

/O M S I - P S / 8 F O C A L

/

/THIS SOURCE FILE IS STORED ON M T A : P F O C A L . P A

/IDENTIFICATION

/PRODUCT CODE: DEC-08-AJAE-PA

/PRODUCT NAME: SOURCE OF FOCAL, 1969 + INIT (4K,INIT)

/ AND

/ UTILITY OVERLAYS FOR FOCAL , 1969 (4 WORD,8K)

/DATE CREATED: JULY 9,1969

/ F O C A L

/ T H E F O R M U L A C A L C U L A T O R

/FOR FORMULATING ON-LINE CALCULATIONS IN ALGEBRAIC LANGUAGE

/ON THE FOLLOWING D.E.C. COMPUTERS;

/5,8,8/I,8/S,8/L,LINC-8,LAB-8,TSS-8,PDP-12

/F O C A L A N D F L O A T

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/3 RD REVISION

/MODIFIED TO ACCEPT TWO PAGE HANDLERS

0000 FIELD 0

/PS/8 LIBRARY ROUTINES FOR "PFOCAL"

0000 *0000

00000 0000 INTRUPT, 0
 00001 6213 CIF CDF 10 /INTERRUPT ENTRY
 00002 5403 JMP I .+1
 00003 2603 INTRPT

INTOUT,
 00004 6244 RMF /RETURN FROM INTERRUPT SERVICE
 00005 6001 ION /RESTORE MEMORY FIELD AND INTERRUPT
 00006 5400 JMP I INTRUPT

00007 0000 0000 /SPARE

00010 0000 AUTO1, 0 /AUTO-INDEX REGISTERS
 00011 0000 AUTO2, 0
 00012 0000 AUTO3, 0
 00013 0000 AUTO4, 0
 00014 0000 AUTO5, 0
 00015 0000 AUTO6, 0
 00016 0000 AUTO7, 0
 00017 0000 AUTO8, 0

00020 0000 XCNT, 0 /GENERAL COUNTER - SUCH AS FOR MPD2,MPD3
 00021 7700 USR, 7700 /POINTER TO MONITOR(0200 IF IN CORE)

EXIT,
 00022 4577 JMS I IDISMIS /NORMAL RETURN FOR PS/8 COMMANDS
 00023 6001 ION
 00024 6213 CDF CIF 10
 00025 5426 JMP I .+1
 00026 7512 GOSWITCH-3

NAMLOC,
 00027 0000 0000 /NAME
 00030 0000 0000
 00031 0000 0000

EXTENSION,
 00032 0000 0000 /.FC OR .FD

00033 0000 LISTFLG, 0000
 NEWDEV,
 00034 0000 0000
 00035 0000 0000

00036 0000 TEN7, 0
 00037 0000 ATEM, 0
 00040 0066 XCHAR, CHAR
 00041 7607 SHNDLR, 7607 /SYSTEM HANDLER ENTRY POINT

/DEFINE LOWER FIELD INSTRUCTIONS.....

```

      4442 TGETC=JMS I .
00042 7150      XGETC
      4443 TPOPA=JMS I .
00043 5533      MPOPA
      4444 TPUSHA=JMS I .
00044 5432      MPUSHA
      4445 TPUSHF=JMS I .
00045 5457      MPD2
      4446 TPOPF=JMS I .
00046 5506      MPD3
      4447 TSORTJ=JMS I .
00047 6537      MSORTJ

```

```

00050 0000 ECHFLG, 0
00051 0000 OPNFLG, 0
00052 0000 IPNFLG, 0
00053 0000 FLNGTH, 0
00054 0000 STBLK, 0
00055 0000 DEVNO, 0
00056 0000 LIBBLK, 0
00057 0000      0000
00060 7201      7201
00061 0000      0000
00062 0000 LIBHND, 0000

```

/FOR DEVICE NAME

/LOAD POINT

/FOR DEVICE #

/HANDLER ENTRY

```

      4463 TESTRM=JMS I .
00063 5565      MSORTC
      4464 ERROR1=JMS I .
00064 7044      ERROR

```

```

00065 0000      0000

```

/SPARE

```

00066 0000 CHAR, 0

```

/FOR OBSCURE FAKING REASONS

```

00067 0000 INBLK, 0000
00070 0000      0000
00071 4201      4201
00072 0000      0000
00073 0000 INHND, 0000

```

OUTBLK,

```

00074 0000      0000
00075 0000      0000
00076 4601      4601
00077 0000      0000
00100 0000 OUTHND, 0000

```

```

      4501 TPRINTC=JMS I .
00101 6122      MPRINTC
      4502 TGETLN=JMS I .
00102 7140      MGETLN

```

4503 TSPNOR=JMS I .
00103 6526 XTSPNOR

00104 0000 LIBFIL, 0
00105 0000 DEVNLD, 0

/IN THE CURRENT VERSION OF PFOCAL (7/8/72)
/LOCATIONS 00106 - 00110 ARE AVAILABLE
/LOCATIONS 00111 - 00177 ARE USED BY
/PAGE ZERO LITERALS AND LINKAGES

0200 PAGE

/INITIAL TEXT FOR PS/8 FOCAL

```

00200 0000 PC0,      0
00201 0000          0
00202 0000          0
00203 0000          0
00204 0000          0
00205 5051          5051
00206 0060          BUFR
00207 2367          LINEX

LINE0,
00210 0224          LINE01      /LINK TO NEXT LINE(=0 IF NO NEXT LINE)
00211 0000          0          /LINE NO. (00.00)          (AC0-4=GROUP)
                                   /                          (AC5-11=FRACTION)
                                   /<GROUP=0-31, FRACTION=0-99>

00212 0355 TEXT "C-FILE FOCAL, 1976"
00213 0611
00214 1405
00215 4006
00216 1703
00217 0114
00220 5440
00221 6171
00222 6766
00223 0000

00223 0223 *. -1
00223 7715 7715          /DUMMY CR

00224 LINE1=.

/ THE FOLLOWING CODING REPRESENTS THE INITIAL DIALOG
/ AS FOCAL SEES IT.

DECIMAL

00200 K=128          /FOR LINE # CODING ALGORITHM

LINE01,
00224 0266          LINE02
00225 0212          1^K+10      /"01.10"
00226 0372 TEXT 00: PS/8 FOCAL, 1971 BY D. SCHNEIDER & B. SMITH OF OMSI, 6/1/7
00227 4020
00230 2357
00231 7040
00232 0617
00233 0301
00234 1454
00235 4061
00236 7167
00237 6140
00240 0231

```

00241 4004
00242 5640
00243 2303
00244 1016
00245 0511
00246 0405
00247 2240
00250 4640
00251 0256
00252 4023
00253 1511
00254 2410
00255 4017
00256 0640
00257 1715
00260 2311
00261 5440
00262 6657
00263 6157
00264 6761
00265 7715
00266 0000

0266 *-1
LINE02,

00266 0330
00267 0224
00270 0372
00271 4011
00272 1624
00273 0522
00274 2225
00275 2024
00276 1116
00277 0740
00300 2410
00301 0540
00302 1116
00303 1124
00304 1101
00305 1440
00306 0411
00307 0114
00310 1707
00311 2505
00312 4022
00313 0524
00314 0111
00315 1623
00316 4023
00317 2401
00320 1604
00321 0122
00322 0440
00323 0605

LINE03
1^K+20

TEXT 0C: INTERRUPTING THE INITIAL DIALOGUE RETAINS STANDARD FEATURE

00324 0124
00325 2522
00326 0523
00327 7715
00330 0000

00330 *. -1
LINE03,

00330 0373 LINE04
00331 0236 1^K+30
00332 0372 TEXT @C: OMITTING OPTIONS 1, 2, AND 3 INCREASE THE NUMBER OF VARIAB
00333 4017
00334 1511
00335 2424
00336 1116
00337 0740
00340 1720
00341 2411
00342 1716
00343 2340
00344 6154
00345 4062
00346 5440
00347 0116
00350 0440
00351 6340
00352 1116
00353 0322
00354 0501
00355 2305
00356 4024
00357 1005
00360 4016
00361 2515
00362 0205
00363 2240
00364 1706
00365 4026
00366 0122
00367 1101
00370 0214
00371 0523
00372 7715
00373 0000

00373 *. -1
LINE04,

00373 0424 LINE05
00374 0242 1^K+34
00375 0372 TEXT @C: OMITTING OPTION 4 PERMITS LARGER PROGRAMS?M0
00376 4017
00377 1511
00400 2424
00401 1116
00402 0740

00403 1720
00404 2411
00405 1716
00406 4064
00407 4020
00410 0522
00411 1511
00412 2423
00413 4014
00414 0122
00415 0705
00416 2240
00417 2022
00420 1707
00421 2201
00422 1523
00423 7715
00424 0000

0424 *-1

LINE05,

00424 0430 LINE06
00425 0250 1^K+40
00426 0577 TEXT @E?M@
00427 1500

LINE06,

00430 0474 LINE07
00431 0262 1^K+50

00432 2340 TEXT @S Q(141)=3.1;S Q(223)=2.1;S Q(255)=2.5;C SETS LINE NUMBER 01
00433 2150
00434 6164
00435 6151
00436 7563
00437 5661
00440 7323
00441 4021
00442 5062
00443 6263
00444 5175
00445 6256
00446 6173
00447 2340
00450 2150
00451 6265
00452 6551
00453 7562
00454 5665
00455 7303
00456 4023
00457 0524
00460 2340
00461 1411
00462 1605
00463 4016

00464 2515
00465 0205
00466 2240
00467 2017
00470 1116
00471 2405
00472 2223
00473 7715
00474 0000

0474 *. -1

LINE07,

00474 0513
00475 0267
00476 2340
00477 2150
00500 6164
00501 7151
00502 7562
00503 5664
00504 7323
00505 4043
00506 7561
00507 7307
00510 4061
00511 5667
00512 7715
00513 0000

LINE08

1^K+55

TEXT 0S Q(149)=2.4;S #=1;G 1.7?M0

0513 *. -1

LINE08,

00513 0537
00514 0274
00515 2440
00516 4141
00517 4222
00520 0524
00521 2231
00522 4017
00523 2240
00524 2431
00525 2005
00526 4010
00527 0514
00530 2072
00531 4040
00532 4273
00533 0740
00534 6256
00535 6177
00536 1500

LINE09

1^K+60

TEXT 0T !! "RETRY OR TYPE HELP: " ;G 2.1?M0

LINE09,

00537 0601
00540 0306

LINE10

1^K+70

00541 2440 TEXT @T !! "DO YOU WANT THE STANDARD FEATURES OF PS/8 FOCAL, 1971?
00542 4141
00543 4204
00544 1740
00545 3117
00546 2540
00547 2701
00550 1624
00551 4024
00552 1005
00553 4023
00554 2401
00555 1604
00556 0122
00557 0440
00560 0605
00561 0124
00562 2522
00563 0523
00564 4017
00565 0640
00566 2023
00567 5770
00570 4005
00571 1703
00572 0114
00573 5440
00574 6171
00575 6761
00576 7740
00577 4042
00600 7715
00601 0000

0601 *. -1

LINE10,

00601 0612 LINE11
00602 0405 2^K+5
00603 0372 TEXT @C: GET INPUT?M0
00604 4007
00605 0524
00606 4011
00607 1620
00610 2524
00611 7715
00612 0000

0612 *. -1

LINE11,

00612 0623 LINE12
00613 0412 2^K+10
00614 2340 TEXT @S P=0;S V=0?M0
00615 2075
00616 6073
00617 2340

00620 2675
00621 6077
00622 1500

LINE12,

00623 0632 LINE13
00624 0424 2^K+20
00625 2340 TEXT 0S P=P+1?M0
00626 2075
00627 2053
00630 6177
00631 1500

LINE13,

00632 0643 LINE14
00633 0426 2^K+22
00634 2340 TEXT 0S S(P)=FIN(?)?M0
00635 2350
00636 2051
00637 7506
00640 1116
00641 5051
00642 7715
00643 0000

0643 *-1

LINE14,

00643 0707 LINE15
00644 0431 2^K+25
00645 1140 TEXT 0I [(P-25)*(S(P)-141)*(S(P)-223)*(S(P)-255)*(S(P)-149)]2.2,2.3
00646 3350
00647 2055
00650 6265
00651 5152
00652 5023
00653 5020
00654 5155
00655 6164
00656 6151
00657 5250
00660 2350
00661 2051
00662 5562
00663 6263
00664 5152
00665 5023
00666 5020
00667 5155
00670 6265
00671 6551
00672 5250
00673 2350
00674 2051
00675 5561
00676 6471

00677 5135
00700 6256
00701 6254
00702 6256
00703 6354
00704 6256
00705 6277
00706 1500

LINE15,

00707 0725
00710 0436
00711 1140
00712 5062
00713 6555
00714 2051
00715 5461
00716 5666
00717 7307
00720 4021
00721 5023
00722 5020
00723 5151
00724 7715
00725 0000

LINE16

2^K+30

TEXT 0I (25-P),1.6;G 0(S(P))?M0

0725 *-1

LINE16,

00725 0763
00726 0450
00727 2440
00730 4236
00731 2542
00732 4173
00733 0740
00734 6256
00735 6173
00736 0340
00737 2205
00740 2305
00741 2440
00742 0310
00743 0122
00744 0103
00745 2405
00746 2240
00747 2017
00750 1116
00751 2405
00752 2240
00753 0116
00754 0440
00755 2324
00756 0122
00757 2440

LINE17

2^K+40

TEXT 0T "U"!;G 2.1;C RESET CHARACTER POINTER AND START OVER?M0

00760 1726
00761 0522
00762 7715
00763 0000

0763 *-1
LINE17,

00763 1021 LINE18
00764 0462 2^K+50
00765 2340 TEXT 0S P=P-FSGN(P-1);T "\";G 2.22;C DELETES LAST CHARACTER?M0
00766 2075
00767 2055
00770 0623
00771 0716
00772 5020
00773 5561
00774 5173
00775 2440
00776 4234
00777 4273
01000 0740
01001 6256
01002 6262
01003 7303
01004 4004
01005 0514
01006 0524
01007 0523
01010 4014
01011 0123
01012 2440
01013 0310
01014 0122
01015 0103
01016 2405
01017 2277
01020 1500

LINE18,

01021 1037 LINE19
01022 0605 3^K+5
01023 0372 TEXT 0C: EXAMINE INPUT LINE?M0
01024 4005
01025 3001
01026 1511
01027 1605
01030 4011
01031 1620
01032 2524
01033 4014
01034 1116
01035 0577
01036 1500

LINE19,

01037	1075	LINE20
01040	0607	3^K+7
01041	0372	TEXT 0C: CHECK FOR Y, H, SPACE, COMMA, RETURN AND NON-DIGITS?M0
01042	4003	
01043	1005	
01044	0313	
01045	4006	
01046	1722	
01047	4031	
01050	5440	
01051	1054	
01052	4023	
01053	2001	
01054	0305	
01055	5440	
01056	0317	
01057	1515	
01060	0154	
01061	4022	
01062	0524	
01063	2522	
01064	1640	
01065	0116	
01066	0440	
01067	1617	
01070	1655	
01071	0411	
01072	0711	
01073	2423	
01074	7715	
01075	0000	

1075 *-1

LINE20,

01075	1116	LINE21
01076	0612	3^K+10
01077	2440	TEXT 0T !;I (S<1>-217)3.2,3.15,3.2?M0
01100	4173	
01101	1140	
01102	5023	
01103	5061	
01104	5155	
01105	6261	
01106	6751	
01107	6356	
01110	6254	
01111	6356	
01112	6165	
01113	5463	
01114	5662	
01115	7715	
01116	0000	

1116 *-1

LINE21,

011116 1140 LINE22
011117 0617 3^K+15
011120 0440 TEXT 0D 4.3;D 4.4;D 4.5;D 4.6;G 4.95?M0
011121 6456
011122 6373
011123 0440
011124 6456
011125 6473
011126 0440
011127 6456
011130 6573
011131 0440
011132 6456
011133 6673
011134 0740
011135 6456
011136 7165
011137 7715
011140 0000

1140 *. -1
LINE22,

011140 1155 LINE23
011141 0624 3^K+20
011142 1140 TEXT 0I (S(1)-200)3.22,5.1?M0
011143 5023
011144 5061
011145 5155
011146 6260
011147 6051
011150 6356
011151 6262
011152 5465
011153 5661
011154 7715
011155 0000

1155 *. -1
LINE23,

011155 1172 LINE24
011156 0626 3^K+22
011157 1140 TEXT 0I (S(1)-141)3.3,3.15?M0
011160 5023
011161 5061
011162 5155
011163 6164
011164 6151
011165 6356
011166 6354
011167 6356
011170 6165
011171 7715
011172 0000

1172 *. -1

LINE24,

01172	1211	LINE25
01173	0636	3^K+30
01174	2340	TEXT 0S V=V+1;I (V-P)3.4,4.05?M0
01175	2675	
01176	2653	
01177	6173	
01200	1140	
01201	5026	
01202	5520	
01203	5163	
01204	5664	
01205	5464	
01206	5660	
01207	6577	
01210	1500	

LINE25,

01211	1232	LINE26
01212	0650	3^K+40
01213	1140	TEXT 0I (FABS(S(V)-180.5)-5.1)3.6?M0
01214	5006	
01215	0102	
01216	2350	
01217	2350	
01220	2651	
01221	5561	
01222	7060	
01223	5665	
01224	5155	
01225	6556	
01226	6151	
01227	6356	
01230	6677	
01231	1500	

LINE26,

01232	1257	LINE27
01233	0662	3^K+50
01234	1140	TEXT 0I [(S(V)-160)*(S(V)-172)]1.6,3.6,1.6?M0
01235	3350	
01236	2350	
01237	2651	
01240	5561	
01241	6660	
01242	5152	
01243	5023	
01244	5026	
01245	5155	
01246	6167	
01247	6251	
01250	3561	
01251	5666	
01252	5463	
01253	5666	

01254 5461
01255 5665
01256 7715
01257 0000

1257 *. -1

LINE27,

01257 1273
01260 0674
01261 2340
01262 2550
01263 2350
01264 2651
01265 5175
01266 6173
01267 0740
01270 6356
01271 6377
01272 1500

LINE28

3^K+60

TEXT 0S U(S(V))=1;G 3.3?M0

LINE28,

01273 1306
01274 1001
01275 0372
01276 4005
01277 1603
01300 1704
01301 0540
01302 0614
01303 0107
01304 2377
01305 1500

LINE29

4^K+1

TEXT 0C: ENCODE FLAGS?M0

LINE29,

01306 1321
01307 1005
01310 1140
01311 5025
01312 5061
01313 7065
01314 5151
01315 5464
01316 5661
01317 6577
01320 1500

LINE30

4^K+5

TEXT 0I (U(185)),4.15?M0

LINE30,

01321 1336
01322 1012
01323 0640
01324 3275
01325 6167
01326 6754
01327 6170
01330 6073

LINE31

4^K+10

TEXT 0F Z=177,180;S U(Z)=1?M0

01331 2340
01332 2550
01333 3251
01334 7561
01335 7715
01336 0000

1336 *.-1

LINE31,

01336 1351 LINE32
01337 1017 4CK+15
01340 1140 TEXT 01 (U(177)), 4.257M0
01341 5025
01342 5061
01343 6767
01344 5151
01345 5464
01346 5662
01347 6577
01350 1500

LINE32,

01351	1362	LINE33
01352	1024	4^K+20
01353	2340	TEXT @S A=1;S # =2?M0
01354	0175	
01355	6173	
01356	2340	
01357	4375	
01360	6277	
01361	1500	

LINE33,

01362	1375	LINE34
01363	1031	4^K+25
01364	1140	TEXT @I (U(178)), 4.35?M0
01365	5025	
01366	5061	
01367	6770	
01370	5151	
01371	5464	
01372	5663	
01373	6577	
01374	1500	

LINE34,

01375	1411	LINE35
01376	1036	4^K+30
01377	2340	TEXT @S A=1;S B=1;S # =6?M0
01400	0175	
01401	6173	
01402	2340	
01403	0275	
01404	6173	
01405	2340	
01406	4375	
01407	6677	
01410	1500	

LINE35,

01411	1424	LINE36
01412	1043	4^K+35
01413	1140	TEXT @I (U(179)), 4.45?M0
01414	5025	
01415	5061	
01416	6771	
01417	5151	
01420	5464	
01421	5664	
01422	6577	
01423	1500	

LINE36,

01424	1436	LINE37
01425	1050	4^K+40
01426	2340	TEXT @S C=1;S # =#*5?M0

01427 0375
01430 6173
01431 2340
01432 4375
01433 4352
01434 6577
01435 1500

LINE37,

01436 1451 LINE38
01437 1055 4^K+45
01440 1140 TEXT @I (U(180)), 4.55?M0
01441 5025
01442 5061
01443 7060
01444 5151
01445 5464
01446 5665
01447 6577
01450 1500

LINE38,

01451 1463 LINE39
01452 1062 4^K+50
01453 2340 TEXT @S D=1;S #=#*7?M0
01454 0475
01455 6173
01456 2340
01457 4375
01460 4352
01461 6777
01462 1500

LINE39,

01463 1476 LINE40
01464 1067 4^K+55
01465 1140 TEXT @I (U(181)), 4.65?M0
01466 5025
01467 5061
01470 7061
01471 5151
01472 5464
01473 5665
01474 6577
01475 1500

LINE40,

01476 1510 LINE41
01477 1074 4^K+60
01500 2340 TEXT @S E=1;S #=#*11?M0
01501 0575
01502 6173
01503 2340
01504 4375
01505 4352

01506 6161
01507 7715
01510 0000

1510 *. -1
LINE41,

01510 1523 LINE42
01511 1101 4^K+65
01512 1140 TEXT @I (U(182)), 4.75?M0
01513 5025
01514 5061
01515 7062
01516 5151
01517 5464
01520 5667
01521 6577
01522 1500

LINE42,

01523 1535 LINE43
01524 1106 4^K+70
01525 2340 TEXT @S G=1;S #=#*13?M0
01526 0775
01527 6173
01530 2340
01531 4375
01532 4352
01533 6163
01534 7715
01535 0000

1535 *. -1
LINE43,

01535 1550 LINE44
01536 1113 4^K+75
01537 1140 TEXT @I (U(183)), 4.85?M0
01540 5025
01541 5061
01542 7063
01543 5151
01544 5464
01545 5670
01546 6577
01547 1500

LINE44,

01550 1562 LINE45
01551 1120 4^K+80
01552 2340 TEXT @S H=1;S #=#*17?M0
01553 1075
01554 6173
01555 2340
01556 4375
01557 4352
01560 6167

01561 7715
01562 0000

1562 *. -1
LINE45,

01562 1575 LINE46
01563 1125 4^K+85
01564 1140 TEXT 01 (U(184)), 4.95?M0
01565 5025
01566 5061
01567 7064
01570 5151
01571 5464
01572 5671
01573 6577
01574 1500

LINE46,

01575 1610 LINE47
01576 1132 4^K+90
01577 2340 TEXT 0S I=1;S #=#*(-1)?M0
01600 1175
01601 6173
01602 2340
01603 4375
01604 4352
01605 5055
01606 6151
01607 7715
01610 0000

1610 *. -1
LINE47,

01610 1653 LINE48
01611 1137 4^K+95
01612 2440 TEXT 0T %6.04, !"PROCEED. "!!!;R;C: RETURNS TO MACHINE LANGUAGE PR GR
01613 4566
01614 5660
01615 6454
01616 4142
01617 2022
01620 1703
01621 0505
01622 0456
01623 4241
01624 4173
01625 7322
01626 7303
01627 7240
01630 2205
01631 2425
01632 2216
01633 2340
01634 2417
01635 4015

01636 0103
01637 1011
01640 1605
01641 4014
01642 0116
01643 0725
01644 0107
01645 0540
01646 2022
01647 1707
01650 2201
01651 1577
01652 1500

LINE48,

01653 1700
01654 1140
01655 0372
01656 4027
01657 1011
01660 0310
01661 4003
01662 1716
01663 0611
01664 0725
01665 2205
01666 2340
01667 2023
01670 5770
01671 4006
01672 1703
01673 0114
01674 5440
01675 6171
01676 6761
01677 7715
01700 0000

LINE49

4^K+96

TEXT @C: WHICH CONFIGURES PS/8 FOCAL, 1971?M0

1700

*.-1

LINE49,

01700 1713
01701 1205
01702 0372
01703 4010
01704 0514
01705 2040
01706 2022
01707 1116
01710 2417
01711 2524
01712 7715
01713 0000

LINE50

5^K+5

TEXT @C: HELP PRINTOUT?M0

1713

*.-1

LINE50,

01713	1754	LINE51
01714	1212	5^K+10
01715	2440	TEXT @T !!!"ANSWER BY TYPING THE CODES TO RETAIN THE FEATURES."! ?M
01716	4141	
01717	4142	
01720	0116	
01721	2327	
01722	0522	
01723	4002	
01724	3140	
01725	2431	
01726	2011	
01727	1607	
01730	4024	
01731	1005	
01732	4003	
01733	1704	
01734	0523	
01735	4024	
01736	1740	
01737	2205	
01740	2401	
01741	1116	
01742	4024	
01743	1005	
01744	4005	
01745	0501	
01746	2425	
01747	2205	
01750	2372	
01751	4241	
01752	4177	
01753	1500	

LINE51,

01754	1770	LINE52
01755	1224	5^K+20
01756	2440	TEXT @T "1 SIN & COS"! ?M0
01757	4261	
01760	4040	
01761	2311	
01762	1640	
01763	4640	
01764	0317	
01765	2342	
01766	4177	
01767	1500	

LINE52,

01770	2013	LINE53
01771	1236	5^K+30
01772	2440	TEXT @T "2 SIN, COS, LOG, EXP & ATN"! ?M0
01773	4262	
01774	4040	
01775	2311	

01776 1654
01777 4003
02000 1723
02001 5440
02002 1417
02003 0754
02004 4005
02005 3020
02006 4046
02007 4001
02010 2416
02011 4241
02012 7715
02013 0000

2013 *. -1

LINE53,

02013 2033
02014 1250
02015 2440
02016 4263
02017 4040
02020 0530
02021 2405
02022 1604
02023 0504
02024 4020
02025 2205
02026 0311
02027 2311
02030 1716
02031 4241
02032 7715
02033 0000

LINE54

5^K+40

TEXT @T "3 EXTENDED PRECISION"! ?M0

2033 *. -1

LINE54,

02033 2051
02034 1262
02035 2440
02036 4264
02037 4040
02040 0611
02041 1405
02042 4003
02043 1715
02044 1501
02045 1604
02046 2342
02047 4177
02050 1500

LINE55

5^K+50

TEXT @T "4 FILE COMMANDS"! ?M0

LINE55,

02051 2074
02052 1267

LINE56

5^K+55

02053	2440	TEXT @T "5	LEADING SPACE IN 'TYPE'"!?	M0
02054	4265			
02055	4040			
02056	1405			
02057	0104			
02060	1116			
02061	0740			
02062	2320			
02063	0103			
02064	0540			
02065	1116			
02066	4047			
02067	2431			
02070	2005			
02071	4742			
02072	4177			
02073	1500			

LINE56,

02074	2132	LINE57		
02075	1274	5^K+60		
02076	2440	TEXT @T "6	'=' IN 'TYPE' (OPTION 5	DISABLES THIS OPTION)"!?
02077	4266			M0
02100	4040			
02101	4775			
02102	4740			
02103	1116			
02104	4047			
02105	2431			
02106	2005			
02107	4740			
02110	5017			
02111	2024			
02112	1117			
02113	1640			
02114	6540			
02115	0411			
02116	2301			
02117	0214			
02120	0523			
02121	4024			
02122	1011			
02123	2340			
02124	1720			
02125	2411			
02126	1716			
02127	5142			
02130	4177			
02131	1500			

LINE57,

02132	2147	LINE58		
02133	1306	5^K+70		
02134	2440	TEXT @T "7	'.' IN 'ASK'"!?	M0
02135	4267			

02136 4040
02137 4772
02140 4740
02141 1116
02142 4047
02143 0123
02144 1347
02145 4241
02146 7715
02147 0000

2147 *. -1
LINE58,

02147 2175
02150 1320
02151 2440
02152 4270
02153 4040
02154 4745
02155 4740
02156 1116
02157 4020
02160 1727
02161 0522
02162 2355
02163 1706
02164 5524
02165 0516
02166 4016
02167 1724
02170 0124
02171 1117
02172 1642
02173 4177
02174 1500

LINE59
5^K+80

TEXT 0T "8 ' & ' IN POWERS-OF-TEN NOTATION"! ?M0

LINE59,

02175 2217
02176 1332
02177 2440
02200 4271
02201 4040
02202 2205
02203 2401
02204 1116
02205 2340
02206 0605
02207 0124
02210 2522
02211 0523
02212 4062
02213 5463
02214 5464
02215 4241
02216 7715

LINE60
5^K+90

TEXT 0T "9 RETAINS FEATURES 2,3,4"! ?M0

02217 0000

2217 *. -1
LINE60,

02217	2246	LINE61
02220	1334	5^K+92
02221	2440	TEXT 0T "0 RETAINS NONE OF LISTED FEATURES"!!?M0
02222	4260	
02223	4040	
02224	2205	
02225	2401	
02226	1116	
02227	2340	
02230	1617	
02231	1605	
02232	4017	
02233	0640	
02234	1411	
02235	2324	
02236	0504	
02237	4006	
02240	0501	
02241	2425	
02242	2205	
02243	2342	
02244	4141	
02245	7715	
02246	0000	

2246 *. -1
LINE61,

02246	2277	LINE62
02247	1336	5^K+94
02250	2440	TEXT 0T "YES RETAINS STANDARD FEATURES 2,3,4,5"! ?M0
02251	4231	
02252	0523	
02253	4040	
02254	2205	
02255	2401	
02256	1116	
02257	2340	
02260	2324	
02261	0116	
02262	0401	
02263	2204	
02264	4006	
02265	0501	
02266	2425	
02267	2205	
02270	2340	
02271	6254	
02272	6354	
02273	6454	
02274	6542	
02275	4177	

02276 1500

LINE62,

02277 2326

LINE63

02300 1340

5^K+96

02301 2440

TEXT 0T "RUBOUT DELETES PRECEEDING CHARACTER"! ?M0

02302 4222

02303 2502

02304 1725

02305 2440

02306 0405

02307 1405

02310 2405

02311 2340

02312 2022

02313 0503

02314 0505

02315 0411

02316 1607

02317 4003

02320 1001

02321 2201

02322 0324

02323 0522

02324 4241

02325 7715

02326 0000

2326

*.-1

LINE63,

02326 2361

LINE64

02327 1342

5^K+98

02330 2440

TEXT 0T " "; S D=FOUT(223); T " ' OR CTRL/U KILLS LINE"! ?M0

02331 4247

02332 4273

02333 2340

02334 0475

02335 0617

02336 2524

02337 5062

02340 6263

02341 5173

02342 2440

02343 4247

02344 4017

02345 2240

02346 0324

02347 2214

02350 5725

02351 4013

02352 1114

02353 1423

02354 4014

02355 1116

02356 0542

02357 4141
02360 7715
02361 0000

2361 *. -1
LINE64,

02361 0000 0000
02362 1343 5^K+99
02363 0740 TEXT @G 1.4?M@
02364 6156
02365 6477
02366 1500

/NO MORE LINES OF TEXT

2367 LINEX=.

OCTAL

/PS/8 FOCAL FILE ROUTINES

3014 *3014

RESTORE,

03014	4503	TSPNOR	/ "OPEN RESTORE" COMMAND
03015	1066	TAD CHAR	/SAVE COMMAND CHAR(3 WORD COMMAND)
03016	4444	TPUSHA	/PUSH IT
03017	4442	TGETC	
03020	4463	TESTRM	/GO TO END OF COMMAND WORD
03021	7610	SKP CLA	
03022	5217	JMP .-3	
03023	7340	CLA CLL CMA	/INITIALIZE ECHO SWITCH
03024	3050	DCA ECHFLG	
03025	4576	JMS I INAME	/JUST TO SET ECHO MODE
03026	4443	TPOPA	
03027	1175	TAD [-"I	/OPEN RESTORE INPUT ?
03030	7450	SNA	
03031	5574	JMP I IIRST	/YES
03032	1173	TAD ["I-"0	/NO, MUST BE OUTPUT !
03033	7640	SZA CLA	
03034	4464	ERROR1	/NEITHER ONE !
03035	5572	JMP I IORST	

03036	0000	OCLOSE, 0	/CLOSE THE OPEN OUTPUT FILE
03037	1051	TAD OPNFLG	
03040	7650	SNA CLA	/DON'T BOTHER IF IT ISN'T OPEN
03041	5636	JMP I OCLOSE	
03042	1171	TAD [232	/CTRL-Z
03043	4267	JMS NOCHAR	
03044	1372	TAD OPTR1	/PAD BUFFER WITH ZEROS
03045	1377	TAD (-3600	/AND WRITE IT OUT
03046	7640	SZA CLA	
03047	5243	JMP .-4	
03050	1105	TAD DEVHLD	/SAVED DEVICE #
03051	6002	IOF	
03052	6212	CIF 10	
03053	4421	JMS I USR	
03054	0004	4	

03055	5351	ONMTP	/POINTER TO SAVED NAME
03056	0000	BLKCNT, 0	/FILE LENGTH (BLOCKS)
03057	4464	ERROR1	/ "HUH ?"
03060	3051	DCA OPNFLG	/CLEAR "FILE OPEN" FLAG
03061	6001	ION	
03062	6211	CDF 10	
03063	1170	TAD [XOUTL	/RESTORE TELETYPE OUTPUT ROUTINE
03064	3567	DCA I IOUTDEV	
03065	6201	CDF	
03066	5636	JMP I OCLOSE	/DO WHATEVER ELSE NEEDS TO E DONE

03067	0000	NOCHAR, 0	/PS/8 3/2 BUFFERED CHARACTER OUTPUT
03070	4566	JMS I IFLDSET	/CALLED FROM EITHER FIELD
03071	3332	DCA CCIF	/SAVE CALLING FIELD
03072	6201	CDF	

```

03073 1037      TAB ATEM
03074 0376      AND C377      /MASK OUT GARBAGE OF CHAR TO BE OUTPUT
03075 2334      ISZ 03        /WHICH CHAR OF THREE ?
03076 5330      JMP 02        /STRAIGH PACKING
03077 4334      JMS RT        /HALF WORD PACKING-PACK FIRST HALF
03100 1037      TAB ATEM      /GET SAVED ARG
03101 4334      JMS RT        /PACK SECOND HALF
03102 7346      CLA CLL CMA RTL /RESET 3-WAY SWITCH
03103 3334      DCA 03
03104 2375      ISZ 0CHCT      /BUFFER CAN ONLY BE FILLED WITH 3RD CHAR
03105 5332      JMP CCIF      /NO FULL YET, RETURN TO CALLER
03106 4565      JMS I IPUTDEV  /TELL THE MONITOR THIS HANDLER'S IN CORE
03107 0077      OUTHND-1     /POINTER TO DEVICE # AND ENTRY
03110 7300      CLA CLL
03111 1374      TAB 0LNGTH    /--MAXIMUM ALLOWABLE LENGTH
03112 1256      TAB BLKCNT    /LENGTH SO FAR
03113 7630      SZL CLA       /HAS HE GONE TOO FAR ?
03114 5346      JMP 00VER     /YES, KILL HIM
03115 6002      IOF
03116 4500      JMS I OUTHND   /NO, WRITE ONE BLOCK BUFFER
03117 4200      4200
03120 3600      3600
03121 0000      0000
03122 5564      OBLK,        JMP I IDERR      /DEVICE ERROR
03123 2321      ISZ OBLK      /BUMP OUTPUT BLOCK
03124 2256      ISZ BLKCNT    /AND COUNT OF BLOCKS SO FAR
03125 4360      JMS 0SETUP    /RESET POINTERS FOR NEXT BUFFER
03126 6001      ION
03127 5332      JMP CCIF
02,
03130 3772      DCA I OPTR1   /NORMAL PACKING IS EASY !
03131 2372      ISZ OPTR1     /BUMP POINTER
03132 7402      CCIF,        HLT          /FILLED WITH CIF CDF
03133 5667      JMP I NOCHAR
3134 03=.      /WHY NOT ?
03134 0000      RT,         0          /HALF-WORD PACK ROUTINE
03135 7106      CLL RTL
03136 7006      RTL
03137 3037      DCA ATEM      /SAVE FOR SECOND HALF
03140 1037      TAB ATEM
03141 0163      AND I7400
03142 1773      TAB I OPTR2   /ADD IN CHARACTER IN RIGHT HALF
03143 3773      DCA I OPTR2   /PACK IT
03144 2373      ISZ OPTR2     /BUMP POINTER AGAIN
03145 5734      JMP I RT
DOVER,
03146 3051      DCA 0PNFLG    /HE BLEW IT- KILL THE FILE !!
03147 1105      TAB DEVHLD
03150 6002      IOF
03151 6212      CIF 10
03152 4421      JMS I USR
03153 0004      4

```

03154	5351		ONMTP	
03155	0000		0	/LENGTH OF ZERO TO DELETE
03156	7600	07600,	7600	/IGNORE ERRORS
03157	4464		ERROR1	/BECAUSE WE ALREADY KNOW ABOUT THEM
03160	0000	OSETUP, 0		/RESET ALL THE POINTERS (WHAT FUN)!
03161	1320		TAD OBLK-1	
03162	3372		DCA OPTR1	
03163	1320		TAD OBLK-1	
03164	3373		DCA OPTR2	
03165	7346		CLA CLL CMA RTL	
03166	3334		DCA 03	
03167	1356		TAD 07600	
03170	3375		DCA OCHCT	
03171	5760		JMP I OSETUP	
03172	0000	OPTR1, 0		
03173	0000	OPTR2, 0		
03174	0000	OLNGTH, 0		
03175	0000	OCHCT, 0		
03176	0377			
03177	4200			
	3200	PAGE		

5200 *5200

OOPEN,

```

05200 4562 JMS I [IOWAIT /WAIT FOR TTY TO FINISH (DECTAPES ARE SLOW)
05201 4561 JMS I [OPEN /CALL USR, HANDLER; ENTER OUTPUT FILE
05202 0073 YINT, OUTBLK-1 /OUTPUT HANDLER BLOCK
05203 0003 3 /ENTER
05204 5241 YBLK, JMP TTYOUT /OPEN OUTPUT TTY;
05205 5777' JMP OCLCHK /ERROR ON ENTER-SEE IF FILE ALREADY OPEN
05206 4577 JMS I [DISMISS /KICK USR OUT
05207 4445 TPUSHF /SAVE NAME AND OTHER CRAP
05210 0027 NAMLOC
05211 4446 TPOPF
05212 5351 ONMTMP
05213 1054 TAD STBLK /STARTING BLOCK
05214 3776 DCA I [OBLK
05215 1053 TAD FLNGTH /-MAXIMUM ALLOWABLE LENGTH
05216 3775 DCA I [OLNGTH
05217 4774 JMS I [OSETUP /SETUP PACKING POINTERS
05220 7340 CLA CLL CMA /THERE'S A FILE OPEN !
05221 3051 DCA OPNFLG
05222 1055 TAD DEVNO /SAVE FOR CLOSE
05223 3105 DCA DEVHLD
05224 3773 DCA I [BLKCNT /DITTO

```

ORST,

```

05225 1051 TAD OPNFLG /ENTRY FOR "OPEN RESTORE INPUT"
05226 7650 SNA CLA /IF "OPEN OUTPUT" , FLAG IS ALREADY SET
05227 4464 ERROR1 /NO OUTPUT FILE TO RESTORE
05230 6211 CDF 10
05231 2050 ISZ ECHFLG /SKIP IF NO ECHO
05232 1276 TAD IBLK+2
05233 3772 DCA I [OUTECH /SET OUTPUT ROUTINE
05234 1371 TAD [OCHAR /POINTERTO FILE OUTPUT ROUTINE
05235 6213 CIF CDF 10
05236 3567 DCA I [OUTDEV
05237 6001 ION
05240 5560 JMP I [PROC /FINISH THE LINE

```

TTYOUT,

```

05241 1170 TAD [XOUTL /SWITCH OUTPUT TO TTY:(INTERRUPT)
05242 5235 JMP .-5

```

FILEST,

```

05243 1440 TAD I XCHAR /HERE(S WHERE FILES START !!
05244 3066 DCA CHAR /GET NEXT CHAR
05245 6201 CDF
05246 1370 TAD [0604 /SET ".FD" EXTENSION
05247 3032 DCA EXTENSION
05250 4503 TSPNOR /SKIP SPACES
05251 1066 TAD CHAR /SAVE COMMAND CHAR
05252 4444 TPUSHA
05253 4442 TGETC
05254 4463 TESTRM /GO TO END OF COMMAND WORD
05255 7610 SKP CLA
05256 5253 JMP .-3

```

05257	4443		TPOPA	
05260	4447		TSORTJ	/GO DO COMMAND
05261	6563			FILIST-1
05262	7401			FILGO-FILIST
05263	4464		ERROR1	/OOPS-BAD "0" COMMAND
05264	0000	ICHAR,	0	/GET A CHARACTER FROM A FILE
05265	7300		CLA CLL	/MAKE SURE
05266	2350		ISZ INCHT	/DO WE NEED ANOTHER BUFFER ?
05267	5730		JMP I RDPTR	/NO, UNPACK THE CHARACTER
05270	6002		IOF	
05271	4473		JMS I INHND	/YES, GO GET IT
05272	0200			0200
05273	3200			3200
05274	0000	IBLK,		0000
05275	7700		SMA CLA	/ONLY BOTHER WITH FATAL ERRORS
05276	7610		SKP CLA	
05277	5564		JMP I IDERR	/WE'VE GOT ONE
05300	6001		ION	
05301	2274		ISZ IBLK	/BUMP TO NEXT BLOCK
05302	1273		TAD IBLK-1	/AND RESTORE POINTES
05303	3347		DCA IPNTR	
05304	1157		TAD I7200	
05305	3350		DCA INCHT	
05306	1747	ICHAR1,	TAD I IPNTR	/STRAIGHTFORWARD UNPACK ROUTINE
05307	4330		JMS RDPTR	/DO COMMON CRAP
05310	1747	ICHAR2,	TAD I IPNTR	/SAVE LEFT HALF FOR LATER
05311	0163		AND I7400	
05312	3346		DCA ITEMP	
05313	2347		ISZ IPNTR	/INCREMENT TO NEXT WORD
05314	1747		TAD I IPNTR	/ANOTHER EASY ONE
05315	4330		JMS RDPTR	
05316	1747	ICHAR3,	TAD I IPNTR	/THIS IS THE TRICKY ONE!
05317	2347		ISZ IPNTR	/GET LOW-ORDER HALF
05320	0163		AND I7400	
05321	7112		CLL RTR	/SHIFT RIGHT
05322	7012		RTR	
05323	1346		TAD ITEMP	/GET HIGH-ORDER HALF(REMEMBER ?)
05324	7012		RTR	/SHIFT SOME MORE
05325	7012		RTR	
05326	4330		JMS RDPTR	/GOT IT!
05327	5306		JMP ICHAR1	/1-2-3-1-2-3-1-2-3...
05330	0000	RDPTR,	0	/IF YOU DIDN'T KNOW, THIS IS A COROUTINE !
05331	0156		AND I0177	/ISN'T THAT AMAZING ?
05332	7450		SNA	/IGNORE NULLS AND PARITY
05333	5265		JMP ICHAR+1	
05334	1367		TAD (-32	/END OF FILE ? (CTRL-Z)
05335	7440		SZA	
05336	5343		JMP .+5	/NO
05337	3052		DCA IPNFLG	/YES, CLEAR OPEN FILE FLAG
05340	6211		CDF 10	/AND SET UP CLEVER KLUDGE

05341	1366	TAD (EOF	/TO CHECK FOR A STUPID
05342	3555	DCA I IINDEV	/ATTEMPT-TO-READ-PAST-EOF !
05343	1171	TAD [232	/PASS CTRL-Z TO PROGRAM (MIGHT COME IN HAND
05344	6213	CDF CIF 10	
05345	5664	JMP I ICHAR	
05346	0000	ITEMP, 0	
05347	0000	IPNTR, 0	
05350	0000	INCHT, 0	
		ONKTMP,	
05351	0000	0	
05352	0000	0	
05353	0000	0	
05354	0000	0	
05366	3170		
05367	7746		
05370	0604		
05371	3200		
05372	3202		
05373	3056		
05374	3160		
05375	3174		
05376	3121		
05377	7131		
	5400	PAGE	

	IOPEN,		
05400	4562	JMS I [IOWAIT	/WAIT FOR TTY(DECTAPES ARE SLOW)
05401	4561	JMS I IOPEN	/CALL THAT AMAZING GENERAL-PURPOSE SUBROUTINE
05402	0066	INBLK-1	
05403	0002	2	/ "LOOKUP"
05404	5230	JMP TTYIN	/OPEN INPUT TTY:
05405	4464	ERROR1	/WHOOOPS-FILE NOT FOUND
05406	4577	JMS I [DISMISS	/BOOT THE USER OUT
05407	1054	TAD STBLK	/SET POINTERS AND OTHER CRAP
05410	3777	DCA I [IBLK	
05411	7340	CLA CLL CMA	
05412	3052	DCA IPNFLG	
05413	7340	CLA CLL CMA	
05414	3776	DCA I [INCHT	
	IRST,		
05415	1052	TAD IPNFLG	/ "OPEN RESTORE INPUT" COMES HERE
05416	7650	SNA CLA	/FLAG IS SET ALREADY IF "OPEN INPUT"
05417	4464	ERROR1	/NO INPUT FILE TO RESTORE
05420	1375	TAD [ICHARF	/SET I/O POINTERS
05421	6213	CIF CDF 10	
05422	3555	DCA I [INDEX	
05423	2050	ISZ ECHFLG	/AND ECHO MODE
05424	1154	TAD [PRINTC	
05425	3553	DCA I [2163	
05426	6001	ION	
05427	5560	JMP I [PROC	
	TTYIN,		
05430	1152	TAD [XI33	/ "OPEN INPUT TTY:"
05431	5221	JMP TTYIN-7	
	MPUSHA,	0	
05432	0000		/PUSH THE AC ON THE STACK
05433	4344	JMS FLDSET	/CALLED FROM EITHER FIELD
05434	3255	DCA ACDF	
05435	6211	CDF 10	/DO SOME CRAZY, MIXED-UP POINTER SCRAMBLING
05436	1774	TAD I [PDLXR	
05437	3036	DCA TEM7	
05440	7040	CMA	
05441	1036	TAD TEM7	
05442	3774	DCA I [PDLXR	
05443	1036	TAD TEM7	
05444	7141	CIA CLL	
05445	1551	TAD I [BUFR	
05446	7630	SZL CLA	
	PDERR,		
05447	4464	ERROR1	/PUSHDOWN OVERFLOW
05450	1774	TAD I [PDLXR	
05451	6201	CDF	
05452	3011	DCA AUTO2	
05453	1037	TAD ATEM	
05454	3436	DCA I TEM7	
	ACDF,		
05455	6203	CIF CDF	
05456	5632	JMP I MPUSHA	

05457	0000	MPD2,	0	/PUSH 4 WORDS ON THE STACK
05460	1657		TAD I MPD2	/GET POINTER TO FIRST WORD
05461	1150		TAD C3	/PUSH IN REVERSE ORDER
05462	3306		DCA MPD3	
05463	2257		ISZ MPD2	
05464	4344		JMS FLDSET	
05465	3271		DCA FCDF	
05466	6201		CDF	
05467	1147		TAD C-4	
05470	3020		DCA XCNTN	
05471	7402	FCDF,	HLT	/CHANGE FIELD TO CALLING FIELD
05472	1706		TAD I MPD3	/GET THE NEXT WORD
05473	6203		CIF CDF	
05474	4232		JMS MPUSHA	/PUSH IT
05475	7340		CLA CLL CMA	/BACK UP POINTER
05476	1306		TAD MPD3	
05477	3306		DCA MPD3	
05500	2020		ISZ XCNTN	
05501	5271		JMP FCDF	/GET THE NEXT ONE
05502	1271		TAD FCDF	
05503	3304		DCA .+1	
05504	0000		0	/RESTORE CALLING FIELD
05505	5657		JMP I MPD2	
05506	0000	MPD3,	0	/POP 4 WORDS
05507	7340		CLA CLL CMA	/GET POINTER-1
05510	1706		TAD I MPD3	
05511	3012		DCA AUTO3	
05512	2306		ISZ MPD3	
05513	1373		TAD CDF	
05514	6214		RDF	
05515	3322		DCA FCIF	
05516	1147		TAD C-4	/FOUR WORDS
05517	3020		DCA XCNTN	
05520	6201		CDF	
05521	4333		JMS MPOPA	/GET ONE
05522	6201	FCIF,	CDF	
05523	3412		DCA I AUTO3	/PUT IT AWAY
05524	2020		ISZ XCNTN	/ALL DONE ?
05525	5320		JMP FCIF-2	/NO, GET ANOTHER
05526	7326		CLL CLA CML RTL	/YES, CHANGE CDF TO CIF CDF
05527	1322		TAD FCIF	
05530	3331		DCA .+1	
05531	0000		0	/CHANGE FIELD AND EXIT
05532	5706		JMP I MPD3	
05533	0000	MPOPA,	0	/POP A WORD
05534	4344		JMS FLDSET	/THIS ONE'S EASY
05535	3342		DCA ACIF	
05536	6211		CDF 10	
05537	2774		ISZ I (PDLXR	
05540	6201		CDF	
05541	1411		TAD I AUTO2	
05542	6203	ACIF,	CIF CDF	
05543	5733		JMP I MPOPA	

05544 0000 FLDSET, 0
05545 3037 DCA ATEM
05546 1273 TAD FCDF+2
05547 6214 RDF
05550 5744 JMP I FLDSET

XRESTOR,

05551 1033 TAD LISTFLG /PART OF ERROR ROUTINE TO RESET I/O TO TTY
05552 7640 SZA CLA
05553 4546 JMS I C\$WAPIN /RESTORE CORE SWAPPED BY DIRECTORY LIST
05554 6213 CIF CDF 10
05555 1154 TAD CPRINTC /OPEN INPUT TTY., ECHO; OPEN OUTPUT TTY.
05556 3553 DCA I C2163
05557 1152 TAD CXI33
05560 3555 DCA I CINDEX
05561 1170 TAD CXOUTL
05562 3567 DCA I COUTDEV
05563 5764 JMP I .+1
05564 2762 RECOVX+3

05565 0000 MSORTC, 0 /CHECK FOR TERMINATOR
05566 6213 CIF CDF 10
05567 4545 JMS I CTERMER
05570 2365 ISZ MSORTC
05571 5765 JMP I MSORTC

05573 6201
05574 0013
05575 3151
05576 5350
05577 5274

5600 PAGE

/LIBRARY COMMAND PROCESSOR

/*****STORAGE ALLOCATION MAP*****/
 /*****

```

/*      3000      FILES (OUTPUT AND RESTORE)
/*      3200      INPUT BUFFER (PAGE 1)
/*      3400      INPUT BUFFER (PAGE 2)
/*      3600      OUTPUT BUFFER (PAGE 1)
/*      4000      OUTPUT BUFFER (PAGE 2)
/*      4200      INPUT HANDLER (2 PAGE)
/*      4400      INPUT HANDLER
/*      4600      OUTPUT HANDLER (1 PAGE)
/*      5000      OUTPUT HANDLER
/*      5200      FILES (INPUT AND OUTPUT)
/*
/*      5400      PUSHDOWN LIST CONTROLS
/*      5600      NAME, GTMON, DISMISS, IOWAIT
/*      6000      HANDAD, COMPARE
/*      6200      LOWLIB, SAYER, RETURN
/*      6400      CHAINER, FETCHER, GOSUB
/*      6600      LIBRARIAN
/*      7000      MISCELLANEOUS
/*      7200      LIBRARY HANDLER
/*      7400      LIBRARY HANDLER
/*      7600      MONITOR RESIDENT
  
```

/*****
 /*****

```

05600  0000  NAME,  0      /READ A DEV:FILENAME.EX STRING INTO "NAMLOC"
05601  4360      JMS DISMIS /"GETC" WON'T WITH THE USR IN CORE
05602  1377      TAD (5723  /CODE FOR DSK:
05603  3034      DCA NEWDEV  /DEFAULT DEVICE
05604  3035      DCA NEWDEV+1
05605  4216      JMS GNAME   /GET FIRST PART (MIGHT BE DEVICE)
05606  1144      TAD ["A-":  /WAS IT A DEVICE ?
05607  7640      SZA CLA
05610  5600      JMP I NAME   /NO, ALL SET UP
05611  4442      TGETC        /YES, MOVE PAST ":"
05612  1027      TAD NAMLOC   /MOVE TO DEVICE AREA
05613  3034      DCA NEWDEV
05614  1030      TAD NAMLOC+1
05615  5204      JMP NAME+4   /GET FILENAME

05616  0000  GNAME,  0      /READ A NAME INTO "NAMLOC"
05617  3027      DCA NAMLOC   /CLEAR NAME AREA
05620  3030      DCA NAMLOC+1 /DON'T CLEAR ASSUMED EXTENSION)
05621  3031      DCA NAMLOC+2
05622  1143      TAD (NAMLOC  /INITIALIZE POINTERS
05623  3333      DCA NMBASE
05624  7240      CLA CMA
05625  3334      DCA PERDSW
05626  3335      DCA NAMECT
05627  4503      TSPNOR
  
```

05630	7410	SKP	
		NAMEC,	
05631	4442	TGETC	/MAIN LOOP
05632	1066	TAD CHAR	/LOWER FIELD COPY, OF COURSE
05633	1142	TAD [- " .	/EXTENSION ?
05634	7450	SNA	
05635	5271	JMP PERD	/YES, CLEAR DEFAULT EXTENSION
05636	1141	TAD [" . - " ,	/COMMA ?
05637	7650	SNA CLA	
05640	5302	JMP ECHCHK	/YES, CHECK FOR ECHO
		ECHGO,	
05641	4316	JMS DECODE	/MUST BE A-Z , 0-9
05642	5616	JMP I GNAME	/IT WASN'T, MUST BE END OF NAME
05643	7430	SZL	/RESTORE CHARACTER
05644	1140	TAD [57	
05645	7001	IAC	
05646	3316	DCA DECODE	/TEMPORARY STORAGE
05647	1335	TAD NAMECT	/NO MORE THAN 6 CHAR PER NAME
05650	1173	TAD [- 6	
05651	7700	SMA CLA	
05652	5231	JMP NAMEC	
05653	1335	TAD NAMECT	
05654	7110	CLL RAR	/BUILD POINTER TO CHARACTER POSITION
05655	1333	TAD NMBASE	
05656	3336	DCA TT	
05657	1316	TAD DECODE	/LEFT OR RIGHT HALF ?
05660	7430	SZL	
05661	5265	JMP . + 4	/RIGHT
05662	7106	CLL RTL	/LEFT, SHIFT OVER
05663	7006	RTL	
05664	7006	RTL	
05665	1736	TAD I TT	/ADD IN THE OTHER HALF
05666	3736	DCA I TT	
05667	2335	ISZ NAMECT	/BUMP COUNT
05670	5231	JMP NAMEC	/CONTINUE LOOP
		PERD,	
05671	1027	TAD NAMLOC	/FOUND A PERIOD IN A STRING
05672	7640	SZA CLA	
05673	2334	ISZ PERDSW	
05674	4464	ERROR1	/DOUBLE PERIODS OR NO FILE NAME
05675	3032	DCA EXTENSION	/CLEAR EXTENSION
05676	4442	TGETC	/MOVE PAST PERIOD
05677	2333	ISZ NMBASE	/FAKE OUT POINTERS
05700	1137	TAD [4	
05701	5226	JMP NAMEC-3	
		ECHCHK,	
05702	4442	TGETC	/MOVE PAST COMMA
05703	4503	TSPNDR	
05704	1066	TAD CHAR	/MUST BE FOLLOWED BY "ECHO"
05705	1136	TAD [- " E	
05706	7640	SZA CLA	
05707	5616	JMP I GNAME	
05710	3050	DCA ECHFLG	/SET ECHOF LG

05711	4442	TGETC	/MOVE TO END OF WORD
05712	4316	JMS DECODE	
05713	5616	JMP I GNAME	
05714	7300	CLA CLL	
05715	5311	JMP .-4	
05716	0000	DECODE, 0	/CHECK FOR A-Z, 0-9
05717	1066	TAD CHAR	
05720	1135	TAD [-"9-1	
05721	7100	CLL	
05722	1134	TAD ["9+1-"0	
05723	7430	SZL	
05724	5331	JMP DCDYES	
05725	1133	TAD ["0-"Z-1	
05726	7120	CLL CML	
05727	1132	TAD ["Z-"A+1	
05730	7420	SNL	
		DCDYES,	
05731	2316	ISZ DECODE	/IT WAS !
05732	5716	JMP I DECODE	
05733	0000	NMBASE, 0	
05734	0000	PERDSW, 0	
05735	0000	NAMECT, 0	
05736	0000	TT, 0	
05737	0000	IOWAIT, 0	/WAIT FOR TTY TO FINISH
05740	6001	ION	
05741	6211	CDF 10	
05742	1776	TAD I (TELSW	/BUSY FLAG IS 0 WHEN THROUGH
05743	7640	SZA CLA	
05744	5342	JMP .-2	
05745	6201	CDF	
05746	6002	IOF	
05747	5737	JMP I IOWAIT	
05750	0000	GTMON, 0	/LOCK THE USR IN CORE
05751	6002	IOF	/NOP IF ALREADY IN CORE
05752	6212	CIF 10	
05753	4421	JMS I USR	
05754	0010	10	
05755	1131	TAD [200	/SET POINTER FOR LATER CALLS
05756	3021	DCA USR	
05757	5750	JMP I GTMON	
05760	0000	DISMIS, 0	/IF THE USR IS IN, KICK IT OUT
05761	7300	CLA CLL	
05762	1021	TAD USR	/CHECK POINTER TO FIND OUT
05763	7710	SPA CLA	
05764	5760	JMP I DISMIS	/ALREADY OUT
05765	6002	IOF	
05766	6212	CIF 10	
05767	4421	JMS I USR	/KICK IT OUT
05770	0011	11	
05771	1251	TAD ECHG0+10	/RESET POINTER

05772 3021

05773 5760

DCA USR

JMP I DISMIS

05776 0016

05777 5723

6000 PAGE

```

06000 0000 HANDAD, 0 /LOADS HANDLER INTO PROPER SLOT
06001 1600 TAD I HANDAD /WHICH SLOT?
06002 2200 ISZ HANDAD
06003 3206 DCA SLOT
06004 4277 JMS COMPARE /IF THE HANDLER HAS THE SAME NAME,
06005 7776 -2 /DON'T LOAD IT AGAIN
06006 0000 SLOT, 0
06007 0033 NEWDEV-1
06010 5221 JMP NOTEQ /DIFFERENT NAMES, LOAD NEW HANDLER
06011 2014 ISZ AUT05
06012 1414 TAD I AUT05 /SET BY "COMPARE"
06013 3055 DCA DEVNO /MOVE DEVICE # (FOR SAVE AND CLOSE)
06014 1014 TAD AUT05 /POINTS TO DEVICE #
06015 3217 DCA .+2
06016 4565 JMS I IPUTDEV /SO USR KNOWS IT'S IN CORE
06017 0000 0
06020 5600 JMP I HANDAD

NOTEQ,
06021 2206 ISZ SLOT /BUMP POINTER TO SAVE NAME
06022 1034 TAD NEWDEV /MOVE NEW DEVICE NAME TO TABLE
06023 3606 DCA I SLOT
06024 2206 ISZ SLOT
06025 1035 TAD NEWDEV+1
06026 3606 DCA I SLOT
06027 2206 ISZ SLOT
06030 4530 JMS I IGTMON /WE MUST CALL THE USR, MIGHT AS WELL LOCK H

RETRY,
06031 1034 TAD NEWDEV /MOVE DEVICE NAME FOR MONITOR CALL
06032 3242 DCA DEVC
06033 1035 TAD NEWDEV+1
06034 3243 DCA DEVC+1
06035 1606 TAD I SLOT /MOVE LOAD POINT
06036 3244 DCA DLOAD
06037 6212 CIF 10
06040 4421 JMS I USR /CALL MONITOR (ALREADY IN CORE)
06041 0001 TABCPT, 1
06042 0000 DEVC, 0
06043 0000 0
06044 0000 DLOAD, 0
06045 4464 ERROR1 /DEVICE NOT AVAILABLE OR TWO PAGE HANDLE
06046 7100 CLL
06047 1244 TAD DLOAD /ENTRY POINT FOR HANDLER
06050 1131 TAD C0200 /IF THIS HANDLER IS IN PAGE 7600
06051 7630 SZL CLA /DON'T BOTHER TO CHECK FOR LEGALITY
06052 5266 JMP HANDOK /SYSTEM HANDLER
06053 1244 TAD DLOAD /IF THE HANDLER WAS NOT LOADED
06054 0127 AND C7600 /INTO THE PROPER PAGE, RELOAD IT
06055 7141 CLL CIA
06056 1606 TAD I SLOT /PROPER LOADING ADDRESS
06057 0127 AND C7600
06060 7650 SNA CLA
06061 5266 JMP HANDOK /EVERYTHING'S ALL RIGHT
06062 3244 DCA DLOAD /CLEAR ENTRY POINT

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06063 4565 JMS I (PUTDEV /TELL USR THE HANDLER IS NOT
06064 6043 DEVC+1 /IN CORE ANYMORE
06065 5231 JMP RETRY /LOAD IT THIS TIME

```

HANDOK,

```

06066 2206 ISZ SLOT /BUMP POINTER TO DEVICE #
06067 1243 TAD DEVC+1 /SAVE IT
06070 3606 DCA I SLOT
06071 2206 ISZ SLOT /MOVE TO ENTRY POINT
06072 1244 TAD DLOAD /SAVE ENTRY
06073 3606 DCA I SLOT
06074 1243 TAD DEVC+1 /GET DEVICE #
06075 3055 DCA DEVNO /SAVE IT AND EXIT
06076 5600 JMP I HANDAD

```

COMPARE,

```

06077 0000 0 /COMPARE TWO BLOCKS OF INDEFINITE LENGTH
06100 1677 TAD I COMPARE /CALLING SEQUENCE:
06101 2277 ISZ COMPARE /JMS COMPARE
06102 3020 DCA XCNT /
06103 1677 TAD I COMPARE / -# OF WORDS TO CHECK
06104 2277 ISZ COMPARE / FIRST-1
06105 3014 DCA AUT05 / SECOND-1
06106 1677 TAD I COMPARE /RETURN IF MATCH
06107 2277 ISZ COMPARE /RETURN IF NO MATCH
06110 3015 DCA AUT06

```

AGAIN,

```

06111 1414 TAD I AUT05 /COMPARE TWO WORDS
06112 7041 CIA
06113 1415 TAD I AUT06
06114 7640 SZA CLA
06115 5677 JMP I COMPARE /NO MATCH
06116 2020 ISZ XCNT /FINISHED ?
06117 5311 JMP AGAIN /CHECK NEXT TWO
06120 2277 ISZ COMPARE /YES, BUMP RETURN POINTER
06121 5677 JMP I COMPARE

```

MPRINTC,

```

06122 0000 0 /CROSS-FIELD "PRINTC"
06123 6213 CIF CDF 10
06124 4777 JMS I (CPRNT
06125 5722 JMP I MPRINTC

```

TABCNT, 0

```

06126 0000 /TAB COUNTER (ONLY PRINTING CHARACTERS)
06127 1376 TAD (-15 /7-BIT CR MEANS RETURN ONLY
06130 7450 SNA
06131 5345 JMP CRONLY
06132 1127 TAD (-200 /CHECK FOR CR
06133 7450 SNA
06134 5353 JMP NEWLIN /TYPE CR, LF
06135 2326 ISZ TABCNT
06136 1375 TAD (-215-240
06137 7500 SNA
06140 2641 ISZ I TABCPT /IT PRINTS, INCREMENT TAB COUNTER
06141 7000 NOP /IT JUST MIGHT SKIP
06142 1126 TAD (-240
06143 6212 CIF 10

```

06144 5726 JMP I TABCNT

CRONLY,

06145 1125 TAD [215
06146 6212 CIF 10
06147 4524 JMS I [PRINTX
06150 3641 DCA I TABCPT
06151 1131 TAD [200
06152 5327 JMP TABCNT+1

/NULL FOR DELAY

NEWLIN,

06153 3641 DCA I TABCPT
06154 5343 JMP CRONLY-2

CONLIST,

06155 0323 "S
06156 0303 "C
06157 0322 "R
06160 0314 "L
06161 0304 "D
06162 0307 "G
06163 0240 "
06164 0305 "E

/SAVE

/CALL

/RUN

/LIST

/DELETE

/GOSUB

/FAKE A LIBRARY RETURN WITH A SPACE

/EXIT

FILGO,

06165 5400 IOPEN
06166 5200 OOPEN
06167 6355 OCLOSR
06170 3014 RESTOR

06175 7755
06176 7763
06177 7541

6200 PAGE

/ACTUAL LIBRARY PROCESSOR
/STARTING WITH COMMAND DECODE.

LOWLIB,

06200	6211	CDF 10	/CLEAR SWITCH FOR NORMAL RETURN
06201	3523	DCA I [GOSWITCH	/I.E. TO "PROC" FOR REST OF LINE
06202	1440	TAD I XCHAR	/MOVE CURRENT CHARACTER DOWN
06203	6201	CDF	
06204	3066	DCA CHAR	
06205	1066	TAD CHAR	/SAVE FOR COMMAND SORT
06206	4444	TPUSHA	
06207	1122	TAD [0603	/"FC" EXTENSION ASSUMED
06210	3032	DCA EXTENSION	
06211	7610	SKP CLA	/MIGHT BE A TERMINATOR ALREADY
06212	4442	TGETC	/MOVE TO END OF COMMAND WORD
06213	4463	TESTRM	
06214	7410	SKP	
06215	5212	JMP .-3	
06216	4443	TPOPA	/RESTORE COMMAND CHAR
06217	4447	TSORTJ	/AND BRANCH TO APPROPRIATE ROUTINE
06220	6154	COMLIST-1	
06221	0045	PCOMGO-COMLIST	
06222	4464	ERROR1	/SORRY, CHARLIE !

PCOMGO,

06223	6233	SAVER
06224	6402	FETCHER
06225	6400	CHAINER
06226	6600	LIBRARIAN
06227	7052	PDELETE
06230	6501	GOSUB
06231	6340	PRETURN
06232	7600	C7600, 7600

SAVER,

06233	4576	JMS I [NAME	/GET NAME FOR SAVE
06234	4236	JMS PSAVE	/DO IT
06235	5022	JMP EXIT	/EASY, WASN'T IT ?

PSAVE,

06236	0000	0	/CALLED BY "SAVE" AND "GOSUB"
06237	4777	JMS OCHK	/CLOSE OUTPUT FILE TO AVOID TROUBLE
06240	1143	TAD [NAMLOC	/POINTER TO NAME
06241	3270	DCA SAVEPT	
06242	6211	CDF 10	
06243	1551	TAD I [BUFR	/GET PROGRAM LENGTH
06244	6201	CDF	
06245	3521	DCA I [207	/SAVE IT WITH THE PROGRAM
06246	4530	JMS I [GTMON	/CALL THE MONITOR
06247	4520	JMS I [HANDAD	/AND THE HANDLER
06250	0055	LIBBLK-1	
06251	1521	TAD I [207	/SAVED LENGTH, REMEMBER ?
06252	0232	AND C7600	/MASK OFF
06253	7110	CLL RAR	/CONVERT TO PAGES
06254	3337	DCA BLOCK	/FOR HANDLER
06255	1337	TAD BLOCK	/ROUND UP TO BBLOCKS

```

06256 1117      TAD C100
06257 0232      AND C7600
06260 7112      CLL RTR
06261 7010      RAR
06262 3336      DCA RECORD      /FOR MONITOR "ENTER"
06263 1336      TAD RECORD      /GET DESIRED LENGTH
06264 1055      TAD DEVNO      /SET BY "HANDAD"
06265 6212      CIF 10
06266 4421      JMS I USR      /ENTER OUTPUT FILE
06267 0003              3
06270 0027      SAVEPT,      NAMLOC
06271 0000              0
06272 4464      ERROR1      /NO ROOM ON DEVICE
06273 1336      TAD RECORD      /SHIFT FOR CLOSING LENGTH
06274 7112      CLL RTR
06275 7012      RTR
06276 3304      DCA SAVBLK
06277 1055      TAD DEVNO      /CLOSE THE FILE BEFORE WE WRITE IT !
06300 6212      CIF 10      /SURE, IT'S CHEATING, BUT
06301 4421      JMS I USR      /IT SAVES TIME
06302 0004              4
06303 0027      NAMLOC
06304 0000      SAVBLK,      0
06305 4464      ERROR1      /IMPOSSIBLE ERROR!
06306 1304      TAD SAVBLK      /SAVE THIS CRAP TO REMEMBER
06307 7041      CIA      /WHERE THIS PROGRAM IS
06310 3333      DCA LIBLEN      /IN CASE WE WANT TO GOSUB
06311 1270      TAD SAVEPT
06312 3104      DCA LIBFIL
06313 1034      TAD NEWDEV
06314 3334      DCA LIBDEV
06315 1035      TAD NEWDEV+1
06316 3335      DCA LIBDEV+1
06317 1270      TAD SAVEPT      /MOVE STARTING BLOCK FOR WRITE
06320 3330      DCA POINT4
06321 7130      CLL CML RAR      /COMPUTE FUNCTION WORD
06322 7001      IAC      /SET TO SEARCH FORWARD
06323 1337      TAD BLOCK      /HOW MUCH TO WRITE
06324 3326      DCA BLLL
06325 4462      JMS I LIBHND
06326 0000      BLLL,      0      /WRITE (BLOCK) BLOCKS FROM FIELD 0
06327 0200              0200      /0200 UP
06330 0000      POINT4,      0
06331 5564      JMP I LDERR      /GO COMPLAIN ABOUT DEVICE
06332 5636      JMP I PSAVE

06333 0000      LIBLEN, 0
06334 0000      LIBDEV, 0
06335 0000              0
06336 0000      RECORD, 0
06337 0000      BLOCK, 0

      PRETURN,

06340 4443      TPOPA
06341 6211      CDF 10      /GET BACK ALL THE JUNK WE SAVED
                                /FOR THE LAST GOSUB

```

06342	3440	DCA I XCHAR	/IN-LINE CHAR
06343	6201	CDF	
06344	4446	TPOPF	/DEVICE NAME
06345	0034	NEWDEV	
06346	4443	TPOPA	/FILE LENGTH
06347	3053	DCA FLNGTH	
06350	4443	TPOPA	/STARTING BLOCK
06351	3054	DCA STBLK	
06352	4520	JMS I [HANDAD	/GET THE HANDLER BACK
06353	0055	LIBBLK-1	
06354	5776	JMP LOADGO	/LOAD THE PROGRAM
OCLOSR,			
06355	4516	JMS I [OCLOSE	/CLOSE OUTPUT FILE
06356	6213	CIF CDF 10	
06357	5560	JMP I [PROC	/ANOTHER EASY ONE !
PUTDEV, 0			
06360	0000		/TELL THE MONITOR A HANDLR IS IN OR OUT
06361	1760	TAD I PUTDEV	/GET POINTER TO DEV # AND ENTRY
06362	3336	DCA RECORD	
06363	1736	TAD I RECORD	/DEVICE #
06364	2336	ISZ RECORD	/BUMP POINTER TO ENTRY
06365	1375	TAD <7646	/MONITOR TABLE
06366	3337	DCA BLOCK	/POINTER TO "HANDLR-IN-CORE" FLAG
06367	1736	TAD I RECORD	/FLAG IS HANDLER ENTRY
06370	6211	CDF 10	/TABLE IS IN FIELD 1
06371	3737	DCA I BLOCK	
06372	6201	CDF	
06373	2360	ISZ PUTDEV	
06374	5760	JMP I PUTDEV	
06375	7646		
06376	6420		
06377	7070		
6400	PAGE		

/LOOKUP AND LOAD ROUTINES

06400	7001	CHAINER,	IAC	/THESE ALLDO THE SAME THING
06401	7001	GOSUB1,	IAC	/AND THEN GO TO DIFFERENT PLACES
06402	7001	FETCHER,	IAC	/
06403	6211		CDF 10	
06404	3523		DCA I (GOSWITCH	
06405	6201		CDF	
		LOAD,		
06406	4561		JMS I (OPEN	/CALL THE HANDLER AND LOOKUP THE FILE
06407	0055		LIBBLK-1	
06410	0002		2	
06411	5216		JMP .+5	/TTY: NOT A DIRECTORY DEVICE
06412	4464		ERROR1	
06413	4577		JMS I (DISMISS	
06414	4777		JMS I (GETDEV	/GET DEVICE TYPE
06415	7700		SMA CLA	
06416	4464		ERROR1	/NOT A DIRECTORY DEVICE
06417	4502		TGETLN	/SOME COMMANDS HAVE LINE NUMBERS
		LOADGO,		
06420	4577		JMS I (DISMISS	/ONLY USED BY "RETURN"
06421	1054		TAD STBLK	/BLOCK TO READ FROM
06422	3262		DCA POINT6	
06423	1011		TAD AUTO2	/GET PUSHDOWN POINTER
06424	1127		TAD (-200	/DIDDLE IT
06425	0127		AND (7600	
06426	7104		CLL RAL	
06427	7006		RTL	
06430	7006		RTL	
06431	1053		TAD FLNGTH	/NOW COMPARE WITH LENGTH OF FILE
06432	7710		SPA CLA	
06433	5776		JMP PDERR	/PROGRAM TOO LONG
06434	6211		CDF 10	
06435	7344		CLA CLL CMA RAL	/-2
06436	1523		TAD I (GOSWITCH	/IS THIS A GOSUB ?
06437	7640		SZA CLA	
06440	5247		JMP .+7	/NO, SKIP THIS GARBAGE
06441	1440		TAD I XCHAR	/YES, SAVE PROGRAM NAME, ETC.
06442	6201		CDF	
06443	4444		TPUSHA	
06444	1125		TAD (215	
06445	6211		CDF 10	
06446	3440		DCA I XCHAR	
06447	6201		CDF	
06450	1053		TAD FLNGTH	/COMPUTE FUNCTION WORD
06451	7041		CIA	
06452	7106		CLL RTL	
06453	7006		RTL	
06454	7006		RTL	
06455	7124		CLL CML RAL	/SET TO SEARCH FORWARD
06456	3260		DCA LENF1	
06457	4462		JMS I LIBHND	/GET THE PROGRAM
06458	3600	LENF1,	3600	

06461	0200		0200	
06462	0000	POINT6,	0000	
06463	5564		JMP I [DERR	
06464	1034		TAD NEWDEV	/SAVE THIS STUFF SO WE
06465	3775		DCA LIBDEV	/KNOW WHERE WE ARE
06466	1035		TAD NEWDEV+1	
06467	3774		DCA LIBDEV+1	
06470	1054		TAD STBLK	
06471	3104		DCA LIBFIL	
06472	1053		TAD FLNGTH	
06473	3773		DCA LIBLEN	
06474	1521		TAD I [207	/MOVE PROGRAM LENGTH
06475	6211		CDF 10	
06476	3551		DCA I [BUFR	
06477	6201		CDF	
06500	5022		JMP EXIT	/GO TO APPROPRIATE ROUTINE
GOSUB,				
06501	1104		TAD LIBFIL	/CHECK FOR CURRENT PROGRAM
06502	7440		SZA	
06503	5320		JMP NOSAVE	/NO NEED TO SAVE CORE
06504	4445		TPUSHF	/MOVE "FOCAL.TM" TO NAME AREA
06505	7144		FOCTXT	
06506	4446		TPOPF	
06507	0027		NAMLOC	
06510	1372		TAD (5723	/DEVICE "DSK:" FOR SAVE
06511	3034		DCA NEWDEV	
06512	3035		DCA NEWDEV+1	
06513	4771		JMS PSAVE	/SAVE FILE (THIS WILL LEAVE USR IN CORE)
06514	1122		TAD [0603	/RESET EXTENSION TO ".FC"
06515	3032		DCA EXTENSION	
06516	4577		JMS I [DISMISS	/KICK MONITOR OUT TO SAVE STARTING BLOCK
06517	1104		TAD LIBFIL	
NOSAVE,				
06520	4444		TPUSHA	/ "LIBFIL" STILL IN AC
06521	1773		TAD LIBLEN	
06522	4444		TPUSHA	
06523	4445		TPUSHF	
06524	6334		LIBDEV	
06525	5201		JMP GOSUB1	
XTSPNOR,				
06526	0000		0	/DUPLICATE UPPER FIELD ROUTINE
06527	1066		TAD CHAR	/
06530	1115		TAD [-240	
06531	7640		SZA CLA	
06532	5726		JMP I XTSPNOR	
06533	4442		TGETC	
06534	5327		JMP XTSPNOR+1	
TTYTXT,				
06535	2424		DEVICE TTY	/HANDY THING TO HAVE
06536	3100			
MSORTJ, 0				
06537	0000			/ANOTHER DUPLICATE
06540	7041		CIA	

06541	3037	DCA ATEM
06542	1737	TAD I MSORTJ
06543	2337	ISZ MSORTJ
06544	3013	DCA AUTO4
06545	1413	TAD I AUTO4
06546	7510	SPA
06547	5361	JMP MSEX
06550	1037	TAD ATEM
06551	7640	SZA CLA
06552	5345	JMP .-5
06553	1013	TAD AUTO4
06554	1737	TAD I MSORTJ
06555	3037	DCA ATEM
06556	1437	TAD I ATEM
06557	3037	DCA ATEM
06560	5437	JMP I ATEM

MSEX,

06561	2337	ISZ MSORTJ
06562	7300	CLA CLL
06563	5737	JMP I MSORTJ

FILIST,

06564	0311	"I	/INPUT
06565	0317	"O	/OUTPUT
06566	0303	"C	/CLOSE
06567	0322	"R	/RESTORE

06571	6236
06572	5723
06573	6333
06574	6335
06575	6334
06576	5447
06577	6753

6600 PAGE

/THIS SECTION DOES ALL THE DIRTY WORK OF LISTING
/ALL "FC"'S AND "FD"'S ON THE REFERENCED DEVICE
/IT WAS FUN....

LIBRARIAN,

```

06600 4576      JMS I [NAME      /GET DEVICE TO LIST
06601 4520      JMS I [HANDAD    /GET THE HANDLER
06602 0055              LIBBLK-1
06603 4577      JMS I [DISMISS  /KICK OUT USR (IN CASE HANDAD CALLED IT)
06604 4353      JMS GETDEV      /FIND DEVICE TYPE
06605 7700      SNA CLA
06606 4464      ERROR1          /CAN'T LIST A NON-DIRECTORY DEVICE
06607 4441      JMS I SHNDLR     /SWAP OUT CORE TO MAKE ROOM FOR DIRECTORY
06610 4200              4200
06611 1000              1000
06612 0040              40      /SYSTEM SCRATCH AREA
06613 5564      JMP I [DERR      /WHOOOPS !
06614 7201      CLA IAC          /SET FLAG TO SWAP BACK IN
06615 3033      DCA LISTFLG
06616 7301      CLL CLA IAC      /DIRECTORY BEGINS WITH BLOCK 1

```

BLOCKLP,

```

06617 3224      DCA LBLOCK
06620 6002      IOF
06621 4462      JMS I LIBHND
06622 0200              0200
06623 1000              1000
06624 0001      LBLOCK,        0001
06625 5564      JMP I [DERR
06626 1377      TAD (1004      /FIRST 5 WORDS ARE INFORMATION
06627 3013      DCA AUT04

```

LOOP2,

```

06630 1013      TAD AUT04      /SAVE FOR LATER
06631 3017      DCA AUT08
06632 1013      TAD AUT04
06633 3261      DCA LIBX
06634 1413      TAD I AUT04     /LOOKING FOR .FC AND .FD FILES
06635 7650      SNA CLA
06636 5342      JMP PATCH      /ZERO FILE
06637 2013      ISZ AUT04
06640 2013      ISZ AUT04
06641 1413      TAD I AUT04     /PICK UP EXTENSION
06642 3224      DCA LBLOCK
06643 1777      TAD I (1004     /WASTE WORDS (NEGATIVE)
06644 7041      CIA            /THANKS FOR TELLING US , RITCHIE
06645 1013      TAD AUT04      /SKIP TO LENGTH
06646 3013      DCA AUT04
06647 1413      TAD I AUT04     /ZERO LENGTH MEANS TEMPORARY FILE
06650 7450      SNA
06651 5343      JMP LOOP3      /IGNORE SUCH THINGS
06652 7141      CLL CIA
06653 3053      DCA FLNGTH     /SAVE POSITIVE LENGTH
06654 1027      TAD NAMLOC     /IF A NAME WAS GIVEN, SEE IF
06655 7650      SNA CLA        /HAVE REACHED IT YET
06656 5265      JMP TESTG0     /NO NAME

```

```

06657 4514      JMS I [COMPARE /COMPARE THIS NAME WITH ARG
06660 7774      -4
06661 0000      LIBX,      0
06662 0026      NAMLOC-1
06663 5343      JMP LOOP3 /NON-MATCHING
06664 3027      DCA NAMLOC /WE FOUND IT, DON'T CHECK ANYMORE

TESTGO,
06665 1224      TAD LBLOCK /COMPARE EXTENSION
06666 1376      TAD (-0604 /DO WE WANT THIS ONE ?
06667 7440      SZA
06670 7001      IAC
06671 7640      SZA CLA
06672 5343      JMP LOOP3 /GUESS NOT

DIRLIST,
06673 7346      CLA CLL CMA RTL /PRINT 3 WORDS
06674 3371      DCA COUNT
06675 1417      TAD I AUTO8 /SET BEFORE THIS
06676 4775      JMS NPACK /PRINT 2 CHARS
06677 2371      ISZ COUNT
06700 5275      JMP .-3
06701 1374      TAD ("
06702 4501      TPRINTC
06703 1417      TAD I AUTO8 /PRINT EXTENSION
06704 4775      JMS NPACK
06705 1373      TAD (PTABLE /SET UP FOR DECIMAL LENGTH PRINT
06706 3034      DCA POINT

ZLOOP,
06707 3035      DCA ZERSW
06710 3371      DCA COUNT

NLOOP,
06711 1434      TAD I .POINT /FINISHED ALL POWERS OF TEN ?
06712 7450      SNA
06713 5337      JMP NEND /YES, ALL DONE
06714 1053      TAD FLNGTH /NO SUBTRACT THIS POWER
06715 7510      SPA /UNDERFLOW ?
06716 5322      JMP PDIGIT /YES, PRINT THIS DIGIT
06717 3053      DCA FLNGTH /NO, GO THROUGH THIS LOOP AGAIN
06720 2371      ISZ COUNT /ADD ANOTHER ONE TO THIS DIGIT
06721 5311      JMP NLOOP /ANOTHER DIVIDE CYCLE

PDIGIT,
06722 7300      CLA CLL /CRAP IN AC
06723 2034      ISZ POINT /NEXT POWER OF TEN
06724 1371      TAD COUNT /IF THIS DIGIT IS ZERO
06725 2035      ISZ ZERSW /AND NO OTHER DIGITS HAVE BEEN NON-ZERO
06726 7440      SZA /PRINT A SPACE INSTEAD
06727 5333      JMP NPRNT
06730 1126      TAD [240
06731 4501      TPRINTC
06732 5307      JMP ZLOOP

NPRNT,
06733 1113      TAD [260 /CHANGE TO ASCII
06734 4501      TPRINTC

```

06735 7340 CLA CLL CMA
06736 5307 JMP ZLOOP

/ZER ZERO SWITCH

NEND,

06737 1125 TAD [215
06740 4501 TPRINTC
06741 5343 JMP LOOP3

/DONE WITH THIS LINE (WHEW !)

PATCH,

06742 2013 ISZ AUTO4

/BUMP PAST EMPTY LENGTH

LOOP3,

06743 2623 ISZ I LBLOCK-1
06744 5230 JMP LOOP2

/DONE WITH THIS BLOCK ?

/NO, KEEP GOING

LEXIT,

06745 4562 JMS I [IOWAIT
06746 1512 TAD I [1002
06747 7440 SZA
06750 5217 JMP BLOKLP
06751 4772 JMS SWAPIH
06752 5022 JMP EXIT

/WAIT FOR I/O

/LINK TO NEXT BLOCK

/LAST BLOCK ?

/NO, GET THE NEXT

/YES, RESTORE SWAPPED CORE AND EXIT

06753 0000 GETDEV, 0
06754 1111 TAD [7757
06755 1055 TAD BEYNO
06756 3371 DCA COUNT
06757 6211 CDF 10
06760 1771 TAD I COUNT
06761 6201 CDF
06762 5753 JMP I GETDEV

/GET DEVICE TYPE FROM MONITOR TABLE

/DCB-1

DECIMAL

PTABLE,

06763 6030 -1000
06764 7634 -100
06765 7766 -10
06766 7777 -1
06767 0000 0

OCTAL

0034 POINT=NEWDEV
0035 ZERSW=NEWDEV+1

06770 0000 POINT7, 0
06771 0000 COUNT, 0
06772 7075
06773 6763
06774 0256
06775 7106
06776 7174
06777 1004
7000 PAGE

/MISCELLANEOUS GENERAL - PURPOSE ROUTINES

/THIS IS THE GENERAL OPEN SUBROUTINE

/CALLING SEQUENCE:

/JMS I [OPEN

/HANDLER BLOCK

/MONITOR CALL CODE

/RETURN IF TTY: IS DEVICE

/ERROR RETURN

/NORMAL RETURN

/SETS STBLK, FLNGTH ON PAGE ZERO

```

07000 0000 OPEN, 0
07001 7340 CLA CLL CMA /INITIALIZE ECHO FLAG TO OFF
07002 3050 DCA ECHFLG
07003 4576 JMS I [NAME /GET DEVICE AND FILENAME
07004 4514 JMS I [COMPARE /DEVICE "TTY:" IS SPECIAL
07005 7776 -2
07006 0033 NEWDEV-1
07007 6534 TTYTXT-1
07010 5214 JMP OTHER /DEVICE OTHER THAN TTY:
07011 2200 ISZ OPEN /TTY:, INCREMENT TO PROPER RETURN
07012 2200 ISZ OPEN
07013 5600 JMP I OPEN /TTY: RETURN

OTHER,
07014 1600 TAD I OPEN /GET HANDLER BLOCK TO USE
07015 3223 DCA HND
07016 2200 ISZ OPEN
07017 1143 TAD [NAMLOC /POINTER TO NAME
07020 3234 DCA NAMPT
07021 4530 JMS I [GTMON
07022 4520 JMS I [HANDAD /GET THE HANDLER
07023 0000 HND, 0 /SET TO HANDLR BLOCK
07024 1600 TAD I OPEN /GET MONITOR CALL CODE (2, OR 3)
07025 2200 ISZ OPEN
07026 3233 DCA CALL
07027 3235 DCA LNGTH /FOR MONITOR KLUDGE<IT FALLS THROUGH ON
07030 1055 TAD DEVNO /DO THE CALL
07031 6212 CIF 10
07032 4421 JMS I USR
07033 0000 CALL, 0
07034 0027 NAMPT, NAMLOC
07035 0000 LNGTH, 0
07036 5212 JMP OTHER-2 /LET THE CALLING ROUTINE DECIDE
07037 1235 TAD LNGTH /ERROR PROCEDURES
07040 3053 DCA FLNGTH /MOVE PARAMETERS TO PAGE ZERO
07041 1234 TAD NAMPT
07042 3054 DCA STBLK
07043 5211 JMP OTHER-3 /AND TAKE NORMAL RETURN

07044 0000 ERROR, 0 /LOWER FIELD ERROR ROUTINE
07045 4577 JMS I [DISMIS /MAKE SURE
07046 1244 TAD ERROR /FAKE OUT THE ERROR ROUTINE
07047 6213 CIF CDF 10 /AND GO TO IT

```

07050 3777 DCA I (ERR2
 07051 5776 JMP I (ERR2+1

PDELETE,

07052 4576 JMS I (NAME /DELETE IS AN EASY ONE (THANK GOD !)
 07053 4530 JMS I (GTMON
 07054 4520 JMS I (HANDAD
 07055 0055 LIBBLK-1
 07056 4270 JMS OCHK /CLOSE ANY OPEN OUTPUT FILE
 07057 6212 CIF 10 /DELETE THE FILE
 07060 1055 TAD DEVNO
 07061 4421 JMS I USR
 07062 0004 4
 07063 0027 NAMLOC
 07064 0000 0
 07065 4464 ERROR1
 07066 3104 DCA LIBFIL /IN CASE HE JUST DELETED THIS PROGRAM
 07067 5022 JMP EXIT

07070 0000 OCHK, 0 /IF ANY FILE EXISTS , CLOSE IT
 07071 1105 TAD DEVHLD
 07072 7640 SZA CLA
 07073 4775 JMS OCLOSE
 07074 5670 JMP I OCHK

07075 0000 SWAPIN, 0 /RESTORE CORE AFTER DIRECTORY LIST
 07076 3033 DCA LISTFLG
 07077 6002 IOF
 07100 4441 JMS I SHNDLR
 07101 0200 0200
 07102 1000 1000
 07103 0040 0040
 07104 4464 DERR, ERROR1
 07105 5675 JMP I SWAPIN

07106 0000 NPACK, 0 /STANDARD 6-BIT UNPACK ROUTINE
 07107 3270 DCA OCHK
 07110 1270 TAD OCHK
 07111 7012 RTR
 07112 7012 RTR
 07113 7012 RTR
 07114 4320 JMS XFORM
 07115 1270 TAD OCHK
 07116 4320 JMS XFORM
 07117 5706 JMP I NPACK

07120 0000 XFORM, 0
 07121 0110 AND (77 /PRINT SPACES FOR NULLS
 07122 7440 SZA
 07123 1374 TAD (-40
 07124 7510 SPA
 07125 1117 TAD (100
 07126 1126 TAD (240
 07127 4501 TPRINTC
 07130 5720 JMP I XFORM

OCLCHK,

07131	1051	TAD OPNFLG	/MAKE "OPEN OUTPUT" WITH AN ALREADY OPEN FI
07132	7650	SNA CLA	/THE SAME AS "OUTPUT CLOSE;OPEN OUTPUT"
07133	4464	ERROR1	
07134	4775	JMS OCLOSE	
07135	1373	TAD (YINT	/FAKE OUT "OPEN"
07136	3200	DCA OPEN	
07137	5214	JMP OTHER	

07140	0000	MGETLN, 0	/CROSS-FIELD FAKE
07141	6213	CIF CDF 10	
07142	4772	JMS I (PGETLN	
07143	5740	JMP I MGETLN	

FOCTXT,

07144	0617	FILENAME FOCAL.TM	/USED BY "GOSUB"
07145	0301		
07146	1400		
07147	2415		

07150	0000	XGETC, 0	/ANOTHER FAKE
07151	6213	CIF CDF 10	
07152	4771	JMS I (MGETC	
07153	1440	TAD I XCHAR	
07154	6201	CDF	
07155	3066	DCA CHAR	
07156	5750	JMP I XGETC	

07171	5774
07172	7545
07173	5202
07174	7740
07175	3036
07176	2727
07177	2726

7200 PAGE

0000 FIXMRI AND=0000
1000 FIXMRI TAD=1000
2000 FIXMRI ISZ=2000
3000 FIXMRI DCA=3000
4000 FIXMRI JMS=4000
5000 FIXMRI JMP=5000
5000 FIXMRI FPOW=5000
1000 FIXMRI FADD=1000
2000 FIXMRI FSUB=2000
4000 FIXMRI FMUL=4000
3000 FIXMRI FDIV=3000
0000 FIXMRI FGET=0000
6000 FIXMRI FPUT=6000

/ACTUAL MEMORY REFERENCE INSTRUCTIONS

/PSEUDO-FLOATING POINT INSTRUCTIONS

7000 FNOR=7000
0000 FEXT=0
0000 FXIT=0
4407 FINT=JMS I 7
4407 FENT=JMS I 7
4451 NEGATE=4451
7000 NOP=7000
7200 CLA=7200
7100 CLL=7100
7040 CMA=7040
7004 RAL=7004
7020 CML=7020
7010 RAR=7010
7012 RTR=7012
7006 RTL=7006
7001 IAC=7001
7500 SMA=7500
7440 SZA=7440
7510 SPA=7510
7450 SNA=7450
7420 SNL=7420
7430 SZL=7430
7410 SKP=7410
7402 HLT=7402
7041 CIA=7041
6001 ION=6001
6002 IOF=6002
6031 KSF=6031
6036 KRB=6036
6041 TSF=6041
6042 TCF=6042
6044 TPC=6044
6046 TLS=6046
6026 PLS=6026
6011 RSF=6011
6012 RRB=6012
6014 RFC=6014
6101 SMP=6101
6244 RMF=6244

7421 MQL=7421
7405 MUY=7405
7501 MQA=7501