IDENTIFICATION

Product Code:	DEC-12-ZR6A-D
Product Name:	DIAL-MS Loader Program Description
Date Created:	July 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[1] by Mary Allen Wilkes of Washington University. The assembly portion is derived from several programs used for the PDP-8 computer including PAL-D[2].

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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[1] M. A. Wilkes, LAP6 Handbook, Computer Research Laboratory Tech. Rep. No. 2, Washington University, St. Louis, May 1, 1967.

[2] PAL-D Assembler Programmer's Reference Manual DEC-D8-ASAA-D.

1.0 OVERVIEW

The LAP6-DIAL-MS (hereafter referred to as DIAL-MS) Loader is the routine which transfers the user's binary program from tape or disk into the appropriate core locations. The loader has two sections: the first is the routine which ascertains whether the load is by name or from the Binary Working Area; the second part is a subroutine which looks up the name in the index and does the actual loading. If the file is not present, the Loader returns to the caller.

2.0 ENVIRONMENT

The DIAL-MS loader occupies blocks 54 and 55 of the DIAL systems unit (354-355 of tape unit Ø, if using a tape system). Upon giving a load command, the Editor reads these blocks into locations 4ØØØ-4777 of field 1. An extension of the loader exists in locations 76ØØ-7627 of field 1 and is referred to as the mini-loader; it is assembled as part of the DIAL-MS I/O routines. Its function will be described later in this manual.

3.0 OPERATION

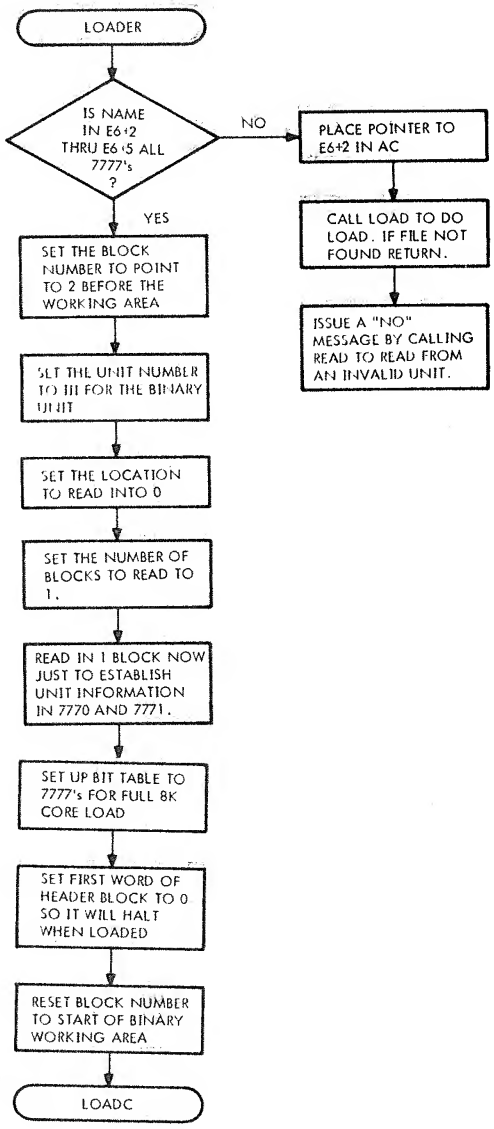
The Loader starts at location 4Ø2Ø of field 1 in LINCmode. It first checks to see if the Editor put a name of the program to be loaded in E6. If there is one present, it calls the load subroutine (LOAD) with a pointer to the name in the AC. If there is not a name present, the Loader loads into core the second block before the Binary Working Area. This is necessary because the routine will JMP into the load subroutine, which requires that a block has been read from the desired unit. Next, a header block is created in core consisting of all 1's which will cause all 8K of the binary area to be loaded. The Loader then JMP's to location LOADC, which is in the middle of the LOAD subroutine, to load in the data pointed to by the bit map in core. The LOAD subroutine can be called from any field. The AC contains a pointer to a block of field Ø core locations. The first four words are the name of a program in DIAL format. The fifth is a unit number. The Loader reads in the index and searches for the desired name. If not present, it returns to the caller. If present, in reads in up to 17_8 blocks into

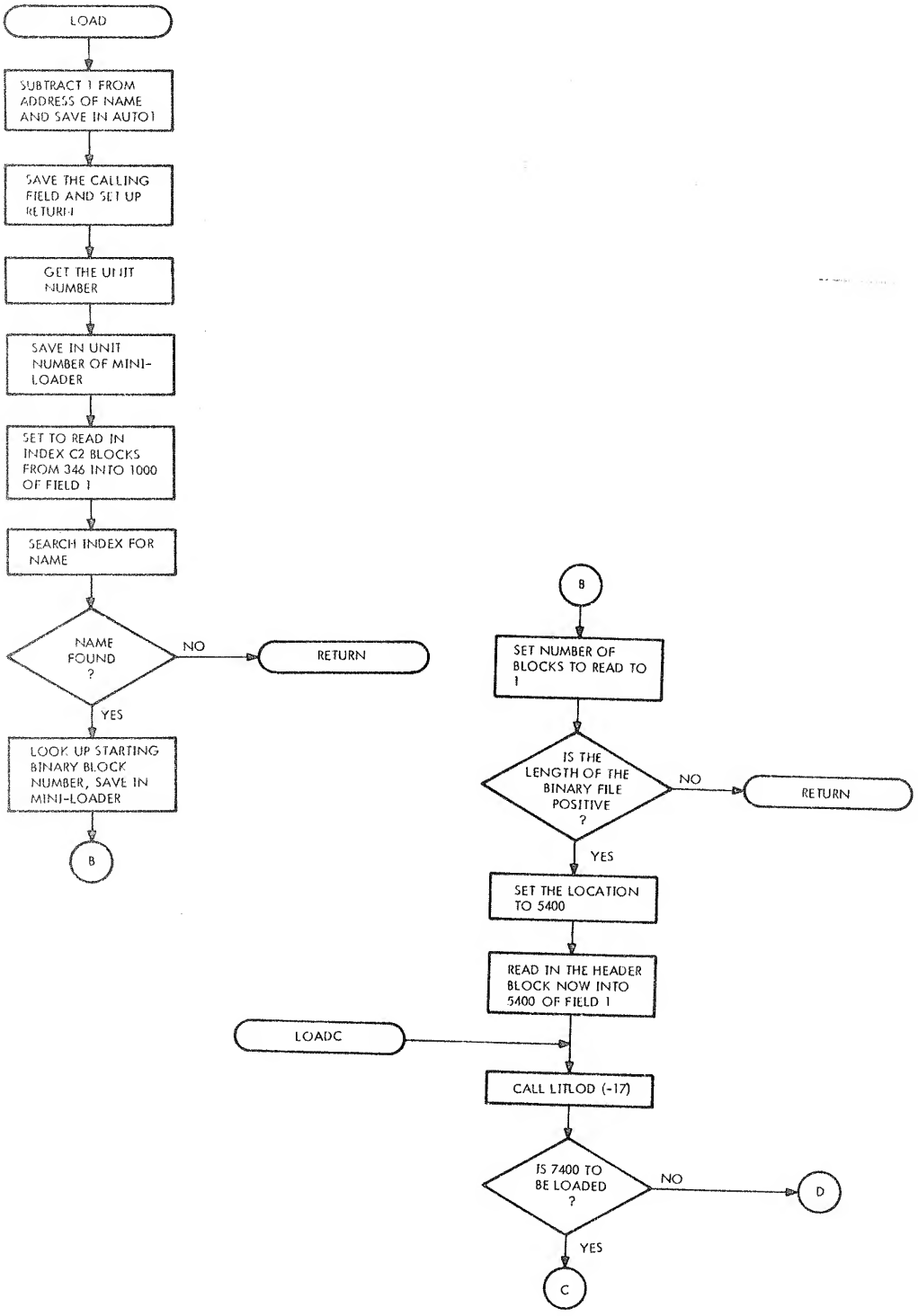
lower core (depending of course on the bit map for the program). Locations 74ØØ-7777 of field Ø, if they are to be read in, are read into Ø-377 of field 1, then moved to 74ØØ-7777 of field Ø. (This avoids problems with the data break locations). Locations 1ØØØØ-13777 are then read in, if the bit map indicates they are to be loaded. Now the Loader moves the starting information up from the header block to 7774 of field 1. (The I/O controller is now useless as far as the loader is concerned.) A mini-bit map is set up in location 7627 of field 1 which contains the information for loading into locations 14ØØØ-17377. It then moves the I/O handler (address contained in 777Ø) to 763Ø of field 1. The next absolute block to be loaded is determined and added into the block correction factor (left in 7771 by the last call to the I/O handler[1]). This information is left in 7610 (unit) and 7612 (next block). It then checks to see if locations 174ØØ-17777 are to be loaded. If they are, it reads this information into 64ØØ of field 1, then moves the first 200 words to 74ØØ-7577 followed by a JMP to 76ØØ of field 1. The mini-loader shifts bits out of the minimap to determine which blocks are to be loaded, then JMP's to 7774 of field 1 in LINC-mode.

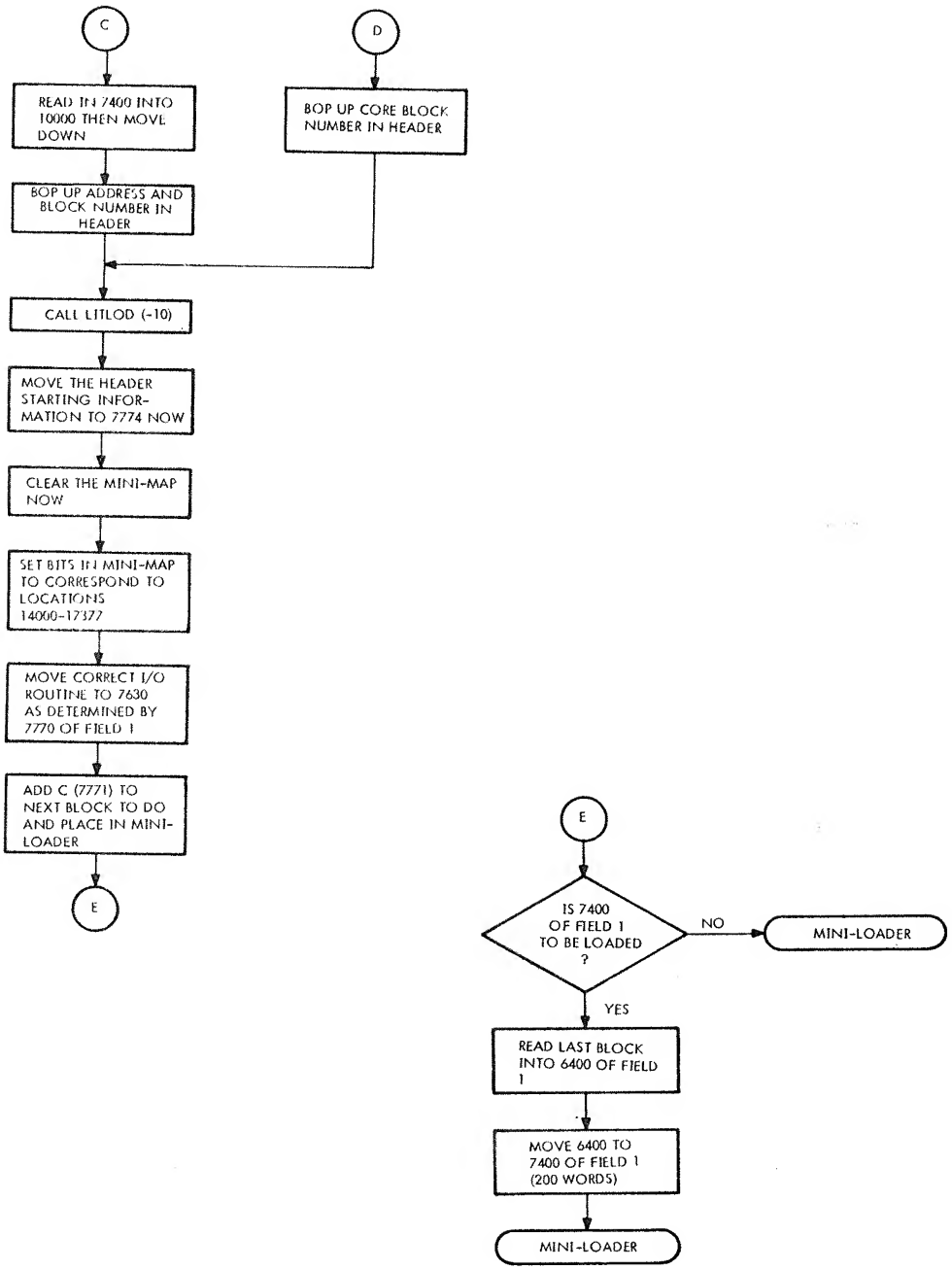
4.0 FLOW DIAGRAM (Attached)

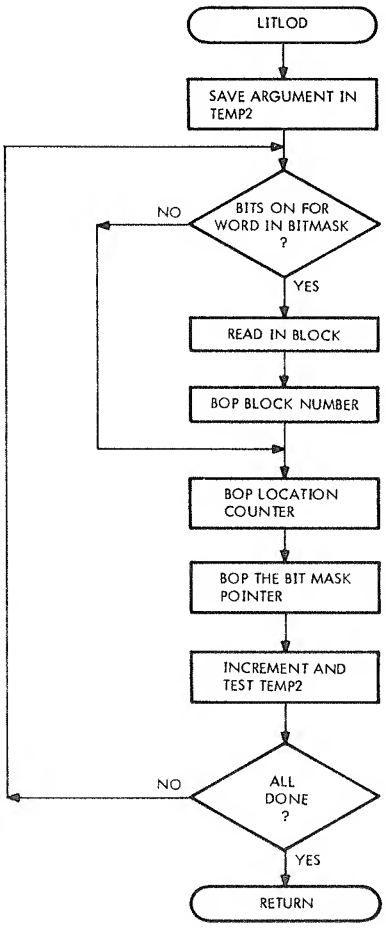
5.0 PROGRAM LISTING (Attached)

[1] Refer to the BUILD Internal Description, DEC-12-ZR5A-D.

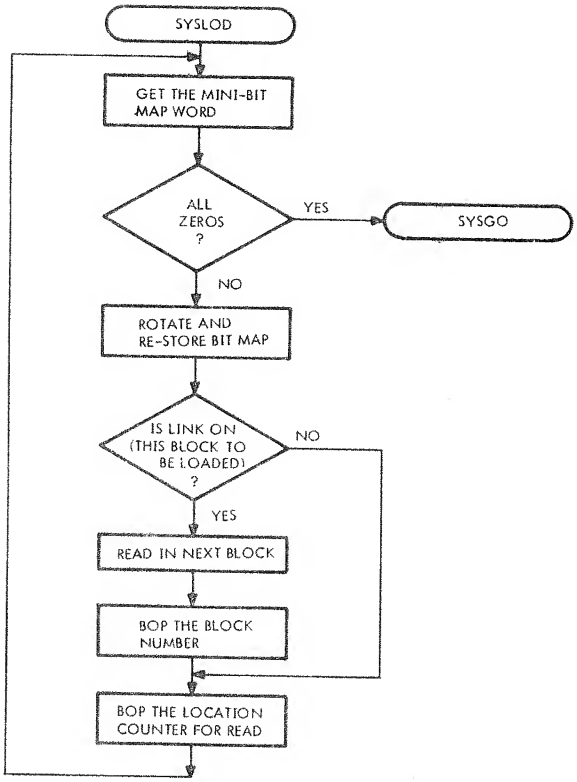

LOADER
IS NAME IN E6+2 THRU E6+5 ALL 7777's ?
NO
YES
PLACE POINTER TO E6+2 IN AC
CALL LOAD TO DO LOAD. IF FILE NOT FOUND RETURN.
ISSUE A "NO" MESSAGE BY CALLING READ TO READ FROM AN INVALID UNIT.
SET THE BLOCK NUMBER TO POINT TO 2 BEFORE THE WORKING AREA
SET THE UNIT NUMBER TO III FOR THE BINARY UNIT
SET THE LOCATION TO READ INTO 0
SET THE NUMBER OF BLOCKS TO READ TO 1.
READ IN 1 BLOCK NOW JUST TO ESTABLISH UNIT INFORMATION IN 7770 AND 7771.
SET UP BIT TABLE TO 7777's FOR FULL 8K CORE LOAD
SET FIRST WORD OF HEADER BLOCK TO 0 SO IT WILL HALT WHEN LOADED
RESET BLOCK NUMBER TO START OF BINARY WORKING AREA
LOADC

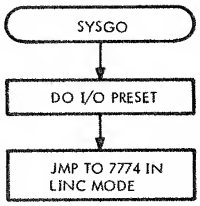

LOAD
SUBTRACT 1 FROM ADDRESS OF NAME AND SAVE IN AUTO1
SAVE THE CALLING FIELD AND SET UP RETURN
GET THE UNIT NUMBER
SAVE IN UNIT NUMBER OF MINI-LOADER
SET TO READ IN INDEX C2 BLOCKS FROM 346 INTO 1000 OF FIELD 1
SEARCH INDEX FOR NAME
NAME FOUND ?
NO
RETURN
YES
LOOK UP STARTING BINARY BLOCK NUMBER, SAVE IN MINI-LOADER
B
B
SET NUMBER OF BLOCKS TO READ TO 1
IS THE LENGTH OF THE BINARY FILE POSITIVE ?
NO
RETURN
YES
SET THE LOCATION TO 5400
READ IN THE HEADER BLOCK NOW INTO 5400 OF FIELD 1
LOADC
CALL LITLOD (-17)
IS 7400 TO BE LOADED ?
NO
D
YES
C


C
D
READ IN 7400 INTO 10000 THEN MOVE DOWN
BOP UP CORE BLOCK NUMBER IN HEADER
BOP UP ADDRESS AND BLOCK NUMBER IN HEADER
CALL LITLOD (-10)
MOVE THE HEADER STARTING INFOR-MATION TO 7774 NOW
CLEAR THE MINI-MAP NOW
SET BITS IN MINI-MAP TO CORRESPOND TO LOCATIONS 14000-17377
MOVE CORRECT I/O ROUTINE TO 7630 AS DETERMINED BY 7770 OF FIELD 1
ADD C (7771) TO NEXT BLOCK TO DO AND PLACE IN MINI-LOADER
E
E
IS 7400 OF FIELD 1 TO BE LOADED ?
NO
MINI-LOADER
YES
READ LAST BLOCK INTO 6400 OF FIELD 1
MOVE 6400 TO 7400 OF FIELD 1 (200 WORDS)
MINI-LOADER


LITLOD
SAVE ARGUMENT IN TEMP2
BITS ON FOR WORD IN BITMASK ?
NO
YES
READ IN BLOCK
BOP BLOCK NUMBER
BOP LOCATION COUNTER
BOP THE BIT MASK POINTER
INCREMENT AND TEST TEMP2
ALL DONE ?
NO
YES
RETURN

MINI-LOADER


SYSLOD
GET THE MINI-BIT MAP WORD
ALL ZEROS ?
YES
SYSGO
NO
ROTATE AND RE-STORE BIT MAP
IS LINK ON (THIS BLOCK TO BE LOADED) ?
NO
YES
READ IN NEXT BLOCK
BOP THE BLOCK NUMBER
BOP THE LOCATION COUNTER FOR READ


SYSGO
DO I/O PRESET
JMP TO 7774 IN LINC MODE

```
0000                    .ED
0001                    /DISK-DIAL LOADER
0002                    /
0003                    /COPYRIGHT 1970,        DIGITAL EQUIPM   CORPORATION
0004                    /                       MAYNARD,MASS, 01754
0005                    /
0006                    /       WRITTEN BY JACK BURNESS
0007                    /
0010                    /
0011                    /
0012                    /
0013                    /
0014                            EJECT
-
```

```
0015                /
0016                /
0017                /
0020                /
0021                /
0022                /
0023                /
0024                /
0025                /
0026                        E6=2371                 /POINTER TO SYSTEM PARAMETER TABLES
0027                        READ=7774               /POINTER TO SYSTEM READ ENTRY
0030                        WA=0000                 /DISPLACEMENT FROM START OF BINARY WORK AREA.
0031                        LUNIT=7610              /SYSTEM LOAD UNIT NUMBER LOCATION
0032                        LLOC=LUNIT+1            /SYSTEM CORE LOCATION POINTER WORD
0033                        LBLOCK=LLOC+1           /SYSTEM BLOCK NUMBER LOCATION
0034                        LNUM=LBLOCK+1           /SYSTEM NUMBER OF WORDS TO READ LOCATION
0035                        AUTO1=11                /DEFINE THE AUTO INDEX REGISTERS NOW.
0036                        AUTO2=AUTO1+1
0037                        AUTO3=AUTO1+2
0040                        AUTO4=AUTO1+3
0041                        AUTO5=AUTO1+4
0042                        AUTO6=AUTO1+5
0043                        AUTO7=AUTO1+6
0044                        PTABLE=5400             /SYSTEM HEADER BLOCK INFORMATION LOC
0045                        PTAB2=33                /PTABLE/400 FOR LLOC WORD
0046                        INDEX=346               /WHERE THE INDEX RESIDES ON DIAL
0047                        INCOR1=1000-1           /WHERE THE INDEX WILL BE IN CORE
0050                        INCOR2=22               /INCOR2=INCOR1+1/400
0051                        MOVE=7200               /WHERE THE MOVE ROUTINE IS LOCATED IN CORE
0052                        TPOINT=7627             /WHERE THE MINI MASK IS LOCATED,
0053                        SYSLOD=7600             /MINI BOOTSTRAP
0054                        TREAD=7630              /CONDENSED READ ROUTINE
0055                        SRTCH1=6400             /SCRATCH BLOCK FOR LOADING IN 17400
0056                        SRTCH2=35               /SRTCH1/400
0057                /
0060                /
0061                /
0062                /
0063                /
0064                /
0065                /
0066                /
0067                /
0070                /
0071                /
0072                /
0073                        EJECT
-
```

```
0074                    /
0075                    /
0076                    /
0077                            SEGMNT  6
0100                    /
0101                    /
0102                            *4020                   /THIS PROGRAM IS LOADED INTO THE UPPER
0103                    /                                FIELD OF MEMORY
0104                    /
0105                    /
0106                    /
0107                    /
0110    0020    0641    JBLOAD, LDF     1               /SET THE DATA FIELD TO LOWER CORE
0111    0021    1020            LDA I
0112    0022    7777            7777                    /PREPARE TO CHECK FOR PRESENCE OF A NAME
0113    0023    0002            PDP                     /GET OVER INTO THE GOODY MODE
0114                            PMODE
0115    4024    0665            AND I   E6P2            /AND AND OUT AC WITH THE NAMES
0116    4025    0666            AND I   E6P3
0117    4026    0667            AND I   E6P4            /IF NO NAME THEN THE AC WILL STILL BE
0120    4027    0670            AND I   E6P5            /ALL 7777S,,,
0121    4030    6211            CDF     10              /RESET TO UPPER FIELD POINTER
0122    4031    7040            CMA                     /PREPARE TO TEST NOW
0123    4032    7650            SNA CLA                 /,NOT, AC=0=NONAME=LOAD FROM WORKING AREA
0124    4033    5240            JMP     LOADWA          /LOAD FROM THE WORKING AREA,
0125    4034    1265            TAD     E6P2            /GET THE POINTER TO THE START OF THE NAME
0126    4035    4673            JMS I   ALOAD           /LOAD IT IN AND START IT, RETURN IF NOT
0127    4036    4674            JMS I   AREAD           /FOUND, WELL GIVE A "NO" MESSAGE BY
0130    4037    4037            ,                       /ISSUING A READ ON A NON-EXISTENT UNIT,
0131                    /
0132                    /
0133                    /
0134    4040    1275    LOADWA, TAD     WAM2            /GET A POINTER TO RIGHT BEFORE THE BINARY
0135    4041    3676            DCA I   ALBLOCK         /WORKING AREA AND STASH AWAY IN READ BLOCK
0136    4042    1271            TAD     A111            /SELECT THE BINARY WORKING AREA NOW,
0137    4043    3677            DCA I   ALUNIT          /SEND IT TO THE UNIT WORD
0140    4044    3700            DCA I   ALLOC           /ZERO OUT THE CORE LOCATION NOW,
0141    4045    7201            CLA IAC                 /+1 IN THE AC TO READ IN JUST 1 BLOCK
0142    4046    3701            DCA I   ALNUM           /AND STASH AWAY IN THE NUMBER WORD NOW
0143    4047    4674            JMS I   AREAD           /NOW READ IN JUST 1 BLOCK TO ESTABLISH TO UNIT
0144    4050    7610            LUNIT                   /POINTER TO THE UNIT CRAP,
0145    4051    1302            TAD     APBIT           /SET A POINTER TO THE BIT TABLE -1
0146    4052    3011            DCA     AUTO1           /SO THAT THE AUTO REGISTER CAN USE IT,
0147    4053    1272            TAD     AM40            /SET AUTO2 TO THE NUMBER OF BIT WORDS IN TABLE,
0150    4054    3012            DCA     AUTO2           /SO WE CAN USE IT AS A COUNT TO SET UP BITS,
0151    4055    7240            CLA CMA                 /-1 MEANS TO LOAD THIS BLOCK
0152    4056    3411            DCA I   AUTO1           /SET UP TABLE TO LOAD ALL OF CORE
0153    4057    2012            ISZ     AUTO2           /ALL DONE?
0154    4060    5255            JMP     ,-3             /NOPE, DO SOME MORE,
0155    4061    3703            DCA I   APTABLE         /SET UP HEADER BLOCK TO HALT,
0156    4062    1304            TAD     AWA             /NOW SET LBLOCK TO POINT TO THE FIRST BLOCK
0157    4063    3676            DCA I   ALBLOCK         /OF THE BINARY WORKING AREA
0160    4064    5705            JMP I   ALOADC          /NOW JUMP TO MIDDLE TO LOADER TO LOAD IN THE W.A.
0161                    /
0162                    /
0163                    /
0164                    /
0165                    /
0166                    /
0167                    /
0170                    /
0171                    /
0172                    /
```

```
0173                    /
0174                    /
0175        4065  2373  E6P2,   E6+2
0176        4066  2374  E6P3,   E6+3
0177        4067  2375  E6P4,   E6+4
0200        4070  2376  E6P5,   E6+5
0201        4071  0111  A111,   111
0202        4072  7740  AM40,   -40
0203                    /
0204        4073  4200  ALOAD,  LOAD
0205        4074  7774  AREAD,  READ
0206        4075  7776  WAM2,   WA-2
0207        4076  7612  ALBLOCK,LBLOCK
0210        4077  7610  ALUNIT, LUNIT
0211        4100  7611  ALLOC,  LLOC
0212        4101  7613  ALNUM,  LNUM
0213        4102  5737  APBIT,  PTABLE+340-1
0214        4103  5400  APTABLE,PTABLE
0215        4104  0000  AWA,    WA
0216        4105  4272  ALOADC, LOADC
0217                    /
0220                    /
0221                    /
0222                    /
0223                    /
0224                    /
0225                    /
0226                    /
0227                    /
0230                    /
0231                    /
0232                    /
0233                    /
0234                    /
0235                            EJECT
```

```
                  /
                  /
                  /
                        *4200
                  /
                  /
                  /
4200  0000  LOAD,   0                   /THIS LOADS IN A PROGRAM BY NAME,
4201  1320          TAD     BM1         /SUBTRACT 1 SO AUTO REG CAN USE IT
4202  3011          DCA     AUTO1       /TO PICK UP THE ARGUEMENTS,
4203  6214          RDF                 /GET THE CALLING DATA FIELD
4204  1332          TAD     BCIFCDF     /SET UP THE RETURN
4205  6211          CDF     10          /SET THE DATA FIELD TO UPPER CORE
4206  3733          DCA I   BLRET       /AND STASH AWAY,
4207  7307          CLA IAC CLL RTL     /+4 IN THE AC
4210  1011          TAD     AUTO1       /BOP UP THE ARG POINTER TO THE UNIT-1
4211  3012          DCA     AUTO2       /POSITION AND STASH AWAY,
4212  6201          CDF     0           /RESET THE DATA FIELD POINTER TO 0
4213  1412          TAD I   AUTO2       /GET THE UNIT NOW,
4214  6211          CDF     10          /AND RESET THE DATA FIELD TO UPPER CORE,
4215  3734          DCA I   BLUNIT      /SAVE IT IN THE UNITS POSITION,
4216  1335          TAD     BINDEX      /GET THE POINTER TO THE INDEX AREA
4217  3736          DCA I   BLBLOCK     /STASH AWAY IN THE BLOCK NUMBER WORD
4220  1337          TAD     BINCR2      /GET THE MODIFIED CORE FOR THE INDEX SEARCH
4221  3740          DCA I   BLLOC       /STASH AWAY NOW IN THE CALL LOCATION,
4222  7326          CLA CLL CML RTL     /+2 IN THE AC FOR TWO BLOCKS TO BE READ IN,
4223  3741          DCA I   BLNUM       /SET UP THE NUMBER NOW,
4224  4742          JMS I   BREAD       /READ IN THE CORRECT INDEX NOW,
4225  7610          LUNIT               /POINTER TO THE READ INFORMATION,
4226  1343          TAD     BM100       /PREPARE THE SEARCH THE DIRECTORY NOW,
4227  3017          DCA     AUTO7       /SET UP THE DIRECTORY SEARCH COUNT
4230  1344          TAD     BINCR1      /SET THE SEARCH POINTER TO THE START OF THE
4231  3013          DCA     AUTO3       /INDEX AREA -1/
                  /
4232  1011  LOOP,   TAD     AUTO1       /MOVE AUTO1 POINTER TO AUTO2
4233  3012          DCA     AUTO2       /BECAUSE WE DONT WANT TO HAVE TO REGET THE ARG EACH TIME
4234  1013          TAD     AUTO3       /PUSH AUTO3 TO THE NEXT NAME IN THE INDEX
4235  7040          CMA
4236  0345          AND     B7770
4237  7040          CMA                 /PUSH IS DONE NOW
4240  3013          DCA     AUTO3
4241  1321          TAD     BM4         /RESET COUNTER TO CHECK FOR WORDS OF NAME
4242  3016          DCA     AUTO6       /STORE IN ANOTHER TEMP
                  /
4243  6201  LLOOP,  CDF     0           /SET POINTER TO LOWER CORE
4244  1412          TAD I   AUTO2       /GET A NAME WORD
4245  6211          CDF     10          /RESET THE POINTER TO UPPER CORE,
4246  7041          CIA                 /NEGATE THE NAME WORD,
4247  1413          TAD I   AUTO3       /A MATCH??
4250  7640          SZA CLA
4251  5746          JMP I   BLBAD       /NOPE, DO A BOP AND CHECK
4252  2016          ISZ     AUTO6       /HAVE WE CHECKED ALL FOUR WORDS OF THE NAME
4253  5243          JMP     LLOOP       /NOPE, GO BACK AN CHECK SOME MORE,
                  /
4254  2013          ISZ     AUTO3       /NAME IS A MATCH, NOW SKIP PAST SOURCE
4255  2013          ISZ     AUTO3
4256  1413          TAD I   AUTO3       /GET THE STARTING BINARY BLOCK
4257  3736          DCA I   BLBLOCK     /AND STASH AWAY
4260  1413          TAD I   AUTO3       /NOW GET THE LENGTH
4261  7710          SPA CLA             /IS THE LENGTH OK [POSITIVE] ???
4262  574[illegible] JMP I   BLBAD[illegible] /NOPE, ERROR RETURN
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0336    4266  3740          DCA I   BLLOC           /AND STORE IN THE READ WORD.
0337    4267  4742          JMS I   BREAD           /READ IN THE HEADER BLOCK
0340    4270  7610          LUNIT                   /POINTER TO THE READ CRAP
0341    4271  2736          ISZ I   BLBLOCK         /ISZ THE BLOCK NUMBER PAST THE HEADER BLOCK
0342                  /
0343    4272  3740  LOADC,  DCA I   BLLOC           /ZAP OUT THE CORE LOC NOW, COMMON ENTRY
0344    4273  1325          TAD     BBTAB           /SET TO BIT POINTER TO THE BEGINNING OF THE MAP
0345    4274  3726          DCA I   BTEMP           /AND SAVE AWAY NOW
0346    4275  1327          TAD     BM17            /PREPARE TO LOAD IN 17 BLOCKS
0347    4276  4730          JMS I   BLITLOD         /LOAD THEM IN NOW
0350    4277  1731          TAD I   BBTAB2          /GET THE BITS WHICH TELL WHETHER 7400 IS LOADED
0351    4300  7040          CMA
0352    4301  7640          SZA CLA                 /TEST FOR THE 7400 BLOCK BEING LOADED IN
0353    4302  5722          JMP I   BNOL74         /DONT LOAD IN THE 7400 BLOCK
0354    4303  2740          ISZ I   BLLOC          /BOP PAST THE 7400 LOCATION
0355    4304  7240          CLA CMA                 /-1: LOAD IN THE 7400 BLOCK INTO 10000
0356    4305  4730          JMS I   BLITLOD         /LOAD IT IN NOW
0357    4306  4723          JMS I   BMOVE           /NOW MOVE LOCATIONS 10000 TO 7400
0360    4307  6211          CDF     10              /THIS AVOIDS THE DATA-BREAK PROBLEM
0361    4310  0000          0000
0362    4311  6201          CDF     0
0363    4312  7400          7400
0364    4313  0400          400                     /400 WORDS=1 BLOCK
0365    4314  7240          CLA CMA                 /-1: NOW RESET TO CONTINUE THE NORMAL LOAD
0366    4315  1740          TAD I   BLLOC
0367    4316  3740          DCA I   BLLOC           /LOC NOW POINTS TO 10000 AGAIN
0370    4317  5724          JMP I   BLN4            /SKIP PAST THE PHOONEY BOP
0371                  /
0372                  /
0373                  /
0374                  /
0375                  /
0376                  /
0377                  /
0400                  /
0401                  /
0402                  /
0403                  /
0404                  /
0405                  /
0406                  /
0407                  /
0410                  /
0411    4320  7777  BM1,     -1
0412    4321  7774  BM4,     -4
0413    4322  4400  BNOL74,  NOL74
0414    4323  7200  BMOVE,   MOVE
0415    4324  4402  BLN4,    LN4
0416    4325  5740  BBTAB,   PTABLE+340
0417    4326  4522  BTEMP,   TEMP
0420    4327  7761  BM17,    -17
0421    4330  4504  BLITLOD, LITLOD
0422    4331  5757  BBTAB2,  PTABLE+357
0423    4332  6203  BCIFCDF, CIF CDF 0
0424    4333  4530  BLRET,   LRET
0425    4334  7610  BLUNIT,  LUNIT
0426    4335  0346  BINDEX,  INDEX
0427    4336  7612  BLBLOCK, LBLOCK
0430     337  0022  BINCR2,  INCOR2
0431     340  7611  BLLOC,   LLOC
0432    4341  7613  BLNUM,   LNUM
0433    4342  7774  BREAD,   READ
```

```
4343    [illegible]    [illegible]
4344    3777    [illegible]    INCR[illegible]
4345    7770    B7770,  7770
4346    4524    BLBAD,  LBAD
4347    4526    BLBAD2, LBAD2
4350    0033    BPTAB2, PTAB2
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                /
                        EJECT
```

```
0467                    /
0470                    /
0471                    /
0472                    /
0473                    /
0474                    /
0475                            *4400
0476                    /
0477                    /
0500                    /
0501                    /
0502    4400    2322    NOL74,  ISZ     TEMP            /BOP UP THE BIT MAP POINTER
0503    4401    2744            ISZ I   CLLOC           /BOP UP THE LOC TO 10000
0504                    /
0505    4402    1345    LN4,    TAD     CM10            /READ IN THE REST OF CORE UP TO 13777
0506    4403    4304            JMS     LITLOD          /LOAD NOW
0507    4404    4746            JMS I   CMOVE           /NOW MOVE THE HEADER BLOCK UP,
0510    4405    6211            CDF     10
0511    4406    5400            PTABLE
0512    4407    6211            CDF     10
0513    4410    7774            7774
0514    4411    0004            4                       /4 WORDS OF BOOTSTRAP NOW IN POSITION,
0515    4412    3747            DCA I   CTPOINT         /CLEAR THE MINI LOADER WORDS,
0516    4413    3200            DCA     NOL74           /ALSO SET TOTAL COUNT TO ZERO(NOL74 IS GOOD ENOUGH)
0517    4414    1350            TAD     CM7             /PREPARE TO SET UP MINI MAP TO READ IN SEMI-FINAL SEVEN BLOC
                KS
0520    4415    3323            DCA     TEMP2           /SET UP THE PHOONEY COUNT
0521    4416    1722    LNLP,   TAD I   TEMP            /GET THE CORRECT BIT MASK
0522    4417    2322            ISZ     TEMP            /BOP UP TO NEXT BIT MASK
0523    4420    7040            CMA                     /COMPLEMENT TO BE SURE
0524    4421    7450            SNA                     /BLOCK LOADED???
0525    4422    2200            ISZ     NOL74           /YEP, ISZ TOTAL COUNT,
0526    4423    7650            SNA CLA                 /TEST FOR PRESENCE
0527    4424    2747            ISZ I   CTPOINT         /WERE GOING TO LOAD IT, ALL IS WELL
0530    4425    1747            TAD I   CTPOINT         /NOW SHIFT OVER TPOINT
0531    4426    7104            CLL RAL                 /FOR THE NEXT ISZ-TEST
0532    4427    3747            DCA I   CTPOINT
0533    4430    2323            ISZ     TEMP2           /INCREMENT THE COUNTER
0534    4431    5216            JMP     LNLP            /NOT DONE YET, GET THE NEXT BIT MAP CRAP,
0535    4432    1747            TAD I   CTPOINT         /GIVE AN EXTRA ROTATE NOW
0536    4433    7106            CLL RTL                 /ROTATE ALL THE WAY TO BIT 0
0537    4434    7106            CLL RTL
0540    4435    3747            DCA I   CTPOINT         /STASH AWAY NOW
0541    4436    1733            TAD I   C7770           /NOW GET THE ADDRESS OF THE ROUTINE,
0542    4437    3242            DCA     .+3             /SAVE IT FOR THE SETUP WHICH FOLLOWS,
0543    4440    4746            JMS I   CMOVE           /NOW MOVE CORRECT ROUTINE TO 7630
0544    4441    6211            CDF     10
0545    4442    0000            0000                    /NEW READ ROUTINE GOES HERE
0546    4443    6211            CDF     10              /TO BE MOVED
0547    4444    7630    LPOINT, TREAD                   /TO 7630 FOR THE FINAL LOAD,
0550    4445    0140            7767-TREAD+1            /NUMBER OF WORDS TO MOVE
0551    4446    1734            TAD I   C7771           /GET THE FUDGE FACTOR
0552    4447    1735            TAD I   CLBLOCK         /ADD IN THE BLOCK NUMBER
0553    4450    3735            DCA I   CLBLOCK         /NOW STORE BACK AS AN ABSOLUTE BLOCK NUMBER
0554    4451    1736            TAD I   CPTAB           /IS THE FINAL BLOCK TO BE LOADED?????
0555    4452    7040            CMA
0556    4453    7640            SZA CLA
0557    4454    5737            JMP I   CSYSLOD         /NOPE, CUT OUT NOW AND DO THE LOAD,
0560    4455    4746            JMS I   CMOVE           /MOVE DOWN THE UNIT BLOCK TO A SAFE PLACE,
0561    4456    6211            CDF     10
0562    4457    7610            LUNIT
0563    4460    6211            CDF     10
```

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4462  0004                              /LUNIT IS NOW IN A PRESERVED STATE
4463  1200            TAD     NUM...    /GET THE ADDITIONAL NUMBER OF BLOCKS TO GO
4464  1273            TAD     LBLCK2    /ADD   THE PRESENT BLOCK
4465  3273            DCA     LBLCK2    /SAVE   AY IN THE LAST BLOCK COUNT
4466  1340            TAD     CSRTCH2   /SET UP THE CORRECT LOC NOW IN THE
4467  3272            DCA     LLOC2     /READ CALLING SEQUNCE BECAUSE THE MOVE DESTROYED IT,
4470  4644            JMS I   LPOINT    /NOW CALL IN MINI READ ROUTINE TO READ IN LAST BLOCK
4471  0000  LUNIT2,   0                 /TEMPORARY UNIT FOR THE LAST BLOCK READ
4472  0035  LLOC2,    SRTCH2            /WHERE TO READ IT INTO
4473  0000  LBLCK2,   0                 /LAST BLOCK TO GO INTO CORE
4474  0001  LNUM2,    1                 /NUMBER OF BLOCKS TO READ IN
4475  4746            JMS I   CMOVE     /NOW MOVE UP THE HALF OF LAST BLOCK
4476  6211            CDF     10        /INTO CORRECT POSIITON
4477  6400            SRTCH1
4500  6211            CDF     10
4501  7400            SYSLOD-200        /UPTO 7400-7577
4502  0200            200               /TWO-HUNDRED-GOODY WORDS
4503  5737            JMP I   CSYSLOD   /NOW LOAD IN THE MIDDLE UPPER CORE LOCATIONS,
            /
            /
            /
            /
            /
            /
            /
            /
            /
            /
4504  0000  LITLOD,   0                 /THIS ROUTINE LOADS IN N BLOCKS
4505  3323            DCA     TEMP2     /STARTING FROM THE NEXT BLOCK NUMBER IN LBLOCK
4506  1722            TAD I   TEMP      /GET THE NEXT BIT MASK
4507  7040            CMA               /COMPLEMENT TO BE SURE
4510  7640            SZA CLA           /ALL THE BITS ON???
4511  5315            JMP     LITNO     /DONT LOAD THIS BLOCK
4512  4741            JMS I   CREAD     /BITS ON, READ  IN THIS BLOCK,
4513  7610            LUNIT
4514  2735            ISZ I   CLBLOCK   /BOP UP TO THE NEXT BLOCK
4515  2744  LITNO,    ISZ I   CLLOC     /BOP UP TO THE NEXT LOC
4516  2322            ISZ     TEMP      /BOP UP THE BIT MASK POSITION
4517  2323            ISZ     TEMP2     /BOP UP THE COUNT, ALL DONE?
4520  5306            JMP     LITLOD+2  /NOT YET DONE, GET THE NEXT
4521  5704            JMP I   LITLOD    /ALL DONE, RETURN TO CALLER,
            /
            /
4522  0000  TEMP,     0                 /POINTER
4523  0000  TEMP2,    0                 /COUNTER
            /
            /
4524  2017  LBAD,     ISZ     AUTO7     /BOP UP THE COUNT
4525  5742            JMP I   CLOOP     /NOT YET DONE, TRY NEXT NAME
            /
4526  1743  LBAD2,    TAD I   CLOAD     /BINARY FILE NOT THERE,
4527  3332            DCA     .+3       /RETURN TO CALLER
4530  0000  LRET,     0                 /SET UP TO HIS DATA FIELD
4531  5732            JMP I   .+1
4532  0000            0000              /CALLERS ADDRESS,
            /
            /
            /
```

```
0664                    /
0665                    /
0666                    /
0667                    /
0670                    /
0671        4533  7770  C7770,  7770
0672        4534  7771  C7771,  7771
0673        4535  7612  CLBLOCK,LBLOCK
0674        4536  5777  CPTAB,  PTABLE+377
0675        4537  7600  CSYSLOD,SYSLOD
0676        4540  0035  CSRTCH2,SRTCH2
0677        4541  7774  CREAD,  READ
0700        4542  4232  CLOOP,  LOOP
0701        4543  4200  CLOAD,  LOAD
0702        4544  7611  CLLOC,  LLOC
0703        4545  7770  CM10,   -10
0704        4546  7200  CMOVE,  MOVE
0705        4547  7627  CTPOINT,TPOINT
0706        4550  7771  CM7,    -7
0707                    /
0710                    /
0711                    /
0712                    /
0713                    /
0714                    /
0715                    /
0716                    /
0717                    /
0720                    /
0721                    /
0722                    /
0723                    /
0724                    /
0725                    /
0726                    /
0727                    /
0730                    /
0731                    /
0732                    /
0733                    /
0734                    /
0735                    /
0736                    /
0737                    /
0740                            EJECT
```

```
0741                    /
0742                    /
0743                    /
0744                    /
0745
```

NO ERRORS

```
SYMBOL  VALUE  DEF   REFERENCES

ALBLOC    76   0207  0135 0157
ALLOC   4100   0211  0140
ALNUM   4101   0212  0142
ALOAD   4073   0204  0126
ALOADC  4105   0216  0160
ALUNIT  4077   0210  0137
AM40    4072   0202  0147
APBIT   4102   0213  0145
APTABL  4103   0214  0155
AREAD   4074   0205  0127 0143
AUTO1   0011   0035  0036 0037 0040 0041 0042 0043 0146 0152 0247 0255 0300
AUTO2   0012   0036  0150 0153 0256 0260 0301 0313
AUTO3   0013   0037  0276 0302 0306 0316 0324 0325 0326 0330
AUTO4   0014   0040
AUTO5   0015   0041
AUTO6   0016   0042  0310 0321
AUTO7   0017   0043  0274 0645
AWA     4104   0215  0156
A111    4071   0201  0136
BBTAB   4325   0416  0344
BBTAB2  4331   0422  0350
BCIFCD  4332   0423  0251
BINCR1  4344   0435  0275
BINCR2  4337   0430  0265
BINDEX  4335   0426  0263
BLBAD   4346   0437  0320
BLBAD2  4347   0440  0332
BLBLOC  4336   0427  0264 0327 0341
BLITLO  4330   0421  0347 0356
BLLOC   4340   0431  0266 0336 0343 0354 0366 0367
BLNUM   4341   0432  0270 0334
BLN4    4324   0415  0370
BLRET   4333   0424  0253
BLUNIT  4334   0425  0262
BMOVE   4323   0414  0357
BM1     4320   0411  0246
BM100   4343   0434  0273
BM17    4327   0420  0346
BM4     4321   0412  0307
BNOL74  4322   0413  0353
BPTAB2  4350   0441  0335
BREAD   4342   0433  0271 0337
BTEMP   4326   0417  0345
B7770   4345   0436  0304
CLBLOC  4535   0673  0552 0553 0631
CLLOC   4544   0702  0503 0632
CLOAD   4543   0701  0650
CLOOP   4542   0700  0646
CMOVE   4546   0704  0507 0543 0560 0600
CM10    4545   0703  0505
CM7     4550   0706  0517
CPTAB   4536   0674  0554
CREAD   4541   0677  0627
CSRTCH  4540   0676  0571
CSYSLO  4537   0675  0557 0606
CTPOIN  4547   0705  0515 0527 0530 0532 0535 0540
C7770   4533   0671  0541
C7771   4534   0672  0551
E6      2371   0026  0175 0176 0177 0200
E6P2    4065   0175  0115 0125
```

SYMBOL	VALUE	DEF	REFERENCES
E6P4	4067	0177	0117
E6P5	4070	0200	0120
INCOR1	0777	0047	0435
INCOR2	0022	0050	0430
INDEX	0346	0046	0426
JBLOAD	4020	0110	
LBAD	4524	0645	0437
LBAD2	4526	0650	0440
LBLCK2	4473	0576	0567 0570
LBLOCK	7612	0033	0034 0207 0427 0673
LITLOD	4504	0621	0421 0506 0635 0636
LITNO	4515	0632	0626
LLOC	7611	0032	0033 0211 0431 0702
LLOC2	4472	0575	0572
LLOOP	4243	0312	0322
LNLP	4416	0521	0534
LNUM	7613	0034	0212 0432
LNUM2	4474	0577	
LN4	4402	0505	0415
LOAD	4200	0245	0204 0701
LOADC	4272	0343	0216
LOADWA	4040	0134	0124
LOOP	4232	0300	0700
LPOINT	4444	0547	0573
LRET	4530	0652	0424
LUNIT	7610	0031	0032 0144 0210 0272 0340 0425 0562 0630
LUNIT2	4471	0574	0564
MOVE	7200	0051	0414 0704
NOL74	4400	0502	0413 0516 0525 0566
PTABLE	5400	0044	0213 0214 0416 0422 0511 0674
PTAB2	0033	0045	0441
READ	7774	0027	0205 0433 0677
SRTCH1	6400	0055	0602
SRTCH2	0035	0056	0575 0676
SYSLOD	7600	0053	0604 0675
TEMP	4522	0641	0417 0502 0521 0522 0623 0633
TEMP2	4523	0642	0520 0533 0622 0634
TPOINT	7627	0052	0705
TREAD	7630	0054	0547 0550
WA	0000	0030	0206 0215
WAM2	4075	0206	0134