirements on the system, the only information AIPOS passes is the length of the file loaded and its starting block and unit number (on page 37; refer to the Monitor Internal Description). The program must determine from this the location of the secondary binaries and the scratch area.

3.0 Using INIT

The initialization program, INIT, creates LINCtapes and disks that can be used by the LDP system by placing the necessary index information and the AIPOS system (Monitor and Job Control) on the tape. To prepare an LDP tape/disk:

1. Start the LDP system by the appropriate procedure in Appendix A of AIPOS User's Manual, DEC-12-SQ1A-D.
2. When the initial Job Control display appears, type INIT and press the RETURN key.
3. The first display of the INIT program appears:

```
LDP UNIT TO INITIALIZE:

LTØ-7 LINCTAPE
DKØ-3 DISK

REPLY:
```

4. Type the mnemonic unit code for the device containing the volume to be initialized for the LDP system. This volume must be a marked LINCtape or formatted disk. Then press the RETURN key. RETURN may be pressed alone as the reply to this display to return to Job Control.

5. When an acceptable response is typed, the next display appears:

```
ENTER UP TO TEN CHARACTERS
FOR VOLUME IDENTIFICATION

REPLY:
```

6. Up to ten printing DIAL characters may be typed in for volume identification purposes. The information entered this time appears as the first entry in an index display (DX). It may be helpful to use the date created as the volume identifier.

7. After the volume identifier is entered and accepted, the next display is:

```
HOW MANY INDEX BLOCKS SHOULD BE
ALLOCATED?  (1 TO 1Ø OCTAL)
DEFAULT IS 4

REPLY:
```

The number of index blocks to be allocated to this volume is specified now. This value should be large enough to accommodate all future files because additional index blocks can only be allotted by reinitializing the volume, thereby losing all files currently on the volume. Use the following parameters as a guide in determining the number of blocks to allocate.

32_{10} index entries/index block

1st index block requires 3 entries for system use.

Each file, alias, and deletion requires an index entry. It is suggested that a tape have at least four index blocks and a disk have ten blocks.

8. Type the number of blocks to be used for the index and press the RETURN key.

9. If it is a LINCtape that is being initialized, the next display is:

```
HOW MANY BLOCKS ARE MARKED ON
THIS TAPE?  (1ØØØ TO 16ØØ OCTAL)
DEFAULT IS 16ØØ

REPLY:
```

If the tape was marked (via MARK12) for 1ØØØ blocks, type 1ØØØ; if it was marked for 16ØØ blocks, type 16ØØ. Then press the RETURN key. If the volume being initialized is an RK8 disk, a length of $626Ø_8$ blocks is assumed.

10. The next display is:

```
WHERE ARE THE SYSTEM BINARIES?

      LTØ-7     LDP TAPE
      DKØ-3     LDP DISK
      DIAL      DIAL-MS FILES
      NO        OMIT SYSTEM

REPLY:
```

If a system from another LDP volume is to be copied on to this volume, type the mnemonic unit designation for the device containing that volume. If carriage return alone is typed, the system will be copied from the current system residence device. If a new system is to be created from DIAL-MS binary files, type DIAL, which will cause the following display to appear:

```
ENTER NAME, COMMA, AND DIAL UNIT
OF LDP MONITOR BINARY.

REPLY;
```

Type the DIAL name and unit of the device where the LDP Monitor resides. For the Monitor on LINCtape DEC-12-SQAA-UO, the DIAL name is MØ1 (for version 1). The unit number is as in DIAL-MS: Ø-7 for tape and 1Ø-15, 2Ø-25, 3Ø-35 and 4Ø-45 for RK8 disk. If no system is desired on the volume being initialized (e.g., it is to be used for data only), type NO. All replies are followed by RETURN.

11. After the Monitor is copied from the specified unit onto this volume, the following display appears:

    ENTER NAME, COMMA, AND DIAL UNIT
    OF LDP JOB CONTROL BINARY.

    REPLY:

    Type the DIAL name and unit number of the device where Job Control resides. For the Job Control binary on LINCtape DEC-12-SQAA-UO, the DIAL name is JOBCTL. After it is copied, the message in step 3 reappears. Another volume may then be initialized or Job Control can be reentered.

Note that it is very poor practice to initialize the system unit because the system may be copied to different tape blocks than it had before initialization.

4.0 Using BUILD

The BUILD program modifies DIAL binary files so they can be used by the LDP system. It is implemented as follows:

1. After starting the LDP system, display the index of the volume on which binary files are to be built. Delete or rename any binary files present on the volume whose name is the same as a binary file that is to be built on that volume. (All binary file names have the extension .BIN.) When the index is correct, return to the initial Job Control display.

2. Respond to the display by typing

   BUILD unit:binfile

   where BUILD is followed by a space, unit is the mnemonic device code to contain the binary, followed by a colon, and binfile is the name of the binary file to be built. Terminate the command by pressing the RETURN key.

3. The initial BUILD display appears:

```
BUILDING binfile.BIN
ENTER NAME AND DIAL UNIT
OF PRIMARY BINARY FILE

REPLY:
```

where binfile is the name of the binary file specified in the command in step 2.

4. Type the name, a comma, and the unit (Ø-7 for tape, 1Ø-17 for disk) where the DIAL binary file to be built on the LDP volume is located, followed by a carriage return. The primary binary file is then built on the appropriate volume.

5. If the primary binary does not have load and go arguments, the following message is displayed:

```
ENTER STARTING MODE (P OR L)
AND FIELD (Ø TO 7), COMMA
AND STARTING ADDRESS.

REPLY:
```

Specify the starting mode as P for PDP-8 mode or L for LINC mode, followed by an octal digit (Ø-7) for the field. If the starting mode is not included before the octal digit, PDP-8 mode is assumed; if the field is omitted, field Ø is assumed. Then type a comma and the 1 to 4 digit starting address, followed by a carriage return. (For example, a reply of 1,2Ø means the program will be started at location 20 of field 1 in PDP-8 mode.)

6. The next display is:

```
ENTER NAME AND DIAL UNIT
OF SECONDARY BINARY FILE
STRIKE RETURN IF NO MORE.

REPLY:
```

7. Type the DIAL name, a comma, and the unit where the secondary (overlay) binary is located followed by a carriage return. The display in step 6 reappears. Additional secondary binaries may be entered. When all secondary binaries have been loaded, type RETURN as the reply to the display.

8. The next display is:

```
HOW MANY BLOCKS OF SCRATCH SPACE?
DEFAULT IS NONE.

REPLY:
```

9. Type the number of blocks of scratch space to be allocated in the binary file and press return. If none are to be allocated, just press the RETURN key.

10. The following display will appear:

```
HOW MANY WORKING AREAS
DOES THIS PROGRAM NEED?  (Ø-7)
DEFAULT IS NONE

REPLY:
```

If the program requires a certain number of output files for correct operation (DORA, for example, requires 2), type this number, followed by carriage return. If the program needs no working areas, simply press RETURN.

Whenever BUILD/INIT is waiting for completion of a mass storage read operation, the following message is displayed:

```
READING FROM dev
```

where dev is the mnemonic unit code for the device being read. Similarly, while waiting for output completion, the following message is displayed:

```
WRITING ON dev
```

These messages are intended as an aid to the user when a device is not ready or is write locked.

When a new volume is initialized, it is often inconvenient to obtain the binary files to be stored on it from DIAL-MS files. In this case, the file handling function MOVE can be used to copy binary files from one LDP volume to another.

For example, if the programs BUILD, DORA and MOVE are on disk Ø and are desired on a newly initialized tape on unit 1, the correct sequence of commands is:

```
MOVE LT1:BUILD.BIN=DKØ:BUILD.BIN ↵
MOVE LT1:DORA.BIN=DKØ:DORA.BIN ↵
MOVE LT1:MOVE.BIN=DKØ:BUILD.BIN ↵
```

Note that because INIT.BIN is an alias of BUILD.BIN, it is not necessary to MOVE it separately; the ALIAS facility of DISPLAY INDEX may be used. Similarly, all the file handling functions may be created as ALIASes of MOVE.

5.0 The Routines

The program starts at the tag "BEGIN", location 4ØØØ in field Ø. Here the name by which it was called (obtained from page 37) is checked. If the first two characters of the name are "IN", the call is assumed to be an initialization request, and control passes to INTØØØ. Otherwise, control flows to BUILD.

The loop from BUILD to NEXT examines each FDB in page 37 for output requests on mass storage devices. Each time it finds one with a non-blank name, it moves the name to the initial BUILD display, QPRIN, and calls the subroutine MAKBIN to build a binary file.

MAKBIN calls the subroutines ASK (to display a message and wait for a response on the Teletype[1]), GDIAL (to interpret an answer of the form "filename,unit", look up the file in a DIAL index, and leave the unit in ILIST, the starting block in ILIST+4, and the complement of the length in REMAIN), and CPYFIL to move the file from DIAL to LDP. If HDRSW= -1, CPYFIL interprets the first block of the input file as a header in the DIAL Loader format, and calls the routine CVH to convert the header to a form suitable for the LDP loader. If the header does not contain starting information, CVH asks the operator for that information in the form:

mf,address where m is the starting mode:
P implies PDP-8 mode
L implies LINC mode
(default is P);
f is the starting field; any octal digit, Ø assumed if not specified;
address is one to four octal digits, specifying the starting address within field f.

All mass storage I/O, in CPYFIL and elsewhere, is performed by the routines GET and PUT, which call the LDP Monitor to perform a read or write, then display a message until the operation is completed. This makes it easier for the operator to determine the cause of the problem when the system hangs due to a write lock or incorrectly selected unit.

[1] Teletype is a registered trademark of Teletype Corporation.

Volume initialization is performed starting at INTØØØ, where ASK is called to determine the unit containing the volume to be initialized. A null response (carriage return alone) causes a jump to EXIT to recall Job Control. Otherwise, GLDPU is called to interpret an LDP mnemonic unit code. The volume identification is obtained and stored at XBUF, along with the number of index blocks desired. If the unit is tape, ASK is called to obtain the number of blocks marked on the tape (number of blocks is always 626Ø on disk). This number is also saved following XBUF. At INT15Ø, the current system unit is determined by finding the I/O control block used to reload Job Control (this is the default for the next question), and ASK is called to determine the source from which to obtain the system (that is, the Monitor and Job Control). The allowable responses are:

null (carriage return alone) - use the current system unit
NO - do not put a system on the volume
DIAL - get the system from DIAL-MS binary files
LTØ-7 or DKØ-3 - use the system on the specified device

If the response is NO, control passes to INT3ØØ, which moves appropriate code into XBUF to create a "NO" index. A "NO" index is one which causes a display of NO when an attempt is made to load the system from that volume.

If the response is "DIAL", the code at INT2ØØ uses ASK and GDIAL to obtain the DIAL files containing the Monitor and Job Control, and calls CPYFIL to move them to the new LDP volume.

If the response is neither NO nor DIAL, GLDPU is called to decode the unit requested, its index is read, and (if it contains the system), the Monitor and Job Control are copied, via CPYFIL, to the new LDP volume. Control passes to INT215, where the appropriate startup code is moved into XBUF, a working area entry is created in the first file entry of the index, and XBUF is copied to field 1 for writing. All the remaining index entries are cleared, and PUT is called to write the index. Control then returns to INTØØØ to begin initialization of another volume.

6.0 Core Map

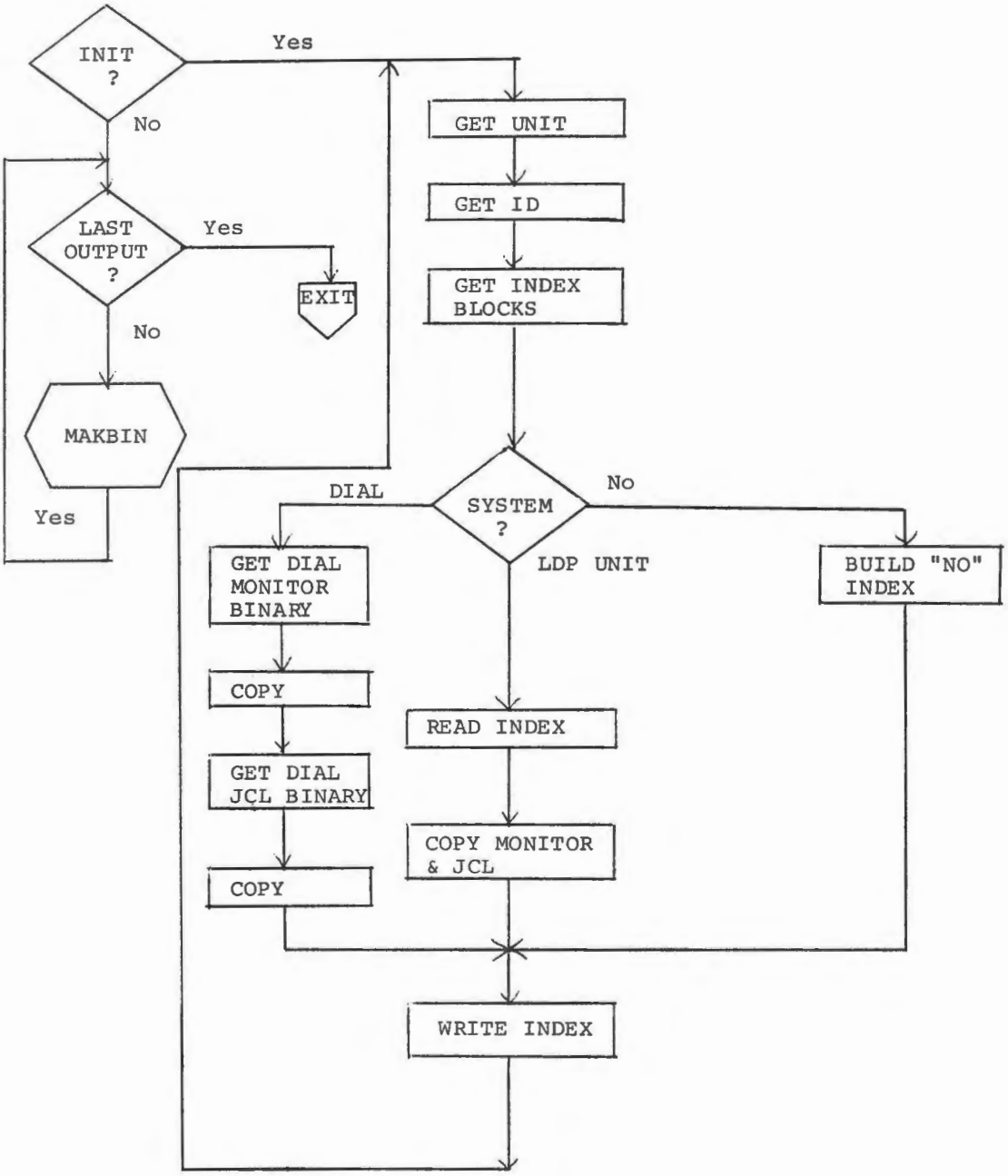
Field Ø

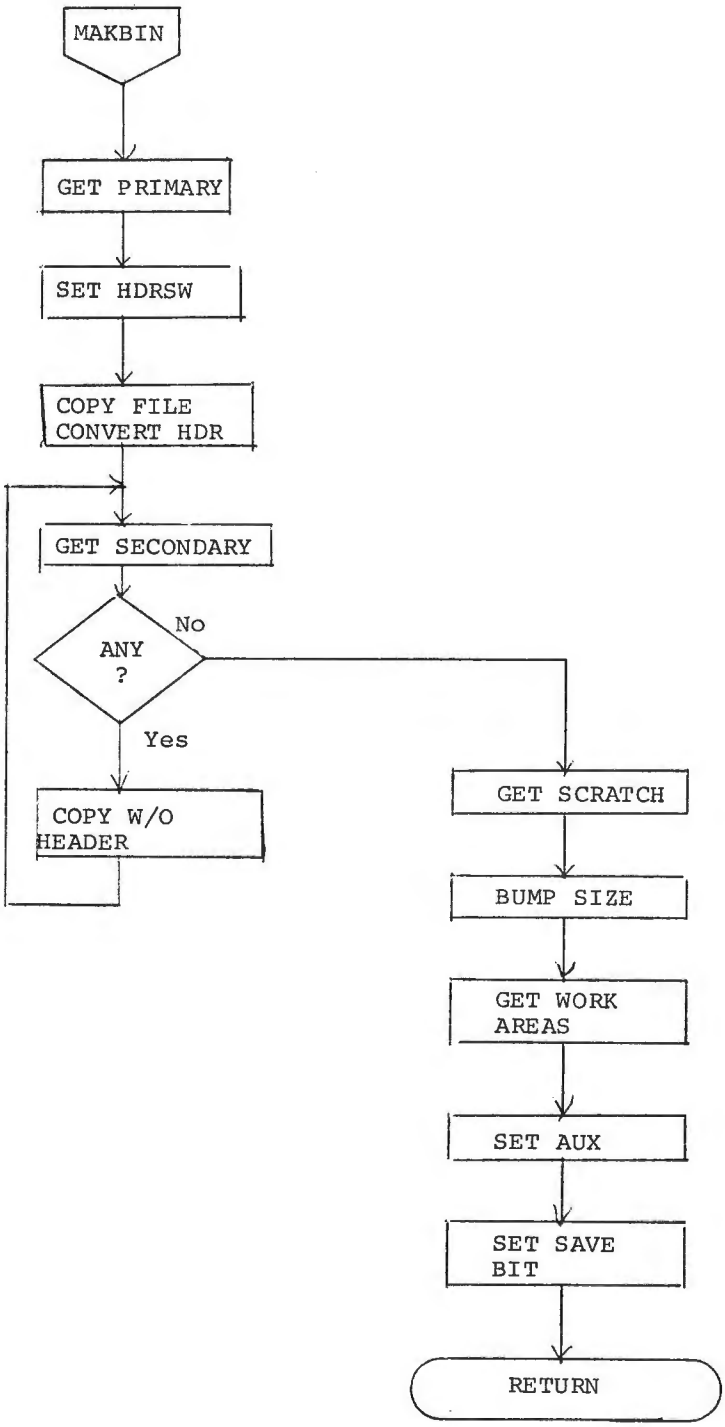
Ø- 43	Reserved for Monitor
44- 137	BUILD/INIT page Ø
14Ø-2577	Monitor
26ØØ-3777	Unused
4ØØØ-4177	Main BUILD code
42ØØ-53xx	Common subroutines
53xx-61xx	Main INIT code
61xx-7377	Index skeletons and displays
74ØØ-7577	Unused
76ØØ-7777	Page 37 information in BUILD, XBUF in INIT

Field 1

Ø-7777	CPYFIL buffer

7.0 Flowcharts




MAKBIN
GET PRIMARY
SET HDRSW
COPY FILE
CONVERT HDR
GET SECONDARY
ANY
?
No
Yes
COPY W/O
HEADER
GET SCRATCH
BUMP SIZE
GET WORK
AREAS
SET AUX
SET SAVE
BIT
RETURN

```
0000                    *20
0001                    /       LDP BINARY BUILDER
0002                    /
0003                    /COPYRIGHT 1971; DIGITAL EQUIPMENT CORP,
0004                    /                MAYNARD, MASS, 01754
0005                    /
0006                    /       VERSION 1: JAN 4, 1971
0007                    /       JUD LEONARD
0010                    /
0011                            CREF=14         /LISTAPE UNIT
0012                    /
0013                            PMODE
0014                            *44
0015                    /
0016                            TMP1=2
0017                            TMP2=3
0020                            TMP3=4
0021                            TMP4=5
0022                            TMP5=6
0023                            TMP6=7
0024                            AX0=10
0025                            AX1=11
0026                            AX2=12
0027                            AX3=13
0030                    /
0031                            READ=21
0032                            WRITE=22
0033                            EXIT=25
0034                    /
0035                            ONE=CLA IAC
0036                            TWO=ONE CLL RAL
0037                            THREE=TWO STL
0040                            FOUR=TWO RTL
0041                            SIX=FOUR STL
0042                            MONE=CLA CMA
0043                            MTWO=MONE CLL RAL
0044                            MTHREE=MTWO RTL
0045                            AC4000=CLA STL RAR
0046                            AC2000=AC4000 RTR
0047                            AC6000=AC2000 IAC
0050                    /
0051                    /
0052    0044    4225    ASK,    ASK00
0053    0045    4331    TELL,   TEL00
0054    0046    4400    GDIAL,  GDL00
0055    0047    5256    GLDPU,  GLU00
0056    0050    4620    CPYFIL, CFL00
0057    0051    4200    NUMBER, NUM00
0060    0052    4161    UPLEN,  UPL00
0061    0053    5200    GET,    GET00
0062    0054    5215    PUT,    PUT00
0063    0055    4600    LIMIT,  XLIMIT
0064                    /
0065                    XBUF=   7600            /BUFFER FOR INDEX CONSTRUCTION
0066                                            /DURING INITIALIZATION
0067    0056    7577    PXBUF,  XBUF-1
0070    0057    7606    PXLEN,  XBUF+6
0071    0060    7607    PVLEN,  XBUF+7
0072                    /
0073                            EJECT
```

```
0074                        /
0075        0061    0000    P0,     0
0076        0062    0001    P1,     1
0077        0063    0002    P2,     2
0100        0064    0003    P3,     3
0101        0065    0007    P7,     7
0102        0066    0010    P10,    10
0103        0067    0020    P20,    20
0104        0070    0030    P30,    30
0105        0071    0070    P70,    70
0106        0072    0077    P77,    77
0107        0073    1000    P1000,  1000
0110        0074    0337    P337,   337
0111        0075    0353    P353,   353
0112        0076    7774    M4,     -4
0113        0077    7773    M5,     -5
0114        0100    7772    M6,     -6
0115        0101    7770    M10,    -10
0116        0102    7764    M14,    -14
0117        0103    7760    M20,    -20
0120        0104    7740    M40,    -40
0121        0105    7700    M100,   -100
0122        0106    7424    M354,   -354
0123        0107    7400    M400,   -400
0124        0110    4355    PMLIST, MLIST-1
0125        0111    0000    REMAIN, 0
0126        0112    0000    WALEFT, 0
0127        0113    0000    HDRSW,  0
0130        0114    7563    MCR,    -215
0131        0115    7524    MCOMMA, -254
0132        0116    0254    COMMA,  254
0133        0117    7460    MCP,    -320
0134        0120    0004    CPMCL,  320-314
0135        0121    0314    CL,     314
0136                        /
0137                        /
0140        0122    0000    OLIST,  0
0141        0123    6211            CDF     10
0142        0124    0000            0               /BUFFER ADDR
0143        0125    0000            0               /BUFFER LEN
0144        0126    0000            0               /START BLOCK
0145        0127    0000            0
0146        0130    0000            0
0147                        /
0150        0131    0000    ILIST,  0
0151        0132    6211            CDF     10
0152        0133    0000            0               /BUFFER ADDR
0153        0134    0000            0               /BUFFER LEN
0154        0135    0000            0               /START BLOCK
0155        0136    0000            0
0156        0137    0000            0
0157                        /
0160                        /
0161                        ASMIFM  140-,
0162                    ERROR       /OVERFLOW OF PAGE 0
0163                        /
0164                        EJECT
-
```

```
0165                    /
0166                            *4000
0167                    /
0170                    /
0171                    /       ENTER HERE FOR ALL FUNCTIONS
0172                    /
0173                    /
0174                    /       IT WOULD BE NICE TO INCLUDE
0175                    /       THE TAPE AND DISK FORMATTING
0176                    /       ROUTINES IN THIS PROGRAM.
0177                    /
0200                    /
0201    4000    6201    BEGIN,  CDF     0
0202    4001    7200            CLA
0203    4002    1354            TAD     PLDNAM  /POINT TO LOAD NAME
0204    4003    3010            DCA     AX0
0205    4004    1410            TAD I   AX0
0206    4005    1351            TAD     MTIN    /COMPARE "IN"
0207    4006    7650            SNA CLA
0210    4007    5760            JMP I   INIT    /DO INITIALIZATION
0211                    /
0212                    /
0213                            EJECT
-
```

```
0214                    /
0215                    /       BUILD
0216                    /
0217        4010  1755  BUILD,  TAD I   PFILE   /GET OUTPUT UNIT
0220        4011  3122          DCA     OLIST
0221        4012  1122          TAD     OLIST
0222        4013  7004          RAL
0223        4014  7700          SMA CLA         /OUTPUT?
0224        4015  5425          JMP I   EXIT    /NO - THATS ALL
0225        4016  1355          TAD     PFILE
0226        4017  3010          DCA     AX0
0227        4020  1410          TAD I   AX0     /BLOCK LEN
0230        4021  1107          TAD     M400    /COMPARE 400
0231        4022  7640          SZA CLA         /EQUAL?
0232        4023  5263          JMP     NEXT    /NO - GO TO NEXT OFILE
0233        4024  1010          TAD     AX0
0234        4025  3011          DCA     AX1
0235        4026  1411          TAD I   AX1     /CHECK FOR BLANK NAME
0236        4027  1352          TAD     MBLNKS
0237        4030  7650          SNA CLA
0240        4031  5263          JMP     NEXT
0241        4032  1353          TAD     PONAME
0242        4033  3011          DCA     AX1
0243        4034  7346          MTHREE
0244        4035  3002          DCA     TMP1
0245        4036  1410          TAD I   AX0     /MOVE NAME
0246        4037  3411          DCA I   AX1     /TO DISPLAY BUFFER
0247        4040  2002          ISZ     TMP1
0250        4041  5236          JMP     .-3
0251        4042  1347          TAD     TPTB    /",B"
0252        4043  3410          DCA I   AX0
0253        4044  1350          TAD     TIN     /"IN"
0254        4045  3410          DCA I   AX0
0255        4046  1066          TAD     P10
0256        4047  1355          TAD     PFILE   /POINT TO START
0257        4050  3356          DCA     PSTRT
0260        4051  7201          ONE
0261        4052  1356          TAD     PSTRT   /POINT TO LENGTH
0262        4053  3357          DCA     PLEN
0263        4054  1757          TAD I   PLEN
0264        4055  7041          CIA
0265        4056  3112          DCA     WALEFT  /REMAINING SPACE FOR OUTPUT
0266        4057  3757          DCA I   PLEN    /CLEAR LENGTH
0267        4060  1756          TAD I   PSTRT
0270        4061  3126          DCA     OLIST+4 /OUTPUT START BLOCK
0271        4062  4272          JMS     MAKBIN  /ASK THE QUESTIONS
0272        4063  1346  NEXT,   TAD     P12
0273        4064  1355          TAD     PFILE
0274        4065  3355          DCA     PFILE
0275        4066  2271          ISZ     FDBCNT
0276        4067  5210          JMP     BUILD   /LOOP FOR NEXT
0277        4070  5425          JMP I   EXIT    /UP TO EIGHT
0300                    /
0301        4071  7770  FDBCNT, -10
0302                    /
0303                    EJECT
-
```

```
0304                    /
0305                    /
0306    4072    0000    MAKBIN, 0
0307                    /
0310                    /       GET PRIMARY BINARY FILE
0311                    /
0312    4073    4444    GETPRI, JMS I   ASK
0313    4074    6140            QPRIM           /NAME OF INPUT PRIMARY
0314    4075    5263            JMP     NEXT
0315    4076    4446            JMS I   GDIAL   /LOOK IT UP
0316    4077    5273            JMP     GETPRI  /NO FIND
0317    4100    7240            MONE
0320    4101    3113            DCA     HDRSW   /CONVERT HEADER
0321    4102    4450            JMS I   CPYFIL  /COPY THE FILE
0322                    /
0323                    /       SECONDARY BINARIES?
0324                    /
0325    4103    4444    GETSEC, JMS I   ASK
0326    4104    6212            QSECN           /NAME OF SECONDARY, IF ANY
0327    4105    5314            JMP     GETSCR  /NONE - GET SCRATCH AREA
0330    4106    4446            JMS I   GDIAL   /LOOK IT UP
0331    4107    5303            JMP     GETSEC  /NO FIND
0332    4110    2135            ISZ     ILIST+4 /IGNORE HEADER
0333    4111    2111            ISZ     REMAIN
0334    4112    4450            JMS I   CPYFIL  /COPY THIS FILE
0335    4113    5303            JMP     GETSEC  /AND GO FOR ANOTHER
0336                    /
0337                    /       ASK ABOUT SCRATCH AREA
0340                    /
0341    4114    4444    GETSCR, JMS I   ASK
0342    4115    6267            QSCR            /SIZE OF SCRATCH AREA
0343    4116    5322            JMP     GETWAS  /ZERO
0344    4117    4451            JMS I   NUMBER  /CONVERT TO BINARY
0345    4120    5314            JMP     GETSCR
0346    4121    4452            JMS I   UPLEN   /UPDATE LENGTH
0347                    /
0350                    /       HOW MANY WORKING AREAS ARE NEEDED?
0351                    /
0352    4122    4444    GETWAS, JMS I   ASK
0353    4123    6327            QWAS            /NO OF WAS
0354    4124    7000            NOP
0355    4125    4451            JMS I   NUMBER  /CONVERT
0356    4126    5322            JMP     GETWAS  /ERROR
0357    4127    7510            SPA             /MUST BE POS
0360    4130    5322            JMP     GETWAS
0361    4131    1101            TAD     M10
0362    4132    7700            SMA CLA         /MUST BE LT 10
0363    4133    5322            JMP     GETWAS
0364    4134    7240            MONE
0365    4135    1356            TAD     PSTRT   /AUX IS BEFORE START
0366    4136    3006            DCA     TMP5
0367    4137    1002            TAD     TMP1    /REGET WA COUNT
0370    4140    3406            DCA I   TMP5    /SET AUX
0371                    /
0372                    /
0373    4141    1755            TAD I   PFILE
0374    4142    7004            RAL
0375    4143    7130            STL RAR         /SET SAVE BIT
0376    4144    3755            DCA I   PFILE
0377    4145    5672            JMP I   MAKBIN  /RETURN, BIN IS MADE
```

```
0402                        /
0403        4146  0012  P12,    12
0404        4147  5602  TPTB,   5602
0405        4150  1116  TIN,    1116
0406        4151  6662  MTIN,   -1116
0407        4152  3740  MBLNKS, -4040
0410        4153  6152  PONAME, ONAME-1
0411        4154  7613  PLONAM, 7613
0412        4155  7624  PFILE,  7624
0413        4156  7634  PSTRT,  7634
0414        4157  7635  PLEN,   7635
0415        4160  5317  INIT,   INT000
0416                        /
0417                        /
0420                        /       UPDATE FILE LENGTH BY NUMBER IN AC
0421                        /
0422        4161  0000  UPL000, 0
0423        4162  3002          DCA     TMP1
0424        4163  7300          CLA CLL
0425        4164  1002          TAD     TMP1
0426        4165  1112          TAD     WALEFT
0427        4166  3112          DCA     WALEFT
0430        4167  7430          SZL
0431        4170  5375          JMP     UPL010
0432        4171  1002          TAD     TMP1
0433        4172  1757          TAD I   PLEN
0434        4173  3757          DCA I   PLEN
0435        4174  5761          JMP I   UPL000
0436                        /
0437        4175  4445  UPL010, JMS I   TELL    /NO ROOM
0440        4176  6460          TOOBIG
0441        4177  5425          JMP I   EXIT
0442                        /
0443                        EJECT
-
```

```
0444                    /
0445                    /
0446                            PAGE
0447                    /
0450                    /
0451                    /       CONVERT ANSWER TO BINARY IN AC AND TMP1
0452                    /
0453    4200    0000    NUM000, 0
0454    4201    7200            CLA
0455    4202    3002    NUM010, DCA     TMP1    /CLEAR RESULT
0456    4203    1411            TAD I   AX1     /GET CHAR
0457    4204    4455            JMS I   LIMIT   /IS IT NUMERIC?
0460    4205    7520    NUM020, -260
0461    4206    7511            -267
0462    4207    5217            JMP     NUM030  /NO - VERIFY CR
0463    4210    1205            TAD     NUM020  /YES
0464    4211    7112            CLL RTR
0465    4212    7010            RAR
0466    4213    1002            TAD     TMP1
0467    4214    7006            RTL
0470    4215    7004            RAL
0471    4216    5202            JMP     NUM010  /NEW RESULT
0472                    /
0473    4217    1114    NUM030, TAD     MCR     /IS CHAR CR?
0474    4220    7640            SZA CLA
0475    4221    5600            JMP I   NUM000  /NO - ERROR RETURN
0476    4222    2200            ISZ     NUM000  /YES - GOOD RETURN
0477    4223    1002            TAD     TMP1    /GET ANSWER
0500    4224    5600            JMP I   NUM000  /AND RETURN
0501                    /
0502                            EJECT
-
```

```
0503                    /
0504                    /       GET USER RESPONSE
0505                    /
0506        4225  0000  ASK000, 0
0507        4226  7200          CLA
0510        4227  1102          TAD     M14
0511        4230  3002          DCA     TMP1
0512        4231  1262          TAD     PRPLY
0513        4232  3011          DCA     AX1
0514        4233  3411          DCA I   AX1     /CLEAR REPLY BUFFER
0515        4234  2002          ISZ     TMP1
0516        4235  5233          JMP     .-2
0517        4236  4421          JMS I   READ
0520        4237  4263          ASK100
0521        4240  1625          TAD I   ASK000  /GET QUESTION ADDRESS
0522        4241  3246          DCA     ASK020
0523        4242  2225          ISZ     ASK000
0524        4243  4422  ASK010, JMS I   WRITE   /DISPLAY REPLY
0525        4244  4272          ASK110
0526        4245  4422          JMS I   WRITE   /QUESTION
0527        4246  0000  ASK020, 0
0530        4247  1263          TAD     ASK100  /READ DONE?
0531        4250  7710          SPA CLA
0532        4251  5243          JMP     ASK010  /NO - LOOP ON DISPLAY
0533        4252  1665          TAD I   ASK100+2/FIRST CHAR
0534        4253  1114          TAD     MCR     /CR?
0535        4254  7650          SNA CLA
0536        4255  5625          JMP I   ASK000  /YES - TAKE NULL RETURN
0537        4256  2225          ISZ     ASK000
0540        4257  1262          TAD     PRPLY
0541        4260  3011          DCA     AX1     /SET POINTER
0542        4261  5625          JMP I   ASK000
0543                    /
0544                    /
0545        4262  4313  PRPLY,  ANSWER-1
0546                    /
0547        4263  0040  ASK100, 40              /TTY INPUT
0550        4264  6201          CDF     0
0551        4265  4314          ANSWER
0552        4266  0014          14
0553        4267  0000          0
0554        4270  0000          0
0555        4271  0000          0
0556                    /
0557        4272  0060  ASK110, 60              /DISPLAY ASCII
0560        4273  6201          CDF     0
0561        4274  4276          ABUF
0562        4275  0032          ANSWER-ABUF+14
0563                    /
0564                    EJECT
-
```

```
0565                    /
0566    4276    0212    ABUF,   212;
0566    4277    0212    212;
0566    4300    0212    212;
0566    4301    0212    212;
0566    4302    0212    212;
0566    4303    0212    212;
0566    4304    0212    212;
0566    4305    0212    212
0567    4306    0322            322;
0567    4307    0305    305;
0567    4310    0320    320;
0567    4311    0314    314;
0567    4312    0331    331;
0567    4313    0272    272
0570    4314    0000    ANSWER, 0
0571                    *.+13
0572    4330    0215            215             /AUTOMATIC CR
0573                    /
0574                    /       DISPLAY UNTIL ANYTHING TYPED
0575                    /
0576    4331    0000    TEL000, 0
0577    4332    7200            CLA
0600    4333    6201            CDF     0
0601    4334    1731            TAD I   TEL000
0602    4335    3342            DCA     TEL020
0603    4336    2331            ISZ     TEL000
0604    4337    4421            JMS I   READ
0605    4340    4347            TEL100
0606    4341    4422    TEL010, JMS I   WRITE
0607    4342    0000    TEL020, 0
0610    4343    1347            TAD     TEL100
0611    4344    7710            SPA CLA
0612    4345    5341            JMP     TEL010
0613    4346    5731            JMP I   TEL000
0614                    /
0615    4347    0040    TEL100, 40
0616    4350    6201            CDF     0
0617    4351    4353            .+2
0620    4352    0001            1
0621    4353    0000            0
0622    4354    0000            0
0623    4355    0000            0
0624                    /
0625                    /
0626    4356    7777    MLIST,  -1              /SPACE FOR DIAL
0627    4357    7777            -1              /FILE NAME
0630    4360    7777            -1
0631    4361    7777            -1
0632                    EJECT
-
```

```
0633                    /
0634                            PAGE
0635                    /
0636                    /       GET A DIAL FILE
0637                    /
0640    4400    0000    GDL000, 0
0641    4401    7200            CLA
0642    4402    1110            TAD     PMLIST  /POINTER TO MILDRED LIST
0643    4403    3012            DCA     AX2
0644    4404    1076            TAD     M4      /NAME LENGTH COUNTER
0645    4405    3002            DCA     TMP1
0646    4406    7240    GDL010, MONE            /SET NAME
0647    4407    3412            DCA I   AX2     /TO 77S
0650    4410    2002            ISZ     TMP1
0651    4411    5206            JMP     GDL010
0652    4412    1110            TAD     PMLIST  /SET POINTER
0653    4413    3003            DCA     TMP2
0654    4414    1374            TAD     M11     /AND COUNT
0655    4415    3002            DCA     TMP1
0656    4416    1002    GDL020, TAD     TMP1
0657    4417    7010            RAR             /LOW COUNT TO LINK
0660    4420    7630            SZL CLA
0661    4421    7240            MONE
0662    4422    3004            DCA     TMP3    /SET HALF SWITCH
0663    4423    1411            TAD I   AX1     /GET CHAR
0664    4424    1115            TAD     MCOMMA
0665    4425    7450            SNA             /COMMA?
0666    4426    5247            JMP     GDL050  /YES
0667    4427    1116            TAD     COMMA   /NO- RESTORE
0670    4430    0072            AND     P77
0671    4431    1105            TAD     M100    /FORCE H=0 77S
0672    4432    2004            ISZ     TMP3    /LEFT CHAR?
0673    4433    5240            JMP     GDL030  /NO
0674    4434    7126            RTL STL
0675    4435    7006            RTL
0676    4436    7006            RTL
0677    4437    2003            ISZ     TMP2    /BUMP ADDR
0700    4440    0403    GDL030, AND I   TMP2
0701    4441    3403            DCA I   TMP2
0702    4442    2002            ISZ     TMP1    /CHECK COUNTER
0703    4443    5216            JMP     GDL020  /OK - GET NEXT
0704    4444    4445            JMS I   TELL
0705    4445    6510            BADNAM
0706    4446    5600            JMP I   GDL000  /TOO MANY CHARS
0707                    /
0710                            EJECT
-
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```
0711                        /
0712    4447    1370  GDL050, TAD     DXBLK   /INDEX BLOCK NO
0713    4450    3135          DCA     ILIST+4
0714    4451    4451          JMS I   NUMBER  /GOT COMMA, FIND UNIT
0715    4452    4315          JMS     GDL070  /INVALID UNIT
0716    4453    1101          TAD     M10     /DISK?
0717    4454    7510          SPA
0720    4455    5270          JMP     GDL060  /NO, TAPE
0721    4456    0065          AND     P7
0722    4457    7112          CLL RTR
0723    4460    7012          RTR
0724    4461    1370          TAD     DXBLK   /ADDRESS CORRECT INDEX
0725    4462    3135          DCA     ILIST+4
0726    4463    1002          TAD     TMP1    /GET UNIT AGAIN
0727    4464    1101          TAD     M10
0730    4465    0101          AND     M10
0731    4466    7112          CLL RTR
0732    4467    7010          RAR
0733    4470    1070  GDL060, TAD     P30
0734    4471    4455          JMS I   LIMIT   /CHECK RESULT
0735    4472    7760          -20
0736    4473    7745          -33
0737    4474    5315          JMP     GDL070  /INVALID UNIT
0740    4475    3131          DCA     ILIST
0741    4476    1073          TAD     P1000   /INDEX LEN
0742    4477    3134          DCA     ILIST+3
0743    4500    4453          JMS I   GET
0744                        /
0745                        /       SCAN THE INDEX FOR SPECIFIED NAME
0746                        /
0747    4501    1105          TAD     M100
0750    4502    3002          DCA     TMP1
0751    4503    7240          MONE
0752    4504    3010          DCA     AX0
0753    4505    6211          CDF     10
0754    4506    1410          TAD I   AX0     /LOOK FOR 5757
0755    4507    1371          TAD     M5757
0756    4510    7650          SNA CLA
0757    4511    5320          JMP     GDL100  /GOOD DIAL INDEX
0760    4512    4445          JMS I   TELL
0761    4513    6562          NOTX
0762    4514    5600          JMP I   GDL000
0763                        /
0764                        /       UNIT IS INVALID
0765                        /
0766    4515    4445  GDL070, JMS I   TELL
0767    4516    6527          INVU            /UNIT IS INVALID
0770    4517    5600          JMP I   GDL000
0771                        /
0772                        EJECT
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0773                    /
0774                    /       LOOK AT NEXT INDEX ENTRY
0775                    /
0776    4520    1010    GDL100, TAD     AX0
0777    4521    0101            AND     M10     /GO TO NEXT 8
1000    4522    1065            TAD     P7
1001    4523    3010            DCA     AX0
1002    4524    2002            ISZ     TMP1    /CHECK COUNT
1003    4525    5331            JMP     GDL120  /LOOK AT NEXT
1004                    /
1005                    /       NO FIND
1006                    /
1007    4526    4445    GDL110, JMS I   TELL
1010    4527    6544            NOFIND
1011    4530    5600            JMP I   GDL000
1012                    /
1013                    /       COMPARE THIS ENTRY
1014                    /
1015    4531    1110    GDL120, TAD     PMLIST
1016    4532    3011            DCA     AX1
1017    4533    1076            TAD     M4
1020    4534    3003            DCA     TMP2
1021    4535    6201    GDL130, CDF     0
1022    4536    1411            TAD I   AX1
1023    4537    7041            CIA
1024    4540    6211            CDF     10
1025    4541    1410            TAD I   AX0
1026    4542    7640            SZA CLA
1027    4543    5320            JMP     GDL100
1030    4544    2003            ISZ     TMP2
1031    4545    5335            JMP     GDL130
1032                    /
1033                    /       WE HAVE FOUND A NAME MATCH
1034                    /
1035    4546    2010            ISZ     AX0     /SKIP SOURCE
1036    4547    2010            ISZ     AX0
1037    4550    1410            TAD I   AX0     /START OF BINARY
1040    4551    7510            SPA             /DOES IT EXIST?
1041    4552    5326            JMP     GDL110  /NO, AND SO CLOSE...
1042    4553    0372            AND     P777
1043    4554    3002            DCA     TMP1
1044    4555    1135            TAD     ILIST+4
1045    4556    0373            AND     M1000
1046    4557    1002            TAD     TMP1
1047    4560    3135            DCA     ILIST+4
1050    4561    1410            TAD I   AX0     /LENGTH
1051    4562    0372            AND     P777
1052    4563    7041            CIA
1053    4564    3111            DCA     REMAIN
1054    4565    6201            CDF     0
1055    4566    2200            ISZ     GDL000  /TAKE OK RETURN
1056    4567    5600            JMP I   GDL000
1057                    /
1060    4570    0346    DXBLK,  346             /DIAL INDEX BLOCK
1061    4571    2021    M5757,  -5757
1062    4572    0777    P777,   777
1063    4573    7000    M1000,  -1000
1064    4574    7767    M11,    -11
1065                    /
1066                    EJECT
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1067                    /
1070                            PAGE
1071                    /
1072                    /       CHECK FOR AC WITHIN BOUNDS
1073                    /
1074    4600    0000    XLIMIT, 0
1075    4601    3217            DCA     XLIM    /HOLD AC
1076    4602    7100            CLL
1077    4603    1217            TAD     XLIM
1100    4604    1600            TAD I   XLIMIT  /COMPARE LOWER
1101    4605    2200            ISZ     XLIMIT
1102    4606    7620            SNL CLA         /SKIP IF GE
1103    4607    5214            JMP     .+5     /OUT OF BOUNDS
1104    4610    1217            TAD     XLIM
1105    4611    1600            TAD I   XLIMIT  /COMPARE UPPER
1106    4612    7670            SZL SNA CLA     /SKIP IF GT
1107    4613    2200            ISZ     XLIMIT  /IN BOUNDS
1110    4614    2200            ISZ     XLIMIT
1111    4615    1217            TAD     XLIM    /RESTORE AC
1112    4616    5600            JMP I   XLIMIT
1113                    /
1114    4617    0000    XLIM,   0
1115                    /
1116                    /       COPY FILE
1117                    /
1120    4620    0000    CFL000, 0
1121    4621    7300            CLA CLL
1122    4622    1111            TAD     REMAIN
1123    4623    7041            CIA
1124    4624    4452            JMS I   UPLEN   /UPDATE FILE LENGTH
1125    4625    3134            DCA     ILIST+3 /SET LENGTHS
1126    4626    3125            DCA     OLIST+3 /TO 4096
1127    4627    7300    CFL100, CLA CLL
1130    4630    1067            TAD     P20
1131    4631    1111            TAD     REMAIN
1132    4632    7420            SNL             /IS THAT ALL?
1133    4633    5245            JMP     CFL110  /NO - COPY 20 AND COME BACK
1134    4634    7112            CLL RTR
1135    4635    7012            RTR
1136    4636    7010            RAR
1137    4637    7041            CIA
1140    4640    3134            DCA     ILIST+3 /SET SHORT LENGTH
1141    4641    1134            TAD     ILIST+3
1142    4642    3125            DCA     OLIST+3
1143    4643    1111            TAD     REMAIN
1144    4644    7041            CIA             /SET POS LAST LEN
1145    4645    3111    CFL110, DCA     REMAIN  /SET NEW REMAINDER
1146    4646    4453            JMS I   GET
1147    4647    2113            ISZ     HDRSW   /DO WE HAVE HEADER?
1150    4650    5306            JMP     CFL120  /NO
1151    4651    5652            JMP I   .+1     /YES, CONVERT IT
1152    4652    5000            CVH000
1153                    /
1154                            EJECT
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1155                    /
1156                    /       CLEANUP HEADER
1157                    /
1160        4653  1731  CVH180, TAD I   P4
1161        4654  0332          AND     P3700    /CHECK FOR LOW LOAD
1162        4655  7640          SZA CLA
1163        4656  5321          JMP     CFL130   /TOO BAD
1164        4657  1075          TAD     P353
1165        4660  3013          DCA     AX3      /MOVE START & MAP TO 354
1166        4661  7240          MONE
1167        4662  3012          DCA     AX2      /FROM 0
1170        4663  1101          TAD     M10      /10 WORDS
1171        4664  3002          DCA     TMP1
1172        4665  1412  CVH190, TAD I   AX2
1173        4666  3413          DCA I   AX3
1174        4667  2002          ISZ     TMP1
1175        4670  5265          JMP     CVH190
1176        4671  1102          TAD     M14      /CLEAR TO END OF MAP
1177        4672  3002          DCA     TMP1
1200        4673  3413          DCA I   AX3
1201        4674  2002          ISZ     TMP1
1202        4675  5273          JMP     .-2
1203        4676  7240          MONE
1204        4677  3013          DCA     AX3      /CLEAR BEGINNING OF BLOCK
1205        4700  1106          TAD     M354
1206        4701  3002          DCA     TMP1
1207        4702  3413          DCA I   AX3
1210        4703  2002          ISZ     TMP1
1211        4704  5302          JMP     .-2
1212        4705  6201          CDF     0
1213                    /
1214                    EJECT
-
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```
1215                        /
1216                        /       NOW WRITE THE SAME
1217                        /
1220    4706    4454    CFL120, JMS I   PUT
1221    4707    1111            TAD     REMAIN  /ANY MORE TO GO?
1222    4710    7700            SMA CLA
1223    4711    5325            JMP     CFL140  /NO
1224    4712    1067            TAD     P20     /YES - UPDATE STARTING BLOCKS
1225    4713    1135            TAD     ILIST+4
1226    4714    3135            DCA     ILIST+4
1227    4715    1067            TAD     P20
1230    4716    1126            TAD     OLIST+4 /SAME FOR OUTPUT
1231    4717    3126            DCA     OLIST+4
1232    4720    5227            JMP     CFL100  /DO NEXT 20 BLOCKS
1233                        /
1234                        /       BINARY LOADS BELOW 3000
1235                        /
1236    4721    4445    CFL130, JMS I   TELL
1237    4722    6600            TOOLOW
1240    4723    5724            JMP I   .+1
1241    4724    4063            NEXT
1242                        /
1243                        /       COPY IS COMPLETE
1244                        /       UPDATE OLIST BLOCK NUMBER
1245                        /
1246    4725    1111    CFL140, TAD     REMAIN  /LEN OF LAST
1247    4726    1126            TAD     OLIST+4 /PLUS START BLOCK
1250    4727    3126            DCA     OLIST+4 /IS NEXT START
1251    4730    5620            JMP I   CFL000  /DONE
1252                        /
1253    4731    0004    P4,     4
1254    4732    3700    P3700,  3700
1255                        /
1256                        EJECT
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1257                    /
1260                            PAGE
1261                    /
1262                    /       CONVERT HEADER
1263                    /
1264    5000    6211    CVH000, CDF     10
1265    5001    7344            MTWO
1266    5002    1461            TAD I   P0
1267    5003    7450            SNA                     /DIAL PMODE START?
1270    5004    5320            JMP     CVH110  /YES
1271    5005    7700            SMA CLA                 /WAS START INFO GIVEN?
1272    5006    5322            JMP     CVH120  /YES
1273                    /
1274                    /       GET STARTING MODE AND ADDRESS
1275                    /
1276    5007    6201            CDF     0
1277    5010    4444    CVH020, JMS I   ASK     /GET START INFO
1300    5011    6403            QSTRT
1301    5012    5210            JMP     CVH020  /MUST RESPOND
1302    5013    3003            DCA     TMP2    /SET PMODE
1303    5014    3004            DCA     TMP3
1304    5015    1411            TAD I   AX1     /GET FIRST CHAR
1305    5016    4455            JMS I   LIMIT   /NUMERIC?
1306    5017    7520            -260
1307    5020    7511            -267
1310    5021    5274            JMP     CVH060  /NO - GET P, L, OR COMMA
1311    5022    0065    CVH030, AND     P7
1312    5023    3004            DCA     TMP3
1313    5024    1411            TAD I   AX1     /NEXT MUST BE COMMA
1314    5025    1115    CVH040, TAD     MCOMMA
1315    5026    7640            SZA CLA
1316    5027    5210            JMP     CVH020  /ILLEGAL INPUT
1317    5030    4451            JMS I   NUMBER  /CONVERT ADDRESS
1320    5031    5210            JMP     CVH020  /ILLEGAL INPUT
1321    5032    7200            CLA
1322    5033    6211            CDF     10
1323    5034    2003            ISZ     TMP2    /P OR L START?
1324    5035    5262            JMP     CVH050  /P
1325    5036    1315            TAD     KLINC
1326    5037    3461            DCA I   P0
1327    5040    1002            TAD     TMP1
1330    5041    7104            CLL RAL
1331    5042    3002            DCA     TMP1
1332    5043    1004            TAD     TMP3
1333    5044    7004            RAL
1334    5045    3004            DCA     TMP3
1335    5046    1002            TAD     TMP1
1336    5047    7104            CLL RAL
1337    5050    3002            DCA     TMP1
1340    5051    1004            TAD     TMP3
1341    5052    7004            RAL
1342    5053    1314            TAD     KLIF
1343    5054    3462            DCA I   P1
1344    5055    7321            ONE STL
1345    5056    1002            TAD     TMP1
1346    5057    7012            RTR
1347    5060    3463            DCA I   P2
1350    5061    5345            JMP     CVH150
1351                    /
1352                            EJECT
-
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```
1353                        /
1354        5062  1004  CVH050, TAD     TMP3    /START FIELD
1355        5063  7106          CLL RTL
1356        5064  7004          RAL
1357        5065  1316          TAD     KCIF    /BUILD CIF
1360        5066  3461          DCA I   P0
1361        5067  1317          TAD     JMPI377
1362        5070  3462          DCA I   P1
1363        5071  1002          TAD     TMP1
1364        5072  3463          DCA I   P2
1365        5073  5345          JMP     CVH150
1366                        /
1367        5074  1117  CVH060, TAD     MCP     /IS IT PMODE?
1370        5075  7450          SNA
1371        5076  5306          JMP     CVH080  /YES
1372        5077  1120          TAD     CPMCL   /IS IT LMODE?
1373        5100  7450          SNA
1374        5101  5304          JMP     CVH070
1375        5102  1121          TAD     CL      /RESTORE CHAR
1376        5103  5225          JMP     CVH040
1377                        /
1400        5104  7240  CVH070, MONE
1401        5105  3003          DCA     TMP2    /L SWITCH
1402        5106  1411  CVH080, TAD I   AX1
1403        5107  4455          JMS I   LIMIT
1404        5110  7520          -260
1405        5111  7511          -267
1406        5112  5225          JMP     CVH040
1407        5113  5222          JMP     CVH030
1410                        /
1411        5114  0600  KLIF,   600
1412        5115  6141  KLINC,  LINC
1413        5116  6202  KCIF,   CIF
1414        5117  5777  JMPI377, JMP I  .!177
1415                        /
1416                          EJECT
-
```

```
1417                    /
1420                    /       WE HAVE STARTING INFO
1421                    /
1422    5120    1462    CVH110, TAD I   P1      /GET CIF
1423    5121    5331            JMP     CVH130
1424                    /
1425    5122    1462    CVH120, TAD I   P1
1426    5123    7710            SPA CLA         /START IN PMODE?
1427    5124    5337            JMP     CVH140  /NO - LMODE
1430    5125    1461            TAD I   P0      /GET LIF
1431    5126    7004            RAL
1432    5127    0071            AND     P70
1433    5130    1316            TAD     KCIF    /MAKE CIF
1434    5131    3461    CVH130, DCA I   P0      /SET START FIELD
1435    5132    1317            TAD     JMPI377 /JMP I 377
1436    5133    3462            DCA I   P1      /TO 1
1437    5134    1464            TAD I   P3      /ADDRESS TO 2
1440    5135    3463            DCA I   P2
1441    5136    5345            JMP     CVH150
1442                    /
1443                    /       LMODE START
1444                    /
1445    5137    1462    CVH140, TAD I   P1      /MOVE JMP TO 2
1446    5140    3463            DCA I   P2
1447    5141    1461            TAD I   P0      /MOVE LIF TO 1
1450    5142    3462            DCA I   P1
1451    5143    1315            TAD     KLINC   /LINC INST TO 0
1452    5144    3461            DCA I   P0
1453                    /
1454    5145    1474    CVH150, TAD I   P337    /GET BLOCK COUNT
1455    5146    3464            DCA I   P3      /TO WORD 3
1456                    /
1457                    /       CONVERT BLOCK MAP TO LDP FORM
1460                    /
1461    5147    1074            TAD     P337
1462    5150    3012            DCA     AX2     /POINT TO OLD MAP
1463    5151    1076            TAD     M4      /COUNT OF NEW WORDS
1464    5152    3002            DCA     TMP1
1465    5153    7325            THREE
1466    5154    3013            DCA     AX3     /POINT TO NEW MAP
1467    5155    1101    CVH160, TAD     M10     /BITS PER NEW WORD
1470    5156    3004            DCA     TMP3
1471    5157    3005    CVH170, DCA     TMP4    /BUILD NEW WORD
1472    5160    1412            TAD I   AX2     /GET BLOCK CONTROL WORD
1473    5161    7004            RAL             /BIT TO LINK
1474    5162    7200            CLA
1475    5163    1005            TAD     TMP4
1476    5164    7004            RAL             /BRING IN NEXT BIT
1477    5165    2004            ISZ     TMP3    /NEW WORD FULL?
1500    5166    5357            JMP     CVH170  /NO
1501    5167    7106            CLL RTL         /YES
1502    5170    7006            RTL             /MOVE TO HIGH 8 BITS
1503    5171    3413            DCA I   AX3     /AND INSERT IN NEW MAP
1504    5172    2002            ISZ     TMP1    /IS THAT ALL?
1505    5173    5355            JMP     CVH160  /NO
1506    5174    5775            JMP I   .+1
1507    5175    4653            CVH180
1510                    /
1511                    EJECT
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1512                    /
1513                            PAGE
1514                    /
1515                    /       I/O ROUTINES WITH WAIT DISPLAY
1516                    /
1517    5200    0000    GET000, 0               /READ FROM ILIST
1520    5201    7200            CLA
1521    5202    4421            JMS I   READ
1522    5203    0131            ILIST           /START THE READ
1523    5204    1131            TAD     ILIST
1524    5205    4232            JMS     CVU     /CONVERT UNIT
1525    5206    7320            IWTU
1526    5207    4422    GET010, JMS I   WRITE   /DISPLAY WHILE WAITING
1527    5210    7303            IWAIT
1530    5211    1131            TAD     ILIST
1531    5212    7710            SPA CLA
1532    5213    5207            JMP     GET010
1533    5214    5600            JMP I   GET000  /DONE
1534                    /
1535                    /
1536    5215    0000    PUT000, 0               /WRITE FROM OLIST
1537    5216    7200            CLA
1540    5217    4422            JMS I   WRITE
1541    5220    0122            OLIST
1542    5221    1122            TAD     OLIST
1543    5222    4232            JMS     CVU
1544    5223    7336            OWTU
1545    5224    4422    PUT010, JMS I   WRITE
1546    5225    7322            OWAIT
1547    5226    1122            TAD     OLIST
1550    5227    7710            SPA CLA
1551    5230    5224            JMP     PUT010
1552    5231    5615            JMP I   PUT000  /DONE
1553                    /
1554                    /
1555                    /       CONVERT UNIT CODE IN AC
1556                    /       TO TEXT MNEMONIC CODE.
1557                    /
1560    5232    0000    CVU,    0
1561    5233    3002            DCA     TMP1    /HOLD UNIT
1562    5234    1632            TAD I   CVU     /GET RESULT ADDR
1563    5235    3003            DCA     TMP2
1564    5236    1066            TAD     P10
1565    5237    0002            AND     TMP1    /TAPE OR DISK?
1566    5240    7640            SZA CLA         /SKIP IF TAPE
1567    5241    1253            TAD     TDSK
1570    5242    1254            TAD     TTAP
1571    5243    3403            DCA I   TMP2
1572    5244    2003            ISZ     TMP2
1573    5245    1065            TAD     P7
1574    5246    0002            AND     TMP1    /GET UNIT NO
1575    5247    1255            TAD     P60     /MAKE TEXT NUMBER
1576    5250    3403            DCA I   TMP2
1577    5251    2232            ISZ     CVU     /BUMP RETURN
1600    5252    5632            JMP I   CVU     /AND DO IT
1601                    /
1602    5253    6767    TDSK,   413=1424
1603    5254    1424    TTAP,   1424
1604    5255    0060    P60,    60
1605                    /
1606                            EJECT
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1607                    /
1610                    /       DECODE LDP UNIT
1611                    /
1612        5256  0000  GLU000, 0
1613        5257  7200          CLA
1614        5260  1411          TAD I   AX1      /FIRST ANSWER CHAR
1615        5261  0072          AND     P77      /STRIP TO 6 BITS
1616        5262  7106          CLL RTL
1617        5263  7006          RTL
1620        5264  7006          RTL
1621        5265  3002          DCA     TMP1     /HOLD IT
1622        5266  1411          TAD I   AX1      /2ND CHAR
1623        5267  0072          AND     P77
1624        5270  1002          TAD     TMP1     /COMBINE THEM
1625        5271  7041          CIA
1626        5272  1254          TAD     TTAP     /COMPARE "LT"
1627        5273  7450          SNA
1630        5274  5301          JMP     GLU010   /GOT IT
1631        5275  1253          TAD     TDSK     /TRY "DK"
1632        5276  7640          SZA CLA
1633        5277  5314          JMP     GLU020   /NOPE, TOO BAD
1634        5300  1066          TAD     P10
1635        5301  1067  GLU010, TAD     P20      /MAKE UNIT CLASS
1636        5302  3002          DCA     TMP1
1637        5303  1411          TAD I   AX1      /3RD CHAR
1640        5304  4455          JMS I   LIMIT    /CHECK FOR NUMERIC
1641        5305  7520          -260
1642        5306  7511          -267
1643        5307  5314          JMP     GLU020   /NOPE
1644        5310  0065          AND     P7       /ITS OK,,,
1645        5311  1002          TAD     TMP1     /COMBINE FOR FULL UNIT CODE
1646        5312  2256          ISZ     GLU000   /BUMP RETURN
1647        5313  5656          JMP I   GLU000
1650                    /
1651                    /
1652        5314  4445  GLU020, JMS I   TELL
1653        5315  6527          INVU             /BAD UNIT
1654        5316  5656          JMP I   GLU000
1655                    /
1656                            EJECT
-
```

```
1657                    /
1660                    /       INITIALIZE A VOLUME
1661                    /
1662    5317    4444    INT000, JMS I   ASK     /WHAT UNIT?
1663    5320    6627            QUNIT
1664    5321    4425            JMS I   EXIT    /DONE, NO SAVE
1665    5322    4447            JMS I   GLDPU   /GET LDP UNIT
1666    5323    5317            JMP     INT000  /HE BLEW IT
1667    5324    3122            DCA     OLIST
1670                    /
1671                    /       UNIT IS OK-GET VOL ID
1672                    /
1673    5325    4444    INT050, JMS I   ASK
1674    5326    6672            QVOLID
1675    5327    5317            JMP     INT000
1676    5330    1077            TAD     M5
1677    5331    3002            DCA     TMP1    /CLEAR VOLID
1700    5332    1056            TAD     PXBUF
1701    5333    3010            DCA     AX0
1702    5334    1346    INT060, TAD     HBLNKS
1703    5335    3410            DCA I   AX0
1704    5336    2002            ISZ     TMP1
1705    5337    5334            JMP     INT060
1706    5340    1077            TAD     M5
1707    5341    3002            DCA     TMP1
1710    5342    1056            TAD     PXBUF
1711    5343    3010            DCA     AX0
1712    5344    5745            JMP I   .+1
1713    5345    5400            INT070
1714                    /
1715    5346    4040    HBLNKS, 4040
1716                    /
1717                    EJECT
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```
1720                    /
1721                            PAGE
1722                    /
1723                    /       COLLECT VOLID
1724                    /
1725    5400    1411    INT070, TAD I   AX1     /GET VOLID CHAR
1726    5401    4455            JMS I   LIMIT
1727    5402    7540            -240
1730    5403    7441            -337
1731    5404    5233            JMP     INT090
1732    5405    0072            AND     P77     /STRIP TO 6 BITS
1733    5406    7106            CLL RTL
1734    5407    7006            RTL
1735    5410    7006            RTL
1736    5411    3003            DCA     TMP2    /HOLD IT
1737    5412    1411            TAD I   AX1
1740    5413    4455            JMS I   LIMIT
1741    5414    7540            -240
1742    5415    7441            -337
1743    5416    5226            JMP     INT080
1744    5417    0072            AND     P77     /STRIP
1745    5420    1003            TAD     TMP2    /COMBINE WITH LAST
1746    5421    3410            DCA I   AX0     /STORE IN BUFFER
1747    5422    2002            ISZ     TMP1
1750    5423    5200            JMP     INT070
1751    5424    1411            TAD I   AX1
1752    5425    5233            JMP     INT090
1753                    /
1754    5426    3002    INT080, DCA     TMP1    /HOLD THIS
1755    5427    1363            TAD     P40
1756    5430    1003            TAD     TMP2    /LAST CHAR AND BLANK
1757    5431    3410            DCA I   AX0
1760    5432    1002            TAD     TMP1
1761    5433    1114    INT090, TAD     MCR     /COMPARE CR
1762    5434    7640            SZA CLA         /EQUAL?
1763    5435    5770            JMP I   AVOLID  /NO-TRY AGAIN
1764                    /
1765    5436    1364            TAD     P400
1766    5437    3766            DCA I   PBLKLN  /BLOCK LEN ALWAYS=400
1767                    /
1770                            EJECT
-
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```
1771                    /
1772                    /       GET NUMBER OF INDEX BLOCKS
1773                    /
1774    5440    4444    INT100, JMS I   ASK
1775    5441    6733            QXBLKS
1776    5442    5254            JMP     INT105
1777    5443    4451            JMS I   NUMBER  /GET BINARY
2000    5444    5240            JMP     INT100  /BAD INPUT
2001    5445    7550            SPA SNA         /CHECK VALIDITY
2002    5446    5240            JMP     INT100
2003    5447    1101            TAD     M10
2004    5450    7740            SMA SZA CLA
2005    5451    5240            JMP     INT100
2006    5452    1002            TAD     TMP1
2007    5453    7410            SKP
2010    5454    7307    INT105, FOUR            /DEFAULT INDEX LEN
2011    5455    3457            DCA I   PXLEN   /SET XLEN
2012                    /
2013                    /       GET VOLUME LENGTH
2014                    /
2015    5456    1122            TAD     OLIST
2016    5457    0066            AND     P10     /CHECK FOR DISK
2017    5460    7650            SNA CLA
2020    5461    5264            JMP     INT110  /TAPE
2021    5462    1365            TAD     DSKL    /DISK
2022    5463    5277            JMP     INT120
2023                    /
2024    5464    4444    INT110, JMS I   ASK     /GET TAPE LENGTH
2025    5465    7006            QTLEN
2026    5466    5276            JMP     INT115
2027    5467    4451            JMS I   NUMBER  /CONVERT TO BINARY
2030    5470    5264            JMP     INT110
2031    5471    4455            JMS I   LIMIT   /CHECK RANGE
2032    5472    7000            -1000
2033    5473    6200            -1600
2034    5474    5264            JMP     INT110  /NOPE
2035    5475    7410            SKP
2036    5476    1367    INT115, TAD     P1600   /DEFAULT VOL LEN
2037    5477    3460    INT120, DCA I   PVLEN   /SET VOL LENGTH
2040    5500    1460            TAD I   PVLEN
2041    5501    7041            CIA
2042    5502    1457            TAD I   PXLEN
2043    5503    3112            DCA     WALEFT
2044                    /
2045                            EJECT
-
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2046                    /
2047                    /       YOU WANT A NICE SYSTEM?
2050                    /       FOR YOU, ILL GIVITYA HALF PRICE
2051                    /
2052    5504    1025    INT150, TAD     EXIT
2053    5505    3010            DCA     AX0
2054    5506    1410            TAD I   AX0
2055    5507    1373            TAD     MJMS    /LOOK FOR JMS READ
2056    5510    7640            SZA CLA
2057    5511    5306            JMP     .-3     /GOTTA FIND IT
2060    5512    1410            TAD I   AX0     /POINTER TO JC UNIT
2061    5513    3002            DCA     TMP1
2062    5514    1402            TAD I   TMP1
2063    5515    0072            AND     P77
2064    5516    3131            DCA     ILIST   /DEFAULT SYS UNIT
2065    5517    4444            JMS I   ASK     /NOW ASK FOR SYSTEM
2066    5520    7172            QSYS
2067    5521    5342            JMP     INT170
2070    5522    1011            TAD     AX1     /SAVE POINTER
2071    5523    3010            DCA     AX0
2072    5524    4350            JMS     G2C     /GET 2 CHARS
2073    5525    1374            TAD     MNO     /COMPARE "NO"
2074    5526    7450            SNA
2075    5527    5772            JMP I   NOSYS   /IF THATS WHAT YOU WANT
2076    5530    1375            TAD     NOMDI   /MAYBE "DIAL"
2077    5531    7640            SZA CLA
2100    5532    5337            JMP     INT160  /NOT DIAL
2101    5533    4350            JMS     G2C     /TRY 2 MORE
2102    5534    1376            TAD     MAL     /JUST FOR SURE
2103    5535    7650            SNA CLA
2104    5536    5771            JMP I   DSYS    /GET DIAL SYSTEM
2105                    /
2106                    /       NOT NO, AND NOT DIAL ...
2107                    /
2110    5537    4447    INT160, JMS I   GLDPU   /SO TRY FOR LDP
2111    5540    5304            JMP     INT150  /NOT THAT EITHER
2112    5541    3131            DCA     ILIST   /SAVE UNIT
2113    5542    1364    INT170, TAD     P400
2114    5543    3134            DCA     ILIST+3 /GET 1 BLOCK
2115    5544    3135            DCA     ILIST+4 /THE INDEX
2116    5545    4453            JMS I   GET
2117    5546    5747            JMP I   .+1
2120    5547    5600            INT175
2121                    /
2122                    EJECT
-
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2123                    /
2124                    /       GET TWO CHARACTERS
2125                    /
2126    5550    0000    G2C,    0
2127    5551    1410            TAD I   AX0
2130    5552    0072            AND     P77
2131    5553    7106            CLL RTL
2132    5554    7006            RTL                     /SHIFT TO LEFT CHAR
2133    5555    7006            RTL
2134    5556    3002            DCA     TMP1
2135    5557    1410            TAD I   AX0
2136    5560    0072            AND     P77
2137    5561    1002            TAD     TMP1
2140    5562    5750            JMP I   G2C
2141                    /
2142    5563    0040    P40,    40
2143    5564    0400    P400,   400
2144    5565    6260    DSKL,   6260
2145    5566    7605    PBLKLN, XBUF+5
2146    5567    1600    P1600,  1600
2147    5570    5525    AVOLID, INT050
2150    5571    5655    DSYS,   INT200
2151    5572    5744    NOSYS,  INT300
2152    5573    3357    MJMS,   -4421           /JMS I READ
2153    5574    6161    MNO,    -1617
2154    5575    1206    NOMDI,  1617-411
2155    5576    7664    MAL,    -114
2156                    /
2157                    EJECT
-
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2160                    /
2161                            PAGE
2162                    /
2163                    /       VERIFY THAT THIS IS AN LDP SYSTEM VOLUME
2164                    /
2165    5600    6211    INT175, CDF     10
2166    5601    1650            TAD I   P5      /CHECK BLK LEN
2167    5602    1107            TAD     M400
2170    5603    7640            SZA CLA
2171    5604    5244            JMP     INT180  /WHOA, NELLY
2172    5605    1651            TAD I   P6      /LOOK AT X LEN
2173    5606    7550            SPA SNA
2174    5607    5244            JMP     INT180
2175    5610    1101            TAD     M10
2176    5611    7740            SMA SZA CLA
2177    5612    5244            JMP     INT180
2200    5613    1652            TAD I   P27     /JCL LENGTH
2201    5614    7450            SNA
2202    5615    5244            JMP     INT180
2203    5616    6201            CDF     0
2204    5617    3771            DCA I   PJLEN   /SAVE IT
2205                    /
2206                    /       SEEMS OK, GET USEFUL INFO
2207                    /
2210    5620    6211            CDF     10
2211    5621    1653            TAD I   P16     /MON START
2212    5622    3135            DCA     ILIST+4 /SAVE FOR READING
2213    5623    1654            TAD I   P17     /MON LEN
2214    5624    6201            CDF     0
2215    5625    3767            DCA I   PMLEN
2216    5626    1457            TAD I   PXLEN   /NEW MON START
2217    5627    3766            DCA I   PMST
2220    5630    1766            TAD I   PMST
2221    5631    1767            TAD I   PMLEN   /NEW JCL START
2222    5632    3770            DCA I   PJST
2223    5633    1457            TAD I   PXLEN   /OUTPUT START
2224    5634    3126            DCA     OLIST+4
2225    5635    1767            TAD I   PMLEN
2226    5636    1771            TAD I   PJLEN   /TOTAL LENGTH
2227    5637    7041            CIA
2230    5640    3111            DCA     REMAIN
2231    5641    3113            DCA     HDRSW
2232    5642    4450            JMS I   CPYFIL  /MOVE IT
2233    5643    5312            JMP     INT215  /AND CLEAR OUT
2234                    /
2235                    /
2236    5644    4445    INT180, JMS I   TELL
2237    5645    7260            NOTL
2240    5646    5647            JMP I   .+1
2241    5647    5504            INT150
2242                    /
2243    5650    0005    P5,     5
2244    5651    0006    P6,     6
2245    5652    0027    P27,    27
2246    5653    0016    P16,    16
2247    5654    0017    P17,    17
2250                    /
2251                            EJECT
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2252                    /
2253                    /       GET MONITOR FROM DIAL
2254                    /
2255    5655    4444    INT200, JMS I   ASK     /WHERE IS MONITOR?
2256    5656    7064            QMON
2257    5657    5765            JMP I   ASYS    /CHANGED HIS MIND
2260    5660    4446            JMS I   GDIAL   /FIND THE MONITOR
2261    5661    5255            JMP     INT200  /TRY AGAIN
2262    5662    2135            ISZ     ILIST+4 /IGNORE HEADER
2263    5663    2111            ISZ     REMAIN
2264    5664    1457            TAD I   PXLEN   /MON START BLOCK
2265    5665    3126            DCA     OLIST+4
2266    5666    1126            TAD     OLIST+4
2267    5667    3766            DCA I   PMST    /MON START TO INDEX
2270    5670    1111            TAD     REMAIN  /MINUS MON LEN
2271    5671    7041            CIA             /NOW POS
2272    5672    3767            DCA I   PMLEN   /TO INDEX
2273    5673    3113            DCA     HDRSW   /NO COPY HEADER
2274    5674    4450            JMS I   CPYFIL  /COPY FILE
2275                    /
2276                    /       NOW GET JOB CONTROL
2277                    /
2300    5675    4444    INT210, JMS I   ASK     /WHERE IS JOB CONTROL?
2301    5676    7126            QJCL
2302    5677    5765            JMP I   ASYS
2303    5700    4446            JMS I   GDIAL
2304    5701    5275            JMP     INT210
2305    5702    2135            ISZ     ILIST+4 /IGNORE HEADER
2306    5703    2111            ISZ     REMAIN
2307    5704    1126            TAD     OLIST+4
2310    5705    3770            DCA I   PJST    /JCL START BLOCK
2311    5706    1111            TAD     REMAIN
2312    5707    7041            CIA
2313    5710    3771            DCA I   PJLEN   /JCL LEN TO INDEX
2314    5711    4450            JMS I   CPYFIL  /COPY THAT FILE
2315                    /
2316                    EJECT
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2317                    /
2320                    /       FILL IN THE REMAINING PARTS OF THE INDEX
2321                    /
2322    5712    1122    INT215, TAD     OLIST
2323    5713    0066            AND     P10     /CHECK DISK BIT
2324    5714    7640            SZA CLA
2325    5715    1373            TAD     PDKMLT
2326    5716    1374            TAD     PLTX    /ADDRESS APPROPRIATE INDEX FORM
2327    5717    3011            DCA     AX1
2330    5720    1060            TAD     PVLEN   /POINT TO MON ENTRY-1
2331    5721    3010            DCA     AX0
2332    5722    1100            TAD     M6
2333    5723    3002            DCA     TMP1
2334    5724    1411    INT220, TAD I   AX1     /GET STARTUP CODE
2335    5725    3410            DCA I   AX0     /INTO INDEX
2336    5726    2002            ISZ     TMP1
2337    5727    5324            JMP     INT220
2340    5730    1367            TAD     PMLEN   /POINT TO JCL ENTRY-1
2341    5731    3010            DCA     AX0
2342    5732    1100            TAD     M6
2343    5733    3002            DCA     TMP1
2344    5734    1411    INT230, TAD I   AX1
2345    5735    3410            DCA I   AX0
2346    5736    2002            ISZ     TMP1
2347    5737    5334            JMP     INT230
2350    5740    1371            TAD     PJLEN   /WA ENTRY-1
2351    5741    3010            DCA     AX0
2352    5742    5743            JMP I   .+1
2353    5743    6000            INT320          /FINISH UP
2354                    /
2355                    /       NO SYSTEM ON THIS VOLUME
2356                    /
2357    5744    1457    INT300, TAD I   PXLEN
2360    5745    3126            DCA     OLIST+4
2361    5746    1060            TAD     PVLEN   /START OF SP ENTRIES-1
2362    5747    3010            DCA     AX0
2363    5750    1103            TAD     M20     /MOVE LENGTH
2364    5751    3002            DCA     TMP1
2365    5752    1122            TAD     OLIST
2366    5753    0066            AND     P10     /10 IF DISK, ELSE 0
2367    5754    7104            CLL RAL         /NOW 20 OR 0
2370    5755    1372            TAD     PNOX    /ADDRESS APPROPRIATE "NO" INDEX
2371    5756    3011            DCA     AX1
2372    5757    1067            TAD     P20
2373    5760    1011            TAD     AX1
2374    5761    3003            DCA     TMP2
2375    5762    1457            TAD I   PXLEN
2376    5763    3403            DCA I   TMP2
2377    5764    5334            JMP     INT230
2400                    /
2401    5765    5504    ASYS,   INT150
2402    5766    7616    PMST,   XBUF+16
2403    5767    7617    PMLEN,  XBUF+17
2404    5770    7626    PJST,   XBUF+26
2405    5771    7627    PJLEN,  XBUF+27
2406    5772    6047    PNOX,   NOX=1
2407    5773    0014    PDKMLT, DKX=LTX
2410    5774    6107    PLTX,   LTX=1
2411                    /
2412                    EJECT
```

```
2413                    /
2414                            PAGE
2415                    /
2416                    /       BUILD WA ENTRY
2417                    /
2420    6000    1100    INT320, TAD     M6
2421    6001    3002            DCA     TMP1    /SET COUNT
2422    6002    3410    INT330, DCA I   AX0
2423    6003    2002            ISZ     TMP1
2424    6004    5202            JMP     INT330
2425    6005    1126            TAD     OLIST+4 /CURRENT BLOCK
2426    6006    3410            DCA I   AX0     /IS START OF WA
2427    6007    1112            TAD     WALEFT
2430    6010    7041            CIA
2431    6011    3410            DCA I   AX0     /THERES LENGTH
2432                    /
2433                    /       NOW PUT THE SHEBANG IN FIELD 1
2434                    /
2435    6012    1056    INT340, TAD     PXBUF   /HANDY FRIENDLY
2436    6013    3010            DCA     AX0     /LOCAL POINTER
2437    6014    7240            MONE
2440    6015    3011            DCA     AX1
2441    6016    1104            TAD     M40
2442    6017    3002            DCA     TMP1
2443    6020    1410    INT350, TAD I   AX0
2444    6021    6211            CDF     10
2445    6022    3411            DCA I   AX1     /MOVE IT TO F1
2446    6023    6201            CDF     0
2447    6024    2002            ISZ     TMP1
2450    6025    5220            JMP     INT350
2451                    /
2452                    /       CLEAR THE REST TO ZERO
2453                    /
2454    6026    1457            TAD I   PXLEN   /INDEX BLOCK COUNT
2455    6027    7112            CLL RTR
2456    6030    7012            RTR             /GET WORD COUNT
2457    6031    7010            RAR
2460    6032    3125            DCA     OLIST+3
2461    6033    1125            TAD     OLIST+3
2462    6034    1104            TAD     M40     /MINUS WHATS NOT ZERO
2463    6035    7041            CIA
2464    6036    3002            DCA     TMP1
2465    6037    6211            CDF     10
2466    6040    3411    INT360, DCA I   AX1     /CLEAR OTHERS
2467    6041    2002            ISZ     TMP1
2470    6042    5240            JMP     INT360
2471    6043    6201            CDF     0
2472    6044    3126            DCA     OLIST+4 /THIS IS BLOCK 0
2473    6045    4454            JMS I   PUT     /WRITE IT
2474    6046    5647            JMP I   .+1
2475    6047    5317            INT000          /INIT NEXT
2476                    /
2477                            EJECT
```

```
2500                    /
2501                    /       INDEX ENTRIES 1 AND 2
2502                    /       FOR NON-SYSTEM VOLUMES
2503                    /
2504                    NOX=    .
2505                            LMODE
2506    0050    1760            DSC I           /SPACE BETWEEN CHARS
2507    0051    0000            0
2510    0052    1760            DSC I           /1ST HALF "0"
2511    0053    4136            4136
2512    0054    1760            DSC I           /2ND HALF
2513    0055    3641            3641
2514    0056    0456            SKP
2515    0057    0000            0               /UNUSED
2516    0060    4001            STC     1       /RESET HORIZ
2517    0061    1760            DSC I
2520    0062    3077            3077            /1ST HALF "N"
2521    0063    1760            DSC I           /2ND HALF
2522    0064    7706            7706
2523    0065    6010            JMP     10
2524    0066    0000            0
2525    0067    0000            0
2526                    /
2527                    /
2530    0070    6745            6745            /DSKD
2531    0071    5011            5011            /JMP .-1
2532    0072    6141            6141            /LMODE DISPLAY
2533    0073    1760            DSC I           /1ST HALF "0"
2534    0074    4136            4136
2535    0075    1760            DSC I           /2ND HALF
2536    0076    3641            3641
2537    0077    4001            STC     1       /RESET HORIZ
2540    0100    5011            STC     1011    /PMODE JMP 11
2541    0101    1760            DSC I           /1ST HALF "N"
2542    0102    3077            3077
2543    0103    1760            DSC I           /2ND HALF
2544    0104    7706            7706
2545    0105    6014            JMP     14
2546    0106    0000            0
2547    0107    0000            0
2550                    /
2551                            EJECT
-
```

```
2552                    /
2553                            PMODE
2554                    /
2555                    /       SYSTEM BOOTSTRAPS
2556                    /
2557                    LTX=    .
2560                            LMODE
2561    0110    4012            STC     12      /SET IPL BLOCK NO
2562    0111    0702            RDE             /READ THE BLOCK TO 6000
2563    0112    0000            0
2564    0113    0002            PDP
2565    0114    5624            5624            /JMP I  24, THIS PAGE
2566    0115    0000            0               /UNUSED
2567                    /               MON START
2570                    /               AND LENGTH
2571    0116    1000            LDA             /ENTER HERE
2572    0117    0016            16              /GET MON START
2573    0120    1620            BSE I           /IN DATA SEG
2574    0121    4000            4000
2575    0122    6010            JMP     10      /THIS INSTR IS ALSO
2576                                            /START ADDRESS OF IPL
2577    0123    0000            0               /UNUSED
2600                    /               JCL START
2601                    /               AND LENGTH
2602                    /
2603                            PMODE
2604                    /
2605    6124    6745    DKX,    6745            /DSKD
2606    6125    5011            JMP     10+1    /WAIT FOR DONE
2607    6126    7300            CLA CLL
2610    6127    1017            TAD     16+1    /GET MON START
2611    6130    7012            RTR             /MAKE ADDRESS
2612    6131    5022            JMP     21+1
2613                    /               MON START
2614                    /               AND LENGTH
2615    6132    5011            JMP     10+1    /ENTER HERE
2616    6133    7012            RTR             /CONTINUE CONVERSION OF
2617    6134    7010            RAR             /BLOCK TO ADDRESS
2620    6135    7001            IAC
2621    6136    3024            DCA     24      /IPL ADDRESS
2622    6137    5424            JMP I   24      /GO TO IPL
2623                    /               JCL START
2624                    /               AND LENGTH
2625                    /
2626                            EJECT
```

```
2627                    /
2630                    /       DISPLAYS
2631                    /
2632    6140    0061    QPRIM,  61
2633    6141    6201            CDF     Ø
2634    6142    6144            .+2
2635    6143    0046            QSECN-.,-1
2636                    /
2637    6144    4545            4545
2640    6145    4547            4547
2641    6146    0225
2641    6147    1114
2641    6150    0411
2641    6151    1607
2641    6152    4000
2641                            TEXT    "BUILDING "
2642    6153    4040    ONAME,  4040
2643    6154    4040            4040
2644    6155    4040            4040
2645    6156    5602
2645                            TEXT    ",BIN
2646    6157    1116
2646    6160    4347
2646    6161    0516
2646    6162    2405
2646    6163    2240
2646    6164    1601
2646    6165    1505
2646    6166    4001
2646    6167    1604
2646    6170    4004
2646    6171    1101
2646    6172    1440
2646    6173    2516
2646                            ENTER NAME AND DIAL UNIT
2647    6174    1124
2647    6175    4347
2647    6176    1706
2647    6177    4020
2647    6200    2211
2647    6201    1501
2647    6202    2231
2647    6203    4002
2647    6204    1116
2647    6205    0122
2647    6206    3140
2647    6207    0611
2647    6210    1405
2647    6211    5600
2647                            OF PRIMARY BINARY FILE,"
2650                    /
2651                            EJECT
```

```
2652                        /
2653      6212  0061    QSECN,  61
2654      6213  6201            CDF     0
2655      6214  6216            ,+2
2656      6215  0051            QSCR=,-1
2657                        /
2660      6216  4545            4545
2661      6217  4547            4547
2662      6220  0516
2662      6221  2405
2662      6222  2240
2662      6223  1601
2662      6224  1505
2662      6225  4001
2662      6226  1604
2662      6227  4004
2662      6230  1101
2662      6231  1440
2662      6232  2516
2662                        TEXT    "ENTER NAME AND DIAL UNIT
2663      6233  1124
2663      6234  4347
2663      6235  1706
2663      6236  4023
2663      6237  0503
2663      6240  1716
2663      6241  0401
2663      6242  2231
2663      6243  4002
2663      6244  1116
2663      6245  0122
2663      6246  3140
2663      6247  0611
2663      6250  1405
2663                            OF SECONDARY BINARY FILE,
2664      6251  5643
2664      6252  4723
2664      6253  2422
2664      6254  1113
2664      6255  0540
2664      6256  2205
2664      6257  2425
2664      6260  2216
2664      6261  4011
2664      6262  0640
2664      6263  1617
2664      6264  4015
2664      6265  1722
2664      6266  0556
2664                            STRIKE RETURN IF NO MORE,"
2665                        /
2666                            EJECT
*
```

```
2667                    /
2670    6267    0061    QSCR,   61
2671    6270    6201            CDF     0
2672    6271    6273            .+2
2673    6272    0034            QWAS=.=1
2674                    /
2675    6273    4545            4545
2676    6274    4547            4547
2677    6275    1017
2677    6276    2740
2677    6277    1501
2677    6300    1631
2677    6301    4002
2677    6302    1417
2677    6303    0313
2677    6304    2340
2677    6305    1706
2677    6306    4023
2677    6307    0322
2677    6310    0124
2677    6311    0310
2677    6312    4023
2677    6313    2001
2677    6314    0305
2677                    TEXT    "HOW MANY BLOCKS OF SCRATCH SPACE?
2700    6315    7743
2700    6316    4704
2700    6317    0506
2700    6320    0125
2700    6321    1424
2700    6322    4011
2700    6323    2340
2700    6324    1617
2700    6325    1605
2700    6326    5600
2700                            DEFAULT IS NONE,"
2701                    /
2702                            EJECT
```

```
2703                        /
2704      6327  0061  QWAS,   61
2705      6330  6201          CDF     0
2706      6331  6333          ,+2
2707      6332  0050          QSTRT-,-1
2710                        /
2711      6333  4545          4545
2712      6334  4547          4547
2713      6335  1017
2713      6336  2740
2713      6337  1501
2713      6340  1631
2713      6341  4027
2713      6342  1722
2713      6343  1311
2713      6344  1607
2713      6345  4001
2713      6346  2205
2713      6347  0123
2713      6350  4004
2713      6351  1705
2713                        TEXT    "HOW MANY WORKING AREAS DOES
2714      6352  2343
2714      6353  4724
2714      6354  1011
2714      6355  2340
2714      6356  2022
2714      6357  1707
2714      6360  2201
2714      6361  1540
2714      6362  1605
2714      6363  0504
2714      6364  7740
2714      6365  4050
2714      6366  6040
2714      6367  2417
2714      6370  4067
2714                        THIS PROGRAM NEED?  (0 TO 7)
2715      6371  5143
2715      6372  4704
2715      6373  0506
2715      6374  0125
2715      6375  1424
2715      6376  4011
2715      6377  2340
2715      6400  1617
2715      6401  1605
2715      6402  5600
2715                        DEFAULT IS NONE,"
2716                        /
2717                        EJECT
-
```

```
2720                        /
2721        6403    0061    QSTRT,  61
2722        6404    6201            CDF     0
2723        6405    6407            .+2
2724        6406    0051            TOOBIG-.-1
2725                        /
2726        6407    4547            4547
2727        6410    0516
2727        6411    2405
2727        6412    2240
2727        6413    2324
2727        6414    0122
2727        6415    2411
2727        6416    1607
2727        6417    4015
2727        6420    1704
2727        6421    0540
2727        6422    5020
2727        6423    4017
2727        6424    2240
2727                        TEXT    "ENTER STARTING MODE (P OR L)
2730        6425    1451
2730        6426    4347
2730        6427    0116
2730        6430    0440
2730        6431    0611
2730        6432    0514
2730        6433    0440
2730        6434    5060
2730        6435    4024
2730        6436    1740
2730        6437    6751
2730        6440    5440
2730        6441    0317
2730        6442    1515
2730                        AND FIELD (0 TO 7), COMMA,
2731        6443    0154
2731        6444    4347
2731        6445    0116
2731        6446    0440
2731        6447    2324
2731        6450    0122
2731        6451    2411
2731        6452    1607
2731        6453    4001
2731        6454    0404
2731        6455    2205
2731        6456    2323
2731        6457    5600
2731                        AND STARTING ADDRESS,"
2732                    /
2733                        EJECT
-
```

```
2734                        /
2735    6460  0061  TOOBIG, 61
2736    6461  6201          CDF     Ø
2737    6462  6464          .+2
2740    6463  0024          BADNAM-.-1
2741                        /
2742    6464  4545          4545
2743    6465  4547          4547
2744    6466  0211
2744    6467  1601
2744    6470  2231
2744    6471  4011
2744    6472  2340
2744    6473  2417
2744    6474  1740
2744    6475  0211
2744                        TEXT    "BINARY IS TOO BIG
2745    6476  0743
2745    6477  4706
2745    6500  1722
2745    6501  4024
2745    6502  1011
2745    6503  2340
2745    6504  2617
2745    6505  1425
2745    6506  1505
2745    6507  5600
2745                        FOR THIS VOLUME,"
2746                        /
2747    6510  0061  BADNAM, 61
2750    6511  6201          CDF     Ø
2751    6512  6514          .+2
2752    6513  0013          INVU-.-1
2753                        /
2754    6514  4545          4545
2755    6515  4547          4547
2756    6516  1116
2756    6517  2601
2756    6520  1411
2756    6521  0440
2756    6522  0611
2756    6523  1405
2756    6524  1601
2756    6525  1505
2756    6526  5600
2756                        TEXT    "INVALID FILENAME,"
2757                        /
2760                        EJECT
```

```
2761                    /
2762        6527  0061  INVU,   61
2763        6530  6201          CDF     0
2764        6531  6533          .+2
2765        6532  0011          NOFIND-.-1
2766                    /
2767        6533  4545          4545
2770        6534  4547          4547
2771        6535  1116
2771        6536  2601
2771        6537  1411
2771        6540  0440
2771        6541  2516
2771        6542  1124
2771        6543  5600
2771                          TEXT    "INVALID UNIT."
2772                    /
2773        6544  0061  NOFIND, 61
2774        6545  6201          CDF     0
2775        6546  6550          .+2
2776        6547  0012          NOTX=.-1
2777                    /
3000        6550  4545          4545
3001        6551  4547          4547
3002        6552  1617
3002        6553  4023
3002        6554  2503
3002        6555  1040
3002        6556  0211
3002        6557  1601
3002        6560  2231
3002        6561  5600
3002                          TEXT    "NO SUCH BINARY."
3003                    /
3004                          EJECT
*
```

```
3005                        /
3006      6562  0061    NOTX,   61
3007      6563  6201            CDF     0
3010      6564  6566            ,+2
3011      6565  0012            TOOLOW-.-1
3012                        /
3013      6566  4545            4545
3014      6567  4547            4547
3015      6570  1617
3015      6571  2440
3015      6572  0140
3015      6573  0411
3015      6574  0114
3015      6575  4025
3015      6576  1611
3015      6577  2456
3015                        TEXT    "NOT A DIAL UNIT."
3016                        /
3017      6600  0061    TOOLOW, 61
3020      6601  6201            CDF     0
3021      6602  6604            ,+2
3022      6603  0023            QUNIT-.-1
3023                        /
3024      6604  4545            4545
3025      6605  4547            4547
3026      6606  0522
3026      6607  2217
3026      6610  2272
3026      6611  4002
3026      6612  1116
3026      6613  0122
3026      6614  3140
3026      6615  1417
3026      6616  0104
3026                        TEXT    "ERROR: BINARY LOADS
3027      6617  2343
3027      6620  4717
3027      6621  2605
3027      6622  2240
3027      6623  1517
3027      6624  1611
3027      6625  2417
3027      6626  2256
3027                        OVER MONITOR,"
3030                        /
3031                        EJECT
-
```

```
3032                        /
3033        6627  0061  QUNIT,  61
3034        6630  6201          CDF     0
3035        6631  6633          ,+2
3036        6632  0037          QVOLID-,-1
3037                        /
3040        6633  4547          4547
3041        6634  1404
3041        6635  2040
3041        6636  2516
3041        6637  1124
3041        6640  4024
3041        6641  1740
3041        6642  1116
3041        6643  1124
3041        6644  1101
3041        6645  1411
3041        6646  3205
3041                          TEXT    "LDP UNIT TO INITIALIZE:
3042        6647  7243
3042
3043        6650  4043
3043        6651  4714
3043        6652  2460
3043        6653  4055
3043        6654  4067
3043        6655  4040
3043        6656  1411
3043        6657  1603
3043        6660  2401
3043                          LT0 = 7  LINCTAPE
3044        6661  2005
3044        6662  4347
3044        6663  0413
3044        6664  6040
3044        6665  5540
3044        6666  6340
3044        6667  4004
3044        6670  1123
3044        6671  1300
3044                          DK0 = 3  DISK"
3045                        /
3046                          EJECT
-
```

```
3047                        /
3050      6672  0061  QVOLID, 61
3051      6673  6201        CDF     0
3052      6674  6676        .+2
3053      6675  0035        QXBLKS-.-1
3054                        /
3055      6676  4545        4545
3056      6677  4547        4547
3057      6700  0516
3057      6701  2405
3057      6702  2240
3057      6703  2520
3057      6704  4024
3057      6705  1740
3057      6706  2405
3057      6707  1640
3057      6710  0310
3057      6711  0122
3057      6712  0103
3057      6713  2405
3057                        TEXT    "ENTER UP TO TEN CHARACTERS
3060      6714  2223
3060      6715  4347
3060      6716  0617
3060      6717  2240
3060      6720  2617
3060      6721  1425
3060      6722  1505
3060      6723  4011
3060      6724  0405
3060      6725  1624
3060      6726  1106
3060      6727  1103
3060      6730  0124
3060      6731  1117
3060      6732  1656
3060                        FOR VOLUME IDENTIFICATION."
3061                        /
3062                        EJECT
-
```

```
3063                    /
3064    6733  0061  QXBLKS, 61
3065    6734  6201          CDF     0
3066    6735  6737          ,+2
3067    6736  0047          QTLEN=,-1
3070                    /
3071    6737  4545          4545
3072    6740  4547          4547
3073    6741  1017
3073    6742  2740
3073    6743  1501
3073    6744  1631
3073    6745  4011
3073    6746  1604
3073    6747  0530
3073    6750  4002
3073    6751  1417
3073    6752  0313
3073    6753  2340
3073    6754  2310
3073    6755  1725
3073    6756  1404
3073    6757  4002
3073                    TEXT    "HOW MANY INDEX BLOCKS SHOULD BE
3074    6760  0543
3074    6761  4701
3074    6762  1414
3074    6763  1703
3074    6764  0124
3074    6765  0504
3074    6766  7740
3074    6767  5061
3074    6770  4024
3074    6771  1740
3074    6772  6160
3074    6773  4017
3074    6774  0324
3074    6775  0114
3074                    ALLOCATED? (1 TO 10 OCTAL)
3075    6776  5143
3075    6777  4704
3075    7000  0506
3075    7001  0125
3075    7002  1424
3075    7003  4011
3075    7004  2340
3075    7005  6400
3075                    DEFAULT IS 4"
3076                /
3077                    EJECT
-
```

```
3100                        /
3101        7006    0061    QTLEN,  61
3102        7007    6201            CDF     0
3103        7010    7012            .+2
3104        7011    0052            QMON=.-1
3105                        /
3106        7012    4545            4545
3107        7013    4547            4547
3110        7014    1017
3110        7015    2740
3110        7016    1501
3110        7017    1631
3110        7020    4002
3110        7021    1417
3110        7022    0313
3110        7023    2340
3110        7024    0122
3110        7025    0540
3110        7026    1501
3110        7027    2213
3110        7030    0504
3110        7031    4017
3110                        TEXT    "HOW MANY BLOCKS ARE MARKED ON
3111        7032    1643
3111        7033    4724
3111        7034    1011
3111        7035    2340
3111        7036    2401
3111        7037    2005
3111        7040    7740
3111        7041    5061
3111        7042    6060
3111        7043    6040
3111        7044    2417
3111        7045    4061
3111        7046    6660
3111        7047    6040
3111        7050    1703
3111        7051    2401
3111                        THIS TAPE? (1000 TO 1600 OCTAL)
3112        7052    1451
3112        7053    4347
3112        7054    0405
3112        7055    0601
3112        7056    2514
3112        7057    2440
3112        7060    1123
3112        7061    4061
3112        7062    6660
3112        7063    6000
3112                        DEFAULT IS 1600"
3113                        /
3114                        EJECT
-
```

```
3115                    /
3116        7064  0061  QMON,   61
3117        7065  6201          CDF     0
3120        7066  7070          .+2
3121        7067  0036          QJCL=,=1
3122                    /
3123        7070  4545          4545
3124        7071  4547          4547
3125        7072  0516
3125        7073  2405
3125        7074  2240
3125        7075  1601
3125        7076  1505
3125        7077  5440
3125        7100  0317
3125        7101  1515
3125        7102  0154
3125        7103  4001
3125        7104  1604
3125        7105  4004
3125        7106  1101
3125        7107  1440
3125        7110  2516
3125                    TEXT    "ENTER NAME, COMMA, AND DIAL UNIT
3126        7111  1124
3126        7112  4347
3126        7113  1706
3126        7114  4014
3126        7115  0420
3126        7116  4015
3126        7117  1716
3126        7120  1124
3126        7121  1722
3126        7122  4002
3126        7123  1116
3126        7124  0122
3126        7125  3156
3126                    OF LDP MONITOR BINARY."
3127                /
3130                    EJECT
-
```

```
3131                        /
3132        7126    0061    QJCL,   61
3133        7127    6201            CDF     0
3134        7130    7132            .+2
3135        7131    0040            QSYS=.-1
3136                        /
3137        7132    4545            4545
3140        7133    4547            4547
3141        7134    0516
3141        7135    2405
3141        7136    2240
3141        7137    1601
3141        7140    1505
3141        7141    5440
3141        7142    0317
3141        7143    1515
3141        7144    0154
3141        7145    4001
3141        7146    1604
3141        7147    4004
3141        7150    1101
3141        7151    1440
3141        7152    2516
3141                        TEXT    "ENTER NAME, COMMA, AND DIAL UNIT
3142        7153    1124
3142        7154    4347
3142        7155    1706
3142        7156    4014
3142        7157    0420
3142        7160    4012
3142        7161    1702
3142        7162    4003
3142        7163    1716
3142        7164    2422
3142        7165    1714
3142        7166    4002
3142        7167    1116
3142        7170    0122
3142        7171    3156
3142                        OF LDP JOB CONTROL BINARY,"
3143                        /
3144                        EJECT
```

```
3145                        /
3146        7172    0061    QSYS,   61
3147        7173    6201            CDF     0
3150        7174    7176            .+2
3151        7175    0062            NOTL=.-1
3152        7176    2710
3152        7177    0522
3152        7200    0540
3152        7201    0122
3152        7202    0540
3152        7203    2410
3152        7204    0540
3152        7205    2331
3152        7206    2324
3152        7207    0515
3152        7210    4002
3152        7211    1116
3152        7212    0122
3152        7213    1105
3152                        TEXT    "WHERE ARE THE SYSTEM BINARIES?
3153        7214    2377
3153
3154        7215    4347
3154        7216    4347
3154        7217    1424
3154        7220    6055
3154        7221    6747
3154        7222    1404
3154        7223    2040
3154        7224    2401
3154                        LT0-7   LDP TAPE
3155        7225    2005
3155        7226    4347
3155        7227    0413
3155        7230    6055
3155        7231    6347
3155        7232    1404
3155        7233    2040
3155        7234    0411
3155                        DK0-3   LDP DISK
3156        7235    2313
3156        7236    4347
3156        7237    0411
3156        7240    0114
3156        7241    4704
3156        7242    1101
3156        7243    1455
3156        7244    1523
3156        7245    4006
3156        7246    1114
3156                        DIAL    DIAL-MS FILES
3157        7247    0523
3157        7250    4347
3157        7251    1617
3157        7252    4717
3157        7253    1511
3157        7254    2440
3157        7255    2331
3157        7256    2324
3157        7257    0515
3157                        NO      OMIT    STEM"
3160                    /
```

```
3162                        /
3163    7260  0061  NOTL,   61
3164    7261  6201          CDF     0
3165    7262  7264          ,+2
3166    7263  0017          IWAIT-.-1
3167                        /
3170    7264  4545          4545
3171    7265  4547          4547
3172    7266  1617
3172    7267  2440
3172    7270  0116
3172    7271  4014
3172    7272  0420
3172    7273  4023
3172    7274  3123
3172    7275  2405
3172    7276  1540
3172    7277  2617
3172    7300  1425
3172    7301  1505
3172    7302  5600
3172                        TEXT    "NOT AN LDP SYSTEM VOLUME."
3173                        /
3174    7303  0061  IWAIT,  61
3175    7304  6201          CDF     0
3176    7305  7307          ,+2
3177    7306  0013          OWAIT-.-1
3200                        /
3201    7307  4545          4545
3202    7310  4547          4547
3203    7311  2205
3203    7312  0104
3203    7313  1116
3203    7314  0740
3203    7315  0622
3203    7316  1715
3203    7317  4000
3203                        TEXT    "READING FROM "
3204    7320  0000  IWTU,   0;
3204    7321  0000  0
3205                        /
3206    7322  0061  OWAIT,  61
3207    7323  6201          CDF     0
3210    7324  7326          ,+2
3211    7325  0012          LAST-.-1
3212                        /
3213    7326  4545          4545
3214    7327  4547          4547
3215    7330  2722
3215    7331  1124
3215    7332  1116
3215    7333  0740
3215    7334  1716
3215    7335  4000
3215                        TEXT    "WRITING ON "
3216    7336  0000  OWTU,   0;
3216    7337  0000  0
3217                        /
3220                        EJECT
-
```

```
3221                    /
3222                            LAST=,
3223                    /
3224                            ASMIFM  7600-,
3225                    ERROR                   /CODE IN PAGE 37
3226                    /
3227                    /
3230                    /
3231                    /
3232                            ASMIFN  CREF
3233                            LISTAPE CREF
3234                    /
3235                    /       B02
```

NO ERRORS

```
ABUF    4276
AC2000  7332
AC4000  7330
AC6000  7333
ANSWER  4314
ASK     0044
ASK000  4225
ASK010  4243
ASK020  4246
ASK100  4263
ASK110  4272
ASYS    5765
AVOLID  5570
AX0     0010
Ax1     0011
AX2     0012
Ax3     0013
BADNAM  6510
BEGIN   4000
BUILD   4010
CFL000  4620
CFL100  4627
CFL110  4645
CFL120  4706
CFL130  4721
CFL140  4725
CL      0121
COMMA   0116
CPMCL   0120
CPYFIL  0050
CREF    0014
CVH000  5000
CVH020  5010
CVH030  5022
CVH040  5025
CVH050  5062
CVH060  5074
CVH070  5104
CVH080  5106
CVH110  5120
CVH120  5122
CVH130  5131
CVH140  5137
CVH150  5145
CVH160  5155
CVH170  5157
CVH180  4653
CVH190  4665
CVU     5232
DKX     6124
DSKL    5565
DSYS    5571
DXBLK   4570
EXIT    0025
FDBCNT  4071
FOUR    7307
GDIAL   0046
GDL000  4400
GDL010  4406
GDL020  4416
GDL030  4440
GDL050  4447
```

```
GDL110 4526
GDL120 4531
GDL130 4535
GET    0053
GETPRI 4073
GETSCR 4114
GETSEC 4103
GETWAS 4122
GET000 5200
GET010 5207
GLDPU  0047
GLU000 5256
GLU010 5301
GLU020 5314
G2C    5550
HBLNKS 5346
HDRSW  0113
ILIST  0131
INIT   4160
INT000 5317
INT050 5325
INT060 5334
INT070 5400
INT080 5426
INT090 5433
INT100 5440
INT105 5454
INT110 5464
INT115 5476
INT120 5477
INT150 5504
INT160 5537
INT170 5542
INT175 5600
INT180 5644
INT200 5655
INT210 5675
INT215 5712
INT220 5724
INT230 5734
INT300 5744
INT320 6000
INT330 6002
INT340 6012
INT350 6020
INT360 6040
INVU   6527
IWAIT  7303
IWTU   7320
JMPI37 5117
KCIF   5116
KLIF   5114
KLINC  5115
LAST   7340
LIMIT  0055
LTX    6110
MAKBIN 4072
MAL    5576
MBLNKS 4152
MCOMMA 0115
MCP    0117
```

```
MCR     0114
MJMS    5573
MLIST   4356
MNO     5574
MONE    7240
MTHREE  7346
MTIN    4151
MTWO    7344
M10     0101
M100    0105
M1000   4573
M11     4574
M14     0102
M20     0103
M354    0106
M4      0076
M40     0104
M400    0107
M5      0077
M5757   4571
M6      0100
NEXT    4063
NOFIND  6544
NOMDI   5575
NOSYS   5572
NOTL    7260
NOTX    6562
NOX     6050
NUMBER  0051
NUM000  4200
NUM010  4202
NUM020  4205
NUM030  4217
OLIST   0122
ONAME   6153
ONE     7201
OWAIT   7322
OWTU    7336
PBLKLN  5566
PDKMLT  5773
PFILE   4155
PJLEN   5771
PJST    5770
PLDNAM  4154
PLEN    4157
PLTX    5774
PMLEN   5767
PMLIST  0110
PMST    5766
PNOX    5772
PONAME  4153
PRPLY   4262
PSTRT   4156
PUT     0054
PUT000  5215
PUT010  5224
PVLEN   0060
PXBUF   0056
PXLEN   0057
P0      0061
P1      0062
P10     0066
```

```
P16     5693
P1600   5567
P17     5654
P2      0063
P20     0067
P27     5652
P3      0064
P30     0070
P337    0074
P353    0075
P3700   4732
P4      4731
P40     5563
P400    5564
P5      5650
P6      5651
P60     5255
P7      0065
P70     0071
P77     0072
P777    4572
QJCL    7126
QMON    7064
QPRIM   6140
QSCR    6267
QSECN   6212
QSTRT   6403
QSYS    7172
QTLEN   7006
QUNIT   6627
QVOLID  6672
QWAS    6327
QXBLKS  6733
READ    0021
REMAIN  0111
SIX     7327
TDSK    5253
TELL    0045
TEL000  4331
TEL010  4341
TEL020  4342
TEL100  4347
THREE   7325
TIN     4150
TMP1    0002
TMP2    0003
TMP3    0004
TMP4    0005
TMP5    0006
TMP6    0007
TOOBIG  6460
TOOLOW  6600
TPTB    4147
TTAP    5254
TWO     7305
UPLEN   0052
UPL000  4161
UPL010  4175
WALEFT  0112
WRITE   0022
XBUF    7600
XLIM    4617
```