

IDENTIFICATION

|               |                                    |
|---------------|------------------------------------|
| Product Code: | DEC-12-ZR2B-D                      |
| Product Name: | DIAL-MS PIP Program<br>Description |
| Date Created: | December 1, 1970                   |
| Maintainer:   | Software Services                  |

LAP6-DIAL is an editor, filing system and assembler for use with the PDP-12 computer. The editor and filing portions are derived from the basic LINC program LAP6<sup>1</sup> by Mary Allen Wilkes of Washington University. The assembly portion is derived from several programs used for the PDP-8 computer including PAL-D<sup>2</sup>.

The Digital Equipment Corporation wishes to express to the author, Mary Allen Wilkes (Clark), and the Computer Research Laboratory of Washington University, St. Louis, Missouri, its appreciation for the development set forth in LAP6 as well as its thanks for permission to use parts of the LAP6 program.

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<sup>1</sup>M. A. Wilkes, LAP6 Handbook, Computer Research Laboratory Tech. Rep. No. 2, Washington University, St. Louis, May 1, 1967.

<sup>2</sup>PAL-D Assembler Programmer's Reference Manual DEC-D8-ASAA-D.

## 1.0 PROGRAM OVERVIEW

PIP is basically an I/O device manipulator. It transfers data from one device to another, perhaps doing some conversion on the way. PIP works with two types of I/O: sequential and file oriented. File oriented merely means that the entire file resides on some device (DECTAPE, DISK, etc.) from which any part of the file may be retrieved at any time. On such a device there exists an index which has the file names, the record numbers and lengths of each file. Sequential input is defined as a string of one data word after another, where generally the length of the input and/or output is unknown and where it is generally impossible to "backspace" the input device to retrieve characters once they are read in or written out. PIP can transfer files to files, files to sequential, sequential to sequential, and sequential to files.

PIP is composed of several "handlers". Each handler does one conversion task (binary, source, etc.). The initial display chooses which handler to use. The handler does not do any I/O; rather it sets flags which tell the low level I/O routines what to do. This is done by two "flags" called BFLAG1 and BFLAG2 (for exact values see the system routine descriptions at the end of this manual). If either BFLAG1 or BFLAG2 is zero, then file oriented I/O is to be used instead of sequential. If an input or output is sequential, the handler gives an AUXIN to get a character or AUXOUT to output a character. Thus, from a high level point of view, the handler does not know or care what sequential device it is using; all it knows is that when it gives an AUXIN, the I/O routine will return with a character in the AC (the AUXIN also checks for CTRL/D, CTRL/P, and CTRL/Z). For file to file operations a "FILEC" call looks up the output file using "DIRECT" and then uses "COPY" to transfer all the data. (These routines are described in system subroutine calls, section 2.0.) For file to sequential or sequential to file operations, separate "mini-handlers" are often required. For example, the binary handler has two handlers, BINTAP for input from tape and BTAPE for output. Note that these cannot both be in use at the same time because file to file operations are done by "FILEC". Thus, PIP is merely a grouping of subroutines, with a very small main loop. This modularity makes PIP fairly big, but it also makes it easy to understand and to modify. Most of the key subroutines are described in the back of the next section.

## 2.0 PIP SUBROUTINES

PIP is basically a set of general purpose low level subroutines and a master coordinating loop which calls them. This section describes what these routines do and how to call them. Instead of using a JMS NAME type of call, the equal sign is used as follows:

PNAME = JMS NAME

Thus, by just stating PNAME, the subroutine call is obtained. In almost all cases all the tags defined in a subroutine begin with the same letter as the subroutine name.

|         |   |
|---------|---|
| TAPE    | Sets up the index information area (locations INDEX through CUPPER) to use tape rather than disk. Sets the unit to between 0 and 7.   |
| DISC    | Same as TAPE except the unit is set between 10 and 47,  |
| PUSH    | Takes the "FBLOCK" area (FSIZE through PNAME+3) and moves it to an area called the "lower save" area.   |
| POP     | Transfers the lower save area back to the FBLOCK area.  |
| HPUSH   | Transfers the FBLOCK area to the "high save" area.  |
| HPOP    | Transfers the high save area to the FBLOCK area.  |
| LEADER  | Generates about 120 characters of leader-trailer on the chosen output device (BFLAG2).  |
| FILEC   | Copies a named file from one unit to another. The input unit was already "looked up" and exists in the high save region. The output file name and unit are still in FBLOCK. FILEC will do the rest and return to PIP.   |
| PUTL    | Puts a character on the TTY. AC=character on entry; AC=0 on return.   |
| DISPLAY | DISPLAY<br>XYZ        XYZ , Horizontal coordinate (1 word)<br>Vertical coordinate (1 word)<br>Text/F Q and A type<br>H text.....<br>end\/.<br><br>Display will display the message pointed to by the next word. The first and second words are the starting horizontal and vertical positions on the screen. The text is standard Q and A type text, but no replies are permitted. This routine displays the message once and then returns. To refresh you must go back and redisplay it.           |
| PIP     | Restarts PIP.   |
| DIAL    | Returns to the DIAL monitor.  |
| COPY    | Copies blocks from one unit to another. INBLOCK contains the first input block number, OUTPUT contains the output unit. OUTNUM contains the two's complement of the number of copies to make.   |
| CHECKIO | Checks to see if a CTRL/D or CTRL/P was typed.  |
| GETL    |   |
| xxxx    | comes here if no character typed (1st word).  |
| xxxx    | comes here with typed character in the AC (2nd word).   |
| DIRECT  | Looks up the name of a file on a device index. The index information is contained in INDEX and ILEN and the unit in FUNIT. The name of the file is in FNAME and the type of file (source or binary) in FTYPE (1 or 2). There are two types of files: input and output. If FWHAT=1, then it is an input file. If the file exists, then the starting block number is left in FBNUM and the length in FSIZE. If the file does not exist, the routine issues a "NO" display. If the file is output, you |



supply the length in FSIZE and the routine will return the block number in FBNUM. The routine handles the "REPLACE" and the "NO" messages.

DECODE      This routine will get a line from the Teletype, check its syntax, and  
XYZ          then return. It will display the user's message at XYZ (see DISPLAY)  
in addition to displaying a "REPLY". The reply is of the form:

|        |        |   |            |   |        |
|--------|--------|---|------------|---|--------|
| X      | 1234   | ; | ABCDEFGH   | , | 4321   |
| single | octal  |   | 8 six bit  |   | octal  |
| letter | number |   | characters |   | number |

The first letter goes in the location "FTYPE" in 8 bit ASCII, the first octal number goes into FUNIT, the 8 character name goes into FNAME through FNAME+2 (filled by 77's), and the last number goes into FSIZE. Any missing numbers go to 0, any characters missing from the FNAME go to 77.

MOVE          The move subroutine will move NUMBER number of words from FROMLOC to  
FROMLOC      TOLOC.  
TOLOC  
NUMBER

NOO          Displays the word "NO" on the screen. It never returns.

REPLACE      Displays the word "REPLACE" on the screen and waits for an R. If an R  
is typed, it returns. Replace does a PUSH on entry and a POP on exits.

READ (or WRITE)  
UNIT #  
Core Loc. (starting loc of transfer)  
Number of blocks to transfer  
First block of transfer

These are the calls to the Mass Storage I/O Handler. UNIT # is the device number (0-7 = tapes 0 -7; 10-17 are disk units; 20-77 are unassigned yet; 100-7777 an error condition occurs). If you overflow from location 7777, the routines will automatically read into location 0 of field 1, and so on. PIP uses essentially the same RF08 and RK08 routines as BUILD. For a detailed description see DEC -12-ZR5A-D.

SEARCH  
CHECKLIST  
GOTOLIST

CHECKLIST,    301  
                 302  
                 303  
                 320  
                 307  
                 4215

bit 0 on = end of list

GOTOLIST,    AFOUND  
                 BFOUND  
                 CFOUND  
                 PFOUND  
                 GFOUND  
                 CARRET

This routine checks the contents of FTYPE with the list pointed to by the first argument and, if found, goes indirectly to the corresponding position on the second list. If not found, it returns. Note that bit 0 is the end of list indicator. Therefore, only values between 0 and 3777 may be checked using this routine.

AUXIN Gets a character from the device specified by BFLAG1.

BFLAG1 = 1 Teletype  
= 2 High speed reader  
= 3 Card reader

Any other values should not be used.

AUXOUT This puts a character on the specified device.

BFLAG = 1 Teletype  
= 2 High speed punch  
= 3 Line printer

Important lower core locations:

0000 is used by JMP's in LMODE  
0001 is used for displaying characters

AUTO 1-AUTO 8 (10-17)

Used for auto registers.

TEMP

TEMP1 thru TEMP4

These may be used as temporary locations at any time. Remember that as a routine is called, that routine is also free to use them.

KEYCHAR Last character typed on the TTY.

BNUM Number of  $400_8$  word blocks that can be used for buffers.

INBLOCK See COPY.  
through  
OUTNUM

INDEX Contains starting block number of the DIAL index (normally 346).

ILEN Contains the blocks length of the index (normally 2).

ELOWER Lowest block on the device.

EUPPER Highest block on the device.

CLOWER Lowest block the system uses on the device.

CUPPER Last block the system uses on the device.

FBLOCK AREA

FSIZE thru FNAME 3

FSIZE generally the length of the file (in blocks).

FUNIT unit on which the file sits.

FTYPE 1 = source  
2 = binary  
anything else = wrong

FWHAT 1 = input  
2 = output  
anything else = wrong

FBNUM starting block of the file.

FNAME name of the file (8 characters = 4 words).

### 3.0 ADDING OR DELETING DEVICES TO PIP

#### 3.1 MASS STORAGE

Mass storage I/O is all done by calling the system read and write routines. By looking at the mass storage routine (approximate location 1400) the reader can see the general call is:

```
READ (or WRITE)
unit number
first core location of transfer
number of blocks to transfer
first block number of transfer
```

The key to selecting the type of device lies in bits 6-8 of the unit number word. There are, therefore, a maximum of 8 possible types of mass storage devices which PIP may use. At present, only device type 0 (units 0-7) is implemented as LINC tape. Type 1 (units 10-17) is now the RF08 or the RK08. Type 2, 3, and 4 (devices 20-47) are used for additional RK08 drives. Slots 5-7 (units 40-77) are free and there are no plans to use any of these in the immediate future. These slots have a "NOSUCH" in them so that if they are referenced, they will merely JMS to NOSUCH. NOSUCH will display an error message. Note that this should not happen in practice, because PIP should not try to address imaginary units.

Assume the reader wants to add a new mass storage device (for example, a drum) to be called device "7". At location 1411 (the last word of the input slots) put the address of your read routine. Then, whenever PIP attempts to read from a unit on device 7 (units 70-77), it will call this read routine in the manner just discussed. The write routine uses the same principle, with the exception that the address routine goes at location 1423 (the last write slot).

All that now remains is to tell the particular handler about the new device now made available for it to use. You would probably want to add it to the scope message; because that is merely adding one line in the middle of the desired text statement, it will not be discussed further. Assuming that you wish to tell the COPY handler about the new device, consider the following sequence. At location ACOPY (approximately 5626) the COPY routine calls DECODE to get the unit. It then checks for an "L" for LINC tape (314) and for a "D" for drum. Notice that the LINC tape unit number is ANDed with 0007. This ensures a unit between 0 and 7, which is device 0, which is the LINC tape routines. For this device 7, AND the unit with 0007 and then add 0070. This ensures the unit as being between 70 and 77. COPY logic will do the rest, including calling the mass storage routines with the unit selected, which in turn will call the

particular handler. That is basically all there is to adding another device.

### 3.2 SEQUENTIAL DEVICES

Sequential devices are selected by program switches (BFLAG1 and BFLAG2). To insert or remove a sequential device, add a BFLAG test in SEQIN or SEQOUT, the input and output routines. The exact nature of the device is then unimportant, as is the actual testing of the BFLAG switch. As an example of this, a brief description of the card read routine is in order.

The card reader is at present the most complicated sequential device on PIP. It differs from most other devices in that it has a limited amount of time to read in a mass of data. For this reason, it has its own buffer. The card routine is initialized by call CDINIT. This sets certain flags and stores the limits on the card columns to be read in. The main entry point is CDREAD. This routine actually checks BFLAG1 and then returns to the third address after the call if BFLAG1 $\neq$ 3. It returns to the first location if the data is not yet ready. It returns to the second location if the data is ready with a character in the AC. The routine reads in an entire 80 column card into CDBUF. The buffer is 40<sub>10</sub> words long because BCD is only 6 bit. After an entire card is read in, it then translates it to 6 bit ASCII. This is done by using the CDTAB which is a table of the 6 bit ASCII characters. The characters are arranged positionally to correspond to the values of the BCD. As an example, the translation of the character "A" follows.

A has the numerical value 61 in BCD from the card reader. The table CDTAB is packed two characters to a word. Therefore  $61/2 = 30 + \text{Remainder}$ . This may be taken as meaning the 30th character from the table CDTAB, right, as opposed to left if the remainder was 0. The contents of CDTAB+30 is 01, which is indeed the ASCII value of "A". It then stores this correct value back in the card buffer CDBUF until it translates the entire card. Then it will give the characters back to the user on an individual basis. When it has exhausted CDBUF, it reads in another card and translates it. The translation table CDTAB is set up for the IBM-029 Key punch code. This table may be reshuffled or changed in any way, as long as blank is always the only character to have the 00 value.

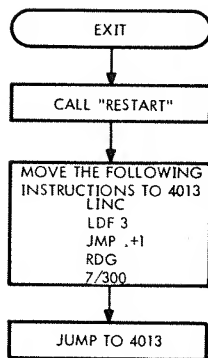
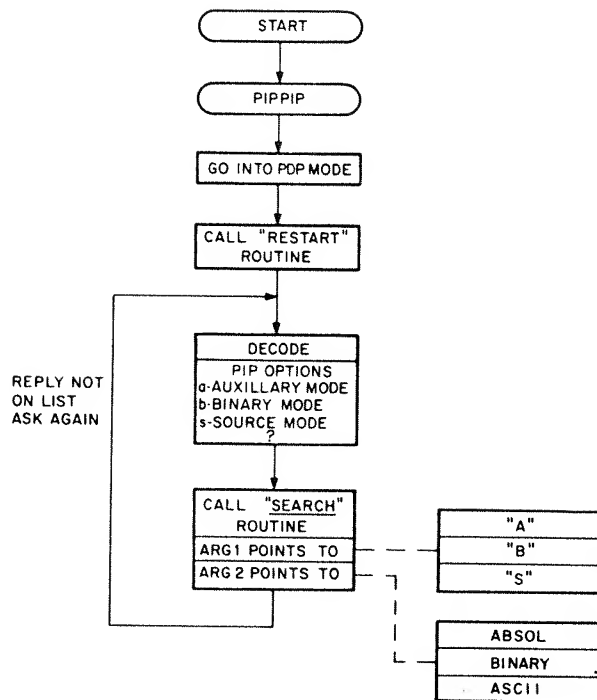
### 4.0 FLOWCHARTS (Attached)

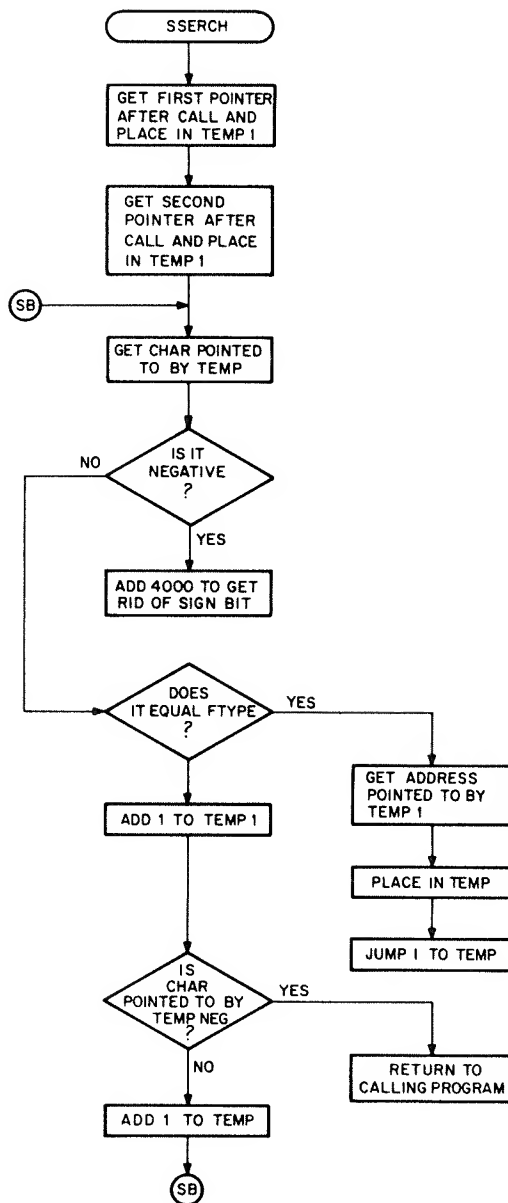
#### PIP FLOWCHART CONVENTIONS

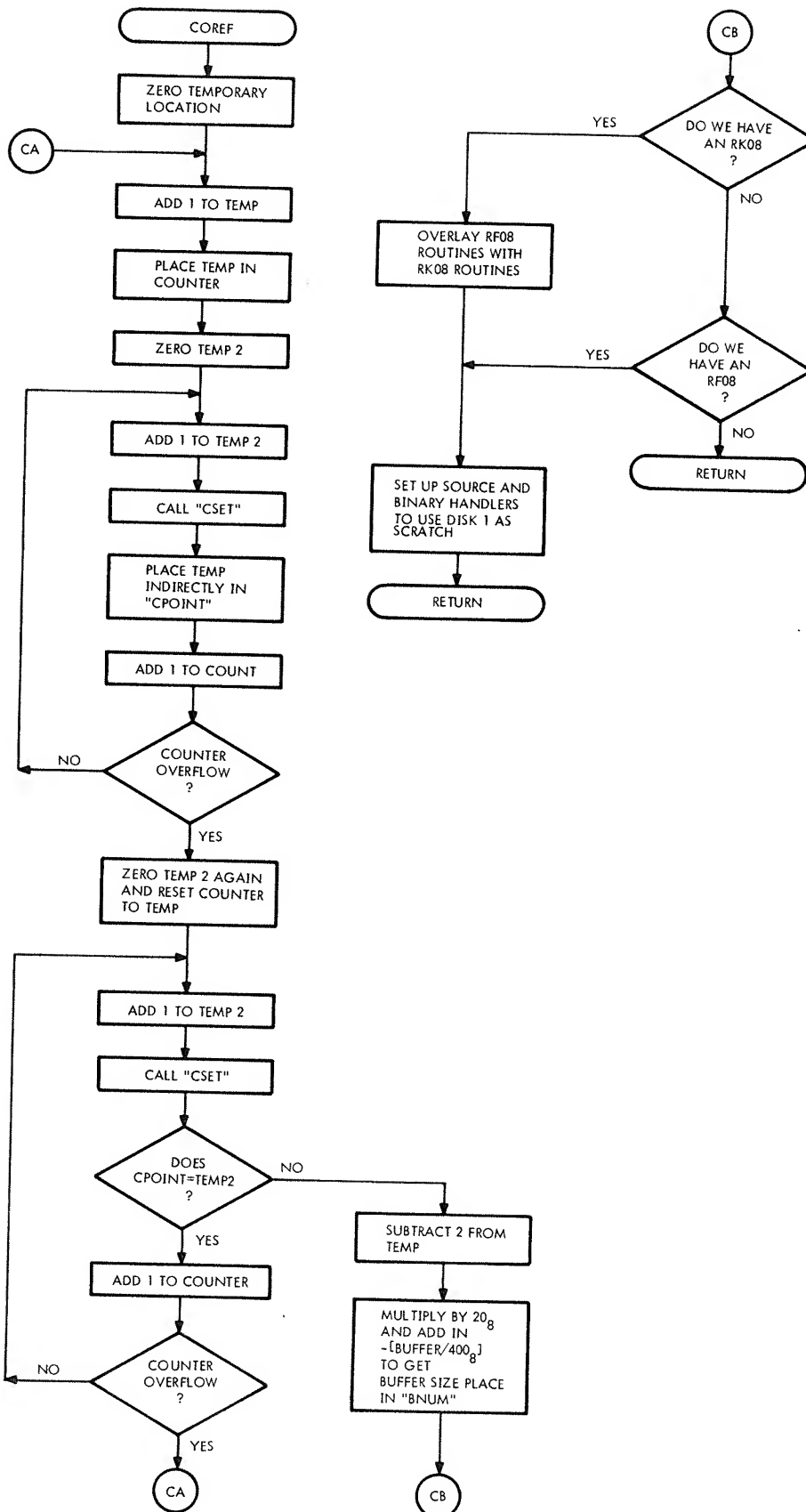
An underlined name means that routine has been called. A name in quotes ("F") means that is the message now being displayed. A subdivided box means that the rest of the box is the argument to the subroutine which is being called. RETURN at the end of a subroutine means return to the calling program.

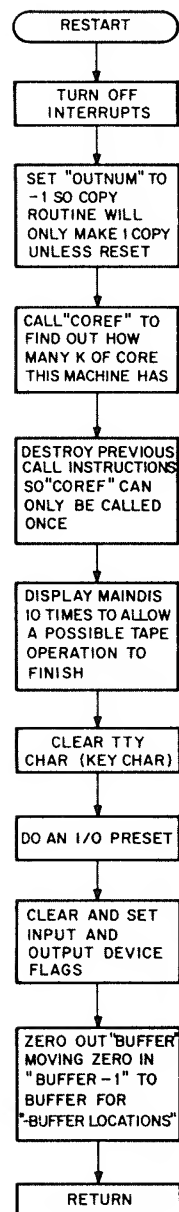
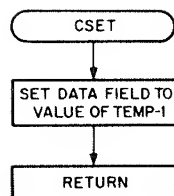
### 5.0 LISTINGS (Attached)

The Disk I/O routines are functionally the same as the DIAL-MS routines. For a more detailed description and flowchart, refer to DEC-12-ZR5B-D.

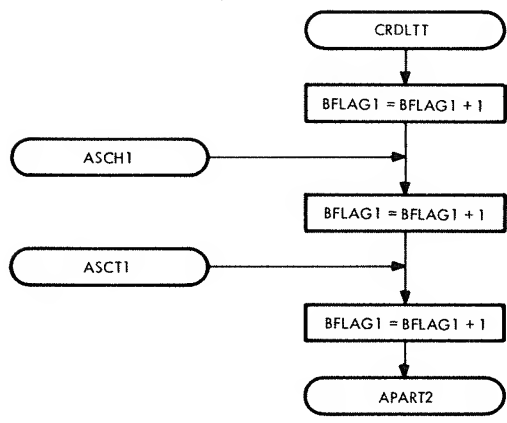
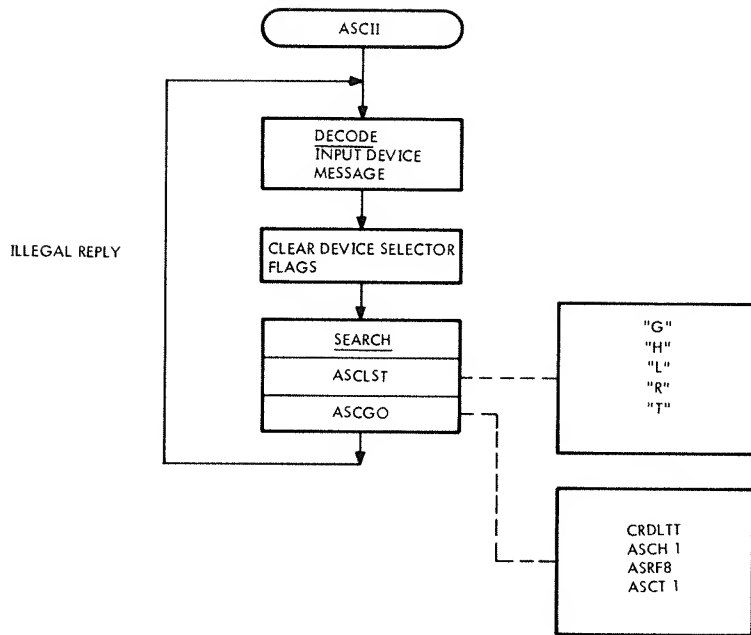


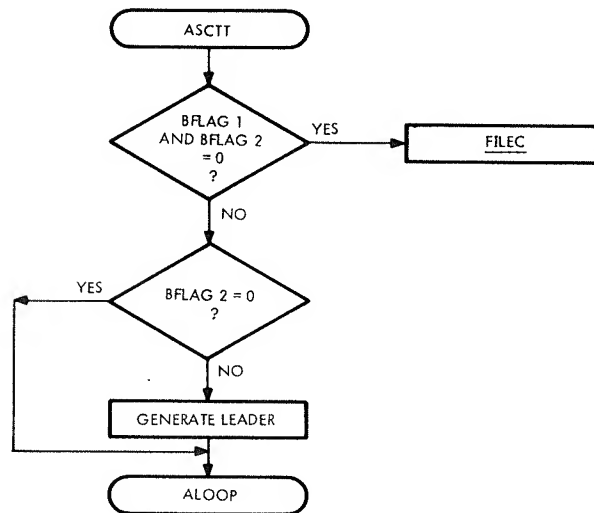
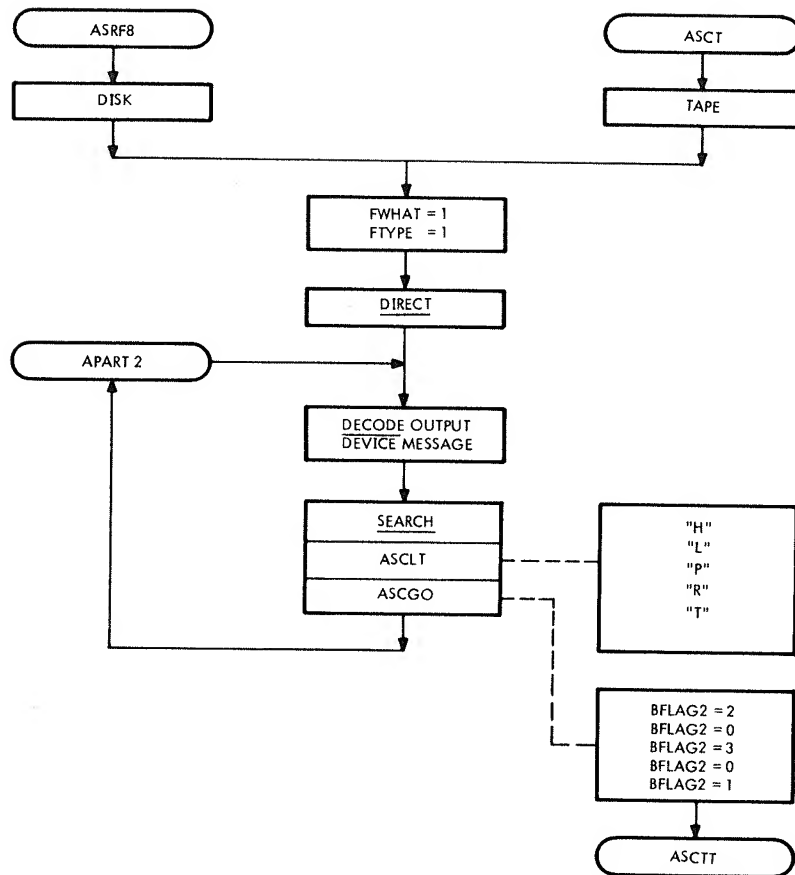


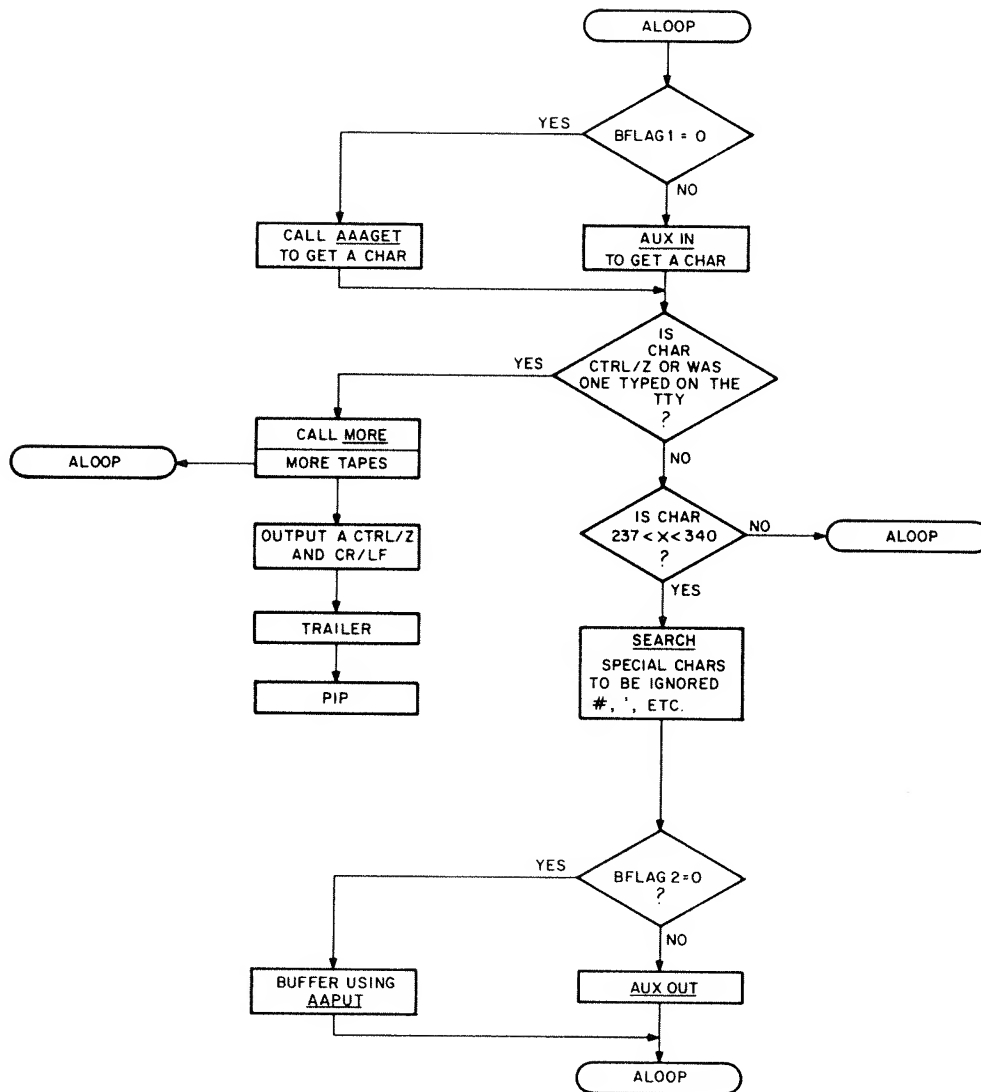


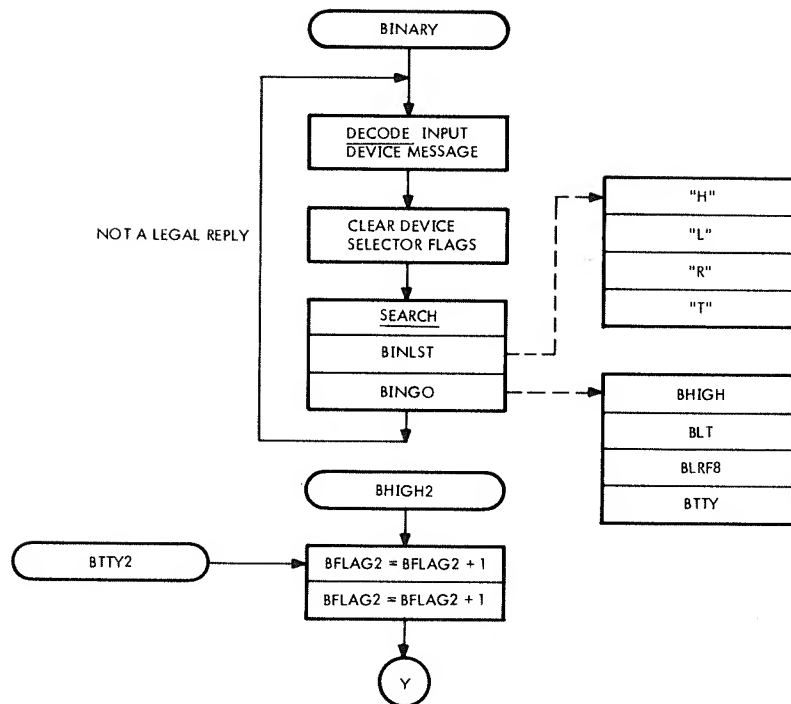


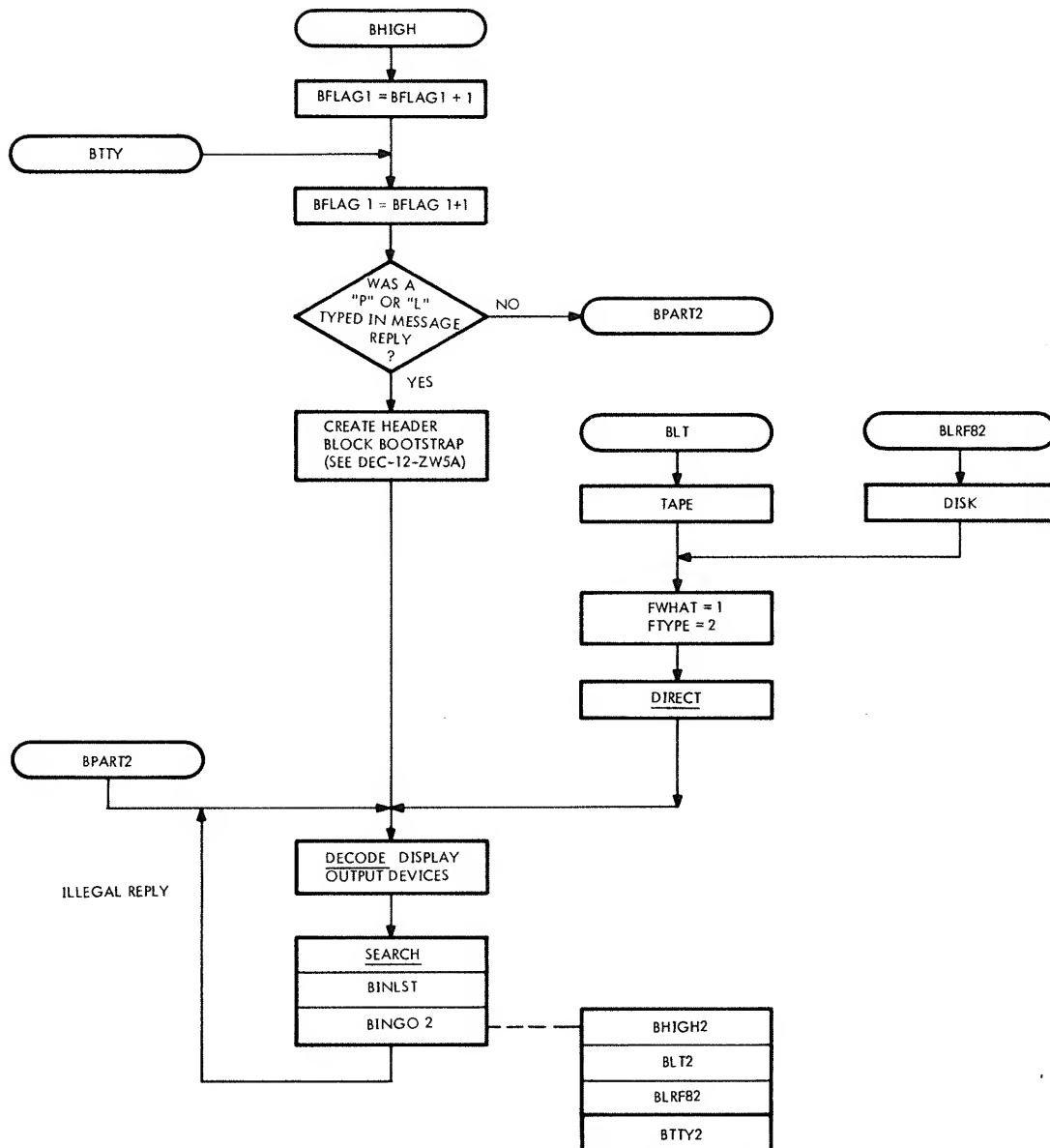


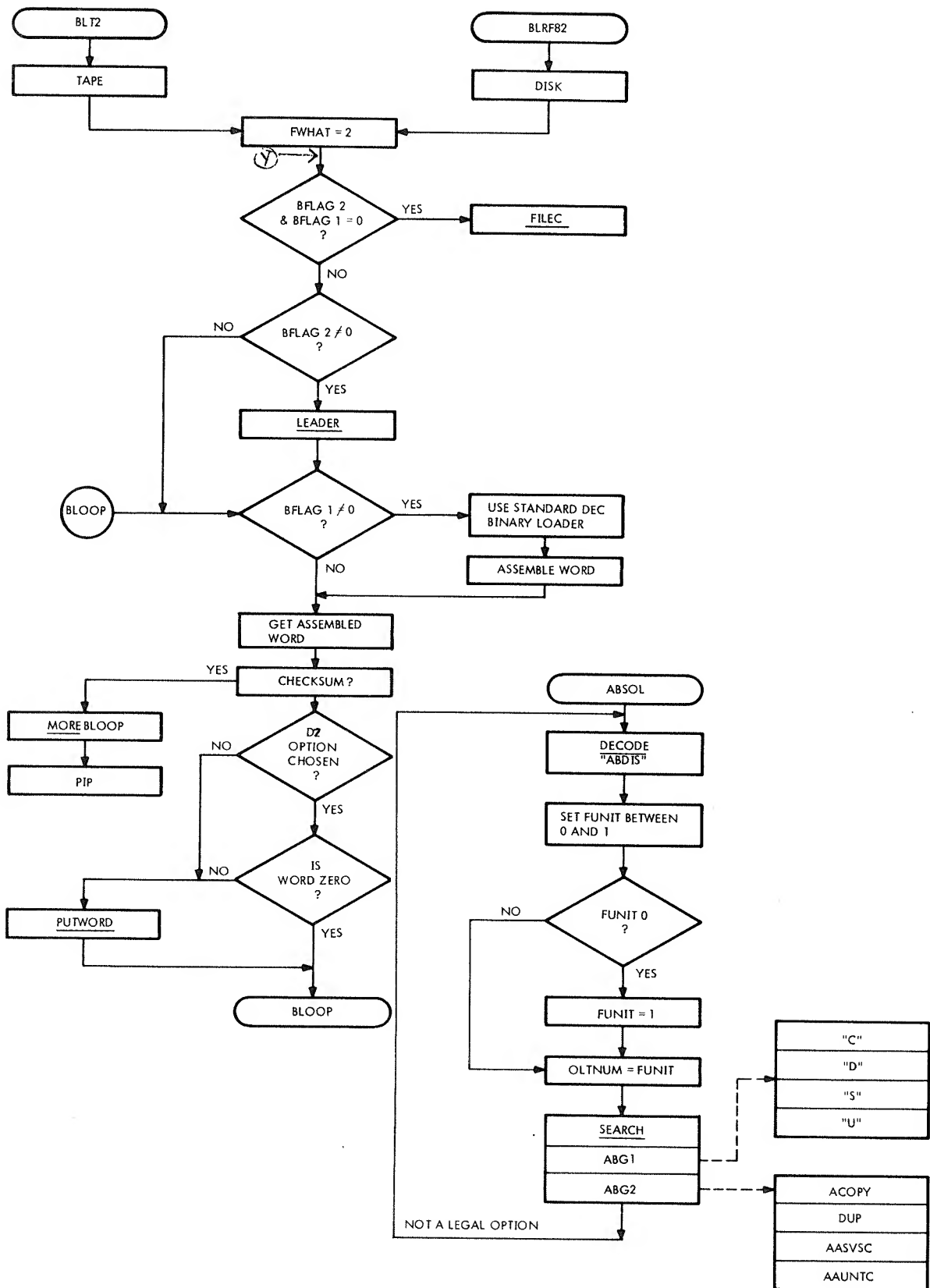


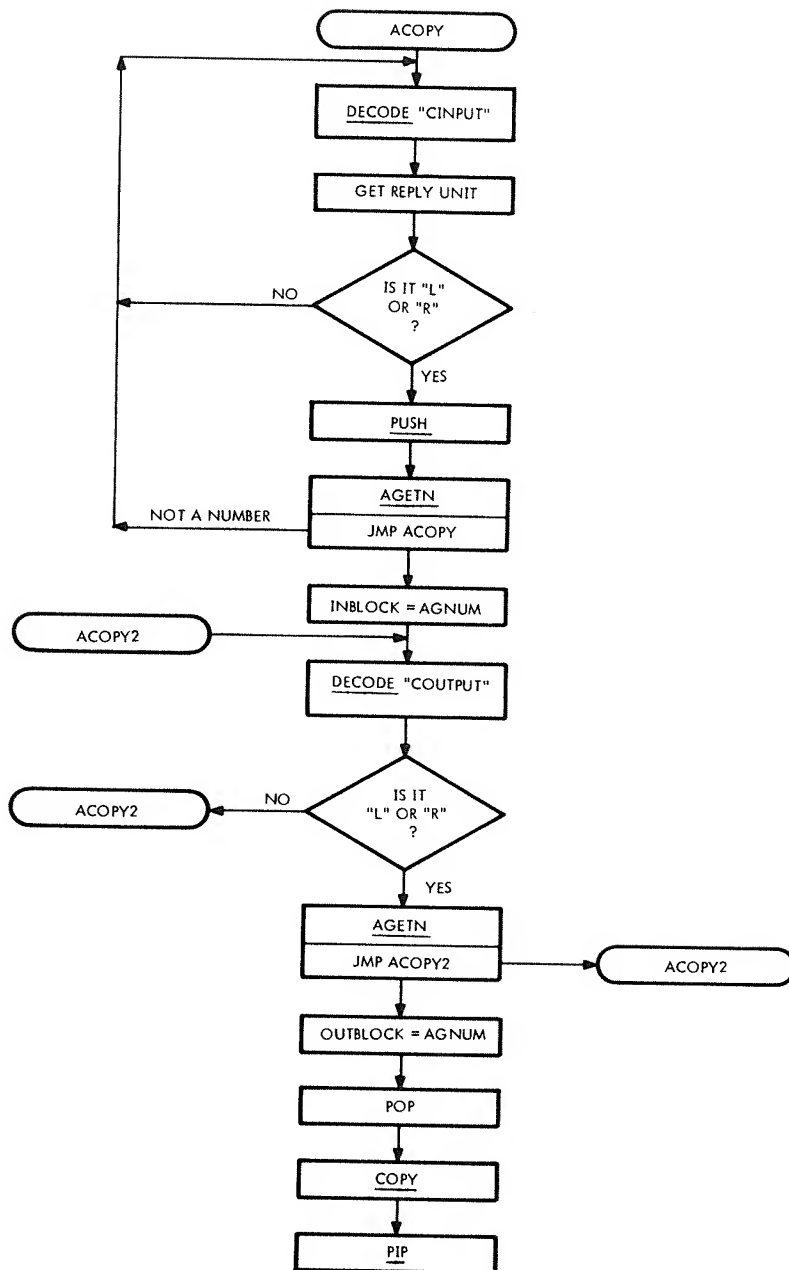


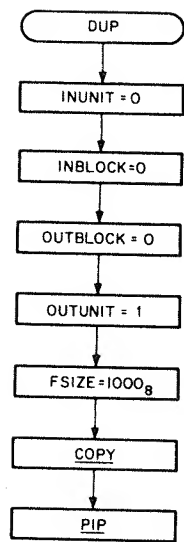














```

0015 /
0016 /
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0032 /
0033 /
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0064 /
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0066 /
0067 /
0070 /
0071 /
0072 /
0073 /
0074 /
0075 /
0076 /
0077 /
0100 /
0101 /
0102 /

```

DIAL PERIPHERAL INTERCHANGE PROGRAM FOR THE PDP-12 COMPUTER.  
 COPYRIGHT 1969; DIGITAL EQUIPMENT CORPORATION, MAYNARD MASS., 01754  
 WRITTEN BY JACK BURNES  
 RELEASED NOVEMBER, 1969.  
 UPDATED TO DIAL-MS MARCH, 1970.  
 UPDATED FOR CHAINING MAY 14, 1970  
 UPDATED FOR MULTIPLE RK26S 8/12/70

PIP WILL RUN ON A PDP-12 B OR HIGHER.

```

PPPPPPPP      IIIIIIIIIII      PPPPPPPP
P      PP      II      P      PP
P      PPP      II      P      PPP
P      PP      II      P      PP
PPPPPPPP      II      PPPPPPPP
P      II      P
P      II      P
P      II      P
P      II      P
P      IIIIIIIIIII      P

```

EJECT

```

0103          *0          /MAJOR PAGE # LOCATIONS.
0104          /
0105          /
0106          /
0107          /
0110      0000 0000      0          /RESERVED FOR JMP S IN L MODE.
0111      0001 0000 LOC1, 0          /USED BY DISPLAY ROUTINE.
0112          TAPE=JMS I .
0113      0002 3340      TTAPE
0114          HPOP=JMS I .
0115      0003 3321      HHPOP
0116          HPUSH=JMS I .
0117      0004 3313      HHPUSH
0120          LEADER=JMS I .
0121      0005 3303      LLEDER
0122          FILEC=JMP I .
0123      0006 1515      FFILEC
0124          PUTL=JMS I .
0125      0007 3361      TTYPUT
0126          /
0127          /
0130          *10
0131      0010 0000 AUTO1, 0          /AUTO REGISTER 1
0132      0011 0000 AUTO2, 0
0133      0012 0000 AUTO3, 0
0134      0013 0000 AUTO4, 0
0135      0014 0000 AUTO5, 0
0136      0015 0000 AUTO6, 0
0137      0016 0000 AUTO7, 0
0140      0017 0000 AUTO8, 0
0141          /
0142          /
0143          /
0144          /
0145          /
0146          /
0147          /
0150          RF08=1          /SET THIS SWITCH TO 1 IF YOU WANT
0151          /THE RF08 DISK HANDLER ASSEMBLED INTO PIP.
0152          /ELSE SET THE SWITCH "RF08" TO 0.
0153          /
0154          /
0155          DISKWORK=0001          /SET THIS SWITCH TO 0 IF YOU DO NOT WANT PIP TO
0156          /AUTOMATICALLY USE THE RF08 DISK FOR
0157          /THE BINARY AND SOURCE SCRATCH AREAS; IF AN RF08 DISK IS PRESENT.
0160          /
0161          /
0162          /
0163          /
0164          /
0165          /
0166          /
0167          CARD=1          /SET THE CARD=1 TO CARD READER AND LINE PRINTER.
0170          /          ELSE SET CARD TO 0.
0171          /
0172          /
0173          TERMC=00          /SET TO LOOK FOR A 00 AS THE EOF CHAR.
0174          /
0175          REMAKE=0          /DO NOT LOAD IN THE SOURCE FILE CONVERTER.
0176          /          REMAKE WAS ORIGINALLY 1 BUT THE CONVERT ROUTINES NO LONGER ARE NEEDED.
0177          /
0200          ECHO=1          /SET THIS SWITCH TO 0 TUPPRESS ECHOING.
0201          /

```

```

0202      /
0203      /
0204      PFLICK=1
0205
0206      /SET THIS SWITCH TO ONE TO CAUSE DISPLAY
0207      /CHARACTERS TO ALTERNATE RANDOMLY BETWEEN
0210      /CHANNELS 1&2. MAY BE SET TO ZERO
0211      /TO PICK UP SPACE ON PAGES IF NEEDED, WITH
0212      /NO ILL EFFECTS NOTED. A FRILL ONLY.
0213      /
0214      /
0215      /
0216      /
0217      /
0220      STAR20=1
0221      /
0222      /
0223      /
0224      /
0225      /
0226      /
0227      /
0230      /
0231      DIALBOOT=300
0232      DIALSYS=300
0233      SYSWT=467
0234      TINDEX=346
0235      TILEN=2
0236      TLOWER=0
0237      TUPPER=777
0240      TSYSLOWER=270
0241      TSYSUPPER=467
0242      SYSSBLOCK=370
0243      SYSBIN=0001
0244      ASMIFZ RF08&DISKWORK
0245      SYSSBSP=0001
0246      ASMIFN RF08&DISKWORK
0247      SYSSBSP=0011
0250      SYSSBLOCK=370
0251      SYSHDR=447
0252      /
0253      /
0254      /
0255      /
0256      /
0257      /
0260      /
0261      /
0262      /
0263      /
0264      /
0265      ZERO=CLA
0266      PONE=ZERO+1
0267      PTWO=PONE+4+100
0270      PTHREE=PTWO+20
0271      PFOUR=PTWO+2
0272      PSIX=PTHREE+2
0273      MONE=CLA CMA
0274      MTWO=CLA CLL CMA RAL
0275      MTHREE=CLA CLL CMA RTL
0276      LEFT=000
0277      TOP=340
0300      BOTTOM=-400

```

/SET THIS SWITCH TO ONE TO CAUSE DISPLAY  
 /CHARACTERS TO ALTERNATE RANDOMLY BETWEEN  
 /CHANNELS 1&2. MAY BE SET TO ZERO  
 /TO PICK UP SPACE ON PAGES IF NEEDED, WITH  
 /NO ILL EFFECTS NOTED. A FRILL ONLY.

/SET TO 1 IF YOU WANT TO HAVE A "20" AT THE BEGINNING OF EVERY FILE.  
 ELSE SET STAR20 TO 0000/

/WHERE TO REREAD IN DIAL FROM  
 /START OF FIRST BLOCK OF SYSTEM ABOVE FREE BLOCKS.  
 /LAST BLOCK OF DIAA WORK AREA.  
 /TAPE INDEX BLOCK  
 /NUMBER OF BLOCKS IN INDEX  
 /FIRST BLOCK TO USE  
 /LAST BLOCK TO USE  
 /START OF SYSTEM  
 /LAST BLOCK OF SYSTEM.  
 /START OF BINARY WORK AREA.  
 /BINARY SCRATCH UNIT.  
 /WHAT IS SPECIAL DISK UNIT  
 /NO SPECIAL SCRATCH UNITS.  
 /HOW ABOUT NOW???  
 /DEFINE PRIMARY SCRATCH AS DISK (INIT WILL DECIDE REST OF STORY)  
 /START OF ASCII WORK AREA.  
 /BINARY HEADER BLOCK FOR "SB"2 COMMAND"

SOME BASIC DEFINITIONS

/((Awww))  
 /CLA CLL IAC RAL  
 /CML  
 /((Awww))  
 /RTL

/POINTER TO STARTING LEFT OF SCREEN  
 /POINTER TO TOP OF SCREEN  
 /SCREEN BOTTOM

```

0301 /
0302 /
0303 AS 41F2 CARD-1
0304 BUFFER=6400
0305 AS 41F2 CARD-1
0306 BUFFER=6000
0307 /
0310 /
0311 /
0312 0020 0020 L20, 20
0313 0021 7770 M10, =10
0314 L7770=M10
0315 0022 7774 M4, -4
0316 0023 7760 M20, =20
0317 0024 0077 L77, 77
0320 0025 0100 L100, 100
0321 0026 0200 L200, 200
0322 0027 7456 M322, -322
0323 0028 4000 L4000, 4000
0324 0031 5000 L5000, 5000
0325 0032 6000 L6000, 6000
0326 0033 7000 L7000, 7000
0327 0034 7757 L7757, 7757
0330 0035 0060 L60, 60
0331 0036 0700 L700, 700
0332 0037 7766 M12, =12
0333 0040 0400 L400, 400
0334 0041 0054 L54, 54
0335 0042 7724 M24, =24
0336 0043 7720 M60, =60
0337 0044 7710 M70, =70
0340 0045 7705 M73, =73
0341 0046 7701 M77, =77
0342 0047 7777 L7777, 7777
0343 0050 7746 M32, =32
0344 0051 0333 L333, 333
0345 0052 7744 M34, =34
0346 0053 7700 L7700, 7700
0347 0054 0010 L10, 10
0350 0055 0004 L4, 4
0351 0056 7740 L7740, 7740
0352 M400=L7740
0353 0057 2021 M5757, =5757
0354 0060 0007 L7, 7
0355 0061 0030 L30, 30
0356 0062 7735 M43, =43
0357 0063 7772 M6, =6
0360 0064 7400 L7400, 7400
0361 M400=L7400
0362 /
0363 /
0364 0065 0000 TEMP, 0
0365 0066 0000 TEMP1, 0
0366 0067 0000 TEMP2, 0
0367 0070 0000 TEMP3, 0
0370 0071 0000 TEMP4, 0
0371 /
0372 0072 0000 KEYCHAR, 0
0373 0073 0000 CNTRLZ, 0
0374 0074 0000 BNUM, 0
0375 0075 0000 DFIRST, 0
0376 0076 4413 PMORE, MORE
0377 0077 0000 BWORD1, 0

```

```

/IF CARD READER IS IN
/SET THE BUFFER TO 6400
/IF NO CARD READER
/THEN SET IT TO 6000
IN ANY EVENT BUFFER MUST BE A MULTIPLE OF 400 OCTAL WORDS.

```

/CONTAINS THE CONTROL Z SWITCH.

|      |      |      |                   |  |
|------|------|------|-------------------|--|
| 0400 | 0100 | 0000 | BWORDZ, 0         |  |
| 0401 | 0101 | 0000 | BDELZ, 0          | /0=DONT DELETE ZEROS; NOT ZERO=DELETE ZEROS FROM BINARY OUTPUT |
| 0402 |      |      | /                 |  |
| 0403 | 0102 | 0000 | INBLOCK, 0        |  |
| 0404 | 0103 | 0000 | INUNIT, 0         |  |
| 0405 | 0104 | 0000 | OUTBLOCK, 0       |  |
| 0406 | 0105 | 0000 | OUTUNIT, 0        |  |
| 0407 | 0106 | 0000 | OUTNUM, 0         |  |
| 0410 |      |      | /                 |  |
| 0411 |      |      | BFLAG1=INBLOCK    |  |
| 0412 |      |      | BFLAG2=OUTBLOCK   |  |
| 0413 |      |      | BOLDP=INUNIT      |  |
| 0414 |      |      | BCHAR=OUTUNIT     |  |
| 0415 |      |      | /                 |  |
| 0416 |      |      | /                 |  |
| 0417 |      |      | /                 |  |
| 0420 |      |      | /                 |  |
| 0421 |      |      | ASMIFF RF28-1     | /IF RF08 [RK08] DESIRED  |
| 0422 | 0107 | 0000 | RKDRIV, 0         | /INSERT WORD FOR UNIT NUMBER IN PAGE 0                         |
| 0423 |      |      | /                 |  |
| 0424 |      |      | /                 |  |
| 0425 |      |      | /                 |  |
| 0426 | 0110 | 0346 | INDEX, TINDEX     |  |
| 0427 | 0111 | 0002 | ILEN, TLEN        |  |
| 0430 | 0112 | 0000 | ELOWER, TLOWER    |  |
| 0431 | 0113 | 0777 | EUPPER, TUPPER    |  |
| 0432 | 0114 | 0270 | CLOWER, TSYSLOWER |  |
| 0433 | 0115 | 0467 | CUPPER, TSYSUPPER |  |
| 0434 |      |      | /                 |  |
| 0435 | 0116 | 5757 | LS757, 5757       |  |
| 0436 | 0117 | 0000 | FSIZE, 0          |  |
| 0437 | 0120 | 0000 | FUNIT, 0          |  |
| 0440 | 0121 | 0000 | FTYPE, 0          |  |
| 0441 | 0122 | 0000 | FBNUM, 0          |  |
| 0442 | 0123 | 0000 | FWHAT, 0          |  |
| 0443 | 0124 | 7777 | FNAME, 7777       |  |
| 0444 | 0125 | 7777 | 7777              |  |
| 0445 | 0126 | 7777 | 7777              |  |
| 0446 | 0127 | 7777 | 7777              |  |
| 0447 |      |      | /                 |  |
| 0450 |      |      | /                 |  |
| 0451 | 0130 | 0000 | ORIGIN, 0         |  |
| 0452 | 0131 | 0000 | DATA, 0           |  |
| 0453 | 0132 | 0000 | BTEMP1, 0         |  |
| 0454 | 0133 | 0000 | BTEMP2, 0         |  |
| 0455 | 0134 | 0000 | BTEMP3, 0         |  |
| 0456 | 0135 | 0000 | BFIELD, 0         |  |
| 0457 | 0136 | 0000 | BOLD0, 0          |  |
| 0460 | 0137 | 0000 | BOFIELD, 0        |  |
| 0461 | 0140 | 0000 | BCOUNT, 0         |  |
| 0462 |      |      | /                 |  |
| 0463 |      |      | /                 |  |
| 0464 | 0141 | 0000 | COUNT, 0          |  |
| 0465 | 0142 | 0177 | L177, 177         |  |
| 0466 | 0143 | 7563 | M215, -215        |  |
| 0467 | 0144 | 7566 | M212, -212        |  |
| 0470 | 0145 | 7401 | M377, -377        |  |
| 0471 | 0146 | 7540 | M240, -240        |  |
| 0472 | 0147 | 7440 | M340, -340        |  |
| 0473 |      |      | /                 |  |
| 0474 |      |      | /                 |  |
| 0475 |      |      | /                 |  |
| 0476 |      |      | ROR6=JMS I .      | /SUBROUTINE ROTATES AC RIGHT 6 PLACES                          |

|      |      |      |                   |  |
|------|------|------|-------------------|--|
| 0477 | 0150 | 0770 | RSIX              |  |
| 0500 |      |      | DISPLAY=JMS I ,   |  |
| 0501 | 0151 | 0600 | PPDIS             |  |
| 0502 |      |      | PIP=JMP I ,       |  |
| 0503 | 0152 | 0200 | PIPPIP            |  |
| 0504 |      |      | DIAL=JMP I ,      |  |
| 0505 | 0153 | 0246 | EXIT              |  |
| 0506 |      |      | COPY=JMS I ,      |  |
| 0507 | 0154 | 3214 | CCOPY             |  |
| 0510 |      |      | SETA=JMS I ,      |  |
| 0511 | 0155 | 1502 | ASET              |  |
| 0512 |      |      | GETA=TAD I AUTO8  |  |
| 0513 |      |      | CHECKIO=JMS I ,   |  |
| 0514 | 0156 | 0743 | IOCHECK           |  |
| 0515 |      |      | ASMIFZ ECHO       | /ECHOING DESIRED?                      |
| 0516 |      |      | ASMSKP 2          | /NOPE. DON T ASSEMBLE CRLF PROCESS IN. |
| 0517 |      |      | CRLF=JMS I ,      |  |
| 0520 | 0157 | 0364 | TTYCR             |  |
| 0521 |      |      | GETL=JMS I ,      |  |
| 0522 | 0160 | 1105 | TTYGET            |  |
| 0523 |      |      | LINE=JMS I ,      |  |
| 0524 | 0161 | 1000 | GLINE             |  |
| 0525 |      |      | DECODE=JMS I ,    |  |
| 0526 | 0162 | 2222 | DGCODE            |  |
| 0527 |      |      | SYSERR=HLT        |  |
| 0530 |      |      | DIRECTORY=JMS I , |  |
| 0531 | 0163 | 2400 | OYRECT            |  |
| 0532 |      |      | MOVE=JMS I ,      |  |
| 0533 | 0164 | 1327 | MMOVE             |  |
| 0534 |      |      | POP=JMS I ,       |  |
| 0535 | 0165 | 1360 | PPOP              |  |
| 0536 |      |      | PUSH=JMS I ,      |  |
| 0537 | 0166 | 1352 | PPUSH             |  |
| 0540 |      |      | NO=JMS I ,        |  |
| 0541 | 0167 | 3151 | NODIS             |  |
| 0542 |      |      | REPLACE=JMS I ,   |  |
| 0543 | 0170 | 3161 | REPOIS            |  |
| 0544 |      |      | READ=JMS I ,      |  |
| 0545 | 0171 | 1400 | TREAD             |  |
| 0546 |      |      | WRITE=JMS I ,     |  |
| 0547 | 0172 | 1412 | TWRITE            |  |
| 0550 |      |      | SEARCH=JMS I ,    |  |
| 0551 | 0173 | 0334 | SSERCH            |  |
| 0552 |      |      | AUXIN=JMS I ,     |  |
| 0553 | 0174 | 3711 | SEQIN             |  |
| 0554 |      |      | AUXOUT=JMS I ,    |  |
| 0555 | 0175 | 3747 | SEQOUT            |  |
| 0556 |      |      | PUTWORD=JMS I ,   |  |
| 0557 | 0176 | 4273 | BBOUT             |  |
| 0560 |      |      | ASMIFZ RF08       | /DO WE WANT THE RF08 ROUTINES LOADED?  |
| 0561 |      |      | ASMSKP 2          | /NO. SKIP PAST THE DEFINITIONS.        |
| 0562 |      |      | DISC=JMS I ,      |  |
| 0563 | 0177 | 1540 | RFDISK            |  |
| 0564 |      | /    |                   |  |
| 0565 |      | /    |                   |  |
| 0566 |      | /    |                   |  |
| 0567 |      | /    |                   |  |
| 0570 |      | /    |                   |  |
| 0571 |      | /    |                   |  |
| 0572 |      | /    |                   |  |
| 0573 |      |      | EJECT             |  |

```

0574 /
0575 /
0576 /
0577 /
0600 /
0601 /
0602 /
0603 /
0604 /
0605 /
0606 /
0607 *200
0610 /
0611 /
0612 /
0613 /
0614 /
0615 0200 4216 PIPPIP, JMS RESTART /RESTART I-O DEVICES, CLEAN UP SYSTEM, ETC.
0616 ASMIFN ECHO /DO A CRLF ONLY IF ECHOING.
0617 0201 4557 CRLF /GIVE INITIAL CARRIAGE RETURN LINE FEED.
0620 0202 4562 PIPL, DECODE /DISPLAY OPTIONS
0621 0203 0263 MAINDIS /FROM MY LIST OF GOODIES.
0622 0204 4573 SEARCH /LOOK FOR LEAGAL OPTIONS
0623 0205 0210 PIPLSI /LIST OF PIP OPTIONS
0624 0206 0213 PIPGO /WHERE TO GO IF FOUND
0625 0207 5202 JMP PIPL /NOT A LEGAL REQUEST.
0626 /
0627 /
0630 /
0631 0210 0301 PIPLST, 301 /A=ABSOLUTE MODE
0632 0211 0302 302 /B=BINARY MODE
0633 0212 4323 4323 /S=SOURCE MODE, 4000=END LIST
0634 /
0635 0213 5600 PIPGO, ABSOL /ABSOLUTE HANDLER.
0636 0214 3400 BINARY /POINTER TO BINARY HANDLER
0637 0215 5000 ASCII /SOURCE HANDLER
0640 /
0641 /
0642 /
0643 /
0644 /
0645 0216 0000 RESTART,0
0646 0217 4660 JMS I SAVEST /SAVE RK08STATUS BEFORE ZAPPER.
0647 0220 7240 MONE /SET UP COPIER FOR 1 COPY
0650 0221 3106 DCA OUTNUM /-NUMBER OF OUTPUT TAPES FOR COPY
0651 0222 4662 INITOV, JMS I FCORE /ALLOCATE CORE NOW, THIS IS LATER A "TAD 440".
0652 0223 3000 DCA 0
0653 0224 4551 DISPLAY /JUST WAIT A SECOND.
0654 0225 0263 MAINDIS
0655 0226 2000 ISZ 0
0656 0227 5224 JMP .-3 /NOT DONE YET
0657 0230 3072 DCA KEYCHAR /NO NEW CHAR.
0660 0231 6141 LINC /ENTER LINC MODE
0661 LMODE
0662 0232 2020 ADD L20 /GET THE I/O PRESET BIT
0663 0233 0004 ESF /AND DO AA I/O PRESET
0664 0234 0002 PDP
0665 PHODE
0666 0235 6026 6026
0667 0236 4661 JMS I RESTST /FIX UP RK08 NOW, IF NECESSARY.
0670 0237 6046 TLS /FIX UP THE TELEPUNCH NOW BY GIVING A PHOONEY CHARACTER.
0671 /
0672 LP0801, ASMIFZ CARD-1 /SHOULD WE INITIALIZE PRINTER???

```

P I P C E N T R A L L O O P

|      |      |      |                             |  |
|------|------|------|-----------------------------|--|
| 0673 | 0240 | 6662 | LCB                         | /YEP. CLEAR THE PRINTER BUFFER AND SET THE FLAG SO IT LL BE READY IF WE NEED |
| 0674 |      |      | IT.                         |  |
| 0675 |      |      | /                           |  |
| 0676 | 0241 | 4564 | MOVE                        | /ZERO UPPER CORE BY A HIDEIOUS MOVE.   |
| 0677 | 0242 | 6577 | BUFFER-1                    |  |
| 0700 | 0243 | 6400 | BUFFER                      |  |
| 0701 |      |      | ASMIFF RF08                 | /IF NO RF08 ZERO ALL OF CORE   |
| 0702 |      |      | =BUFFER                     |  |
| 0703 | 0244 | 1020 | ASMIFF RF08                 | /IF AN RF08 PRESENT ZERO ONLY BUFFER-7377                                    |
| 0704 | 0245 | 5616 | =BUFFER-400                 |  |
| 0705 |      |      | JMP I RESTART               |  |
| 0706 |      |      | /                           |  |
| 0707 |      |      | /                           |  |
| 0710 | 0246 | 4216 | EXIT, JMS RESTART           | /RESTART DIAL  |
| 0711 | 0247 | 4564 | OVEREX, MOVE                | /PLACE DIAL RESTART INSTRUCTIONS   |
| 0712 | 0250 | 0254 | READIN                      |  |
| 0713 | 0251 | 4014 | EXITLOC, 4020=READEN+READIN | /IN PROPER PLACE FOR REBOOTSTRAP.  |
| 0714 | 0252 | 4004 | READEN-READIN               | /BOOTSTRAP IS 4 WORDS LONG   |
| 0715 | 0253 | 5651 | JMP I EXITLOC               | /RETURN TO DIAL  |
| 0716 |      |      | /                           |  |
| 0717 |      |      | /                           |  |
| 0720 | 0254 | 6141 | READIN, LINC                | /MAIN BOOTSTRAP.   |
| 0721 |      |      | LMODE                       | /GET INTO LINC MODE FOR REBOOTSTRAP  |
| 0722 | 0255 | 0643 | LDF 3                       | /MAKE SURE DATA FIELD IS SET AT 3  |
| 0723 | 0256 | 0701 | RCG                         | /READ GROUP  |
| 0724 | 0257 | 7300 | 7\DIALBOOT                  | /FROM 300.   |
| 0725 |      |      | PMODE                       | /RESUME 8 MODE DEFINITIONS   |
| 0726 |      |      | READEN=.                    |  |
| 0727 |      |      | /                           |  |
| 0730 |      |      | /                           |  |
| 0731 |      |      | /                           |  |
| 0732 |      |      | /                           |  |
| 0733 |      |      | /                           |  |
| 0734 |      |      | /                           |  |
| 0735 | 0260 | 4600 | SAVEST, STATSV              | /POINTER TO RK08 SAVER   |
| 0736 | 0261 | 4562 | RESTST, STATRS              | /POINTER TO THE RK08 FIXER.  |
| 0737 |      |      | /                           |  |
| 0740 |      |      | /                           |  |
| 0741 |      |      | /                           |  |
| 0742 |      |      | /                           |  |
| 0743 |      |      | /                           |  |
| 0744 |      |      | /                           |  |
| 0745 |      |      | /                           |  |
| 0746 |      |      | /                           |  |
| 0747 |      |      | /                           |  |
| 0750 |      |      | /                           |  |
| 0751 |      |      | /                           |  |
| 0752 |      |      | /                           |  |
| 0753 | 0262 | 6400 | FCORE, COREF                | /POINTER TO CORE INITIALIZER ROUTINE.  |
| 0754 |      |      | /                           |  |
| 0755 |      |      | /                           |  |
| 0756 |      |      | /                           |  |
| 0757 |      |      | /                           |  |
| 0760 |      |      | /                           |  |
| 0761 |      |      | /                           |  |
| 0762 |      |      | /                           |  |
| 0763 |      |      | /                           |  |
| 0764 |      |      | /                           |  |
| 0765 |      |      | /                           |  |
| 0766 |      |      | /                           |  |
| 0767 |      |      | /                           |  |
| 0770 |      |      | /                           |  |



|      |      |      |                       |
|------|------|------|-----------------------|
| 0771 |      | /    |                       |
| 0772 | 0263 | 2240 | MAINDIS, LEFT+240     |
| 0773 | 0264 | 2140 | TJP=220               |
| 0774 | 0265 | 0620 |                       |
| 0774 | 0266 | 1120 |                       |
| 0774 | 0267 | 4017 |                       |
| 0774 | 0270 | 2024 |                       |
| 0774 | 0271 | 1117 |                       |
| 0774 | 0272 | 1623 |                       |
| 0774 |      |      | TEXT "FPIP OPTIONS:   |
| 0775 | 0273 | 7243 |                       |
| 0775 |      |      |                       |
| 0776 | 0274 | 4043 |                       |
| 0776 |      |      |                       |
| 0777 | 0275 | 4043 |                       |
| 0777 | 0276 | 1001 |                       |
| 0777 | 0277 | 4055 |                       |
| 0777 | 0300 | 5555 |                       |
| 0777 | 0301 | 4001 |                       |
| 0777 | 0302 | 2530 |                       |
| 0777 | 0303 | 1114 |                       |
| 0777 | 0304 | 1101 |                       |
| 0777 | 0305 | 2231 |                       |
| 0777 | 0306 | 4015 |                       |
| 0777 | 0307 | 1704 |                       |
| 0777 |      |      | HA --- AUXILIARY MODE |
| 1000 | 0310 | 0543 |                       |
| 1000 | 0311 | 1002 |                       |
| 1000 | 0312 | 4055 |                       |
| 1000 | 0313 | 5555 |                       |
| 1000 | 0314 | 4002 |                       |
| 1000 | 0315 | 1116 |                       |
| 1000 | 0316 | 0122 |                       |
| 1000 | 0317 | 3140 |                       |
| 1000 | 0320 | 1517 |                       |
| 1000 |      |      | HB --- BINARY MODE    |
| 1001 | 0321 | 0405 |                       |
| 1001 | 0322 | 4310 |                       |
| 1001 | 0323 | 2340 |                       |
| 1001 | 0324 | 5555 |                       |
| 1001 | 0325 | 5540 |                       |
| 1001 | 0326 | 2317 |                       |
| 1001 | 0327 | 2522 |                       |
| 1001 | 0330 | 0305 |                       |
| 1001 | 0331 | 4015 |                       |
| 1001 | 0332 | 1704 |                       |
| 1001 | 0333 | 0534 |                       |
| 1001 |      |      | HS --- SOURCE MODE\   |
| 1002 |      |      | /                     |
| 1003 |      |      | /                     |
| 1004 |      |      | /                     |
| 1005 |      |      | /                     |
| 1006 |      |      | /                     |
| 1007 |      |      | /                     |
| 1010 |      |      | /                     |
| 1011 | 0334 | 0000 | SSERCH, 0             |
| 1012 | 0335 | 7300 | CLA CLL               |
| 1013 | 0336 | 1734 | TAD I SSERCH          |
| 1014 | 0337 | 3065 | DCA TEMP              |
| 1015 | 0340 | 2334 | ISZ SSERCH            |
| 1016 | 0341 | 1734 | TAD I SSERCH          |
| 1017 | 0342 | 3066 | DCA TEMP1             |
| 1020 | 0343 | 2334 | ISZ SSERCH            |
| -    |      |      |                       |

|                                       |
|---------------------------------------|
| /COMPARES "FTYPE" AGAINST GIVEN LIST. |
| /CLEAR AC TO BE SURE                  |
| /GET POINTER TO USER LIST             |
| /AND STOORE AWAY                      |
| /BOP PAST FIRST ARG.                  |
| /GET JMP LIST                         |
| /STORE POINTER N TEMP1                |
| /BOP PAST SECOND ARG FOR RETRUN.      |

```

1021
1022      0344 1465 / SSLOOP, TAD I TEMP /GET NEXT WORD TO COAMPARE
1023      0345 7510 SPA /IF POSIITIVE SKIP
1024      0346 1030 TAD L4000 /NEGATIVE. LAST CHAR. MAKE POSIITIVE FOR CHECK.
1025      0347 7041 CIA
1026      0350 1121 TAD FTYPE /DOES IT EQUAL CONTENTS O F FTYPE
1027      0351 7640 SZA CLA
1030      0352 5356 JMP SSNO /NO, TEST FOR END
1031      0353 1466 TAD I TEMP1 /YES. GET FOUND RETURN ADDRESS
1032      0354 3065 DCA TEMP
1033      0355 5465 JMP I TEMP /AND GO THERE
1034
1035      0356 2066 / SSNO, ISZ TEMP1 /BOP UP JUMP TABLE POINTER
1036      0357 1465 TAD I TEMP /WAS THIS LAST CHARACTER?
1037      0360 7710 SPA CLA
1040      0361 5734 JMP I SSERCH /YEP. IT S NEGATVIE
1041      0362 2065 ISZ TEMP /NOP. BOP UP CHAR POINTER AND TRY AGAIN
1042      0363 5344 JMP SSLOOP /BACK UP TO TRY NEXT,
1043
1044 /
1045 /
1046 /
1047 /
1050 /
1051 /
1052 /
1053 /
1054 /
1055 ASMIFZ ECHO /DO WE WANT ECHOING???
1056 ASMSKP 12 /NOPE. CR NEVER CALLED, SO DO NOT PUT IT IN.
1057
1060      0364 0000 / TTYCR, 0
1061      0365 1143 TAD M215 /GET A C.R. IN THE AC.
1062      0366 7041 CIA
1063      0367 4407 PUTL /AND AWAY IT GOES
1064      0370 1144 TAD M212 /N THE L.F.
1065      0371 7041 CIA
1066      0372 4407 PUTL /AND AWAY IT GOES
1067      0373 5764 JMP I TTYCR /AND RETURN TO CALLER.
1070
1071 /
1072 /
1073 /
1074 /
1075 /
1076 /
1077 /
1100 /
1101 /
1102 /
1103 EJECT

```

```

1104          *400
1105          /      DISPLAY CHARACTER TABLE.
1106          /
1107          TABLED=.
1108          /
1111          0400  7777          7777          /00=ILLEGAL
1112          0401  7777          7777
1113          0402  4477          4477          /01=A
1114          0403  7744          7744
1115          0404  5177          5177          /02=B
1116          0405  2651          2651
1117          0406  4136          4136          /03=C
1120          0407  2241          2241
1121          0410  4177          4177          /04=D
1122          0411  3641          3641
1123          0412  4577          4577          /05=E
1124          0413  4145          4145
1125          0414  4477          4477          /06=F
1126          0415  4044          4044
1127          0416  4136          4136          /07=G
1130          0417  2645          2645
1131          0420  1077          1077          /10=H
1132          0421  7710          7710
1133          0422  7741          7741          /11=I
1134          0423  0041          0041
1135          0424  4142          4142          /12=J
1136          0425  4076          4076
1137          0426  1077          1077          /13=K
1140          0427  4324          4324
1141          0430  0177          0177          /14=L
1142          0431  0301          0301
1143          0432  3077          3077          /15=M
1144          0433  7730          7730
1145          0434  3077          3077          /16=N
1146          0435  7706          7706
1147          0436  4177          4177          /17=O
1150          0437  7741          7741
1151          0440  4477          4477          /20=P
1152          0441  3044          3044
1153          0442  4276          4276          /21=Q
1154          0443  0376          0376
1155          0444  4477          4477          /22=R
1156          0445  3146          3146
1157          0446  5121          5121          /23=S
1160          0447  4651          4651
1161          0450  4040          4040          /24=T
1162          0451  4077          4077
1163          0452  0177          0177          /25=U
1164          0453  7701          7701
1165          0454  0176          0176          /26=V
1166          0455  7402          7402
1167          0456  0677          0677          /27=W
1170          0457  7701          7701
1171          0460  1463          1463          /30=X
1172          0461  6314          6314
1173          0462  0770          0770          /31=Y
1174          0463  7007          7007
1175          0464  4543          4543          /32=z
1176          0465  6151          6151
1177          0466  4177          4177          /33=[
1200          0467  0000          0000
1201          0470  7777          7777          /34=ILLEGAL
1202          0471  7777          7777

```

|      |      |      |      |                   |
|------|------|------|------|-------------------|
| 1203 | 0472 | 0000 | 2000 | /35=J             |
| 1204 | 2473 | 7741 | 7741 |                   |
| 1205 | 2474 | 2000 | 2000 | /36=+             |
| 1206 | 2475 | 2076 | 2076 |                   |
| 1207 | 0476 | 7777 | 7777 | /37=ILLEGAL       |
| 1210 | 0477 | 7777 | 7777 |                   |
| 1211 | 0500 | 0000 | 0000 | /40=SPACE         |
| 1212 | 0501 | 0000 | 0000 |                   |
| 1213 | 0502 | 7500 | 7500 | /41=:             |
| 1214 | 0503 | 0000 | 0000 |                   |
| 1215 | 0504 | 7000 | 7000 | /42="             |
| 1216 | 0505 | 0070 | 0070 |                   |
| 1217 | 0506 | 7777 | 7777 | /43=ILLEGAL       |
| 1220 | 0507 | 7777 | 7777 |                   |
| 1221 | 0510 | 5721 | 5721 | /44=DOLLAR SIGN   |
| 1222 | 0511 | 4671 | 4671 |                   |
| 1223 | 0512 | 6661 | 6661 | /45=PER CENT SIGN |
| 1224 | 0513 | 4333 | 4333 |                   |
| 1225 | 0514 | 5166 | 5166 | /46=8             |
| 1226 | 0515 | 0526 | 0526 |                   |
| 1227 | 0516 | 0000 | 0000 | /47=TAB           |
| 1230 | 0517 | 0000 | 0000 |                   |
| 1231 | 0520 | 3600 | 3600 | /50=(             |
| 1232 | 0521 | 0041 | 0041 |                   |
| 1233 | 0522 | 4100 | 4100 | /51=)             |
| 1234 | 0523 | 0036 | 0036 |                   |
| 1235 | 0524 | 2050 | 2050 | /52=*             |
| 1236 | 0525 | 0050 | 0050 |                   |
| 1237 | 0526 | 0404 | 0404 | /53=+             |
| 1240 | 0527 | 0437 | 0437 |                   |
| 1241 | 0530 | 0500 | 0500 | /54=,             |
| 1242 | 0531 | 0006 | 0006 |                   |
| 1243 | 0532 | 0404 | 0404 | /55=.             |
| 1244 | 0533 | 0404 | 0404 |                   |
| 1245 | 0534 | 0001 | 0001 | /56=.             |
| 1246 | 0535 | 0000 | 0000 |                   |
| 1247 | 0536 | 0601 | 0601 | /57=/             |
| 1250 | 0537 | 4030 | 4030 |                   |
| 1251 | 0540 | 4536 | 4536 | /60=0             |
| 1252 | 0541 | 3651 | 3651 |                   |
| 1253 | 0542 | 2101 | 2101 | /61=1             |
| 1254 | 0543 | 0177 | 0177 |                   |
| 1255 | 0544 | 4523 | 4523 | /62=2             |
| 1256 | 0545 | 2151 | 2151 |                   |
| 1257 | 0546 | 4122 | 4122 | /63=3             |
| 1260 | 0547 | 2651 | 2651 |                   |
| 1261 | 0550 | 2414 | 2414 | /64=4             |
| 1262 | 0551 | 0477 | 0477 |                   |
| 1263 | 0552 | 5172 | 5172 | /65=5             |
| 1264 | 0553 | 0651 | 0651 |                   |
| 1265 | 0554 | 1506 | 1506 | /66=6             |
| 1266 | 0555 | 4225 | 4225 |                   |
| 1267 | 0556 | 4443 | 4443 | /67=7             |
| 1270 | 0557 | 6050 | 6050 |                   |
| 1271 | 0560 | 5126 | 5126 | /70=8             |
| 1272 | 0561 | 2651 | 2651 |                   |
| 1273 | 0562 | 5122 | 5122 | /71=9             |
| 1274 | 0563 | 3651 | 3651 |                   |
| 1275 | 0564 | 2200 | 2200 | /72=:             |
| 1276 | 0565 | 0000 | 0000 |                   |
| 1277 | 0566 | 4601 | 4601 | /73=;             |
| 1300 | 0567 | 0000 | 0000 |                   |
| 1301 | 0570 | 1000 | 1000 | /74=<             |

|      |      |      |       |       |
|------|------|------|-------|-------|
| 1302 | 0571 | 4224 | 4224  |       |
| 1303 | 0572 | 1212 | 1212  | /75== |
| 1304 | 0573 | 1212 | 1212  |       |
| 1305 | 0574 | 2442 | 2442  | /76=> |
| 1306 | 0575 | 0010 | 0010  |       |
| 1307 | 0576 | 4020 | 4020  | /77=? |
| 1310 | 0577 | 2055 | 2055  |       |
| 1311 |      | /    |       |       |
| 1312 |      | /    |       |       |
| 1313 |      | /    |       |       |
| 1314 |      |      | EJECT |       |
| -    |      |      |       |       |

```

1315          / *000
1316          /
1317          /
1320          /      DISPLAY ROUTINE
1321          /
1322          /      GENERAL CALL:
1323          /
1324          /      DISPLAY
1325          /      PTEXT
1326          /      WHERE PTEXT POINTS TO THE FOLLOWING:
1327          /
1330          /PTEXT, XCOORD.
1331          /      YCOORD
1332          /      TEXT      "F THIS IS MY MESSAGE\"
1333          /
1334          /
1335          0000 0000 PDIS, 0 /MAIN ENTRY
1336          0001 7300 PINST1, CLA CLL /CLEAR AC.
1337          0002 4556 CHECKIO /CHECKIO FOR IO NOW AND AFTER EVERY C.R.
1340          0003 1600 TAD I PDIS /GET MAIN POINTER
1341          0004 3331 DCA PDIS /AND PLACE IN TEMP POINTER.
1342          0005 2200 ISZ PDIS /PAST POINTER ON RETURN.
1343          0006 1731 TAD I PDIS /GET POINTER
1344          0007 3332 DCA PHOR /X POS
1345          0010 2331 ISZ PDIS /BOP UP
1346          0011 1731 TAD I PDIS /GET VERTICAL
1347          0012 3333 PDCAVR, DCA PVER /AND STASH AWAY,
1350          0013 1331 TAD PDIS /START OF TEXT
1351          0014 3334 DCA PSTART /BOP DOWN BY 1
1352          0015 7240 MONE /SET SWITHC TO LEFT OF NEXT WORD,
1353          0016 3335 DCA PSWITCH
1354          0017 1201 TAD PINST1 /GET A CLA FOR FIRST TIME THROUGH,
1355          0020 3251 DCA PNOT1 /AND STORE SO NO VERTICAL BOP.
1356          /
1357          0021 4302 PPSTART, JMS PGETL /GET NEXT CHAR FROM TEXT.
1360          0022 7240 MONE /SET CHAR SIZE TO HALFWORD
1361          0023 3337 DCA PCSW /IN CASE OF NO F OR H.
1362          0024 1336 TAD PCHAR /GET IN AC.
1363          0025 1021 TAD M10 /IS IT AN "H"
1364          0026 7650 SNA CLA /IF IT IS, SKIP PAST AND IGNORE.
1365          0027 5235 JMP PPAST /ITS AN "H"
1366          0030 1336 TAD PCHAR
1367          0031 1063 TAD M6 /IS IT AN "F"
1370          0032 7640 SZA CLA
1371          0033 5236 JMP PDD /NOT AN "F" OR AN "H". USE IT AS A CHAR IN HALFWORD.
1372          0034 3337 DCA PCSW /SET SIZE TO FULL.
1373          0035 4302 PPAST, JMS PGETL /GET FIRST CHAR TO BE DISPLAYED.
1374          0036 1337 PDD, TAD PCSW /GET SIZE.
1375          0037 7650 SNA CLA /IS IT FULL SIZE.
1376          0040 1022 TAD M4 /YES, SET BACK LEFT BY 8.
1377          0041 1022 TAD M4 / IF HALF SET IT BACK BY 4.
1400          0042 1332 TAD PHOR
1401          0043 5001 DCA LOC1 /THIS IS A REAL LOC1(0001)
1402          0044 1337 TAD PCSW /GET SIZE
1403          0045 7650 SNA CLA /FULL?
1404          0046 1023 TAD M20 /YES, BOP DOWN BY 40, NOT 20
1405          0047 1023 TAD M20 /M20 IF HALF SIZE
1406          0050 1333 TAD PVER
1407          0051 3333 PNOT1, DCA PVER /MADE A CLA FOR THE FIRST TIME THROUGH
1410          0052 1212 TAD PDCAVR /GET CORRECT INST.
1411          0053 3251 DCA PNOT1 /SET UP FOR FUTURE CALLS.
1412          0054 1337 TAD PCSW /CHAR SIZE.
1413          0055 7040 CMA /COMPLEMENT BIT.

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|      |      |      |          |           |   |
|------|------|------|----------|-----------|---|
| 1414 | 0656 | 0026 | AND      | L200      | /BIT4 OF ESF                                      |
| 1415 | 0657 | 6141 | LINC     |           |   |
| 1416 |      |      | LMODE    |           | /GET INTO LINC MODE                               |
| 1417 | 0660 | 0004 | ESF      |           | /SET CHARS TO CORRECT SIZE                        |
| 1420 | 0661 | 0002 | PDP      |           | /BACK OVER INTO 8 MODE                            |
| 1421 |      |      | PMODE    |           |   |
| 1422 | 0662 | 7200 | CLA      |           | /CLEAR THE AC BECAUSE THE SIZE IS STILL IN THE AC |
| 1423 |      |      | /        |           |   |
| 1424 | 0663 | 1336 | PL00P,   | TAD PCHAR | /GET THE CHAR IN THE AC,                          |
| 1425 | 0664 | 7104 | CLL RAL  |           | /MULTIPLY BY 2.                                   |
| 1426 | 0665 | 1347 | TAD      | PTABLE    | /POINTER TO DISPLAY TABLE.                        |
| 1427 | 0666 | 3016 | DCA      | AUTO7     | /AUTO FOR PICKING UP THE DISPLAY CHARS.           |
| 1430 | 0667 | 1333 | TAD      | PVER      | /GET THE VERTICAL IN THE AC.                      |
| 1431 | 0670 | 6141 | LINC     |           | /GO OVER TO LMODE AND START TO DISPLAY.           |
| 1432 |      |      | LMODE    |           |   |
| 1433 | 0671 | 1776 | DSC I    | AUTO7     | /FIRST PART OF CHAR                               |
| 1434 | 0672 | 1776 | DSC I    | AUTO7     | /SECOND PART OF CHAR.                             |
| 1435 | 0673 | 0002 | PDP      |           |   |
| 1436 |      |      | PMODE    |           | /BACK INTO 8 MODE                                 |
| 1437 | 0674 | 7305 | PTWO     |           | /GET A +2 IN THE AC                               |
| 1440 | 0675 | 1001 | TAD      | LOC1      | /GET NEXT DISPLAY POINT.                          |
| 1441 | 0676 | 3001 | DCA      | LOC1      | /AND BOP BY 1/2 CHAR.                             |
| 1442 |      |      | ASMIFN   | PFLICK    | /DO WE WANT TO ALTERNATE CHANNELS?                |
| 1443 | 0677 | 4730 | JMS I    | PALT      | /YES. ADD IN RANDOM CHANNEL BITS NOW.             |
| 1444 | 0700 | 4302 | JMS      | PGETL     | /GET ANOTHER CHARACTER.                           |
| 1445 | 0701 | 5263 | JMP      | PLOOP     | / AND DISPLAY IT.                                 |
| 1446 |      |      | /        |           |   |
| 1447 | 0702 | 0000 | PGETL,   | 0         | /CHAR GETTER ROUTINE                              |
| 1450 | 0703 | 2335 | ISZ      | PSWITCH   | /IS IT LEFT HALF?                                 |
| 1451 | 0704 | 5311 | JMP      | PRIGHT    | /GET CHARACTER                                    |
| 1452 | 0705 | 2334 | ISZ      | PSTART    | /GET NEXT WORD                                    |
| 1453 | 0706 | 1734 | TAD I    | PSTART    | /IN THE AC  |
| 1454 | 0707 | 4550 | ROR6     |           | /ROTATE LEFT HALF TO THE RIGHT HALF.              |
| 1455 | 0710 | 5314 | JMP      | PCOM      | /GO DO THE AND.                                   |
| 1456 | 0711 | 7240 | PRIGHT,  | MONE      | /RESET SWITCH                                     |
| 1457 | 0712 | 3335 | DCA      | PSWITCH   | /FOR NEW WORD NEXT TIME.                          |
| 1460 | 0713 | 1734 | TAD I    | PSTART    | /WORD IN AC                                       |
| 1461 | 0714 | 0024 | PCOM,    | AND       | /JUST THE LOW ORDER BITS.                         |
| 1462 | 0715 | 5336 | DCA      | PCHAR     | /SAVE FOR LATTER USE.                             |
| 1463 | 0716 | 1336 | TAD      | PCHAR     | /BACK IN AC.                                      |
| 1464 | 0717 | 1052 | TAD      | M34       | /IS IT "\"  |
| 1465 | 0720 | 7650 | SNA      | CLA       |   |
| 1466 | 0721 | 5600 | JMP I    | PPDIS     | /YES! E X I T.                                    |
| 1467 | 0722 | 1336 | TAD      | PCHAR     | /GET IT AGAIN                                     |
| 1470 | 0723 | 1062 | TAD      | M43       | /IS IT A CR.                                      |
| 1471 | 0724 | 7640 | SZA      | CLA       |   |
| 1472 | 0725 | 5702 | JMP I    | PGETL     | /NO. RETURN.                                      |
| 1473 | 0726 | 4556 | CHECKIO  |           | /CHECK I/O FLAGS AND SERVICE.                     |
| 1474 | 0727 | 5221 | JMP      | PPSTART   | /RESET TO START NEXT LINE.                        |
| 1475 |      |      | /        |           |   |
| 1476 |      |      | /        |           |   |
| 1477 |      |      | ASMIFN   | PFLICK    | /IF ALTERNATING CHANNELS STICK IN POINTER NOW     |
| 1500 | 0730 | 3372 | PALT,    | POTHER    | /POINTER TO THE FLICKERER                         |
| 1501 | 0731 | 0000 | PDIS,    | 0         | /TEMPORARY POINTER                                |
| 1502 | 0732 | 0000 | PHOR,    | 0         | /HORIZONTAL COORDINATE                            |
| 1503 | 0733 | 0000 | PVER,    | 0         | /VERTICAL COORDINATE                              |
| 1504 | 0734 | 0000 | PSTART,  | 0         | /POINTS TO NEXT TEXT WORD.                        |
| 1505 | 0735 | 0000 | PSWITCH, | 0         | /0=GET RIGHT HALF,-1=GET LEFT HALF OF NEXT WORD.  |
| 1506 | 0736 | 0000 | PCHAR,   | 0         | /CONTAINS NEXT TEXT CHARACTER.                    |
| 1507 |      |      | /        |           |   |
| 1510 |      |      | /        |           |   |
| 1511 |      |      | /        |           |   |
| 1512 |      |      | /        |           |   |

|      |      |      |                      |         |  |
|------|------|------|----------------------|---------|--|
| 1513 | 0737 | 0000 | DDCCM, J             |         | /DECODE CALLS THIS ROUTINE TO GET A CHAR FROM PGETL                |
| 1514 | 0740 | 4302 | JMS                  | PGETL   | /GET A CHAR.   |
| 1515 | 0741 | 1336 | TAD                  | PCHAR   | /PLACE IN AC.  |
| 1516 | 0742 | 5737 | JMP I                | DDCCM   | /RETURN.   |
| 1517 |      |      | /                    |         |  |
| 1520 |      |      | /                    |         |  |
| 1521 | 0743 | 0000 | IOCHECK, J           |         | /CHECKS IO DEVICES.  |
| 1522 | 0744 | 7300 | CLA CLL              |         |  |
| 1523 | 0745 | 6031 | KSF                  |         | /IS IT KEYBOARD?   |
| 1524 | 0746 | 5743 | JMP I                | IOCHECK | /NOPE. RETURN.   |
| 1525 | 0747 | 0377 | PTABLE, TABLED-1     |         | /POINTS TO THE DISPLAY TABLE-1                                     |
| 1526 |      |      |                      |         | /  |
| 1527 |      |      |                      |         | /NOW CHECK TO SEE IF PREVIOUS INSTRUCTION                          |
| 1530 |      |      |                      |         | /WAS AN "AND" SO THAT ITS EFFECTIVELY A NOP.                       |
| 1531 |      |      |                      |         | /IT IS NECESSARY BECAUSE DOUBLE IOTS                               |
| 1532 |      |      |                      |         | /CAN SCREW UP THE DATA BREAK TRANSFER.                             |
| 1533 |      |      |                      |         | /SINCE THE AC IS ZERO, AN AND CAN BE NO WRONG                      |
| 1534 |      |      |                      |         | /  |
| 1535 |      |      | ASMIFN TABLED-1&7000 |         | /CHECK FOR AN AND CONDITION.                                       |
| 1536 |      |      | ERROR HAS OCCURRED   |         | /AND IF NOT AN AND, THEN GIVE AN ASSEMBLY ERROR MESSAGE            |
| 1537 |      |      |                      |         | /THE ASSEMBLY ERROR MESSAGE WILL LET THE GUY KNOW SOMETHINGS WRONG |
| 1540 |      |      |                      |         | /  |
| 1541 | 0750 | 6034 | RKBTST, KRS          |         | /READ IN THE FLAG BUT DON T TURN OFF THE FLAG.                     |
| 1542 | 0751 | 1366 | TAD                  | IOCD    | /IS IT A CONTROL D   |
| 1543 | 0752 | 7450 | SNA                  |         | /????  |
| 1544 | 0753 | 5553 | DIAL                 |         | /YEP. RESTART DIAL   |
| 1545 | 0754 | 1367 | TAD                  | IOCP    | /HOW ABOUT A CONTROL P   |
| 1546 | 0755 | 7650 | SNA CLA              |         | /????  |
| 1547 | 0756 | 5552 | PIP                  |         | /YEP. RESTART PIP.   |
| 1550 | 0757 | 1072 | TAD                  | KEYCHAR | /DO WE HAVE A CHARACTER IN BUFFER????                              |
| 1551 | 0760 | 7500 | SMA                  |         |  |
| 1552 | 0761 | 6036 | KRB                  |         | /READ IN NEW CHAR IF NONE THERE                                    |
| 1553 | 0762 | 7004 | RAL                  |         |  |
| 1554 | 0763 | 7130 | CLL CML RAR          |         | /TURN ON SIGN BIT.   |
| 1555 | 0764 | 3072 | DCA                  | KEYCHAR | /STASH AWAY.   |
| 1556 | 0765 | 5743 | JMP I                | IOCHECK | /ALL DONE. RETURN TO CALLER  |
| 1557 |      |      | /                    |         |  |
| 1560 |      |      | /                    |         |  |
| 1561 |      |      | /                    |         |  |
| 1562 | 0766 | 7574 | IOCD, -204           |         | /CONTROL D   |
| 1563 | 0767 | 7764 | IOCP, -220+204       |         | /CONTROL P MINUS CONTROL D   |
| 1564 |      |      | /                    |         |  |
| 1565 |      |      | /                    |         |  |
| 1566 |      |      | /                    |         |  |
| 1567 |      |      | /                    |         |  |
| 1570 |      |      | /                    |         |  |
| 1571 |      |      | /                    |         |  |
| 1572 |      |      | /                    |         |  |
| 1573 |      |      | /                    |         |  |
| 1574 |      |      | /                    |         |  |
| 1575 |      |      | /                    |         |  |
| 1576 | 0770 | 0000 | RSIX, 0              |         | /THIS LITTLE ROUTINE ROTATES THE AC SIX PLACES RIGHT               |
| 1577 | 0771 | 7012 | RTR                  |         |  |
| 1600 | 0772 | 7012 | RTR                  |         |  |
| 1601 | 0773 | 7012 | RTR                  |         |  |
| 1602 | 0774 | 5770 | JMP I                | RSIX    | /RETURN.   |
| 1603 |      |      | /                    |         |  |
| 1604 |      |      | /                    |         |  |
| 1605 |      |      | /                    |         |  |
| 1606 |      |      | /                    |         |  |
| 1607 |      |      | /                    |         |  |
| 1610 |      |      | /                    |         |  |
| 1611 |      |      | /                    |         |  |



|      |   |            |                                 |
|------|---|------------|---------------------------------|
| 1612 | / |            |                                 |
| 1613 | / |            |                                 |
| 1614 | / |            |                                 |
| 1615 | / |            |                                 |
| 1616 | / |            |                                 |
| 1617 | / |            |                                 |
| 1620 | / |            |                                 |
| 1621 |   | PUSW=DDCOM | /A GOOD PLACE FOR THIS LOCATION |
| 1622 | / |            |                                 |
| 1623 | / |            |                                 |
| 1624 | / |            |                                 |
| 1625 | / |            |                                 |
| 1626 | / |            |                                 |
| 1627 | / |            |                                 |
| 1630 | / |            |                                 |
| 1631 | / |            |                                 |
| 1632 | / |            |                                 |
| 1633 | / |            |                                 |
| 1634 | / |            |                                 |
| 1635 | / |            |                                 |
| 1636 | / |            |                                 |
| 1637 |   | EJECT      |                                 |

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1640          *1000
1641          /
1642          /
1643          / ROUTINE TO GET A LINE FROM TTY.
1644          /
1645          / GENERAL CALL:
1646          /
1647          / LINE
1648          / PDIS
1649          /
1650          /
1651          /
1652          / WHERE PDIS POINTS TO THE STUFF TO BE DISPLAYED WHILE WAITING FOR A LINE OF INPUT.
1653          /
1654          /
1655          /
1656          /
1657          1000 0000 GLINE, 0 /MAIN ENTRY FPR LINE GETTER ROUTINE.
1658          1001 1600 TAD I GLINE /GET POINTER TO DISPLAY
1659          1002 3222 DCA G1 /AND SAVE IT.
1660          1003 2200 ISZ GLINE /SET UP RETURN.
1661          1004 1222 TAD G1 /GET POINTER
1662          1005 3241 DCA G2 /AND STASH IT IN THE SECOND LOOP.
1663          1006 3700 GCLEAR, DCA I GGNUM /CLEAR NUMBER OF CHARS TO ZERO.
1664          1007 7201 GMAIN, PONE /GET A +1 IN THE AC.
1665          1010 1700 TAD I GGNUM /GNUM+1, NEXT SPOT IN BUFFER.
1666          1011 4252 JMS GIN /STICKS NEXT CHARACTER INTO GNUM+1
1667          1012 0000 0 /0=ILLEGAL=A SOLID BLOCK.
1668          1013 7305 PTWO /GET A PTWO INTO THE AC.
1669          1014 1700 TAD I GGNUM /NUMBER OF CHARS+2
1670          1015 4252 JMS GIN /PUT A 34 AT END FOR DISPLAY ROUTINE.
1671          1016 0034 34 / FORM.
1672          1017 1303 TAD GCOUNT /AN OSCILLATING NUMBER.
1673          1020 3141 DCA COUNT /GENERAL COUNT LOCATION.
1674          /
1675          1021 4551 GLOOP1, DISPLAY /DISPLAY CALLERS MESSAGE.
1676          1022 0000 G1, 0 /HIS POINTER HERE
1677          1023 4551 DISPLAY /NOW DO OUR LINE OF CRAP.
1678          1024 1120 GTEXT /POINTER TO OUR BUFFER.
1679          1025 4560 GETL /IS THERE A TTY CHAR?
1680          1026 7410 SKP /NO!
1681          1027 4702 JMS I GGINSERT /YES. PLACE IN BUFFER.
1682          1030 2141 ISZ COUNT /BOP UP FLICKER COUNT.
1683          1031 5221 JMP GLOOP1 /STILL GOOD, DISPLAY AGAIN.
1684          1032 1303 TAD GCOUNT /GET FLICKER COUNTER
1685          1033 3141 DCA COUNT /AND RESET TEMPORARY COUNTER.
1686          1034 7201 PONE /+1
1687          1035 1700 TAD I GGNUM /SET A "\" AT END WITH NO BLOCK FLICKER.
1688          1036 4252 JMS GIN /PLACE IN BUFFER
1689          1037 0034 34
1690          1040 4551 GLOOP2, DISPLAY /NOW DISPLAY USERS MESSAGE.
1691          1041 0000 G2, 0 /HIS POINTER.
1692          1042 4551 DISPLAY /NOW OUR BUFFER
1693          1043 1120 GTEXT /BUFFER POINTER.
1694          1044 4560 GETL /TEST LOW READER.
1695          1045 7410 SKP /NO CHAR THERE
1696          1046 4702 JMS I GGINSERT /INSERT INTO BUFFER
1697          1047 2141 ISZ COUNT /DONE YET???
1698          1050 5240 JMP GLOOP2 /NO. DISPLAY AGAIN.
1699          1051 5207 JMP GMAIN /RESET FLICKER POINTER.
1700          /
1701          /
1702          /
1703          1052 0000 GIN, 0 /PUTS A CHAR IN BUFFER
1704          1053 1301 TAD GMLEN /BASIC MESSAGE BEFORE USER DOES ANYTHING.

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|      |      |      |                |            |  |
|------|------|------|----------------|------------|--|
| 1737 | 1054 | 3065 | DCA            | TEMP       | /SAVE CHARACTER NUMBER.  |
| 1740 | 1055 | 1065 | TAD            | TEMP       | /GET CHARACTER NUMBER.   |
| 1741 | 1056 | 7110 | CLL            | RAR        | /DIVIDE BY 2 TO GET WORD NUMBER.   |
| 1742 | 1057 | 1304 | TAD            | GGTEXT     | /POINTER TO ACTUAL TEXT.   |
| 1743 | 1060 | 3067 | UCA            | TEMP2      | /AND STASH AWAY.   |
| 1744 | 1061 | 1065 | TAD            | TEMP       | /REGET CHAR NUMBER.  |
| 1745 | 1062 | 7010 | RAR            |            | /IS IT ODD OR EVEN.  |
| 1746 | 1063 | 7020 | SNL            | CLA        |  |
| 1747 | 1064 | 5273 | JMP            | GLEFT      | /EVEN. GET LEFT HALF.  |
| 1750 | 1065 | 1467 | TAD            | I          | TEMP2  |
| 1751 | 1066 | 0053 | AND            | L7700      | /BLAH OUT RIGHT 6 BITS   |
| 1752 | 1067 | 1652 | TAD            | I          | GIN  |
| 1753 | 1070 | 2252 | GINTO,         | ISZ        | GIN  |
| 1754 | 1071 | 3467 | DCA            | I          | TEMP2  |
| 1755 | 1072 | 5652 | JMP            | I          | GIN  |
| 1756 |      |      | /              |            |  |
| 1757 | 1073 | 1652 | GLEFT,         | TAD        | I  |
| 1760 | 1074 | 7106 | CLL            | RTL        | GIN  |
| 1761 | 1075 | 7006 | RTL            |            | /ROTATE TO BITS 0-5. CANNOT INSERT                                       |
| 1762 | 1076 | 7006 | RTL            |            | /IN THE MIDDLE OF THE BUFFER.  |
| 1763 | 1077 | 5270 | JMP            | GINTO      | /AND GO STORE AWAY THE WORD.   |
| 1764 |      |      | /              |            |  |
| 1765 |      |      | /              |            |  |
| 1766 | 1100 | 1276 | GGNUM,         | GNUM       |  |
| 1767 | 1101 | 0005 | GMLN,          | LBNUM-1    | /LEN OF MESS ALREADY IN BUFF -1 TO COMPENSATE FOR 0 CHAR.                |
| 1770 | 1102 | 1200 | GGINSERT,      | GININSERT  | /POINTER TO INSERT ROUTINE.  |
| 1771 | 1103 | 7770 | GCUUNT,        | -10        | /FLICKER COUNTER   |
| 1772 | 1104 | 1122 | GGTEXT,        | GTEXT+2    | /ACTUAL TEXT POINTER.  |
| 1773 |      |      | /              |            |  |
| 1774 |      |      | /              |            |  |
| 1775 |      |      | /              |            |  |
| 1776 |      |      | /              |            |  |
| 1777 | 1105 | 0000 | TTYGET,        | 0          | /ROOM FOR NON-OVERLAPPED TTY ROUTINE HERE                                |
| 2000 | 1106 | 4556 | CHECKIO        |            | /CHECK IO DEVICES NOW.   |
| 2001 | 1107 | 1072 | TAD            | KEYCHAR    | /GET SAVED CHAR.   |
| 2002 | 1110 | 7450 | SNA            |            | /IS THERE REALLY ONE THERE???  |
| 2003 | 1111 | 5705 | JMP            | I          | TTYGET   |
| 2004 | 1112 | 2305 | ISZ            | TTYGET     | /NO. RETURN  |
| 2005 | 1113 | 1030 | TAD            | L4000      | /YES. BOP UP RETURN ADDRESS.   |
| 2006 | 1114 | 3000 | DCA            | 0          | /CHOP OFF STUCK ON BIT.  |
| 2007 | 1115 | 3072 | DCA            | KEYCHAR    | /0 CAN BE USED RIGHT ONW.  |
| 2010 | 1116 | 1000 | TAD            | 0          | /ZAP OUT OLD CHAR.   |
| 2011 | 1117 | 5705 | JMP            | I          | TTYGET   |
| 2012 |      |      | /              |            | /RETRIEVE CHAR.  |
| 2013 |      |      | /              |            | /EXIT TO SECOND LOCATION WITH CHAR IN THE AC.                            |
| 2014 | 1120 | 0000 | LINEB,         | LEFT       | /START AT BOTTOM LEFT FOR DISPLAY.                                       |
| 2015 |      |      | GTEXT=LINEB    |            |  |
| 2016 | 1121 | 7400 |                | BOTTOM     | /BOTTOM OF SCREEN.   |
| 2017 | 1122 | 2205 |                |            |  |
| 2017 | 1123 | 2014 |                |            |  |
| 2017 | 1124 | 3172 |                |            |  |
| 2017 | 1125 | 3400 |                |            |  |
| 2017 |      |      | TEXT           | "REPLY: \" | /HALFWORD ASSUMED.   |
| 2020 |      |      | LBNUM=6        |            | /NUMBER OF PREVIOUS CHARS IN BUFFER.                                     |
| 2021 |      |      | LBMAX=62-LBNUM |            | /MAXIMUM NUMBER OF USER CHARACTERS.                                      |
| 2022 |      |      | /              |            | FOUND BY GETTING MAX ON LINE(62) AND SUBTRACTING THOSE IN BUFFER(LBNUM). |
| 2023 |      |      | /              |            |  |
| 2024 |      |      | /              |            |  |
| 2025 |      |      | /              |            |  |
| 2026 |      |      | /              |            |  |
| 2027 |      |      | /              |            |  |
| 2030 |      |      | /              |            |  |
| 2031 |      |      | /              |            |  |

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2032      /
2033      *LINEH+2+J1-1*1      /ALLOW SPACE FOR THE BUFFER
2034      1153 0000      2000      /LAST WORD OF THE CHARACTER BUFFER
2035      /
2036      /
2037      /
2040      /
2041      /
2042      /
2043      /
2044      /
2045      /
2046      /
2047      1154 1375 UNLOAD, TAD      UL320      /FOR A *T SET TO POSITIN BLOCK TO 300
2050      /
2051      /
2052      /
2053      /
2054      1155 3373 UNLOAD, DCA      UNPOS      /STORE THE BLOCK TO POSITION UNIT 0 TO (0 OR 300)
2055      /
2056      1156 6141      LINC      /THIS ROUTINE UNLOADS ALL THE TAPES
2057      LMODE      /EXCEPT FOR TAPE 0. IT IS SO SIMPLE
2060      1157 0076      SET I      AUTO7      /AND YET SO ELEGANT IT NEEDS
2061      1160 7773      -4      /NO COMMENTS. SO GAZE UPON IT AND BE THANKFUL.
2062      1161 2020      ADD      L20
2063      1162 1120 UNLOOP, ADA I
2064      1163 7776      -1
2065      1164 0001      AXO
2066      1165 0737      CHK I      U
2067      1166 0727      CHK I
2070      1167 7166      JMP      -1
2071      1170 0236      XSK I      AUTO7
2072      1171 7162      JMP      UNLOOP
2073      1172 0707      CHK
2074      1173 0300 UNPOS,      J00
2075      1174 0002      POP
2076      PMODE
2077      1175 7300 UL300,      CLA CLL
2100      1176 5207      JMP      GMAIN      /CLEAR THE AC AND JMP TO MIDDLE OF MESSAGE DISPLAY
2101      /
2102      /
2103      /
2104      /
2105      /
2106      /
2107      /
2110      /
2111      /
2112      /
2113      /
2114      /
2115      /
2116      /
2117      /
2120      /
2121      /
2122      /
2123      /
2124      EJECT

```

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2125 /
2126 /
2127 /
2130 *1222
2131 / SECOND PAGE OF LINE GETTER ROUTINE.
2132 /
2133 /
2134 /
2135 /
2136 1200 0000 GINSERT,0 /CHECKS CHAR AND STICKS IN BUFFER.
2137 1201 0142 AND L177 /CHOP OFF THE PARITY BIT.
2140 1202 1026 TAD L270 /AND FORCE 200 BIT ON FOR TESTS TO FOLLOW.
2141 1203 3121 DCA FTYPE /NOW STASH AWAY IN FTYPE FOR SEARCH TO FOLLOW.
2142 1204 4573 SEARCH /SEARCH LIST FOR FTYPE MATCH
2143 1205 1303 GSPL1 /SPECIAL CHARS AND EXCEPTIONS.
2144 1206 1315 GSPG1 /WHERE TO GO IF FOUND.
2145 1207 4253 JMS GGLIMC /CHECK FOR BETWEEN 240 AND 340
2146 1210 5600 GNXIT, JMP I GINSERT /NOPE. IT ISN'T A 37. RETURN TO CALLER.
2147 1211 1276 TAD GNUM /GET NUMBER OF CHARS.
2150 1212 1040 CMA /TEST TO SEE IF THIS OVERFLOWS THE BUFFER
2151 1213 1277 TAD GLIMIT /NUMBER OF SPACES IN BUFFER.
2152 1214 7650 SMA CLA
2153 1215 5702 JMP I GGCLEAR /TOO MANY. RESTART.
2154 ASMIFN ECHO /LOAD THE CHAR IN AC TO ECHO IF ECHOING CHARS!
2155 1216 1121 TAD FTYPE /GET THE CHAR.
2156 ASMIFN ECHO /ECHO CHAR ONLY IF SWITCH IS SET.
2157 1217 4407 PUTL /ECHO ON TTY.
2160 1220 1121 TAD FTYPE /GET CHAR.
2161 1221 0024 AND L77 /MAKE INTO A SIXBITTER
2162 1222 3226 DCA GPUT
2163 1223 2276 ISZ GNUM /BOP UP COUNT
2164 1224 1276 TAD GNUM /PLACE IN AC.
2165 1225 4700 JMS I GGIN /PLACE CHAR IN BUFFER
2166 1226 0000 GPUT, 0 /HERE IS CHAR.
2167 1227 5701 JMP I GGMAIN /ALRIGHT, GO BACK AND DO NEXT
2170 /
2171 /
2172 /
2173 /
2174 /
2175 /
2176 GNLF, ASMIFN ECHO /LINEFEED WAS TYPED. GIVE C.R.L.F.
2177 1230 4557 CRLF /IF ECHOING IS DESIRED.
2200 1231 5702 JMP I GGCLEAR /AND RESTART THE INPUT BUFFER.
2201 /
2202 /
2203 /
2204 /
2205 1232 7240 GNRUB, NONE /RUBOUT TYPED. -1 TO AC.
2206 1233 1276 TAD GNUM /SUBTRACT ONE FROM THE NUMBER OF CHARS IN THE BUFR.
2207 1234 7500 SMA /HAVE WE BACKSPACED TOO FAR?
2210 1235 3276 DCA GNUM /NOPE. STORE AWAY.
2211 /
2212 ASMIFZ ECHO /DO WE WANT ECHOING?
2213 ASMSKP 4 /NO. DO NOT ASSEMBLE IN TTY ECHO CHAR.
2214 1236 7640 SZA CLA /WAS BACKSPACE SUCCESSFUL?
2215 1237 5242 JMP GNRNO /NO. DO NOT PRINT "\".
2216 1240 1307 TAD GNL334 /FORM CHAR.
2217 1241 4407 PUTL /OUTPUT IT TO SHOW DELETE WAS SUCCESSFUL.
2220 /
2221 GNRNO, ASMIFZ ECHO /DO WE HAVE ECHOING?
2222 CLA /NO. WE DON'T. AC MIGHT BE NON-ZERO. CLEAR TO BE SURE.
2223 1242 5721 JMP I GGMAIN /NOW GO BACK AND START DISPLAYING LINE AGAIN.

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2224      /
2225      /
2226      /
2227      /
2230      GALL,  ASMIFN  ECHO      /DO A CRLF ONLY IF SWITCH IS SET.
2231      1243  7201  PONE      /SPACE TO NEXT SPOT IN THE BUFFER
2232      1244  1276  TAD       /WHICH IS 1+GNUM
2233      1245  4700  JMS I     /AND INSERT A 0000 AS A TERMINATOR
2234      1246  0000  0000     /IN IT GOES.
2235      1247  4557  CRLF      /DO A CAR RET AND LIN FED.
2236      1250  1675  TAD I     GGLINE
2237      1251  3200  DCA       GINSERT
2240      1252  5600  JMP I     GINSERT
2241      /
2242      /
2243      /
2244      /
2245      /
2246      /
2247      /
2250      /
2251      /
2252      1253  0000  GGLIMC, 0      /THIS TESTS TO SEE IF TYPE IS BETWEEN 240 AND 337
2253      1254  1121  TAD       FTYPE /GET THE CHAR IN QUESTION
2254      1255  1147  TAD       M340  /SEE IF ITS GREATER THAN 340
2255      1256  7510  SPA      /?
2256      1257  1257  TAD       /IT ISNT, SO MAKE IT A BIG NUM FOR SECOND TEST
2257      1260  1274  TAD       GGM33 /SEE IF ITS GREATER THEN 372
2260      1261  7710  SPA CLA    /?
2261      1262  1056  TAD       M40   /ITS GREATER THEN 337 BUT LESS THEN 373
2262      1263  1121  TAD       FTYPE /NOW EITHER UPDATE FTYPE OR LEAVE IT ALONE
2263      1264  3121  DCA       FTYPE /THE UPDATE CONVERTS A 37 CHAR TO A 35 CHAR
2264      1265  1121  TAD       FTYPE /NOW GET THE MODIFIED OR UNMODIFIED CHAR
2265      1266  1147  TAD       M340  /SUBTRACT OFF 340 FOR LIMIT TEST
2266      1267  7100  CLL      /CLEAR THE LIC FOR THE FOLLOWING TEST
2267      1270  1025  TAD       L100  /NOW ADD IN 100 FOR LOWER LIMIT TEST
2270      1271  7630  SZL CLA    /IF GOOD LINC IS NOW A 1
2271      1272  2253  ISZ       GGLIMC /THEN GO TO SECONDRRETURN IF OK
2272      1273  5653  JMP I     GGLIMC /ELSE GO TO THE FIRST RETURN
2273      /
2274      /
2275      /
2276      /
2277      /
2300      /
2301      /
2302      /
2303      /
2304      1274  7745  GGM33, -33
2305      /
2306      /
2307      1275  1000  GGLINE, GLINE /COMMUNICATION.
2310      1276  0000  GNUM, 0      /NUMBER OF CHARS IN BUFFER
2311      1277  0054  GLIMIT, LBMAX /MAX NUM OF USER CHARS IN BUFFER.
2312      1300  1052  GGIN, GIN
2313      1301  1007  GGMAIN, GMAIN
2314      1302  1006  GGCLEAR, GGCLEAR
2315      /
2316      /
2317      /
2320      /
2321      /
2322      1303  0212  GSPL1, 212

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|      |      |      |                 |          |                                       |
|------|------|------|-----------------|----------|---------------------------------------|
| 2323 | 1304 | 0215 | 215             |          |                                       |
| 2324 | 1305 | 0377 | 377             |          |                                       |
| 2325 |      |      | ASMIFZ          | TERMC-44 | /EOF CHAR=DOLLAR SIGN?                |
| 2326 |      |      | 244             |          | /YEP. PLACE IT ON THE EXCEPTION TABLE |
| 2327 | 1306 | 0247 | 247             |          |                                       |
| 2330 | 1307 | 0334 | GNL334, 334     |          |                                       |
| 2331 | 1310 | 0300 | 300             |          |                                       |
| 2332 | 1311 | 0337 | 337             |          |                                       |
| 2333 | 1312 | 0224 | 224             |          |                                       |
| 2334 | 1313 | 0225 | 225             |          | /CONTROL U CHARACTER                  |
| 2335 | 1314 | 4243 | 4243            |          |                                       |
| 2336 |      |      | /               |          |                                       |
| 2337 |      |      | /               |          |                                       |
| 2340 |      |      | /               |          |                                       |
| 2341 | 1315 | 1230 | GSPG1, GNLF     |          | /LINE FEED                            |
| 2342 | 1316 | 1243 | GALL            |          | /C.R.                                 |
| 2343 | 1317 | 1232 | GNRUB           |          | /RUB OUT                              |
| 2344 |      |      | ASMIFZ          | TERMC-44 | /DO WE WANT DOLLAR SIGN IN LIST?      |
| 2345 |      |      | GNXIT           |          | /YEP. DOLLAR SIGN ILLEGAL             |
| 2346 | 1320 | 1210 | GNXIT           |          |                                       |
| 2347 | 1321 | 1210 | GNXIT           |          |                                       |
| 2350 | 1322 | 1210 | GNXIT           |          |                                       |
| 2351 | 1323 | 1210 | GNXIT           |          |                                       |
| 2352 | 1324 | 1154 | LUNOAD          |          |                                       |
| 2353 | 1325 | 1155 | UNLOAD          |          | /POINTER TO THE UNLOAD ROUTINE.       |
| 2354 | 1326 | 1210 | GNXIT           |          |                                       |
| 2355 |      |      | /               |          |                                       |
| 2356 |      |      | /               |          |                                       |
| 2357 |      |      | /               |          |                                       |
| 2360 |      |      | /               |          |                                       |
| 2361 |      |      | /               |          |                                       |
| 2362 |      |      | /               |          |                                       |
| 2363 | 1327 | 0000 | MMOVE, 0        |          |                                       |
| 2364 | 1330 | 7240 | MONE            |          |                                       |
| 2365 | 1331 | 1327 | TAD             | MMOVE    |                                       |
| 2366 | 1332 | 3012 | DCA             | AUTO3    |                                       |
| 2367 | 1333 | 7240 | MONE            |          |                                       |
| 2370 | 1334 | 1412 | TAD I           | AUTO3    |                                       |
| 2371 | 1335 | 3013 | DCA             | AUTO4    |                                       |
| 2372 | 1336 | 7240 | MONE            |          |                                       |
| 2373 | 1337 | 1412 | TAD I           | AUTO3    |                                       |
| 2374 | 1340 | 3014 | DCA             | AUTO5    |                                       |
| 2375 | 1341 | 1412 | TAD I           | AUTO3    |                                       |
| 2376 | 1342 | 7040 | CMA             |          |                                       |
| 2377 | 1343 | 3141 | DCA             | COUNT    |                                       |
| 2400 | 1344 | 5347 | JMP             | MMEXIT-2 |                                       |
| 2401 | 1345 | 1413 | TAD I           | AUTO4    |                                       |
| 2402 | 1346 | 3414 | DCA I           | AUTO5    |                                       |
| 2403 | 1347 | 2141 | ISZ             | COUNT    |                                       |
| 2404 | 1350 | 5345 | JMP             | .-3      |                                       |
| 2405 | 1351 | 5412 | MMEXIT, JMP I   | AUTO3    |                                       |
| 2406 |      |      | /               |          |                                       |
| 2407 |      |      | /               |          |                                       |
| 2410 | 1352 | 0000 | PPUSH, 0        |          |                                       |
| 2411 | 1353 | 4564 | MOVE            |          |                                       |
| 2412 | 1354 | 0117 | FSIZE           |          |                                       |
| 2413 | 1355 | 1366 | PPTEMP          |          |                                       |
| 2414 | 1356 | 0011 | FNAME+J-FSIZE+1 |          |                                       |
| 2415 | 1357 | 5752 | JMP I           | PPUSH    |                                       |
| 2416 |      |      | /               |          |                                       |
| 2417 | 1360 | 0000 | PPOP, 0         |          |                                       |
| 2420 | 1361 | 4564 | MOVE            |          |                                       |
| 2421 | 1362 | 1366 | PPTEMP          |          |                                       |

|      |      |      |                         |   |
|------|------|------|-------------------------|---|
| 2422 | 1363 | 0117 | FSIZE                   |   |
| 2423 | 1364 | 0011 | FN+NAME+S*FSIZE+1       |   |
| 2424 | 1365 | 0700 | JMP I PPP               |   |
| 2425 |      | /    |                         |   |
| 2426 |      | /    |                         |   |
| 2427 | 1366 | 0070 | PPTEMP,0                |   |
| 2430 |      |      | *PPTEMP+FN+NAME+S*FSIZE |   |
| 2431 | 1376 | 0000 | 0000                    | /JUST TO SEE WHERE IT IS. NEXT LOCATION IS COMPLETELY FREE. |
| 2432 |      | /    |                         |   |
| 2433 |      | /    |                         |   |
| 2434 |      | /    |                         |   |
| 2435 |      |      | EJECT                   |   |

-



2436  
2437  
2440  
2441  
2442  
2443  
2444  
2445  
2446  
2447  
2450  
2451  
2452

/

EVOKE PIP2 NOW

CHAIN "PIP2"

0000  
0001  
0002  
-

\*20

PMODE  
EJECT

0003  
0004  
0005  
0006  
0007  
0010  
0011  
0012  
0013  
0014  
0015  
0016  
0017  
0020  
0021  
0022  
0023  
0024  
0025  
0026  
0027  
0030  
0031  
0032  
0033  
0034  
0035  
0036  
0037  
-

/

THIS IS THE SECOND PART OF PIP. IT S CALLED P I P 2.

EJECT

```

0040          *1400          GENERAL MASS STORAGE I/O ROUTINES.
0041          /
0042          /
0043          /
0044          /
0045          /
0046          /          CALLING SEQUENCE:
0047          /
0050          /
0051          /          READ      (OR WRITE)
0052          /          UNIT NUMBER
0053          /          FIRST CORE LOCATION OF TRANSFER
0054          /          NUMBER OF BLOCKS TO BE TRANSFERRED.
0055          /          FIRST BLOCK OF TRANSFER.
0056          /
0057          /
0060          /          ROUTINE HAS THE ABILITY TO GO INTO EXTENDED CORE.
0061          /          IF HIS NUMBER OF BLOCKS MAKES THE LOCATION COUNTER "WRAP AROUND".
0062          /
0063          /
0064          /
0065          /
0066          /
0067          1400  0000  TREAD,  0          /MAIN READ ROUTINE
0070          1401  4224          JMS      TWHERE          /GET CORRECT MASS DEVICE
0071          1402  1453          TAPEW          /00-07 = TAPE READ
0072          ASMIFN  RF08          /DO WE WANT THE RF08 ROUTINES ASSEMBLED?
0073          ASMSKP  4          /YEP BYPASS NON-UNIT ASSIGNMENTS.
0074          NOSUCH
0075          NOSUCH
0076          NOSUCH
0077          NOSUCH          /UNITS 10-47 NOT PRESENT
0100          /
0101          ASMIFZ  RF08          /ARE THEY NOT THERE?
0102          ASMSKP  4          /NOT THERE. DO NOT ASSEMBLE IN POINTERS.
0103          1403  7501  RF08R
0104          1404  7501  RF08R
0105          1405  7501  RF08R
0106          1406  7501  RF08R          /UNITS 0-47 INCASE OF RK08S
0107          /
0110          1407  4560  NOSUCH          /UNITS 50-77 FREE FOR NOW.
0111          1410  4560  NOSUCH
0112          1411  4560  NOSUCH
0113          /
0114          /
0115          /
0116          /
0117          1412  0000  TWRITE, 0          /MAIN WRITEE.
0120          1413  4224          JMS      TWHERE          /GET COORRECT MASS STORAGE DEVICE.
0121          1414  1464          TAPEW          /FIRST IS LINC TAPE.
0122          ASMIFZ  RF08          /DISK DESIRED?
0123          ASMSKP  4          /NOPE. BYPASS POITERS
0124          1415  7505  RF08W          /UNITS 10-47 ARE DISK UNITS NOW.
0125          1416  7505  RF08W
0126          1417  7505  RF08W
0127          1420  7505  RF08W
0130          /
0131          ASMIFN  RF08          /TEST AGAIN.
0132          ASMSKP  4          /SKIP NOSUCH UNITS IF DISK DESIRED.
0133          NOSUCH          /UNITS 10-17 NOT YET ASSIGNED.
0134          NOSUCH          /UNITS 20-77 FREE FOR NOW.
0135          NOSUCH
0136          NOSUCH

```

|      |      |      |           |        |  |   |
|------|------|------|-----------|--------|--|---|
| 0137 |      |      | /         |        |  |   |
| 0140 | 1421 | 4560 |           | NOSUCH |  | /UNITS 52-77 FREE FOR NOW.                      |
| 0141 | 1422 | 4560 |           | NOSUCH |  |   |
| 0142 | 1423 | 4560 |           | NOSUCH |  |   |
| 0143 |      |      | /         |        |  |   |
| 0144 |      |      | /         |        |  |   |
| 0145 |      |      | /         |        |  |   |
| 0146 |      |      | /         |        |  |   |
| 0147 |      |      | /         |        |  |   |
| 0150 | 1424 | 0000 | TWHERE, 0 |        |  | /GETS CORRECT MASS STORAGE DEVICE.              |
| 0151 | 1425 | 7344 | MTWO      |        |  | /-2   |
| 0152 | 1426 | 1224 | TAD       | TWHERE |  | /GET CALLING.                                   |
| 0153 | 1427 | 3065 | DCA       | TEMP   |  | /GET ORIGINAL CALLING.                          |
| 0154 | 1430 | 1465 | TAD I     | TEMP   |  |   |
| 0155 | 1431 | 3065 | DCA       | TEMP   |  | /GET USER CALLING.                              |
| 0156 |      |      | /         |        |  |   |
| 0157 |      |      | /         |        |  |   |
| 0160 |      |      | ASMIFF    | RF08   |  | /DISK   |
| 0161 |      |      | ASMSKP    | 6      |  | /NOPE   |
| 0162 |      |      | /         |        |  |   |
| 0163 | 1432 | 1465 | TAD I     | TEMP   |  | /GET USERS UNIT.                                |
| 0164 | 1433 | 1356 | TAD       | RK70   |  | /SUBTRACT ONE FROM THE DRIVE NUMBER             |
| 0165 | 1434 | 0060 | AND       | L30    |  | /CHOP OFF RANDOM CRAP.                          |
| 0166 | 1435 | 7112 | CLL RTR   |        |  | /SHIFT TO CONTROLLER BITS 9-10                  |
| 0167 | 1436 | 3107 | DCA       | RKDRIV |  | /SAVE AWAY                                      |
| 0170 |      |      | /         |        |  |   |
| 0171 |      |      | /         |        |  |   |
| 0172 | 1437 | 1465 | TAD I     | TEMP   |  | /GET THE USERS UNIT AGAIN.                      |
| 0173 | 1440 | 7012 | RTR       |        |  |   |
| 0174 | 1441 | 7010 | RAR       |        |  | /GET BITS 6-8                                   |
| 0175 | 1442 | 0060 | AND       | L7     |  |   |
| 0176 | 1443 | 1224 | TAD       | TWHERE |  | /GET START OF LIST.                             |
| 0177 | 1444 | 3224 | DCA       | TWHERE |  | /AND STORE AWAY.                                |
| 0200 | 1445 | 1624 | TAD I     | TWHERE |  | /GET CALLING ADDRESS.                           |
| 0201 | 1446 | 3224 | DCA       | TWHERE |  | /AND STASH AWAY.                                |
| 0202 | 1447 | 1065 | TAD       | TEMP   |  | /GET USERS CALLING ADDRESS.                     |
| 0203 | 1450 | 3624 | DCA I     | TWHERE |  | /AND SET UP PHONNEY CALL.                       |
| 0204 | 1451 | 2224 | IS        | TWHERE |  | /GO TO SECOND LOC.                              |
| 0205 | 1452 | 5624 | JMP I     | TWHERE |  | /PHONNEY CALL ALL DONE.                         |
| 0206 |      |      | /         |        |  |   |
| 0207 |      |      | /         |        |  |   |
| 0210 |      |      | /         |        |  |   |
| 0211 |      |      | /         |        |  |   |
| 0212 | 1453 | 0000 | TAPER, 0  |        |  | /MAIN LINC TAPE READ ROUTINE.                   |
| 0213 | 1454 | 1200 | TAD       | TREAD  |  | /GET READ ADDRESS.                              |
| 0214 | 1455 | 3212 | DCA       | TWRITE |  | /AND SAVE FOR HEAD.                             |
| 0215 | 1456 | 1312 | TAD       | TERENT |  | /SET TO RETRY READ IF ERROR                     |
| 0216 | 1457 | 3713 | DCA I     | TEERNT |  | /SAVE IN RETRY LOCATION                         |
| 0217 | 1460 | 3707 | DCA I     | TTSKP  |  | /DO A CHECK OF CHECKSUM.                        |
| 0220 | 1461 | 4711 | JMS I     | TTBLAH |  | /GO PERFORM FOLLOWING OPERATION.                |
| 0221 |      |      | LMODE     |        |  | /NEXT INSTRUCTION IS EXECUTED BY TBLAH IN LMODE |
| 0222 | 1462 | 0722 | RDE I     |        |  | /READ AND LEAVE GOING.                          |
| 0223 |      |      | PMODE     |        |  | /JUST FOR ASSEMBLER.                            |
| 0224 | 1463 | 5276 | JMP       | TEXT   |  | /AND EXIT                                       |
| 0225 |      |      | /         |        |  |   |
| 0226 |      |      | /         |        |  |   |
| 0227 | 1464 | 0000 | TAPEW, 0  |        |  | /GENERAL LINC TAPE WRITE ROUTINE.               |
| 0230 | 1465 | 1310 | TAD       | TTTSKP |  | /SET UP TO IGNORE BAD CHECKSUM.                 |
| 0231 | 1466 | 3707 | DCA I     | TTTSKP |  | /AND STASH AWAY.                                |
| 0232 | 1467 | 1314 | TAD       | TTAPEW |  | /FOR WRITE ERROR REWRITE ENTIRE BLOCK           |
| 0233 | 1470 | 3713 | DCA I     | TEERNT |  |   |
| 0234 | 1471 | 4711 | JMS I     | TTBLAH |  | /DO WRITE NOW.                                  |
| 0235 |      |      | LMODE     |        |  |   |

|      |      |      |         |          |   |
|------|------|------|---------|----------|---|
| 0236 | 1472 | 0726 | WRI I   |          |   |
| 0237 |      |      | Pmode   |          | /BACK INTO Pmode  |
| 0240 | 1473 | 3707 | DCA I   | TTSKP    | /SET TO CHECK CHECKSUM.                                 |
| 0241 | 1474 | 4711 | JMS I   | TTBLAH   | /NOW DO CHECK OF WHAT WE JUST WROTE.                    |
| 0242 |      |      | Lmode   |          |   |
| 0243 | 1475 | 0727 | CHK I   |          |   |
| 0244 |      |      | Pmode   |          |   |
| 0245 |      |      | /       |          |   |
| 0246 | 1476 | 7307 | TEXIT,  | PFOUR    | /GENERAL EXIT.  |
| 0247 | 1477 | 1212 | TAD     | TWRITE   | /GET WRITE  |
| 0250 | 1500 | 3212 | DCA     | TWRITE   | /GO PAST ARGUEMENTS.                                    |
| 0251 | 1501 | 5612 | JMP I   | TWRITE   | /PAST ARGUEMENTS.                                       |
| 0252 |      |      | /       |          |   |
| 0253 |      |      | /       |          |   |
| 0254 | 1502 | 0000 | ASET,   | 0        | /INITIALIZES ARGUEMENT GETTER FOR AMSS STORAGE DEVICES. |
| 0255 | 1503 | 7240 |         | MONE     |   |
| 0256 | 1504 | 1212 | TAD     | TWRITE   | /FIRST AGR.   |
| 0257 | 1505 | 3017 | DCA     | AUTO8    | /ARG REGISTER.  |
| 0260 | 1506 | 5702 | JMP I   | ASET     | /EXIT   |
| 0261 |      |      | /       |          |   |
| 0262 |      |      | /       |          |   |
| 0263 |      |      | /       |          |   |
| 0264 |      |      | /       |          |   |
| 0265 |      |      | /       |          |   |
| 0266 |      |      | /       |          |   |
| 0267 |      |      | /       |          |   |
| 0270 | 1507 | 1750 | TTSKP,  | TSKP     | /CHECKSUM SKIP  |
| 0271 | 1510 | 7410 | TTTSKP, | SKP      | /INSTRUCTION TO IGNORE CHECKSUM                         |
| 0272 | 1511 | 1600 | TTBLAH, | TBLAH    | /POINTER TO I/O DOER                                    |
| 0273 | 1512 | 1627 | TERENT, | TRENT    | /RETRY LOCATION   |
| 0274 | 1513 | 2032 | TEERNT, | TIRENT   | /RETRY SWITCH   |
| 0275 | 1514 | 1413 | TTAPEW, | TWRITE+1 | /RETRY ENTRIE WRITE ON ERROR                            |
| 0276 |      |      | /       |          |   |
| 0277 |      |      | /       |          |   |
| 0300 |      |      | /       |          |   |
| 0301 |      |      | /       |          |   |
| 0302 |      |      | /       |          |   |
| 0303 | 1515 | 7240 | FFILEC, | MONE     | /COPIES A NAMED FILE TO ANOTHER NAMED FILE.             |
| 0304 | 1516 | 3106 | DCA     | OUTNUM   | /ZET COUNTER TO 1                                       |
| 0305 | 1517 | 7305 | PTWO    |          | /SET UP SECOND DIRECTORY LOOKUP                         |
| 0306 | 1520 | 3123 | DCA     | FWHAT    | /IT S AN OUTPUT FILE                                    |
| 0307 | 1521 | 1737 | TAD I   | FFTEMP   | /GET THE ORIGINAL SIZE                                  |
| 0310 | 1522 | 3117 | DCA     | FSIZE    | /PLACE IN THE SIZE NOW.                                 |
| 0311 | 1523 | 4563 | DIRECT  |          | /NOW ALLOCATE SPACE.                                    |
| 0312 | 1524 | 1120 | TAD     | FUNIT    | /GET THE NEW OUTPUT UNIT                                |
| 0313 | 1525 | 3105 | DCA     | OUTUNIT  | /AND SET UP OUTPUT UNIT                                 |
| 0314 | 1526 | 1122 | TAD     | FBNUM    | /GET OUTPUT BLOCK                                       |
| 0315 | 1527 | 3104 | DCA     | OUTBLOCK | /AND SET UP.  |
| 0316 | 1530 | 4403 | HPOP    |          | /POP IN UPPER SAVED FBLOCK                              |
| 0317 | 1531 | 1120 | TAD     | FUNIT    | /SAVE THE INPUT UNIT                                    |
| 0320 | 1532 | 3103 | DCA     | INUNIT   |   |
| 0321 | 1533 | 1122 | TAD     | FBNUM    | /GET THE INPUT STARTING BLOCK                           |
| 0322 | 1534 | 3102 | DCA     | INBLOCK  | /AND SET UP   |
| 0323 | 1535 | 4554 | COPY    |          | /NOW COPY THE FILE                                      |
| 0324 | 1536 | 5552 | PIP     |          | /AND RETURN TO PIP.                                     |
| 0325 |      |      | /       |          |   |
| 0326 |      |      | /       |          |   |
| 0327 |      |      | /       |          |   |
| 0330 | 1537 | 3327 | FFTEMP, | HHTEMP   |   |
| 0331 |      |      | /       |          |   |
| 0332 |      |      | /       |          |   |
| 0333 |      |      | /       |          |   |
| 0334 |      |      | /       |          |   |

|      |      |      |                 |                              |
|------|------|------|-----------------|------------------------------|
| 0335 |      | /    |                 |                              |
| 0336 |      | /    |                 |                              |
| 0337 |      | /    |                 |                              |
| 0340 |      | /    |                 |                              |
| 0341 |      | /    |                 |                              |
| 0342 |      | /    |                 |                              |
| 0343 |      | /    |                 |                              |
| 0344 |      | /    |                 |                              |
| 0345 |      | /    |                 |                              |
| 0346 |      | /    |                 |                              |
| 0347 | 1540 | 0000 | RFDISK, 0       |                              |
| 0350 | 1541 | 1120 | TAD             | FUNIT                        |
| 0351 | 1542 | 3200 | DCA             | TREAD                        |
| 0352 | 1543 | 4402 | TAPE            |                              |
| 0353 | 1544 | 1200 | TAD             | TREAD                        |
| 0354 | 1545 | 0356 | AND             | RK70                         |
| 0355 | 1546 | 7450 | SNA             |                              |
| 0356 | 1547 | 1054 | TAD             | L10                          |
| 0357 | 1550 | 1356 | TAD             | RK70                         |
| 0360 | 1551 | 0356 | AND             | RK70                         |
| 0361 | 1552 | 1054 | TAD             | L10                          |
| 0362 | 1553 | 1120 | TAD             | FUNIT                        |
| 0363 | 1554 | 3120 | DCA             | FUNIT                        |
| 0364 | 1555 | 5740 | JMP I           | RFDISK                       |
| 0365 |      | /    |                 |                              |
| 0366 |      | /    |                 |                              |
| 0367 |      | /    |                 |                              |
| 0370 | 1556 | 0070 | RK70, 70        |                              |
| 0371 |      | /    |                 |                              |
| 0372 |      | /    |                 |                              |
| 0373 |      | /    |                 |                              |
| 0374 |      | /    |                 |                              |
| 0375 |      | /    |                 |                              |
| 0376 |      | /    |                 |                              |
| 0377 |      | /    |                 |                              |
| 0400 |      | /    |                 |                              |
| 0401 |      | /    |                 |                              |
| 0402 |      | /    |                 |                              |
| 0403 |      | /    |                 |                              |
| 0404 |      | /    |                 |                              |
| 0405 |      | /    |                 |                              |
| 0406 |      | /    |                 |                              |
| 0407 |      | /    |                 |                              |
| 0410 |      |      | ASMIF2 RF08     | /RF08 DESIRED?               |
| 0411 |      |      | ASMSKP 4        | /NO, DON T PUT MESSAGE HERE. |
| 0412 |      | /    |                 |                              |
| 0413 | 1557 | 0614 |                 |                              |
| 0413 | 1560 | 1116 |                 |                              |
| 0413 | 1561 | 0340 |                 |                              |
| 0413 | 1562 | 2401 |                 |                              |
| 0413 |      |      | TMESS2, TEXT    | "FLINC TAPE                  |
| 0414 | 1563 | 2005 |                 |                              |
| 0414 | 1564 | 4306 |                 |                              |
| 0414 | 1565 | 0310 |                 |                              |
| 0414 | 1566 | 0503 |                 |                              |
| 0414 | 1567 | 1323 |                 |                              |
| 0414 | 1570 | 2515 |                 |                              |
| 0414 | 1571 | 4005 |                 |                              |
| 0414 | 1572 | 2222 |                 |                              |
| 0414 | 1573 | 1722 |                 |                              |
| 0414 | 1574 | 4040 |                 |                              |
| 0414 | 1575 | 4040 |                 |                              |
| 0414 |      |      | FCHECKSUM ERROR |                              |

0415 1576 4043 "  
0415 /TAPE ERROR MESSAGE HERE TO LEA  
0416 VE ROOM LATTER ON.  
0417 /  
0420 /  
0421 /  
0422 /  
0423 /  
0424 /  
0425 /  
0426 EJECT  
-



```

0427          *1600
0430          /
0431          /
0432          /
0433          /
0434          /
0435          /
0436          1600 0000 TBLAH, 0 /PERFORMS A FUNCTION, THEN EXITS.
0437          1601 4555 SETA /SET UP ARGUMENT GETTER.
0440          1602 1417 GETA /GET UNIT NUMBER
0441          1603 7110 CLL RAH /MOVE INTO CORRECT PLACE
0442          1604 1061 TAD L30 /SET UP EXTENDED UNITS BITS.
0443          1605 3304 DCA TAX0 /AND STORE AWAY. NO-PAUSE AND EXTENDED ADDRESSING ALSO SET.
0444          1606 7206 CLA RTL /NOW MOVE BACK TO BIT 0
0445          1607 7006 RTL
0446          1610 1600 TAD I TBLAH /ADD IN DESIRED FUNCTION.
0447          1611 3317 DCA TOPR /AND STORE AWAY TO BE EXECUTED.
0450          1612 1317 TAD TOPR /GET THE OPERATION AGAIN.
0451          1613 3307 DCA TSTOPR /SET UP SELECT-WRITE LOCK CHECK.
0452          1614 2200 ISZ TBLAH /SKIP PAST CRAP.
0453          1615 1417 GETA /GET STARTING ADDRESS.
0454          1616 3315 DCA TLOC1 /AND STORE AWAY.
0455          1617 1417 GETA /GET WORD COUNT.
0456          1620 7450 SNA /IS IT ZERO?
0457          1621 5600 JMP I TBLAH /YEP. EXIT.
0460          1622 7041 CIA /NOPE. COMPLETEN IT.
0461          1623 3361 DCA TCOUNT /STASH AWAY.
0462          1624 1417 GETA /GET BLOCK NUMBER
0463          1625 7001 IAC /FOR UPCOMING SUBTRACTION ERROR.
0464          1626 3320 DCA TBLOCK /AND OPLACE IN FIRST BLOCK.
0465          /
0466          /
0467          /
0470          1627 7240 TREENT, MONE /TO RETRY SAME BLOCK AFTER ERROR.
0471          1630 1320 TAD TBLOCK /RESET BLOCK NUMBER TO CORRECT ONE.
0472          1631 3320 DCA TBLOCK
0473          1632 1315 TAD TLOC1
0474          1633 7440 SZA /GET THE FIRST LOC
0475          1634 5244 JMP TDOWN /IT S ZERO. CORRECT FOR FIELD CHANGE
0476          1635 1033 TAD L7000 /NOT ZERO OK.
0477          1636 1304 TAD TAX0 /BOP DOWN FIELD.
0500          1637 3304 DCA TAX0 /IN EXTENDED REGISTER
0501          ASMFZ RF08 /DISK ROUTINES THERE.
0502          ASMSKP 4 /NO. DO NOT ASSEMBLE IN CODE TO PROTECT 7400-7777 OF FIELD 0.
0503          1640 1304 TAD TAX0 /REGET THE NEXT AXO REGISTER.
0504          1641 0033 AND L7000
0505          1642 7650 SNA CLA /ARE WE CROSSING BOUNDARY TO LOWER CORE?
0506          1643 1064 TAD M400 /YES. BOP DOWN BY AN EXTRA 400 SO WE DON T BASH DATA BREAK
0507          / /AND THE READ ROUTINES THERE.
0510          /
0511          1644 1064 TDOWN, TAD M400 /400= LENGTH OF 1 RECORD.
0512          1645 3315 DCA TLOC1 /LOC ALL SET TO GO.
0513          /
0514          1646 1143 TRENT2, TAD M215 /ENTERS HERE IF A SKIP OVER RECORD. M215=LENGTH OF TAPE+10 SECONDS.
0515          1647 3363 DCA TERRC2 /SET UP WAIT COUNT.
0516          1650 1031 TAD L5000 /SET MAINTANCE MODE
0517          1651 6151 /FOR TESING WHETHER OR NOT UNIT OK
0520          /
0521          /
0522          /
0523          1652 7201 TLOOP, PONE /MAIN LOOP TO DO NEXT RECORD. IS THIS LAST RECORD?
0524          1653 1361 TAD TCOUNT /GET THE NUMBER OF RECORDS TO GO
0525          1654 7640 SZA CLA

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|      |      |      |         |         |  |
|------|------|------|---------|---------|--|
| 0526 | 1655 | 5261 | JMP     | ,+4     | /NO. STILL MORE TO GO.   |
| 0527 | 1656 | 1317 | TAD     | TOPR    | /LAST ONE, TURN OFF MOTION BIT.                                      |
| 0530 | 1657 | 0034 | AND     | L7757   |  |
| 0531 | 1660 | 3317 | DCA     | TOPR    |  |
| 0532 |      |      | ASMIFZ  | RF08    | /RF08 DEISRED?   |
| 0533 |      |      | ASMSKP  | 14      | /NOPE. DON T ASSEMBLE IN CODE TO PROTECT 7400.                       |
| 0534 | 1661 | 1315 | TAD     | TLOC1   | /GET THE LAST LOCATION.  |
| 0535 | 1662 | 1040 | TAD     | L400    |  |
| 0536 | 1663 | 1040 | TAD     | L400    | /SEE IF NEXT IS GOING TO READ INTO 7400.                             |
| 0537 | 1664 | 7640 | SZA     | CLA     | /??  |
| 0540 | 1665 | 5275 | JMP     | TLP1    | /NO. IT ISN T.   |
| 0541 | 1666 | 1304 | TAD     | TAX0    | /GET THE TAX0 TO SEE IF  |
| 0542 | 1667 | 0033 | AND     | L7000   | /IT S 7400 OF FIELD 0  |
| 0543 | 1670 | 7640 | SZA     | CLA     |  |
| 0544 | 1671 | 5275 | JMP     | TLP1    | /NOT FIELD 0   |
| 0545 | 1672 | 1040 | TAD     | L400    | /WE RE GOING TO BASH 7400, SO SKIP PAST IT.                          |
| 0546 | 1673 | 1315 | TAD     | TLOC1   |  |
| 0547 | 1674 | 3315 | DCA     | TLOC1   |  |
| 0550 |      |      | /       |         |  |
| 0551 | 1675 | 7300 | TLP1,   | CLA CLL | /LINC MUST BE CLEAR  |
| 0552 | 1676 | 1040 | TAD     | L400    | /BOP UP LOCATION   |
| 0553 | 1677 | 1315 | TAD     | TLOC1   |  |
| 0554 | 1700 | 3315 | DCA     | TLOC1   |  |
| 0555 | 1701 | 6141 | LINC    |         | /GO OVER INTO LMODE  |
| 0556 |      |      | LMODE   |         |  |
| 0557 | 1702 | 0323 | ROR I   | 3       | /MOVE OVERFLOW BIT INTO CORRECT TAPE POSITION.                       |
| 0560 | 1703 | 1160 | ADM I   |         | /UPDATE TAX0 AND AX0 ALL AT ONCE.                                    |
| 0561 | 1704 | 0000 | TAX0,   | 0       |  |
| 0562 | 1705 | 0001 | AX0     |         | /SEND TO CONTROLER   |
| 0563 | 1706 | 0011 | CLR     |         | /CLEAR AC FOR TEST TO FOLLOW DUMMY OPERATION.                        |
| 0564 | 1707 | 0000 | TSTOPR, | 0       | /PERFORM USERS OPERATION ONCE. BLOCK NUMBER=0 INSURES SUCCESS.       |
| 0565 | 1710 | 0000 | 0000    |         | /BECAUSE BLOCK NUMBER IS ADDED TO SPECIAL REGISTER WHICH IS READ IN. |
| 0566 | 1711 | 0500 | IOB     |         | /DO 8 101 TO GET SPECIAL REGISTER.                                   |
| 0567 | 1712 | 6154 | 6154    |         | /IF TAPE OK(SELECT AND WRITE-LOCK OFKAY                              |
| 0570 | 1713 | 4071 | STC     | TEMP4   | /THEN BIT0=1; NOW DO REAL USER OPERATION.                            |
| 0571 | 1714 | 1020 | LDA I   |         | /GET ADDRESS   |
| 0572 | 1715 | 0000 | TLOC1,  | 0       |  |
| 0573 | 1716 | 0023 | TMA     |         | /AND SEND IT TO CONTROLLER   |
| 0574 | 1717 | 0000 | TOPR,   | 0       | /ACTUAL TAPE INSTRUCTION   |
| 0575 | 1720 | 0000 | TBLOCK, | 0       | /ACTUAL BLOCK NUMBER.  |
| 0576 | 1721 | 1000 | LDA     |         | /RECALL PAST SPECIAL FUCTION   |
| 0577 | 1722 | 0071 | TEMP4   |         | /REGISTER AND CHECK WHETER UNIT OK                                   |
| 0600 | 1723 | 0002 | PDP     |         | /GET BACK INTO 8 MODE  |
| 0601 |      |      | PMODE   |         |  |
| 0602 | 1724 | 2320 | ISZ     | TBLOCK  | /BOP UP BLOCK NUMBER   |
| 0603 | 1725 | 7012 | RTR     |         | /PLACE 91T 10 IN LINC  |
| 0604 | 1726 | 7620 | SNL     | CLA     | /IS UNIT OK WITH WRITE LOCK OFF IF NECESSARY.                        |
| 0605 | 1727 | 5357 | JMP     | TSELER  | /UNIT NOT OK. DISPLAY MESSAGE.                                       |
| 0606 |      |      | LMODE   |         | /TELL ASSEM WE LL BE IN LMODE.                                       |
| 0607 | 1730 | 0002 | TLOOP2, | PDP     | /GET INTO 8 MODE. IF IN 8 MODE ITS JUST A NOP.                       |
| 0610 |      |      | PMODE   |         |  |
| 0611 | 1731 | 4556 | CHECKIO |         | /CHECKIO I/O DEVICES WHILE WAITING IN LOOP.                          |
| 0612 | 1732 | 2362 | ISZ     | TERRC1  | /BOP UP FIRST WAIT COUNT   |
| 0613 | 1733 | 5340 | JMP     | TNT2LG  | /DIDN T OVERFLOW YET. GO DOWN  |
| 0614 | 1734 | 2363 | ISZ     | TEHRC2  | /OUTER SKIP OK?  |
| 0615 | 1735 | 5340 | JMP     | TNT2LG  | /BIG COUNT STILL OK. GO DOWN.  |
| 0616 |      |      | /       |         |  |
| 0617 | 1736 | 4764 | JMS I   | TEMAIN  | /WE VE WAITED TOO LONG. GIVE MESSAGE.                                |
| 0620 | 1737 | 2202 | TMESS1  |         | /TO LONG MESSAGE   |
| 0621 |      |      | /       |         |  |
| 0622 | 1740 | 6141 | TNT2LG, | LINC    | /GET INTO LINC MODE FOR FLAG TESTING.                                |
| 0623 |      |      | LMODE   |         | /GET INTO L MODE TO TEST TAPE.                                       |
| 0624 | 1741 | 0416 | STD     |         |  |

|      |      |      |                   |               |                                    |
|------|------|------|-------------------|---------------|------------------------------------|
| 0625 | 1742 | 7730 | JMP               | TLOOP2        | /NOT YET DONE. GO BACK AND WAIT.   |
| 0626 | 1743 | 0003 | TAC               |               | /DONE. GET CHECKSUM INTO AC.       |
| 0627 | 1744 | 0002 | PDP               |               |                                    |
| 0630 |      |      | PMODE             |               | /AND GET BACK INTO B MODE          |
| 0631 | 1745 | 7040 | CMA               |               | /MAKE INTO ZERO IF 7777            |
| 0632 | 1746 | 7650 | SNA CLA           |               | /GOOD CHECKSUM                     |
| 0633 | 1747 | 5352 | JMP               | TDOC          | /YEP. TRY NEXT RECORD.             |
| 0634 | 1750 | 7410 | TSKP,             | SKP           | /SWITCH FOR ERROR IF BAD CHECKSUM. |
| 0635 | 1751 | 5355 | JMP               | TCHEKE        | /BAD CHECKSUM. GIVE MESSAGE        |
| 0636 | 1752 | 2361 | TDOC,             | ISZ           | /OK. IS ALL DONE?                  |
| 0637 | 1753 | 5252 | JMP               | TLOOP         | /NOPE. DO NEXT                     |
| 0640 | 1754 | 5600 | TBEXIT,           | JMP I TBLAH   | /YEP. EXIT                         |
| 0641 |      |      | /                 |               |                                    |
| 0642 |      |      | /                 |               |                                    |
| 0643 |      |      | /                 |               |                                    |
| 0644 |      |      | /                 |               |                                    |
| 0645 | 1755 | 4764 | TCHEKE,           | JMS I TEMAINE |                                    |
| 0646 | 1756 | 1557 |                   | TMESS2        | /CHECKSUM ERROR                    |
| 0647 | 1757 | 4764 | TSELER,           | JMS I TEMAINE |                                    |
| 0650 | 1760 | 1765 |                   | TMESS3        | /BLOCK NUMBER OR TIMING ERROR      |
| 0651 |      |      | /                 |               |                                    |
| 0652 |      |      | /                 |               |                                    |
| 0653 |      |      | /                 |               |                                    |
| 0654 |      |      | /                 |               |                                    |
| 0655 |      |      | /                 |               |                                    |
| 0656 | 1761 | 0000 | TCOUNT,           | 0             |                                    |
| 0657 | 1762 | 0000 | TERRC1,           | 0             |                                    |
| 0660 | 1763 | 0000 | TERRC2,           | 0             |                                    |
| 0661 | 1764 | 2005 | TEMAINE,          | TEMAINE       |                                    |
| 0662 |      |      | /                 |               |                                    |
| 0663 |      |      | /                 |               |                                    |
| 0664 |      |      | /                 |               |                                    |
| 0665 |      |      | /                 |               |                                    |
| 0666 |      |      | /                 |               |                                    |
| 0667 |      |      | /                 |               |                                    |
| 0670 |      |      | /                 |               |                                    |
| 0671 |      |      | /                 |               |                                    |
| 0672 |      |      | /                 |               |                                    |
| 0673 |      |      | ASMIFN            | RF08          | /RF08 DESIRED?                     |
| 0674 |      |      | ASMSKP            | 4             | /YEP. DON'T ASSEMBLE MESSAGE HERE  |
| 0675 |      |      | /                 |               |                                    |
| 0676 |      |      | TMESS2, TEXT      | "FLINC TAPE   |                                    |
| 0677 |      |      | FCHECKSUM ERROR   |               |                                    |
| 0700 |      |      | "                 |               |                                    |
| 0701 |      |      | /                 |               |                                    |
| 0702 | 1765 | 0623 |                   |               |                                    |
| 0702 | 1766 | 0514 |                   |               |                                    |
| 0702 | 1767 | 0503 |                   |               |                                    |
| 0702 | 1770 | 2440 |                   |               |                                    |
| 0702 |      |      | TMESS3, TEXT      | "FSELECT OR   |                                    |
| 0703 | 1771 | 1722 |                   |               |                                    |
| 0703 | 1772 | 4306 |                   |               |                                    |
| 0703 | 1773 | 2722 |                   |               |                                    |
| 0703 | 1774 | 1124 |                   |               |                                    |
| 0703 | 1775 | 0555 |                   |               |                                    |
| 0703 | 1776 | 1417 |                   |               |                                    |
| 0703 | 1777 | 0313 |                   |               |                                    |
| 0703 | 2000 | 4005 |                   |               |                                    |
| 0703 | 2001 | 2222 |                   |               |                                    |
| 0703 | 2002 | 1722 |                   |               |                                    |
| 0703 | 2003 | 4040 |                   |               |                                    |
| 0703 |      |      | FWRITE-LOCK ERROR |               |                                    |
| 0704 | 2004 | 4043 |                   |               |                                    |

|      |   |       |
|------|---|-------|
| 0704 | " |       |
| 0705 | / |       |
| 0706 | / |       |
| 0707 | / |       |
| 0710 | / |       |
| 0711 | / |       |
| 0712 |   | EJECT |

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0713 /
0714 /
0715 /
0716 /
0717 /
0720 /
0721 /
0722 /
0723 /
0724 2025 2020 TMAINE, 7
0725 2026 7330 CLA CLL CML RAR /TAPE ROUTINES CONTINUED.
0726 2027 6152 6152 /MAIN ERROR WAIT
0727 2010 7300 CLA CLL /4422+6152=TAPE PRESET.
0730 2011 1605 TAD I TMAINE /STOP ANY STRAY TAPE OPERATIONS.
0731 2012 3214 DCA ,+2 /GET ERROR MESSAGE
0732 2013 4564 MOVE /AND MOVE TO MAIN MESSAGE.
0733 2014 0000 2
0734 2015 2101 TMAIND
0735 2016 0020 20 /40 CHARACTER NAME.
0736 2017 7240 NONE
0737 2020 1633 TAD I TBLOKK /GET CORRECT BLOCK NUMBER FOR DISPLAY OF ERROR MESSAGE.
0740 2021 4237 JMS TTRC /CALL ERROR MESSAGE DISPLAYER
0741 2022 2023 TTEG1 /WITH LIST OF WHERE TO GO ON REPLY.
0742 /
0743 /
0744 /
0745 /
0746 /
0747 2023 2026 TTEG1, TRENT3 /ACCEPT LOCATION
0750 2024 2031 TTRRT /RETRY LOCATION
0751 2025 2026 TRENT3 /SKIP LOCATION (INTERNALLY SAME AS ACCEPT)
0752 /
0753 /
0754 /
0755 /
0756 /
0757 /
0760 /
0761 2026 2634 TRENT3, ISZ I TKOUNT /IS THIS LAST RECORD?
0762 2027 5635 JMP I TTRNT2 /NOPE. GO BACK AND SKIP
0763 2030 5636 JMP I TBLAHT /YEP. EXIT
0764 /
0765 /
0766 /
0767 /
0770 /
0771 2031 5632 TTRRT, JMP I TTRENT
0772 /
0773 /
0774 /
0775 /
0776 /
0777 /
1000 2032 1627 TTRENT, TREENT
1001 2033 1720 TBLOKK, TBLOCK
1002 2034 1761 TKOUNT, TCOUNT
1003 2035 1646 TTRNT2, TRENT2
1004 2036 1754 TBLAHT, TBEXIT
1005 /
1006 /
1007 /
1010 /
1011 /

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LOCATED AROUND 2070. PREVIOUS PAGE OVERLAPS A LITTLE BIT.

|      |      |      |                   |  |
|------|------|------|-------------------|--|
| 1012 |      | /    |                   |  |
| 1013 |      | /    |                   |  |
| 1014 |      | /    |                   |  |
| 1015 |      | /    |                   |  |
| 1016 |      | /    |                   |  |
| 1017 |      | /    |                   |  |
| 1020 |      | /    |                   |  |
| 1021 |      | /    |                   |  |
| 1022 |      | /    |                   |  |
| 1023 | 2037 | 0000 | TTBC, 0           | /ERROR MESSAGE DISPLAYER                       |
| 1024 | 2040 | 0141 | LINC              | /GET OVER TO LINC SIDE                         |
| 1025 |      |      | LMODE             |  |
| 1026 |      |      | TBREG=TMAINE&1777 | /ASSIGN A BETA REGISTER                        |
| 1027 | 0041 | 4046 | STC TTEBLK        | /SAVE THE BLOCK NUMBER                         |
| 1030 | 0042 | 0065 | SET I TBREG       | /SET THE B REG TO POINT TO                     |
| 1031 | 0043 | 4131 | TOUT1&1777-1+4000 | /WHERE THE BLOCK NUMBER SHOULD GO.             |
| 1032 |      |      | /                 |  |
| 1033 | 0044 | 0006 | TTBLP, DJR        | /DON T CLOBBER 0                               |
| 1034 | 0045 | 1020 | LOA I             |  |
| 1035 | 0046 | 0000 | TTEBLK, 0         | /GET THE BLOCK NUMBER                          |
| 1036 | 0047 | 0243 | ROL 3             | /ROTATE TO GET DIGIT                           |
| 1037 | 0050 | 1040 | STA               |  |
| 1040 | 0051 | 0046 | TTEBLK            | /AND STORE BACK FOR NEXT TIME                  |
| 1041 | 0052 | 1560 | BCL I             |  |
| 1042 | 0053 | 7770 | -7                |  |
| 1043 | 0054 | 1620 | BSE I             |  |
| 1044 | 0055 | 0060 | 60                | /CONVERT TO TRIMMED ASCII                      |
| 1045 | 0056 | 1365 | STH I TBREG       | /AND STORE AWAY.                               |
| 1046 | 0057 | 1520 | SRO I             |  |
| 1047 | 0060 | 3567 | 3567              | /ALL DONE WITH 4 DIGITS?                       |
| 1050 | 0061 | 6044 | JMP TTBLP         | /NOPE. DISPLAY MORE.                           |
| 1051 | 0062 | 0002 | PDP               |  |
| 1052 |      |      | Pmode             | /GET BACK INTO B MODE                          |
| 1053 | 2063 | 7200 | CLA               |  |
| 1054 | 2064 | 1637 | TAD I TTBC        | /GET THE GO TO LIST                            |
| 1055 | 2065 | 3272 | DCA TTS2          | /AND SAVE IN SEARCH CALL                       |
| 1056 | 2066 | 4562 | DECODE            | /DISPLAY MESSAGE AND GET REPLY                 |
| 1057 | 2067 | 2077 | TMAIND-2          |  |
| 1060 | 2070 | 4573 | SEARCH            | /LOOK-UP REPLY                                 |
| 1061 | 2071 | 2074 | TTS1              |  |
| 1062 | 2072 | 0000 | TTS2, 0           | /CALLENS LIST.                                 |
| 1063 | 2073 | 5266 | JMP -5            | /NOT A LEGAL REPLY.                            |
| 1064 |      |      | /                 |  |
| 1065 |      |      | /                 |  |
| 1066 |      |      | /                 |  |
| 1067 | 2074 | 0301 | TTS1, 301         |  |
| 1070 | 2075 | 0322 | 322               |  |
| 1071 | 2076 | 4323 | 4323              |  |
| 1072 |      |      | /                 |  |
| 1073 |      |      | /                 |  |
| 1074 |      |      | /                 |  |
| 1075 |      |      | /                 |  |
| 1076 |      |      | /                 |  |
| 1077 |      |      | /                 |  |
| 1100 |      |      | /                 |  |
| 1101 |      |      | /                 |  |
| 1102 | 2077 | 0140 | LEFT+140          |  |
| 1103 | 2100 | 0240 | TOP-100           | /LOCATED ON TOP,LEFT OF SCREEN                 |
| 1104 | 2101 | 0000 | TMAIND, 0         | /OVERLAYED BY EXACT MESSGE                     |
| 1105 |      |      | *TMAIND+20        | /A 40 CHAR MESSAGE FROM CORRECT ERROR ROUTINE. |
| 1106 | 2121 | 0601 |                   |  |
| 1106 | 2122 | 2440 |                   |  |
| 1106 | 2123 | 0214 |                   |  |

|      |      |      |              |                                |
|------|------|------|--------------|--------------------------------|
| 1106 | 2124 | 1703 |              |                                |
| 1106 | 2125 | 1340 |              |                                |
| 1106 | 2126 | 1625 |              |                                |
| 1106 | 2127 | 1502 |              |                                |
| 1106 | 2130 | 0522 |              |                                |
| 1106 | 2131 | 4040 |              |                                |
| 1106 |      |      | TEXT         | "FAT BLOCK NUMBER "            |
| 1107 | 2132 | 0000 | TOUT1,       | 0                              |
| 1110 | 2133 | 0000 | TOUT2,       | 0                              |
| 1111 |      |      | TEXT         | "                              |
| 1112 |      |      |              |                                |
| 1113 | 2134 | 4340 |              |                                |
| 1113 |      |      |              |                                |
| 1114 | 2135 | 4340 |              |                                |
| 1114 | 2136 | 4301 |              |                                |
| 1114 | 2137 | 4055 |              |                                |
| 1114 | 2140 | 5555 |              |                                |
| 1114 | 2141 | 4001 |              |                                |
| 1114 | 2142 | 0303 |              |                                |
| 1114 | 2143 | 0520 |              |                                |
| 1114 | 2144 | 2440 |              |                                |
| 1114 | 2145 | 0123 |              |                                |
| 1114 | 2146 | 4011 |              |                                |
| 1114 |      |      | A ---        | ACCEPT AS IS                   |
| 1115 | 2147 | 2343 |              |                                |
| 1115 | 2150 | 2240 |              |                                |
| 1115 | 2151 | 5555 |              |                                |
| 1115 | 2152 | 5540 |              |                                |
| 1115 | 2153 | 2422 |              |                                |
| 1115 | 2154 | 3140 |              |                                |
| 1115 | 2155 | 0107 |              |                                |
| 1115 | 2156 | 0111 |              |                                |
| 1115 |      |      | R ---        | TRY AGAIN                      |
| 1116 | 2157 | 1643 |              |                                |
| 1116 | 2160 | 2340 |              |                                |
| 1116 | 2161 | 5555 |              |                                |
| 1116 | 2162 | 5540 |              |                                |
| 1116 | 2163 | 2422 |              |                                |
| 1116 | 2164 | 3140 |              |                                |
| 1116 | 2165 | 2417 |              |                                |
| 1116 | 2166 | 4023 |              |                                |
| 1116 | 2167 | 1311 |              |                                |
| 1116 | 2170 | 2040 |              |                                |
| 1116 | 2171 | 2001 |              |                                |
| 1116 | 2172 | 2324 |              |                                |
| 1116 | 2173 | 4006 |              |                                |
| 1116 | 2174 | 0125 |              |                                |
| 1116 | 2175 | 1424 |              |                                |
| 1116 | 2176 | 3140 |              |                                |
| 1116 | 2177 | 0214 |              |                                |
| 1116 | 2200 | 1703 |              |                                |
| 1116 | 2201 | 1334 |              |                                |
| 1116 |      |      | S ---        | TRY TO SKIP PAST FAULTY BLOCK\ |
| 1117 | 2202 | 0602 |              |                                |
| 1117 | 2203 | 1417 |              |                                |
| 1117 | 2204 | 0313 |              |                                |
| 1117 | 2205 | 4016 |              |                                |
| 1117 | 2206 | 2515 |              |                                |
| 1117 | 2207 | 0205 |              |                                |
| 1117 |      |      | TMESS1, TEXT | "FBLOCK NUMBER                 |
| 1120 | 2210 | 2243 |              |                                |
| 1120 | 2211 | 0617 |              |                                |
| 1120 | 2212 | 2240 |              |                                |

|      |      |      |                  |
|------|------|------|------------------|
| 1120 | 2213 | 2411 |                  |
| 1120 | 2214 | 1511 |                  |
| 1120 | 2215 | 1607 |                  |
| 1120 | 2216 | 4005 |                  |
| 1120 | 2217 | 2222 |                  |
| 1120 | 2220 | 1722 |                  |
| 1120 |      |      | FOR TIMING ERROR |
| 1121 | 2221 | 4043 |                  |
| 1121 |      | "    |                  |
| 1122 |      | /    |                  |
| 1123 |      | /    |                  |
| 1124 |      | /    |                  |
| 1125 |      | /    |                  |
| 1126 |      |      | EJECT            |
| -    |      |      |                  |



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1127 / LOCATED AROUND 2242. PREVIOUS PAGE OVERLAPS A LITTLE BIT.
1130 /
1131 /
1132 / GENERAL CALL:
1133 /
1134 / DECODE
1135 / YOUR DISPLAY
1136 /
1137 /
1140 /
1141 /
1142 / WILL DECODE A STRING AS FOLLOWS:
1143 /
1144 / <SINGLE LETTER><OCTAL NUMBER>;<B CHARACTER NAME>,<OCTAL NUMBER>
1145 /
1146 / ANY PART MAY BE MISSING WITH THE EXCEPTION OF THE FIRST LETTER.
1147 /
1150 / IT IS BROKEN DOWN AS FOLLOWS. THE FIRST LETTER GOES INTO "FTYPE", THE NUMBER INTO "FUNIT",
1151 / THE B CHARACTER NAME INTO "FNAME" FOLLOWED BY
1152 / "77" S TO FILL IT OUT, AND THE LAST NUMBER INTO
1153 / "FSIZE". ANY MISSING NUMBERS GO TO 2, A MISSING NAME GOES TO 7777777777777.
1154 /
1155 2222 0000 DDAGIN, W /GETS AND DECODES A LINE FROM THE TTY WHILE DISPLAYING SOMETHING.
1156 2223 7300 CLA CLL /CLEAR AC.
1157 2224 1622 TAD I DDAGIN /GET LOCATION OF DISPLAY.
1160 2225 3243 DCA DDAGIN /AND PLACE HERE.
1161 2226 2222 ISZ DDAGIN /SKIP PAST CALLING ARG.
1162 2227 7240 DDAGIN, NONE /RESTART OF DISPLAY.
1163 2230 3124 DCA FNAME /SET NAME TO 7777
1164 2231 7240 NONE
1165 2232 3125 DCA FNAME+1
1166 2233 7240 NONE
1167 2234 3126 DCA FNAME+2
1170 2235 7240 NONE
1171 2236 3127 DCA FNAME+3 /NAME NOW CONTAINS A 7777
1172 2237 3120 DCA FUNIT /ZAP OUT UNIT NUMBER.
1173 2240 3121 DCA FTYPE /ZAP OUT CHAR.
1174 2241 3117 DCA FSIZE /AND SIZE.
1175 2242 4561 LINE /GET A LINE FROM THE TTY.
1176 2243 0000 DDAGIN, 2 /WHILE DISPLAYING THE CALLER'S CRAP.
1177 2244 1673 TAD DDAGIN /POINTER TO BUFFER-1
1200 2245 3774 DCA I DPSTART /WE LL USE "PGETL" TO GET
1201 2246 7240 NONE /THE CHARS SO I M SETTING IT UP NOW.
1202 2247 3775 DCA I DPSTART /SET SWITCH TO LEFT CHAR.
1203 2250 1376 TAD DSIZE /NUMBER OF CHARS ALREADY IN BUFFER.
1204 2251 3141 DCA COUNT /PLACE IN TEMP COUNT.
1205 2252 4771 JMS I DPGETL /GO GET A CHAR.
1206 2253 2141 ISZ COUNT /BOP UP COUNT. IS THAT ALL?
1207 2254 5252 JMP --2 /NO. GET NEXT.
1210 2255 7200 CLA /YES. CLEAR AC OF CHAR.
1211 2256 4771 JMS I DPGETL /GET NEXT CHAR.
1212 2257 1047 TAD L7777 /TEST TO SEE IF A LETTER
1213 2260 7510 SPA /IS IT <"A"
1214 2261 5227 JMP DDAGIN /YES. NOT A LET. TRY AGAIN.
1215 2262 1050 TAD M32 /IS IT TOO BIG???
1216 2263 7500 SNA
1217 2264 5227 JMP DDAGIN /YEP. TOO BIG. TRY AGAIN.
1220 2265 1051 TAD L333 /OK. MAKE INTO A GOOD LETTER.
1221 2266 3121 DCA FTYPE /AND STASH AWAY.
1222 2267 4334 JMS DGETNUM /GET A NUMBER NEXT.
1223 2270 1065 TAD TEMP /GET THE VALUE.
1224 2271 3120 DCA FUNIT /AND STASH AWAY.
1225 2272 1066 TAD TEMP1 /GET CHARACTER WHICH WAS NON NUM.

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|      |      |      |             |           |                                     |
|------|------|------|-------------|-----------|-------------------------------------|
| 1226 | 2273 | 7450 | SNA         |           | /IS IT TERMINATING 0000             |
| 1227 | 2274 | 5622 | JMP I       | DDCODE    | /YES, EXIT.                         |
| 1230 | 2275 | 1045 | TAD         | M73       | /IS IT A ";"                        |
| 1231 | 2276 | 7640 | SZA         | CLA       |                                     |
| 1232 | 2277 | 5227 | JMP         | DDAGIN    | /NOT ANYONE. BAD CHAR. TRY AGAIN.   |
| 1233 | 2300 | 1372 | TAD         | OFNAME    | /POINTER TO "FNAME"                 |
| 1234 | 2301 | 3070 | DCA         | TEMP3     | /AND STORE AWAY                     |
| 1235 | 2302 | 1022 | TAD         | M4        | /4 *2 CHARS PER WORD=8              |
| 1236 | 2303 | 3141 | DCA         | COUNT     |                                     |
| 1237 | 2304 | 4360 | JMS         | DDCHEK    | /GET A CHAR AND CHECK IT.           |
| 1240 | 2305 | 7006 | RTL         |           |                                     |
| 1241 | 2306 | 7006 | RTL         |           |                                     |
| 1242 | 2307 | 7006 | RTL         |           | /ROTATE INTO LEFT SPOT.             |
| 1243 | 2310 | 0053 | AND         | L7700     | /ZAP OUT RIGHT                      |
| 1244 | 2311 | 1024 | TAD         | L77       | /NAME TERMINATES WITH A 77          |
| 1245 | 2312 | 3470 | DCA I       | TEMP3     | /PLACE IT AWAY.                     |
| 1246 | 2313 | 4360 | JMS         | DDCHEK    | /GET ANOTHER                        |
| 1247 | 2314 | 0024 | AND         | L77       | /JUST RIGHT 6 BITS                  |
| 1250 | 2315 | 1470 | TAD I       | TEMP3     | /GET BACK OLD 1                     |
| 1251 | 2316 | 1046 | TAD         | M77       | /CHOP OFF L77 WE ADDED BEFORE.      |
| 1252 | 2317 | 3470 | DCA I       | TEMP3     | /AND PLACE BACK IN THING.           |
| 1253 | 2320 | 2070 | ISZ         | TEMP3     | /BOP UP NAME POINTER.               |
| 1254 | 2321 | 2141 | ISZ         | COUNT     | /4 WORDS FILLED UP YET?             |
| 1255 | 2322 | 5304 | JMP         | DLOOP     | /NO.                                |
| 1256 | 2323 | 4360 | JMS         | DDCHEK    | /YES. GET NEXT JUST FOR HELL OF IT. |
| 1257 | 2324 | 5227 | JMP         | DDAGIN    | /NAME TOO LOONG. RESTART/           |
| 1260 |      |      | /           |           |                                     |
| 1261 | 2325 | 4334 | DCOMMA, JMS | DGETNUM   | /EVALUATE NUM AFTER COMMA.          |
| 1262 | 2326 | 1065 | TAD         | TEMP      | /GET VALUE                          |
| 1263 | 2327 | 3117 | DCA         | FSIZE     | /AND STASH AWAY                     |
| 1264 | 2330 | 1066 | TAD         | TEMP1     | /GET TERMINATING CHAR.              |
| 1265 | 2331 | 7640 | SZA         | CLA       | /IS IT 0000                         |
| 1266 | 2332 | 5227 | JMP         | DDAGIN    | /NO. RETRY AGAIN.                   |
| 1267 | 2333 | 5622 | JMP I       | DDCODE    | /YEP. ALL DONE. E X I T !           |
| 1270 |      |      | /           |           |                                     |
| 1271 | 2334 | 0000 | DGETNUM, 0  |           | /FORMS A NUMBER                     |
| 1272 | 2335 | 5065 | DCA         | TEMP      | /ZERO SUM                           |
| 1273 | 2336 | 4771 | JMS I       | DPGETL    | /GET A CHAR.                        |
| 1274 | 2337 | 3066 | DCA         | TEMP1     | /STASH IT AWAY.                     |
| 1275 | 2340 | 1066 | TAD         | TEMP1     | /GET IT BACK                        |
| 1276 | 2341 | 1043 | TAD         | M60       | /IS IT <60                          |
| 1277 | 2342 | 7710 | SPA         | CLA       |                                     |
| 1300 | 2343 | 5734 | JMP I       | DGETNUM   | / <60. RETURN.                      |
| 1301 | 2344 | 1066 | TAD         | TEMP1     | /GET AGAIN                          |
| 1302 | 2345 | 1044 | TAD         | M70       | /IS IT T00000 BBBIIIGGG?????        |
| 1303 | 2346 | 7700 | SMA         | CLA       |                                     |
| 1304 | 2347 | 5734 | JMP I       | DGETNUM   | /YEP. RETURN                        |
| 1305 | 2350 | 1065 | TAD         | TEMP      | /GET OLD TOTAL                      |
| 1306 | 2351 | 7104 | CLL         | RAL       |                                     |
| 1307 | 2352 | 7104 | CLL         | RAL       |                                     |
| 1310 | 2353 | 7104 | CLL         | RAL       | /MULTIPLY BY 8                      |
| 1311 | 2354 | 1066 | TAD         | TEMP1     | /ADD IN TEMP1                       |
| 1312 | 2355 | 1043 | TAD         | M60       | /GET RID OF ASCII BITS.             |
| 1313 | 2356 | 3065 | DCA         | TEMP      | /AND STASH AWAY.                    |
| 1314 | 2357 | 5336 | JMP         | DGETNUM+2 | /GO GET NEXT CHAR.                  |
| 1315 |      |      | /           |           |                                     |
| 1316 | 2360 | 0000 | DDCHEK, 0   |           | /CHECKS FOR 0 OR ,                  |
| 1317 | 2361 | 4771 | JMS I       | DPGETL    |                                     |
| 1320 | 2362 | 7450 | SNA         |           | /IS GOTTEN CHAR 0?                  |
| 1321 | 2363 | 5622 | JMP I       | DDCODE    | /YES. E X I T                       |
| 1322 | 2364 | 1042 | TAD         | M54       | /IS IT A ,                          |
| 1323 | 2365 | 7450 | SNA         |           |                                     |
| 1324 | 2366 | 5325 | JMP         | DCOMMA    | /YES. END OF NAME.                  |

|      |      |      |                   |       |  |
|------|------|------|-------------------|-------|--|
| 1325 | 2367 | 1041 | TAD               | L54   | /CORRECT FOR SUBTRACTION.                  |
| 1326 | 2370 | 5760 | JMP I             | DDCHK | /RETURN WITH CHAR IN AC.                   |
| 1327 |      |      | /                 |       |  |
| 1330 |      |      | /                 |       |  |
| 1331 |      |      | /                 |       |  |
| 1332 | 2371 | 0737 | DPGETL, DDCOM     |       | /POINTER TO UNPACK ROUTINE CHAR GETTER.    |
| 1333 | 2372 | 0124 | DFNAME, FNAME     |       | /POINTER TO FNAME                          |
| 1334 | 2373 | 1121 | DDGTEXT, GTEXT+1  |       | /POINTER TO START OF MESSAGE-1             |
| 1335 | 2374 | 0734 | DPSTART, PSTART   |       | /POINTER TO GETCHAR POINTER                |
| 1336 | 2375 | 0735 | DPSWITCH, PSWITCH |       | /POINTER TO SWITCH (LEFT OR RIGHT CHAR)    |
| 1337 | 2376 | 7772 | DSIZE, -LBNUM     |       | /NUMBER OF SYSTEM CHARS ALREADY IN BUFFER. |
| 1340 |      |      | /                 |       |  |
| 1341 |      |      | /                 |       |  |
| 1342 |      |      | /                 |       |  |
| 1343 |      |      | /                 |       |  |
| 1344 |      |      | /                 |       |  |
| 1345 |      |      | /                 |       |  |
| 1346 |      |      | /                 |       |  |
| 1347 |      |      | EJECT             |       |  |

```

1350      *240Z
1351      /
1352      /
1353      /
1354      /
1355      /
1356      /
1357      /
1360      /
1361      /
1362      /
1363      /
1364      /
1365      /
1366      /
1367      /
1370      /
1371      2400 0000 DYRECT, 0 /MAIN ENTRY
1372      2401 7300 CLA CLL /CLEAR AC TO BE SURE.
1373      2402 1110 TAD INDEX /GET START OF INDEX
1374      2403 3215 DCA DINDEX /AND PLACE AWAY HERE
1375      2404 1111 TAD ILEN /GET LENGTH OF INDEX
1376      2405 3214 DCA DLEN /AND PLACE AWAY.
1377      2406 4566 PUSH /SAVE FBLOCK. I/O MIGHT DESTROY IT.
1400      2407 1120 TAD FUNIT /GET DESIRED UNIT.
1401      2410 3212 DCA ,+2 /AND FINISH SETTING UP READ.
1402      2411 4571 READ /READ IN INDEX.
1403      2412 0000 0 /UNIT
1404      2413 6400 DPOINT, BUFFER /INTO START OF BUFFER AREA.
1405      2414 0000 DLEN, 0 /LENGTH OF INDEX.
1406      2415 0000 DINDEX, 0 /STARTING BLOCK OF INDEX.
1407      2416 4565 POP /RESTORE FBLOCK
1410      2417 4763 JMS I DDNAME /LOOKUP NAME.
1411      2420 5764 JMP I DDFOUND /NAME EXISTS. GO ELSEWHERE.
1412      2421 4765 JMS I DYGLLEN /NO NAME. GET D LEN.
1413      2422 2141 ISZ COUNT /BOP BY 1 TO OFFSET FOR FIRST ENTRY
1414      2423 1213 TAD DPOINT /SET UP AUT01
1415      2424 3010 DCA AUT01 /TO POINT TO DIRECTORY.
1416      2425 4766 DYLOOP, JMS I DYPAST /GO TO NEXT ENTRY.
1417      2426 1410 TAD I AUT01 /GET FIRST LETTERS OF NAME.
1420      2427 1057 TAD M5757 /IS IT FREE
1421      2430 7650 SNA CLA
1422      2431 5235 JMP DYGOOD /YEP. PLACE IT HERE
1423      2432 2141 ISZ COUNT /NO GOOD, ANY MORE TO CHACK?
1424      2433 5225 JMP DYLOOP /YEP. GO BACK
1425      2434 4567 NO /NO ROOM FOR NEW NAME.
1426      2435 1010 DYGOOD, TAD AUT01 /SET UP MOVE TO DIRECOTRY OF NAME
1427      2436 3241 DCA ,+3 /NAME PLACE IN DIRECTORY.
1430      2437 4564 MOVE /MOVE NEW NAME INTO DIRECTORY.
1431      2440 0124 FNAME
1432      2441 0000 0
1433      2442 0004 4
1434      2443 7307 PFOUR /NOW FILL IN SPACES WITH 5757S
1435      2444 1010 TAD AUT01 /POINTER TO SOURCE BLOCKS
1436      2445 3250 DCA ,+3
1437      2446 4564 MOVE /NOW MOVE IN 5757 S
1440      2447 2570 CL5757
1441      2450 0000 0
1442      2451 0004 4
1443      2452 4767 JMS I DYBACK /POINT TO START OF NAME
1444      /
1445      /
1446      2453 1123 DREENT, TAD FWHAT /DFOUND ALSO COMES HERE. IS IT INPUT OR OUTPUT???

```

|      |      |      |              |         |   |
|------|------|------|--------------|---------|---|
| 1447 | 2454 | 1047 | TAD          | L7777   | /1=INPUT,2=OUTPUT   |
| 1450 | 2455 | 7450 | SXA          |         | /IS IT INPUT  |
| 1451 | 2456 | 4567 | NO           |         | /YES, NO NAME, DISPLAY "NO"                               |
| 1452 | 2457 | 1047 | TAD          | L7777   | /IS IT "2"  |
| 1453 | 2460 | 7440 | SZA          |         |   |
| 1454 | 2461 | 7402 | SYSEERR      |         | /NO, INTERNAL PIP ERROR, FOR DEBUGGING ONLY.              |
| 1455 | 2462 | 1121 | TAD          | FTYPE   | /SOURCE=1,BINARY=2  |
| 1456 | 2463 | 1047 | TAD          | L7777   | /IS IT A 1  |
| 1457 | 2464 | 7450 | SXA          |         |   |
| 1460 | 2465 | 5272 | JMP          | DSOURCE | /YES, SOURCE  |
| 1461 | 2466 | 1047 | TAD          | L7777   | /IS IT2. (BINARY)   |
| 1462 | 2467 | 7440 | SZA          |         |   |
| 1463 | 2470 | 7402 | SYSEERR      |         | /NEITHER, SYSTEM ERROR                                    |
| 1464 | 2471 | 7305 | PTWO         |         | /BINARY, BOP PAST SOURCE.                                 |
| 1465 | 2472 | 1055 | DSOURCE, TAD | L4      | /GO PAST NAME.  |
| 1466 | 2473 | 1010 | TAD          | AUTO1   | /SET AUTO2 TO BLOCK NUMBER POINTER.                       |
| 1467 | 2474 | 3011 | DCA          | AUTO2   |   |
| 1470 |      |      | /            |         |   |
| 1471 |      |      | /            |         |   |
| 1472 |      |      | /            |         |   |
| 1473 |      |      | /            |         |   |
| 1474 |      |      | /            |         |   |
| 1475 |      |      | /            |         |   |
| 1476 |      |      | /            |         |   |
| 1477 |      |      | /            |         |   |
| 1500 | 2475 | 1114 | DLOOK, TAD   | CLOWER  | /GET LOWER LIMIT OF SYSTEM.                               |
| 1501 | 2476 | 3075 | DCA          | DFIRST  | /THATS WHERE WE LL START CHECKING.                        |
| 1502 | 2477 | 1075 | DLOOP1, TAD  | DFIRST  | /GET START OF BLOCKS WE RE NOW CHECKING                   |
| 1503 | 2500 | 1117 | TAD          | FSIZE   | /FIND OUT HOW BIG WE WANT THEM.                           |
| 1504 | 2501 | 7141 | CLL CMA      | IAC     | /13 BIT NEGATE, EXCEPT FOR LINK.                          |
| 1505 | 2502 | 1114 | TAD          | CLOWER  | /DO WE GO OVER INTO SYSTEM?                               |
| 1506 | 2503 | 7660 | SZA SNL      | CLA     | /NOW REASON FOR NO CML ABOVE.                             |
| 1507 | 2504 | 5316 | JMP          | DN01    | /YEP, GO DOWN AND TRY NEXT.                               |
| 1510 | 2505 | 4761 | JMS I        | DDCHECK | /CHECK TO SEE IF ANY OF THESE BLOCKS ARE OCCUPIED.        |
| 1511 | 2506 | 5316 | JMP          | DN01    | /YEP, THEY ARE. GO DOWN AND TRY NEXT.                     |
| 1512 | 2507 | 1075 | TAD          | DFIRST  | /FOUND ROOM.  |
| 1513 | 2510 | 1117 | TAD          | FSIZE   | /GET DISTANCE FROM INDEX.                                 |
| 1514 | 2511 | 7041 | CIA          |         |   |
| 1515 | 2512 | 1110 | TAD          | INDEX   |   |
| 1516 | 2513 | 7001 | IAC          |         | /1 MORE FOR ADDITION OVERSHOOT.                           |
| 1517 | 2514 | 3357 | DCA          | DDIS1   | /DISTANCE FROM INDEX.                                     |
| 1520 | 2515 | 5331 | JMP          | DD02    | /NOW CHECK OTHER SIDE.                                    |
| 1521 | 2516 | 1075 | DN01, TAD    | DFIRST  | /BLOCKS WON T FIT.  |
| 1522 | 2517 | 7041 | CIA          |         | /CAN WE TRY FARTHER FROM SYSTEM.                          |
| 1523 | 2520 | 1112 | TAD          | ELOWER  | /ADD LOWER LIMIT OF DEVICE.                               |
| 1524 | 2521 | 7650 | SNA CLA      |         | /ARE WE AT BOTTOM NOW?                                    |
| 1525 | 2522 | 5327 | JMP          | DBAD1   | /YEP, NO ROOM HERE IN THIS SIDE.                          |
| 1526 | 2523 | 7240 | MONE         |         | /ROOM LEFT. BOP DOWN DFIRST AND TRY AGAIN.                |
| 1527 | 2524 | 1075 | TAD          | DFIRST  |   |
| 1530 | 2525 | 3075 | DCA          | DFIRST  | /A LITTLE FARTHER FROM SYSTEM THIS TIME.                  |
| 1531 | 2526 | 5277 | JMP          | DLOOP1  | /GO BACK AND TRY AGAIN.                                   |
| 1532 |      |      | /            |         |   |
| 1533 | 2527 | 7240 | DBAD1, MONE  |         | /NO ROOM ON BOTTOM, SET DISTANCE TO MAX.                  |
| 1534 | 2530 | 3357 | DCA          | DDIS1   |   |
| 1535 |      |      | /            |         |   |
| 1536 | 2531 | 7300 | DD02, CLA    | CLL     | /NOW EW LL CHECK TO UPPER TO SEE IF IT FITS.              |
| 1537 | 2532 | 1115 | TAD          | CUPPER  | /GET UPPER PART OF SYSTEM.                                |
| 1540 | 2533 | 3075 | DCA          | DFIRST  | /FOR FIRST ISZ CORRECTION.                                |
| 1541 |      |      | /            |         |   |
| 1542 | 2534 | 2075 | DLOOP2, ISZ  | DFIRST  | /WE LL TRY NEXT BLOCK.                                    |
| 1543 | 2535 | 7410 | SKP          |         | /NOW, QUITE A DEVICE HE S GOT THERE. 4 RE08 S IT MUST BE. |
| 1544 | 2536 | 5354 | JMP          | DBAD2   | /BUT STILL NO ROOM ON TOP.                                |
| 1545 | 2537 | 1113 | TAD          | EUPPER  | /GET THE UPPER LIMIT OF THE DEVICE.                       |

|      |      |      |                 |   |
|------|------|------|-----------------|---|
| 1546 | 2540 | 7160 | CLL CML CMA     | /13 BIT COMP , -1   |
| 1547 | 2541 | 1075 | TAD DFIRST      | /WILL WE OVERFLOW DEVICE LIMITS.                            |
| 1550 | 2542 | 1117 | TAD FSIZE       | /WHEN WE ADD IN LENGTH.                                     |
| 1551 | 2543 | 7660 | SZA SNL CLA     |   |
| 1552 | 2544 | 5354 | JMP DBAD2       | /NO ROOM LEFT ON TOP END.                                   |
| 1553 | 2545 | 4761 | JMS I DDCHECK   | /CHECK TO SEE IF BLOCKS ARE FREE.                           |
| 1554 | 2546 | 5334 | JMP DLOOP2      | /NOT FREE. GO BACK AND TRY AGAIN.                           |
| 1555 | 2547 | 1110 | TAD INDEX       | /FREE. GET DISTANCE.  |
| 1556 | 2550 | 7041 | CIA             |   |
| 1557 | 2551 | 1075 | TAD DFIRST      |   |
| 1560 | 2552 | 3360 | DCA DDIS2       | /AND SAVE IT.   |
| 1561 | 2553 | 5762 | JMP I DDFIG     | /GO CALCULATE WHICHONE IS CLOSER [LOWER HALF OR UPPER HALF] |
| 1562 |      |      | /               |   |
| 1563 |      |      | /               |   |
| 1564 | 2554 | 7240 | DBAD2, MONE     | /NO ROOM ON UPPER HALF.                                     |
| 1565 | 2555 | 5360 | DCA DDIS2       | /SET DISTANCE TO A MAXIMUM.                                 |
| 1566 | 2556 | 5762 | JMP I DDFIG     | /GO FIGURE OUT WHICH ONE IS CLOSER.                         |
| 1567 |      |      | /               |   |
| 1570 |      |      | /               |   |
| 1571 | 2557 | 0000 | DDIS1, 0        | /LOWER DEVICE DISTANCE                                      |
| 1572 | 2560 | 0000 | DDIS2, 0        | /UPPER DEVICE DISTANCE FROM DESIRED FILE.                   |
| 1573 | 2561 | 2653 | DDCHECK, DCHECK | /POINTER  |
| 1574 | 2562 | 2600 | DDFIG, DFIG     |   |
| 1575 | 2563 | 3064 | DDNAME, DNAME   |   |
| 1576 | 2564 | 3000 | DDFOUND, DFOUND |   |
| 1577 | 2565 | 2706 | DYGLN, DGLN     |   |
| 1600 | 2566 | 2717 | DYPAST, DPAST   |   |
| 1601 | 2567 | 2725 | DYBACK, DBACK   |   |
| 1602 | 2570 | 5757 | DL5757, 5757    |   |
| 1603 | 2571 | 5757 | 5757            |   |
| 1604 | 2572 | 5757 | 5757            |   |
| 1605 | 2573 | 5757 | 5757            |   |
| 1606 |      |      | /               |   |
| 1607 |      |      | /               |   |
| 1610 |      |      | /               |   |
| 1611 |      |      | /               |   |
| 1612 |      |      | /               |   |
| 1613 |      |      | /               |   |
| 1614 |      |      | /               |   |
| 1615 |      |      | /               |   |
| 1616 |      |      | /               |   |
| 1617 |      |      | EJECT           |   |

|      |      |      |          |          |  |
|------|------|------|----------|----------|--|
| 1620 |      |      |          | *2600    |  |
| 1621 |      | /    |          |          |  |
| 1622 |      | /    |          |          |  |
| 1623 |      | /    |          |          | MORE OF THE DIRECTORY LOOKUP ROUTINES.               |
| 1624 |      | /    |          |          |  |
| 1625 |      | /    |          |          |  |
| 1626 |      | /    |          |          |  |
| 1627 |      | /    |          |          |  |
| 1630 |      | /    |          |          |  |
| 1631 | 2600 | 1765 | DFIG,    | TAD I    | DDDIS1   |
| 1632 | 2601 | 7001 |          | IAC      |  |
| 1633 | 2602 | 7650 |          | SNA CLA  | /IS LOWER HALF OK??                                  |
| 1634 | 2603 | 5245 |          | JMP      | D1NOG  |
| 1635 | 2604 | 1766 |          | TAD I    | DDDIS2   |
| 1636 | 2605 | 7001 |          | IAC      | /NO ROOM IN LOWER HALF.                              |
| 1637 | 2606 | 7650 |          | SNA CLA  | /HOW ABOUT THE UPPER HALF?                           |
| 1640 | 2607 | 5215 |          | JMP      | D1CLOSE  |
| 1641 | 2610 | 1765 |          | TAD I    | DDDIS1   |
| 1642 | 2611 | 7161 |          | CLL CML  | CMA IAC  |
| 1643 | 2612 | 1766 |          | TAD I    | DDDIS2   |
| 1644 | 2613 | 7630 |          | SZL CLA  | /LOWER HALF IS CLOSER BECAUSE NO UPPER HALF.         |
| 1645 | 2614 | 5251 |          | JMP      | D2CLOSE  |
| 1646 |      |      | /        |          | /BOTH THERE. GET LOWER DISTANCE.                     |
| 1647 | 2615 | 7240 | D1CLOSE, | MONE     | /13 BIT NEGATE                                       |
| 1650 | 2616 | 1117 |          | TAD      | FSIZE  |
| 1651 | 2617 | 1765 |          | TAD I    | DDDIS1   |
| 1652 | 2620 | 7041 |          | CIA      |  |
| 1653 | 2621 | 1110 |          | TAD      | INDEX  |
| 1654 | 2622 | 3122 | DCOM,    | DCA      | FBNUM  |
| 1655 | 2623 | 1122 |          | TAD      | FBNUM  |
| 1656 | 2624 | 3411 |          | DCA I    | AUTO2  |
| 1657 | 2625 | 1117 |          | TAD      | FSIZE  |
| 1660 | 2626 | 3411 |          | DCA I    | AUTO2  |
| 1661 | 2627 | 4564 |          | MOVE     |  |
| 1662 | 2630 | 2412 |          | DPOINT-1 | /WE VE GOT THE ORIGINAL BLOCK NUMBER NOW,            |
| 1663 | 2631 | 2635 |          | DWRITE*1 | /TELL CALLING PROGRAM ABOUT IT,                      |
| 1664 | 2632 | 0004 |          | 4        | /NOW PLACE IT IN DIRECTORY.                          |
| 1665 | 2633 | 4566 |          | PUSH     |  |
| 1666 | 2634 | 4572 | DWRITE,  | WRITE    | /PUSH DOWN F BLOCK                                   |
| 1667 | 2635 | 0000 |          | 0        | /WRITE DIRECTORY, WITH MOVED IN ARGUEMENTS.          |
| 1670 | 2636 | 0000 |          | 0        |  |
| 1671 | 2637 | 0000 |          | 0        |  |
| 1672 | 2640 | 0000 |          | 0        |  |
| 1673 | 2641 | 4565 |          | POP      | /POP UP FBLOCK                                       |
| 1674 | 2642 | 1767 | DDEXIT,  | TAD I    | DDIRECT  |
| 1675 | 2643 | 3065 |          | DCA      | TEMP   |
| 1676 | 2644 | 5465 |          | JMP I    | TEMP   |
| 1677 |      |      | /        |          | /GET CALLING ADDRESS                                 |
| 1700 | 2645 | 1766 | D1NOG,   | TAD I    | DDDIS2   |
| 1701 | 2646 | 7001 |          | IAC      |  |
| 1702 | 2647 | 7650 |          | SNA CLA  | /CHECK IF ROOM ON TOP HALF.                          |
| 1703 | 2650 | 4567 |          | NO       | /ROOM?   |
| 1704 | 2651 | 1075 | D2CLOSE, | TAD      | DFIRST   |
| 1705 | 2652 | 5222 |          | JMP      | DCOM   |
| 1706 |      |      | /        |          | /NO ROOM ON DEVICE FOR FILE.                         |
| 1707 |      |      | /        |          | /GET THE LAST BLOCK CHECKED.                         |
| 1710 |      |      | /        |          | /AND THATS IT. PLACE IN DIRECTORY.                   |
| 1711 |      |      | /        |          |  |
| 1712 | 2653 | 0000 | DCHECK,  | J        |  |
| 1713 | 2654 | 7240 |          | MONE     | /CHECKS TO SEE IF BLOCKS OCCUPIED BY DFIRST ARE FREE |
| 1714 | 2655 | 1770 |          | TAD I    | DDPOINT  |
| 1715 | 2656 | 3010 |          | DCA      | AUTO1  |
| 1716 | 2657 | 4771 |          | JMS I    | DDGLEN   |
|      |      |      |          |          | /SET AUTO1 TO POINT TO START OF DIRECTORY            |
|      |      |      |          |          | /IN CORE.  |
|      |      |      |          |          | /GET LEN OF DIRECTORY                                |

|      |      |      |          |         |         |   |
|------|------|------|----------|---------|---------|---|
| 1717 | 2660 | 1410 | DL00P3,  | TAD I   | AUTO1   | /GET FIRST WORD OF A NAME IN THE DIRECTORY.                             |
| 1720 | 2661 | 1057 |          | TAD     | M5757   | /IS IT A GOOD NAME???   |
| 1721 | 2662 | 7650 |          | SNA     | CLA     |   |
| 1722 | 2663 | 5301 |          | JMP     | DBLANK  | /NO. SKIP PAST IT.  |
| 1723 | 2664 | 2010 |          | ISZ     | AUTO1   |   |
| 1724 | 2665 | 2010 |          | ISZ     | AUTO1   |   |
| 1725 | 2666 | 2010 |          | ISZ     | AUTO1   | /SKIP PAST REST OF NAME.  |
| 1726 | 2667 | 2010 |          | ISZ     | AUTO1   | /AND ALSO STARTING BLOCK OF SOURCE                                      |
| 1727 | 2670 | 1410 |          | TAD I   | AUTO1   | /IS THERE ANY SOURCE(LENGTH=POSITIVE)                                   |
| 1730 | 2671 | 7710 |          | SPA     | CLA     |   |
| 1731 | 2672 | 5274 |          | JMP     | DNOS    | /NO SOURCE  |
| 1732 | 2673 | 4772 |          | JMS I   | DOTHERE | /YEP. CHECK IT OUT.   |
| 1733 | 2674 | 2010 | DNOS,    | ISZ     | AUTO1   | /SKIP PAST BINARY BLOCK   |
| 1734 | 2675 | 1410 |          | TAD I   | AUTO1   | /GET BINARY LENGTH  |
| 1735 | 2676 | 7710 |          | SPA     | CLA     | /BINARY THERE?  |
| 1736 | 2677 | 5301 |          | JMP     | DBLANK  | /NO BINARY  |
| 1737 | 2700 | 4772 |          | JMS I   | DOTHERE | /BINARY THERE. CHECK FOR INTERFERENCE.                                  |
| 1740 |      |      | /        |         |         |   |
| 1741 | 2701 | 4773 | DBLANK,  | JMS I   | DPAST   | /SKIP TO NEXT DIRECTORY ENTRY   |
| 1742 | 2702 | 2141 |          | ISZ     | COUNT   | /ARE WE ALL DONE WITH THE DIRECTORY?                                    |
| 1743 | 2703 | 5260 |          | JMP     | DL00P3  | /NO. GET NEXT ENTRY   |
| 1744 | 2704 | 2253 |          | ISZ     | DCHECK  | /YES. SKIP PAST NEXT CALLING STATEMENT AND EXIT.                        |
| 1745 | 2705 | 5653 |          | JMP I   | DCHECK  | /GOODBYE. AND GOOD LUCK.  |
| 1746 |      |      | /        |         |         |   |
| 1747 |      |      | /        |         |         |   |
| 1750 |      |      | /        |         |         |   |
| 1751 |      |      | /        |         |         |   |
| 1752 |      |      | /        |         |         |   |
| 1753 | 2706 | 0000 | DGLEN,   | 0       |         | /ROUTINE GETS LENGTH OF DIRECTORY AND STORES IT IN -COUNT.              |
| 1754 | 2707 | 1111 |          | TAD     | ILEN    | /GET INDEX LENGTH.  |
| 1755 | 2710 | 7006 |          | RTL     |         |   |
| 1756 | 2711 | 7006 |          | RTL     |         |   |
| 1757 | 2712 | 7004 |          | RAL     |         | /MULTIPLY BY 32 (32 ENTRIES PER BLOCK.                                  |
| 1760 | 2713 | 0056 |          | AND     | L7740   | /CHOP AWAY CRAP.  |
| 1761 | 2714 | 7041 |          | CLA     |         |   |
| 1762 | 2715 | 3141 |          | DCA     | COUNT   | /AND STORE NEGATED IN COUNT.  |
| 1763 | 2716 | 5706 |          | JMP I   | DGLEN   | /RETURN TO CALLER.  |
| 1764 |      |      | /        |         |         |   |
| 1765 | 2717 | 0000 | DPAST,   | 0       |         | /ROUTINE SETS AUTO1 TO POINT TO NEXT NAME IN DIRECTORY.                 |
| 1766 | 2720 | 1010 |          | TAD     | AUTO1   |   |
| 1767 | 2721 | 0021 |          | AND     | L7770   | /LOGICAL OPERATION---- AUTO1.OR.7                                       |
| 1770 | 2722 | 1060 |          | TAD     | L7      |   |
| 1771 | 2723 | 3010 |          | DCA     | AUTO1   | /AND PUT BACK.  |
| 1772 | 2724 | 5717 |          | JMP I   | DPAST   |   |
| 1773 |      |      | /        |         |         |   |
| 1774 | 2725 | 0000 | DBACK,   | 0       |         | /ROUTINE BACKSPACES 1 DIRECTORY ENTRY.                                  |
| 1775 | 2726 | 4317 |          | JMS     | DPAST   | /MOVE TO END OF THIS NAME   |
| 1776 | 2727 | 1010 |          | TAD     | AUTO1   |   |
| 1777 | 2730 | 1021 |          | TAD     | M10     |   |
| 2000 | 2731 | 3010 |          | DCA     | AUTO1   | /AND DOP DOWN BY 10 (1 DIRECTORY ENTRY)                                 |
| 2001 | 2732 | 5725 |          | JMP I   | DBACK   |   |
| 2002 |      |      | /        |         |         |   |
| 2003 |      |      | /        |         |         |   |
| 2004 |      |      | /        |         |         |   |
| 2005 | 2733 | 0000 | DOTHERE, | 0       |         | /CHECKS JUST ONE DIRECTORY ENTRY FOR BEING WITHIN THE SPECIFIED LIMITS. |
| 2006 | 2734 | 7240 |          | MONE    |         |   |
| 2007 | 2735 | 1010 |          | TAD     | AUTO1   | /BOP BACK THE AUTO REG.   |
| 2010 | 2736 | 3070 |          | DCA     | TEMP3   | /AND PLACE IT AWAY  |
| 2011 | 2737 | 1470 |          | TAD I   | TEMP3   | /RETRIEVE STARTING BLOCK NUMBER   |
| 2012 | 2740 | 7161 |          | CLL CML | CMA IAC | /13 BIT NEGATE.   |
| 2013 | 2741 | 1075 |          | TAD     | DFIRST  | /ADD IN DESIRED STARTING BLOCK.   |
| 2014 | 2742 | 7450 |          | SNA     |         |   |
| 2015 | 2743 | 5653 |          | JMP I   | DCHECK  | /SAME. BLOCK IS TAKEN. EXIT.  |



|      |      |      |          |        |        |  |
|------|------|------|----------|--------|--------|--|
| 2016 | 2744 | 7620 | SNL      | CLA    |        | /ARE WE PAST DFIRST.                                 |
| 2017 | 2745 | 5355 | JMP      | I      | DFBIGN | /NO. DFIRST IS BIGGER.                               |
| 2020 | 2746 | 1470 | TAD      | I      | TEMP3  | /YEP. LETS SEE IF WE MISS IT.                        |
| 2021 | 2747 | 7162 | CLL      | CML    | CMA    |  |
| 2022 | 2752 | 1075 | TAD      |        | DFIRST | /DOES DFIRST+FSIZE INCRDACH ON OUR TERRITORY.        |
| 2023 | 2751 | 1117 | TAD      |        | FSIZE  |  |
| 2024 | 2752 | 7620 | SNL      | CLA    |        | /????  |
| 2025 | 2753 | 5653 | JMP      | I      | DCHECK | /YEP. CAN T PUT IT HERE.                             |
| 2026 | 2754 | 5733 | JMP      | I      | DTHERE | /IT FITS.  |
| 2027 |      |      | /        |        |        |  |
| 2030 | 2755 | 1470 | DFBIGN,  | TAD    | I      | TEMP3  |
| 2031 | 2756 | 2070 | ISL      |        | TEMP3  | /WE RE BEFORE DFIRST.                                |
| 2032 | 2757 | 1470 | TAD      | I      | TEMP3  | /POINT TO FILE LENGTH NOW.                           |
| 2033 | 2760 | 7141 | CLL      | CMA    | IAC    | /ADD OUR LENGTH IN                                   |
| 2034 | 2761 | 1075 | TAD      |        | DFIRST |  |
| 2035 | 2762 | 7660 | SZA      | SNL    | CLA    | /DO WE OVERFLOW INTO DFIRST???                       |
| 2036 | 2763 | 5653 | JMP      | I      | DCHECK | /WE CERTAINLY DO.                                    |
| 2037 | 2764 | 5733 | JMP      | I      | DTHERE | / NOPE. WE RE CLEAR. RETURN TO CHECK AGAIN.          |
| 2040 |      |      | /        |        |        |  |
| 2041 |      |      | /        |        |        |  |
| 2042 |      |      | /        |        |        |  |
| 2043 | 2765 | 2557 | DDDIS1,  | DDIS1  |        | /POINTER TO LOWER DISTANCE FROM SYSTEM               |
| 2044 | 2766 | 2560 | DDDIS2,  | DDIS2  |        | /POINTER TO UPPER DISTANCE FROM SYSTEM               |
| 2045 | 2767 | 2400 | DDYRECT, | DIRECT |        | /POINTER TO ENTRY                                    |
| 2046 | 2770 | 2413 | DDPOINT, | DPOINT |        | /POINTER TO BUFFERS                                  |
| 2047 | 2771 | 2706 | DDGLEN,  | DGLEN  |        | /POINTER TO GET NUMBER OF DIRECTORY ENTRIES ROUTINE. |
| 2050 | 2772 | 2733 | DDTHERE, | DTHERE |        | /POINTER TO BLOCK CHECKER                            |
| 2051 | 2773 | 2717 | DDPAST,  | DPAST  |        | /POINTER TO ROUTINE TO GO TO NEXT ENTRY,             |
| 2052 |      |      | /        |        |        |  |
| 2053 |      |      | /        |        |        |  |
| 2054 |      |      | /        |        |        |  |
| 2055 |      |      | /        |        |        |  |
| 2056 |      |      | /        |        |        |  |
| 2057 |      |      | /        |        |        |  |
| 2060 |      |      | /        |        |        |  |
| 2061 |      |      | /        |        |        |  |
| 2062 |      |      | /        |        |        |  |
| 2063 |      |      |          |        |        |  |

EJECT

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2064                                *3000
2065                                /
2066                                /
2067                                /
2070                                /
2071                                /
2072                                /
2073                                /
2074      3000 1123  DFOUND, TAD    FWHAT    /NAME ALREADY IN DIRECTORY. GET WHETHER INPUT OR OUTPUT FILE.
2075      3001 1047          TAD    L7777    /1=INPUT,2=OUTPUT
2076      3002 7450          SNA
2077      3003 5241          JMP    DDIN     /IT S INPUT.
2100      3004 1047          TAD    L7777    /IS IT OUTPUT?
2101      3005 7440          SZA
2102      3006 7402          SYSERR        /NOT 1 OR 2. SOMETHING HAS BLOWN.
2103      3007 1121          TAD    FTYPE   /1=SOURCE,2=BINARY
2104      3008 1047          TAD    L7777    /IS IT SOURCE
2105      3011 7450          SNA
2106      3012 5217          JMP    DZAP     /YEP. ZAP OUT BLOCKS FROM DIRECTORY.
2107      3013 1047          TAD    L7777    /BINARY???
2110      3014 7440          SZA
2111      3015 7402          SYSERR
2112      3016 7305          PTWO
2113      3017 1055  DZAP,  TAD    L4        /BINARY FILE. ADD TWO TO BYPASS SOURCE
2114      3020 1010          TAD    AUTO1    /BOP PAST NAME
2115      3021 3010          DCA    AUTO1    /GET POINTER NOW
2116      3022 1116          TAD    L5757
2117      3023 3410          DCA I  AUTO1    /BLANK OUT THE BLOCK NUMBER
2120      3024 4566          PUSH          /      (EITHER TO POINTER TO SOURCE OR BINARY)
2121      3025 1010          TAD    AUTO1    /PUSH DOWN FBLOCK SO "REPLACE" WONT BLOW IT.
2122      3026 3012          DCA    AUTO3    /NOW GET THE AUTO LENGTH POINTER.
2123      3027 1412          TAD I  AUTO3    /AND PLACE IN A TEMPORARY AUTO.
2124      3030 7700          SMA CLA
2125      3031 4570          REPLACE        /IF SIGN BIT OF LENGTH ON THEN NO SOURCE OR BINARY.
2126      3032 4565          POP            /DO WE WANT TO REPLACE???
2127      3033 1116          TAD    L5757    /YEP. DISPLAY REPLACE MESSAGE.
2130      3034 3410          DCA I  AUTO1    /HE S ANSWERED AN "R". NOW REPLACE FBLOCK.
2131      3035 4566          PUSH          /NOW ZAP OUT THE LENGTH.
2132      3036 4745          JMS I  DDBACK   /BY PLACING IN SOME 5757 S.
2133      3037 5640          JMP I  ,+1      /NOW PUSH DOWN SO THAT WE WILL REMEMBER IT.
2134      3040 2453          DREENT        /BACKSPACE TO BEGINNING OF NAME.
2135                                /        /WE WANTS IT REPLACED.
2136                                /        /REENTRY FOR REPLACING THE FILE
2137      3041 1121  DDIN,  TAD    FTYPE   /IT AN INPUT FILE. GET THE MODE.
2140      3042 1047          TAD    L7777    /1=SOURCE,2=BINARY
2141      3043 7450          SNA
2142      3044 5251          JMP    DDT      /IT SOURCE
2143      3045 1047          TAD    L7777    /MAYBE IT S BINARY
2144      3046 7440          SZA
2145      3047 7402          SYSERR        /UGH. PIP HAS BLOWN.
2146      3050 7305          PTWO
2147      3051 1055  DDT,   TAD    L4        /IT S BINARY. MOVE PAST SOURCE.
2150      3052 1010          TAD    AUTO1    /PUSH PAST NAME.
2151      3053 3010          DCA    AUTO1    /RESET POINTER
2152      3054 1410          TAD I  AUTO1    /GET BLOCK NUMBER
2153      3055 3122          DCA    FBNUM    /AND STORE AWAY.
2154      3056 1410          TAD I  AUTO1    /GET SIZE OF FILE
2155      3057 7510          SPA            /IS IT OK?
2156      3060 4567          NO            /NO. DISPLAY "NO" MESSAGE.
2157      3061 3117          DCA    FSIZE   /YEP. ITS THERE. STASH AWAY.
2160      3062 5663          JMP I  ,+1      /NOW EXIT FROM DYRECT.
2161      3063 2642          DDEXIT
2162                                /

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|      |      |      |         |         |  |
|------|------|------|---------|---------|--|
| 2163 |      | /    |         |         |  |
| 2164 |      | /    |         |         |  |
| 2165 |      | /    |         |         |  |
| 2166 | 3064 | 0000 | DNAME,  | 0       | /LOOKS UP NAME IN THE DIRECTORY.                 |
| 2167 | 3065 | 1746 | TAD I   | DNPOINT | /GET STARTING ADDRESS FOR THE NAME LOOKUP.       |
| 2170 | 3066 | 1047 | TAD     | L7777   | /AC MAY NOT CONTAIN ZERO FOR SOME SPECIAL CALLS. |
| 2171 | 3067 | 3010 | DCA     | AUTO1   | /PLACE IN AUTO1                                  |
| 2172 | 3070 | 4747 | JMS I   | DNGLN   | /GET LENGTH                                      |
| 2173 | 3071 | 1746 | TAD I   | DNPOINT | /GET STARTING ADDRESS OF DIRECTORY               |
| 2174 | 3072 | 3071 | DCA     | TEMP4   | /STORE AWAY.                                     |
| 2175 | 3073 | 1471 | TAD I   | TEMP4   | /GET FIRST WORD. IS IT "5757"                    |
| 2176 | 3074 | 1057 | TAD     | M5757   |  |
| 2177 | 3075 | 7650 | SNA     | CLA     |  |
| 2200 | 3076 | 5312 | JMP     | DOK     | /IT'S THERE. ALL IS WELL                         |
| 2201 | 3077 | 2264 | ISZ     | DNAME   | /DESIRED NAME NOT THERE BECAUSE NO DIRECTORY.    |
| 2202 | 3100 | 1141 | TAD     | COUNT   | /MULTIPLY COUNT BY 8                             |
| 2203 | 3101 | 7006 | RTL     |         |  |
| 2204 | 3102 | 7004 | RAL     |         | /BECAUSE THERE ARE 8 WORDS PER                   |
| 2205 | 3103 | 0021 | AND     | L7770   | /DIRECTORY ENTRY                                 |
| 2206 | 3104 | 3141 | DCA     | COUNT   |  |
| 2207 | 3105 | 1116 | TAD     | L5757   | /MAKE IT A GOOD DIRECTORY.                       |
| 2210 | 3106 | 3410 | DCA I   | AUTO1   | /FILL IT UP                                      |
| 2211 | 3107 | 2141 | ISZ     | COUNT   | /ALL DONE?                                       |
| 2212 | 3110 | 5305 | JMP     | ,-J     | /NOPE  |
| 2213 | 3111 | 5664 | JMP I   | DNAME   | /YEP. ALL DONE.                                  |
| 2214 |      |      | /       |         |  |
| 2215 |      |      | /       |         |  |
| 2216 |      |      | /       |         |  |
| 2217 | 3112 | 4750 | DOK,    | JMS I   | DNPAST   |
| 2220 | 3113 | 1410 |         | TAD I   | AUTO1  |
| 2221 | 3114 | 7041 |         | CIA     |  |
| 2222 | 3115 | 1124 |         | TAD     | FNAME  |
| 2223 | 3116 | 7640 |         | SZA     | CLA  |
| 2224 | 3117 | 5341 |         | JMP     | DNOT   |
| 2225 | 3120 | 1410 |         | TAD I   | AUTO1  |
| 2226 | 3121 | 7041 |         | CIA     |  |
| 2227 | 3122 | 1125 |         | TAD     | FNAME+1  |
| 2230 | 3123 | 7640 |         | SZA     | CLA  |
| 2231 | 3124 | 5341 |         | JMP     | DNOT   |
| 2232 | 3125 | 1410 |         | TAD I   | AUTO1  |
| 2233 | 3126 | 7041 |         | CIA     |  |
| 2234 | 3127 | 1126 |         | TAD     | FNAME+2  |
| 2235 | 3130 | 7640 |         | SZA     | CLA  |
| 2236 | 3131 | 5341 |         | JMP     | DNOT   |
| 2237 | 3132 | 1410 |         | TAD I   | AUTO1  |
| 2240 | 3133 | 7041 |         | CIA     |  |
| 2241 | 3134 | 1127 |         | TAD     | FNAME+3  |
| 2242 | 3135 | 7640 |         | SZA     | CLA  |
| 2243 | 3136 | 5341 |         | JMP     | DNOT   |
| 2244 | 3137 | 4745 |         | JMS I   | DNBACK   |
| 2245 | 3140 | 5664 |         | JMP I   | DNAME  |
| 2246 |      |      | /       |         |  |
| 2247 |      |      | /       |         |  |
| 2250 | 3141 | 2141 | DNOT,   | ISZ     | COUNT  |
| 2251 | 3142 | 5312 |         | JMP     | DOK  |
| 2252 | 3143 | 2264 |         | ISZ     | DNAME  |
| 2253 | 3144 | 5664 |         | JMP I   | DNAME  |
| 2254 |      |      | /       |         |  |
| 2255 |      |      | /       |         |  |
| 2256 |      |      | /       |         |  |
| 2257 |      |      | /       |         |  |
| 2260 |      |      | /       |         |  |
| 2261 | 3145 | 2725 | DDBACK, | DBACK   | /POINTER TO BACKSPACE ROUTINE                    |

```

2262          ONBACK=DDBACK
2263 3146 2413 DNPOINT,DPOINT
2264 3147 2706 DNGLN, DGLN
2265 3150 2717 DNPAST, DPAST
2266          /
2267          /
2270          /
2271          /
2272          /
2273 3151 0000 NODIS, 0
2274 3152 4551 DISPLAY
2275 3153 3155 NONODI
2276 3154 5352 JMP .-2
2277          /
2300 3155 0340 NONODI, LEFT+340
2301 3156 7740 BOTTOM+340
2302 3157 0616
2302 3160 1734
2302          TEXT "FNO\"
2303          /
2304          /
2305          /
2306 3161 0000 REPDIS, 0
2307 3162 4566 PUSH
2310 3163 4562 DECODE
2311 3164 3173 DISREP
2312 3165 1121 TAD FTYPE
2313 3166 1027 TAD M322
2314 3167 7640 SZA CLA
2315 3170 5363 JMP REPDIS+2
2316 3171 4565 POP
2317 3172 5761 JMP 1 REPDIS
2320          /
2321          /
2322 3173 0260 DISREP, LEFT+260
2323 3174 0040 TOP=300
2324 3175 0622
2324 3176 0520
2324 3177 1401
2324 3200 0305
2324          TEXT "FREPLACE?"
2325 3201 7743
2325
2326 3202 4043
2326
2327 3203 4243
2327 3204 1022
2327 3205 4055
2327 3206 5555
2327 3207 4022
2327 3210 0520
2327 3211 1401
2327 3212 0305
2327 3213 3400
2327          HR == REPLACE\
2330          /
2331          /
2332          /
2333          /
2334          /
2335          /
2336          /
2337          /

```

```

/ A SLIGHT OVERSIGHT.
/ POINTER TO BUFFERS
/ GET NUMBER OF ENTRIES ROUTINE
/ ADVANCE POINTER TO NEXT NAME ROUTINE

```

```

/ THIS ROUTINE DISPLAYS A "NO"
/ ISSUE DISPLAY COMMAND
/ MYOUTPUT CRAP
/ HANG AROUND UNTIL A +D OR +P IS TYPED.

```

```

/ ABOUT CENTER OF THE SCREEN

```

```

/ A SIMPLE MESSAGE.

```

```

/ STORE AWAY FBLOCK
/ GET A LINE
/ REPLACE MESSAGE
/ GET REPLY
/ IS IT AN "R"
/ NOPE. TRY AGAIN.
/ RESTORE FBLOCK
/ AND RETURN.

```

```

/ ABOUT THE CENTER
/ GOOD ENOUGH

```

2340  
2341  
2342  
2343  
-

/

/

/

EJECT

```

2344 /
2345 /
2346 /
2347 /
2350 / COPY ROUTINE:
2351 / OVERLAPS IN 3200 FROM PREVIOUS PAGE.
2352 /
2353 /
2354 /
2355 /
2356 /
2357 / GENERAL CALL:
2360 /
2361 /
2362 / COPY
2363 /
2364 /
2365 /
2366 / COPIES FSIZE BLOCKS FROM INUNIT,INBLOCK
2367 / TO OUTUNIT,OUTBLOCK
2370 / AND TO MORE UNITS DEPENDING ON THE VALUE OF "OUTNUM".
2371 / OUTNUM SHOULD BE 7777 FOR 1 TAPE COPY.
2372 /
2373 /
2374 /
2375 /
2376 /
2377 /
2400 3214 0000 CCOPY, 0 /MAIN ENTRY
2401 3215 1103 TAD INUNIT /GET INPUT UNIT
2402 3216 3252 DCA CINU /AND PLACE IN READ CALL
2403 3217 1102 TAD INBLOCK /GET INPUT STARTING BLOCK
2404 3220 3255 DCA CINB /AND STORE IN READ BLOCK
2405 3221 1104 TAD OUTBLOCK /GET THE OUTPUT STARTING BLOCK
2406 3222 3262 DCA COUTB /AND LEAVE THAT IN WRITE
2407 3223 1117 TAD FSIZE /GET THE NUMBER OF BLOCKS TO COPY
2410 3224 3301 DCA CSIZE /AND STORE THAT AWAY.
2411 /
2412 3225 1105 CPLOOP, TAD OUTUNIT /GET THE ORIGINAL OUTPUT UNIT.
2413 3226 3257 DCA COUTU /AND PLACE IN WRITE OUT UNIT.
2414 3227 1106 TAD OUTNUM /GET NUMBER OF UNITS ITS GOING TO
2415 3230 3302 DCA CCOUNT /PLACE IN TEMPORARY COUNTER.
2416 3231 1301 TAD CSIZE /GET NUMBER OF BLOCKS LEFT.
2417 3232 7450 SNA /ALL DONE???
2418 3233 5614 JMP I CCOPY /YES
2419 3234 7161 CLL CML CMA IAC /13 BIT NEGATE.
2420 3235 1074 TAD BNUM /NUMBER OF BUFFERS AVAILABLE.
2421 3236 7660 SNL SZA CLA /MORE TO GO THEN BUFFERS ALOLOW?
2422 3237 5245 JMP CSMALL /NO. BUFFERS BIGGER.
2423 3240 1074 TAD BNUM /GET BUFFER SIZE.
2424 3241 3254 DCA CINS /STASH IN READ.
2425 3242 1074 TAD BNUM
2426 3243 3261 DCA COUTS /STASH IN WRITE.
2427 3244 5251 JMP CCOM /GO DO READ-WRITE
2430 /
2431 3245 1301 CSMALL, TAD CSIZE /GET NUMBER LEFT.
2432 3246 3254 DCA CINS /STASH IN INPUT SIZE.
2433 3247 1301 TAD CSIZE
2434 3250 3261 DCA COUTS /AND OUTPUT SIZE.
2436 /
2437 3251 4571 CCOM, READ /READ IN CORECT NUMBER OF BLOCKS.
2440 3252 0000 CINU, 0 /INPUT UNIT.
2441 3253 6400 BUFFER /POINTER TO BUFFERS.
2442 3254 0000 CINS, 0 /NUMBER OF RECORDS TO BE READ IN.

```

|      |      |      |                          |        |  |
|------|------|------|--------------------------|--------|--|
| 2443 | 3255 | 0000 | CINB, 0                  |        | /STARTING BLOCK NOW OF READ.                 |
| 2444 | 3256 | 4572 | CCMORE, WRITE            |        | /NOW WRITE IT OUT.                           |
| 2445 | 3257 | 0000 | COUTU, 0                 |        | /OUTPUT UNIT                                 |
| 2446 | 3260 | 6400 | BUFFER                   |        | /BUFFER POINTER                              |
| 2447 | 3261 | 0000 | COUIS, 0                 |        | /NUMBER OF RECORDS.                          |
| 2450 | 3262 | 0000 | COUTB, 0                 |        | /STARTING RECORD NUMBER.                     |
| 2451 | 3263 | 2257 | ISZ                      | COUTU  | /BUP UP TO NEXT OUTPUT UNIT                  |
| 2452 | 3264 | 2302 | ISZ                      | CCOUNT | /MORE UNITS TO WRITE ON??                    |
| 2453 | 3265 | 5256 | JMP                      | CCMORE | /YEP. GO BACK AND WRITE ON NEXT.             |
| 2454 |      |      | /                        |        |  |
| 2455 |      |      | /                        |        |  |
| 2456 |      |      | /                        |        |  |
| 2457 | 3266 | 1254 | TAD                      | CINS   | /GET THE INPUT SIZE                          |
| 2460 | 3267 | 1255 | TAD                      | CINB   | /ADD THE BLOCK NUMBER                        |
| 2461 | 3270 | 3255 | DCA                      | CINB   | /AND UPDATE BLOCK NUMBER.                    |
| 2462 | 3271 | 1261 | TAD                      | COUTS  | /GET THE OUTPUT SIZE.                        |
| 2463 | 3272 | 1262 | TAD                      | COUTB  | /ADD THE COUTPUT SIZE.                       |
| 2464 | 3273 | 3262 | DCA                      | COUTB  | /AND UPDATE IT.                              |
| 2465 | 3274 | 1254 | TAD                      | CINS   | /GET THE NUMBER OF RECORDS JUST TRANSFERRED. |
| 2466 | 3275 | 7041 | CIA                      |        | /AND SUBTRACT IT FROM                        |
| 2467 | 3276 | 1301 | TAD                      | CSIZE  | /THE TOTAL TRANSFERR                         |
| 2470 | 3277 | 3301 | DCA                      | CSIZE  | /AND STORE AWAY.                             |
| 2471 | 3300 | 5225 | JMP                      | CPL00P | /GO BACK AND DO SOME MORE.                   |
| 2472 |      |      | /                        |        |  |
| 2473 |      |      | /                        |        |  |
| 2474 |      |      | /                        |        |  |
| 2475 |      |      | /                        |        |  |
| 2476 | 3301 | 0000 | CSIZE, 0                 |        | /CURRENT NUMBER OF BLOCKS GOING.             |
| 2477 | 3302 | 0000 | CCOUNT, 0                |        | /TEMPORAY COUNTER FOR THE UNITS.             |
| 2500 |      |      | /                        |        |  |
| 2501 |      |      | /                        |        |  |
| 2502 |      |      | /                        |        |  |
| 2503 | 3303 | 0000 | LLEDER, 0                |        | /GENERATES LEADER OR TRAILER                 |
| 2504 | 3304 | 1144 | TAD                      | M212   | /ABOUT 130 CHARACTERS OF LEADER              |
| 2505 | 3305 | 3141 | DCA                      | COUNT  |  |
| 2506 | 3306 | 1026 | TAD                      | L200   |  |
| 2507 | 3307 | 4575 | AUXOUT                   |        | /PUT OUT LEADER                              |
| 2510 | 3310 | 2141 | ISZ                      | COUNT  | /ALL DONE?                                   |
| 2511 | 3311 | 5306 | JMP                      | .-3    | /NOPE, DO MORE.                              |
| 2512 | 3312 | 5703 | JMP I                    | LLEDER | /ALL DONE. EXIT                              |
| 2513 |      |      | /                        |        |  |
| 2514 |      |      | /                        |        |  |
| 2515 |      |      | /                        |        |  |
| 2516 | 3313 | 0000 | HHPUSH, 0                |        | /HIGH FBLOCK SAVE.                           |
| 2517 | 3314 | 4564 | MOVE                     |        | /MOVE FBLOCK TO A SAFE PLACE                 |
| 2520 | 3315 | 0117 | FSIZE                    |        |  |
| 2521 | 3316 | 3327 | HHTEMP                   |        |  |
| 2522 | 3317 | 0011 | FNAME+3=FSIZE+1          |        |  |
| 2523 | 3320 | 5713 | JMP I                    | HHPUSH |  |
| 2524 |      |      | /                        |        |  |
| 2525 |      |      | /                        |        |  |
| 2526 | 3321 | 0000 | HHPOP, 0                 |        | /RESTORES FBLOCK FROM HIGH PLACE             |
| 2527 | 3322 | 4564 | MOVE                     |        |  |
| 2530 | 3323 | 3327 | HHTEMP                   |        |  |
| 2531 | 3324 | 0117 | FSIZE                    |        |  |
| 2532 | 3325 | 0011 | FNAME+3=FSIZE+1          |        |  |
| 2533 | 3326 | 5721 | JMP I                    | HHPOP  |  |
| 2534 |      |      | /                        |        |  |
| 2535 |      |      | /                        |        |  |
| 2536 | 3327 | 0000 | HHTEMP, 0/HIGH SAVE AREA |        | /LEAVE ROOM FOR FBLOCK                       |
| 2537 |      |      | *HHTEMP+FNAME+3-FSIZE    |        | /LAST WORD OF SAVE AREA.                     |
| 2540 | 3337 | 0000 | 0000                     |        |  |
| 2541 |      |      | /                        |        |  |

```

2542      /
2543      /
2544      /
2545      3340 0000 TTAPE, 0 /SETS UP TO USE TAPE LIMITS FOR DIRECTORY LOOKUP.
2546      3341 4564 MOVE /MOVE IN CORRECT POINTERS
2547      3342 3353 TTISSET
2548      3343 0110 INDEX
2549      3344 0006 CUPPER=INDEX+1
2550      3345 1120 TAD FUNIT /GET THE UNIT
2551      3346 0060 AND L7 /SET UP FOR LINC TAPE
2552      3347 3120 DCA FUNIT
2553      3350 1240 NONE /SET FOR 1 COPY
2554      3351 3106 DCA OUTNUM
2555      3352 5740 JMP I TTAPE /AND RETURN
2556      /
2557      /
2558      /
2559      3353 0346 TTISSET, TINDEX /START OF TAPE INDEX BLOCK
2560      3354 0002 TLEN /LENGTH OF TAPE INDEX
2561      3355 0000 TLOWER /LOWEST BLOCK NUMBER ON DEVICE
2562      3356 0777 TUPPER /HIGHEST BLOCK NUMBER ON THE DEVICE
2563      3357 0270 TSYSLOWER /LOWER LIMIT OF SYSTEM
2564      3360 0467 TSYSUPPER /LAST BLOCK USED BY SYSTEM
2565      /
2566      /
2567      /
2568      /
2569      3361 0000 TTYPUT, 0 /TTY OUTPUT ROUTINE
2570      3362 3340 DCA TTAPE /STASH AWAY WHILE DOING CHECK.
2571      3363 4556 CHECKIO /TEST FOR MAYBE A CONTROL Z
2572      3364 6041 6041 /IS IT FREE?
2573      3365 5363 JMP ,-2 /NOPE, CHECK AGAIN.
2574      3366 1340 TAD TTAPE /GET IT AGAIN.
2575      3367 6046 6046 /YEP, GOOD BYE.
2576      3370 7200 CLA
2577      3371 5761 JMP I TTYPUT /THATS ALL
2578      /
2579      /
2580      /
2581      /
2582      /
2583      /
2584      /
2585      /
2586      /
2587      /
2588      /
2589      /
2590      /
2591      /
2592      /
2593      /
2594      /
2595      /
2596      /
2597      /
2598      /
2599      /
2600      /
2601      /
2602      /
2603      /
2604      /
2605      /
2606      /
2607      /
2608      /
2609      /
2610      /
2611      /
2612      /
2613      /
2614      /
2615      /
2616      /
2617      /
2618      /
2619      /
2620      /
2621      /
2622      /
2623      /
2624      /
2625      /
2626      /
2627      /
2628      /
2629      /
2630      /
2631      /
2632      /
2633      /
2634      /
2635      /
2636      /
2637      /
2638      /
2639      /
2640      /

```

```

/SETS UP TO USE TAPE LIMITS FOR DIRECTORY LOOKUP.
/MOVE IN CORRECT POINTERS

```

```

/GET THE UNIT
/SET UP FOR LINC TAPE
/SET FOR 1 COPY
/AND RETURN

```

```

/START OF TAPE INDEX BLOCK
/LENGTH OF TAPE INDEX
/LOWEST BLOCK NUMBER ON DEVICE
/HIGHEST BLOCK NUMBER ON THE DEVICE
/LOWER LIMIT OF SYSTEM
/LAST BLOCK USED BY SYSTEM

```

```

/TTY OUTPUT ROUTINE
/STASH AWAY WHILE DOING CHECK.
/TEST FOR MAYBE A CONTROL Z
/IS IT FREE?
/NOPE, CHECK AGAIN.
/GET IT AGAIN.
/YEP, GOOD BYE.
/THATS ALL

```

```

/DO WE WANT THE FLICKER FACTOR ADDED?
/NOPE, DONT ASSEMBLE THEM IN

```

```

/FLICKER.
/PICK A RANDOM LOCATION
/JUST GET THE HIGH ORDER BIT
/NOW ADD IN THE TABLE POINTER
/AND THE CHANNEL SELECTIO WORD
/STASH BACK AND RETURN TO THE CALLER

```



2641 /  
2642 /  
2643 /  
2644 /  
2645 /  
2646 /  
2647 /  
2650 /  
2651 /  
2652

EJECT

```
2653      /
2654      /
2655      /
2656      /
2657      /
2660      /      END OF      P   I   P   2.
2661      /
2662      /
2663      /
2664      /      CALL PIP3
2665      /
2666      /
2667      /
2670      /
2671      /
2672      /
2673      /      CHAIN      "PIP3"
2674
```

0000  
0001  
0002  
-

•20

PMODE  
EJECT

0003 /  
0004 /  
0005 /  
0006 /  
0007 /  
0010 /  
0011 /  
0012 /  
0013 /  
0014 /  
0015 /  
0016 /  
0017 /  
0020 /  
0021 /  
0022 /  
0023 /  
0024 /  
0025 /  
0026 /  
0027 /  
0030 /  
0031 /  
0032 /

THIS IS THE THIRD PART OF PIP. IT S CALLED:

P 1 P 3

EJECT

-

```

0033          3422
0034          /
0035          /
0036          /
0037          /
0040          /
0041          /
0042      3402 4502 BINARY, DECODE      /GET THE CORRECT INPUT DEVICE.
0043      3401 4610 BININP             /WHILE DISPLAYING INPUT MESSAGE.
0044      3402 /344 NTWO                /SET RFIELD TO DO A NEW ONE.
0045      3403 3137 DCA BFIELDJ
0046      3404 3130 DCA ORIGIN          /SET ORIGIN TO ZERO
0047      3405 3103 DCA BOLDP           /SET BASE TO ZERO
0050      3406 3135 DCA BFIELD          /SET FIELD TO ZERO
0051      3407 3136 DCA BOLD0           /SET OLD ORIGIN TO ZERO
0052      3410 3140 DCA BCCOUNT          /SET SIZE TO ZERO
0053      3411 3102 DCA BFLAG1          /CLEAR THE INPUT AND OUTPUT DEVICE FLAGS.
0054      3412 3104 DCA BFLAG2
0055      3413 4573 SEARCH              /CHECK IF A LEGAL OPTION WAS GIVEN
0056      3414 4377 BINLST
0057      3415 4403 BINGO
0060      3416 5200 JMP BINARY          /AND IF IT WAS, GO TO CORRECT PLACE.
0061          /                          /NOT A LEGAL DEVICE.
0062          /
0063          /
0064          /
0065      3417 2102 BHIGH, ISZ BFLAG1    /SET FLAG TO READER
0066      3420 2102 BTTY, ISZ BFLAG1     /SET FLAG TO LOW READER. MORE DEVICE MAY COME
0067          /                          /BEFORE THE HIGH READER
0070      3421 1124 TAD FNAME            /TEST TO SEE IF MODE GIVEN
0071      3422 7040 CMA
0072      3423 7650 SNA CLA
0073      3424 5304 JMP BPART2           /NO LETTERS. NOO AUTO START.
0074      3425 1124 TAD FNAME            /GET LEFT CHARACTER OF NAME.
0075      3426 0053 AND L7700           /ONLY P OR L NEEDED
0076      3427 3121 DCA FTYPE           /AND STASH AWAY
0077      3430 4573 SEARCH              /CHECK FOR P OR L
0100      3431 3555 BGOLST
0101      3432 3557 BSTGO
0102      3433 5200 JMP BINARY          /ILLEGAL
0103          /
0104          /
0105      3434 1117 BPODE, TAD FSIZE     /GET STARTING ADDRESS
0106      3435 7450 SNA                 /ONE GIVEN?
0107      3436 1026 TAD L200            /NOPE. SET IT TO 200.
0110      3437 3117 DCA FSIZE           /AND STASH AWAY.
0111      3440 7305 PTWO                /GET A "PDP" INSTRUCTION IN THE AC
0112      3441 5252 JMP BSCOMM          /AND STORE AWAY.
0113          /
0114      3442 1117 BLODE, TAD FSIZE     /GET THE STARTING ADDRESS.
0115      3443 7450 SNA                 /ONE GIVEN?
0116      3444 1350 TAD L4020           /NO. ASSUME 4020
0117      3445 3117 DCA FSIZE           /SAVE BACK STARTING ADDRESS.
0120      3446 1032 TAD L6000           /GET .NOT. 10 BIT MASK IN AC.
0121      3447 7040 CMA                 /MAKE IT A GOOD 10 BIT AND MASK
0122      3450 0117 AND FSIZE           /JUST 10 BITS.
0123      3451 1032 TAD L6000           /NOW MAKE IT A GOOD JMP IN LMODE INSTRUCTION.
0124          /                          I NEEDED A PAGE 0 LOCATION, SO I DID IT THAT WAY
0125          /
0126      3452 3752 BSCOMM, DCA I B800T+1
0127      3453 1117 TAD FSIZE            /GET STARTING ADDRESS
0130      3454 3754 DCA I B800T+3       /PLACE AWAY IN HEADER.
0131      3455 7352 CLA CLL CMA RTR     /PLACE A JMP I 7777 IN THE AC(5777)

```

*input from HSR*

|      |      |      |         |                 |   |
|------|------|------|---------|-----------------|---|
| 0132 | 3456 | 3753 | DCA I   | BB00T+2         | /AND PLACE AWAY.  |
| 0133 | 3457 | 1120 | TAD     | FUNIT           | /GET THE FIELD  |
| 0134 | 3460 | 0060 | AND     | L7              | /MAKE IT REASONABLE                                     |
| 0135 | 3461 | 7106 | CLL RTL |                 | /SHIFT TO CORRECT PLACES.                               |
| 0136 | 3462 | 1026 | TAD     | L200            |   |
| 0137 | 3463 | 1040 | TAD     | L400            | /SAVE A PAGE 0 LITTERAL                                 |
| 0140 | 3464 | 3120 | DCA     | FUNIT           | /PLACE BACK   |
| 0141 | 3465 | 1117 | TAD     | F5IZE           | /GET STARTING ADDRESS.                                  |
| 0142 | 3466 | 0032 | AND     | L6000           | /JUST LMODE FIELD BITS.                                 |
| 0143 | 3467 | 7106 | CLL RTL |                 |   |
| 0144 | 3470 | 7004 | RAL     |                 | /INTO CORRECT POSITION.                                 |
| 0145 | 3471 | 1120 | TAD     | FUNIT           | /ADD BACK IN CORRECT "LIF"                              |
| 0146 | 3472 | 3751 | DCA I   | BB00T           | /AND SAVE AWAY.   |
| 0147 | 3473 | 5304 | JMP     | BPART2          | /GO TO COMMON.  |
| 0150 |      |      | /       |                 |   |
| 0151 |      |      | /       |                 |   |
| 0152 |      |      | /       |                 |   |
| 0153 |      |      | ASMIFZ  | RF08            | /DISK THERE?  |
| 0154 |      |      | ASMSKP  | 2               | /NOPE. DON'T ASSEMBLE THE FOLLOWING IN.                 |
| 0155 | 3474 | 4577 | BLRF8,  | DISC            | /SET UP DISK INPUT                                      |
| 0156 | 3475 | 7410 | SKP     |                 | /SKP OVER TAPE SETUP.                                   |
| 0157 | 3476 | 4402 | BLT,    | TAPE            | /SET UP TAPE OPERATION.                                 |
| 0160 | 3477 | 7305 | PTWO    |                 | /TELL DIRECTORY LOOKUP ITS BINARY                       |
| 0161 | 3500 | 3121 | DCA     | FTYPE           | /FTYPE=2 MEANS A BINARY FILE.                           |
| 0162 | 3501 | 7345 | BL7345, | CLA CLL CIA RAL | /+1=BINARY, 7345=-433=-( "DZ" )-1 FOR DELETE ZERO       |
| 0163 |      |      |         |                 | /IN OTHER WORDS, ITS ALSO A LITTERAL, SO DONT MESS.     |
| 0164 | 3502 | 3123 | DCA     | FWHAT           | /SET INPUT SWITCH                                       |
| 0165 | 3503 | 4563 | DIRECT  |                 | /GO DO IT.  |
| 0166 |      |      | /       |                 |   |
| 0167 | 3504 | 4404 | BPART2, | HPUSH           | /PUSH DOWN THE FBLOCK REGION.                           |
| 0170 | 3505 | 4562 |         | DECODE          | /GET THE OUTPUT DEVICE                                  |
| 0171 | 3506 | 4703 |         | BINOUT          | /BINARY OUTPUT DISPLAY CMESSAGE                         |
| 0172 | 3507 | 4573 |         | SEARCH          | /CHECK NAME FOR LEGAL OPTION                            |
| 0173 | 3510 | 4377 |         | BINLST          | /SAME INPUT AS OUTPUT FORR NOW                          |
| 0174 | 3511 | 4407 |         | BING02          | /JMP LIST   |
| 0175 | 3512 | 5305 | JMP     | BPART2+1        | /NOT A LEGAL REQUEST.                                   |
| 0176 |      |      | /       |                 |   |
| 0177 |      |      | /       |                 |   |
| 0200 | 3513 | 2104 | BHIGH2, | ISZ BFLAG2      | /SET THE OUTPUT FLAG                                    |
| 0201 | 3514 | 2104 | BTY2,   | ISZ BFLAG2      | /FOR THE CORRECT DEVICE                                 |
| 0202 | 3515 | 2124 |         | ISZ FNAME       | /PREPARE TO CHECK FOR "DZ". BOP UP FNAME                |
| 0203 | 3516 | 1301 | TAD     | BL7345          | /ADD IN -DZ-1.(IF NOT 7777)                             |
| 0204 | 3517 | 3101 | DCA     | BOELZ           | /NOW STASH AWAY IN DELETE SWITCH (0 OR -DZ-1)           |
| 0205 | 3520 | 1124 | TAD     | FNAME           | /NOW GET THE CORRECT NAME+1                             |
| 0206 | 3521 | 1101 | TAD     | BOELZ           | /COMPARE AGAINST WHAT WE PUT THERE                      |
| 0207 | 3522 | 7640 | SZA CLA |                 | /DO THEY MATCH.   |
| 0210 | 3523 | 5305 | JMP     | BPART2+1        | /THEY DONT MATCH. ASK AGAIN.                            |
| 0211 |      |      |         |                 | /NOW BOELZ CONTAINS 0 FOR NO DELETE OR 7345 FOR DELETE. |
| 0212 |      |      | /       |                 |   |
| 0213 |      |      | /       |                 |   |
| 0214 |      |      | ASMIFZ  | RF08            | /DISK THERE???  |
| 0215 |      |      | ASMSKP  | 2               | /NOPE. NO DISK CODE NOW.                                |
| 0216 | 3524 | 4577 | BLRF82, | DISC            | /SET FOR DISC NOW                                       |
| 0217 | 3525 | 7410 | SKP     |                 |   |
| 0220 | 3526 | 4402 | BLT2,   | TAPE            | /SET FOR LINC TAPE, NOT DISC                            |
| 0221 | 3527 | 4566 | PUSH    |                 | /SAVE FBLOCK IN LOW SAVE AREA.                          |
| 0222 | 3530 | 7305 | PTWO    |                 | /SET BINARY MODE AGAIN.                                 |
| 0223 | 3531 | 3121 | DCA     | FTYPE           | /IN CASE OF COPY  |
| 0224 | 3532 | 7240 | MONE    |                 | /IS IT A MASS STORAGE DEVICE OPERATION                  |
| 0225 | 3533 | 1102 | TAD     | BFLAG1          |   |
| 0226 | 3534 | 1104 | TAD     | BFLAG2          | /IF NEGATIVE IT IS.                                     |
| 0227 | 3535 | 7710 | SPA CLA |                 | /THE TEST!  |
| 0230 | 3536 | 5406 | FILEC   |                 | /YEP. COPY CHOSEN FILLS.                                |

|      |      |      |         |            |  |
|------|------|------|---------|------------|--|
| 0231 | 3537 | 1104 | TAD     | BFLAG2     | /GET OUTPUT FLAG                           |
| 0232 | 3540 | 7640 | SZA CLA |            | /TAPE OUTPUT?                              |
| 0233 | 3541 | 4405 | LEADER  |            | /NO, PUNCH LEADER.                         |
| 0234 | 3542 | 1102 | TAD     | BFLAG1     | /IS IT LINC TAPE INPUT???                  |
| 0235 | 3543 | 7650 | SNA CLA |            |  |
| 0236 | 3544 | 5746 | JMP I   | BBTAPE     | /YEP. GO TO LINC TAPE ROUTINE              |
| 0237 | 3545 | 5747 | JMP I   | BLODYR     | /NOPE. USE STANDARD BINARY LOADER.         |
| 0240 |      |      | /       |            |  |
| 0241 |      |      | /       |            |  |
| 0242 |      |      | /       |            |  |
| 0243 |      |      | /       |            |  |
| 0244 | 3546 | 4003 | BBTAPE, | BINTAP     |  |
| 0245 | 3547 | 3600 | BLODYR, | BNFILE     |  |
| 0246 | 3550 | 4020 | L4020,  | 4020       | /NORMAL STARTING ADDRESS IN LINC MODE.     |
| 0247 |      |      | /       |            |  |
| 0250 | 3551 | 7000 | BB00T,  | BUFFER+400 | /HEADER BLOCK SELF STARTING POINTERS.      |
| 0251 | 3552 | 7001 |         | BUFFER+401 |  |
| 0252 | 3553 | 7002 |         | BUFFER+402 |  |
| 0253 | 3554 | 7003 |         | BUFFER+403 |  |
| 0254 |      |      | /       |            |  |
| 0255 | 3555 | 1400 | BGOLST, | 1400       | /L*100                                     |
| 0256 | 3556 | 6000 |         | 6000       | /P*100+4000                                |
| 0257 |      |      | /       |            |  |
| 0260 | 3557 | 3442 | BSTGO,  | BLODE      |  |
| 0261 | 3560 | 3434 |         | BPODE      |  |
| 0262 |      |      | /       |            |  |
| 0263 |      |      | /       |            |  |
| 0264 |      |      | /       |            |  |
| 0265 |      |      | /       |            |  |
| 0266 |      |      | /       |            |  |
| 0267 |      |      | /       |            |  |
| 0270 |      |      | /       |            |  |
| 0271 |      |      | /       |            |  |
| 0272 |      |      | ASMIFN  | CARD-1     | /DO WE WANT CARD READER CRAP LOADERED???   |
| 0273 |      |      | ASMSKP  | 30         | /GUESS NOT, DON T ASSEMBLE THEM.           |
| 0274 |      |      | /       |            |  |
| 0275 |      |      | /       |            |  |
| 0276 | 3561 | 0000 | CRDLTT, | 0          | /CARD READER CHECKER AND INITIALIZER.      |
| 0277 | 3562 | 1121 | TAD     | FTYPE      | /GET THE REPLY.                            |
| 0300 | 3563 | 1376 | TAD     | CRM303     | /IS IT A "C"                               |
| 0301 | 3564 | 7640 | SZA CLA |            | /?   |
| 0302 | 3565 | 5761 | JMP I   | CRDLTT     | /NOPE. RETURN TO CHECK MORE.               |
| 0303 | 3566 | 1120 | TAD     | FUNIT      | /YEP. GET THE STARTING COLUMN              |
| 0304 | 3567 | 3136 | DCA     | BOLDO      | /AND STASH AWAY.                           |
| 0305 | 3570 | 1117 | TAD     | FSIZE      | /AND GET THE LAST COLUMN                   |
| 0306 | 3571 | 3131 | DCA     | DATA       | /AND STORE IT AWAY.                        |
| 0307 | 3572 | 4777 | JMS I   | CRINIT     | /INITIALIZE CARD READER.                   |
| 0310 | 3573 | 2102 | ISZ     | BFLAG1     | /PREPARE TO SET THE INPUT FLAG TO 3        |
| 0311 | 3574 | 5775 | JMP I   | ,+1        | /NOW ADD TWO TO THE INPUT FLAG             |
| 0312 | 3575 | 5017 | ASCH1   |            | /HIGH SPEED READER=2                       |
| 0313 |      |      | /       |            |  |
| 0314 | 3576 | 7475 | CRM303, | -303       | /A - "C"                                   |
| 0315 | 3577 | 6005 | CRINIT, | CDINIT     | /POINTE TO CARD READER INITIALIZE ROUTINE. |
| 0316 |      |      | /       |            |  |
| 0317 |      |      | /       |            |  |
| 0320 |      |      | /       |            |  |
| 0321 |      |      | /       |            |  |
| 0322 |      |      | /       |            |  |
| 0323 |      |      | /       |            |  |
| 0324 |      |      | /       |            |  |
| 0325 |      |      | /       |            |  |
| 0326 |      |      | /       |            |  |
| 0327 |      |      | /       |            |  |

0330  
0331  
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EJECT



0340 /  
0341 / \*3620  
0342 / MORE BINARY LOADER ROUTINES AND CRAP.  
0343 /  
0344 /  
0345 /  
0346 /  
0347 3620 6016 BNFIL, 6216 /NON FILE ORIENTED ROUTINES. ←  
0350 3621 6032 6232 /INITIATE AND CLEAR ALL POSSIBLE DEVICES.  
0351 3622 3135 DCA BFIELD /SET FIELD TO ZERO.  
0352 3623 3372 DCA BFIELD /AND SET NEXT FIELD TO ZERO ALSO.  
0353 3624 4243 JMS BEGG /GET A CHARACTER  
0354 3625 5224 JMP .-1 /LEADER-TRAILER. IGNORE IT.  
0355 /  
0356 3626 3371 BGO, DCA BCHECK /UPDATE CHECKSUM  
0357 3627 1125 TAD BCHAR /GET THE CHARACTER  
0360 3610 3077 DCA BWORD1 /STORE AWAY  
0361 3611 4574 AUXIN /LOOKUP FOR NEXT CHAR  
0362 3612 3120 DCA BWORD2 /AND SAVE  
0363 3613 4243 JMS BEGG /LOOK AHEAD ONE NOW.  
0364 3614 5276 JMP BEND /TRAILER FOUND. CHECK CHECKSUM.  
0365 3615 4234 JMS BASSEM /ASSEMBLE A WORD  
0366 3616 7420 SNL /ORIGIN?  
0367 3617 5227 JMP BBBPUT /NO. PLACE IN DATA WORD  
0370 3620 3130 DCA ORIGIN /YES. STORE IN ORIGIN.  
0371 3621 1372 BCHEX, TAD BFIELD /GET THE NEXT FIELD  
0372 3622 3135 DCA BFIELD /AND STORE IT IN THE PRESENT FIELD FOR NEXT TIME  
0373 3623 1077 TAD BWORD1  
0374 3624 1120 TAD BWORD2  
0375 3625 1371 TAD BCHECK /UPDATE CHECKSUM  
0376 3626 5206 JMP BGO /AND GO GET NEXT WORD.  
0377 /  
0400 3627 3131 BBBPUT, DCA DATA /PLACE IN DATA FOR OUTPUT ROUTINE TO USE.  
0401 3630 4576 PUTWORD /GO OUTPUT IT.  
0402 3631 2130 ISZ ORIGIN /GO TO NEXT LOC.  
0403 3632 7600 M200, -200 /NOP IN CASE OF SKIP  
0404 3633 5221 JMP BCHEX /AND UPDATE CHECKSUM  
0405 /  
0406 3634 0000 BASSEM, 2  
0407 3635 1077 TAD BWORD1 /GET THE FIRST WORD  
0410 3636 7106 CLL RTL  
0411 3637 7006 RTL  
0412 3640 7006 RTL /NOW PLACE IN SECOND PART  
0413 3641 1120 TAD BWORD2  
0414 3642 5634 JMP I BASSEM /NOW EXIT  
0415 /  
0416 3643 0000 BEGG, 0  
0417 3644 3071 DCA TEMP4 /GETS AND CHECKS A CHARACTER FROM GIVEN SEQUENTIAL DEVICE.  
0420 3645 4574 AUXIN /SET SWITCH  
0421 3646 1145 TAD M377 /GET A CHARACTER.  
0422 3647 7640 SZA CLA /CHECK FOR RUBOUT  
0423 3650 5254 JMP .+4 /?  
0424 3651 2071 ISZ TEMP4 /NO RUBOUT  
0425 3652 7040 CMA /YES. COMPLEMENT SWITCH  
0426 3653 5244 JMP BEGG+1 /GO BACK AGAIN.  
0427 3654 1071 TAD TEMP4 /SWITCH SET?  
0430 3655 7640 SZA CLA  
0431 3656 5245 JMP BEGG+2 /YEP. STILL IN RUBOUTS  
0432 3657 1125 TAD BCHAR /GET THE CHAR  
0433 3660 0036 AND L700 /HIGH ORDER BITS ON?  
0434 3661 1232 TAD M200 /GET TYPE  
0435 3662 7510 SPA /IS IT JUST LEADER  
0436 3663 2243 ISZ BEGG /NO HIGH ORDER BITS ON.

not clear from  
paper tape

|      |      |      |                      |   |
|------|------|------|----------------------|---|
| 0437 | 3664 | 7750 | SPA SNA CLA          | /TEST NOW FOR ORIGIN AND LEADER-TRAILER     |
| 0440 | 3665 | 5643 | JMP I BEGG           | /DATA, ORIGIN, OR LEADER TRAILER            |
| 0441 | 3666 | 1105 | TAD BCHAR            | /FIELD CHARACTER                            |
| 0442 | 3667 | 0374 | AND L70              | /JUST GET FIELD                             |
| 0443 | 3670 | 3372 | DCA BFIELD           | /SAVE IN NEXT FIELD                         |
| 0444 | 3671 | 1372 | TAD BFIELD           | /GET BACK                                   |
| 0445 | 3672 | 1023 | TAD M20              | /MORE THEN 8 K?                             |
| 0446 | 3673 | 7700 | SMA CLA              |   |
| 0447 | 3674 | 4567 | NO                   | /YEP. 10000 BBBIGGG!!!                      |
| 0450 | 3675 | 5245 | JMP BEGG+2           |   |
| 0451 |      |      | /                    |   |
| 0452 |      |      | /                    |   |
| 0453 | 3676 | 4234 | BEND, JMS BASSEM     |   |
| 0454 | 3677 | 7041 | CIA                  |   |
| 0455 | 3700 | 1371 | TAD BCHECK           | /CHECK CHECKSUM                             |
| 0456 | 3701 | 7640 | SZA CLA              | /GOOD?                                      |
| 0457 | 3702 | 5775 | JMP I BCERR          | /GIVE CHECKSUM MESSAGE, IT BAD              |
| 0460 | 3703 | 4476 | JMS I PMORE          | /ASK IF ANY MORE TAPES?                     |
| 0461 | 3704 | 5200 | JMP BNFILE           |   |
| 0462 | 3705 | 7240 | MONE                 | /CLOSE THE OUTPUT FILE                      |
| 0463 | 3706 | 3135 | DCA BFIELD           |   |
| 0464 | 3707 | 4576 | PUTWORD              | /SEND T O BLAHS.                            |
| 0465 | 3710 | 5552 | PIP                  | /RETURN TO PIP                              |
| 0466 |      |      | /                    |   |
| 0467 |      |      | /                    |   |
| 0470 |      |      | /                    |   |
| 0471 |      |      | /                    |   |
| 0472 |      |      | /                    |   |
| 0473 | 3711 | 0000 | SEQIN, 0             | /SEQ INPUT UNIT.                            |
| 0474 | 3712 | 4556 | CHECKIO              | /CHECKIO AND LEAVE AC 0                     |
| 0475 | 3713 | 3073 | DCA CNTRLZ           | /CLEAR THE CONTROLZ FLAG                    |
| 0476 | 3714 | 1102 | TAD BFLAG1           | /GET INPUT FLAG.                            |
| 0477 | 3715 | 1047 | TAD L777             | /SUBTRACT1                                  |
| 0500 | 3716 | 7650 | SNA CLA              |   |
| 0501 | 3717 | 5336 | JMP SEQTTY           |   |
| 0502 | 3720 | 4560 | SEQTST, GETL         | /TEST LOW READER FOR A CHAR                 |
| 0503 | 3721 | 5327 | JMP SEQN1            |   |
| 0504 | 3722 | 1373 | TAD M232             |   |
| 0505 | 3723 | 7450 | SNA                  |   |
| 0506 | 3724 | 2073 | ISZ CNTRLZ           |   |
| 0507 | 3725 | 7650 | SNA CLA              |   |
| 0510 | 3726 | 5711 | JMP I SEQIN          | /EXIT                                       |
| 0511 |      |      | /                    |   |
| 0512 |      |      | SEQN1, ASMIFN CARD-1 | /DO WE WANT CARD READER CHECK LOADED????    |
| 0513 |      |      | ASMSKP 5             | /NOPE. DONT ASSEMBLE THEM IN                |
| 0514 |      |      | /                    |   |
| 0515 | 3727 | 4776 | JMS I SEQCIN         | /CHECK FOR CARD READER AND GET CHAR.        |
| 0516 | 3730 | 5320 | JMP SEQTST           | /CHAR NOT READY YET.                        |
| 0517 | 3731 | 5340 | JMP SEQCOM           | /CHAR READY.                                |
| 0520 |      |      | /                    |   |
| 0521 |      |      | /                    |   |
| 0522 | 3732 | 6011 | 6011                 | /DEVICE IS HIGH SPEED READER. FLAG READY??? |
| 0523 | 3733 | 5320 | JMP SEQTST           | /GO INTO BIG WAIT LOOP                      |
| 0524 | 3734 | 6016 | 6016                 |   |
| 0525 | 3735 | 5340 | JMP SEQCOM           |   |
| 0526 | 3736 | 4560 | SEQTTY, GETL         | /GET A CHARACTER                            |
| 0527 | 3737 | 5336 | JMP .-1              | /WAIT FOR IT                                |
| 0530 | 3740 | 3105 | SEQCOM, DCA BCHAR    | /STASH AWAY                                 |
| 0531 | 3741 | 1105 | TAD BCHAR            |   |
| 0532 | 3742 | 1373 | TAD M232             |   |
| 0533 | 3743 | 7650 | SNA CLA              |   |
| 0534 | 3744 | 2073 | ISZ CNTRLZ           |   |
| 0535 | 3745 | 1105 | TAD BCHAR            |   |

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0536      3746  5711      JMP I   SEQIN
0537      /
0540      /
0541      /
0542      3747  0000  SEQOUT, 0
0543      3750  3311      DCA      SEQIN
0544      3751  4556      CHECKIO
0545      3752  1104      TAD      BFLAG2
0546      3753  1047      TAD      L7777
0547      3754  7640      SZA CLA
0550      3755  5361      JMP      SEQ02
0551      3756  1311      TAD      SEQIN
0552      3757  4407      PUTL
0553      3760  5747      JMP I   SEQOUT
0554      /
0555      SEQ02,  ASMIFZ  CARD-1
0556      3761  4777      JMS I   SEQLP
0557      /
0560      3762  4556      CHECKIO
0561      3763  6021      6021
0562      3764  5362      JMP      .-2
0563      3765  1311      TAD      SEQIN
0564      3766  6026      6026
0565      3767  7200  SEQEXT, CLA
0566      3770  5747      JMP I   SEQOUT
0567      /
0570      /
0571      /
0572      /
0573      3771  0000  BCHECK, 0
0574      3772  0000  BFIELD, 0
0575      3773  7546  M232,  -232
0576      3774  0070  L70,    70
0577      3775  4477  BCERR,  CERR
0600      /
0601      /
0602      /
0603      /
0604      ASMIFN  CARD-1
0605      ASMSKP  3
0606      /
0607      3776  6025  SEQCIN, CDREAD
0610      3777  6275  SEQLP,  LPTEST
0611      /
0612      /
0613      /
0614      /
0615      /
0616      /
0617      EJECT

```

/SEQUENTIAL OUTPUT BLOP.  
 /SAVE THE CHAR  
 /CHECKIO  
 /GET THE OUTPUT FLAG

/HIGH PUNCH OUTPUT

/OUT IT GOES.

/DO WE CHECK FOR LINE PRINTER???  
 /YEP. GO CHECK

/LINE PRINTER ISN'T THE ONE.  
 /WAIT FOR OK.  
 /WAIT TILL DONE.  
 /GET THE CHAR.  
 /SEND IT OUT  
 /CLEAR THE AC.  
 /ALL DONE.

/CARD READER AND LINE PRINTER THERE???  
 /NOPE. DONT ASSEMBLE IN POINTERS.

/POINTER TO CARD READER ROUTINE.  
 /POINTER TO LINE PRINTER ROUTINE.

← paper tape output

```

0620 /
0621 /
0622 *4000
0623 /
0624 /
0625 /
0626 /
0627 /
0630 /
0631 /
0632 4000 0000 0000 /FIRST 3 LOCATION ARE RESERVED FOR A REGISTERS IN LMODE
0633 4001 0000 0000
0634 4002 0000 0000
0635 /
0636 /
0637 /
0640 /
0641 4003 4403 BINTAP, HPOP /INPUT FROM LINC TAPE.
0642 4004 1120 TAD FUNIT /GET THE UNIT
0643 4005 3211 DCA ,+4 /SET UP CONTROL BLOCK READ
0644 4006 1122 TAD FBNUM /GET THE STARTING BLOCK NUMBER
0645 4007 3214 DCA ,+5 /GET BLOCK NUMBER
0646 4010 4571 READ /READ IN HEADER BLOCK
0647 4011 0000 0 /PLACED IN UNIT
0650 4012 7000 BUFFER+400 /READ HEADER BLOCK IN SECOND BLOCK OF BUFFER.
0651 4013 0001 1 /1 RECORD
0652 4014 0000 0 /CORRECT BLOCK NUMBER
0653 4015 4403 HPOP /ZAP IN FBLOCK AGAIN
0654 4016 2122 ISZ FBNUM /MOVE PAST HEADER BLOCK
0655 4017 4772 JMS I BSETI /SET UP WORD GETTER.
0656 4020 1056 TAD M400 /SET UP NUMBER OF 400 WORD BLOCKS TO CHECK
0657 4021 3132 DCA BTEMP1 /AND STASH AWAY.
0660 4022 1367 TAD BMTAB /GET START OF MEMORY MAP CONFIG.
0661 4023 3133 DCA BTEMP2 /AND PLACE AWAY.
0662 /
0663 4024 1064 BEILOP, TAD M400 /400 WORDS PER RECORD
0664 4025 3134 DCA BTEMP3 /SET UP COUNT
0665 4026 1132 TAD BTEMP1 /GET THE BLOCK NUMBER
0666 4027 1371 TAD L40 /GET BETWEEN 0-37
0667 4030 7112 CLL RTR
0670 4031 7012 RTR
0671 4032 7010 RAR
0672 4033 3130 DCA ORIGIN /MOVE INTO 7400 POSITION
0673 4034 7006 RTL /SET UP INITIAL ORIGIN.
0674 4035 7006 RTL
0675 4036 3135 DCA BFIELD /MOVE LINC TO FIELD POSITION.
0676 4037 1533 BETLP2, TAD I BTEMP2 /AND PLACE IN BFIELD.
0677 4040 7650 SNA CLA /IS THIS BLOCK USED.
0700 4041 5245 JMP BEOUT /?
0701 4042 4773 JMS I BGETI /NOPE. WANDER DOWN.
0702 4043 3131 DCA DATA /GET A WORD FROM TAPE/
0703 4044 4576 PUTWORD /PLACE IN DATA WORD.
0704 4045 2130 BEOUT, ISZ ORIGIN /SEND IT DOWN THE LINE.
0705 4046 7000 NOP /BOP UP ORIGIN.
0706 4047 2134 ISZ BTEMP3 /BOP UP 400 COUNTER
0707 4050 5237 JMP BETLP2 /NOT YET DONE. DO ANOTHER.
0710 4051 2133 ISZ BTEMP2 /BOP UP MAP POINTER
0711 4052 7000 NOP /IT REALLY CAN SKIP(I FOUND OUT THE HARD WAY)
0712 4053 2132 ISZ BTEMP1 /BOP UP BIGCOUNT POINTER
0713 4054 5224 JMP BEILOP /GO BACK AND GET NEXT FIELD AND ORIGIN.
0714 4055 7240 MONE /ALL DONE.
0715 4056 3135 DCA BFIELD /PLACE AN "EOF" ON BFIELD
0716 4057 4576 PUTWORD /END OF FILE CODE WORD.

```

MORE OF THE BINARY ROUTINES.

|      |      |      |                    |  |
|------|------|------|--------------------|--|
| 0717 | 4060 | 5552 | PIP                | /RETURN TO PIP   |
| 0720 |      | /    |                    |  |
| 0721 |      | /    |                    |  |
| 0722 |      | /    |                    |  |
| 0723 |      | /    |                    |  |
| 0724 | 4061 | 0000 | BTAPE, /           | /MAIN TAPE OUTPUTER.                                   |
| 0725 | 4062 | 1135 | TAD BFIELD         | /LAST TIME THROUGH?                                    |
| 0726 | 4063 | 7001 | IAC                |  |
| 0727 | 4064 | 7652 | SNA CLA            | /?   |
| 0730 | 4065 | 5770 | JMP I BTEMP        | /YEP. CLOSE FILE.                                      |
| 0731 | 4066 | 1135 | TAD BFIELD         | /GET THE FIELD   |
| 0732 | 4067 | 7041 | CIA                |  |
| 0733 | 4070 | 1137 | TAD BOFIELD        | /SAME AS LAST ONE?                                     |
| 0734 | 4071 | 7640 | SZA CLA            |  |
| 0735 | 4072 | 5315 | JMP BIDIFF         | /NOPE. SET TO CHANGE BANKS.                            |
| 0736 | 4073 | 1130 | TAD ORIGIN         | /GET THE ORIGIN  |
| 0737 | 4074 | 0064 | AND L7400          | /JUST HIGH BITS.                                       |
| 0740 | 4075 | 7041 | CIA                | /  |
| 0741 | 4076 | 1136 | TAD BOLDO          | /ADD IN LAST ORIGIN                                    |
| 0742 | 4077 | 7640 | SZA CLA            | /SAME 400 WORD BANK??                                  |
| 0743 | 4100 | 5315 | JMP BIDIFF         | /NOPE.. CHANGE BANKS.                                  |
| 0744 |      | /    |                    |  |
| 0745 | 4101 | 1130 | BINTRY, TAD ORIGIN | /GET THE ORIGIN  |
| 0746 | 4102 | 0365 | AND L377           | /GET IN 400 WORD BANK POSITION                         |
| 0747 | 4103 | 1366 | TAD BPOINT         | /GET START OF BUFFER LOCATION.                         |
| 0750 | 4104 | 3065 | DCA TEMP           | /STOKE AWAY  |
| 0751 | 4105 | 1131 | TAD DATA           | /GET THE DATA WORD                                     |
| 0752 | 4106 | 3465 | DCA I TEMP         | /NOW PLACE IN BUFFER                                   |
| 0753 | 4107 | 1130 | TAD ORIGIN         | /GET ORIGIN  |
| 0754 | 4110 | 0064 | AND L7400          | /GET JUST BANK NUMBER                                  |
| 0755 | 4111 | 3136 | DCA BOLDO          | /STASH AWAY.   |
| 0756 | 4112 | 1135 | TAD BFIELD         | /RESET THE FIELD TOO                                   |
| 0757 | 4113 | 3137 | DCA BOFIELD        | /AND AWAY IT GOES.                                     |
| 0760 | 4114 | 5661 | JMP I BTAPE        | /GO BACK AND GET ANOTHER WORD.                         |
| 0761 |      | /    |                    |  |
| 0762 |      | /    |                    |  |
| 0763 | 4115 | 1130 | BIDIFF, TAD ORIGIN | /GET THE ORIGIN  |
| 0764 | 4116 | 7006 | RTL                |  |
| 0765 | 4117 | 7006 | RTL                |  |
| 0766 | 4120 | 0060 | AND L7             | /MUST MAKE IT BITS 8-11                                |
| 0767 | 4121 | 1135 | TAD BFIELD         | /PUT IN FIELD BIT NOW!                                 |
| 0770 | 4122 | 7004 | RAL                | /AND ROTATE IN REST OF CRAP.                           |
| 0771 | 4123 | 3132 | DCA BTEMP1         | /STASH AWAY/   |
| 0772 | 4124 | 1137 | TAD BOFIELD        | /GET THE OLD FIELD BITS.                               |
| 0773 | 4125 | 7700 | SMA CLA            | /IF ITS MINUS, DONT DUMP BUFFERS.                      |
| 0774 | 4126 | 4352 | JMS BIDUMP         | /NOT THE FIRST TIME THROUGH. DUMP BUFFERS              |
| 0775 | 4127 | 1132 | TAD BTEMP1         | /REGET NEW POSITION                                    |
| 0776 | 4130 | 3103 | DCA BOLDP          | /AND PLACE IN OLD PLACE                                |
| 0777 | 4131 | 1132 | TAD BTEMP1         | /GET PLACE AGAIN                                       |
| 1000 | 4132 | 1367 | TAD BMTAB          | /START OF POSITION THING                               |
| 1001 | 4133 | 3133 | DCA BTEMP2         | /CORE MAP  |
| 1002 | 4134 | 1533 | TAD I BTEMP2       | /GET REFERENCE WORD                                    |
| 1003 | 4135 | 7650 | SNA CLA            | /IS IT TAKEN?  |
| 1004 | 4136 | 2140 | ISZ BCOUNT         | /NOPE. ANOTHER RECORD TO WRITE OUT LATTER ON.          |
| 1005 | 4137 | 7240 | MONE               | /MEANWHILE....   |
| 1006 | 4140 | 3533 | DCA I BTEMP2       | /TELL SYSTEM IT S TAKEN NOW.                           |
| 1007 | 4141 | 1132 | TAD BTEMP1         | /REGET BASE POINTER                                    |
| 1010 | 4142 | 1364 | TAD BMBASE         | /ADD IN STARTING BLOCK NUMBE                           |
| 1011 | 4143 | 3550 | DCA .+5            | /READ IN NEW CORE IMAGE FOR OVERLAYING.                |
| 1012 | 4144 | 4571 | READ               | /READ IT IN  |
| 1013 | 4145 | 0001 | DSYS1, SYSBIN      | /FROM SYSTEM BINARY UNIT.                              |
| 1014 | 4146 | 6400 | BUFFER             | /THIS IS THE GENERAL CORE WORKING AREA FOR THE BINARY. |
| 1015 | 4147 | 0001 | 1                  |  |

```

1016      4150 0000      0
1017      4151 5301      JMP      BINTRY      /RECORD NUMBER GOES HERE.
1020      /
1021      /
1022      /
1023      4152 0000      BIDUMP, 0      /DUMPS THE PRESENT BUFFER INTO THE CORRECT POSITION.
1024      4153 1103      TAD      BOLDP      /GET OLD POINTER
1025      4154 1364      TAD      BMBASE      /ADD IN THE RECORD NUMBER BASE.
1026      4155 3362      DCA      .+5      /SAVE AWAY.
1027      4156 4572      WRITE      /WRITE IT OUT.
1030      4157 0001      DSY2, SYSBIN
1031      4160 6400      BUFFER
1032      4161 0001      1
1033      4162 0000      0
1034      4163 5752      JMP I      BIDUMP      /RETURN
1035      /
1036      /
1037      /
1040      /
1041      /
1042      4164 0370      BMBASE, SYSBBLOCK
1043      4165 0377      L377, 377
1044      4166 6400      BPOINT, BUFFER
1045      4167 7340      BMTAB, BUFFER+740      /BINARY CORE WORKING AREA
1046      4170 4200      BTEND, BTENT      /LOADING MAP.
1047      4171 0040      L40, 40
1050      4172 4514      BSETI, SETI
1051      4173 4525      BGETI, GETI
1052      /
1053      /
1054      /
1055      /
1056      /
1057      /
1060      /
1061      /
1062      EJECT

```

```

1063          *4200
1064          /
1065          /
1066          /
1067          /
1070          /
1071          /
1072          4200 4667 BTENT, JMS I BBDUMP /DUMP THE BUFFER
1073          4201 1140 TAD BCOUNT /NUMBER OF RECORDS SAVED.
1074          4202 7450 SNA /ANY AT ALL?
1075          4203 4567 NO /NOPE.
1076          4204 3671 DCA I BBOINT-1 /STASH IN HEADER BLOCK.
1077          4205 4572 WRITE /WRITE OUT HEADER BLOCK NOW.
1100          4206 0001 BSYS, SYSBIN
1101          4207 7000 BUFFER+400
1102          4210 0001 1
1103          4211 0447 BBBHDR, SYSHDR /POSITION OF HEADER BLOCK ON SYSTEM.
1104          /
1105          DSYS3=BSYS
1106          /
1107          4212 4565 POP /BRING BACK FBLOCK FROM LOWER AREA NOW.
1110          4213 1140 TAD BCOUNT /REGET THE LENGTH.
1111          4214 7001 IAC /ADD 1 FOR HEADER BLOCK
1112          4215 3117 DCA FSIZE /SAVE IN CORRECT PLACE.
1113          4216 7305 PTWO /SET FOR OUTPUT FILE.
1114          4217 3123 DCA FWHAT
1115          4220 7305 PTWO /SET FOR BINARY FILE
1116          4221 3121 DCA FTYPE
1117          4222 4563 DIRECT /LOOKUP UP NAME AND ROOM.
1120          4223 4404 HPUSH /STASH AWAY.
1121          4224 1122 TAD FBNUM /GET THE STARTING BLOCK
1122          4225 3104 DCA OUTBLOCK
1123          4226 1120 TAD FUNIT /STASH IN UNIT TOO.
1124          4227 3105 DCA OUTUNIT /SET UP OUTPUT UNIT.
1125          4230 1206 TAD BSYS /GET INPUT UNIT
1126          4231 3103 DCA INUNIT /SET UP INPUT UNIT
1127          4232 1211 TAD BBBHDR /POINTER TO HEADER BLOCK
1130          4233 3102 DCA INBLOCK /STASH IN INPUT BLOCK NUMBER
1131          4234 7201 PONE /SET THE SIZE TO 1 BLOCK
1132          4235 3117 DCA FSIZE
1133          4236 4554 COPY /COPY THE HEADER BLOCK TO THE CORRECT LOCATION ON TAPE,
1134          4237 1270 TAD BBBASE /GET THE BINARY WORK AREA POINTER.
1135          4240 3102 DCA INBLOCK /SET THE INPUT UP AGAIN.
1136          4241 4564 MOVE /NOW MOVE THE HEADER BLOCK WHICH
1137          4242 6400 BUFFER /WE JUST READ INTO BUFFER BY COPY
1140          4243 7000 BUFFER+400 /BACK UP TO BUFFER+400 SO WE CAN USE THE HEADER
1141          4244 0400 400 /BLOCK INFORMATION FOR THE COPYING OF THE BLOCKS.
1142          4245 1272 TAD BBOINT /START OF MEMORY BLOCK CONFIG.
1143          4246 3132 DCA BTEMP1 /SET UP OUTCHECKER
1144          4247 1056 TAD M40 /SET UP TO LOOK AT 40 BLOCKS
1145          4250 3134 DCA BTEMP3 /BTEMP3 IS OUR COUNTER NOW.
1146          4251 2104 ISZ OUTBLOCK /SKIP PAST HEADER BLOCK
1147          /
1150          4252 1532 BELOOP, TAD I BTEMP1 /GET THE MEMORY USAGE WORD
1151          4253 7650 SNA CLA /BLOCK USED?
1152          4254 5261 JMP BEEND /NOPE. GO DOWN
1153          4255 7201 PONE /SET TO MAKE A 1 BLOCK COPY
1154          4256 3117 DCA FSIZE /BY PLACING A "1" IN FSIZE
1155          4257 4554 COPY /YEP. COPY A BLOCK
1156          4260 2104 ISZ OUTBLOCK /GO TO NEXT OUTBLOCK.
1157          4261 2102 BEEND, ISZ INBLOCK /GO TO NEXT INPUT BLOCK
1160          4262 2132 ISZ BTEMP1 /BOP MEMORY POINTER
1161          4263 7000 NOP /THIS CAN SKIP IF BUFFER WAS SET TO 7000

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|      |      |      |          |            |   |
|------|------|------|----------|------------|---|
| 1162 | 4264 | 2134 | ISZ      | BTEMP3     | /HAVE WE FINISHED THE HEADER BLOCK?                   |
| 1163 | 4265 | 5252 | JMP      | BELOOP     | /NOT YET DONE.  |
| 1164 | 4266 | 5552 | PIP      |            | /ALL DONE. RETURN TO PIP.                             |
| 1165 |      |      | /        |            |   |
| 1166 |      |      | /        |            |   |
| 1167 |      |      | /        |            |   |
| 1170 | 4267 | 4152 | BBDUMP,  | BIDUMP     |   |
| 1171 | 4270 | 0370 | BBBASE,  | SYSBBLOCK  |   |
| 1172 | 4271 | 7337 |          | BUFFER+737 | /POINTER TO HEADER BLOCK LENGTH. MUST BE AT BBPOINT-1 |
| 1173 | 4272 | 7340 | BBPOINT, | BUFFER+740 | /POINTS TO START OF CORE MAP IN HEADER BLOCK          |
| 1174 |      |      | /        |            |   |
| 1175 |      |      | /        |            |   |
| 1176 |      |      | /        |            |   |
| 1177 |      |      | /        |            |   |
| 1200 |      |      | /        |            |   |
| 1201 | 4273 | 0000 | BBOUT,   | 0          |   |
| 1202 | 4274 | 1104 | TAD      | BFLAG2     | /MASS STORAGE OUTPUT???                               |
| 1203 | 4275 | 7640 | SZA      | CLA        |   |
| 1204 | 4276 | 5301 | JMP      | ..+3       | /NO.  |
| 1205 | 4277 | 4776 | JMS      | I BBLT     | /YEP. GO DO IT.                                       |
| 1206 | 4300 | 5673 | JMP      | I BBOUT    | /AND RETURN.  |
| 1207 | 4301 | 7201 | PGNE     |            | /IS THIS END OF INPUT???                              |
| 1210 | 4302 | 1135 | TAD      | BFIELD     | /(BFIELD=777??  |
| 1211 | 4303 | 7640 | SZA      | CLA        |   |
| 1212 | 4304 | 5316 | JMP      | BBBBBJ     | /NOT END. CHECK ORIGIN AND FIELD SETTINGS,%           |
| 1213 | 4305 | 1140 | TAD      | BCOUNT     |   |
| 1214 | 4306 | 4500 | ROR6     |            | /ROTATE INTO LOW ORDER BITS OF AC.                    |
| 1215 | 4307 | 0024 | AND      | L77        |   |
| 1216 | 4310 | 4575 | AUXOUT   |            |   |
| 1217 | 4311 | 1140 | TAD      | BCOUNT     |   |
| 1220 | 4312 | 0024 | AND      | L77        |   |
| 1221 | 4313 | 4575 | AUXOUT   |            | /OUTPUT CHECKSUM                                      |
| 1222 | 4314 | 4405 | LEADER   |            |   |
| 1223 | 4315 | 5552 | PIP      |            | /GIVE TRAILER AND RETURN TO PIP                       |
| 1224 |      |      | /        |            |   |
| 1225 | 4316 | 1101 | BBBBBJ,  | TAD BDELZ  | /GET THE DELETE ZEROS SWITCH.                         |
| 1226 | 4317 | 7650 | SNA      | CLA        | /IS IT NON ZERO?                                      |
| 1227 | 4320 | 5324 | JMP      | ..+4       | /ITS ZERO. DONT DELETE ZEROS.                         |
| 1230 | 4321 | 1131 | TAD      | DATA       | /GET THE DATA WORD.                                   |
| 1231 | 4322 | 7650 | SNA      | CLA        | /IS IT ZERO?  |
| 1232 | 4323 | 5673 | JMP      | I BBOUT    | /YEP. RETURN TO THE CALLER NOW. ZERO DELETED.         |
| 1233 | 4324 | 1135 | TAD      | BFIELD     | /SEE IF IN SAME DATA FIELD AS BEFORE.                 |
| 1234 | 4325 | 7041 | CIA      |            |   |
| 1235 | 4326 | 1137 | TAD      | BFIELD     | /?  |
| 1236 | 4327 | 7650 | SNA      | CLA        | /?  |
| 1237 | 4330 | 5335 | JMP      | BBN1       | /YEP. DON T DO A NEW FIELD                            |
| 1240 | 4331 | 1135 | TAD      | BFIELD     | /GET THE FIELD  |
| 1241 | 4332 | 1036 | TAD      | L700       | /PLACE ON TWO HIGH ORDER BITS.                        |
| 1242 | 4333 | 4575 | AUXOUT   |            | /AND OUTPUT IT.                                       |
| 1243 | 4334 | 5342 | JMP      | BBNEW0     | /AND GO OUTPUT ORIGIN.                                |
| 1244 |      |      | /        |            |   |
| 1245 | 4335 | 1136 | BBN1,    | TAD BOLD0  | /IS IS LOCATION+1?                                    |
| 1246 | 4336 | 7040 | CMA      |            |   |
| 1247 | 4337 | 1130 | TAD      | ORIGIN     | /SO THTA IT WOULD LOAD HERE ANYWAY.                   |
| 1250 | 4340 | 7650 | SNA      | CLA        |   |
| 1251 | 4341 | 5352 | JMP      | BBN2       | /NEXT LOC. DON T DO A NEW ORIGIN                      |
| 1252 | 4342 | 1130 | BBNEW0,  | TAD ORIGIN | /NEW ORG. OUTPUT IT ON SEQ. DEVICE                    |
| 1253 | 4343 | 4550 | ROR6     |            | /NOW PLACE IN RIGHT HALF OF A.C.                      |
| 1254 | 4344 | 0024 | AND      | L77        | /JUST 6 BITS  |
| 1255 | 4345 | 1025 | TAD      | L100       | /PLACE ON ORIGIN BIT                                  |
| 1256 | 4346 | 4366 | JMS      | B0ADD      | /AND PUT OUT WITH A CHECKSUM                          |
| 1257 | 4347 | 1130 | TAD      | ORIGIN     | /GET THE ORIGIN                                       |
| 1260 | 4350 | 0024 | AND      | L77        | /JUST 6 BITS  |



|      |      |      |        |       |                     |
|------|------|------|--------|-------|---------------------|
| 1261 | 4351 | 4366 | JMS    | BOADD | /AND OUTPUT IT TOO  |
| 1262 |      | /    |        |       |                     |
| 1263 | 4352 | 1130 | BBN2,  | TAD   | ORIGIN              |
| 1264 | 4353 | 3136 |        | DCA   | BOLDD               |
| 1265 | 4354 | 1135 |        | TAD   | BFIELD              |
| 1266 | 4355 | 3137 |        | DCA   | BFIELD              |
| 1267 | 4356 | 1131 |        | TAD   | DATA                |
| 1270 | 4357 | 4550 | ROR6   |       |                     |
| 1271 | 4360 | 0024 | AND    | L77   |                     |
| 1272 | 4361 | 4366 | JMS    | BOADD | /AND PUT IT OUT     |
| 1273 | 4362 | 1131 | TAD    | DATA  |                     |
| 1274 | 4363 | 0024 | AND    | L77   |                     |
| 1275 | 4364 | 4366 | JMS    | BOADD | /NOW PUT IT OUT TOO |
| 1276 | 4365 | 5673 | JMP I  | BROUT | /NOW EXIT           |
| 1277 |      | /    |        |       |                     |
| 1300 |      | /    |        |       |                     |
| 1301 |      | /    |        |       |                     |
| 1302 | 4366 | 0000 | BOADD, | 0     |                     |
| 1303 | 4367 | 5070 |        | DCA   | TEMP3               |
| 1304 | 4370 | 1070 |        | TAD   | TEMP3               |
| 1305 | 4371 | 1140 |        | TAD   | BCOUNT              |
| 1306 | 4372 | 3140 |        | DCA   | BCOUNT              |
| 1307 | 4373 | 1070 |        | TAD   | TEMP3               |
| 1310 | 4374 | 4575 | AUXOUT |       | /UPDATE BCOUNT      |
| 1311 | 4375 | 5766 | JMP I  | BOADD | /SEND IT ALONG      |
| 1312 |      | /    |        |       |                     |
| 1313 | 4376 | 4061 | BBLT,  | BTAPE |                     |
| 1314 |      | /    |        |       |                     |
| 1315 |      | /    |        |       |                     |
| 1316 |      | /    |        |       |                     |
| 1317 |      | /    |        |       |                     |
| 1320 |      | /    |        |       |                     |
| 1321 |      | /    |        |       |                     |
| 1322 |      | /    |        |       |                     |
| 1323 |      | /    |        |       |                     |
| 1324 |      |      |        |       |                     |
|      |      |      | EJECT  |       |                     |

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1325      /
1326      /
1327      /
1330      /
1331      /
1332      /
1333      /
1334      /
1335      /
1336      /
1337      /
1340      /
1341      /
1342      /
1343      /
1344      4377 0310 BINLST, 310      /BINARY INPUT DEVICE LIST. "H"
1345      4400 0314      314      /"L"
1346      ASMIFN RF08      /DO WE WANT THE RF08 PRESENT
1347      4401 0322      322      /YES. "R"
1350      4402 4324      4324      /"T"
1351      /
1352      /
1353      /
1354      4403 3417 BINGO, BHIGH      /HIGH SPEED READER
1355      4404 3476      BLT      /LINC TAPE
1356      ASMIFN RF08      /DISK?
1357      4405 3474      BLRF8      /YES. RF08
1360      4406 3420      BTY      /TELETYPE.
1361      /
1362      /
1363      /
1364      4407 3513 BINGO2, BHIGH2
1365      4410 3526      BLT2
1366      ASMIFN RF08
1367      4411 3524      BLRF82
1370      4412 3514      BTY2
1371      /
1372      /
1373      /
1374      /
1375      /
1376      /
1377      /
1400      /
1401      /
1402      /
1403      4413 0000 MORE, 0      /DISPLAYS A "MORE" MESSAGE.
1404      4414 4562      DECODE      /DECODE A LINE
1405      4415 4432      MMORE      /THATS OUR MESSAGE
1406      4416 4573      SEARCH      /LOOK UP THE ANSWER
1407      4417 4424      MAORN
1410      4420 4427      MGOTO
1411      4421 5214      JMP MORE+1      /JUMP TABLE
1412      4422 2213 MANDM1, ISZ MORE      /BAD REPLY.
1413      4423 5613 MANDM2, JMP I MORE      /NO MORE TAPES
1414      /
1415      /
1416      4424 0301 MAORN, 301
1417      4425 0316      316
1420      4426 4322      4322
1421      /
1422      4427 4423 MGOTO, MANDM2
1423      4430 4422      MANDM1

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1424      4431  4423      MANDM2
1425      /
1426      /
1427      4432  0200  MMORE,  LEFT+200
1430      4433  0040      TOP=300
1431      /
1432      /
1433      /
1434      /
1435      ASMIFN  CARD      /CARD MESSAGE
1436      ASMSKP  10      /THERE. GIVE CARD MESSAGE
1437      /
1440      /
1441      TEXT    "FMORE TAPES?"
1442
1443
1444      HN --- NO MORE TAPES
1445      HR --- READ ANOTHER TAPE\
1446      /
1447      /
1450      /
1451      /
1452      /
1453      /
1454      ASMIF2  CARD      /CARD READER NOT THERE?
1455      ASKSKP  10      /SKIP OVER MESSAGE
1456      /
1457      /
1460      4434  0615
1460      4435  1722
1460      4436  0540
1460      4437  1116
1460      4440  2025
1460      TEXT    "FMORE INPUT?"
1461      4441  2477
1461
1462      4442  4340
1462
1463      4443  4340
1463      4444  4310
1463      4445  1640
1463      4446  5555
1463      4447  5540
1463      4450  1617
1463      4451  4015
1463      4452  1722
1463      4453  0540
1463      4454  1116
1463      4455  2025
1463      HN --- NO MORE INPUT
1464      4456  2443
1464      4457  1022
1464      4460  4055
1464      4461  5555
1464      4462  4022
1464      4463  0501
1464      4464  0440
1464      4465  1517
1464      4466  2205
1464      4467  4003
1464      4470  0122
1464      4471  0423
1464      4472  4017
-

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1464      4473  2240
1464      4474  2401
1464      4475  2005
1464      4476  2334
1464      HR --- READ MORE CARDS OR TAPES\
1465      /
1466      /
1467      /
1470      /
1471      /
1472      /
1473      /
1474      /
1475      /
1476      /
1477      /
1500      /
1501      /
1502      4477  4551  CCERR,  DISPLAY      /CHECKSUM ERROR DISPLAY.
1503      4500  4502  CCERR      /DISPLAY MESSAGE
1504      4501  5277  JMP      .-2      /HANG AROUND UNTIL A +D OR +P IS TYPED.
1505      /
1506      /
1507      /
1510      4502  0200  CCERR,  LEFT+200
1511      4503  0000      TOP=340
1512      4504  0603
1512      4505  1005
1512      4506  0313
1512      4507  2325
1512      4510  1540
1512      4511  0522
1512      4512  2217
1512      4513  2234
1512      TEXT      "FCHECKSUM ERROR\
1513      /
1514      /
1515      /
1516      /
1517      /
1520      /
1521      4514  0000  SETI,  0      /SETS UP GETI
1522      4515  7240      MONE      /BOP DOWN BY 1
1523      4516  1122      TAD      FBNUM      /GET FIRST BLOCK NUMBER
1524      4517  3342      DCA      GEENUM      /AND PLACE IN READ CALL.
1525      4520  1120      TAD      FUNIT      /GET THE UNIT
1526      4521  3337      DCA      GUNIT      /PLACE AWAY UNIT
1527      4522  7240      MONE      /SET THE SWITCH
1530      4523  3347      DCA      GCUNT      /TO OVERFLOW FIRST TIME THROUGH
1531      4524  5714      JMP I  SETI      /RETURN
1532      /
1533      /
1534      /
1535      /
1536      /
1537      4525  0000  GETI,  0      /GETS A CHARACTER FROM THE SYSTEM BUFFER.
1540      4526  7200      CLA
1541      4527  2347      ISZ      GCUNT      /IS BUFFER EXHAUSTED?
1542      4530  5343      JMP      GOK      /NOPE. GET NEXT.
1543      4531  1064      TAD      M400      /YEP. RESET COUNTRTE FOR A NEW BLOCK.
1544      4532  3347      DCA      GCUNT      /COUNTER RESET.
1545      4533  1540      TAD      GPLACE      /GET START OF BUFFER
1546      4534  3346      DCA      GPLCE2      /STORE AWAY.

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|      |      |      |                |        |   |
|------|------|------|----------------|--------|---|
| 1547 | 4535 | 2342 | ISL            | GEENUM | /BOP UP TO NEXT REOGRD.                           |
| 1550 | 4536 | 4571 | READ           |        |   |
| 1551 | 4537 | 0000 | GUNIT, 0       |        | /AND READ IT IN.                                  |
| 1552 | 4540 | 6400 | GPLACE, BUFFER |        |   |
| 1553 | 4541 | 0001 | 1              |        |   |
| 1554 | 4542 | 0000 | GEENUM, 0      |        |   |
| 1555 | 4543 | 1746 | GOK, TAD I     | GPLCE2 | /GET WORD FROM BUFFER                             |
| 1556 | 4544 | 2346 | ISZ            | GPLCE2 | /BOP UP POINTER                                   |
| 1557 | 4545 | 5725 | JMP I          | GETI   | /EXIT   |
| 1560 |      |      | /              |        |   |
| 1561 | 4546 | 0000 | GPLCE2, 0      |        |   |
| 1562 | 4547 | 0000 | GCUNT, 0       |        | /GCOUNT ALREADY USED ELSEWHERE                    |
| 1563 |      |      | /              |        |   |
| 1564 |      |      | /              |        |   |
| 1565 |      |      | /              |        |   |
| 1566 |      |      | /              |        |   |
| 1567 |      |      | /              |        |   |
| 1570 |      |      | /              |        |   |
| 1571 |      |      | /              |        |   |
| 1572 |      |      | /              |        |   |
| 1573 |      |      | /              |        |   |
| 1574 |      |      | /              |        |   |
| 1575 |      |      | /              |        |   |
| 1576 |      |      | /              |        |   |
| 1577 |      |      | /              |        |   |
| 1600 |      |      | ASMI FZ        | RF08   | /RF08 THERE?                                      |
| 1601 |      |      | ASMSKP         | 15     | /NOPE. DONT ASSEMBLE THIS CRAP.                   |
| 1602 |      |      | /              |        |   |
| 1603 |      |      | /              |        |   |
| 1604 | 4550 | 7417 | ASUGO1, ASULP1 |        | /TRANSFER TABLES FOR SYS AND UNIT COPIES          |
| 1605 | 4551 | 7427 | ASUTT1         |        |   |
| 1606 | 4552 | 7425 | ASUDD1         |        |   |
| 1607 | 4553 | 7417 | ASULP1         |        |   |
| 1610 |      |      | /              |        |   |
| 1611 |      |      | /              |        |   |
| 1612 |      |      | /              |        |   |
| 1613 | 4554 | 7432 | ASUGO2, ASULP2 |        |   |
| 1614 | 4555 | 7442 | ASUTT2         |        |   |
| 1615 | 4556 | 7440 | ASUDD2         |        |   |
| 1616 | 4557 | 7432 | ASULP2         |        |   |
| 1617 |      |      | /              |        |   |
| 1620 |      |      | /              |        |   |
| 1621 |      |      | /              |        |   |
| 1622 |      |      | /              |        |   |
| 1623 |      |      | /              |        |   |
| 1624 |      |      | /              |        |   |
| 1625 |      |      | /              |        |   |
| 1626 |      |      | /              |        |   |
| 1627 |      |      | /              |        |   |
| 1630 |      |      | /              |        |   |
| 1631 |      |      | /              |        |   |
| 1632 | 4560 | 0000 | NOSUCH, 0      |        | /THIS ROUTINE DISPLAYS A DEVICE OVERFLOW MESSAGE  |
| 1633 | 4561 | 4567 | NO             |        | /ON THE SCREEN CONSISTING OF THE LETTERS N AND O. |
| 1634 |      |      | /              |        |   |
| 1635 |      |      | /              |        |   |
| 1636 |      |      | /              |        |   |
| 1637 |      |      | /              |        |   |
| 1640 |      |      | /              |        |   |
| 1641 |      |      | /              |        |   |
| 1642 |      |      | /              |        |   |
| 1643 |      |      | /              |        |   |
| 1644 |      |      | /              |        |   |
| 1645 |      |      | /              |        |   |

|      |      |      |                 |        |  |
|------|------|------|-----------------|--------|--|
| 1646 |      | /    |                 |        |  |
| 1647 |      | /    |                 |        |  |
| 1650 | 4562 | 0000 | STATRS, 0       |        | /THIS CALIBRATES DISK IF NOT OK.                       |
| 1651 | 4563 | 6032 | KCC             |        | /CLEAR AC AND TTY.                                     |
| 1652 | 4564 | 1376 | TAD             | RKSTAT | /REGET THE STATUS NOW.                                 |
| 1653 | 4565 | 7640 | SZA CLA         |        | /IS IT ZERO? <NO EXTRA UNITS SELECTED>?                |
| 1654 | 4566 | 6751 | DCLA            |        | /NOPE. DO A CALIBRATE.                                 |
| 1655 |      | /    |                 |        |  |
| 1656 | 4567 | 4551 | STATLP, DISPLAY |        | /DO SOME MORE DISPLAYING WHILE WAITING.                |
| 1657 | 4570 | 0263 | MAINDIS         |        | /FOR THE DISK TO BE READY.                             |
| 1660 | 4571 | 6741 | OROS            |        | /READ IN STATUS.                                       |
| 1661 | 4572 | 7010 | RAR             |        | /ROTATE TO LINK.                                       |
| 1662 | 4573 | 7620 | SNL CLA         |        | /DONE.   |
| 1663 | 4574 | 5762 | JMP I           | STATRS | /YEP. EXIT.  |
| 1664 | 4575 | 5367 | JMP             | STATLP | /NOPE. WAIT A WHILE.                                   |
| 1665 |      | /    |                 |        |  |
| 1666 |      | /    |                 |        |  |
| 1667 |      | /    |                 |        |  |
| 1670 | 4576 | 0000 | RKSTAT, 0       |        | /WORD FOR STATUS BEFORE I-O PRESET.                    |
| 1671 |      | /    |                 |        |  |
| 1672 |      | /    |                 |        |  |
| 1673 |      | /    |                 |        |  |
| 1674 |      | /    |                 |        |  |
| 1675 |      | /    |                 |        |  |
| 1676 |      | /    |                 |        |  |
| 1677 |      | /    |                 |        |  |
| 1700 |      |      | ASHIFN .8100    |        | /IF THE 300 BIT IS ON, ASSEMBLE IN THE PAGE PSEUDO-OP. |
| 1701 |      |      | PAGE            |        |  |
| 1702 |      | /    |                 |        |  |
| 1703 |      | /    |                 |        |  |
| 1704 |      | /    |                 |        |  |
| 1705 |      | /    |                 |        |  |
| 1706 |      | /    |                 |        |  |
| 1707 |      | /    |                 |        |  |
| 1710 |      | /    |                 |        |  |
| 1711 |      | /    |                 |        |  |
| 1712 |      | /    |                 |        |  |
| 1713 | 4600 | 0000 | STATSV, 0       |        |  |
| 1714 | 4601 | 6032 | KCC             |        | /CLEAR THE KEYBOARD AND THE AC.                        |
| 1715 | 4602 | 6736 | OROC            |        | /READ IN THE OLD COMMAND REGISTER.                     |
| 1716 | 4603 | 0206 | AND             | STL6   | /LEAVE IN JUST EXTRA UNITS BITS.                       |
| 1717 | 4604 | 3607 | DCA I           | RKSTTP | /AND SAVE AWAY THE DRIVE WE'RE ON.                     |
| 1720 | 4605 | 5600 | JMP I           | STATSV | /RETURN NOW.   |
| 1721 |      | /    |                 |        |  |
| 1722 |      | /    |                 |        |  |
| 1723 |      | /    |                 |        |  |
| 1724 | 4606 | 0006 | STL6, 6         |        |  |
| 1725 | 4607 | 4576 | RKSTTP, RKSTAT  |        | /ACROSS PAGE POINTER.                                  |
| 1726 |      | /    |                 |        |  |
| 1727 |      | /    |                 |        |  |
| 1730 |      | /    |                 |        |  |
| 1731 |      | /    |                 |        |  |
| 1732 |      | /    |                 |        |  |
| 1733 |      | /    |                 |        |  |
| 1734 |      | /    |                 |        |  |
| 1735 |      | /    |                 |        |  |
| 1736 |      | /    |                 |        |  |
| 1737 |      | /    |                 |        |  |
| 1740 |      | /    |                 |        |  |
| 1741 |      | /    |                 |        |  |
| 1742 |      | /    |                 |        |  |
| 1743 |      | /    |                 |        |  |
| 1744 |      | /    |                 |        |  |

```

1745      /
1746      /
1747      /
1750      /
1751      /
1752      /
1753      /
1754      /
1755      /
1756      /
1757      /
1760      /
1761      /
1762      4610 0240 BININP, LEFT+240
1763      4611 0140 TOP=220
1764      /
1765      /
1766      ASMIFN RF08!CARD /DO WE WANT STANDARD MESSAGE???
1767      ASMSKP 12 /NOPE. DONT ASSEMBLE I.T IN...
1770      /
1771      /
1772      TEXT "FINPUT DEVICE:
1773
1774
1775      HH --- HIGH SPEED READER
1776      HL --- LINC TAPE
1777      HT --- TELETYPE\"
2000      /
2001      /
2002      /
2003      /
2004      ASMIF2 RF08+1&CARD /DO WE WANT THE CARD READER BUT NO DISK?
2005      ASMSKP 13 /YES. DONT ASSEMBLE THAT IN.
2006      /
2007      /
2008      TEXT "FINPUT DEVICE:
2009
2010
2011
2012
2013      C --- CARD READER
2014      HH --- HIGH SPEED READER
2015      L --- LINC TAPE
2016      T --- TELETYPE\"
2017      /
2020      /
2021      /
2022      /
2023      /
2024      /
2025      /
2026      ASMIF2 CARD+1&RF08 /ASSEMBLE FOLLOWING MESSAGE IF DISK BUT NO CARD READER.
2027      ASMSKP 13 /SKIP OVER IT.
2030      /
2031      /
2032      TEXT "FINPUT DEVICE:
2033
2034
2035      HH --- HIGH SPEED READER
2036      L --- LINC TAPE
2037      R --- RF08,RK08 DISK
2040      T --- TELETYPE\"
2041      /
2042      /
2043      /

```

```

2044      /
2045      /
2046      /
2047      /
2050      ASMIF2 RF08&CARD /DO WE WANT BOTH DISK AND CARD?
2051      ASMSKP 14 /NOPE. NOT THIS MESSAGE.
2052      /
2053      /
2054      4612 0611
2054      4613 1620
2054      4614 2524
2054      4615 4004
2054      4616 0526
2054      4617 1103
2054      TEXT "F INPUT DEVICE:
2055      4620 0572
2055      4621 4340
2056      4622 4340
2057      4623 4303
2057      4624 4055
2057      4625 5555
2057      4626 4003
2057      4627 0122
2057      4630 0440
2057      4631 2205
2057      4632 0104
2057      C --- CARD READER
2060      4633 0522
2060      4634 4310
2060      4635 1040
2060      4636 5555
2060      4637 5540
2060      4640 1011
2060      4641 0710
2060      4642 4023
2060      4643 2005
2060      4644 0504
2060      4645 4022
2060      4646 0501
2060      4647 0405
2060      HH --- HIGH SPEED READER
2061      4650 2243
2061      4651 1440
2061      4652 5555
2061      4653 5540
2061      4654 1411
2061      4655 1603
2061      4656 4024
2061      4657 0120
2061      L --- LINC TAPE
2062      4660 0543
2062      4661 2240
2062      4662 5555
2062      4663 5540
2062      4664 2206
2062      4665 6070
2062      4666 5422
2062      4667 1360
2062      4670 7040
2062      4671 0411
2062      R --- RF08,RK08 DISK

```



|      |      |        |  |
|------|------|--------|--|
| 2063 | 4672 | 2313   |  |
| 2063 | 4673 | 4324   |  |
| 2063 | 4674 | 4055   |  |
| 2063 | 4675 | 5555   |  |
| 2063 | 4676 | 4024   |  |
| 2063 | 4677 | 0514   |  |
| 2063 | 4700 | 0524   |  |
| 2063 | 4701 | 3120   |  |
| 2063 | 4702 | 0534   |  |
| 2063 |      |        | T ---  |
|      |      |        | TELETYPE\"   |
| 2064 |      |        | /  |
| 2065 |      |        | /  |
| 2066 |      |        | /  |
| 2067 |      |        | /  |
| 2070 |      |        | /  |
| 2071 |      |        | /  |
| 2072 |      |        | /  |
| 2073 |      |        | /  |
| 2074 |      |        | /  |
| 2075 |      |        | /  |
| 2076 |      |        | /  |
| 2077 |      |        | /  |
| 2100 |      |        | /  |
| 2101 |      |        | /  |
| 2102 |      |        | /  |
| 2103 |      |        | /  |
| 2104 |      |        | /  |
| 2105 |      |        | /  |
| 2106 |      |        | /  |
| 2107 |      |        | /  |
| 2110 |      |        | /  |
| 2111 |      |        | /  |
| 2112 |      |        | /  |
| 2113 |      |        | /  |
| 2114 | 4703 | 0240   | BINOUT, LEFT+240   |
| 2115 | 4704 | 0140   | TOP=200  |
| 2116 |      |        | /  |
| 2117 |      |        | /  |
| 2120 |      |        | /  |
| 2121 |      | ASMIFN | CARD!RF08 /DO WE WANT STANDARD OUTPUT DEVICES.             |
| 2122 |      | ASMSKP | 12 /NOPE. DONT ASSEMBLE THEM IN.                           |
| 2123 |      |        | /  |
| 2124 |      |        | /  |
| 2125 |      | TEXT   | "FOUTPUT DEVICE:   |
| 2126 |      |        |  |
| 2127 |      |        |  |
| 2130 |      | HH     | == HIGH SPEED PUNCH  |
| 2131 |      | HL     | == LINC TAPE   |
| 2132 |      | HT     | == TELETYPE\"  |
| 2133 |      |        | /  |
| 2134 |      |        | /  |
| 2135 |      |        | /  |
| 2136 |      |        | /  |
| 2137 |      | ASMIFZ | RF08+18CARD /DO WE WANT THE LINE PRINTER ROUTINES LOADED?? |
| 2140 |      | ASMSKP | 13 /DO NOT DISPLAY LINE PRINTER MESSAGES.                  |
| 2141 |      |        | /  |
| 2142 |      |        | /  |
| 2143 |      | TEXT   | "FOUTPUT DEVICE:   |
| 2144 |      |        |  |
| 2145 |      |        |  |
| 2146 |      | HH     | == HIGH SPEED PUNCH  |
| 2147 |      | L      | == LINC TAPE   |

```

2150      P --- LINE PRINTER
2151      T --- TELETYPE\
2152      /
2153      /
2154      /
2155      /
2156      /
2157      /
2160      /
2161      /
2162      ASMIFZ CARD+1&RF08 /DO WE WANT DISK BUT NOT PRINTER?
2163      ASMSKP 13 /NOPE. SKIP OVER MESSAGE.
2164      /
2165      /
2166      TEXT "FOUTPUT DEVICE:
2167
2170
2171      HH --- HIGH SPEED PUNCH
2172      L --- LINC TAPE
2173      R --- RF08,RK08 DISK
2174      T --- TELETYPE\
2175      /
2176      /
2177      /
2200      /
2201      /
2202      /
2203      ASMIFZ CARD&RF08 /DO WE WANT BOTH PRINTER AND DISK?
2204      ASKSKP 14 /NOPE. DONT ASSEMBLE IN THIS MESSAGE
2205      /
2206      /
2207      4705 0617
2207      4706 2524
2207      4707 2025
2207      4710 2440
2207      4711 0405
2207      4712 2611
2207      4713 0305
2207      TEXT "FOUTPUT DEVICE:
2210      4714 7243
2210
2211      4715 4043
2211
2212      4716 4043
2212      4717 1010
2212      4720 4055
2212      4721 5555
2212      4722 4010
2212      4723 1107
2212      4724 1040
2212      4725 2320
2212      4726 0505
2212      4727 0440
2212      4730 2025
2212      4731 1603
2212      HH --- HIGH SPEED PUNCH
2213      4732 1043
2213      4733 1440
2213      4734 5555
2213      4735 5540
2213      4736 1411
2213      4737 1603
2213      4740 4024

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|      |      |      |                      |
|------|------|------|----------------------|
| 2213 | 4741 | 0120 |                      |
| 2213 |      |      | L --- LINC TAPE      |
| 2214 | 4742 | 0543 |                      |
| 2214 | 4743 | 2040 |                      |
| 2214 | 4744 | 5555 |                      |
| 2214 | 4745 | 5540 |                      |
| 2214 | 4746 | 1411 |                      |
| 2214 | 4747 | 1605 |                      |
| 2214 | 4750 | 4020 |                      |
| 2214 | 4751 | 2211 |                      |
| 2214 | 4752 | 1624 |                      |
| 2214 |      |      | P --- LINE PRINTER   |
| 2215 | 4753 | 0522 |                      |
| 2215 | 4754 | 4322 |                      |
| 2215 | 4755 | 4055 |                      |
| 2215 | 4756 | 5555 |                      |
| 2215 | 4757 | 4022 |                      |
| 2215 | 4760 | 0660 |                      |
| 2215 | 4761 | 7054 |                      |
| 2215 | 4762 | 2213 |                      |
| 2215 | 4763 | 6070 |                      |
| 2215 | 4764 | 4004 |                      |
| 2215 | 4765 | 1123 |                      |
| 2215 |      |      | R --- RF08,RK08 DISK |
| 2216 | 4766 | 1343 |                      |
| 2216 | 4767 | 2440 |                      |
| 2216 | 4770 | 5555 |                      |
| 2216 | 4771 | 5540 |                      |
| 2216 | 4772 | 2405 |                      |
| 2216 | 4773 | 1405 |                      |
| 2216 | 4774 | 2431 |                      |
| 2216 | 4775 | 2005 |                      |
| 2216 | 4776 | 3400 |                      |
| 2216 |      |      | T ---                |
|      |      |      | TELETYPE\            |
| 2217 |      |      | /                    |
| 2220 |      |      | /                    |
| 2221 |      |      | /                    |
| 2222 |      |      | /                    |
| 2223 |      |      | /                    |
| 2224 |      |      | /                    |
| 2225 |      |      | /                    |
| 2226 |      |      | /                    |
| 2227 |      |      | /                    |
| 2230 |      |      | /                    |
| 2231 |      |      | /                    |
| 2232 |      |      | /                    |
| 2233 |      |      | EJECT                |
| -    |      |      |                      |

```
2234      /
2235      /
2236      /
2237      /
2240      /
2241      /
2242      /
2243      /      CHAIN TO THE NEXT PART OF PIP
2244      /
2245      /
2246      /
2247      /
2250      /
2251      CHAIN  "PIP4"
```

0000  
0001  
0002  
-

•20

PMODE  
EJECT

0003  
0004  
0005  
0006  
0007  
0010  
0011  
0012  
0013  
0014  
0015  
0016  
0017  
0020  
0021  
0022  
0023  
0024  
0025  
0026  
0027  
0030  
0031  
0032  
0033  
0034  
0035  
0036  
0037  
0040  
0041  
0042  
-

/

P I P 4

THIS IS THE FOURTH PART OF PIP

EJECT

```

0043      /
0044      /
0045      *5000
0046      /
0047      /
0050      /
0051      /
0052      /
0053      /
0054      /
0055      /
0056      /
0057      /
0060      /
0061      /
0062      ASCINP=BININP      /SAME DEFINITIONS AS BINARY(FOR NOW , ANYWAY)
0063      ASCOUT=BINOUT
0064      ASCLST=BINLST
0065      ASCLTO=ASCLST
0066      /
0067      /
0070      /
0071      /
0072      /
0073      /
0074      5000 4562 ASCII, DECODE      /GET THE INPUT REQUEST NOW
0075      5001 4610 ASCINP      /DISPLAY THE POSSIBLE INPUT DEVICES.
0076      5002 3102 DCA BFLAG1
0077      5003 3104 DCA BFLAG2
0100      5004 3140 DCA BCOUNT
0101      5005 3130 DCA ORIGIN
0102      5006 3135 DCA BFIELD
0103      5007 3103 DCA BOLOP
0104      5010 3073 DCA CNTRLZ
0105      ASMIFZ CARD-1      /INITIALIE VARIOUS POINTERS AND COUNTS.
0106      5011 4616 JMS I ACRCHK      /ASSEMBLE NEXT CHECK IF CARD READER DEISRED.
0107      5012 4573 SEARCH      /SEE IF ITS A "C" FOR THE CARD READER
0110      5013 4377 ASCLST      /SEARCH THE LIST FOR A GOOD OPTION
0111      5014 5174 ASCGO      /LIST OF GOOD CHARS
0112      5015 5200 JMP ASCII      /WHERE TO GO FOR THEM
0113      /      /NO LEGAL REQUEST THERE.
0114      /
0115      ASMIFZ CARD-1      /ASSEMBLE IN CARD POINTER IF CARD READER DESIRED.
0116      5016 3561 ACRCHK, CRDLTT      /CARD READER POINTER.
0117      /
0120      /
0121      5017 2102 ASCH1, ISZ BFLAG1      //SET FOR HIGH SPPEED READER
0122      5020 2102 ASCT1, ISZ BFLAG1      /SET FO R ITY
0123      5021 5233 JMP APART2      /GO AND GET OUTPUT
0124      /
0125      /
0126      ASMIFZ RF08      /DO WE HAVE THE DISK?
0127      ASMSKP 2      /NOPE. SKIP OVER DISK INSTRUCTIONS
0130      5022 4577 ASRF8, DISC      /SET UP FOR DISK OPERATION
0131      5023 7410 SKP
0132      5024 4402 ASCT, TAPE      /SET FOR TAPE OPERATION
0133      5025 7201 PONE      /SET TO INPUT AND SOURCE
0134      5026 3123 DCA FWHAT
0135      5027 7201 PONE
0136      5030 3121 DCA FTYPE
0137      5031 4563 DIRECT
0140      5032 4404 HPUSH      /LOOKUP UP NAME NOW.
0141      /      /AND SAVE IT AWAY
-

```

# S O U R C E H A N D L E R

|      |      |      |         |         |        |   |
|------|------|------|---------|---------|--------|---|
| 0142 | 5033 | 4562 | APART2, | DECODE  |        | /GET THE OUTPUT DEVICE                          |
| 0143 | 5034 | 4703 |         | ASCOUT  |        |   |
| 0144 | 5035 | 4573 |         | SEARCH  |        | /LOOKUP UP REPLY                                |
| 0145 | 5036 | 4377 |         | ASCLT0  |        |   |
| 0146 | 5037 | 5577 |         | ASCG02  |        | /GO TO WHERE IT POINTS                          |
| 0147 |      |      |         | AS MIFZ | CARD-1 | /IS LINE PRINTER THERE???                       |
| 0150 | 5040 | 4642 | JMS I   | ASCLPT  |        | /CHECK IF "P" TYPED AND INITIALIZE LINEPRINTER. |
| 0151 | 5041 | 5233 | JMP     | APART2  |        | /NOT A GOOD REPLY                               |
| 0152 |      |      | /       |         |        |   |
| 0153 |      |      | /       |         |        |   |
| 0154 |      |      |         | AS MIFZ | CARD-1 | /ASSEMBLE IN PRINTER POINTER?                   |
| 0155 | 5042 | 5765 | ASCLPT, | LPT2    |        | /PRINTER TO CHECKER AND INITIALIZER.            |
| 0156 |      |      | /       |         |        |   |
| 0157 |      |      | /       |         |        |   |
| 0160 | 5043 | 2104 | ASCH2,  | ISZ     | BFLAG2 | /SET TO HIGH OUTPUT                             |
| 0161 | 5044 | 2104 | ASCT2,  | ISZ     | BFLAG2 | /SET TO TTY OUTPUT                              |
| 0162 |      |      | /       |         |        |   |
| 0163 |      |      |         | AS MIFZ | RFJH   | /DO WE HAVE THE DISK ROUTINES?                  |
| 0164 |      |      |         | ASMSKP  | 2      | /NOPE. SKIP NEXT TWO INSTRUCTIONS.              |
| 0165 | 5045 | 4577 | ASRF82, | DISC    |        | /SET UP FOR DISK OPERATION                      |
| 0166 | 5046 | 7410 |         | SKP     |        |   |
| 0167 | 5047 | 4402 | ASCTT,  | TAPE    |        | /SET FOR A TAPE OPERATION, SHOULD THERE BE ONE. |
| 0170 | 5050 | 7201 |         | PONE    |        |   |
| 0171 | 5051 | 3121 |         | DCA     | FTYPE  | /SET FOR SOURCE MOOD.                           |
| 0172 | 5052 | 7240 |         | MONE    |        |   |
| 0173 | 5053 | 1102 |         | TAD     | BFLAG1 |   |
| 0174 | 5054 | 1104 |         | TAD     | BFLAG2 | /IS IT MASS STORAGE TO MASS STORAGE.            |
| 0175 | 5055 | 7710 |         | SPA CLA |        | /????   |
| 0176 | 5056 | 5406 |         | FILEC   |        | /YEP. DO TRANSFER NOW.                          |
| 0177 | 5057 | 4566 |         | PUSH    |        | /SAVE OUTPUT FILE INFORMATION                   |
| 0200 | 5060 | 4403 |         | HPOP    |        | /BRING IN INPUT FILE INFORMATION                |
| 0201 | 5061 | 4762 | JMS I   | ASET1   |        | /SET UP SEQUENTIAL TAPE INPUT                   |
| 0202 | 5062 | 1104 |         | TAD     | BFLAG2 | /ARE WE GOING TO TAPE                           |
| 0203 | 5063 | 7640 |         | SZA CLA |        |   |
| 0204 | 5064 | 4405 |         | LEADER  |        | /NO, WE BETTER GENERATE SOME LEADER NOW.        |
| 0205 |      |      | /       |         |        |   |
| 0206 |      |      | /       |         |        |   |
| 0207 |      |      | /       |         |        |   |
| 0210 |      |      | /       |         |        |   |
| 0211 | 5065 | 6016 | ANTAPE, | 6016    |        | /INITIALIZE THE HIGH SPEED READER               |
| 0212 | 5066 | 6032 |         | 6032    |        | /AND CLEAR THE TTY FLAG AND THE AC.             |
| 0213 |      |      | /       |         |        |   |
| 0214 |      |      | /       |         |        |   |
| 0215 | 5067 | 1102 | ALOOP,  | TAD     | BFLAG1 | /GET THE INPUT DEVICE POINTER.                  |
| 0216 | 5070 | 7640 |         | SZA CLA |        | /FROM A FILE?                                   |
| 0217 | 5071 | 5274 |         | JMP     | ,+3    | /NOPE.  |
| 0220 | 5072 | 4763 |         | JMS I   | AAGET  | /YEP. GET A CHAR NOW                            |
| 0221 | 5073 | 7410 |         | SKP     |        | /SKP OVER BELOW GET.                            |
| 0222 | 5074 | 4574 |         | AUXIN   |        | /IF NOT FROM A FILE, GET THE CHAR NOW. AND L177 |
| 0223 | 5075 | 0142 |         | AND     | L177   | /MAKE INTO A GOOD ASCII CHARACTER.              |
| 0224 | 5076 | 1026 |         | TAD     | L200   | /WITH PARITY BIT ON.                            |
| 0225 | 5077 | 3121 |         | DCA     | FTYPE  | /AND STORE AWAY.                                |
| 0226 | 5100 | 1073 |         | TAD     | CNTRLZ | /WAS A CONTROL Z TYPED?                         |
| 0227 | 5101 | 7640 |         | SZA CLA |        |   |
| 0230 | 5102 | 5313 |         | JMP     | AEND   | /YEP. DO END                                    |
| 0231 | 5103 | 4573 |         | SEARCH  |        | /SEARCH FOR POSSIBLE SPECIAL CHARACTERS.        |
| 0232 | 5104 | 5165 |         | AC1     |        |   |
| 0233 | 5105 | 5370 |         | AG1     |        |   |
| 0234 | 5106 | 4764 | JMS I   | AALIMC  |        | /CHECK TO SEE IF IT S IN 240-337 LIMITS.        |
| 0235 | 5107 | 5312 |         | JMP     | ABAD   | /IT ISN'T IGNORE IT.                            |
| 0236 |      |      | /       |         |        |   |
| 0237 | 5110 | 4350 | AOK,    | JMS     | APUTIT | /CHAR OK AS IS. OUTPUTTIT.                      |
| 0240 | 5111 | 5267 |         | JMP     | ALOOP  | /GO BACK AND GET ANOTHER ONE.                   |



```

0241      /
0242      /
0243      5112 5267 AHAD,  JMP      ALOOP      /RAD CHAR. GET NEXT ONE
0244      /
0245      /
0246      /
0247      5113 1122 AEND,   TAD      BFLAG1    /IS IT MASS INPUT?
0248      5114 7650      SZA  CLA
0249      5115 5322      JMP      AEND2
0250      5116 4476      JMS  I  PNOFF
0251      5117 5265      JMP      ANTAPE
0252      5120 4334 AEND2,  JMS      ACRH
0253      5121 1372      TAD      AABLAH
0254      5122 3121      DCA      FTYPE
0255      5123 4350      JMS      APUTIT
0256      5124 7240      MONE
0257      5125 3121      DCA      FTYPE
0258      5126 4350      JMS      APUTIT
0259      5127 4334      JMS      ACRH
0260      5130 4425      LEADER
0261      5131 5552      PIP
0262      /
0263      /
0264      /
0265      /
0266      /
0267      /
0268      /
0269      /
0270      /
0271      /
0272      5132 4334 ACR,    JMS      ACRH
0273      5133 5267      JMP      ALOOP
0274      /
0275      /
0276      5134 0000 ACRH,  0
0277      5135 1365      TAD      AC1
0278      5136 3121      DCA      FTYPE
0279      5137 4350      JMS      APUTIT
0280      5140 1144      TAD      M212
0281      5141 7041      CIA
0282      5142 3121      DCA      FTYPE
0283      5143 4350      JMS      APUTIT
0284      5144 7240      MONE
0285      5145 3121      DCA      FTYPE
0286      5146 4350      JMS      APUTIT
0287      5147 5734      JMP  I  ACRH
0288      /
0289      /
0290      /
0291      /
0292      5150 0000 APUTIT, 0
0293      5151 1104      TAD      BFLAG2
0294      5152 7640      SZA  CLA
0295      5153 5356      JMP      .+3
0296      5154 4761      JMS  I  AAPUT
0297      5155 5750      JMP  I  APUTIT
0298      5156 1121      TAD      FTYPE
0299      5157 4575      AUXOUT
0300      5160 5750      JMP  I  APUTIT
0301      /
0302      /
0303      /
0304      /
0305      5161 5200 AAPUT,  AAPUT
0306      5162 4514 ASETI,  SETI
0307      5163 5403 AAGET,  AAAGET
0308      5164 1253 AALIMC, GGLIMC
0309      /
0310      /
0311      /
0312      /
0313      /
0314      /
0315      /
0316      /
0317      /
0318      /
0319      /
0320      /
0321      /
0322      /
0323      /
0324      /
0325      /
0326      /
0327      /
0328      /
0329      /
0330      /
0331      /
0332      /
0333      /
0334      /
0335      /
0336      /
0337      /

```

|      |      |      |         |          |   |
|------|------|------|---------|----------|---|
| 0340 | 5165 | 0215 | AC1,    | 215      |   |
| 0341 | 5166 | 0300 |         | 300      |   |
| 0342 | 5167 | 0337 |         | 337      |   |
| 0343 | 5170 | 0243 |         | 243      |   |
| 0344 |      |      | ASMIFZ  | TERMC-44 | /IS 44 A LEGAL CHAR???                  |
| 0345 |      |      |         | 244      | /NO. ASSEMBLE INTO THE EXCEPTION TABLE. |
| 0346 | 5171 | 0247 |         | 247      |   |
| 0347 | 5172 | 0232 | AABLAH, | 232      |   |
| 0350 | 5173 | 4211 |         | 4211     | /END OF THE LIST                        |
| 0351 |      |      | /       |          |   |
| 0352 |      |      | /       |          |   |
| 0353 |      |      | /       |          |   |
| 0354 |      |      | /       |          |   |
| 0355 |      |      | /       |          |   |
| 0356 | 5174 | 5017 | ASCGO,  | ASCH1    |   |
| 0357 | 5175 | 5024 |         | ASCT     |   |
| 0360 |      |      | ASMIFN  | RF08     | /DO WE HAVE DISK?                       |
| 0361 | 5176 | 5022 | ASRF8   |          | /YEP. ASSEMBLE IN BRANCH                |
| 0362 | 5177 | 5020 | ASCT1   |          |   |
| 0363 |      |      | /       |          |   |
| 0364 |      |      | /       |          |   |
| 0365 |      |      | /       |          |   |
| 0366 |      |      | /       |          |   |
| 0367 |      |      | /       |          |   |
| 0370 |      |      | /       |          |   |
| 0371 |      |      | /       |          |   |
| 0372 |      |      | /       |          |   |
| 0373 |      |      | /       |          |   |
| 0374 |      |      | /       |          |   |
| 0375 |      |      | /       |          |   |
| 0376 |      |      |         | EJECT    |   |

-

```

0377      /
0400      /
0401      /
0402      /
0403      /
0404      /
0405      /
0406      /
0407      /
0410      /
0411      5200 0000 AAPUT, 0
0412      5201 4573 SEARCH
0413      5202 5165 AC1
0414      5203 5470 AG2
0415      5204 1121 TAD FTYPE
0416      5205 1146 TAD M240
0417      5206 7710 SPA CLA
0420      5207 5220 JMP AP
0421      5210 1121 TAD FTYPE
0422      5211 1147 TAD M340
0423      5212 7700 SMA CLA
0424      5213 5220 JMP AP
0425      5214 1121 TAD FTYPE
0426      5215 0024 AND L77
0427      5216 4253 AAA1, JMS AAAAAA
0430      5217 5600 JMP I AAPUT
0431      /
0432      /
0433      /
0434      5220 5600 AP, JMP I AAPUT
0435      /
0436      5221 1365 APCR, TAD AL43
0437      5222 5216 JMP AAA1
0440      /
0441      5223 1060 AATAB, TAD L7
0442      5224 1364 TAD AL40
0443      5225 5216 JMP AAA1
0444      /
0445      /
0446      /
0447      AAEND, ASMIFN TERMC-44
0450      ASMSKP 2
0451      PFOUR
0452      TAD AL40
0453      5226 4253 JMS AAAAAA
0454      5227 1354 TAD AAAORG
0455      5230 7040 CMA
0456      5231 0103 AND BOLDP
0457      5232 7650 SNA CLA
0460      5233 5236 JMP .+3
0461      5234 4253 JMS AAAAAA
0462      5235 5227 JMP .-6
0463      5236 1353 TAD AAUNIT
0464      5237 3120 DCA FUNIT
0465      5240 1363 TAD AABLOCK
0466      5241 3122 DCA FBNUM
0467      5242 1363 TAD AABLOCK
0470      5243 7041 CIA
0471      5244 1356 TAD AAOUTB
0472      5245 3117 DCA FSIZE
0473      5246 7201 PONE
0474      5247 3121 DCA FTYPE
0475      5250 4404 HPUSH

```

THIS PAGE OVERLAPS A LITTLE FROM PREVIOUS PAGE.

MORE OF THE ASCII HANDLER.

/CHECK FOR A SPECIAL CONTROL CHAR.  
/SAME LIST IS OK.

/GET THE CHAR

/TOO SMALL. NOG A REGULAR CHAR.

/TOO BIG. IT S NO GOOD.  
/GET THE CHAR AGAIN  
/JUST THE LOW ORDER BITS.  
/PLACE THE CHAR IN THE BUFFER.  
/AND EXIT

/BAD CHAR.

/CR FOUND. PLACE A "43" IN THE BUFFER  
/STICK IN BUFFER

/CONVERT TAB TO A 47

/IS 44 THE END OF FILE CHARACTER?  
/NO. ZERO IS. IGNORE NEXT TWO STATEMENTS.  
/DOLLAR SIGN IS THE END OF BUFFER CRAP  
/MAKE IT INTO A DOLLAR SIGN  
/AND PLACE EOF CHAR IN THE BUFFER.  
/SEE IF BUFFER IS WRITTEN OUT.

/BY CHECKING ENDING ADDRESS

/BUFFER IS CLEAR AND WRITTEN OUT.  
/BUFFER STILL IN USE. ADD 1 CHAR AND SEE IF DUMPED.  
/NOT DUMPED. WAIT.  
/GET THE UNIT  
/AND FLACE AWAY  
/GET THE FIRST BLOCK  
/AND STASH AWAY.  
/GET THE FIRST BLOCK

/ADD IN NEXT BLOCK TO GET SIZE.  
/AND STASH AWAY.  
/SET FOR SEOURCE

/NOW STASH THIS AWAY FOR FILEC TO USE.

|      |      |      |           |          |  |
|------|------|------|-----------|----------|--|
| 0476 | 5251 | 4565 | POP       |          | /RESET THE OUTPUT UNIT CONFIGURATION.                  |
| 0477 | 5252 | 5426 | FILEC     |          | /AND DO A DIRECTORY TYPE COPY.                         |
| 0500 |      |      | /         |          |  |
| 0501 |      |      | /         |          |  |
| 0502 |      |      | /         |          |  |
| 0503 |      |      | /         |          |  |
| 0504 |      |      | /         |          |  |
| 0505 | 5253 | 0000 | AAAAAA, / |          | /PLACES HALF A CHAR IN THE BUFFER.                     |
| 0506 | 5254 | 3132 | DCA       | BTEMP1   |  |
| 0507 | 5255 | 1135 | TAD       | BFIELD   | /FIRST TIME THROUGH?                                   |
| 0510 | 5256 | 7642 | SZA       | CLA      |  |
| 0511 | 5257 | 5303 | JMP       | AAA      | /NOPE. IGNORE SETUP                                    |
| 0512 | 5258 | 2135 | ISZ       | BFIELD   | /SET SWITCH  |
| 0513 | 5261 | 1363 | TAD       | AABLOCK  | /GET START OF BINARY CRAP.                             |
| 0514 | 5262 | 3356 | DCA       | AAOUTB   | /AND SET UP WRITE BLOCK.                               |
| 0515 | 5263 | 1354 | TAD       | AAAORG   | /GET THE LOCATION OF START                             |
| 0516 | 5264 | 3143 | DCA       | BOLDP    | /AND SAVE IN THE ADDRESS                               |
| 0517 | 5265 | 7240 | MONE      |          | /SET THE SWITCH TO PLACE IN LEFT HALF OF WORD.         |
| 0520 | 5266 | 3132 | DCA       | ORIGIN   |  |
| 0521 | 5267 | 1064 | TAD       | M400     | /SET THE WORD COUNTER                                  |
| 0522 | 5270 | 3134 | DCA       | BTEMP3   | /TO 400 WORDS TO GO IN BUFFER.                         |
| 0523 |      |      | /         |          |  |
| 0524 |      |      | /         |          |  |
| 0525 |      |      | ASMIFN    | STAR20-1 | /DO WE WANT TO STICK IN A "20" AT BEGINNING OF FILE??? |
| 0526 |      |      | ASMSP     | 13       | /NOPE. DON'T ASSEMBLE THEM IN.                         |
| 0527 |      |      | /         |          |  |
| 0530 | 5271 | 1361 | TAD       | A5262    | /GET A "20" AND PLACE IT                               |
| 0531 | 5272 | 3503 | DCA       | I BOLDP  |  |
| 0532 | 5273 | 2103 | ISZ       | BOLDP    | /IN FIRST TWO WORDS OF FILE.                           |
| 0533 | 5274 | 1362 | TAD       | A6043    |  |
| 0534 | 5275 | 3503 | DCA       | I BOLDP  |  |
| 0535 | 5276 | 2103 | ISZ       | BOLDP    | /BOP UP THE IN POINTER.                                |
| 0536 | 5277 | 2134 | ISZ       | BTEMP3   |  |
| 0537 | 5300 | 2134 | ISZ       | BTEMP3   | /INCREMENT THE BUFFER COUNTER BY 2.                    |
| 0540 |      |      | /         |          |  |
| 0541 | 5301 | 1365 | TAD       | AL43     | /TELL BUFFERS WE JUST PUT A "43" IN IT.                |
| 0542 | 5302 | 3366 | DCA       | ALASTC   | /BY PLACING IT IN LAST CAR INSERTED.                   |
| 0543 |      |      | /         |          |  |
| 0544 | 5303 | 1132 | AAA,      | TAD      | BTEMP1   |
| 0545 | 5304 | 7041 |           | CIA      |  |
| 0546 | 5305 | 1365 |           | TAD      | AL43   |
| 0547 | 5306 | 7640 |           | SZA      | CLA  |
| 0550 | 5307 | 5315 |           | JMP      | .*6  |
| 0551 | 5310 | 1366 |           | TAD      | ALASTC   |
| 0552 | 5311 | 7041 |           | CIA      |  |
| 0553 | 5312 | 1365 |           | TAD      | AL43   |
| 0554 | 5313 | 7650 |           | SNA      | CLA  |
| 0555 | 5314 | 5653 |           | JMP      | I  |
| 0556 | 5315 | 1132 |           | TAD      | BTEMP1   |
| 0557 | 5316 | 3366 |           | DCA      | ALASTC   |
| 0560 | 5317 | 2130 |           | ISZ      | ORIGIN   |
| 0561 | 5320 | 5330 |           | JMP      | AAA2   |
| 0562 | 5321 | 1132 |           | TAD      | BTEMP1   |
| 0563 | 5322 | 7006 |           | RTL      |  |
| 0564 | 5323 | 7006 |           | RTL      |  |
| 0565 | 5324 | 7006 |           | RTL      |  |
| 0566 | 5325 | 0053 |           | AND      | L7700  |
| 0567 | 5326 | 3503 |           | DCA      | I BOLDP  |
| 0570 | 5327 | 5653 |           | JMP      | I  |
| 0571 |      |      | /         |          |  |
| 0572 | 5330 | 7240 | AAA2,     | MONE     |  |
| 0573 | 5331 | 3132 |           | DCA      | ORIGIN   |
| 0574 | 5332 | 1132 |           | TAD      | BTEMP1   |
|      |      |      |           |          | /PLACE IN RIGHT HALF OF WORD.                          |

|      |      |      |              |           |  |
|------|------|------|--------------|-----------|--|
| 0575 | 5333 | 0024 | AND          | L77       |  |
| 0576 | 5334 | 1923 | TAD I        | BOLDP     |  |
| 0577 | 5335 | 3523 | DCA I        | BOLDP     | /AND PLACE IT AWAY.                                |
| 0600 | 5336 | 2123 | ISZ          | BOLDP     | /THAT ALL  |
| 0601 | 5337 | 7000 | NOP          |           | /THIS CAN SKIP IF BUFFER=7400                      |
| 0602 | 5340 | 2134 | ISZ          | BTEMP3    | /INCREMENT THE COUNTER. ALL DONE WITH THIS BUFFER? |
| 0603 | 5341 | 5653 | JMP I        | AAAAAA    | /NOPE. BUFFER STILL GOOD.                          |
| 0604 | 5342 | 1354 | TAD          | AAAORG    | /BUFFER FULL. RESET POINTER.                       |
| 0605 | 5343 | 3103 | DCA          | BOLDP     |  |
| 0606 | 5344 | 1064 | TAD          | M400      |  |
| 0607 | 5345 | 3134 | DCA          | BTEMP3    | /RESET COUNTER.                                    |
| 0610 | 5346 | 1356 | TAD          | AAOUTB    | /SET THE OUTPUT BLOCK                              |
| 0611 | 5347 | 1367 | TAD          | AALIM     | /WILL IT EXCEED WORKING AREA?                      |
| 0612 | 5350 | 7650 | SNA          | CLA       |  |
| 0613 | 5351 | 4567 | NO           |           | /YEP. IT WILL. GIVE ERROR MESSAGE.                 |
| 0614 | 5352 | 4572 | WRITE        |           | /WRITE OUT FULL BUFFER.                            |
| 0615 | 5353 | 0001 | AAUNIT,      | SYSBIN    |  |
| 0616 | 5354 | 6400 | AAAORG,      | BUFFER    |  |
| 0617 | 5355 | 0001 | 1            |           |  |
| 0620 | 5356 | 0000 | AAOUTB,      | 2         |  |
| 0621 | 5357 | 2356 | ISZ          | AAOUTB    | /BOP UP BLOCK                                      |
| 0622 | 5360 | 5653 | JMP I        | AAAAAA    | /AND EXIT  |
| 0623 |      |      | /            |           |  |
| 0624 |      |      | DSYS4=AAUNIT |           |  |
| 0625 |      |      | /            |           |  |
| 0626 |      |      | /            |           |  |
| 0627 |      |      | ASMIFN       | STAR20-1  | /DO WE WANT THE "020" LITERALS IN???               |
| 0630 |      |      | ASMSKP       | 3         | /NOPE. DON'T PUT THEM IN.                          |
| 0631 |      |      | /            |           |  |
| 0632 | 5361 | 5262 | A5262,       | 5262      |  |
| 0633 | 5362 | 6043 | A6043,       | 6043      |  |
| 0634 |      |      | /            |           |  |
| 0635 | 5363 | 0370 | AABLOCK,     | SYSBBLOCK |  |
| 0636 | 5364 | 0040 | AL40,        | 40        |  |
| 0637 | 5365 | 0043 | AL43,        | 43        |  |
| 0640 | 5366 | 0000 | ALASTC,      | 0         |  |
| 0641 | 5367 | 7310 | AALIM,       | -SYSWT-1  | /MAXIMUM SIZE OF THE WORKSPACE.                    |
| 0642 |      |      | /            |           |  |
| 0643 |      |      | /            |           |  |
| 0644 |      |      | /            |           |  |
| 0645 |      |      | /            |           |  |
| 0646 |      |      | /            |           |  |
| 0647 |      |      | /            |           |  |
| 0650 |      |      | /            |           |  |
| 0651 |      |      | /            |           |  |
| 0652 |      |      | /            |           |  |
| 0653 |      |      | /            |           |  |
| 0654 |      |      | /            |           |  |
| 0655 |      |      | /            |           |  |
| 0656 | 5370 | 5132 | AG1,         | ACR       |  |
| 0657 | 5371 | 5112 | ABAD         |           |  |
| 0660 | 5372 | 5112 | ABAD         |           |  |
| 0661 | 5373 | 5112 | ABAD         |           |  |
| 0662 |      |      | ASMIF2       | TERMC-44  | /SHOULD WE IGNORE DOLLAR SIGNS?                    |
| 0663 |      |      | ABAD         |           | /YEP. ASSEMBLE IN THE POINTER                      |
| 0664 | 5374 | 5112 | ABAD         |           |  |
| 0665 | 5375 | 5113 | AEND         |           |  |
| 0666 | 5376 | 5110 | AGK          |           |  |
| 0667 |      |      | /            |           |  |
| 0670 |      |      | /            |           |  |
| 0671 |      |      | /            |           |  |
| 0672 |      |      | /            |           |  |
| 0673 |      |      | /            |           |  |

```

0674      /
0675      /
0676      5377 5043 AS CG02, AS CH2
0677      5400 5047 ASCTT
0700      ASMI FN RF08 /DISK THERE?
0701      5401 5045 ASRF82 /YEP.
0702      5402 5044 ASCT2
0703      /
0704      /
0705      /
0706      /
0707      /
0710      /
0711      /
0712      /
0713      /
0714      /
0715      /
0716      /
0717      /
0720      /
0721      /
0722      /
0723      /
0724      EJECT
-

```

```

0725 / MORE ASCII HANDLERS
0726 /
0727 / WHICH OVERLAP SOME MORE FROM THE PREVIOUS PAGE.
0730 /
0731 /
0732 /
0733 /
0734 /
0735 /
0736 /
0737 /
0740 /
0741 /
0742 /
0743 /
0744 /
0745 /
0746 /
0747 5403 0000 AAAGET, 0 /MAIN BUFFER GETTER ROUTINE
0750 5404 7200 CLA /
0751 5405 1135 TAD BFIELD /
0752 5406 7640 SZA CLA /ARE WE ACTIVE?
0753 5407 9215 JMP AAGET2 /YEP. IGNORE NEXT.
0754 5410 2135 ISZ BFIELD /SET STATUS SWITCH
0755 /
0756 / ASMIFN STAR20-1 /DO WE WANT TO SKIP PAST A "*20"
0757 / ASMSKP 3 /NOPE. NO *20 SKIP.
0760 /
0761 5411 4644 JMS I AGET1 /GET A WORD
0762 5412 4644 JMS I AGET1 /GET TWO WORDS (BYPASS "*20")
0763 /
0764 5413 7240 MONE /
0765 5414 3130 DCA ORIGIN / LEFT HALF OF WORD CHAR.
0766 /
0767 5415 2130 AAGET2, ISZ ORIGIN /WHICH HALF?
0770 5416 5224 JMP AAGET3 /RIGHT HALF.
0771 5417 4644 JMS I AGET1 /GET A WORD.
0772 5420 3103 DCA BOLDP /AND STASH AWAY
0773 5421 1103 TAD BOLDP /RETURN WITH ITS VALUE.
0774 5422 4550 ROR6 /SHIFT LEFT HALF OF AC TO THE RIGHT HALF
0775 5423 5227 JMP AAGET4 /GO DOWN AND GET REST.
0776 /
0777 5424 7240 AAGET3, MONE /
1000 5425 3130 DCA ORIGIN /RESET RIGHT-LEFT SWITHC.
1001 5426 1103 TAD BOLDP /GET THE RIGHT CHAR
1002 5427 0024 AAGET4, AND L77 /JUST GET 6 BITS
1003 5430 3121 DCA FTYPE /STORE AWAY.
1004 5431 4573 SEARCH /CHECK FOR A NO NO.
1005 5432 5460 AAGL1
1006 5433 5464 AAG01
1007 5434 1121 TAD FTYPE
1010 5435 1056 TAD M40 /FIGURE OUT CORRECT BIT 4
1011 5436 7510 SPA />40. A 20 0 TYPE CHARACTER
1012 5437 1025 TAD L100 /<40 A 300 TXPE CHAR.
1013 5440 1224 TAD AAGET3 /ADD IN 240 (ACTUALLY /240)
1014 5441 0243 AND A377 /JUST MAKE IT8 BITS
1015 5442 5603 JMP I AAAGET /AND EXIT.
1016 /
1017 /
1020 5443 0377 A377, 377
1021 5444 4525 AGET1, GET1
1022 /
1023 /

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```

1024      5445 1143 AACR,   TAD      M215      /CARRIGE RETURN
1025      5446 7041      CIA
1026      5447 5603      JMP I   AAAGET
1027      /
1030      5450 7201 AAATAB, PONE
1031      5451 1054      TAD      L10
1032      5452 1026      TAD      L200
1033      5453 5603      JMP I   AAAGET
1034      /
1035      5454 7305 AAAEND, PTWO
1036      5455 1061      TAD      L30
1037      5456 1026      TAD      L200
1040      5457 5603      JMP I   AAAGET      /EXIT WITH A CONTROL Z IN THE AC.
1041      /
1042      /
1043      /
1044      /
1045      /
1046      5460 0000 AAGL1, 0
1047      ASMIFZ   TERMC-44      /IS 44 THE END OF FILE CHAR?
1050      44      /YEP. ON 44 GO TO THE CONTROL Z GENERATOR.
1051      5461 0043      43
1052      5462 0047      47
1053      5463 4037      4037      /END OF LIST
1054      /
1055      AAG01, ASMIFN   TERMC-44
1056      5464 5454 AAAEND      /00 IS THE END OF FILE CHARACTER.
1057      ASMIFZ   TERMC-44
1060      AAAGET+1      /44 (DOLLAR SIGN) IS THE TERMINATOR.
1061      ASMIFZ   TERMC-44      /IS DOLLAR SIGN LEGAL?
1062      AAAEND      /NOPE, IT S THE END OF FILE CHAR.
1063      5465 5445 AACR
1064      5466 5450 AAATAB
1065      5467 5404 AAAGET+1
1066      /
1067      5470 5221 AG2,   APCR
1070      5471 5220      AP
1071      5472 5220      AP
1072      ASMIFZ   TERMC-44      /ASMEBLE IGNORE CHARACTER IF DOLLA.R IS THE END OF FILE CAHR...
1073      AP
1074      5473 5220      AP
1075      5474 5220      AP
1076      5475 5226 AAEND
1077      5476 5223 AATAB
1100      /
1101      /
1102      /
1103      /
1104      /
1105      /
1106      /
1107      /
1110      /
1111      /
1112      /
1113      /
1114      5477 0200 ABDIS, LEFT+200
1115      5500 0100 TOP=240
1116      ASMIFN   REMAKE!RF08      /DO WE WANT REMAKE OPTION OR THE DISK?
1117      ASMSKP   5      /YEP. SKIP NEXT MESSAGE.
1120      TEXT     "FAUXILIARY OPTIONS:
1121
1122

```



```

1123      HC --- COPY SPECIFIED BLOCKS
1124      HD --- DUPLICATE TAPE 2 ONTO 1\
1125      /
1126      /
1127      /
1130      /
1131      /
1132      ASMIFZ  REMAKE          /DO WE WANT REMAKE MESSAGE?
1133      ASMSKP  6              /YEP. PUT IN MESSAGE.
1134      TEXT    "FAUXILIARY OPTIONS:
1135
1136
1137      HC --- COPY SPECIFIED BLOCKS
1140      HD --- DUPLICATE TAPE 0 ONTO 1
1141      HR --- REFORMAT FILE\
1142      /
1143      /
1144      /
1145      /
1146      /
1147      /
1150      /
1151      /
1152      /
1153      /
1154      ASMIFZ  RF08          /DO WE WANT THE RF08 OPTIONS.
1155      ASKSKP  6              /NOPE. DON T PUT IN THE MESSAGE.
1156      /
1157      /
1160      5501  0601
1160      5502  2530
1160      5503  1114
1160      5504  1101
1160      5505  2231
1160      5506  4017
1160      5507  2024
1160      5510  1117
1160      5511  1623
1160
1160      TEXT    "FAUXILIARY OPTIONS:
1161      5512  7243
1161
1162      5513  4043
1162
1163      5514  4043
1163      5515  0340
1163      5516  5555
1163      5517  5540
1163      5520  0317
1163      5521  2031
1163      5522  4023
1163      5523  2005
1163      5524  0311
1163      5525  0611
1163      5526  0504
1163      5527  4002
1163      5530  1417
1163      5531  0313
1163
1163      C --- COPY SPECIFIED BLOCKS
1164      5532  2343
1164      5533  0440
1164      5534  5555
1164      5535  5540
1164      5536  0425

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|      |      |      |                               |
|------|------|------|-------------------------------|
| 1164 | 5537 | 2014 |                               |
| 1164 | 5540 | 1103 |                               |
| 1164 | 5541 | 0124 |                               |
| 1164 | 5542 | 0540 |                               |
| 1164 | 5543 | 2401 |                               |
| 1164 | 5544 | 2005 |                               |
| 1164 | 5545 | 4060 |                               |
| 1164 | 5546 | 4017 |                               |
| 1164 | 5547 | 1624 |                               |
| 1164 | 5550 | 1740 |                               |
| 1164 |      |      | D --- DUPLICATE TAPE 0 ONTO 1 |
| 1165 | 5551 | 6143 |                               |
| 1165 | 5552 | 2340 |                               |
| 1165 | 5553 | 5555 |                               |
| 1165 | 5554 | 5540 |                               |
| 1165 | 5555 | 0317 |                               |
| 1165 | 5556 | 2031 |                               |
| 1165 | 5557 | 4023 |                               |
| 1165 | 5560 | 3123 |                               |
| 1165 | 5561 | 2405 |                               |
| 1165 |      |      | S --- COPY SYSTEM             |
| 1166 | 5562 | 1543 |                               |
| 1166 | 5563 | 2540 |                               |
| 1166 | 5564 | 5555 |                               |
| 1166 | 5565 | 5540 |                               |
| 1166 | 5566 | 0317 |                               |
| 1166 | 5567 | 2031 |                               |
| 1166 | 5570 | 4025 |                               |
| 1166 | 5571 | 1611 |                               |
| 1166 | 5572 | 2434 |                               |
| 1166 |      |      | U -                           |
|      |      |      | -- COPY UNIT\                 |
| 1167 |      |      | /                             |
| 1170 |      |      | /                             |
| 1171 |      |      | /                             |
| 1172 |      |      | /                             |
| 1173 |      |      | /                             |
| 1174 |      |      | /                             |
| 1175 |      |      | /                             |
| 1176 |      |      | /                             |
| 1177 |      |      | /                             |
| 1200 |      |      | /                             |
| 1201 |      |      | /                             |
| 1202 |      |      | /                             |
| 1203 |      |      | /                             |
| 1204 |      |      | /                             |
| 1205 |      |      | EJECT                         |
| -    |      |      |                               |

```

1206 /
1207 /
1210 /
1211 /
1212 /
1213 *5600
1214 /
1215 /
1216 /
1217 /
1220 /
1221 /
1222 /
1223 /
1224 /
1225 /
1226 /
1227 /
1230 /
1231 /
1232 CINPUT=ASCINP /SAME AS SOURCE INPUT(FOR NOW)
1233 COUTPUT=ASCOUT /SAME AS SOURCE FOR NOW.
1234 /
1235 /
1236 /
1237 5600 4562 ABSOL, DECODE /GIVE THE MESSAGE AND WAIT FOR A REPLY.
1240 5601 5477 ABDIS /ABSOLUTE DISPLAY CRAP.
1241 5602 1120 TAD FUNIT /GET THE NUMBER OF ADDITION AL UNITS.
1242 5603 0060 AND L7 /ONLY 3 GOOD BITS ALLOWED.
1243 5604 7450 SNA /WAS IT ZERO?
1244 5605 7201 PONE /YEP. MAKE IT INTO A ONE.
1245 5606 7041 CIA /COMP TO SET UP COUNT
1246 5607 3365 DCA ABSTMP /AND STORE AWAY IN COUNTER SET.
1247 5610 4573 SEARCH /LOOKUP THE RELYP.
1250 5611 5755 ABL1
1251 5612 5761 ABG1
1252 5613 5200 JMP ABSOL /ILLEGAL REPLY.
1253 /
1254 /
1255 /
1256 /
1257 5614 3103 DUP, DCA INUNIT /COPIES 0 TO 1 OR MORE TAPES.
1260 5615 3102 DCA INBLOCK /SET UP INPUT UNIT AND BLOCK TO 0, OUTPUT BLOCK TO 0.
1261 5616 3104 DCA OUTBLOCK
1262 5617 7201 PONE
1263 5620 3105 DCA OUTUNIT
1264 5621 7332 CLA CLL CML RTR /SET THE OUTPUT UNIT TO 1
1265 5622 7010 RAR /2000
1266 5623 3117 DCA FSIZE /1000. A 1000 BLOCK COPY.
1267 5624 1365 TAD ABSTMP /SET UP SIZE.
1270 5625 3106 DCA OUTNUM /RECALL THE NUMBER OF COPIES TO MAKE
1271 5626 4554 COPY /AND SAVE IN THE COPIER PARAMETER TABLE.
1272 5627 5552 PIP /THEN GO DO COPY.
1273 / /RETURN TO PIP WHEN DONE
1274 /
1275 /
1276 5630 4562 ACOPY, DECODE /GET THE INPUT DEVICE AND BLOCK NUMBER.
1277 5631 4610 CINPUT /FROM THE COPY INPUT CRAP.
1300 5632 4573 SEARCH /LOOK-UP REPLY.
1301 5633 4577 ACPL1 /INPUT LIST
1302 5634 5674 ACPG1 /GO TO LIST
1303 5635 5230 JMP ACOPY /NO GOOD REPLY FOUND
1304 /

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1305 /
1306 /
1307 /
1310 /
1311 /
1312 ASMIFZ RF08 /DISK?
1313 ASKSKP 2 /NO DISK HANDLERS THERE.
1314 5636 4577 ACOPR, DISC /SET UP FOR DISK
1315 5637 7410 SKP
1316 5640 4402 ACOPT, TAPE /SET UP FOR TAPE
1317 5641 1120 TAD FUNIT
1320 5642 3103 DCA INUNIT /SET UP THE INPUT UNIT NOW.
1321 5643 4566 PUSH /SAV THE SIZE BECUASE DECODE MIGH ZAP IT.
1322 5644 4304 JMS AGETN /GET THE STARTING BLOCK NUMBER.
1323 5645 5230 JMP ACOFY /NOT ALL LEGAL NUMBERS.
1324 5646 1331 TAD AGNUM /GET THE BLOCK NUMBER
1325 5647 3102 DCA INBLOCK /AND SAVE AWAY.
1326 5650 4562 ACOFY2, DECODE /GET THE OUTPUT DEVICE
1327 5651 4703 COUTPUT /DISPLAY CHOICES
1330 5652 4573 SEARCH /LOOK UP THE REPLY
1331 5653 4377 ACPL1
1332 5654 5700 ACPG2
1333 5655 5250 JMP ACOFY2 /NOT A LEGAL REPLY
1334 /
1335 /
1336 /
1337 /
1340 /
1341 ASMIFZ RF08 /DISK?
1342 ASMSKP 2 /NOPE.
1343 5656 4577 ACOPR2, DISC /SET UP FOR DISK
1344 5657 7410 SKP
1345 5660 4402 ACOPT2, TAPE /SET UP FOR TAPE
1346 5661 1120 TAD FUNIT /GET THE CORRECT OUTPUT UNIT
1347 5662 3105 DCA OUTUNIT /AND STASH AWAY.
1350 5663 4304 JMS AGETN /GET THE BLOCK NUMBER.
1351 5664 5250 JMP ACOFY2 /NOT A LEGAL NUMBER
1352 5665 1331 TAD AGNUM /GET THE STARTING BLOCK
1353 5666 3104 DCA OUTBLOCK /AND STASH AWAY.
1354 5667 4565 POP /RESTORE THE SIZE OF THE COPY.
1355 5670 1365 TAD ABSTMP /RECALL THE NUMBER OF COPIES TO MAKE
1356 5671 3106 DCA OUTNUM /AND SAVE IN THE COPY PARAMETER
1357 5672 4554 COPY /AND DO IT.
1360 5673 5552 PIP /RETURN TO PIP WHEN DONE.
1361 /
1362 /
1363 /
1364 /
1365 /
1366 /
1367 /
1370 /
1371 ACPL1=BINLST
1372 /
1373 5674 5630 ACPG1, ACOFY /ILLEGAL REPLY
1374 5675 5640 ACOPT /LINC TAPE
1375 ASMIFN RF08 /DISK?
1376 5676 5636 ACOPR /YES, DISK
1377 5677 5630 ACOFY /ILLEGAL
1400 /
1401 /
1402 /
1403 5700 5650 ACPG2, ACOFY2 /ILLEGAL

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|      |      |      |               |        |   |
|------|------|------|---------------|--------|---|
| 1474 | 5721 | 5060 | ACOPT2        |        | /LINE TAPE  |
| 1475 |      |      | ASMIFN        | RF26   | /DISK?  |
| 1476 | 5722 | 5056 | ACOPR2        |        | /YES.   |
| 1477 | 5723 | 5056 | ACOPY2        |        | /ILLEGAL  |
| 1478 |      |      | /             |        |   |
| 1479 |      |      | /             |        |   |
| 1480 | 5724 | 5060 | AGETN         | A      | /CONVERTS FRAME INTO A NUMBER (IF NOT THERE RETURNS TO .+1, OTHERWISE TO .+2) |
| 1481 | 5725 | 6141 | LINE          |        | /GO OVER MODE   |
| 1482 |      |      | LMODE         |        |   |
| 1483 | 1726 | 0051 | SET I         | 1      | /SET 1 TO POINT TO FRAME BLOCK.   |
| 1484 | 1727 | 6123 | FRAME+6       | 000-1  |   |
| 1485 | 1728 | 0642 | LDF           | 2      | /IN OF 2  |
| 1486 | 1729 | 5731 | STC           | AGNUM  | /ZAP OUT PRESENT NUMBER.  |
| 1487 | 1730 | 0062 | SET I         | 2      | /SET 2 TO A COUNT.  |
| 1488 | 1731 | 7772 | -5            |        |   |
| 1489 | 1732 | 1321 | AALoop, LCH I | 1      | /GET THE NEXT CHAR FROM FRAME.  |
| 1490 | 1733 | 1420 | SHD I         |        | /IS IT A 7?   |
| 1491 | 1734 | 7777 | 7777          |        | /WHICH IS END OF NUMBER?  |
| 1492 | 1735 | 7750 | JMP           | AALL   | /YEP. EXIT.   |
| 1493 | 1736 | 1122 | ADA I         |        | /IS IT TOO SMALL?   |
| 1494 | 1737 | 7720 | -57           |        | /(BELOW 62)   |
| 1495 | 1738 | 0451 | APD           |        |   |
| 1496 | 1739 | 7752 | JMP           | AALL   | /YEP. BAD CHAR.   |
| 1497 | 1740 | 1120 | ADA I         |        | /IS IT TOO LARGE  |
| 1498 | 1741 | 7760 | -11           |        | /(ABOVE 72)   |
| 1499 | 1742 | 0471 | APD I         |        |   |
| 1500 | 1743 | 7752 | JMP           | AALL   | /YEP. BAD CHAR.   |
| 1501 | 1744 | 1020 | LDA I         |        | /GET OLD TOTAL  |
| 1502 | 1745 | 0000 | AGNUM,        |        |   |
| 1503 | 1746 | 0243 | ROL           | 3      | /MULTIPLY BY 12   |
| 1504 | 1747 | 1560 | BCL I         |        |   |
| 1505 | 1748 | 0027 | 7             |        |   |
| 1506 | 1749 | 5731 | STC           | AGNUM  | /MULTIPLY DONE  |
| 1507 | 1750 | 1321 | LCH I         | 1      | /REGET THE NUMBER   |
| 1508 | 1751 | 1120 | ADA I         |        |   |
| 1509 | 1752 | 7717 | -60           |        | /CHOP OFF CHAR BITS   |
| 1510 | 1753 | 3731 | ADD           | AGNUM  | /ADD IN OLD TOTAL.  |
| 1511 | 1754 | 0470 | AZE I         |        | /IF NOT ZERO THEN SKP   |
| 1512 | 1755 | 0011 | CLR           |        | /IF ZERO, ZERO AC TO 0000, IN CASE IT WAS 7777, WHICH IS EVIL IN 6 MODE.      |
| 1513 | 1756 | 5731 | STC           | AGNUM  | /STASH AWAY SOMEPLACE OTHER.  |
| 1514 | 1757 | 0222 | XSK I         | 2      | /BOP UP COUNT   |
| 1515 | 1758 | 7714 | JMP           | AALoop | /MORE TO GO.  |
| 1516 | 1759 | 7752 | JMP           | AALL   | /TOO MANY DIGITS. NUM TOO LARGE.  |
| 1517 |      |      | /             |        |   |
| 1518 |      |      | /             |        |   |
| 1519 |      |      | /             |        |   |
| 1520 |      |      | /             |        |   |
| 1521 | 1750 | 0002 | ALD,          | PDP    | /GET INTO PMODE   |
| 1522 |      |      |               | PMODE  |   |
| 1523 | 5751 | 2304 | ISZ           | AGETN  | /GO TO GOOD RETURN  |
| 1524 |      |      | /             |        |   |
| 1525 |      |      | LMODE         |        |   |
| 1526 |      |      | /             |        |   |
| 1527 | 1752 | 0002 | AALL,         | PDP    | /GET INTO R MODE  |
| 1528 |      |      |               | PMODE  | /WE RE BACK IN PMODE NOW.   |
| 1529 | 5753 | 7200 | CLA           |        | /CLEAR THE AC   |
| 1530 | 5754 | 5704 | JMP I         | AGETN  | /AND EXIT.  |
| 1531 |      |      | /             |        |   |
| 1532 |      |      | /             |        |   |
| 1533 |      |      | /             |        |   |
| 1534 |      |      | /             |        |   |
| 1535 |      |      | /             |        |   |
| 1536 |      |      | /             |        |   |

```

1503      /
1504      /
1505      /
1506      /
1507      /
1510      /
1511      5755 0303 ABL1, 303
1512      ASMIFN REMAKE /REMAKE OPTION INCLUDED???
1513      322 /YEP. PLACE CHECK CHAR IN LIST.
1514      ASMIFZ RF08 /DISK THERE
1515      ASMSKP 2 /NOPE. DO NOT OUT IN S AND U
1516      5756 0323 323
1517      5757 0325 325
1520      5760 4304 4304
1521      /
1522      5761 5630 ABG1, ACOPY
1523      ASMIFN REMAKE /REMAKE OPTION???
1524      KONVRT /YEP. PLACE IN POINTER OPTION.
1525      ASMIFZ RF08 /HOW ABOUT THE POINTERS?
1526      ASKSKP 2 /NOT THERE
1527      5762 7400 AASYSC
1530      5763 7405 AAUNTC
1531      5764 5614 DUP
1532      /
1533      /
1534      /
1535      /
1536      /
1537      /
1540      /
1541      /
1542      /
1543      /
1544      /
1545      /
1546      /
1547      /
1550      /
1551      ASMIFN CARD-1 /DO WE WANT LINE PRINTRTER.???
1552      ASMSKP 30 /NOPE. DONT ASEMBLE IT N.
1553      /
1554      /
1555      /
1556      5765 0000 LPT2, 0 /LINE PRINTER CHECKER AND INITIALIZER,
1557      5766 1121 TAD FTTYPE /GET THE OUTPUT DEVICE
1560      5767 1376 TAD LPM320 /IS IT A "P"
1561      5770 7640 SZA CLA /?
1562      5771 5765 JMP I LPT2 /NOPE. RETURN TO CHECK SOME MORE.
1563      5772 4777 JMS I LLPEJ2 /YEP. GIVE TWO EJECTS TO GET THINGS GOING.
1564      5773 2104 ISZ BFLAG2 /PREPARE TO SET OUTPUT FLAG TO 3
1565      5774 5775 JMP I .+1 /RETURN AND ADD TWO MORE TO BFLAG2
1566      5775 5043 ASCH2 /HIGH SPEED PUNCH SETTER
1567      /
1570      5776 7460 LPM320, -320 /"P"
1571      5777 6323 LLPEJ2, LPEJ2 /POINTER TO EJECTOR ROUTINE.
1572      /
1573      /
1574      /
1575      /
1576      /
1577      /
1600      /
1601      /
-

```

|      |             |                                 |
|------|-------------|---------------------------------|
| 1602 | /           |                                 |
| 1603 | /           |                                 |
| 1604 | /           |                                 |
| 1605 | /           |                                 |
| 1606 |             | ASMIFZ CARD                     |
| 1607 | ABSTMP, 0   | /L.P. THERE?                    |
| 1610 | /           | /NOPE. DEFINE THE TEMPORARY NOW |
| 1611 | /           |                                 |
| 1612 |             | ASMIFN CARD                     |
| 1613 | ABSTMP=LPT2 | /L.P. THERE?                    |
| 1614 | /           | /YEP. USE ENTRY AS THE TEMP     |
| 1615 | /           |                                 |
| 1616 | /           |                                 |
| 1617 | /           |                                 |
| 1620 | /           |                                 |
| 1621 | /           |                                 |
| 1622 | /           |                                 |
| 1623 | /           |                                 |
| 1624 | /           |                                 |
| 1625 | /           |                                 |
| 1626 | /           |                                 |
| 1627 | /           |                                 |
| 1630 | /           |                                 |
| 1631 | /           |                                 |
| 1632 | /           |                                 |
| 1633 | /           |                                 |
| 1634 | /           |                                 |
| 1635 | /           |                                 |
| 1636 |             | EJECT                           |

-

```
1637 /
1640 /
1641 /
1642 /
1643 /
1644 /
1645 /
1646 / GET THE LAST PART OF PIP
1647 /
1650 /
1651 /
1652 CHAIN "PIP5"
```



0000  
0001  
0002  
-

\*20

POST  
EJECT

0003  
0004  
0005  
0006  
0007  
0010  
0011  
0012  
0013  
0014  
0015  
0016  
0017  
0020  
0021  
0022  
0023  
0024  
0025  
-

/

P I P 5

EJECT

```

0026      /
0027      /
0030      /
0031      /
0032      /
0033      ASMIFN CARD-1      /DO WE WANT THE WARD READER ROUTINE IN THERE?????
0034      ASMSKP 2237-1415  /NOPE. SKIP PAST THE MESS.
0035      /
0036      /
0037      /
0040      *6000
0041      /
0042      /
0043      /
0044      /
0045      /
0046      /      CARD READER AND LINE PRINTER ROUTINES.
0047      /
0050      /
0051      6000 0000 CDFLAG, 0000      /FOR JUMPS IN LINC MODE.
0052      /      /ALSO USED AS THE CARD MOVING INDICATOR. THIS CAN BE DONE BECAUSE WE WILL ON
      LY EXECUTE
0053      /
0054      /      /JUMPS IN LINC MODE WHEN THIS FLAG IS NON-ZERO[CARD MOVING]
      OVE THIS TO      /IF YOU HAVE ANY DOUBTS ABOUT WHETHER THIS IS TRUE AFTER YOU MAKE CHANGES, M
0055      /
0056      /
0057      /
0060      /
0061      /
0062      /
0063      /
0064      /
0065      /
0066      /      LMODE
0067      /      /DEFINE SYMBOLS IN LMODE IN CASE OF ADDRESSING ERRORS WHILE ASSEMBLING
0070      0001 0000 CDCUNT, 0000
0071      0002 0000 CPOINT, 0000
0072      0003 0000 CUSWT, 0000
0073      0004 0000 CDCONT, 0000
0074      /
0075      /
0076      /
0077      /
0100      /
0101      /      PMODE
0102      /      /TELL IT WE RE BACK IN PMODE NOW.
0103      /
0104      /
0105      /
0106      RCSF=6631
0107      RCHA=6632
0110      RCRB=6634
0111      RCSD=6671
0112      RCSE=6672
0113      RCRD=6674
0114      /
0115      /
0116      /
0117      /
0120      /
0121      /
0122      /

```

|      |      |      |                 |         |   |
|------|------|------|-----------------|---------|---|
| 0123 | 6005 | 0000 | CDINIT, 0       |         | /INITIALIZE THE CARD READER.                      |
| 0124 | 6006 | 3202 | DCA             | CDFLAG  | /CLEAR THE CARD MOVING FLAG.                      |
| 0125 | 6007 | 3133 | DCA             | BTEMP2  | /CLEAR THE CARD IN BUFFER FLAG.                   |
| 0126 | 6010 | 1136 | TAD             | BOLDO   | /GET THE FIRST COLUMN TO BE LOOKED AT.            |
| 0127 | 6011 | 1131 | TAD             | DATA    | /GET THE LAST COLUMN TO BE DONE.                  |
| 0130 | 6012 | 7650 | SNA CLA         |         | /BOTH ZERO?                                       |
| 0131 | 6013 | 1224 | TAD             | COL110  | /GET A 72 IN THE AC.                              |
| 0132 | 6014 | 7442 | SZA             |         | /IS IT ZERO???                                    |
| 0133 | 6015 | 3131 | DCA             | DATA    | /NOPE. STORE THE 72 IN THE LAST COLUMN SCAN.      |
| 0134 | 6016 | 1131 | TAD             | DATA    | /GET THE LAST COLUMN AGAIN                        |
| 0135 | 6017 | 7242 | CMA             |         | /NEGATE IT  |
| 0136 | 6022 | 1136 | TAD             | BOLDO   | /IS THE FIRST > LAST???                           |
| 0137 | 6021 | 7700 | SNA CLA         |         | /?  |
| 0140 | 6022 | 4567 | NO              |         | /IT ISN. I GIVE ERROR MESSAGE.                    |
| 0141 | 6023 | 5605 | JMP I           | CDINIT  | /INITIALIZATION FINISHED.                         |
| 0142 |      |      | /               |         |   |
| 0143 |      |      | /               |         |   |
| 0144 | 6024 | 0110 | CDL110, 110     |         | /72 DECIMAL                                       |
| 0145 |      |      | /               |         |   |
| 0146 |      |      | /               |         |   |
| 0147 |      |      | /               |         |   |
| 0150 | 6025 | 0000 | CDREAD, 0       |         | /READS A CHAR FROM THE CARD READER.               |
| 0151 | 6026 | 7346 | MTHREE          |         | /DO WE WANT CARD READER INPUT???                  |
| 0152 | 6027 | 1102 | TAD             | BFLAG1  | /CHECK THE INPUT FLAG.                            |
| 0153 | 6030 | 7650 | SNA CLA         |         |   |
| 0154 | 6031 | 5234 | JMP             | ..+3    | /YEP. WE WANT CARD READER INPUT                   |
| 0155 | 6032 | 2225 | ISZ             | CDREAD  | /NOPE. JUMP THIRRD RETURN ADDRESS.                |
| 0156 | 6033 | 5314 | JMP             | CDISZ   | /ISZ CDREAD AGAIN BEFORE EXITING.                 |
| 0157 | 6034 | 1133 | TAD             | BTEMP2  | /IS THE CARD ALREADY IN THE BUFFER???             |
| 0160 | 6035 | 7640 | SZA CLA         |         |   |
| 0161 | 6036 | 5303 | JMP             | CDNEXT  | /YEP. IT IS. FETCH A CHAR FROM IT.                |
| 0162 | 6037 | 1200 | TAD             | CDFLAG  | /IS THE CARD MOVING???                            |
| 0163 | 6040 | 7640 | COL240, SZA CLA |         | /TESTA NO LITTERAL                                |
| 0164 | 6041 | 5254 | JMP             | CDGONG  | /ITS MOVING. CHECK TO SEE IF COLUMN IS READY.     |
| 0165 | 6042 | 6672 | RCSE            |         | /START THE CARD GOING NOW...                      |
| 0166 | 6043 | 5277 | JMP             | CNOTR   | /ITS NOT READY. WAIT AWILE BY RETURN TO USER.     |
| 0167 | 6044 | 2200 | ISZ             | CDFLAG  | /SET THE SWITCH TO SHOW THE CARD MOVING.          |
| 0170 | 6045 | 4564 | MOVE            |         | /ZERO OUT THE CARD BUFFER.                        |
| 0171 | 6046 | 6163 | CDBUF-1         |         | /CONTAINS A 0000                                  |
| 0172 | 6047 | 6164 | CDBUF           |         |   |
| 0173 | 6050 | 0050 | 50              |         | /80=120=50*2                                      |
| 0174 | 6051 | 1356 | TAD             | CDPOINT | /SET CPOINT TO POINT TO FIRST CHAR OF CARD BUFFER |
| 0175 | 6052 | 3202 | DCA             | CPOINT  |   |
| 0176 | 6053 | 3140 | DCA             | BCOUNT  | /ZERO OUT THE CURRENT COLUMN COUNTER.             |
| 0177 |      |      | /               |         |   |
| 0200 | 6054 | 6631 | CDGONG, RCSF    |         | /IS THERE A CHAR THERE???                         |
| 0201 | 6055 | 5277 | JMP             | CNOTR   | /NOPE. WAIT.                                      |
| 0202 | 6056 | 6632 | RCRA            |         | /READ IT IN ALPHA NUMERIC TYPE                    |
| 0203 | 6057 | 3065 | DCA             | TEMP    | /STORE IN TEMP                                    |
| 0204 | 6060 | 2140 | ISZ             | BCOUNT  | /BOP UP COLUMN COUNTER BY 1.                      |
| 0205 | 6061 | 1140 | TAD             | BCOUNT  | /GET CURRENT POSITION.                            |
| 0206 | 6062 | 7161 | CLL CML CMA IAC |         | /13 BIT NEGATE                                    |
| 0207 | 6063 | 1136 | TAD             | BOLDO   | /IS IT BELOW THE STARTING COLUMN???               |
| 0210 | 6064 | 7660 | SNL SZA CLA     |         |   |
| 0211 | 6065 | 5277 | JMP             | CNOTR   | /YEP. IGNORE IT.                                  |
| 0212 | 6066 | 1131 | TAD             | DATA    | /GET THE UPPER LIMIT                              |
| 0213 | 6067 | 7161 | CLL CML CMA IAC |         | /13 BIT NEGATE.                                   |
| 0214 | 6070 | 1140 | TAD             | BCOUNT  | /HAVE WE GONE TOO FAR???                          |
| 0215 | 6071 | 7660 | SNL SZA CLA     |         |   |
| 0216 | 6072 | 5277 | JMP             | CNOTR   | /YEP. IGNORE THE CHAR.                            |
| 0217 | 6073 | 1065 | TAD             | TEMP    | /ALL IS WELL. RETRIEVE THE HCHARACTER.            |
| 0220 | 6074 | 6141 | LINC            |         | /NOW GO OVER TO THE LINC SIDE.                    |
| 0221 |      |      | LMODE           |         |   |

|      |      |      |                |        |  |
|------|------|------|----------------|--------|--|
| 0222 | 0075 | 1362 | SIH I          | CPOINT | /SAVE THE HALFWORD IN THE BUFFER.  |
| 0223 | 0076 | 0002 | PDP            |        |  |
| 0224 |      |      | PMODE          |        | /AND BACK INTO 8 MODE.   |
| 0225 |      |      | /              |        |  |
| 0226 | 6077 | 7200 | CNOIR,         | CLA    | /THE AC IS DEFINITELY NOT ZERO WHEN IT COMES HERE.                           |
| 0227 | 6100 | 6671 | RCSD           |        | /END OF CARD REACHED???  |
| 0230 | 6101 | 5625 | JMP I          | CDREAD | /NOPE, RETURN TO USER TO WAIT AWHILE.  |
| 0231 | 6102 | 5322 | JMP            | CDONE  | /GO CONVERT STORED CARD.   |
| 0232 |      |      | /              |        |  |
| 0233 |      |      | /              |        |  |
| 0234 |      |      | /              |        |  |
| 0235 | 6103 | 6141 | CDNEXT,        | LINC   | /CARD IN BUFFER AND CONVERTED.   |
| 0236 |      |      |                | LMODE  | /LETS GET A CHAR.  |
| 0237 | 0104 | 1322 | CDNXT2,        | LDH I  | /GET A CHAR,[COMES HERE IN LINC MODE SOMETIMES]                              |
| 0240 | 0105 | 0022 | PDP            | CPOINT | /GET OVER INTO A DECENT MODE   |
| 0241 |      |      | PMODE          |        |  |
| 0242 | 6106 | 7450 | SNA            |        | /IS IT THROUGH(00=CR)  |
| 0243 | 6107 | 5316 | JMP            | CDEOC  | /YEP, END OF CARD.   |
| 0244 | 6110 | 1056 | TAD            | M40    | /NOT DONE. SEE WHICH WAY TO ADD.   |
| 0245 | 6111 | 7510 | SPA            |        |  |
| 0246 | 6112 | 1025 | TAD            | L100   | /01-37=301-337   |
| 0247 | 6113 | 1240 | TAD            | CDL240 | /40-77=240-277   |
| 0250 |      |      | /              |        |  |
| 0251 | 6114 | 2225 | CDISZ,         | ISZ    | /AND EXIT TO SECOND LOCATION   |
| 0252 | 6115 | 5625 | JMP I          | CDREAD | /OR THIRD IF CARD READER NOT CHOSEN DEVICE.                                  |
| 0253 |      |      | /              |        |  |
| 0254 |      |      | /              |        |  |
| 0255 |      |      | /              |        |  |
| 0256 | 6116 | 3133 | CDEOC,         | DCA    | /TURN OF THE CARD IN FLAG  |
| 0257 | 6117 | 3200 |                | DCA    | /ALSO TURN OFF THE CARD MOVING FLAG.   |
| 0260 | 6120 | 1361 | TAD            | CDL215 | /GET A CR IN THE AC  |
| 0261 | 6121 | 5314 | JMP            | CDISZ  | /AND EXIT.   |
| 0262 |      |      | /              |        |  |
| 0263 |      |      | /              |        |  |
| 0264 |      |      | /              |        |  |
| 0265 |      |      | /              |        |  |
| 0266 |      |      | /              |        |  |
| 0267 | 6122 | 2133 | CDONE,         | ISZ    | /TURN ON THE CARD IN BUFFER FLAG   |
| 0270 |      |      |                | BTEMP2 | /WE CAN LEAVE ON THE CARD MOVING FLAG FOR NOW BECAUSE THE CARD MOVING FLAG I |
|      |      |      | S TESTED FIRST |        |  |
| 0271 | 6123 | 6674 | RCRD           |        | /TURN OFF THE CARD DONE FLAG.  |
| 0272 | 6124 | 6141 | LINC           |        | /AND GO OVER TO LMODE  |
| 0273 |      |      | LMODE          |        |  |
| 0274 | 0125 | 0061 | SET I          | CDUNT  | /SET COUNTER TO 80 COLUMNS   |
| 0275 | 0126 | 7657 | -120           |        |  |
| 0276 | 0127 | 0062 | SET I          | CPOINT | /SET POINTER TO POINT TO LAST COLUMN+1                                       |
| 0277 | 0130 | 0234 | CDBUF+50       |        |  |
| 0300 | 0131 | 4003 | STC            | CDSWT  | /TELL THE BLANK SCANNER TO DELETE BLANKS.                                    |
| 0301 |      |      | /              |        |  |
| 0302 | 0132 | 1020 | CDLOOP,        | LDA I  |  |
| 0303 | 0133 | 3777 | -4000          |        | /BACKSPACE 1 CHAR IN CARD BUFEER.  |
| 0304 | 0134 | 1140 | ADM            |        |  |
| 0305 | 0135 | 0002 | CPOINT         |        |  |
| 0306 | 0136 | 1302 | LDH            | CPOINT | /GET THE CHAR  |
| 0307 | 0137 | 0203 | XSK            | CDSWT  | /TEST THE BLANKS SCAN SWITCH.  |
| 0310 | 0140 | 0450 | AZE            |        | /STILL SCANNING. CHECK FOR BLANK.  |
| 0311 | 0141 | 0456 | SKP            |        | /NOT BLANK OR NOT SCANNING.  |
| 0312 | 0142 | 6152 | JMP            | CDFUNT | /IT BLANK. IGNORE IT.  |
| 0313 | 0143 | 0301 | ROR            | 1      | /ROTATE RIGHT TO PUT BIT 11 IN BIT 0   |
| 0314 | 0144 | 1120 | ADA I          |        | /NOW ADD IN BASIC TABLA ADDRESS POINTER.                                     |
| 0315 | 0145 | 0235 | CDTAB          |        |  |
| 0316 | 0146 | 4004 | STC            | CDCONT | /GET TRANSITION CHAR ADDRESS.  |
| 0317 | 0147 | 1304 | LDH            | CDCONT | /NOW GET THE TRANSITION CHARACTER.   |

|      |      |      |         |              |  |
|------|------|------|---------|--------------|--|
| 0320 | 0150 | 0063 | SET I   | CDSWT        | /AND TELL IT WE RE NOT SCANNING BLANKS ANYMORE |
| 0321 | 0151 | 7777 | -0      |              |  |
| 0322 | 0152 | 1342 | CDFUNT, | STH          | CPOINT   |
| 0323 | 0153 | 0221 | XSK I   | CDUNT        | /NOW STASH AWAY CONVERTED CHAR.                |
| 0324 | 0154 | 6132 | JMP     | CDLOOP       | /HAVE WE DONE 80 COLUMNS??                     |
| 0325 | 0155 | 0062 | SET I   | CPOINT       | /NOPE. GO BACK AND DO ANOTHER.                 |
| 0326 | 0156 | 4163 | CDPUNT, | CDBUF-1+4000 | /YEP. WE VE DONE 80 COLUMNS.                   |
| 0327 | 0157 | 6104 | JMP     | CDNXT2       | /SET THE POINTER SO CDNEXT CAN GET THE CHARS.  |
| 0330 |      |      | /       |              | /AND EXIT BUT FIRST GET A CHAR TO SEND BACK    |
| 0331 |      |      | /       |              |  |
| 0332 |      |      | /       |              |  |
| 0333 |      |      | /       |              |  |
| 0334 |      |      | /       |              |  |
| 0335 |      |      | /       |              |  |
| 0336 |      |      | /       |              |  |
| 0337 | 0160 | 0211 | LP1,    | 211          | /TAB   |
| 0340 | 0161 | 0215 | COL215, | 215          | /CR  |
| 0341 | 0162 | 4232 |         | 4232         | / END-OF-TAPE                                  |
| 0342 |      |      | /       |              |  |
| 0343 |      |      | /       |              |  |
| 0344 |      |      | /       |              |  |
| 0345 |      |      | /       |              |  |
| 0346 |      |      | /       |              |  |
| 0347 |      |      | /       |              |  |
| 0350 |      |      | /       |              |  |
| 0351 |      |      | /       |              |  |
| 0352 |      |      | /       |              |  |
| 0353 |      |      |         |              |  |
|      |      |      | EJECT   |              |  |

|      |      |      |   |
|------|------|------|---|
| 0354 | /    |      |   |
| 0355 | /    |      |   |
| 0356 | /    |      |   |
| 0357 | 0163 | 0000 | 0000  |
| 0360 |      |      | /USED FOR ZEROING OUT THE CARD BUFFER.                      |
| 0361 | 0164 | 0000 | CDBUF, 0000   |
| 0362 | /    |      | /80 COLUMN BUFFER   |
| 0363 |      |      | *CDBUF+50   |
| 0364 | /    |      |   |
| 0365 | 0234 | 0000 | 0000  |
| 0366 | /    |      | /USED AS END OF CHAR CHARACTER INCASE OF 80 CHARACTER SCAN. |
| 0367 | /    |      |   |
| 0370 | /    |      |   |
| 0371 | /    |      |   |
| 0372 | /    |      |   |
| 0373 | /    |      |   |
| 0374 | /    |      |   |
| 0375 | /    |      |   |
| 0376 | /    |      |   |
| 0377 | /    |      |   |
| 0400 | /    |      |   |
| 0401 | 0235 | 4061 | CDTAB, 4061   |
| 0402 | 0236 | 6263 | 6263  |
| 0403 | 0237 | 6465 | 6465  |
| 0404 | 0240 | 6667 | 6667  |
| 0405 | 0241 | 7071 | 7071  |
| 0406 | 0242 | 7243 | 7243  |
| 0407 | 0243 | 4047 | 4047  |
| 0410 | 0244 | 7542 | 7542  |
| 0411 | 0245 | 6057 | 6057  |
| 0412 | 0246 | 2324 | 2324  |
| 0413 | 0247 | 2526 | 2526  |
| 0414 | 0250 | 2730 | 2730  |
| 0415 | 0251 | 3132 | 3132  |
| 0416 | 0252 | 3554 | 3554  |
| 0417 | 0253 | 4537 | 4537  |
| 0420 | 0254 | 7677 | 7677  |
| 0421 | 0255 | 5512 | 5512  |
| 0422 | 0256 | 1314 | 1314  |
| 0423 | 0257 | 1516 | 1516  |
| 0424 | 0260 | 1720 | 1720  |
| 0425 | 0261 | 2122 | 2122  |
| 0426 | 0262 | 4144 | 4144  |
| 0427 | 0263 | 5251 | 5251  |
| 0430 | 0264 | 7334 | 7334  |
| 0431 | 0265 | 4601 | 4601  |
| 0432 | 0266 | 0203 | 0203  |
| 0433 | 0267 | 0405 | 0405  |
| 0434 | 0270 | 0607 | 0607  |
| 0435 | 0271 | 1011 | 1011  |
| 0436 | 0272 | 3356 | 3356  |
| 0437 | 0273 | 7450 | 7450  |
| 0440 | 0274 | 5336 | 5336  |
| 0441 | /    |      |   |
| 0442 | /    |      |   |
| 0443 | /    |      |   |
| 0444 | /    |      |   |
| 0445 | /    |      |   |
| 0446 | /    |      |   |
| 0447 | /    |      |   |
| 0450 | /    |      |   |
| 0451 | /    |      |   |
| 0452 |      |      | EJECT   |

THIS IS THE CONVERSION TABLE FOR THE CARD READER CHARS TO ASCII CHARS.

|          |             |
|----------|-------------|
| /BLANK   | 1           |
| /2       | 3           |
| /4       | 5           |
| /6       | 7           |
| /8       | 9           |
| /:       | NUMBER SIGN |
| /AT SIGN | APOSTROPHE  |
| /=       | "           |
| /0       | /           |
| /S       | T           |
| /U       | v           |
| /W       | X           |
| /Y       | Z           |
| /J       | ,           |
| /%       | BACK ARROW. |
| />       | ?           |
| /~       | J           |
| /K       | L           |
| /M       | N           |
| /O       | P           |
| /Q       | R           |
| /!       | DOLLAR SIGN |
| /o       | )           |
| /;       | \           |
| /8       | A           |
| /B       | C           |
| /D       | E           |
| /F       | G           |
| /H       | I           |
| /L       | .           |
| /<       | (           |
| /+       | +           |

```

0453      /
0454      /
0455      /      PMODE
0456      /
0457      /
0460      /
0461      /      LINE PRINTER ROUTINE.
0462      /
0463      /
0464      /
0465      /
0466      /
0467      /
0470      /      LINE PRINTER DEFINITIONS.
0471      /
0472      /
0473      LSE=6651
0474      LCF=6652
0475      LLB=6654
0476      LSD=6661
0477      LCB=6662
0500      LPH=6664
0501      /
0502      /
0503      /
0504      /
0505      /
0506      /
0507      /
0510      /
0511      /
0512      /
0513      6275 0000 LPTEST, 0000      /MAIN LINE PRINT CHARACTER CABOSH.
0514      6276 7346      MTHREE      /IS IF LINE PRINTER IS THE CHOSEN ONE(DEVICE 3)
0515      6277 1104      TAD      BFLAG2
0516      6300 7640      SZA CLA
0517      6301 5675      JMP I      LPTEST      /NOT THE CHOSEN ONE.
0520      6302 1721      TAD I      LPSEQ      /GET THE CHAR
0521      6303 3121      JCA      FTYPE      /PLACE IN SEARCHER INPUT.
0522      6304 4573      SEARCH
0523      6305 6160      LP1
0524      6306 6356      LP2
0525      6307 1121      TAD      FTYPE      /GET THE CHAR
0526      6310 1147      TAD      M340      /SUBTRACT TOO BIG CHAR.
0527      6311 7100      CLL      /CLEAR LINC FOR NEW TEST.
0530      6312 1025      TAD      L100      /CHECK FOR LOWER LIMIT
0531      6313 7620      SNL CLA      /IS IT INBETWEEN 240-337???
0532      6314 5720      JMP I      LPEXIT      /NOPE. IGNORE IT.
0533      6315 1121      TAD      FTYPE      /GET THE CHAR
0534      6316 4333      LPCOMM, JMS      LPPUT      /AND OUTPUT THE CHAR.
0535      6317 5720      JMP I      LPEXIT      /AM D EXIT
0536      /
0537      /
0540      /
0541      6320 3767      LPEXIT, SEQEXT
0542      6321 3711      LPSEQ, SEQIN
0543      6322 0000      LPCOL, 0000
0544      /
0545      /
0546      /
0547      /
0550      6323 0000      LPEJ2, 0      /GIVES TWO EJECTS ON THE PRINTER.
0551      6324 7240      LP0002, MONE      /REALLY A 17

```



|      |      |      |                 |        |   |
|------|------|------|-----------------|--------|---|
| 0552 | 6325 | 4333 | JMS             | LPPUT  | /EJECT 1  |
| 0553 | 6326 | 1374 | TAD             | LPM204 | /RESET THE COLUMN COUNTER TO THE BEGINNING OF A LINE. |
| 0554 | 6327 | 3322 | JCA             | LPCOL  | /STASH AWAY.  |
| 0555 | 6330 | 7240 | LP0803, NONE    |        |   |
| 0556 | 6331 | 4333 | JMS             | LPPUT  | /EJECT 2  |
| 0557 | 6332 | 5723 | JMP I           | LPEJ2  | /RETURN TO THE CALLER.                                |
| 0560 |      |      | /               |        |   |
| 0561 |      |      | /               |        |   |
| 0562 |      |      | /               |        |   |
| 0563 |      |      | /               |        |   |
| 0564 | 6333 | 0000 | LPPUT, 0        |        | /PRINTS A CHAR OR DOES A CONTROL CRAP.                |
| 0565 | 6334 | 3065 | JCA             | TEMP   | /SAVE THE CHAR.                                       |
| 0566 | 6335 | 2322 | ISZ             | LPCOL  | /END OF THE LINE??                                    |
| 0567 | 6336 | 5343 | JMP             | LPWFIT | /NOPE. PRINT IT.                                      |
| 0570 | 6337 | 1374 | LP08, TAD       | LPM204 | /RESET THE COLUMN COUNTER                             |
| 0571 | 6340 | 3322 | JCA             | LPCOL  | /STASH AWAY.  |
| 0572 | 6341 | 1021 | LP0804, TAD     | L7770  | /SPACE 1 PRINTER LINE                                 |
| 0573 | 6342 | 5316 | JMP             | LPCOMM | /COM 40V PUTTER ROUTINE                               |
| 0574 | 6343 | 4556 | LPWFIT, CHECKIO |        | /CHECK FOR A CONTROL Z OR SOMETHING.                  |
| 0575 | 6344 | 6661 | LSU             |        | /LINE PRINTER CLEAR???                                |
| 0576 | 6345 | 5343 | JMP             | -2     | /NOPE. WAIT.  |
| 0577 | 6346 | 6652 | LCF             |        | /CLEAR THE FLAG                                       |
| 0600 | 6347 | 1065 | TAD             | TEMP   | /GET THE FUNCTION.                                    |
| 0601 | 6350 | 7500 | LP0805, SMA     |        | /IS IT A CONTROL.                                     |
| 0602 | 6351 | 6654 | LLB             |        | /NOPE. MUST BE CHAR. STICK IN BUFFER, R.              |
| 0603 | 6352 | 7510 | SPA             |        | /IS IT POSITIVE?                                      |
| 0604 | 6353 | 6664 | LP0806, LPR     |        | /NOPE. MUST BE CONTROL. ZAP IT                        |
| 0605 | 6354 | 7200 | CLA             |        | /NOW CLEAR THE AC TO BE SURE.                         |
| 0606 | 6355 | 5733 | JMP I           | LPPUT  | /AND RETURN TO THE CALLER.                            |
| 0607 |      |      | /               |        |   |
| 0610 |      |      | /               |        |   |
| 0611 |      |      | /               |        |   |
| 0612 |      |      | /               |        |   |
| 0613 |      |      | /               |        |   |
| 0614 |      |      | /               |        |   |
| 0615 |      |      | /               |        |   |
| 0616 |      |      | /               |        |   |
| 0617 | 6356 | 6361 | LP2, LPTAB      |        |   |
| 0620 | 6357 | 6337 | LPCR            |        |   |
| 0621 | 6360 | 6371 | LPEND           |        |   |
| 0622 |      |      | /               |        |   |
| 0623 |      |      | /               |        |   |
| 0624 |      |      | /               |        |   |
| 0625 |      |      | /               |        |   |
| 0626 | 6361 | 1373 | LPTAB, TAD      | LP40   | /BLANK  |
| 0627 | 6362 | 4333 | JMS             | LPPUT  | /SEND TO PUTTER ROUTINE.                              |
| 0630 | 6363 | 7325 | LP0807, PTHREE  |        | /TO COMPENSTATE FOR THE -204 [204-1]                  |
| 0631 | 6364 | 1322 | TAD             | LPCOL  | /GET THE COLUMN.                                      |
| 0632 | 6365 | 0060 | AND             | L7     | /IS IT A MULTIPLE OF 8                                |
| 0633 | 6366 | 7640 | SZA CLA         |        | /??   |
| 0634 | 6367 | 5361 | JMP             | LPTAB  | /NOPE. GIVE ANOTHER BLANK.                            |
| 0635 | 6370 | 5720 | JMP I           | LPEXIT | /AND EXIT.  |
| 0636 |      |      | /               |        |   |
| 0637 |      |      | /               |        |   |
| 0640 | 6371 | 4323 | LPEND, JMS      | LPEJ2  | /GIVE TWO EJECTS.                                     |
| 0641 | 6372 | 5552 | PIP             |        |   |
| 0642 |      |      | /               |        |   |
| 0643 |      |      | /               |        |   |
| 0644 |      |      | /               |        |   |
| 0645 |      |      | /               |        |   |
| 0646 | 6373 | 0040 | LP40, 40        |        |   |
| 0647 | 6374 | 7574 | LPM204, -204    |        |   |
| 0650 | 6375 | 0212 | LP212, 212      |        | /LINE FEED IF LP08 PRESENT.                           |

0651 6576 0214 LP214, 214  
0652 /  
0653 /  
0654 /  
0655 /  
0656 /  
0657 /  
0660 /  
0661 /  
0662 /  
0663 /  
0664 /  
0665 /  
0666 /  
0667 /  
0670 /  
0671 EJECT

/FORM FEED IF LP00 PRESENT

0672 /  
0673 /  
0674 /  
0675 /  
0676 /  
0677 /  
0700 /  
0701 /  
0702 6377 0000 /  
0703 /  
0704 /  
0705 /  
0706 /  
0707 /  
0710 /  
0711 /  
0712 /  
-

\*BUFFER-1

0000

EJECT

THIS ORIGIN INSURES THAT BUFFER-1 CONTAINS A ZERO FOR THE TRIVIAL CORE ZERO ROUTINE WHICH IS LOCATED IN PAGE 1(200-377)

```

2713          /          *BUFFER
2714          /
2715          /
2716          /
2717          /          THIS ROUTINE IS CALLED ONLY ONCE AT INITIALIZATION TO FIGURE OUT HOW
2720          /          MANY K OF CORE THE GUY HAS. THEN IT S USED IN THE
2721          /          BUFFER AREA.
2722          /
2723          /
2724          /
2725          /
2726          /
2727          /
2730          /
2731          6400 0000 COREF, 0 /MAIN ENTRY.
2732          6401 7200 CLA /CLEAR AC TO BE SURE. WE VE GOT ROOM.
2733          6402 1261 TAD CLIT01 /REPLACE JMS INSTRUCTION BY NORMAL TAD.
2734          6403 3712 DCA I CLIT02 /AND OVERLAY NOW.
2735          /
2736          6404 3065 DCA TEMP /ZERO OUT
2737          6405 2065 CLOOP, ISZ TEMP
2740          6406 1065 TAD TEMP
2741          6407 7041 CIA
2742          6410 5141 DCA COUNT
2743          6411 3066 DCA TEMP1
2744          6412 2066 CLOOP, ISZ TEMP1
2745          6413 4275 JMS CSET
2746          6414 1066 TAD TEMP1
2747          6415 3711 DCA I CPBYTE
2750          6416 2141 ISZ COUNT
2751          6417 5212 JMP CLOOP
2752          6420 1065 TAD TEMP
2753          6421 7041 CIA
2754          6422 5141 DCA COUNT
2755          6423 3066 DCA TEMP1
2756          6424 2066 CLOOP, ISZ TEMP1
2757          6425 4275 JMS CSET
2760          6426 1711 TAD I CPBYTE
2761          6427 7041 CIA
2762          6430 1066 TAD TEMP1
2763          6431 7640 SZA CLA
2764          6432 5236 JMP COUNT
2765          6433 2141 ISZ COUNT
2766          6434 5224 JMP CLOOP
2767          6435 5205 JMP CLOOP
2770          /
2771          6436 7344 COUT, MTWO
2772          6437 1065 TAD TEMP
2773          6440 7106 CLL RTL
2774          6441 7006 RTL
2775          6442 3066 DCA TEMP1
2776          6443 1310 TAD CBUFF
2777          6444 7041 CIA
2778          6445 7106 CLL RTL
2779          6446 7006 RTL
2780          6447 7004 RAL
2781          6450 1066 TAD TEMP1
2782          6451 1047 ASMIFN RF08 /DISK PRESENT???
2783          6452 3074 TAD L7777 /YEP. BOP DOWN THE NUMBER OF BUFFERS BY 1 TO PROTECT 7400
2784          6453 6201 DCA BNUM
2785          6454 1074 CDF 0
2786          6455 7110 TAD BNUM
2787          6456 7110 CLL RAK

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|      |      |      |          |          |       |
|------|------|------|----------|----------|-------|
| 1012 | 6456 | 0021 | AND      | L7770    |       |
| 1013 | 6457 | 7640 | SZA      | CLA      |       |
| 1014 | 6460 | 5267 | JMP      | CDCDDC   |       |
| 1015 | 6461 | 1056 | CLIT01,  | TAD      | M40   |
| 1016 | 6462 | 3236 |          | DCA      | COUT  |
| 1017 | 6463 | 4551 |          | DISPLAY  |       |
| 1020 | 6464 | 6513 |          | INSULT   |       |
| 1021 | 6465 | 2236 |          | ISZ      | COUT  |
| 1022 | 6466 | 5265 |          | JMP      | .-3   |
| 1023 |      |      | CDCDDC,  | ASMIFZ   | CAND  |
| 1024 |      |      |          | ASMSKP   | 3     |
| 1025 | 6467 | 4671 |          | JMS I    | .*2   |
| 1026 | 6470 | 7410 |          | SKP      |       |
| 1027 | 6471 | 6703 |          | LP08TS   |       |
| 1030 |      |      |          | ASMIFZ   | RF08  |
| 1031 |      |      |          | ASMSKP   | 3     |
| 1032 | 6472 | 1200 |          | TAD      | COREF |
| 1033 | 6473 | 5674 |          | JMP I    | .*1   |
| 1034 | 6474 | 6601 |          | CDISKC   |       |
| 1035 |      |      |          | ASMIFZ   | RF08  |
| 1036 |      |      |          | CMA CMA  |       |
| 1037 |      |      |          | ASMIFZ   | RF08  |
| 1040 |      |      |          | JMP I    | COREF |
| 1041 |      |      | /        |          |       |
| 1042 |      |      | /        |          |       |
| 1043 | 6475 | 0000 | CSET,    | 0        |       |
| 1044 | 6476 | 1047 |          | TAD      | L7777 |
| 1045 | 6477 | 1066 |          | TAD      | TEMP1 |
| 1046 | 6500 | 0060 |          | AND      | L7    |
| 1047 | 6501 | 7106 |          | CLL      | RTL   |
| 1050 | 6502 | 7004 |          | RAL      |       |
| 1051 | 6503 | 1307 |          | TAD      | CCDF  |
| 1052 | 6504 | 3305 |          | DCA      | .*1   |
| 1053 | 6505 | 0000 |          | 0        |       |
| 1054 | 6506 | 5675 |          | JMP I    | CSET  |
| 1055 |      |      | /        |          |       |
| 1056 | 6507 | 6201 | CCDF,    | CCDF     | 0     |
| 1057 | 6510 | 6400 | CBUFF,   | BUFFER   |       |
| 1060 | 6511 | 7777 | CPBYTE,  | 7777     |       |
| 1061 | 6512 | 0222 | CLIT02,  | INITOV   |       |
| 1062 |      |      | /        |          |       |
| 1063 |      |      | /        |          |       |
| 1064 |      |      | /        |          |       |
| 1065 |      |      | /        |          |       |
| 1066 | 6513 | 0240 | INSULT,  | LEFT+240 |       |
| 1067 | 6514 | 0340 |          | TOP      |       |
| 1070 |      |      | TEXT "   |          |       |
| 1071 | 6515 | 4306 |          |          |       |
| 1071 | 6516 | 1140 |          |          |       |
| 1071 | 6517 | 2717 |          |          |       |
| 1071 | 6520 | 2514 |          |          |       |
| 1071 |      |      | FI WOULD |          |       |
| 1072 | 6521 | 0443 |          |          |       |
| 1072 | 6522 | 0640 |          |          |       |
| 1072 | 6523 | 4022 |          |          |       |
| 1072 |      |      | F RUN    |          |       |
| 1073 | 6524 | 2516 |          |          |       |
| 1073 | 6525 | 4306 |          |          |       |
| 1073 | 6526 | 4006 |          |          |       |
| 1073 | 6527 | 0123 |          |          |       |
| 1073 | 6530 | 2405 |          |          |       |
| 1073 |      |      | F FASTER |          |       |
| 1074 | 6531 | 2243 |          |          |       |

/A LITTER TYPE.  
 /TEST FOR THE LINE PRINTER  
 /SKIP PAST LP08 CRAP  
 /TEST FOR NO AWALEX  
 /DO WE WANT A SCRATCH DISK SETUP???  
 /NOPE. DO DISK CHECK NOW.  
 /RETURN ADDRESS  
 /DO TO CORE CHECKER  
 /NOW CHECK FOR DISKSSSSS  
 /MINUS ONE COUNT, FOR NOW.  
 /CHECK FOR THIS RETURN.....  
 /RETURN NOW  
 /SHOULD BE A FREE LOC NOW.  
 /POINTER INITIALIZATION OVERLAY,  
 /ABOUT CENTER OF SCREEN

|      |      |      |          |
|------|------|------|----------|
| 1074 | 6532 | 0011 |          |
| 1074 | 6533 | 0640 |          |
| 1074 | 6534 | 3117 |          |
| 1074 |      |      | FIF YOU  |
| 1075 | 6535 | 2543 |          |
| 1075 | 6536 | 0640 |          |
| 1075 | 6537 | 4010 |          |
| 1075 |      |      | F HAD    |
| 1076 | 6540 | 0104 |          |
| 1076 | 6541 | 4306 |          |
| 1076 | 6542 | 4040 |          |
| 1076 |      |      | F 8K     |
| 1077 | 6543 | 7013 |          |
| 1077 | 6544 | 4306 |          |
| 1077 | 6545 | 1116 |          |
| 1077 | 6546 | 2324 |          |
| 1077 | 6547 | 0501 |          |
| 1077 |      |      | FINSTEAD |
| 1100 | 6550 | 0443 |          |
| 1100 | 6551 | 0617 |          |
| 1100 | 6552 | 0640 |          |
| 1100 | 6553 | 1716 |          |
| 1100 |      |      | FOF ONLY |
| 1101 | 6554 | 1431 |          |
| 1101 | 6555 | 4306 |          |
| 1101 | 6556 | 4040 |          |
| 1101 | 6557 | 6413 |          |
| 1101 | 6560 | 3400 |          |
| 1101 |      |      | F 4K\"   |
| 1102 |      |      | /        |
| 1103 |      |      | /        |
| 1104 |      |      | /        |
| 1105 |      |      | /        |
| 1106 |      |      | /        |
| 1107 |      |      | /        |
| 1110 |      |      | EJECT    |

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1111      /
1112      /
1113      /
1114      /
1115      /
1116      /
1117      /
1120      /
1121      ASMFZ RF08      /DISK CHECKER OK???
1122      ASMSKP 127      /SKIP FOLLOWING CODE
1123      /
1124      /
1125      /
1126      /
1127      /
1130      /
1131      *BUFFER+200      /DISK CHECKER CRAP.....
1132      /
1133      /
1134      6600 0000 CDISK, 0      /PHOONEY RETURN
1135      6601 3200 CDISK, DCA CDISK      /SAVE RETURN ADDRESS.
1136      6602 7240 CLA CMA      /CLEAR THE RK08 STATUS REGISTER
1137      6603 6742 DCLS
1140      6604 7200 CLA      /NOW CLEAR THE AC
1141      6605 1302 TAD CDIL70      /PLACE A 70 IN THE AC TO SEE IF THE RK08 IS THERE
1142      6606 6732 DLDC      /SEND TO THE CONTROLLER
1143      6607 7200 CLA      /CLEAR AC IN CASE IOT WAS A NOP
1144      6610 6736 DRDC      /NOW READ BACK IN COMMAND REGISITER
1145      6611 7041 CIA      /NEGATE IT
1146      6612 1302 TAD CDIL70      /TEST TO SEE IF STILL THERE
1147      6613 7650 SNA CLA      /HOW ABOUT IT.
1150      6614 5261 JMP CRK08      /REG IS GOOD. WEVE GOT AN RK08
1151      /
1152      6615 6601 DCMA      /BAM. CLEAR DISK
1153      6616 6601 DCMA      /ONE MORE TIME FOR GOOD MEASURE
1154      6617 1024 TAD L77      /A DISK ADDRESS.
1155      6620 6643 DXAL      /SEND IT OUT
1156      6621 7200 CLA      /CLEAR THE AC TO BE SURE
1157      6622 6645 DXAC      /READ IT BACK???
1160      6623 7041 CIA
1161      6624 1024 TAD L77      /ALL WELL?
1162      6625 7650 SNA CLA      /???
1163      6626 4231 JMS DSET      /SET UP FOR THE DISKS NOW???
1164      6627 7240 CLA CMA      /MINUS 1 FOR THE COUNT.
1165      6630 5600 JMP I CDISK      /RETURN
1166      /
1167      /
1170      /
1171      /
1172      6631 0000 DSET, 0
1173      6632 7240 DCA I CRKPTN      /SET TO ALL ONES SO RK08 CONTROLLER WILL THINK ITS THE
1174      6633 3670 TAD BNUM      /WRONG UNIT AND WILL GIVE A POWER CLEAR.
1175      6634 1074 AND L7770      /GET THE NUMBER OF BUFFERS NOW.
1176      6635 0021 SNA CLA      /SEE IF GREATER THEN 20. ACTUALLY 10 WILL DO
1177      6636 7650 JMP DSETP1      /?
1200      6637 5250 MOVE      /NOT BK. NO REBOOTSTRAP.
1201      6640 4564 RKBST      /SAVE OLD INSTRUCTIONS
1202      6641 0750 RKBST      /IN CARD READER TEMP.
1203      6642 6213 2
1204      6643 0002 MOVE
1205      6644 4564 RKSETU
1206      6645 6671 RKBST
1207      6646 0750

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1210      6647 0022      2
1211      6650 1273 DSETP1, TAD DTAB1 /GET THE FIRST TABLE LOCATIONS
1212      6651 3216 JCA AUTJ1 /SAVE AWAY
1213      6652 1410 DCLOOP, TAD I AUTJ1 /GET THE NEXT ADDRESS
1214      6653 7450 SVA /IS IT ZERO????
1215      6654 5031 JMP I DSET /YEP, RETURN
1216      6655 3065 JCA TEMP /SAVE THE ADDRESS
1217      6656 1301 TAD DSYSBIN /GET THE CORRECT NEW UNIT
1220      6657 3465 JCA I TEMP /AND SET IT UP.
1221      6662 5252 JMP DCLOOP /GO BACK FOR NEXT.
1222      /
1223      /
1224      /
1225      /
1226      6661 4231 CRK08, JMS DSET /SET UP THE BINARY UNITS AS ADVERTISED.
1227      6662 4564 MOVE /NOW MOVE THE RK08 ROUTINES UP THE
1230      6663 7226 RKREAD /THE DESIRED AREA
1231      6664 7626 RFREAD
1232      6665 0152 -RFREAD /LENGTH JUST HAPPENS TO BE THIS NUM.
1233      6666 7240 CLA CMA /MINUS 1 FOR THE COUNT, BABY.
1234      6667 5600 JMP I CDISK /HANDLER NOW SET UP USE DISKS.
1235      /
1236      /
1237      /
1240      /
1241      /
1242      /
1243      /
1244      6670 4576 CRKPTN, RKSTAT /RK08 STATUS AS OF BEFORE I-O PRESET.
1245      6671 4751 RKSETU, RKBTST+18177:4600 /JMS I RKBTST+1
1246      6672 6164 RKCHAR /CHECK THE RK08 CHARACTER.
1247      /
1250      /
1251      /
1252      /
1253      /
1254      /
1255      /
1256      /
1257      /
1260      /
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1263      /
1264      /
1265      /
1266      /
1267      /
1270      /
1271      /
1272      /
1273      /
1274      /
1275      6673 6673 DTAB1, . /POINTS TO NEXT -1
1276      6674 4145 DSYS1
1277      6675 4157 DSYS2
1300      6676 4206 DSYS3
1301      6677 5353 DSYS4
1302      6700 0000 00000
1303      /
1304      /
1305      6701 0011 DSYSBIN, SYSBSP /SPECIAL BINARY UNIT.
1306      6702 0070 CDIL70, 70

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1307 /  
1310 /  
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EJECT

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1337      /
1340      /
1341      /
1342      /
1343      /
1344      /
1345      /
1346      ASMIFZ CARD      /LP08 TESTER ROUTINES
1347      ASKSKP 1373-1273 /SKIP PAST THE STUFF NOW
1350      /
1351      /
1352      /
1353      /
1354      /
1355      6703 0000 LP08TS, 0
1356      6704 6652      LCF
1357      6705 1022      TAD      M4
1360      6706 3065      DCA      TEMP
1361      6707 3066      DCA      TEMP1
1362      6710 6662      LCB
1363      6711 6661 LP08LP, LSD
1364      6712 7410      SKP
1365      6713 5703      JMP I LP08TS
1366      6714 2066      ISZ      TEMP1
1367      6715 5311      JMP      LP08LP
1370      6716 2065      ISZ      TEMP
1371      6717 5311      JMP      LP08LP
1372      6720 1337 LP08LT, TAD LP08PT
1373      6721 7450      SNA
1374      6722 5703      JMP I LP08TS      /ALL FINISHED WITH THE PATCH NOW
1375      6723 3727      DCA I LP08PO      /STORE IN THE POINTER NOW
1376      6724 2323      ISZ      ,-1
1377      6725 2320      ISZ      LP08LT
1400      6726 5320      JMP      LP08LT
1401      /
1402      /
1403      /
1404      /
1405      6727 0240 LP08PO, LP0801
1406      6730 6324 LP0802
1407      6731 6330 LP0803
1410      6732 6341 LP0804
1411      6733 6350 LP0805
1412      6734 6353 LP0806
1413      6735 6363 LP0807
1414      6736 6374 LPM204
1415      /
1416      /
1417      /
1420      /
1421      LP08BA=,87600
1422      LP08B2=LPEJ287600
1423      /
1424      /
1425      /
1426      6737 6666 LP08PT, LPR!LCB
1427      6740 1376 TAD LP214-LP08B2+LP08BA
1430      6741 1376 TAD LP214-LP08B2+LP08BA
1431      6742 1375 TAD LP212-LP08B2+LP08BA
1432      6743 5353 JMP LP0806-LP08B2+LP08BA
1433      6744 6666 LPR!LCB
1434      6745 7201 PONE      /ALL THATS NECESSARY TO FILL OUT TABS CORRECTLY,
1435      6746 7656 -122

```

|      |      |      |       |
|------|------|------|-------|
| 1436 | 6747 | 0000 | 0     |
| 1437 |      | /    |       |
| 1440 |      | /    |       |
| 1441 |      | /    |       |
| 1442 |      | /    |       |
| 1443 |      | /    |       |
| 1444 |      | /    |       |
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| 1447 |      | /    |       |
| 1450 |      | /    |       |
| 1451 |      |      | EJECT |
| -    |      |      |       |

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1452      /
1453      /
1454      /
1455      /
1456      /
1457      /
1460      /
1461      *CDBUF
1462      6164 0000 RKCHAR, 2
1463      6165 7300 CLA CLL
1464      6166 6034 KMS
1465      6167 1143 TAD M215
1466      6170 7650 SNA CLA
1467      6171 5376 JMP DIALEX
1470      6172 4564 MOVE
1471      6173 6204 JACKS
1472      6174 0247 OVEREX
1473      6175 0007 OVERLEN
1474      6176 4564 DIALEX, MOVE
1475      6177 6213 RKBST
1476      6200 0150 RKBST
1477      6201 0002 2
1500      6202 5603 JMP I .+1
1501      6203 0750 RKBST
1502      /
1503      /
1504      6204 4571 JACKS, READ
1505      6205 0010 10
1506      6206 6400 BUFFER
1507      6207 0022 22
1510      6210 0302 302
1511      6211 6213 CDF CIF 10
1512      6212 5447 JMP I L7777
1513      /
1514      OVERLEN=.=JACKS
1515      /
1516      /
1517      6213 0000 RKBST, 0
1520      6214 0000 0
1521      /
1522      /
1523      /
1524      /
1525      /
1526      /
1527      /
1530      /
1531      /
1532      /
1533      /
1534      /
1535      /
1536      /
1537      /
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1542      /
1543      EJECT

```

/ORIGIN INITIALIZATION CODE IN THE CARD READER BUFFER.

/CLEAR AC TO BE SURE.  
 /READ IN THE AC CHARACTER NOW  
 /IS IT A C.R.  
 /?  
 /NORMAL TAPE EXIT.  
 /SET UP DISK RETURN NOW.  
 /MOVE OVERLAY IN NOW

/OLD INFO

/READ IN DIAL-MS BOOTSTRAP NOW.

/TWENTY TWO FOR 8=K.  
 /302\*21&22=322&323  
 /UPPER CORE  
 /REBOOTSTRAP

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1600 /
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-

THIS IS THE OPTIONAL RF08-RK08 ROUTINE. IT S DIVIDED INTO TWO PARTS.
THE SECOND PART IS THE ACTUAL LOW LEVEL DISK ROUTINE.
THE FIRST PART IS A LITTLE CALLING ROUTINE WHICH INTERPRETS THE CALLS FROM PIPS MASS STORAGE ROUTIN
AND PROTECTS LOCATIONS 7400-7777 FROM THE DISK ZAPPING THEM.

ASMIFZ RF08
ASMSKP 1362 /SHOULD BE CORRECT NUMBER TO SKIP OVER THEM

*7400

THE SYSTEM AND UNIT COPIER HANDLERS.

7400 4564 AASYSC, MOVE /SET UP TO COPY JUST THE SYSTEM (NO INDEX)
7401 7472 ASYSL /SYSTEM COPY INFORMATION
7402 7466 AASUC /COMMON INFORMATION
7403 0004 AASUCS /SIZE OF SYSTEM INFORMATION
7404 >211 JMP AASUCR /GO TO COMMON ROUTINES

```

|      |      |      |         |          |                                   |
|------|------|------|---------|----------|-----------------------------------|
| 1642 |      |      | /       |          |                                   |
| 1643 |      |      | /       |          |                                   |
| 1644 |      |      | /       |          |                                   |
| 1645 | 7405 | 4564 | AAUNTC, | MOVE     | /SET UP TO COPY THE ENTIRE UNIT.  |
| 1646 | 7406 | 7476 | AUNTL   |          | /INFORMATION                      |
| 1647 | 7407 | 7466 | AASUC   |          | /TO COMMON ROUTINES.              |
| 1650 | 7410 | 0004 | AASUCS  |          | /NUMBER OF WORDS TO MOVE          |
| 1651 |      |      | /       |          |                                   |
| 1652 |      |      | /       |          |                                   |
| 1653 |      |      | /       |          |                                   |
| 1654 |      |      | /       |          |                                   |
| 1655 | 7411 | 1120 | AASUCR, | TAD      | /GET THE NUMBER OF COPIES TO MAKE |
| 1656 | 7412 | 0060 |         | AND      | /CHOP OFF THE HIGH ORDER CRAP     |
| 1657 | 7413 | 7450 |         | L7       | /ZERO???                          |
| 1660 | 7414 | 7001 |         | SNA      | /YEP. MAKE 1 COPY ONLY            |
| 1661 | 7415 | 7041 |         | IAC      |                                   |
| 1662 | 7416 | 3501 |         | CIA      |                                   |
| 1663 |      |      |         | DCA      | /STASH AWAY NUMBER TO MAKE        |
| 1664 |      |      | /       | AAMHOW   |                                   |
| 1665 |      |      | /       |          |                                   |
| 1666 |      |      | /       |          |                                   |
| 1667 |      |      | /       |          |                                   |
| 1670 | 7417 | 4562 | ASULP1, | DECODE   | /GET THE INPUT DEVICE             |
| 1671 | 7420 | 4610 |         | CINPUT   | /COPY INPUT IS GOOD ENOUGH FOR ME |
| 1672 | 7421 | 4573 |         | SEARCH   | /LOOK UP THE REPLY                |
| 1673 | 7422 | 4377 |         | ACPL1    | /TABLE OF CHARS                   |
| 1674 | 7423 | 4550 |         | ASUG01   | /TRANSFER TABLE                   |
| 1675 | 7424 | 5217 |         | JMP      | /NOT A LEGAL REPLY                |
| 1676 |      |      |         | ASULP1   |                                   |
| 1677 |      |      | /       |          |                                   |
| 1700 |      |      | /       |          |                                   |
| 1701 |      |      | /       |          |                                   |
| 1702 |      |      | /       |          |                                   |
| 1703 | 7425 | 4577 | ASUDD1, | DISC     | /DISC IS CHOOSSEN                 |
| 1704 | 7426 | 7410 |         | SKP      |                                   |
| 1705 | 7427 | 4402 | ASUTT1, | TAPE     | /TAPE IS CHOOSSEN                 |
| 1706 | 7430 | 1120 |         | TAD      |                                   |
| 1707 | 7431 | 3103 |         | DCA      |                                   |
| 1710 |      |      |         | INUNIT   |                                   |
| 1711 | 7432 | 4562 | ASULP2, | DECODE   | /GET THE OUTPUT UNIT              |
| 1712 | 7433 | 4703 |         | COOUTPUT | /OUTPUT OPTIONS                   |
| 1713 | 7434 | 4573 |         | SEARCH   | /LOOKUP REPLY                     |
| 1714 | 7435 | 4377 |         | ACPL1    | /REPLY LIST                       |
| 1715 | 7436 | 4554 |         | ASUG02   | /WHERE TO GO WHEN FOUND           |
| 1716 | 7437 | 5232 |         | JMP      | /NOT A LEGAL OUTPUT DEVICE        |
| 1717 |      |      |         | ASULP2   |                                   |
| 1720 |      |      | /       |          |                                   |
| 1721 |      |      | /       |          |                                   |
| 1722 | 7440 | 4577 | ASUDD2, | DISC     | /DISC IS THE CHOOSSEN ONE.        |
| 1723 | 7441 | 7410 |         | SKP      |                                   |
| 1724 | 7442 | 4402 | ASUTT2, | TAPE     | /TAPE IS THE CHOOSSEN ONE         |
| 1725 | 7443 | 1120 |         | TAD      |                                   |
| 1726 | 7444 | 3105 |         | DCA      |                                   |
| 1727 |      |      |         | OUTUNIT  | /STASH AWAY                       |
| 1730 |      |      | /       |          |                                   |
| 1731 |      |      | /       |          |                                   |
| 1732 | 7445 | 1501 |         | TAD      | /GET THE NUMBER OF COPIES TO MAKE |
| 1733 | 7446 | 3106 |         | DCA      | /STASH AWAY NOW.                  |
| 1734 | 7447 | 1266 |         | TAD      | /GET THE SIZE OF THE FIRST COPY   |
| 1735 | 7450 | 3117 |         | DCA      | /AND STASH IN THE SIZE PARAMETER  |
| 1736 | 7451 | 1267 |         | TAD      | /GET THE FIRST BLOCK NUMBER       |
| 1737 | 7452 | 3102 |         | DCA      | /AND SET UP THE READ              |
| 1740 | 7453 | 1102 |         | TAD      | /AND THE                          |
|      |      |      |         | INBLOCK  |                                   |

|      |      |      |                        |          |                                       |
|------|------|------|------------------------|----------|---------------------------------------|
| 1741 | 7454 | 3104 | DCA                    | OUTBLOCK | /AND THE WRITE                        |
| 1742 | 7455 | 4554 | COPY                   |          | /COPY THE SELECTED BLOCKS.            |
| 1743 | 7456 | 1270 | TAD                    | AASIZ2   | /THE THE SECOND COPY                  |
| 1744 | 7457 | 3117 | DCA                    | FSIZE    | /STASH THAT AWAY                      |
| 1745 | 7460 | 1271 | TAD                    | AABL2    | /THE THE SECOND STARTING BLOCK NUMBER |
| 1746 | 7461 | 3102 | DCA                    | INBLOCK  |                                       |
| 1747 | 7462 | 1102 | TAD                    | INBLOCK  |                                       |
| 1750 | 7463 | 3104 | DCA                    | OUTBLOCK | /SET UP FINAL COPY                    |
| 1751 | 7464 | 4554 | COPY                   |          | /AND DO IT                            |
| 1752 | 7465 | 5552 | PIP                    |          | /FINALLY RESTART PIP.                 |
| 1753 |      |      | /                      |          |                                       |
| 1754 |      |      | /                      |          |                                       |
| 1755 |      |      | /                      |          |                                       |
| 1756 |      |      | /                      |          |                                       |
| 1757 |      |      | /                      |          |                                       |
| 1760 |      |      | /                      |          |                                       |
| 1761 |      |      | /                      |          |                                       |
| 1762 |      |      | /                      |          |                                       |
| 1763 |      |      | /                      |          |                                       |
| 1764 |      |      | /                      |          |                                       |
| 1765 |      |      | /                      |          |                                       |
| 1766 | 7466 | 0000 | AASIZ1, 0              |          | /SIZE OF THE FIRST COPY               |
| 1767 | 7467 | 0000 | AABL1, 0               |          | /BLOCK NUMBER OF THE FIRST COPY.      |
| 1770 | 7470 | 0000 | AASIZ2, 0              |          | /SIZE OF THE SECOND COPY              |
| 1771 | 7471 | 0000 | AABL2, 0               |          | /BLOCK NUMBER OF THE SECOND COPY.     |
| 1772 |      |      | /                      |          |                                       |
| 1773 |      |      | /                      |          |                                       |
| 1774 |      |      | /                      |          |                                       |
| 1775 |      |      | /                      |          |                                       |
| 1776 |      |      | AASUC=AASIZ1           |          | /POINTER TO COMMON TABLE              |
| 1777 |      |      | AASUCS=-AASUC          |          | /SIZE OF MOVE.                        |
| 2000 |      |      | /                      |          |                                       |
| 2001 |      |      | /                      |          |                                       |
| 2002 |      |      | /                      |          |                                       |
| 2003 |      |      | /                      |          |                                       |
| 2004 |      |      | /                      |          |                                       |
| 2005 |      |      | /                      |          |                                       |
| 2006 |      |      | /                      |          |                                       |
| 2007 |      |      | /                      |          |                                       |
| 2010 |      |      | /                      |          |                                       |
| 2011 |      |      | /                      |          |                                       |
| 2012 |      |      | /                      |          |                                       |
| 2013 | 7472 | 0046 | ASYSL, TINDEX-DIALSYS  |          |                                       |
| 2014 | 7473 | 0300 | DIALSYS                |          |                                       |
| 2015 | 7474 | 0020 | SYSSBLOCK-TINDEX-TILEN |          |                                       |
| 2016 | 7475 | 0350 | TINDEX+TILEN           |          |                                       |
| 2017 |      |      | /                      |          |                                       |
| 2020 |      |      | /                      |          |                                       |
| 2021 | 7476 | 1000 | AUNT1, TUPPER-TLOWER+1 |          |                                       |
| 2022 | 7477 | 0000 | TLOWER                 |          |                                       |
| 2023 | 7500 | 0000 | 0                      |          |                                       |
| 2024 |      |      | /                      |          |                                       |
| 2025 |      |      | /                      |          |                                       |
| 2026 |      |      | /                      |          |                                       |
| 2027 |      |      | /                      |          |                                       |
| 2030 |      |      | /                      |          |                                       |
| 2031 |      |      | /                      |          |                                       |
| 2032 |      |      | /                      |          |                                       |
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| 2036 |      |      | /                      |          |                                       |
| 2037 |      |      | /                      |          |                                       |

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EJECT



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| 2052 | / |                               |
| 2053 | / |                               |
| 2054 | / |                               |
| 2055 | / |                               |
| 2056 | / |                               |
| 2057 | / |                               |
| 2060 | / |                               |
| 2061 | / |                               |
| 2062 | / |                               |
| 2063 | / | DISK DEFINITIONS.....         |
| 2064 | / |                               |
| 2065 | / |                               |
| 2066 | / |                               |
| 2067 | / | DISK DEFINITIONS FOR THE RK08 |
| 2070 | / |                               |
| 2071 | / |                               |
| 2072 | / |                               |
| 2073 | / |                               |
| 2074 | / |                               |
| 2075 | / |                               |
| 2076 | / |                               |
| 2077 | / |                               |
| 2100 |   | DMAW=6605                     |
| 2101 |   | DCMA=6601                     |
| 2102 |   | DMAR=6603                     |
| 2103 |   | DEAL=6615                     |
| 2104 |   | DEAC=6616                     |
| 2105 |   | DFSE=6621                     |
| 2106 |   | DISK=6623                     |
| 2107 |   | DCIM=6611                     |
| 2110 |   | DSAC=6612                     |
| 2111 |   | DIML=6615                     |
| 2112 |   | DIMA=6616                     |
| 2113 |   | DFSC=6622                     |
| 2114 |   | DXAL=6643                     |
| 2115 |   | DXAC=6645                     |
| 2116 | / | DMAC=6626                     |
| 2117 | / |                               |
| 2120 | / |                               |
| 2121 | / |                               |
| 2122 | / |                               |
| 2123 | / |                               |
| 2124 | / |                               |
| 2125 | / | RK08 DISK DEFINITIONS.        |
| 2126 | / |                               |
| 2127 | / |                               |
| 2130 | / |                               |
| 2131 | / |                               |
| 2132 | / |                               |
| 2133 | / |                               |
| 2134 | / |                               |
| 2135 | / |                               |
| 2136 | / |                               |
| 2137 | / |                               |
| 2140 |   | DCLA=6751                     |
| 2141 |   | DLDC=6732                     |
| 2142 |   | DLDR=6733                     |
| 2143 |   | DLDW=6735                     |
| 2144 |   | DCHP=6737                     |
| 2145 |   | DRDA=6734                     |
| 2146 |   | DRDC=6736                     |
| 2147 |   | DRDS=6741                     |
| 2150 |   | DCLS=6742                     |

|      |   |           |
|------|---|-----------|
| 2151 |   | DMNT=6743 |
| 2152 |   | DSKC=6745 |
| 2153 |   | OSKT=6746 |
| 2154 |   | DSKE=6747 |
| 2155 |   | DRWC=6752 |
| 2156 |   | OLWC=6753 |
| 2157 |   | OLCA=6755 |
| 2160 |   | ORCA=6757 |
| 2161 | / |           |
| 2162 | / |           |
| 2163 | / |           |
| 2164 | / |           |
| 2165 | / |           |
| 2166 | / |           |
| 2167 | / |           |
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| 2210 | / |           |
| 2211 | / |           |
| 2212 |   | EJECT     |
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|      |           |         |         |         |   |
|------|-----------|---------|---------|---------|---|
| 2213 |           | /       |         |         |   |
| 2214 |           | /       |         |         |   |
| 2215 |           | /       |         |         |   |
| 2216 |           | /       |         |         |   |
| 2217 |           | /       |         |         |   |
| 2220 |           | /       |         |         |   |
| 2221 |           | /       |         |         |   |
| 2222 |           | /       |         |         |   |
| 2223 |           | /       |         |         |   |
| 2224 |           | /       |         |         |   |
| 2225 |           | /       |         |         |   |
| 2226 | 7501 0000 | RF08R,  | 0       |         | /DISK=READ SETUP ROUTINE                      |
| 2227 | 7502 1767 |         | TAD I   | RRRT    | /ADDRESS OF TREAD                             |
| 2230 | 7503 3770 |         | DCA I   | WWWI    | /MOVE TO TWRITE FOR THE ARGUEMENT GETTER,     |
| 2231 | 7504 5307 |         | JMP     | RRC     | /GO TO THE COMMON ARG GETTER.                 |
| 2232 |           | /       |         |         |   |
| 2233 | 7505 0000 | RF08W,  | 0       |         | /DISK=WRITE SET-UP ROUTINE                    |
| 2234 | 7506 7305 |         | CLA CLL | IAC RAL | /+2 IN THE AC TO ADD THE READ ROUTINE ADDRESS |
| 2235 | 7507 1371 | RRC,    | TAD     | RRR     | /POINTER TO THE READ ROUTINE                  |
| 2236 | 7510 3372 |         | DCA     | RRT     | /SAVE IN THE GO- TO LOCATION.                 |
| 2237 | 7511 4555 |         | SETA    |         | /INITIALIZE THE ARGUEMENT GETTER              |
| 2240 | 7512 1417 |         | GETA    |         | /GET THE FIRST ARGUEMENT                      |
| 2241 | 7513 0060 |         | AND     | L7      | /CHOP OFF RANDOM UNITS BITS.                  |
| 2242 | 7514 3362 |         | DCA     | RUNIT   | /STASH AWAY NOW.                              |
| 2243 | 7515 1417 |         | GETA    |         | /GET THE NEXT ARGUEMENT NOW.                  |
| 2244 | 7516 3363 |         | DCA     | RLOC    | /SAVE AWAY IN THE LOCATION WORD               |
| 2245 | 7517 1417 |         | GETA    |         | /NOW GET THE NUMBER OF BLOCKS TO TRANSFER     |
| 2246 | 7520 3364 |         | DCA     | RNUM    | /AND STASH AWAY NOW.                          |
| 2247 | 7521 1417 |         | GETA    |         | /NOW GET THE FIRST BLOCK TO BE TRANSFERRED    |
| 2250 | 7522 3365 |         | DCA     | RFIRST  | /AND STASH AWAY ALSO.                         |
| 2251 | 7523 1074 |         | TAD     | BNUM    | /NOW GET THE NUMBER OF BUFFERS AVAILABLE      |
| 2252 | 7524 0060 |         | AND     | L7      | /JUST GET HOW MUCH GOES INTO FIELD 0          |
| 2253 | 7525 3366 |         | DCA     | ROUT    | /AND STORE IN THE FIRST TIME THROUGH BIT.     |
| 2254 |           | /       |         |         |   |
| 2255 |           | /       |         |         |   |
| 2256 |           | /       |         |         |   |
| 2257 |           | /       |         |         |   |
| 2260 | 7526 1364 | ROK,    | TAD     | RNUM    | /GET THE NUMBER LEFT TO DO                    |
| 2261 | 7527 7650 |         | SNA CLA |         | /STILL SOME MORE???                           |
| 2262 | 7530 5774 |         | JMP I   | RRRET   | /NOPE. EXIT NOW.                              |
| 2263 | 7531 1366 |         | TAD     | ROUT    | /TEST TO SEE IF ITLL FIT THIS TIME.           |
| 2264 | 7532 7041 |         | CIA     |         | /NEGATE.                                      |
| 2265 | 7533 1364 |         | TAD     | RNUM    | /NUMBER LEFT                                  |
| 2266 | 7534 7510 |         | SPA     |         | /TEST NOW                                     |
| 2267 | 7535 5356 |         | JMP     | RFIT    | /ITLL FIT. GO AND READJUST COUNT NOT          |
| 2270 | 7536 3364 |         | DCA     | RNUM    | /STORE AWAY NUMBER TO GO NEXT TIME.           |
| 2271 | 7537 4772 | RRTRY,  | JMS I   | RRT     | /GO DO THE DISK OPERATION.                    |
| 2272 | 7540 5773 |         | JMP I   | RRERR   | /DISK ERROR HAS OCCURED.                      |
| 2273 | 7541 3363 | RRGOOD, | DCA     | RLOC    | /CLEAR THE LOCATION TO 0000                   |
| 2274 | 7542 1362 |         | TAD     | RUNIT   | /BOP UP TO THE NEXT MEMORY FIELD              |
| 2275 | 7543 1054 |         | TAD     | L10     |   |
| 2276 | 7544 3362 |         | DCA     | RUNIT   | /SO THE OVERLAP WORKS CORRECTLY.              |
| 2277 | 7545 1365 |         | TAD     | RFIRST  | /BOP UP THE BLOCK NUMBER BY THE NUMBER DONE   |
| 2300 | 7546 1366 |         | TAD     | ROUT    |   |
| 2301 | 7547 3365 |         | DCA     | RFIRST  | /SO THAT WELL PICK UP FROM WHERE WE LEFT OFF. |
| 2302 | 7550 1020 |         | TAD     | L20     | /SET THE NUMBER OF BLOCKS TO DO TO 20         |
| 2303 | 7551 3366 |         | DCA     | ROUT    | /WHICH IS THE NUMBER IN 1 MEMORY FIELD        |
| 2304 | 7552 5326 |         | JMP     | ROK     | /AND GO BACK AND DO THE NEXT ONE.             |
| 2305 |           | /       |         |         |   |
| 2306 |           | /       |         |         |   |
| 2307 |           | /       |         |         |   |
| 2310 |           | /       |         |         |   |
| 2311 |           | /       |         |         |   |

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|------|------|------|--------------|--------|------|--|
| 2312 |      | /    |              |        |      |  |
| 2313 | 7553 | 7541 | REWERE,      | RRGOOD |      | /IF ACCEPTED AS IS                               |
| 2314 | 7554 | 7537 | RRTRY        |        |      | /TO RETRY THE OPERATION.                         |
| 2315 | 7555 | 7541 | RRGOOD       |        |      | /TO TRY TO SKIP PAST THE ERROR                   |
| 2316 |      | /    |              |        |      |  |
| 2317 |      | /    |              |        |      |  |
| 2320 |      | /    |              |        |      |  |
| 2321 |      | /    |              |        |      |  |
| 2322 | 7556 | 7220 | RFIT,        | CLA    |      | /ITLL FIT TMS TIME. SET TO CORRECT OUTPUT NUMBER |
| 2323 | 7557 | 1364 |              | TAD    | RNUM |  |
| 2324 | 7560 | 3366 |              | DCA    | ROUT | /NUMBER TO DO IS THE EXACT NUMBER                |
| 2325 | 7561 | 5326 |              | JMP    | ROK  | /AND GO BACK AND TRY AGAIN                       |
| 2326 |      | /    |              |        |      |  |
| 2327 |      | /    |              |        |      |  |
| 2330 |      | /    |              |        |      |  |
| 2331 | 7562 | 0000 | RUNIT,       | R      |      |  |
| 2332 | 7563 | 0000 | RLOC,        | R      |      |  |
| 2333 | 7564 | 0000 | RNUM,        | R      |      |  |
| 2334 | 7565 | 0000 | RFIRST,      | R      |      |  |
| 2335 | 7566 | 0000 | ROUT,        | R      |      |  |
| 2336 | 7567 | 1400 | RRRT,        | TREAD  |      | /POINTS TO TREAD                                 |
| 2337 | 7570 | 1412 | WWRT,        | TWRITE |      | /POINTS TO TWRITE                                |
| 2340 | 7571 | 7626 | RRR,         | HEADSK |      | /POINTS TO A READ DISK ROUTINE                   |
| 2341 | 7572 | 0000 | RRT,         | R      |      | /FINAL POINTER                                   |
| 2342 | 7573 | 7615 | RRERR,       | RERR   |      | /POINTER TO THE ERROR RECOVERY ROUTINE           |
| 2343 | 7574 | 1476 | RRRET,       | TEXT   |      | /MASS I-O EXIT LOCATION                          |
| 2344 |      | /    |              |        |      |  |
| 2345 |      | /    |              |        |      |  |
| 2346 |      | /    |              |        |      |  |
| 2347 |      | /    |              |        |      |  |
| 2350 |      |      | AAMHOW=RF00R |        |      | /DEFINE A TEMPORARY FOR THE SPECIAL COPIES       |
| 2351 |      | /    |              |        |      |  |
| 2352 |      | /    |              |        |      |  |
| 2353 |      | /    |              |        |      |  |
| 2354 |      | /    |              |        |      |  |
| 2355 |      | /    |              |        |      |  |
| 2356 |      | /    |              |        |      |  |
| 2357 |      | /    |              |        |      |  |
| 2360 |      | /    |              |        |      |  |
| 2361 |      | /    |              |        |      |  |
| 2362 |      | /    |              |        |      |  |
| 2363 |      | /    |              |        |      |  |
| 2364 |      | /    |              |        |      |  |
| 2365 |      | /    |              |        |      |  |
| 2366 |      | /    |              |        |      |  |
| 2367 |      | /    |              |        |      |  |
| 2370 |      |      | EJECT        |        |      |  |

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2371      /
2372      /
2373      /
2374      /
2375      /
2376      /
2377      /
2400      /
2401      /
2402      /
2403      /
2404      /
2405      7575 0601
2405      7576 4004
2405      7577 1123
2405      7600 1340
2405      7601 0522
2405      7602 2217
2405      RRBAD, TEXT "FA DISK ERROR
2406      7603 2243
2406      7604 0610
2406      7605 0123
2406      7606 4017
2406      7607 0303
2406      7610 2522
2406      7611 2205
2406      7612 0440
2406      7613 4040
2406      FHAS OCCURRED
2407      7614 4043
2407      "
2410      /
2411      /
2412      /
2413      /
2414      /
2415      /
2416      /
2417      /
2420      /
2421      /
2422      7615 3001 RERR, DCA LOC1 /STASH AWAY IN A PLACE I KNOW IS FREE
2423      7616 4564 MOVE /MOVE IN THE DISK ERROR MESSAGE
2424      7617 7575 RRBAD
2425      7620 2101 TMAIN0
2426      7621 0020 20 /32CHARS=16 WORDS=20 WORDS
2427      7622 1001 TAD LOC1 /RETRIEVE THE BLOCK NUMBER
2430      7623 4625 JMS I RRERED /CALL THE ERROR MESSAGE DISPLAY ROUTINE
2431      7624 7553 REWERE /LIST OF RETURN OPTIONS.
2432      /
2433      /
2434      /
2435      7625 2037 RRERED, TTBC /POINTER TO THE ERROR MESSAGE DISPLAY ROUTINE
2436      /
2437      /
2440      /
2441      /
2442      READSK=. /THE DISK READ ROUTINE GOES HERE.
2443      /
2444      /
2445      /
2446      /
2447      /

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2451  
2452  
2453  
2454  
2455  
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EJECT

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|------|------|------|--------------|-------------|---|
| 2456 |      | /    |              |             |   |
| 2457 |      | /    |              |             |   |
| 2460 |      | /    |              |             |   |
| 2461 |      | /    |              |             |   |
| 2462 |      | /    |              |             |   |
| 2463 | 7626 | 0000 | RFREAD, 0    |             | /RF08 READ-WRITE ROUTINES. READ ENTRY       |
| 2464 | 7627 | 5234 | JMP          | RFCOMM      | /GO TO COMMEN ENTRY                         |
| 2465 |      | /    |              |             |   |
| 2466 | 7630 | 0000 | RFWRITE, 0   |             | /RF08 WRITE ENTRY                           |
| 2467 | 7631 | 1230 | TAD          | RFWRITE     | /REPLACE THE READ ENTRY BY THE WRITE FOR    |
| 2470 | 7632 | 3226 | DCA          | RFREAD      | /THE RETURN                                 |
| 2471 | 7633 | 7305 | CLA          | CLL IAC RAL | /+2 TO MAKE DMAR A DMAW                     |
| 2472 |      | /    |              |             |   |
| 2473 | 7634 | 1343 | RFCOMM, TAD  | RFDMAR      | /ADD A READ INSTRUCTION TO THE AC.          |
| 2474 | 7635 | 5275 | DCA          | RFINST      | /NOW STORE AWAY THE CORRECT FUNCTION        |
| 2475 | 7636 | 6601 | DCMA         |             | /CLEAR THE DISK STATUS REGISTER             |
| 2476 | 7637 | 1740 | TAD I        | RRLOC       | /GET THE LOC TO WHERE WERE GOING TO         |
| 2477 | 7640 | 1047 | TAD          | L7777       | /SUBTRACT 1 FOR GOOD MEASURE                |
| 2500 | 7641 | 3351 | DCA          | RFDBAD      | /STORE AWAY NOW                             |
| 2501 | 7642 | 1063 | TAD          | M6          | /SET UP THE RANDOM COUNTER                  |
| 2502 | 7643 | 5066 | DCA          | TEMP1       | /WHICH TIMES OUT THE DISK THERE FLAG.       |
| 2503 | 7644 | 1741 | TAD I        | RROUT       | /GET THE NUMBER OF BLOCKS TO DO             |
| 2504 | 7645 | 7053 | CIA          | RTR         | /MOVE TO BITS 0-3 OF THE AC AND             |
| 2505 | 7646 | 7012 | RTR          |             | /NEGATE                                     |
| 2506 | 7647 | 7010 | RAR          |             |   |
| 2507 | 7650 | 0064 | AND          | L7400       | /CHOP OFF ANY CRAP WE PICKED UP ON THE WAY. |
| 2510 | 7651 | 5350 | OCA          | RFDBWC      | /STASH AWAY NOW                             |
| 2511 | 7652 | 1737 | TAD I        | RRUNIT      | /GET THE FIELD BITS ON                      |
| 2512 | 7653 | 0021 | AND          | L7770       | /AND OUT UNIT BITS                          |
| 2513 | 7654 | 6615 | DIML         |             | /AND SET THE FIELD BITS IN THE STATUS REG.  |
| 2514 | 7655 | 1737 | TAD I        | RRUNIT      | /NOW GET THE UNIT FOR REAL                  |
| 2515 | 7656 | 0060 | AND          | L7          | /JUST THE UNIT BITS                         |
| 2516 | 7657 | 7106 | CLL          | RTL         |   |
| 2517 | 7660 | 7006 | RTL          |             |   |
| 2520 | 7661 | 7004 | RAL          |             | /SHIFT OVER TO EXTENDED DISK BITS           |
| 2521 | 7662 | 3065 | DCA          | TEMP        | /SAVE FOR A SECOND                          |
| 2522 | 7663 | 1742 | TAD I        | RRFIRST     | /GET THE FIRST BLOCK NUMBER                 |
| 2523 | 7664 | 7012 | RTR          |             |   |
| 2524 | 7665 | 7012 | RTR          |             | /IGNORE 4 LOW ORDER BITS                    |
| 2525 | 7666 | 0344 | AND          | RFL377      | /JUST BLOCK BITS OF DISK                    |
| 2526 | 7667 | 1065 | TAD          | TEMP        | /ADD IN DISK SELECTION BITS                 |
| 2527 | 7670 | 6643 | DXAL         |             | /SET UP THE DISK ADDRESS.                   |
| 2530 | 7671 | 1742 | TAD I        | RRFIRST     | /RECALL THE STARTING BLOCK NUMBER           |
| 2531 | 7672 | 4550 | ROR6         |             | /ROTAE LOW BITS TO BITS 0-3 OF              |
| 2532 | 7673 | 7004 | RAL          |             | /THE AC. THIS SAVES A LOC.                  |
| 2533 | 7674 | 0064 | AND          | L7400       | /CHOP OFF STRAY CRAP                        |
| 2534 | 7675 | 0000 | RFINST, 0    |             | /CORRECT DISK INSTRUCTION GOES HERE         |
| 2535 | 7676 | 4556 | CHECKIO      |             | /CHECK KEYBOARD NOW                         |
| 2536 | 7677 | 2067 | ISZ          | TEMP2       | /INCREMENT THE FAST COUNTER                 |
| 2537 | 7700 | 5304 | JMP          | RFNOSK      | /DIDNT SKIP                                 |
| 2540 | 7701 | 2066 | ISZ          | TEMP1       | /NOW INCREMENT THE SLOW COUNTER             |
| 2541 | 7702 | 5304 | JMP          | RFNOSK      | /IT DIDNT SKIP EITHER                       |
| 2542 | 7703 | 5334 | JMP          | RF08NO      | /DISK FLAG DIDNT RAISE. PROBABLY NO DISK.   |
| 2543 | 7704 | 6623 | RFNOSK, DISK |             | /AND NOW CHECK THE DISK FLAG                |
| 2544 | 7705 | 5276 | JMP          | RFINST+1    | /IT DIDNT SKIP EITHER. HANG AROUND.         |
| 2545 | 7706 | 6621 | DFSE         |             | /WAS THERE AN ERROR?                        |
| 2546 | 7707 | 5332 | JMP          | RFGXT       | /NOPE. GOOD RETURN                          |
| 2547 | 7710 | 6616 | DIMA         |             | /AN. ERROR. WAS IT A MYTHICAL ONE           |
| 2550 | 7711 | 0345 | AND          | RF1003      | /THIS CHECKS IMPORTANT BITS                 |
| 2551 | 7712 | 7112 | CLL          | RTR         |   |
| 2552 | 7713 | 1350 | TAD          | RFDBWC      | /ALSO CHECK TO SEE IF OPERATION COMPLETED   |
| 2553 | 7714 | 7650 | SNA          | CLA         | /ALL WELL???                                |
| 2554 | 7715 | 5332 | JMP          | RFGXT       | /ALL IS WELL. EXIT                          |

|      |      |      |             |            |                                       |
|------|------|------|-------------|------------|---------------------------------------|
| 2555 | 7716 | 6645 | DXAC        |            | /READ IN THE EXTENDED REGISTER        |
| 2556 | 7717 | 0344 | AND         | RFL377     | /CHOP OFF CRAP                        |
| 2557 | 7720 | 7106 | CLL         | RTL        |                                       |
| 2560 | 7721 | 7006 | RTL         |            | /ROTATE TO GOOD BLOCK NUMBER BITS     |
| 2561 | 7722 | 3065 | DOA         | TEMP       | /SAVE FOR A SECOND                    |
| 2562 | 7723 | 6626 | DMAC        |            | /DOA PICK UP THE LOW ORDER BITS       |
| 2563 | 7724 | 0064 | AND         | L7400      | /IGNORE RANDOM WORD STUFF             |
| 2564 | 7725 | 7106 | CLL         | RTL        |                                       |
| 2565 | 7726 | 7006 | RTL         |            | /SHIFT INTO CORRECT PLACE             |
| 2566 | 7727 | 7004 | RAL         |            | /WHICH IS BITS 0-11 OF THE AC.        |
| 2567 | 7730 | 1065 | TAD         | TEMP       | /ADD IN THE CORRECT FACTOR            |
| 2570 | 7731 | 5626 | JMP         | I REREAD   | /AND RETURN TO THE CALLER             |
| 2571 |      |      | /           |            |                                       |
| 2572 |      |      | /           |            |                                       |
| 2573 |      |      | /           |            |                                       |
| 2574 | 7732 | 2226 | RFGXT,      | ISZ REREAD | /ALL IS WELL. SKIP PAST ERROR RETURN  |
| 2575 | 7733 | 5626 | JMP         | I REREAD   | /AND EXIT TO THE USER                 |
| 2576 |      |      | /           |            |                                       |
| 2577 |      |      | /           |            |                                       |
| 2600 |      |      | /           |            |                                       |
| 2601 |      |      | /           |            |                                       |
| 2602 |      |      | /           |            |                                       |
| 2603 | 7734 | 4551 | RF08NO,     | DISPLAY    | /DISK FLAG NOT UP. GIVE ERROR MESSAGE |
| 2604 | 7735 | 7752 | RF08N2      |            |                                       |
| 2605 | 7736 | 5334 | JMP         | RF08NO     | /ITS AN INFINITE WAIT.                |
| 2606 |      |      | /           |            |                                       |
| 2607 |      |      | /           |            |                                       |
| 2610 |      |      | /           |            |                                       |
| 2611 |      |      | /           |            |                                       |
| 2612 |      |      | /           |            |                                       |
| 2613 |      |      | /           |            |                                       |
| 2614 |      |      | /           |            |                                       |
| 2615 |      |      | /           |            |                                       |
| 2616 | 7737 | 7562 | RRUNIT,     | RUNIT      | /POINTER TO PREVIOUS SECTION INFO     |
| 2617 | 7740 | 7563 | RRLOC,      | RLOC       |                                       |
| 2620 | 7741 | 7566 | RROUT,      | ROUT       |                                       |
| 2621 | 7742 | 7565 | RRFIRST,    | RFIRST     |                                       |
| 2622 |      |      | /           |            |                                       |
| 2623 | 7743 | 6603 | RFDMAR,     | DMAR       | /ACTUAL RF08 DISK READ IOT            |
| 2624 | 7744 | 0377 | RFL377,     | 377        |                                       |
| 2625 | 7745 | 1003 | RF1003,     | 1003       |                                       |
| 2626 |      |      | /           |            |                                       |
| 2627 |      |      | /           |            |                                       |
| 2630 |      |      | /           |            |                                       |
| 2631 |      |      | /           |            |                                       |
| 2632 |      |      | /           |            |                                       |
| 2633 |      |      | /           |            |                                       |
| 2634 |      |      | RFDBAD=7751 |            | /DATA BREAK ADDRESS                   |
| 2635 |      |      | RFDBWC=7750 |            | /WORD COUNT LOCATION                  |
| 2636 |      |      | /           |            |                                       |
| 2637 |      |      | /           |            |                                       |
| 2640 |      |      | /           |            |                                       |
| 2641 |      |      | /           |            |                                       |
| 2642 |      |      | /           |            |                                       |
| 2643 |      |      | /           |            |                                       |
| 2644 |      |      | /           |            |                                       |
| 2645 |      |      | *RFDBAD+1   |            | /ORIGIN PAST DATA BREAK               |
| 2646 |      |      | /           |            |                                       |
| 2647 |      |      | /           |            |                                       |
| 2650 |      |      | /           |            |                                       |
| 2651 |      |      | /           |            |                                       |
| 2652 | 7752 | 0300 | RF08N2,     | LEFT+300   | /ABOUT THE CENTER OF THE SCREEN       |
| 2653 | 7753 | 0000 | TOP=340     |            |                                       |



|      |      |      |
|------|------|------|
| 2654 | 7754 | 2616 |
| 2654 | 7755 | 1742 |
| 2654 | 7756 | 2411 |
| 2654 | 7757 | 2313 |
| 2654 | 7760 | 3402 |

TEXT "END DISK"

|      |   |
|------|---|
| 2655 | / |
| 2656 | / |
| 2657 | / |
| 2660 | / |
| 2661 | / |
| 2662 | / |
| 2663 | / |
| 2664 | / |
| 2665 | / |
| 2666 | / |
| 2667 | / |
| 2670 | / |
| 2671 | / |
| 2672 | / |
| 2673 | / |
| 2674 | / |
| 2675 | / |
| 2676 | / |
| 2677 | / |
| 2700 | / |
| 2701 | / |
| 2702 | / |

EJECT

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|------|-----------|-----------------|---------|--|
| 2703 |           | /               |         |  |
| 2704 |           | /               |         |  |
| 2705 |           | /               |         |  |
| 2706 |           | /               |         |  |
| 2707 |           | /               |         |  |
| 2710 |           | /               |         |  |
| 2711 |           | /               |         |  |
| 2712 |           | /               |         |  |
| 2713 |           | /               |         |  |
| 2714 |           | /               |         |  |
| 2715 |           | /               |         |  |
| 2716 |           | /               |         |  |
| 2717 |           | /               |         |  |
| 2720 |           | /               |         |  |
| 2721 |           | /               |         |  |
| 2722 |           | /               |         |  |
| 2723 |           | /               |         |  |
| 2724 |           | /               |         |  |
| 2725 |           | /               |         |  |
| 2726 |           | /               |         |  |
| 2727 |           | /               |         |  |
| 2730 | 7226 0000 | RKREAD, 0       |         | /RK08 READ ROUTINES                                    |
| 2731 | 7227 5234 | JMP             | RKCOMM  | /GO TO COMMON AREA                                     |
| 2732 |           | /               |         |  |
| 2733 | 7230 0000 | RKWRITE, 0      |         | /RK08 WRITE ENTRY POINT                                |
| 2734 | 7231 1230 | TAD             | RKWRITE | /REPLACE THE READ ENTRY BY THE CORRECT                 |
| 2735 | 7232 3226 | DCA             | RKREAD  | /WRITE ENTRY   |
| 2736 | 7233 7305 | CLA CLL IAC RAL |         | /+2 TO MAKE THE READ A WRITE                           |
| 2737 |           | /               |         |  |
| 2740 | 7234 1334 | RKCOMM, TAD     | RKDLDL  | /ADD IN THE READ INSTRUCTION                           |
| 2741 | 7235 3275 | DCA             | RKINST  | /AND SAVE IN THE CORRECT INSTRUCTION WORD              |
| 2742 | 7236 1733 | TAD I           | RKUNIT  | /GET THE FIELD BITS                                    |
| 2743 | 7237 0021 | AND             | L7770   | /AND LOAD INTO THE COMMAND REGISTER                    |
| 2744 | 7240 1107 | TAD             | RKDRIV  | /INSERT CORRECT DRIVE NUMBER NOW.                      |
| 2745 | 7241 6732 | DLCC            |         | /SEND TO JIMS CONTROLLER                               |
| 2746 | 7242 1733 | TAD I           | RKUNIT  | /NOW WELL GET THE UNIT BITS                            |
| 2747 | 7243 0060 | AND             | L7      | /JUST THE UNIT PORTION                                 |
| 2750 | 7244 7112 | CLL RTR         |         | /ROTATE TO BITS 0-3                                    |
| 2751 | 7245 7012 | RTR             |         |  |
| 2752 | 7246 1730 | TAD I           | RKIRST  | /NOW ADD IN THE CORRECT BLOCK NUMBER.                  |
| 2753 | 7247 3013 | DCA             | RKTRCK  | /SAVE IN THE TRACK POINTER NOW                         |
| 2754 | 7250 1732 | TAD I           | RKLOC   | /GET THE CORE LOCATION                                 |
| 2755 | 7251 1047 | TAD             | L7777   | /SUBTRACT 1 FOR THE D.B.                               |
| 2756 | 7252 3014 | DCA             | RKLOCC  | /SAVE IN A LOCATION POINTER NOW.                       |
| 2757 | 7253 1731 | TAD I           | RKOUT   | /GET THE NUMBER OF RECORDS TO DO                       |
| 2760 | 7254 7041 | CIA             |         | /NEGATE IT NOW   |
| 2761 | 7255 3012 | DCA             | RKCUNT  | /SAVE IN THE COUNTER NOW.                              |
| 2762 | 7256 5263 | JMP             | RKNBOP  | /DONT BOP UP THE ADDRESS AND TRACK FOR FIRST OPERATION |
| 2763 |           | /               |         |  |
| 2764 | 7257 1014 | RKBP, TAD       | RKLOCC  | /GET THE LAST LOCATION                                 |
| 2765 | 7260 1040 | TAD             | L400    | /BOP UP BY 400 TO THE NEXT CORE LOC.                   |
| 2766 | 7261 3014 | DCA             | RKLOCC  | /AND SAVE IT.  |
| 2767 | 7262 2013 | ISZ             | RKTRCK  | /BOP UP THE SECTOR BY 1 NOW.                           |
| 2770 |           | /               |         |  |
| 2771 | 7263 7240 | RKNBOP, CLA CMA |         | /PREPARE TO START THE NEXT OPERATION                   |
| 2772 | 7264 6742 | DCLS            |         | /CLEAR THE STATUS REGISTER NOW.                        |
| 2773 | 7265 7200 | CLA             |         | /CLEAR THE AC BECAUSE DCLS DOESNT                      |
| 2774 | 7266 1023 | TAD             | M20     | /RESET THE TIME OUT COUNTER SO THAT                    |
| 2775 | 7267 3066 | DCA             | TEMP1   | /WE'LL KNOW IF WE TAKE TOO MUCH TIME.                  |
| 2776 | 7270 1014 | TAD             | RKLOCC  | /GET THE LOCATION TO DO.                               |
| 2777 | 7271 6755 | DLCA            |         | /SEND IT OUT TO THE CONTROLLER                         |
| 3000 | 7272 1064 | TAD             | M400    | /SET THE WORD COUNT TO 1 RECORD (-400 WORDS)           |
| 3001 | 7273 6753 | DLWC            |         | /AND SEND IT TO THE CONTROLLER                         |

\*READSK-400

/ORIGIN THIS SECTION INTO FREE AREA.

|      |      |      |   |                |          |  |
|------|------|------|---|----------------|----------|--|
| 3002 | 7274 | 1013 | / | TAD            | RKTRCK   | /NOW GET THE TRACK AND SECTOR IN THE AC.                         |
| 3003 |      |      | / |                |          |  |
| 3004 | 7275 | 0000 | / | RKINST, 0      |          | /DO RK08 INSTRUCTION   |
| 3005 |      |      | / |                |          |  |
| 3006 | 7276 | 4556 |   | CHECK10        |          | /TEST THE KEY BOARD  |
| 3007 | 7277 | 2067 |   | ISZ            | TEMP2    | /AND ALSO THE TIME-OUT FLAG                                      |
| 3010 | 7300 | 5306 |   | JMP            | RKNOSK   | /STILL OK  |
| 3011 | 7301 | 2066 |   | ISZ            | TEMP1    | /HOW ABOUT THE SLOW COUNTER                                      |
| 3012 | 7302 | 5306 |   | JMP            | RKNOSK   | /STILL OK  |
| 3013 |      |      | / |                |          |  |
| 3014 | 7303 | 4551 |   | DISPLAY        |          | /ERROR . NOT DONE YET. A BOO BOO.                                |
| 3015 | 7304 | 7735 |   | RKBAD&177:7600 |          | /RK08 BAD MESSAGE FOR ORIGIN AT 7600                             |
| 3016 | 7305 | 5303 |   | JMP            | .=2      | /WAIT FOREVER  |
| 3017 |      |      | / |                |          |  |
| 3020 | 7306 | 6745 |   | RKNOSK, DSKC   |          | /NOW TEST THE DISK FLAG.   |
| 3021 | 7307 | 7410 |   | SKP            |          | /NOT COMPLETE. TEST THE ERROR FLAG.                              |
| 3022 | 7310 | 5313 |   | JMP            | .+3      | /COMPLETE. TEST THE ERROR FLAG ANYWAY                            |
| 3023 | 7311 | 6747 |   | DSKE           |          | /ALSO CHECK THE POSSIBILITY OF AN ERROR WITH NO COMPLETION FLAG. |
| 3024 | 7312 | 5276 |   | JMP            | RKINST+1 | /NOT YET DONE. HANG AROUND AWHILE                                |
| 3025 | 7313 | 6747 |   | DSKE           |          | /TEST THE ERROR FLAG   |
| 3026 | 7314 | 5323 |   | JMP            | RKOUN1   | /WEVE FINISHED WITH THIS SECTOR. CHECK FOR MORE TO GO            |
| 3027 | 7315 | 6741 |   | RKSEKE, DRDS   |          | /READ IN THE STATUS REGISTER                                     |
| 3030 | 7316 | 0527 |   | AND            | RKL40    | /WAS IT A TRACK MISS   |
| 3031 | 7317 | 7640 |   | SZA CLA        |          | /?   |
| 3032 | 7320 | 5351 |   | JMP            | RKOFF    | /IT WAS. DRIVE BLEW IT. A NO-NO                                  |
| 3033 | 7321 | 1013 |   | TAD            | RKTRCK   | /NOW GET THE RECORD THAT FAILED.                                 |
| 3034 | 7322 | 5626 |   | JMP I          | RKREAD   | /RETURN ON AN ERROR CONDITION TO DISPLAY MESSAGE.                |
| 3035 |      |      | / |                |          |  |
| 3036 |      |      | / |                |          |  |
| 3037 | 7323 | 2012 |   | RKOUN1, ISZ    | RKCUNT   | /BOP UP THE RECORD COUNT. DONE?                                  |
| 3040 | 7324 | 5257 |   | JMP            | RKBOP    | /NOT YET DONE. BOP ALL AND GET NEXT.                             |
| 3041 | 7325 | 2226 |   | ISZ            | RKREAD   | /GOOD OPERATION. GOOD RETURN. ALL IS WELL                        |
| 3042 | 7326 | 5626 |   | JMP I          | RKREAD   | /RETURN TO CALLER  |
| 3043 |      |      | / |                |          |  |
| 3044 |      |      | / |                |          |  |
| 3045 |      |      | / |                |          |  |
| 3046 |      |      | / |                |          |  |
| 3047 |      |      | / |                |          |  |
| 3050 |      |      | / |                |          |  |
| 3051 |      |      | / |                |          |  |
| 3052 |      |      | / |                |          |  |
| 3053 | 7327 | 0040 |   | RKL40, 40      |          | /POINTER TO FIRST BLOCK NUMBER                                   |
| 3054 | 7330 | 7565 |   | RKIRST, RFIRST |          | /POINTER TO THE NUMBER OF BLOCKS TO DO                           |
| 3055 | 7331 | 7566 |   | RKOUT, ROUT    |          | /POINTER TO THE CORRECT LOCATION TO DO                           |
| 3056 | 7332 | 7563 |   | RKLOC, RLOC    |          | /POINTER TO THE UNIT AND FIELD BITS                              |
| 3057 | 7333 | 7562 |   | RKUNIT, RUNIT  |          | /ACTUAL RK08 READ INSTRUCTION                                    |
| 3060 | 7334 | 6733 |   | RKDLDR, ULDR   |          |  |
| 3061 |      |      | / |                |          |  |
| 3062 |      |      | / |                |          |  |
| 3063 |      |      | / |                |          |  |
| 3064 |      |      | / |                |          |  |
| 3065 |      |      | / |                |          |  |
| 3066 |      |      | / |                |          |  |
| 3067 |      |      | / |                |          |  |
| 3070 |      |      | / |                |          |  |
| 3071 |      |      | / |                |          |  |
| 3072 |      |      | / |                |          |  |
| 3073 |      |      | / |                |          |  |
| 3074 |      |      | / |                |          |  |
| 3075 |      |      | / | RKLOCC=AUTO5   |          | /CONTAINS THE CORE ADDRESS-1 FOR THE PRESENT TRANSFER            |
| 3076 |      |      | / | RKTRCK=AUTO4   |          | /CONTAINS THE TRACK AND SECTOR PRESENTLY BEING USED              |
| 3077 |      |      | / | RKCUNT=AUTO3   |          | /CONTAINS -THE NUMBER OF RECORDS TO GO.                          |
| 3100 |      |      | / |                |          |  |

```

3101      /
3102      /
3103      /
3104      /
3105      /
3106      7335 0140 RKBAD, LEFT+140 /SHOULD BE GOOD ENOUGH
3107      7336 0300 TOP=340 /ABOUT THE CENTER
3110      7337 0604
3110      7340 2211
3110      7341 2605
3110      7342 4016
3110      7343 1724
3110      7344 4027
3110      7345 1722
3110      7346 1311
3110      7347 1607
3110      7350 3400
3110      TEXT "FDRIVE NOT WORKING\
3111      /
3112      /
3113      /
3114      /
3115      /
3116      /
3117      /
3120      /
3121      /
3122      7351 3230 RKOFF, DCA RKWRITE /SET UP A COUNT OF 4096 IN A TEMPORARY REGISTER
3123      7352 4551 DISPLAY /DISPLAY THE ERROR MESSAGE FOR A FEW SECONDS
3124      7353 7770 RKOFF28177!7600 /POINTER TO 7600 ERROR MESSAGE
3125      7354 2230 ISZ RKWRITE /INCREMENT AND TEST THE COUNTER
3126      7355 5352 JMP , -3 /DISPLAY FOR ABOUT 10 SECONDS.
3127      7356 7240 CLA CMA /CLEAR THE STATUS REGISTER BITS
3130      7357 6742 DCLS /CLEAR THE STATUS REGISTER
3131      7360 6751 DCLA /DO A POWER CLEAR
3132      7361 4556 RKHANG, CHECKIO /NOW WAIT FOR THE RESYNC OF THE DISC
3133      7362 6747 DSKE /WAS THERE AND ERROR ON THE RECALIBRATE?
3134      7363 7410 SKP /NOPE, NOT YET ANYWAY.
3135      7364 5315 JMP RKSEKE /THERE WAS AN ERROR, GIVE THE MESSAGE
3136      7365 6745 DSKC /IS THE RECALIBRATE FINISHED.
3137      7366 5361 JMP RKHANG /NOPE, WAIT FOR IT.
3140      7367 5263 JMP RKNBOP /RETRY THE OPERATION NOW.
3141      /
3142      /
3143      /
3144      /
3145      /
3146      /
3147      /
3150      /
3151      /
3152      /
3153      7370 0240 RKOFF2, LEFT+240 /ABOUT CENTER SCREEN
3154      7371 0000 TOP=340
3155      7372 0623
3155      7373 0505
3155      7374 1340
3155      7375 0522
3155      7376 2217
3155      7377 2234
3155      TEXT "FSEEK ERROR\
3156      /
3157      /

```

3160 /  
3161 /  
3162 /  
3163 /  
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3205 /  
3206 /  
3207 /  
3210 /  
3211 /  
3212 /

EJECT

3213 /  
3214 /  
3215 /  
3216 /  
3217 /

NO ERRORS

| SYMBOL | VALUE | DEF  | REFERENCES                         |
|--------|-------|------|------------------------------------|
| AAA    | 5303  | 0544 | 0511                               |
| AAAAAA | 5253  | 0505 | 0427 0453 0461 0555 0570 0643 0622 |
| AAEND  | 5454  | 1235 | 1056 1062                          |
| AAAGET | 5403  | 0747 | 0332 1015 1026 1033 1040 1062 1065 |
| AAADRG | 5354  | 0616 | 0454 0515 0624                     |
| AAAPUT | 5161  | 0330 | 0321                               |
| AAATAB | 5450  | 1030 | 1064                               |
| AAA1   | 5216  | 0427 | 0437 0443                          |
| AAA2   | 5330  | 0572 | 0561                               |
| AABLAH | 5172  | 0347 | 0255                               |
| AABLOC | 5363  | 0635 | 0465 0467 0513                     |
| AABL1  | 7467  | 1767 | 1736                               |
| AABL2  | 7471  | 1771 | 1745                               |
| AACR   | 5445  | 1024 | 1063                               |
| AAEND  | 5226  | 0447 | 1076                               |
| AAGET  | 5163  | 0332 | 0220                               |
| AAGET2 | 5415  | 0767 | 0753                               |
| AAGET3 | 5424  | 0777 | 0770 1013                          |
| AAGET4 | 5427  | 1002 | 0775                               |
| AAGL1  | 5460  | 1046 | 1005                               |
| AAG01  | 5464  | 1055 | 1006                               |
| AALIM  | 5367  | 0641 | 0611                               |
| AALIMC | 5164  | 0333 | 0234                               |
| AALL   | 5752  | 1471 | 1432 1436 1456                     |
| AAL00P | 5714  | 1423 | 1455                               |
| AAMHOW | 7501  | 2350 | 1662 1732                          |
| AAOUT8 | 5356  | 0620 | 0471 0514 0610 0621                |
| AAPUT  | 5200  | 0411 | 0330 0430 0434                     |
| AASI#1 | 7466  | 1766 | 1734 1776                          |
| AASI#2 | 7470  | 1770 | 1743                               |
| AASUC  | 7466  | 1776 | 1636 1647 1777                     |
| AASUCH | 7411  | 1655 | 1640                               |
| AASUCS | 0004  | 1777 | 1637 1650                          |
| AASYSC | 7400  | 1634 | 1527                               |
| AATAB  | 5223  | 0441 | 1077                               |
| AAUNIT | 5353  | 0615 | 0463 0624                          |
| AAUNTC | 7405  | 1645 | 1530                               |
| ABAD   | 5112  | 0243 | 0235 0657 0660 0661 0663 0664      |
| ABDIS  | 5477  | 1114 | 1240                               |
| ABG1   | 5761  | 1522 | 1251                               |
| ABL1   | 5755  | 1511 | 1250                               |
| ABSOL  | 5600  | 1237 | 0635 1252                          |
| ABSTMP | 5765  | 1613 | 1246 1267 1355                     |
| ACOPR  | 5636  | 1314 | 1376                               |
| ACOPR2 | 5656  | 1343 | 1406                               |
| ACOPT  | 5640  | 1316 | 1374                               |
| ACOPT2 | 5660  | 1345 | 1404                               |
| ACOPY  | 5630  | 1276 | 1303 1323 1373 1377 1522           |
| ACOPY2 | 5650  | 1326 | 1333 1351 1403 1407                |
| ACPG1  | 5674  | 1373 | 1302                               |
| ACPG2  | 5700  | 1403 | 1332                               |
| ACPL1  | 4377  | 1371 | 1301 1331 1673 1714                |
| ACR    | 5132  | 0272 | 0656                               |
| ACRCHK | 5016  | 0116 | 0106                               |
| ACRR   | 5134  | 0276 | 0254 0263 0272 0311                |
| AC1    | 5165  | 0340 | 0232 0277 0413                     |
| AEND   | 5113  | 0247 | 0230 0665                          |
| AEND2  | 5120  | 0254 | 0251                               |
| AGETI  | 5444  | 1021 | 0761 0762 0771                     |
| AGETN  | 5704  | 1412 | 1322 1350 1465 1474                |
| AGNUM  | 5731  | 1440 | 1324 1352 1420 1444 1450 1453      |



| SYMBOL  | VALUE | DEF  | REFERENCES  |
|---------|-------|------|---|
| AG1     | 5370  | 0606 | 0233  |
| AG2     | 5470  | 1067 | 0414  |
| ALASTC  | 5366  | 0640 | 0542 0551 0557  |
| ALD     | 5750  | 1463 | 1420  |
| ALOOP   | 5067  | 0210 | 0240 0243 0273  |
| AL40    | 5364  | 0636 | 0442 0452   |
| AL43    | 5365  | 0637 | 0436 0541 0546 0553   |
| ANTAPE  | 5065  | 0211 | 0203  |
| AOK     | 5110  | 0237 | 0666  |
| AP      | 5220  | 0434 | 0420 0424 1070 1071 1073 1074 1075  |
| APART2  | 5033  | 0142 | 0123 0151   |
| APCR    | 5221  | 0436 | 1067  |
| APUTIT  | 5150  | 0310 | 0237 0257 0262 0301 0305 0310 0322 0325   |
| ASCG0   | 5174  | 0306 | 0111  |
| ASCG02  | 5377  | 0676 | 0146  |
| ASCH1   | 5017  | 0121 | 0312 0350   |
| ASCH2   | 5043  | 0160 | 0676 1566   |
| ASCI I  | 5000  | 0074 | 0637 0112   |
| ASCI NP | 4010  | 0062 | 0070 1232   |
| ASCLPT  | 5042  | 0100 | 0100  |
| ASCLST  | 4377  | 0064 | 0065 0110   |
| ASCLTO  | 4377  | 0060 | 0145  |
| ASCOU T | 4703  | 0063 | 0143 1233   |
| ASCT    | 5024  | 0132 | 0357  |
| ASCTT   | 5047  | 0167 | 0677  |
| ASCT1   | 5020  | 0122 | 0362  |
| ASCT2   | 5044  | 0161 | 0702  |
| ASET    | 1502  | 0254 | 0511 0260   |
| ASET I  | 5162  | 0331 | 0201  |
| ASRF8   | 5022  | 0130 | 0361  |
| ASRF82  | 5045  | 0160 | 0701  |
| ASUDD1  | 7425  | 1703 | 1606  |
| ASUDD2  | 7440  | 1722 | 1610  |
| ASUG01  | 4550  | 1604 | 1674  |
| ASUG02  | 4554  | 1613 | 1715  |
| ASULP1  | 7417  | 1670 | 1604 1607 1675  |
| ASULP2  | 7432  | 1711 | 1613 1616 1716  |
| ASUTT1  | 7427  | 1705 | 1605  |
| ASUTT2  | 7442  | 1724 | 1614  |
| ASYSL   | 7472  | 0013 | 1635  |
| AUNTL   | 7476  | 0021 | 1646  |
| AUTO1   | 0010  | 0131 | 1415 1417 1426 1435 1466 1715 1717 1723 1724 1725 1726 1727 1733 1734 1766 1771 1776 2000 2007 2114 2115 2117 |
| AUTO2   | 0011  | 0132 | 2121 2130 2150 2151 2152 2154 2171 2210 2220 2225 2232 2237 1212 1213   |
| AUTO3   | 0012  | 0133 | 1467 1656 1660  |
| AUTO4   | 0013  | 0134 | 2366 2370 2373 2375 2405 2122 2123 3077   |
| AUTO5   | 0014  | 0135 | 2371 2401 3076  |
| AUTO6   | 0015  | 0136 | 2374 2402 3070  |
| AUTO7   | 0016  | 0137 | 2624  |
| AUTO8   | 0017  | 0140 | 1427 1433 1434 2060 2071  |
| AUXIN   | 4574  | 0552 | 0561 0420 0222  |
| AUXOUT  | 4575  | 0554 | 0507 1216 1221 1242 1310 0324   |
| A377    | 5443  | 1020 | 1014  |
| A5262   | 5361  | 0632 | 0530  |
| A6043   | 5362  | 0633 | 0533  |
| BASSEM  | 3634  | 0406 | 0365 0414 0453  |
| BBBASE  | 4270  | 1171 | 1134  |
| BBBBBJ  | 4316  | 1225 | 1212  |
| BBBHDR  | 4211  | 1103 | 1127  |
| BBBPUT  | 3627  | 0400 | 0367  |
| BBDUMP  | 4267  | 1170 | 1072  |
| BBLT    | 4376  | 1313 | 1205  |

| SYMBOL | VALUE | DEF  | REFERENCES   |
|--------|-------|------|--|
| BBNEW0 | 4342  | 1252 | 1243   |
| BBN1   | 4335  | 1245 | 1237   |
| BBN2   | 4352  | 1263 | 1251   |
| BB0INT | 4272  | 1173 | 1076 1142  |
| BB00T  | 3551  | 0250 | 0126 0130 0132 0146  |
| BB0UT  | 4273  | 1201 | 0557 1206 1232 1276  |
| BBTAPE | 3546  | 0244 | 0236   |
| BCERR  | 3775  | 0577 | 0457   |
| BCHAR  | 0105  | 0414 | 0357 0432 0441 0530 0531 0535  |
| BCHECK | 3771  | 0573 | 0356 0375 0455   |
| BCHEX  | 3621  | 0371 | 0404   |
| BCOUNT | 0140  | 0461 | 0052 1004 1073 1110 1213 1217 1305 1306 0100 0176 0204 0205 0214                               |
| BDELZ  | 0101  | 0401 | 0204 0206 1225   |
| BEEND  | 4261  | 1157 | 1152   |
| BEGG   | 3643  | 0416 | 0353 0363 0426 0431 0436 0440 0450   |
| BEILOP | 4024  | 0663 | 0713   |
| BELOOP | 4252  | 1150 | 1163   |
| BEND   | 3676  | 0453 | 0364   |
| BEOUT  | 4045  | 0704 | 0700   |
| BETLP2 | 4037  | 0676 | 0707   |
| BEILD  | 3772  | 0574 | 0352 0371 0443 0444  |
| BFIELD | 0135  | 0456 | 0050 0351 0372 0463 0675 0715 0725 0731 0756 0767 1210 1233 1240 1265 0102 0507 0512 0751 0754 |
| BFLAG1 | 0102  | 0411 | 0053 0065 0066 0225 0234 0310 0476 0076 0121 0122 0173 0215 0247 0152                          |
| BFLAG2 | 0104  | 0412 | 0054 0200 0201 0226 0231 0545 1202 0077 0160 0161 0174 0202 0316 1564 0515                     |
| BGETI  | 4173  | 1051 | 0701   |
| BGO    | 3606  | 0356 | 0376   |
| BGOLST | 3555  | 0255 | 0100   |
| BHIGH  | 3417  | 0065 | 1354   |
| BHIGH2 | 3513  | 0200 | 1364   |
| BIDIFF | 4115  | 0763 | 0735 0743  |
| BIDUMP | 4152  | 1023 | 0774 1034 1170   |
| BINARY | 3400  | 0042 | 0636 1000 0060 0102  |
| BINGO  | 4403  | 1354 | 0057   |
| BINGO2 | 4407  | 1364 | 0174   |
| BININP | 4610  | 1762 | 0043 0062  |
| BINLST | 4377  | 1344 | 0056 0173 0064 1371  |
| BINOUT | 4703  | 2114 | 0171 0063  |
| BINTAP | 4003  | 0641 | 0244   |
| BINTRY | 4101  | 0745 | 1017   |
| BLODE  | 3442  | 0114 | 0260   |
| BLODYR | 3547  | 0245 | 0237   |
| BLRFB  | 3474  | 0155 | 1357   |
| BLRFB2 | 3524  | 0216 | 1367   |
| BLT    | 3476  | 0157 | 1355   |
| BLT2   | 3526  | 0220 | 1365   |
| BL7345 | 3501  | 0162 | 0203   |
| BMBASE | 4164  | 1042 | 1010 1025  |
| BMTAB  | 4167  | 1045 | 0660 1000  |
| BNFILE | 3600  | 0347 | 0245 0461  |
| BNUM   | 0074  | 0374 | 2421 2424 2426 1006 1010 1175 2251   |
| BOADD  | 4366  | 1302 | 1256 1261 1272 1275 1311   |
| BOFIEL | 0137  | 0460 | 0045 0733 0757 0772 1235 1266  |
| BOLOO  | 0136  | 0457 | 0051 0304 0741 0755 1245 1264 0126 0136 0207   |
| BOLOP  | 0103  | 0413 | 0047 0776 1024 0103 0456 0516 0531 0532 0534 0535 0567 0576 0577 0600 0605 0772 0773 1001      |
| BOTTOM | 7400  | 0300 | 2016 2301  |
| BPART2 | 3504  | 0167 | 0073 0147 0175 0210  |
| BPODE  | 3434  | 0105 | 0261   |
| BPOINT | 4166  | 1044 | 0747   |
| BSCOMM | 3452  | 0126 | 0112   |
| BSEI1  | 4172  | 1050 | 0655   |
| BSTGO  | 3557  | 0260 | 0101   |
| BSYS   | 4206  | 1100 | 1105 1125  |

| SYMBOL | VALUE | DEF  | REFERENCES  |
|--------|-------|------|---|
| BTAP   | 4061  | 0724 | 0760 1313   |
| BTEMP1 | 0132  | 0453 | 0657 0665 0712 0771 0775 0777 1007 1143 1150 1160 0506 0544 0556 2562 0574                                    |
| BTEMP2 | 0133  | 0454 | 0661 0676 0710 1001 1002 1006 0125 2157 0256 0267   |
| BTEMP3 | 0134  | 0455 | 0664 0706 1145 1162 0522 0536 0537 0602 0607  |
| BTEND  | 4170  | 1046 | 0730  |
| BTENT  | 4200  | 1072 | 1046  |
| BTY    | 3420  | 0066 | 1360  |
| BTY2   | 3514  | 0201 | 1370  |
| BUFFER | 6400  | 0306 | 0676 0677 0701 0703 1404 2441 2446 0250 0251 0252 0253 0650 1014 1031 1044 1045 1101 1137 1140 1172 1173 1174 |
| BWORD1 | 0077  | 0377 | 0360 0373 0407  |
| BWORD2 | 0100  | 0400 | 0362 0374 0413  |
| CARD   | 0001  | 0167 | 0303 0305 0672 0272 0512 0555 0604 1435 1454 1766 2004 2013 2026 2050 2057 2121 2137 2162 2203 0105 0115 1174 |
| CBUFF  | 6510  | 1057 | 0776  |
| CCDF   | 6507  | 1056 | 1051  |
| CCERR  | 4502  | 1510 | 1503  |
| CCLOOP | 6424  | 0756 | 0766  |
| CCMORE | 3256  | 2444 | 2453  |
| CCOM   | 3251  | 2437 | 2430  |
| CCOPY  | 3214  | 2377 | 0507 2417   |
| CCOUNT | 5302  | 2477 | 2414 2452   |
| CDBUF  | 6164  | 0361 | 0171 0172 0277 0326 0363 1461   |
| CDDDC  | 6467  | 1023 | 1014  |
| CDCONT | 6004  | 0073 | 0316 0317   |
| CDUNT  | 6001  | 0070 | 0274 0323   |
| CDONE  | 6122  | 0267 | 0231  |
| CDEOC  | 6116  | 0256 | 0243  |
| CDFLAG | 6000  | 0051 | 0124 0162 0167 0257   |
| CDFUNT | 6152  | 0322 | 0312  |
| CDGONG | 6054  | 0200 | 0164  |
| CDIL70 | 6702  | 1306 | 1141 1146   |
| CDINIT | 6005  | 0123 | 0315 0141   |
| CDISK  | 6600  | 1134 | 1135 1165 1234  |
| CDISKC | 6601  | 1135 | 1034  |
| CDISZ  | 6114  | 0251 | 0156 0261   |
| CDLOOP | 6132  | 0302 | 0324  |
| CDL110 | 6024  | 0144 | 0131  |
| CDL215 | 6161  | 0340 | 0260  |
| CDL240 | 6040  | 0163 | 0247  |
| CDNEXT | 6103  | 0235 | 0161  |
| CDNXT2 | 6104  | 0237 | 0327  |
| CDPONT | 6156  | 0326 | 0174  |
| CDREAD | 6025  | 0150 | 0607 0155 0230 0251 0252  |
| CDSWT  | 6003  | 0072 | 0300 0307 0320  |
| CDTAB  | 6235  | 0401 | 0315  |
| CERR   | 4477  | 1502 | 0577  |
| CHECKI | 4556  | 0513 | 1337 1473 2020 0611 2576 0474 0544 0560 0574 2535 3006 3132   |
| CINB   | 3255  | 2443 | 2403 2460 2461  |
| CINPUT | 4610  | 1232 | 1277 1671   |
| CINS   | 3254  | 2442 | 2425 2433 2457 2465   |
| CINU   | 3252  | 2440 | 2401  |
| CLIT01 | 6461  | 1015 | 0733  |
| CLIT02 | 6512  | 1061 | 0734  |
| CLLOOP | 6412  | 0744 | 0751  |
| CLOOP  | 6405  | 0737 | 0767  |
| CLOWER | 0114  | 0432 | 1500 1505   |
| CNOTR  | 6077  | 0226 | 0166 0201 0211 0216   |
| CNTRLZ | 0073  | 0373 | 0475 0506 0534 0104 0226  |
| COPY   | 4554  | 0506 | 0323 1133 1155 1123 1137 1163 1165 1271 1357 1742 1751  |
| COREF  | 6400  | 0731 | 0753 1032 1040  |
| COUNT  | 0141  | 0464 | 1677 1710 1713 1727 2377 2403 1204 1206 1236 1254 1413 1423 1742 1762 2202 2206 2211 2250 2505 2512 0742 075  |

[illegible]

| SYMBOL  | VALUE | DEF  | REFERENCES  |
|---------|-------|------|---|
| DFOUND  | 3000  | 2074 | 1576  |
| DFSC    | 6622  | 2112 |   |
| DFSE    | 6621  | 2104 | 2545  |
| DGETNU  | 2334  | 1271 | 1222 1261 1300 1324 1314                                    |
| DGLEN   | 2706  | 1753 | 1577 1763 2047 2264   |
| DIAL    | 5553  | 0504 | 1544  |
| DIALBO  | 0300  | 0231 | 0724  |
| DIALEX  | 6176  | 1474 | 1467  |
| DIALSY  | 0300  | 0232 | 2013 2014   |
| DIMA    | 6616  | 2111 | 2547  |
| DIML    | 6615  | 2110 | 2513  |
| DINDEX  | 2415  | 1406 | 1374  |
| DIRECT  | 4563  | 0530 | 0311 0165 1117 0137   |
| DISC    | 4577  | 0562 | 0155 0216 0130 0165 1314 1343 1723 1722                     |
| DISK    | 6623  | 2125 | 2037 2062 2173 2215 2543                                    |
| DISKWO  | 0001  | 0155 | 0244 0246   |
| DISPLA  | 4551  | 0500 | 0653 1701 1703 1720 1722 2274 1522 1656 1017 2603 3014 3123 |
| DISREP  | 3173  | 2322 | 2311  |
| DLCA    | 6755  | 2157 | 2777  |
| DLDC    | 6732  | 2141 | 1142 2745   |
| DLDR    | 6733  | 2142 | 3060  |
| DLDW    | 6735  | 2143 |   |
| DLEN    | 2414  | 1405 | 1376  |
| DLOOK   | 2475  | 1500 |   |
| DLOOP   | 2304  | 1237 | 1255  |
| DLOOP1  | 2477  | 1502 | 1531  |
| DLOOP2  | 2534  | 1542 | 1554  |
| DLOOP3  | 2660  | 1717 | 1743  |
| DLWC    | 6753  | 2156 | 3001  |
| DL5757  | 2570  | 1602 | 1440  |
| DMAC    | 6626  | 2115 | 2562  |
| DMAR    | 6603  | 2101 | 2623  |
| DMAW    | 6605  | 2077 |   |
| DMNT    | 6743  | 2151 |   |
| DNAME   | 3064  | 2166 | 1575 2201 2213 2245 2252 2253                               |
| DNBACK  | 3145  | 2262 | 2244  |
| DNGLEN  | 3147  | 2264 | 2172  |
| DNOS    | 2674  | 1733 | 1731  |
| DNOT    | 3141  | 2250 | 2224 2231 2236 2243   |
| DN01    | 2516  | 1521 | 1507 1511   |
| DNPAST  | 3150  | 2265 | 2217  |
| DNPOIN  | 3146  | 2263 | 2167 2173   |
| DOK     | 3112  | 2217 | 2200 2251   |
| DPAST   | 2717  | 1765 | 1600 1772 1775 2051 2265                                    |
| DPGETL  | 2371  | 1332 | 1205 1211 1273 1317   |
| DPPOINT | 2413  | 1404 | 1414 1662 2046 2263   |
| DPSTAR  | 2374  | 1335 | 1200  |
| DPSWIT  | 2375  | 1336 | 1202  |
| DRCA    | 6757  | 2160 |   |
| DRDA    | 6734  | 2145 |   |
| DRDC    | 6736  | 2146 | 1715 1144   |
| DRDS    | 6741  | 2147 | 1660 3027   |
| DREENT  | 2453  | 1446 | 2134  |
| DRWC    | 6752  | 2155 |   |
| DSAC    | 6612  | 2107 |   |
| DSET    | 6631  | 1172 | 1163 1215 1226  |
| DSETP1  | 6650  | 1211 | 1200  |
| DSIZE   | 2376  | 1337 | 1203  |
| DSKC    | 6745  | 2152 | 3020 3136   |
| DSKE    | 6747  | 2154 | 3023 3025 3133  |
| DSKT    | 6746  | 2153 |   |
| DSOURC  | 2472  | 1465 | 1460  |

| SYMBOL | VALUE | DEF  | REFERENCES  |
|--------|-------|------|---|
| DSYSBI | 6701  | 1305 | 1217  |
| DSYS1  | 4145  | 1013 | 1276  |
| DSYS2  | 4157  | 1030 | 1277  |
| DSYS3  | 4206  | 1105 | 1300  |
| DSYS4  | 5353  | 0624 | 1301  |
| DTAB1  | 6673  | 1275 | 1211  |
| OTHERE | 2733  | 2005 | 2026 2037 2050  |
| DUP    | 5614  | 1257 | 1531  |
| DWRITE | 2634  | 1666 | 1663  |
| DXAC   | 6645  | 2114 | 1157 2555   |
| DXAL   | 6643  | 2113 | 1155 2527   |
| DYBACK | 2567  | 1601 | 1443  |
| DYGLN  | 2565  | 1577 | 1412  |
| DYGOOD | 2435  | 1426 | 1422  |
| DYLOOP | 2425  | 1416 | 1424  |
| DYPAST | 2566  | 1600 | 1416  |
| DIRECT | 2400  | 1371 | 0531 2045   |
| DZAP   | 5017  | 2113 | 2106  |
| D1CLOS | 2615  | 1647 | 1640  |
| D1NOG  | 2645  | 1700 | 1634  |
| D2CLOS | 2651  | 1704 | 1645  |
| ECHO   | 0001  | 0200 | 0515 0616 1055 2154 2156 2176 2212 2221 2230  |
| ELOWER | 0112  | 0430 | 1523  |
| EUPPER | 0113  | 0431 | 1545  |
| EXIT   | 0246  | 0710 | 0505  |
| EXITLO | 0251  | 0713 | 0715  |
| FBNUM  | 0122  | 0441 | 0314 0321 1654 1655 2153 0644 0654 1121 1523 0466   |
| FCORE  | 0262  | 0753 | 0651  |
| FFILEC | 1515  | 0303 | 0123  |
| FFTEMP | 1537  | 0330 | 0307  |
| FILEC  | 5406  | 0122 | 0230 0176 0477  |
| FNAME  | 0124  | 0443 | 2414 2423 2430 1163 1165 1167 1171 1333 1431 2222 2227 2234 2241 2522 2532 2537 0070 0074 0202 0205 1416      |
| FSIZE  | 0117  | 0436 | 2412 2414 2422 2423 2430 0310 1174 1263 1503 1513 1550 1650 1657 2023 2157 2406 2520 2522 2531 2532 2537 0105 |
| FTYPE  | 0121  | 0440 | 0110 0114 0117 0122 0127 0141 0305 1112 1132 1154 0472 1266 1735 1744   |
| FUNIT  | 0120  | 0437 | 1026 2141 2155 2160 2253 2262 2263 2264 1173 1221 1455 2103 2137 2312 0076 0161 0223 0277 1116 0136 0171 0225 |
|        |       |      | 0256 0261 0300 0304 0307 0323 0415 0421 0425 0474 1003 1007 1557 0521 0525 0533                               |
|        |       |      | 0312 0317 0350 0362 0363 1172 1224 1400 2552 2554 0133 0140 0145 0303 0642 1123 1525 0464 1241 1317 1344      |
|        |       |      | 1706 1725   |
| FWHAT  | 0123  | 0442 | 0306 1446 2074 0164 1114 0134   |
| GALL   | 1243  | 2230 | 2342  |
| GCLEAR | 1006  | 1665 | 2314  |
| GCOUNT | 1103  | 1771 | 1676 1712   |
| GCUNT  | 4547  | 1562 | 1530 1541 1544  |
| GEENUM | 4542  | 1554 | 1524 1547   |
| GETA   | 1417  | 0512 | 0440 0453 0455 0462 2240 2243 2245 2247   |
| GETI   | 4525  | 1537 | 1051 1557 1021  |
| GETL   | 4560  | 0521 | 1705 1724 0502 0526   |
| GGCLEA | 1302  | 2314 | 2153 2200   |
| GGIN   | 1300  | 2312 | 2165 2233   |
| GGINSE | 1102  | 1770 | 1707 1726   |
| GGIMC  | 1253  | 2252 | 2145 2271 2272 0333   |
| GGLINE | 1275  | 2307 | 2236  |
| GGMAIN | 1301  | 2313 | 2167 2223   |
| GGMSJ  | 1274  | 2304 | 2257  |
| GGNUM  | 1100  | 1766 | 1665 1667 1673 1715   |
| GGTEXT | 1104  | 1772 | 1742  |
| GIN    | 1052  | 1735 | 1670 1674 1716 1752 1753 1755 1757 2312   |
| GINSER | 1200  | 2136 | 1770 2146 2237 2240   |
| GINTO  | 1070  | 1753 | 1763  |
| GLEFT  | 1073  | 1757 | 1747  |
| GLIMIT | 1277  | 2311 | 2151  |
| GLINE  | 1000  | 1657 | 0524 1660 1662 2307   |

| SYMBOL | VALUE | DEF  | REFERENCES  |
|--------|-------|------|---|
| GLOOP1 | 1021  | 1701 | 1711  |
| GLOOP2 | 1040  | 1720 | 1730  |
| GMAIN  | 1007  | 1666 | 1731 2100 2313  |
| GMLN   | 1101  | 1767 | 1736  |
| GNLF   | 1230  | 2176 | 2341  |
| GNL334 | 1307  | 2330 | 2216  |
| GNRNO  | 1242  | 2221 | 2215  |
| GNRUB  | 1232  | 2205 | 2343  |
| GNUM   | 1276  | 2310 | 1766 2147 2163 2164 2206 2210 2232                                    |
| GNXIT  | 1210  | 2146 | 2345 2346 2347 2350 2351 2354   |
| GOK    | 4543  | 1555 | 1542  |
| GPLACE | 4540  | 1552 | 1545  |
| GPLCE2 | 4546  | 1561 | 1546 1555 1556  |
| GPUT   | 1226  | 2166 | 2162  |
| GSPG1  | 1315  | 2341 | 2144  |
| GSPL1  | 1303  | 2322 | 2143  |
| GTEXT  | 1120  | 2015 | 1704 1723 1772 1334   |
| GUNIT  | 4537  | 1551 | 1526  |
| G1     | 1022  | 1702 | 1661 1663   |
| G2     | 1041  | 1721 | 1664  |
| HHPOP  | 3321  | 2526 | 0115 2533   |
| HHPUSH | 3313  | 2516 | 0117 2523   |
| HHTEMP | 3327  | 2536 | 0330 2521 2530 2537   |
| HPOP   | 4403  | 0114 | 0316 0641 0653 0200   |
| HPUSH  | 4404  | 0116 | 0167 1120 0140 0475   |
| ILEN   | 0111  | 0427 | 1375 1754   |
| INBLOC | 0102  | 0403 | 0411 0322 2402 1130 1135 1157 1260 1325 1737 1740 1746 1747           |
| INDEX  | 0110  | 0426 | 1373 1515 1555 1653 2550 2551   |
| INITOV | 0222  | 0651 | 1061  |
| INSULT | 0513  | 1066 | 1020  |
| INUNIT | 0103  | 0404 | 0413 0320 2400 1126 1257 1320 1707                                    |
| IOCD   | 0766  | 1562 | 1542  |
| IOCHEC | 0743  | 1521 | 0514 1524 1556  |
| IOCP   | 0767  | 1563 | 1545  |
| JACKS  | 6204  | 1504 | 1471 1514   |
| KEYCHA | 0072  | 0372 | 0657 1550 1555 2001 2007  |
| LBMAX  | 0054  | 2021 | 2511  |
| LBNUM  | 0006  | 2020 | 1767 2021 1337  |
| LCB    | 6662  | 0477 | 0673 1426 1433  |
| LCF    | 6652  | 0474 | 0577 1362   |
| LEADER | 4405  | 0120 | 0233 1222 0204 0264   |
| LEFT   | 0000  | 0276 | 0772 2014 1102 2300 2322 1427 1510 1762 2114 1114 1066 2652 3106 3153 |
| LINE   | 4561  | 0523 | 1175 2150 2214  |
| LINEB  | 1120  | 2014 | 2015 2033   |
| LLB    | 6654  | 0475 | 0602  |
| LLEDER | 3303  | 2503 | 0121 2512   |
| LLPEJ2 | 5777  | 1571 | 1563  |
| LOC1   | 0001  | 2111 | 1401 1440 1441 2626 2627 2422 2427                                    |
| LPCOL  | 6322  | 0543 | 0554 0566 0571 0631   |
| LPCOMM | 6316  | 0534 | 0573  |
| LPCR   | 6337  | 0570 | 0620  |
| LPEJ2  | 6323  | 0530 | 1571 0557 0640 1422   |
| LPEND  | 6371  | 0640 | 0621  |
| LPEXIT | 6320  | 0541 | 0532 0535 0635  |
| LPM204 | 6374  | 0647 | 0553 0570 1414  |
| LPM320 | 5776  | 1570 | 1560  |
| LPPUT  | 6333  | 0564 | 0534 0552 0556 0606 0627  |
| LPR    | 6664  | 0500 | 0604 1426 1433  |
| LPSEQ  | 6321  | 0542 | 0520  |
| LPTAB  | 6361  | 0626 | 0617 0634   |
| LPTST  | 6275  | 0513 | 0610 0517   |
| LPT2   | 5765  | 1556 | 0155 1562 1613  |

| SYMBOL | VALUE | DEF  | REFERENCES  |
|--------|-------|------|---|
| LPWFIT | 6343  | 0574 | 0567  |
| LP088A | 6600  | 1421 | 1427 1430 1431 1432   |
| LP0882 | 6200  | 1422 | 1427 1430 1431 1432   |
| LP08LP | 6711  | 1363 | 1367 1371   |
| LP08LT | 6720  | 1372 | 1377 1400   |
| LP0801 | 0240  | 0672 | 1405  |
| LP0802 | 6324  | 0551 | 1406  |
| LP0803 | 6330  | 0555 | 1407  |
| LP0804 | 6341  | 0572 | 1410  |
| LP0805 | 6350  | 0601 | 1411  |
| LP0806 | 6353  | 0604 | 1412 1432   |
| LP0807 | 6363  | 0630 | 1413  |
| LP08P0 | 6727  | 1405 | 1375  |
| LP08PT | 6737  | 1426 | 1372  |
| LP08TS | 6703  | 1355 | 1027 1305 1374  |
| LP1    | 6160  | 0337 | 0523  |
| LP2    | 6356  | 0617 | 0524  |
| LP212  | 6375  | 0650 | 1431  |
| LP214  | 6376  | 0651 | 1427 1430   |
| LP40   | 6373  | 0646 | 0626  |
| LSD    | 6661  | 0476 | 0575 1363   |
| LSE    | 6651  | 0473 |   |
| LUNOAD | 1154  | 2047 | 2352  |
| L10    | 0054  | 0347 | 0356 0361 1031 2275   |
| L100   | 0025  | 0320 | 2267 1255 1012 0246 0530  |
| L177   | 0142  | 0465 | 2137 0223   |
| L20    | 0020  | 0312 | 0662 2062 2302  |
| L200   | 0026  | 0321 | 1414 2140 2506 0107 0136 0224 1032 1037   |
| L30    | 0061  | 0355 | 0165 0442 1036  |
| L333   | 0051  | 0344 | 1220  |
| L377   | 4165  | 1043 | 0746  |
| L4     | 0055  | 0350 | 1465 2113 2147  |
| L40    | 4171  | 1047 | 0666  |
| L400   | 0040  | 0333 | 0535 0536 0545 0552 0137 2765   |
| L4000  | 0030  | 0323 | 1024 2005 2625  |
| L4020  | 3550  | 0246 | 0116  |
| L5000  | 0031  | 0324 | 0516  |
| L54    | 0041  | 0334 | 1325  |
| L5757  | 0116  | 0435 | 2116 2127 2207  |
| L60    | 0035  | 0330 |   |
| L6000  | 0032  | 0325 | 0120 0123 0142  |
| L7     | 0060  | 0354 | 0175 1770 2553 0134 0766 0441 1242 0632 1046 1656 2241 2252 2515 2747   |
| L70    | 3774  | 0576 | 0442  |
| L700   | 0036  | 0331 | 0433 1241   |
| L7000  | 0033  | 0326 | 0476 0504 0542  |
| L7400  | 0064  | 0360 | 0361 0737 0754 2507 2533 2563   |
| L77    | 0024  | 0317 | 1461 2161 1244 1247 1215 1220 1254 1260 1271 1274 0426 0575 1002 1154 1161                                    |
| L7700  | 0053  | 0346 | 1751 1243 0275 0566   |
| L7740  | 0056  | 0351 | 0352 1760   |
| L7757  | 0034  | 0327 | 0530  |
| L7770  | 0021  | 0314 | 1767 2205 0572 1012 1176 2512 2743  |
| L7777  | 0047  | 0342 | 1212 1447 1452 1456 1461 2075 2100 2104 2127 2140 2143 2170 0477 0546 1005 1044 1512 2477 2755                |
| MAINDI | 0263  | 0772 | 0621 0654 1657  |
| MANDM1 | 4422  | 1412 | 1423  |
| MANDM2 | 4423  | 1413 | 1422 1424   |
| MAORN  | 4424  | 1416 | 1407  |
| MGOTO  | 4427  | 1422 | 1410  |
| MMEXIT | 1351  | 2405 | 2400  |
| MMORE  | 4432  | 1427 | 1405  |
| MMOVE  | 1327  | 2363 | 0533 2365   |
| MON    | 7240  | 0273 | 0647 1352 1360 1456 2205 2364 2367 2372 0255 0303 0470 0736 1162 1164 1166 1170 1201 1526 1533 1564 1647 1713 |
|        |       |      | 2006 2555 0224 0462 0714 1005 1522 1527 0172 0267 0306 0517 0572 2764 0777 0551 0555 1173                     |



| SYMBOL | VALUE | DEF  | REFERENCES   |
|--------|-------|------|--|
| MORE   | 4413  | 1403 | 2376 1411 1412 1413 1444 1463 1464   |
| MOVE   | 4564  | 0532 | 0675 0711 2411 2422 2732 1463 1467 1651 2517 2527 2546 1136 2174 1201 1225 1227 1474 1474 1634 1645 2423 |
| MTHREE | 7346  | 0275 | 0151 0514  |
| M100   | 7344  | 0274 | 0151 0044 0771   |
| M10    | 0021  | 0313 | 0314 1363 1777   |
| M12    | 0037  | 0332 |  |
| M20    | 0023  | 0316 | 1404 1405 2445 2774  |
| M200   | 3632  | 0403 | 0434   |
| M212   | 0144  | 0467 | 1264 2504 2522   |
| M215   | 0143  | 0466 | 1061 0514 1224 1465  |
| M232   | 3773  | 0575 | 0504 0532  |
| M240   | 0146  | 0471 | 0416   |
| M32    | 0052  | 0343 | 1213   |
| M322   | 0027  | 0322 | 2313   |
| M34    | 0052  | 0345 | 1464   |
| M340   | 0147  | 0472 | 2254 2265 2422 0526  |
| M377   | 0145  | 0470 | 0421   |
| M4     | 0022  | 0315 | 1376 1377 1235 1357  |
| M40    | 0050  | 0352 | 2261 0656 1144 1010 2244 1015  |
| M400   | 0064  | 0361 | 0506 0511 0663 1543 2521 0606 3002   |
| M43    | 0062  | 0356 | 1470   |
| M54    | 0042  | 0335 | 1322   |
| M5757  | 0057  | 0353 | 1420 1720 2176   |
| M6     | 0063  | 0357 | 1367 2501  |
| M63    | 0043  | 0336 | 1276 1312  |
| M70    | 0044  | 0337 | 1302   |
| M73    | 0045  | 0340 | 1230   |
| M77    | 0046  | 0341 | 1251   |
| N0     | 4567  | 0540 | 1425 1451 1703 2156 0447 1075 1444 1463 1633 0613 0140   |
| NODIS  | 3151  | 2273 | 0541   |
| NONODI | 3155  | 2300 | 2275   |
| NOSUCH | 4560  | 1632 | 0074 0076 0077 0110 0111 0112 0133 0134 0135 0136 0140 0141 0142   |
| ORIGIN | 0130  | 0451 | 0046 0370 0402 0672 0704 0736 0745 0753 0763 1247 1252 1257 1263 0101 0520 0560 0573 0765 0767 1000      |
| OUTBLO | 0104  | 0405 | 0412 0315 2404 1122 1146 1156 1261 1353 1741 1750  |
| OUTNUM | 0106  | 0407 | 0650 0304 2413 2556 1270 1356 1733   |
| OUTUNI | 0105  | 0406 | 0414 0313 2411 1124 1263 1347 1726   |
| OVEREX | 0247  | 0711 | 1472   |
| OVERLE | 0007  | 1514 | 1473   |
| PALT   | 0730  | 1500 | 1443   |
| PCHAR  | 0736  | 1506 | 1362 1366 1424 1462 1463 1467 1515   |
| PCOM   | 0714  | 1461 | 1455   |
| PCSW   | 0737  | 1621 | 1361 1372 1374 1402 1412   |
| PDCAVR | 0612  | 1347 | 1410   |
| PDIS   | 0731  | 1501 | 1341 1343 1345 1346 1350   |
| PDO    | 0636  | 1374 | 1371   |
| PFLICK | 0001  | 0204 | 1442 1477 2620   |
| PFOUR  | 7307  | 0271 | 0246 1434 0451   |
| PGETL  | 0702  | 1447 | 1357 1373 1444 1472 1514   |
| PHOR   | 0732  | 1502 | 1344 1400  |
| PINST1 | 0601  | 1336 | 1354   |
| PIP    | 5552  | 0502 | 1547 0324 0465 0717 1164 1223 2265 1272 1360 0641 1752   |
| PIPGO  | 0213  | 0655 | 0624   |
| PIPL   | 0202  | 0620 | 0625   |
| PIPLST | 0210  | 0631 | 0623   |
| PIPPIP | 0200  | 0615 | 0503   |
| PL00P  | 0663  | 1424 | 1445   |
| PMORE  | 0076  | 0376 | 0460 0252  |
| PNOT1  | 0651  | 1407 | 1355 1411  |
| PONE   | 7201  | 0260 | 0267 1666 1714 2231 0523 1131 1153 1207 2133 0135 0170 0473 1430 1244 1262 1434                          |
| POP    | 4565  | 0534 | 1407 1673 2126 2316 1107 2476 1354   |
| POTHER | 3372  | 2623 | 1500 2630  |
| PPAST  | 0635  | 1373 | 1365   |

| SYMBOL | VALUE | DEF  | REFERENCES   |
|--------|-------|------|--|
| PPDIS  | 0600  | 1335 | 0501 1340 1342 1466  |
| PPOP   | 1360  | 2417 | 0535 2424  |
| PPSTAR | 0621  | 1357 | 1474   |
| PPTEMP | 1366  | 2427 | 2413 2421 2430   |
| PPUSH  | 1352  | 2410 | 0537 2415  |
| PRIGHT | 0711  | 1456 | 1451   |
| PSIX   | 7327  | 0272 |  |
| PSTART | 0734  | 1504 | 1351 1452 1453 1460 1335   |
| PSWITC | 0735  | 1505 | 1353 1450 1457 1336  |
| PTABLE | 0747  | 1525 | 1426   |
| PTHREE | 7325  | 0270 | 0272 0630  |
| PTWO   | 7305  | 0267 | 0270 0271 1437 1672 0305 1464 2112 2146 0111 0160 0222 1113 1115 1035  |
| PUSH   | 4566  | 0536 | 1377 1665 2120 2131 2307 0221 0177 1321  |
| PUTL   | 4407  | 0124 | 1063 1066 2157 2217 0552   |
| PUTWOR | 4576  | 0556 | 0401 0464 0703 0716  |
| PVER   | 0733  | 1503 | 1347 1406 1407 1430  |
| RCRA   | 6632  | 0107 | 0202   |
| RCRB   | 6634  | 0110 |  |
| RCRD   | 6674  | 0113 | 0271   |
| RCSD   | 6671  | 0111 | 0227   |
| RCSE   | 6672  | 0112 | 0165   |
| RCSE   | 6631  | 0106 | 0200   |
| READ   | 4571  | 0544 | 1402 2437 0646 1012 1445 1464 1550 1504  |
| READEN | 0260  | 0726 | 0713 0714  |
| READIN | 0254  | 0720 | 0712 0713 0714   |
| READSK | 7626  | 2442 | 2340 2721  |
| REMAKE | 0000  | 0175 | 1116 1132 1512 1523  |
| REPDIS | 3161  | 2306 | 0543 2315 2317   |
| REPLAC | 4570  | 0542 | 2125 2327  |
| HERR   | 7615  | 2422 | 2342   |
| RESTAR | 0216  | 0645 | 0615 0704 0710   |
| RESTST | 0261  | 0736 | 0667   |
| REWERE | 7553  | 2313 | 2431   |
| RFCOMM | 7634  | 2473 | 2464   |
| RFD8AD | 7751  | 2634 | 2500 2645  |
| RFD8WC | 7750  | 2635 | 2510 2552  |
| RFDISK | 1540  | 0347 | 0563 0364  |
| RFDMAR | 7743  | 2623 | 2473   |
| RFGXT  | 7732  | 2574 | 2546 2554  |
| RFINST | 7675  | 2534 | 2474 2544  |
| RFIRST | 7565  | 2334 | 2250 2277 2301 2621 3054   |
| RFIT   | 7556  | 2322 | 2267   |
| RFLJ77 | 7744  | 2624 | 2525 2556  |
| RFNOSK | 7704  | 2543 | 2537 2541  |
| RFREAD | 7626  | 2463 | 1231 1232 2470 2570 2574 2575  |
| RFWRIT | 7630  | 2466 | 2467   |
| RF08   | 0001  | 2215 | 0244 0246 0421 0560 0700 0702 0072 0101 0122 0131 0160 0410 0501 0532 0673 0153 0214 1346 1356 1366 1602 1766<br>2004 2026 2050 2121 2137 2162 2203 0126 0163 0360 0700 1116 1154 1312 1341 1375 1405 1514 1525 1744 1030 1035<br>1037 1121 1572 |
| RF08NO | 7734  | 2603 | 2542 2605  |
| RF08N2 | 7752  | 2652 | 2604   |
| RF08R  | 7501  | 2226 | 0103 0104 0105 0106 2350   |
| RF08W  | 7505  | 2233 | 0124 0125 0126 0127  |
| RF1003 | 7745  | 2625 | 2550   |
| RKBAD  | 7535  | 3106 | 3015   |
| RKBOP  | 7257  | 2764 | 3040   |
| RK8ST  | 6213  | 1517 | 1203 1475  |
| RKBTST | 0750  | 1541 | 1202 1207 1245 1476 1501   |
| RKCHAR | 6164  | 1462 | 1246   |
| RKCOMM | 7234  | 2740 | 2731   |
| RKCUNT | 0012  | 3077 | 2761 3037  |
| RKDLDL | 7334  | 3060 | 2740   |

| SYMBOL | VALUE | DEF | REFERENCES |
|--------|-------|-----|------------|
|--------|-------|-----|------------|

|        |      |      |   |
|--------|------|------|---|
| RKDRIV | 0107 | 0422 | 0167 2744   |
| RKDUN1 | 7323 | 3037 | 3026  |
| RKHANG | 7361 | 3132 | 3137  |
| RKINST | 7275 | 3004 | 2741 3024   |
| RKIRST | 7330 | 3054 | 2752  |
| RKLOC  | 7332 | 3056 | 2754  |
| RKLOCC | 0014 | 3075 | 2756 2764 2766 2776   |
| RKL40  | 7327 | 3053 | 3030  |
| RKNBOP | 7263 | 2771 | 2762 3140   |
| RKNOSK | 7306 | 3020 | 3010 3012   |
| RKOFF  | 7351 | 3122 | 3032  |
| RKOFF2 | 7370 | 3153 | 3124  |
| RKOUT  | 7331 | 3055 | 2757  |
| RKREAD | 7226 | 2730 | 1230 2735 3034 3041 3042  |
| RKSEKE | 7315 | 3027 | 3135  |
| RKSETU | 6671 | 1245 | 1206  |
| RKSTAT | 4576 | 1670 | 1652 1725 1244  |
| RKSTTP | 4607 | 1725 | 1717  |
| RKTRCK | 0013 | 3076 | 2753 2767 3002 3033   |
| RKUNIT | 7333 | 3057 | 2742 2746   |
| RKWRIT | 7230 | 2733 | 2734 3122 3125  |
| RK70   | 1556 | 0370 | 0164 0354 0357 0360   |
| RL0C   | 7563 | 2332 | 2244 2273 2617 3056   |
| RNUM   | 7564 | 2333 | 2246 2260 2265 2270 2323  |
| R0K    | 7526 | 2260 | 2304 2325   |
| R0R6   | 4550 | 0476 | 1454 1214 1253 1270 0774 2531   |
| ROUT   | 7566 | 2335 | 2253 2263 2300 2303 2324 2620 3055  |
| RRBAD  | 7575 | 2405 | 2424  |
| RRC    | 7507 | 2235 | 2231  |
| RREREO | 7625 | 2435 | 2430  |
| RRERR  | 7573 | 2342 | 2272  |
| RRFIRS | 7742 | 2621 | 2522 2530   |
| RRGOOD | 7541 | 2273 | 2313 2315   |
| RRLOC  | 7740 | 2617 | 2476  |
| RROUT  | 7741 | 2620 | 2503  |
| RRR    | 7571 | 2340 | 2235  |
| RRRET  | 7574 | 2343 | 2262  |
| RRRT   | 7567 | 2336 | 2227  |
| RRT    | 7572 | 2341 | 2230 2271   |
| RRTRY  | 7537 | 2271 | 2314  |
| RRUNIT | 7737 | 2616 | 2511 2514   |
| RSIX   | 0070 | 1576 | 0477 1602   |
| RUNIT  | 7562 | 2331 | 2242 2274 2616 3057   |
| SAVEST | 0260 | 0735 | 0646  |
| SEARCH | 4573 | 0550 | 0622 2142 1060 0055 0077 0172 1406 0107 0144 0231 0412 1004 1247 1300 1330 0522 1672 1713 |
| SEQCIN | 3776 | 0607 | 0515  |
| SEQCOM | 3740 | 0530 | 0517 0525   |
| SEQEXT | 3767 | 0565 | 0541  |
| SEQIN  | 3711 | 0473 | 0553 0510 0536 0543 0551 0563 0542  |
| SEQLP  | 3777 | 0610 | 0556  |
| SEQN1  | 3727 | 0512 | 0503  |
| SEQOUT | 3747 | 0542 | 0555 0553 0566  |
| SEQO2  | 3761 | 0555 | 0550  |
| SEQTST | 3720 | 0502 | 0516 0523   |
| SEQTTY | 3736 | 0526 | 0501  |
| SETA   | 4555 | 0510 | 0437 2237   |
| SETI   | 4514 | 1521 | 1050 1531 0331  |
| SSERCH | 0334 | 1011 | 0551 1013 1015 1016 1020 1040   |
| SSLOOP | 0344 | 1022 | 1042  |
| SSNO   | 0356 | 1035 | 1030  |
| STAR20 | 0001 | 0220 | 0525 0627 0756  |
| STATLP | 4567 | 1656 | 1664  |

| SYMBOL  | VALUE | DEF  | REFERENCES  |
|---------|-------|------|---|
| STATRS  | 4562  | 1650 | 0730 1603   |
| STATSV  | 4600  | 1713 | 0735 1720   |
| STL6    | 4606  | 1724 | 1716  |
| SYSBBL  | 0370  | 0242 | 1042 1171 0635  |
| SYSBIN  | 0001  | 0243 | 1013 1030 1100 0615   |
| SYSBSP  | 0011  | 0247 | 1300  |
| SYSERR  | 7402  | 0527 | 1454 1463 2102 2111 2145  |
| SYSHDR  | 0447  | 0251 | 1103  |
| SYSSBL  | 0370  | 0250 | 2015  |
| SYSWT   | 0467  | 0233 | 0041  |
| TABLED  | 0400  | 1107 | 1520 1535   |
| TAPE    | 4402  | 0112 | 0352 0157 0220 1445 1776 2015 2036 2061 2131 2147 2172 2213 2132 0167 1124 1140 1164 1316 1345 1725 1724      |
| TAPER   | 1453  | 0212 | 0071  |
| TAPEW   | 1464  | 0227 | 0121  |
| TAXO    | 1704  | 0561 | 0443 0477 0500 0503 0541  |
| TBEXIT  | 1754  | 0640 | 1004  |
| TBLAH   | 1600  | 0436 | 0272 0446 0452 0457 0640  |
| TBLAHT  | 2036  | 1004 | 0703  |
| TBLOCK  | 1720  | 0575 | 0464 0471 0472 0602 1001  |
| TBLOKK  | 2033  | 1001 | 0737  |
| TBREG   | 0005  | 1026 | 1030 1045   |
| TCHEKE  | 1755  | 0645 | 0035  |
| TCOUNT  | 1761  | 0656 | 0461 0524 0630 1002   |
| TDOC    | 1752  | 0636 | 0633  |
| TDOWN   | 1644  | 0511 | 0475  |
| TEERNT  | 1513  | 0274 | 0216 0233   |
| TEMAIN  | 1764  | 0661 | 0017 0645 0647  |
| TEMP    | 0065  | 0364 | 1014 1022 1032 1033 1036 1041 1737 1740 1744 0153 0154 0155 0163 0172 0202 1223 1262 1272 1305 1313 1675 1676 |
| TEMP1   | 0066  | 0365 | 0750 0752 0203 0217 0565 0600 0736 0737 0740 0752 0772 1216 1220 1360 1370 2521 2526 2561 2567                |
| TEMP2   | 0067  | 0366 | 1743 1750 1754 2536 3007  |
| TEMP3   | 0070  | 0367 | 1234 1245 1250 1252 1253 2010 2011 2020 2030 2031 2032 1303 1304 1307   |
| TEMP4   | 0071  | 0370 | 0570 0577 2174 2175 0417 0424 0427  |
| TERENT  | 1512  | 0273 | 0215  |
| TERMC   | 0000  | 0173 | 2325 2344 0344 0447 0662 1047 1055 1057 1061 1072   |
| TERRC1  | 1762  | 0657 | 0612  |
| TERRC2  | 1763  | 0660 | 0515 0614   |
| TERRROT | 2031  | 0771 | 0750  |
| TEXIT   | 1476  | 0246 | 0224 2343   |
| TILEN   | 0002  | 0235 | 0427 2563 2015 2016   |
| TINDEX  | 0346  | 0234 | 0426 2562 2013 2015 2016  |
| TKOUNT  | 2034  | 1002 | 0761  |
| TLOC1   | 1715  | 0572 | 0454 0473 0512 0534 0546 0547 0553 0554   |
| TLOOP   | 1652  | 0523 | 0637  |
| TLOOP2  | 1730  | 0607 | 0625  |
| TLOWER  | 0000  | 0236 | 0430 2564 2021 2022   |
| TLP1    | 1675  | 0551 | 0540 0544   |
| TMAIND  | 2101  | 1104 | 0734 1057 1105 2425   |
| TMAINE  | 2005  | 0724 | 0661 0730 1026  |
| TMESS1  | 2202  | 1117 | 0620  |
| TMESS2  | 1557  | 0676 | 0646  |
| TMESS3  | 1765  | 0702 | 0650  |
| TNT2LG  | 1740  | 0622 | 0613 0615   |
| TOP     | 0340  | 0277 | 0773 1103 2323 1430 1511 1703 2115 1115 1067 2653 3107 3154   |
| TOPR    | 1717  | 0574 | 0447 0450 0527 0531   |
| TOUT1   | 2132  | 1107 | 1031  |
| TOUT2   | 2133  | 1110 |   |
| TREAD   | 1400  | 0067 | 0545 0213 0351 0353 2336  |
| TRENT   | 1627  | 0470 | 0273 1000   |
| TRENT2  | 1646  | 0514 | 1003  |
| TRENT3  | 2026  | 0761 | 0747 0751   |

| SYMBOL | VALUE | DEF | REFERENCES |
|--------|-------|-----|------------|
|--------|-------|-----|------------|

|         |      |       |   |
|---------|------|-------|---|
| TSELER  | 1757 | 00647 | 00020   |
| TSKP    | 1750 | 0034  | 0270  |
| TSTOPR  | 1727 | 0564  | 0451  |
| TSYSLO  | 0272 | 0240  | 0432 2560   |
| TSYSUP  | 0467 | 0241  | 0433 2567   |
| TTAPE   | 0340 | 2545  | 0113 2557 2575 2581                               |
| TTAPEW  | 1514 | 2275  | 0232  |
| TTBC    | 0237 | 1023  | 0740 1054 2435                                    |
| TTBLAH  | 1511 | 0272  | 0220 0234 0241                                    |
| TTBLP   | 0244 | 1033  | 1050  |
| TTBLK   | 0246 | 1035  | 1027 1040   |
| TTG1    | 0223 | 0747  | 0741  |
| TTRENT  | 0032 | 1020  | 0274 0771   |
| TTRENT2 | 0035 | 1023  | 0762  |
| TTSKP   | 1527 | 0270  | 0217 0231 0240                                    |
| TTS1    | 0274 | 1067  | 1061  |
| TTS2    | 0272 | 1062  | 1055  |
| TTTSET  | 0353 | 2562  | 2547  |
| TTTSKP  | 1510 | 2271  | 0230  |
| TTYCR   | 0364 | 1060  | 0520 1067   |
| TTYGET  | 1105 | 1777  | 0522 0063 2004 2011                               |
| TTYPUT  | 0361 | 2574  | 0125 2004   |
| TUPPER  | 0777 | 0237  | 0431 2565 2021                                    |
| TWHERE  | 1424 | 0150  | 0070 0120 0152 0170 0177 0200 0201 0203 0204 0205 |
| TWRITE  | 1412 | 0117  | 0547 0214 0247 0252 0251 0256 0275 0287           |
| UL300   | 1175 | 2077  | 0047  |
| UNLOAD  | 1155 | 2054  | 2053  |
| UNLOOP  | 1162 | 2063  | 2272  |
| UNPOS   | 1173 | 2074  | 2054  |
| WRITE   | 0572 | 0546  | 1066 2444 1027 1077 0614                          |
| WWWT    | 7570 | 2337  | 2230  |
| ZERO    | 7200 | 0265  | 0266  |

