```
                    REM
      0000          ORG     0
                    SUPB
0000  7101          JFI     1
0001  0133  R1R               NEWCRD
0002  0000  R2R
0003  0000  R3R
0004  0000  R4R
0005  0000  R5R
0006  0000  R6R
0007  0000  R7R
0010  0000  R8R
0011  0000  R9R
0012  0000  R10R
0014  0000  FF1
0014  0000  FF2
0015  0000  FF3
0016  0000  FF4
0017  0000  FF5
0020  0000  FF6
0021  0000  R1
0022  0000  R2
0023  0000  R3
0024  0000  R4
0025  0000  R5
0026  0000  RR
0027  0000  S1S
0030  0000  S2S
0031  0000  S3S
0032  0000  S4S
0033  0000  S5S
0034  0000  S6S
0035  0000  F1F
0036  0000  F2F
0037  0000  F3F
0040  0000  SC
0041  0000  SN
0042  0000  CASE
0043  6746  LOCCHI         FORM64  1
0044  0000  CHIW
0045  0000  LIM
0046  0000  PTLOC
0047  0000  BOOL
0050  0000  BEGBUF
0051  0000  ENDBUF
0052  0000  INITL
0053  0000  FNLEXT
0054  7762  LIDFWA         7762
0055  0000  FORXIT
0056  0000  STIXIT
0057  6746  ORGB            FORM64  1
0060  6746  ORGB1           FORM64  1
0061  0000  RANK
0062  7771  VLC             7771
0063  3205  OCC             CODFWA
0064  0000  FPMASK
0065  0107  PT1             PTA7
0066  0000  NCFF
0067  0000  TILTCT
0070  0000  IDENT  BSS      17
```

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COMPILER I

```
          0003    CHARSW  EQU     R3R
          0004    CNTR1   EQU     R4R
          0005    CNTR2   EQU     R5R
          0006    CNTR3   EQU     R6R
          0007    CNTR4   EQU     R7R
          0010    COMASW  EQU     R8R
          0011    ENDSW   EQU     R9R
          0012    ERSBIT  EQU     R10R
          0013    FSTIME  EQU     FF1
          0014    FUNLOC  EQU     FF2
          0015    HCNSET  EQU     FF3
          0016    LFTLOC  EQU     FF4
          0017    LSTSET  EQU     FF5
          0020    OPSTOR  EQU     FF6
          0021    PARCNT  EQU     R1
          0022    PARSW   EQU     R2
          0023    PWRCHR  EQU     R3
          0024    RTLOC   EQU     R4
          0025    SAVE1   EQU     R5
          0026    SAVLOC  EQU     RR
          0027    STOROP  EQU     S1S
          0030    SUMCEL  EQU     S2S
          0031    SVLOC1  EQU     S3S
          0032    VARSW   EQU     S4S
          0002    OMEGA   EQU     R2R
          0003    CC      EQU     R3R
          0004    TABX    EQU     R4R
          0005    ZEE     EQU     R5R
          0046    CNVXIT  EQU     PTLOC
          0057    NOLFWA  EQU     ORGB
          0060    NOLLWA  EQU     ORGB1
          0026    R6      EQU     RR
          0047    CONTRL  EQU     BOOL
          0053    FCONT   EQU     FNLEXT
          0022    LCI     EQU     R2
          0063    ORG     EQU     OCC
          0021    CL      EQU     R1
          0054    VARB    EQU     LIDFWA
          0001    LP      EQU     R1R
          0002    W       EQU     R2R
          0003    C       EQU     R3R
          0004    P       EQU     R4R
          0005    PAREN   EQU     R5R
          0010    S       EQU     R8R
          0011    T       EQU     R9R
          0012    K       EQU     R10R
          0027    R7      EQU     S1S
          0060    LOCB1   EQU     ORGB1
0107      0000    PTA7    MSS     24
0133      0401    NEWCRD  LDN     1
0134      4066            STD     NOFF
0135      0406    NEWS    LDN     6
0136      4045            STD     LIM
0137      0400    NEWT    LDN     0
0140      4002            STD     OMEGA
0141      2043    NEWQ    LDD     LOCCHI
0142      4044            STD     CHIW
0143      0606            ADN     6
0144      4021            STD     R1
0145      0425            LDN     25
```

Clear A
Clear Flag
6244
4454

```
0146  4144          STI   CHIW      Store in input area
0147  5444          AOD   CHIW      Step to next
0150  1421          LSD   R1        Toggle with LWA
0151  6504          NZB   4         Go do again if not finished
0152  4003  NEWR    STD   CC        Clear CC
0153  7546          EXF   REDSEL    4102 Select P.T. Reader
0154  7600  NEWV    INA             Read a character
0155  6401          ZJB   1         Throw away leader
0156  3244          ADF   LOCTAB    TAB  Add to base address of BCD codes
0157  4004          STD   TABX      Save as table address
0160  2104          LDI   TABX      Load BCD code
0161  0776          SBN   76        -76  Subtract Upper Case Code
0162  6303    NEF   NJF   3
0163  4042          STD   CASE      CASE - Will be +1 for lower case / Upper Case
0164  6610          PJB   NEWV      Unconditional jump
0165  0601          ADN   1         -75, or flag for Rubout?
0166  6412          ZJB   NEWV      DELETE Yes, so ignore, Read next
0167  0602          ADN   2         -73
0170  6033          ZJF   NEWERR    ERROR
0171  6275          PJF   NEWSPA    SPACE
0172  0602          ADN   2         -71
0173  6043          ZJF   NEWCR
0174  6267          PJF   NEWTAB    TAB
0175  0644          ADN   44        -
0176  6206          PJF   6         ALFA
0177  0613          ADN   13        -12
0200  6304          NJF   4
0201  2104          LDI   TABX
0202  3042          ADD   CASE
0203  6102          NZF   2
0204  2104          LDI   TABX
0205  4022          STD   R2
0206  2043          LDD   LOCCHI
0207  3002          ADD   OMEGA
0210  4044          STD   CHIW
0211  2022          LDD   R2
0212  4144          STI   CHIW
0213  5402  NEWA    AOD   OMEGA
0214  5403          AOD   CC
0215  3045          ADD   LIM
0216  0714          SBN   14
0217  6077          ZJF   NEWL
0220  6147          NZF   NEWK
0221  4102  REDSEL        4102
0222  0372  LOCTAB        TAB
0223  7600  NEWERR  INA
0224  0745          SBN   45
0225  6004          ZJF   4
0226  0645          ADN   45
0227  4021          STD   R1
0230  6605          PJB   5
0231  2021          LDD   R1
0232  0744          SBN   44
0233  6020          ZJF   NEWWP
0234  7101          JFI   1
0235  5266                TILT
0236  2054  NEWCR   LDD   LIDFWA
0237  3444          SBD   CHIW
0240  6204          PJF   4
0241  0417          LDN   17
```

```
0242  7101          JFI   1
0243  5266                TILT
0244  2144          LDI   CHIW
0245  0714          SBN   14          CHECK FOR /
0246  6005          ZJF   NEWWP
0247  5444          AOD   CHIW
0250  0424          LDN   24
0251  4144          STI   CHIW
0252  6167          NZF   NEWW
0253  2005  NEWWP   LDD   ZEE
0254  6003          ZJF   3
0255  7101  NEWLS   JFI   1
0256  0135                NEWS
0257  7101          JFI   1
0260  0133                NEWCRD
0261  7101  NEWLT   JFI   1
0262  0137                NEWT
0263  2045  NEWTAB  LDD   LIM
0264  4003          STD   CC
0265  6102          NZF   NEWK
0266  5403  NEWSPA  AOD   CC
0267  2003  NEWK    LDD   CC
0270  1445          LSD   LIM
0271  6003          ZJF   3
0272  7101          JFI   1
0273  0154                NEWV
0274  2045          LDD   LIM
0275  1620          LSF   L66         102
0276  6037          ZJF   NEWRR
0277  2005  NEWU    LDD   ZEE
0300  4002          STD   OMEGA
0301  2214          LDF   L66
0302  4045          STD   LIM
0303  2143          LDI   LOCCHI
0304  0742          SBN   42
0305  6030          ZJF   NEWRR
0306  2066          LDD   NCFF
0307  6103          NZF   3
0310  7101          JFI   1
0311  0613                PROSTR
0312  0400          LDN   0
0313  4066          STD   NCFF
0314  6033          ZJF   NEWSTT
0315  0102  L66            102
0316  2144  NEWL    LDI   CHIW
0317  6104          NZF   4
0320  0425          LDN   25
0321  4144          STI   CHIW
0322  6523          NZB   NEWU
0323  2005          LDD   ZEE
0324  4002          STD   OMEGA
0325  2310          LDB   L66
0326  4045          STD   LIM
0327  2143          LDI   LOCCHI
0330  0742          SBN   42          **C**
0331  6004          ZJF   4
0332  0400          LDN   0
0333  7101          JFI   1
0334  0152                NEWR
0335  7600  NEWRR   INA
```

```
0336  0745          SBN   45
0337  6502          NZB   2
0340  6474          ZJB   NEWWP  -7
0341  2045  NEWW    LDD   LIM
0342  3725          SBB   L66
0343  6562          NZB   NEWLT
0344  2002          LDD   OMEGA
0345  4005          STD   ZEE
0346  6671          PJB   NEWLS
0347  2332  NEWSTT  LDB   L66
0350  4045          STD   LIM
0351  2043          LDD   LOCCHI
0352  4021          STD   R1
0353  0606          ADN   6
0354  4044          STD   CHIW
0355  0606          ADN   6
0356  4022          STD   R2
0357  2121          LDI   R1
0360  4144          STI   CHIW
0361  5421          AOD   R1
0362  5444          AOD   CHIW
0363  1422          LSD   R2
0364  6505          NZB   5
0365  0414          LDN   14
0366  4002          STD   OMEGA
0367  0400          LDN   0
0370  4005          STD   ZEE
0371  7101          JFI   1
0372  0472  TAB     NEWQQ
0373  0055          55
0374  0073          73
0375  0050          50
0376  0074          74
0377  0047          47
0400  0035          35
0401  0034          34
0402  0073          73 2          10
0403  0033          33
0404  0053          53
0405  0046          46
0406  0030          30
0407  0051          51
0410  0042          42
0411  0057          57
0412  0044          44            20
0413  0063          63
0414  0043          43
0415  0041          41
0416  0054          54
0417  0062          62
0420  0045          45
0421  0061          61
0422  0040          40            30
0423  0060          60
0424  0031          31
0425  0010          10
0426  0056          56
0427  0052          52
0430  0032          32
0431  0011          11
```

```
0432  0073                    73          40
0433  0073                    73
0434  0012                    12
0435  0073                    73
0436  0014                    14
0437  0071                    71
0440  0016                    16
0441  0077                    77          Lower Core
0442  0025                    25          HOLLERITH BLANK 50
0443  0072                    72
0444  0020                    20
0445  0073                    73
0446  0022                    22
0447  0073                    73
0450  0000                    0
0451  0076                    76          Upper Core
0452  0007                    7           60
0453  0073                    73
0454  0004                    4
0455  0073                    73
0456  0003                    3
0457  0073                    73
0460  0005                    5
0461  0073                    73
0462  0002                    2           70
0463  0073                    73
0464  0006                    6
0465  0073                    73          73
0466  0001                    1
0467  0073                    73
0470  0073                    73
0471  0075                    75          77 - Reboot
0472  2040  NEWQQ   LDD       SC                      ADD
0473  6157          NZF       NEWQQQ
0474  2060  NEWQQ1  LDD       LOCB1                   CODING
0475  1443          LSD       LOCCHI
0476  6054          ZJF       NEWQQQ
0477  2043          LDD       LOCCHI
0500  4021          STD       R1
0501  0505          LCN       5
0502  5021          RAD       R1
0503  2121          LDI       R1          N
0504  1441          LSD       SN
0505  6005          ZJF       NEWQQ2
0506  2021          LDD       R1
0507  1460          LSD       LOCB1
0510  6507          NZB       7
0511  6041          ZJF       NEWQQQ
0512  0403  NEWQQ2  LDN       LLINCR
0513  4121          STI       R1
0514  2021          LDD       R1
0515  4050          STD       BEGBUF
0516  0604          ADN       4
0517  4051          STD       ENDBUF
0520  2206          LDF       NEWQQ4
0521  4022          STD       R2
0522  2205          LDF       NEWQQ5
0523  4122          STI       R2
0524  7101          JFI       1
0525  5274                    PAWB
```

```
0526  5310  NEWQQ4        PAWB2   1
0527  0531  NEWQQ5        NEWQQ5  2
0530  0347  NEWQQ6        NEWSTT
0531  2301          LDB   1               RESET
0532  4122          STI   R2                PAWB EXIT
0533  2043          LDD   LOCCHI            MOVE
0534  0614          ADN   14                STRING UP
0535  4023          STD   R3
0536  0721          SBN   21              LOCCHI-5
0537  4043          STD   LOCCHI            TO LOCCHI
0540  2021          LDD   R1
0541  0605          ADN   5
0542  4022          STD   R2
0543  2122          LDI   R2
0544  4121          STI   R1
0545  5421          AOD   R1
0546  5422          AOD   R2
0547  1423          LSD   R3
0550  6505          NZB   5
0551  6455          ZJB   NEWQQ1
0552  2043  NEWQQQ  LDD   LOCCHI
0553  0606          ADN   6               UP SC
0554  4044          STD   CHIW            SET BOOL
0555  0605          ADN   5
0556  4021          STD   R1
0557  2144          LDI   CHIW
0560  0741          SBN   41              B
0561  6104          NZF   4
0562  5444          AOD   CHIW
0563  0400          LDN   0
0564  6002          ZJF   2
0565  0401          LDN   1
0566  4047          STD   BOOL            BOOL=1 IF B ABSENT
0567  2144          LDI   CHIW
0570  0725          SBN   25              BLANK
0571  6104          NZF   4
0572  5440          AOD   SC              NO LABEL
0573  7101  NEQQ1   JFI   1
0574  0141                NEWW
0575  0400          LDN   0               CONVERT LABEL
0576  4040          STD   SC
0577  4041          STD   SN
0600  2144  NEQQ2   LDI   CHIW
0601  0725          SBN   25
0602  6407          ZJB   NEQQ1
0603  2041          LDD   SN
0604  0112          SHA   12
0605  3144          ADI   CHIW
0606  4041          STD   SN
0607  5444          AOD   CHIW
0610  1421          LSD   R1
0611  6511          NZB   NEQQ2
0612  6417          ZJB   NEQQ1
0613  2040  PROSTR  LDD   SC
0614  6123          NZF   PRO2
0615  0421          LDN   21              LABEL
0616  4070          STD   IDENT             GOES
0617  2041          LDD   SN                TO
0620  4071          STD   IDENT   1         IDLIST
0621  2203          LDF   3
```

```
0622  7101          JFI   1
0623  1655                STIDL
0624  0625                PRO1
0625  4021    PRO1  STD   R1          IDLIST INDEX OF LABEL
0626  0603          ADN   3
      4021          STD   R1
0630  2121          LDI   R1
0631  6004          ZJF   4           ((R1R)) NOT ZERO IMPLIES DUPLICA
0632  0432          LDN   32          STATEMENT NUMBER
0633  7101          JFI   1
0634  5266                TILT
0635  2063          LDD   OCC         OBJECT CODE COUNTER
0636  4121          STI   R1            TO IDLIST
0637  2043    PRO2  LDD   LOCCHI
0640  0614          ADN   14
0641  4044          STD   CHIW
0642  0400          LDN   0
0643  4064          STD   FPMASK      USED BY STIDL. ALSO SET BY LSUBR
0644  2226    PROS  LDF   PROS2       L(IDENT)
0645  4024          STD   R4          IDENT I
0646  0603          ADN   3
0647  4025          STD   R5          L(IDENT+3)
0650  2044          LDD   CHIW
0651  0607          ADN   7
0652  4023          STD   R3          L(CHIW+7)
0653  2044          LDD   CHIW
0654  4021    PROS1 STD   R1          W
0655  0601          ADN   1
0656  4022          STD   R2          W+1
0657  1423          LSD   R3
0660  6013          ZJF   PROS3
0661  2121          LDI   R1
0662  0110          SHA   10
0663  0110          SHA   10
0664  1522          LSI   R2
0665  4124          STI   R4
0666  5424          AOD   R4
0667  0402          LDN   2
0670  3021          ADD   R1
0671  6515          NZH   PROS1
0672  0070    PROS2       IDENT
0673  2243    PROS3 LDF   PROS6       L(PROS+1)
0674  4021          STD   R1
0675  2237          LDF   PROS8
0676  4023          STD   R3
0677  2023    PROS4 LDD   R3
0700  4026          STD   R6
0701  2307          LDB   PROS2
0702  4024          STD   R4
0703  2126    PROS5 LDI   R6          IDENT
0704  6020          ZJF   PROS56
0705  0277          LPN   77
0706  6106          NZF   6
0707  0577          LCN   77
0710  1124          LPI   R4
0711  3526          SBI   R6
0712  6012          ZJF   PROS56
0713  6103          NZF   3
0714  2124          LDI   R4
0715  6504          NZH   4
```

```
0716  0403          LDN   3
0717  5023          RAD   R3
0720  5421          AOD   R1
0721  1657          LSF   PROS7
0722  6523          NZB   PROS4
0723  6005          ZJF   5
0724  5426  PROS56  AOD   R6
0725  5424          AOD   R4
0726  1425          LSD   R5
0727  6524          NZB   PROS5
0730  2121          LDI   R1              GO TO
0731  4021          STD   R1                APPROPRIATE
0732  7101          JFI   1
0733  5636  PROA          PROA1
0734  1001  PROS8         PROS88
0735  7021  PROA3   JPI   R1
0736  0737  PROS6         PROS6   1
0737  4772                LGOTO
0740  5201                LASSIG
0741  5235                LFPTLT          IF ACC OV
0742  5235                LFPTLT          IF MQ OV
0743  5235                LFPTLT          IF DV C B K
0744  3105                LIFLP
0745  5123                LPAUST          PAUSE
0746  5123                LPAUST          STOP
0747  3762                LDO
0750  0347                LCONTI
0751  5524                LCALL
0752  5227                LRETUR
0753  5265                LNOCDO          END FILE
0754  5271                LWAIT
0755  4122                LREAD
0756  4132                LPUNCH
0757  4136                LINPUT
0760  4126                LOUTPU
0761  6113  ER33A         LDIMEN
0762  5265                LNOCDO          EQUIVALENCE
0763  6010  ER33B         LSUBRO
0764  6022                LNONLO
0765  6321  ER33C         LFORMA
0766  5265                LNOCDO          SENSE
0767  5265                LNOCDO          FUNCTION
0770  5265                LNOCDO          PRINT
0771  5265                LNOCDO          WRITE
0772  5416                LEND
0773  5265                LNOCDO
0774  5265                LNOCDO
0775  5265                LNOCDO          FREQUENCY
0776  5265                LNOCDO          COMMON
0777  2513                LARITH
1000  0777  PROS7         PROS7   -1
1001  4650  PROS88        4650            GO
1002  5550                5550            TO
1003  0000                0               00
1004  4054                4054            AS
1005  5430                5430            SI
1006  4635                4635            GN
1007  3045                3045            IF
1010  4042                4042            AC
1011  4256                4256            CU
```

1012	3045	3045	IF
1013	5256	5256	QU
1014	5055	5055	QT
1015	3045	3045	IF
1016	4330	4330	DI
1017	5730	5730	VI
1020	3045	3045	IF
1021	2300	2300	(0
1022	0000	0	00
1023	5140	5140	PA
1024	5654	5654	US
1025	4400	4400	E0
1026	5455	5455	ST
1027	5051	5051	OP
1030	0000	0	00
1031	4350	4350	DO
1032	0000	0	00
1033	0000	0	00
1034	4250	4250	CO
1035	3555	3555	NT
1036	3035	3035	IN
1037	4240	4240	CA
1040	3333	3333	LL
1041	0000	0	00
1042	5344	5344	RE
1043	5556	5556	TU
1044	5335	5335	RN
1045	4435	4435	EN
1046	4345	4345	DF
1047	3033	3033	IL
1050	6040	6040	WA
1051	3055	3055	IT
1052	0000	0	00
1053	5344	5344	RE
1054	4043	4043	AD
1055	0000	0	00
1056	5156	5156	PU
1057	3542	3542	NC
1060	4700	4700	H0
1061	3035	3035	IN
1062	5156	5156	PU
1063	5500	5500	T0
1064	5056	5056	OU
1065	5551	5551	TP
1066	5655	5655	UT
1067	4330	4330	DI
1070	3444	3444	ME
1071	3554	3554	NS
1072	4452	4452	EQ
1073	5630	5630	UI
1074	5740	5740	VA
1075	5456	5456	SU
1076	4153	4153	BR
1077	5056	5056	OU
1100	3550	3550	NO
1101	3533	3533	NL
1102	5042	5042	OC
1103	4550	4550	FO
1104	5334	5334	RM
1105	4055	4055	AT

```
1106  5444                      5444          SE
1107  3554                      3554          NS
1110  4400                      4400          E0
1111  4556                      4556          FU
1112  3542                      3542          NC
1113  5530                      5530          TI
1114  5153                      5153          PR
1115  3035                      3035          IN
1116  5500                      5500          TO
1117  6053                      6053          WR
1120  3055                      3055          IT
1121  4400                      4400          E0
1122  4435                      4435          EN
1123  4324                      4324          DEND
1124  0000                      0             00
1125  5344                      5344          RE
1126  6030                      6030          WI
1127  3543                      3543          ND
1130  4140                      4140          BA
1131  4232                      4232          CK
1132  5451                      5451          SP
1133  4553                      4553          FR
1134  4452                      4452          EQ
1135  5644                      5644          UE
1136  4250                      4250          CO
1137  3434                      3434          MM
1140  5035                      5035          ON
1141  4055  FORMOP  STD   FORXIT
1142  2044          LDD   CHIW
1143  4001          STD   R1R
1144  0400          LDN   0
1145  4020          STD   FF6                 SEE CONVERT
1146  2101  FOR1    LDI   R1R
1147  0713          SBN   13
1150  6327          NJF   FOR1C               NUMERIC
1151  0707          SBN   7                   22
1152  6103          NZF   3
1153  5401  FOR1A   AOD   R1R                 ) $ SET FF6=0
1154  6510          NZB   FOR1    -2
1155  0701          SBN   1                   23
1156  6112          NZF   FOR1B
1157  2001          LDD   R1R                 ( $ IS PREV SIGN A V
1160  0701          SBN   1
1161  4002          STD   R2R
1162  2102          LDI   R2R
1163  6103          NZF   3
1164  5401          AOD   R1R
1165  6520          NZB   FOR1    -1
1166  6702          NJB   2
1167  6614          PJB   FOR1A
1170  0701  FOR1B   SBN   1                   24
1171  6103          NZF   3
1172  7101          JFI   1                   END
1173  1317  FOR1BB          FOR8
1174  6203          PJF   3
1175  5401          AOD   R1R
1176  6530          NZB   FOR1
1177  2001  FOR1C   LDD   R1R
1200  4002          STD   R2R                 CHIW
1201  0470          LDN   IDENT
```

```
1202  4003          STD   R3R
1203  0604          ADN   4
1204  4004          STD   R4R           L(IDENT+4)
1205  0400          LDN   0
1206  4070          STD   IDENT
1207  2102          LDI   R2R
1210  0713          SBN   13
1211  6211          PJF   FOR2
1212  2203          LDF   3
1213  7101          JFI   1
1214  2173          CNVERT
1215  1216  FOR3          FOR3    1       EXIT FROM CONVERT
1216  2203          LDF   3               TERM. SYM. FROM CNVERT IN R2R
1217  7101          JFI   1               BEG. SYMBOL IN R1R
1220  1655          SIIDL
1221  1307          FOR7
1222  5403  FOR2    AOD   R3R           STORE ALFA NUMERIC STRING
1223  2102          LDI   R2R            IN IDENT
1224  0712          SBN   12
1225  0277          LPN   77
1226  0713          SBN   13
1227  6332          NJF   FOR6          STRING IS TERMINATED
1230  5470          AOD   IDENT         UP L2 BY 1
1231  2102          LDI   R2R
1232  0110          SHA   10
1233  0110          SHA   10
1234  4103          STI   R3R           IDENT
1235  5402          AOD   R2R
1236  2102          LDI   R2R
1237  0712          SBN   12
1240  0277          LPN   77
1241  0713          SBN   13
1242  6313          NJF   FOR5          STRING IS TERM. ON ODD CHAR.
1243  2102          LDI   R2R
1244  1503          LSI   R3R
1245  4103          STI   R3R
1246  5402          AOD   R2R
1247  3401          SBD   R1R
1250  0707          SBN   7
1251  6727          NJB   FOR2
1252  0424          LDN   24            TOO MANY
1253  7101          JFI   1              TOO MANY
1254  5266          TILT                 CHARACTERS IN IDENTIFIER
1255  0477  FOR5    LDN   77
1256  1503          LSI   R3R
1257  4103  FOR55   STI   R3R
1260  5403          AOD   R3R
1261  2003  FOR6    LDD   R3R
1262  3404          SBD   R4R
1263  6004          ZJF   4
1264  6612          PJB   FOR5    -3
1265  0500          LCN   0             BLANKS TO
1266  6707          NJB   FOR55          REST OF IDENT
1267  0501  FOR6AB  LCN   1             EXIT TO NONLOCAL
1270  3002          ADD   R2R
1271  4003          STD   R3R
1272  2103          LDI   R3R
1273  0745          SBN   45            F.
1274  6107          NZF   FOR6A
1275  2003          LDD   R3R
```

```
1276  3401          SBD   R1R
1277  0703          SBN   3
1300  6303          NJF   FOR6A
1301  0440  FOR7A    LDN   40          CHANGE
1302  5070          RAD   IDENT        TYPE TO 4
1303  2203  FOR6A    LDF   3
1304  7101          JFI   1
1305  1655  FOR6AA         STIDL
1306  1307                 FOR7
1307  4101  FOR7     STI   R1R
1310  5401          AOD   R1R         ZEROS
1311  1402          LSD   R2R          TO
1312  6103          NZF   3              REST
1313  7101          JFI   1               OF
1314  1146                 FOR1             STRING
1315  0400          LDN   0
1316  6407          ZJB   FOR7
1317  2044  FOR8     LDD   CHIW        COLLAPSE
1320  4001          STD   R1R          STRING
1321  4002          STD   R2R           AND
1322  2102          LDI   R2R
1323  6005          ZJF   5
1324  4101          STI   R1R
1325  0724          SBN   24
1326  6004          ZJF   4
1327  5401          AOD   R1R
1330  5402          AOD   R2R
1331  6507          NZB   7
1332  7101          JFI   1
1333  1334  FOR1BK         FOR9
1334  5401  FOR9     AOD   R1R         CONSTRUCT EA PACKS
1335  4026          STD   RH          NEXT AVAILABLE SLOT
1336  2044          LDD   CHIW
1337  4001          STD   R1R
1340  2101  FOR10    LDI   R1R
1341  0724          SBN   24
1342  6103          NZF   3
1343  7101          JFI   1
1344  1641                 FOR34       EXIT
1345  0601          ADN   1
1346  6003          ZJF   3
1347  5401  FOR11    AOD   R1R
1350  6510          NZB   FOR10
1351  2001          LDD   R1R
1352  0701          SBN   1
1353  4002          STD   R2R
1354  2102          LDI   R2R
1355  6606          PJB   FOR11
1356  4002          STD   R2R
1357  2102          LDI   R2R
1360  0270          LPN   70
1361  6006          ZJF   6           ALFA NUMERIC
1362  0704          SBN   4           TILT IF TYPE 1,2,3
1363  6614          PJB   FOR11       SKIP IF TYPE 4,5
1364  0425  FOR12    LDN   25
1365  7101          JFI   1
1366  5266                 TILT        $ IDENTIFIER OF WRONG FORM
1367  0401          LDN   1
1370  4012          STD   R10R        OR INTO IDENT + 1
1371  2102          LDI   R2R
```

```
1372  0110          SHA   10
1373  0207          LPN   7
1374  0706          SBN   6
1375  6015          ZJF   FOR131
1376  2002          LDD   R2R
1377  0602          ADN   2
1400  4003          STD   R3R
1401  2103          LDI   R3R          VARLISTYPE
1402  0702          SBN   2
1403  6417          ZJB   FOR12
1404  0703          SBN   3
1405  6421          ZJB   FOR12
1406  6311          NJF   FOR13        INTEGER
1407  0403          LDN   3
1410  5012          BAD   R10R
1411  6206          PJF   FOR13
1412  2002  FOR131  LDD   R2R
1413  0605          ADN   5
1414  4003          STD   R3R
1415  2103          LDI   R3R
1416  4012          STD   R10R
1417  0400  FOR13   LDN   0
1420  4126          STI   RR
1421  2026          LDD   RR
1422  0601          ADN   1
1423  4003          STD   R3R
1424  5402          AOD   R2R
1425  2102          LDI   R2R
1426  4103          STI   R3R
1427  2001  FOR14   LDD   R1R
1430  4004          STD   R4R
1431  4005          STD   R5R
1432  2105  FOR15   LDI   R5R
1433  0716          SBN   16           ,
1434  6104          NZF   4
1435  2005          LDD   R5R
1436  4004          STD   R4R          LOC OF LAST ,
1437  6103          NZF   3
1440  0704          SBN   4            )
1441  6003          ZJF   3
1442  5405          AOD   R5R
1443  6511          NZR   FOR15
1444  2004          LDD   R4R
1445  4005          STD   R5R
1446  0400          LDN   0
1447  4006          STD   R6R          BIT MASK
1450  0400  FOR16   LDN   0            0
1451  4105          STI   R5R          TO STRING $)OR ,
1452  5405          AOD   R5R
1453  2105          LDI   R5R
1454  6303          NJF   3
1455  7101  FOR17   JFI   1
1456  1364                FOR12
1457  4007          STD   R7R
1460  2107          LDI   R7R          C OR I
1461  0270          LPN   70
1462  6121          NZF   FOR19        C
1463  5407          AOD   R7R
1464  5403          AOD   R3R
1465  2107          LDI   R7R
```

```
1466  4103          STI   R3R
1467  0400          LDN   0             0
1470  4105          STI   R5R           TO REPLACE I
1471  0402          LDN   2
1472  1406          LSD   R6R
1473  4006          STD   R6R
1474  5405          AOD   R5R
1475  0500          LCN   0
1476  4010          STD   R8R           TO COMP D IF NEG
1477  2105          LDI   R5R
1500  6723          NJB   FOR17
1501  6125          NZF   FOR20
1502  6051  FOR18   ZJF   FOR21
1503  0710  FOR19   SBN   10
1504  6527          NZB   FOR17
1505  0400          LDN   0
1506  4105          STI   R5R
1507  2007          LDD   R7R
1510  0603          ADN   3
1511  4007          STD   R7R
1512  5403          AOD   R3R
1513  0401          LDN   1
1514  4006          STD   R6R
1515  2107          LDI   R7R           VALVE OF C
1516  4103          STI   R3R           TO R3R
1517  5405          AOD   R5R
1520  2105          LDI   R5R
1521  0715          SBN   15
1522  6131          NZF   FOR21         HAVE JUST DONE C. CHECK FOR C
1523  0404          LDN   4
1524  4006          STD   R6R
1525  6555          NZB   FOR16
1526  0717  FOR20   SBN   17            HAVE JUST DONE C*I OR I(+OR)
1527  6103          NZF   3
1530  5010          RAD   R0R           SET TO ZERO
1531  6005          ZJF   5
1532  0701          SBN   1
1533  6003          ZJF   3
1534  0701          SBN   1
1535  6116          NZF   FOR21         C*I)
1536  4105          STI   R5R
1537  5405          AOD   R5R
1540  5406          AOD   R6R           1 TO BIT MASK
1541  2105          LDI   R5R
1542  0603          ADN   3
1543  4007          STD   R7R
1544  5403          AOD   R3R
1545  2107          LDI   R7R           D
1546  1410          LSD   R8R           LIST
1547  4103          STI   R3R
1550  0400          LDN   0
1551  4105          STI   R5R
1552  5405          AOD   R5R
1553  2126  FOR21   LDI   RR
1554  0110          SHA   10
1555  1406          LSD   R6R
1556  4126          STI   RR
1557  2004          LDD   R4R
1560  1401          LSD   R1R
1561  6003          ZJF   3
```

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1562  7101          JFI   1
1563  1427                FOR14
1564  2105          LDI   R5R
1565  6103          NZF   3
1566  5405          ADD   R5R
1567  6503          NZB   3
1570  0722          SBN   22
1571  6003          ZJF   3
1572  7101          JFI   1
1573  1364                FOR12
1574  0400          LDN   0
1575  4105          STI   R5R
1576  2126          LDI   RR
1577  0110          SHA   10
1600  1412          LSD   R10R
1601  4126          STI   RR
1602  5403          ADD   R3R
1603  0400    FOR27 LDN   0
1604  4070          STD   IDENT
1605  2026          LDD   RR
1606  4002          STD   R2R
1607  0471          LDN   IDENT   1
1610  4004          STD   R4R
1611  2102    FOR28 LDI   R2R             EA PACK
1612  4104          STI   R4R              TO IDENT
1613  5470          ADD   IDENT
1614  5404          ADD   R4R
1615  5402          ADD   R2R
1616  1403          LSD   R3R
1617  6506          NZB   FOR28
1620  5405          ADD   R5R
1621  2070          LDD   IDENT
1622  0710          SBN   10
1623  6203          PJF   FOR32
1624  0430          LDN   30
1625  6202          PJF   FOR32   1
1626  0460    FOR32 LDN   60
1627  1470          LSD   IDENT
1630  4070          STD   IDENT
1631  0501          LCN   1
1632  5001          RAD   R1R
1633  2202          LDF   2
1634  6121          NZF   STIDL
1635  1636                FOR33
1636  4101    FOR33 STI   R1R             EA PACK LOCN
1637  7101          JFI   1
1640  1340                FOR10
1641  2044    FOR34 LDD   CHIW            SQUEEZE
1642  4002          STD   R2R              AGAIN
1643  4003          STD   R3R
1644  2102    FOR35 LDI   R2R
1645  6006          ZJF   6
1646  4103          STI   R3R
1647  0724          SBN   24
1650  6102          NZF   2
1651  7055          JPI   FORXIT          EXIT SQUEEZED
1652  5403          ADD   R3R                  SYMBOLS IN CHIW
1653  5402          ADD   R2R                  THRU END
1654  6510          NZB   FOR35
1655  4056    STIDL STD   STIXIT          EXIT
```

```
1656  2054          LDD   LIDFWA
1657  4027          STD   S1S
1660  2070          LDD   IDENT
1661  0270          LPN   70
1662  6126          NZF   STI5          TYPE NOT ALFA NUMERIC
1663  2057          LDD   NULFWA
1664  4030          STD   S2S
1665  4031          STD   S3S
1666  1460          LSD   NULLWA
1667  6023          ZJF   STI6
1670  0471  STI1    LDN   IDENT   1     L(IDENT+1)
1671  4032          STD   S4S
1672  2132  STI2    LDI   S4S           IDENT
1673  1531          LSI   S3S           NONLOCAL
1674  6007          ZJF   STI4
1675  0403          LDN   3
1676  5030          RAD   S2S
1677  4031          STD   S3S
1700  3460          SBD   NULLWA
1701  6711          NJB   STI1
1702  6210          PJF   STI6
1703  5431  STI4    AOD   S3S
1704  5432          AOD   S4S
1705  0374          LSN   IDENT   4
1706  6514          NZB   STI2
1707  6011          ZJF   STI7          IDENT BELONGS TO NONLOCAL LIST
1710  0720  STI5    SBN   20
1711  6103          NZF   STI77
1712  2061  STI6    LDD   RANK          LABEL
1713  5070          RAD   IDENT
1714  0750  STI77   SBN   50            DOES IDENT BELONG TO ID LIST
1715  6103          NZF   STI7
1716  0417          LDN   17
1717  6102          NZF   2
1720  0407  STI7    LDN   7
1721  1070          LPD   IDENT
1722  0671          ADN   IDENT   1
1723  4030          STD   S2S
1724  0471  STI8    LDN   IDENT   1
1725  4031          STD   S3S
1726  2127  STI9    LDI   S1S
1727  1225          LPF   STI11
1730  4032          STD   S4S
1731  1527          LSI   S1S
1732  0110          SHA   10
1733  4033          STD   S5S           L2
1734  2032          LDD   S4S
1735  1470          LSD   IDENT
1736  6017          ZJF   STI12
1737  2032  STI131  LDD   S4S
1740  0207          LPN   7
1741  3033          ADD   S5S           L1
1742  5027          RAD   S1S
1743  2032          LDD   S4S
1744  0270          LPN   70
1745  0370          LSN   70
1746  6103          NZF   3
1747  0410          LDN   10
1750  5027          RAD   S1S
1751  2027          LDD   S1S
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1752  6526          NZB   STI8
1753  6016          ZJF   STI15
1754  0777   STI11        777
1755  2027   STI12  LDD   S1S
1756  3033          ADD   S5S
1757  4034          STD   S6S
1760  2131   STI13  LDI   S3S
1761  1534          LSI   S6S
1762  6523          NZB   STI131
1763  5434          AOD   S6S
1764  5431          AOD   S3S
1765  1430          LSD   S2S
1766  6506          NZB   STI13
1767  2027   STI14  LDD   S1S
1770  7056          JPI   STIXIT
1771  2070   STI15  LDD   IDENT          STORE IDENT IN ID LIST
1772  0270          LPN   70
1773  6160          NZF   STI21          NOT ALFA NUMERIC
1774  2070          LDD   IDENT          ALFA NUMERIC TYPE, OR FPMASK
1775  0207          LPN   7               INTO VARLIS TYPE
1776  0603          ADN   3              L1
1777  1652          LSF   STI18          -0
2000  5054          RAD   LIDFWA
2001  4027          STD   S1S
2002  2250          LDF   STI19          3000
2003  5070          RAD   IDENT
2004  4127          STI   S1S            3, RANK, 0, L2 GOES TO ID LIST
2005  5427          AOD   S1S
2006  0402          LDN   2              2 TO
2007  4030          STD   S2S            VARLIS TYPE
2010  0502          LCN   2              DOWN
2011  5062          RAD   VLC             VARLIS COUNTER BY 2
2012  2071          LDD   IDENT   1
2013  6203          PJF   3
2014  0403          LDN   3
2015  5030          RAD   S2S
2016  2430          LCD   S2S
2017  1064          LPD   FPMASK
2020  1430          LSD   S2S
2021  4030          STD   S2S
2022  0705          SBN   5
2023  6103          NZF   3
2024  0502   STI151 LCN   2
2025  5062   STI152 RAD   VLC
2026  2062   STI16  LDD   VLC
2027  4127          STI   S1S
2030  5427          AOD   S1S
2031  2030          LDD   S2S
2032  4127          STI   S1S
2033  2070   STI161 LDD   IDENT
2034  0207          LPN   7
2035  0671   STI162 ADN   IDENT   1
2036  4032          STD   S4S
2037  0471          LDN   IDENT   1
2040  4031          STD   S3S
2041  5427   STI17  AOD   S1S
2042  2131          LDI   S3S
2043  4127          STI   S1S
2044  5431          AOD   S3S
2045  1432          LSD   S4S
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2046  6505          NZB   STI17
2047  2054          LDD   LIDFWA
2050  7056          JPI   STIXIT
2051  7777  STI18         7777
2052  3000  STI19         3000
2053  0710  STI21   SBN   10
2054  6124          NZF   STI22
2055  0402          LDN   2                 NUMERIC CONSTANT
2056  4030          STD   S2S
2057  0502          LCN   2
2060  5062          RAD   VLC
2061  2307          LDB   STI19             3000
2062  5070          RAD   IDENT
2063  0207          LPN   7
2064  0603          ADN   3
2065  1714          LSB   STI18
2066  5054          RAD   LIDFWA
2067  0601          ADN   1
2070  4027          STD   S1S
2071  2070          LDD   IDENT
2072  4154          STI   LIDFWA
2073  0202          LPN   2                 STI21
2074  6446          ZJB   STI16             CHANGE
2075  0405          LDN   5
2076  4030          STD   S2S
2077  6553          NZB   STI151
2100  0710  STI22   SBN   10
2101  6123          NZF   STI24
2102  0505  STI221  LCN   5                 LABELS
2103  5054          RAD   LIDFWA
2104  0601          ADN   1
2105  4027          STD   S1S
2106  2215          LDF   STI23
2107  1470          LSD   IDENT
2110  4154          STI   LIDFWA
2111  0502          LCN   2
2112  5062          RAD   VLC
2113  4127          STI   S1S
2114  5427          AOD   S1S
2115  0406          LDN   6
2116  4127          STI   S1S
2117  5427          AOD   S1S
2120  0400          LDN   0
2121  4127          STI   S1S
2122  6467          ZJB   STI161
2123  4000  STI23         4000
2124  0710  STI24   SBN   10
2125  6141          NZF   STI261
2126  2070          LDD   IDENT
2127  0207          LPN   7
2130  1757  STI241  LSB   STI18
2131  4030          STD   S2S
2132  5062          RAD   VLC
2133  2030          LDD   S2S
2134  0702          SBN   2
2135  5054          RAD   LIDFWA
2136  4027          STD   S1S
2137  2217          LDF   STI25
2140  5070          RAD   IDENT
2141  4154          STI   LIDFWA
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2142  5427           AOD   S1S
2143  2062           LDD   VLC
2144  4127           STI   S1S
2145  2070           LDD   IDENT
2146  0270           LPN   70
2147  0330           LSN   30
2150  6002           ZJF   2
2151  0410           LDN   10
2152  0607           ADN   7
2153  1070           LPD   IDENT
2154  7101           JFI   1
2155  2035                 STI162
2156  2000  STI25            2000
2157  7777  STI181           7777
2160  2070  STI26   LDD   IDENT          SUBROUTINE NAMES
2161  0207           LPN   7
2162  0701           SBN   1
2163  1704           LSB   STI181
2164  5054           RAD   LIDFWA
2165  6563           NZB   STI221
2166  0740  STI261   SBN   40
2167  6507           NZB   STI26
2170  2070           LDD   IDENT
2171  0217           LPN   17
2172  6542           NZB   STI241
2173  4046  CNVERT   STD   CNVXIT
2174  2020           LDD   FF6            CONV IS OCTAL IF FF1=0
2175  6102           NZF   2
2176  2047           LDD   BOOL
2177  4013           STD   FF1
2200  0400           LDN   0
2201  4014           STD   FF2
2202  4015           STD   FF3
2203  4003           STD   R3R
2204  4004           STD   R4R
2205  2001           LDD   R1R            INPUT SYMBOL LOC IN R1R
2206  4005           STD   R5R
2207  2105  CNV2     LDI   R5R
2210  6016           ZJF   CNV5           ZERO
2211  0712           SBN   12
2212  6006           ZJF   CNV3           PERIOD
2213  6321           NJF   CNV6           N
2214  0732           SBN   32             44 = E
2215  6036           ZJF   CNV8           E
2216  7101           JFI   1
2217  2325  CNVC1          CNV13
2220  5415  CNV3     AOD   FF3
2221  0301           LSN   1
2222  6027           ZJF   CNV7
2223  0423  CNV4     LDN   23
2224  7101           JFI   1
2225  5266                 TILT
2226  2014  CNV5     LDD   FF2            ZERO
2227  6105           NZF   CNV6
2230  2015           LDD   FF3
2231  6020           ZJF   CNV7
2232  5403           AOD   R3R
2233  6116           NZF   CNV7
2234  5414  CNV6     AOD   FF2            N
2235  2015           LDD   FF3
```

```
2236  6002          ZJF   2
2237  5403          AOD   R3R
2240  2004          LDD   R4R
2241  0713          SBN   13
2242  6206          PJF   6
2243  2004          LDD   R4R
2244  32c6          ADF   CNVC2
2245  4006          STD   R6R
2246  2105          LDI   R5R
2247  4106          STI   R6R
2250  5404          AOD   R4R
2251  5405  CNV7    AOD   R5R
2252  6543          NZR   CNV2
2253  2013  CNV8    LDD   FF1
2254  6431          ZJR   CNV4
2255  5405          AOD   R5R
2256  2105          LDI   R5R
2257  4006          STD   R6R
2260  0712          SBN   12
2261  6204          PJF   4
2262  0400          LDN   0
2263  4015          STD   FF4
2264  6015          ZJF   CNV11
2265  0705          SBN   5          17
2266  6006          ZJF   CNV10
2267  0701          SBN   1          20
2270  6003          ZJF   3
2271  0701          SBN   1          21
2272  6547          NZR   CNV4
2273  0401  CNV9    LDN   1
2274  4016  CNV10   STD   FF4
2275  5405          AOD   R5R
2276  2105          LDI   R5R
2277  4006          STD   R6R
2300  0712          SBN   12
2301  6656          PJB   CNV4
2302  5405  CNV11   AOD   R5R
2303  2105          LDI   R5R
2304  0712          SBN   12
2305  6211          PJF   CNV12
2306  2006          LDD   R6R
2307  0112          SHA   12
2310  3105          ADI   R5R
2311  4006          STD   R6R
2312  5405          AOD   R5R        R5R IS TERMINATING SYMBOL
2313  2105          LDI   R5R
2314  0712          SBN   12
2315  6772          NJR   CNV4
2316  2016  CNV12   LDD   FF4
2317  6003          ZJF   3
2320  2406          LCD   R6R
2321  4006          STD   R6R
2322  2003          LDD   R3R
2323  3406          SBD   R6R
2324  4003          STD   R3R
2325  2005  CNV13   LDD   R5R
2326  4002          STD   R2R
2327  0411          LDN   11
2330  4070          STD   IDENT
2331  6102          NZF   2
```

```
2332  2477  CNVC2          CBUF
2333  2004        LDD      R4R          PC
2334  3403        SBD      R3R          -EC
2335  4003        STD      R3R          =EC
2336  2304        LDB      CNVC2        BUF+0
2337  4006        STD      R6R          BUF+0
2340  0613        ADN      11
2341  4007        STD      R7R          BUF+11
2342  2006        LDD      R6R
2343  3004        ADD      R4R
2344  4010        STD      R8R          BUF+PC
2345  4011        STD      R9R
2346  3407        SBD      R7R
2347  6205        PJF      5
2350  0400        LDN      0
2351  4111        STI      R9R
2352  5411        AOD      R9R
2353  6505        NZB      5
2354  2015        LDD      FF3
2355  6132        NZF      CNV17        FLOATING
2356  2004        LDD      R4R
2357  0705        SBN      5
2360  6304        NJF      4
2361  7101  CNV13A JPI      1
2362  2223              CNV4
2363  0110  CNV13B SHA      10
2364  2301        LDB      1            INTEGER
2365  4210        STF      CNV14          CONVERSION
2366  0400        LDN      0
2367  4071        STD      IDENT   1
2370  2013        LDD      FF1
2371  6003        ZJF      3
2372  0402        LDN      2
2373  5202        RAF      CNV14
2374  2071        LDD      IDENT   1
2375  0110  CNV14  SHA      10           OR SHA12 IF FF1=1
2376  3106        ADI      R6R          BUF+I
2377  4071        STD      IDENT   1
2400  2006        LDD      R6R
2401  1410        LSD      R8R
2402  6004        ZJF      4
2403  5406        AOD      R6R
2404  1410        LSD      R8R          BUF+PC
2405  6511        NZB      CNV14   -1
2406  7046        JPI      CNVXIT
2407  0402  CNV17  LDN      2
2410  5070        RAD      IDENT
2411  2106        LDI      R6R
2412  6105        NZF      5
2413  4071        STD      IDENT   1    ZERO
2414  4072        STD      IDENT   2    WORD
2415  4073        STD      IDENT   3
2416  7046        JPI      CNVXIT
2417  2003        LDD      R3R
2420  0640        ADN      40
2421  6203        PJF      3
2422  0400        LDN      0
2423  6410        ZJB      10
2424  0110        SHA      10
2425  0102        SHA      2
```

```
2426  0102          SHA   2
2427  4003          STD   R3R
2430  0472          LDN   IDENT   2
2431  4007          STD   R7R
2432  2106          LDI   R6R
2433  0112          SHA   12
2434  4010          STD   R8R
2435  5406          AOD   R6R
2436  2106          LDI   R6R
2437  3010          ADD   R8R
2440  0110          SHA   10
2441  0110          SHA   10
2442  0110          SHA   10
2443  0102          SHA   2
2444  4011          STD   R9R
2445  0237          LPN   37
2446  1403          LSD   R3R
2447  4071          STD   IDENT   1
2450  0237          LPN   37
2451  1411          LSD   R9R
2452  4072          STD   IDENT   2
2453  0400          LDN   0
2454  4073          STD   IDENT   3
2455  0400  CNV22    LDN   0
2456  4010          STD   R8R
2457  0503          LCN   3
2460  4011          STD   R9R
2461  5406  CNV23    AOD   R6R
2462  2010          LDD   R8R
2463  0112          SHA   12
2464  3106          ADI   R6R
2465  4010          STD   R8R
2466  5411          AOD   R9R
2467  6506          NZB   6
2470  2010          LDD   R8R
2471  1507          LSI   R7R
2472  4107          STI   R7R
2473  5407          AOD   R7R
2474  0374          LSN   IDENT   4
2475  6520          NZB   CNV22
2476  7046          JPI   CNVXIT
2477  0000  CRUF     FLR   14
2513  2043  LARITH   LDD   LOCCHI
2514  0614          ADN   14
2515  4044          STD   CHIW
2516  0401  LAR1     LDN   1               ENTER FROM DO AND ALGEBRA
2517  4007          STD   R7R             SET MODE FF
2520  2203          LDF   3
2521  7101          JFI   1
2522  1141                FORMOP
2523  2524                LAR1A
2524  2205  LAR1A    LDF   5
2525  4046          STD   PTLOC
2526  0404          LDN   LLARIT
2527  7101          JFI   1
2530  5342                PTAWAY
2531  2532                LAR1B
2532  5403  LAR1B    AOD   R3R             NEXT AVAIL SLOT
2533  0601          ADN   1
2534  4001          STD   R1R
```

```
2535  0400          LDN   0
2536  4103          STI   R3R
2537  2044          LDD   CHIW
2540  4004          STD   R4R
2541  2104  LAR10   LDI   R4R
2542  6365          NJF   LAR13
2543  0724          SBN   24          END
2544  6103          NZF   3
2545  7101          JFI   1
2546  2735                LAR3
2547  0601          ADN   1           23
2550  6103          NZF   3
2551  0401          LDN   1           (
2552  6152          NZF   LAR11
2553  0601          ADN   1           22
2554  6103          NZF   3
2555  0402          LDN   2           )
2556  6146          NZF   LAR11
2557  0602          ADN   2           20
2560  6303          NJF   3
2561  0407          LDN   7           -
2562  6142          NZF   LAR11
2563  0601          ADN   1           17
2564  6103          NZF   3
2565  0406          LDN   6
2566  6136          NZF   LAR11
2567  0601          ADN   1           16
2570  6103          NZF   3
2571  0403          LDN   3           ,
2572  6132          NZF   LAR11
2573  0601          ADN   1           15
2574  6116          NZF   LAR10A
2575  2004          LDD   R4R         * OR**
2576  0601          ADN   1
2577  4006          STD   R6R
2600  2106          LDI   R6R
2601  0715          SBN   15
2602  6003          ZJF   3           2**
2603  0410          LDN   10
2604  6120          NZF   LAR11
2605  0412          LDN   12          **
2606  4104          STI   R4R
2607  5404          AOD   R4R
2610  0400          LDN   0           BLANK
2611  6013          ZJF   LAR11
2612  0601  LAR10A  ADN   1           14
2613  6103          NZF   3
2614  0411          LDN   11          1
2615  6107          NZF   LAR11
2616  0601          ADN   1           13
2617  6004          ZJF   4
2620  0411          LDN   11
2621  7101          JFI   1           COMPILER BUG UNKNOWN
2622  5266                TILT                CHARACTER
2623  0415          LDN   15          =
2624  4104  LAR11   STI   R4R
2625  5404  LAR12   AOD   R4R
2626  6565          NZR   LAR10
2627  2104  LAR13   LDI   R4R         ID LIST LOCN
2630  4005          STD   R5R
```

```
2631  2105          LDI   R5R
2632  4006          STD   R6R          1ST WORD OF ID LIST ENTRY
2633  5405          AOD   R5R
2634  2003          LDD   R3R          SEARCH
2635  4002          STD   R2R          OP LIST          START WITH
2636  5402  LAR14   AOD   R2R          OP LIST INDEX      R1R=1+(R3R)
2637  1401          LSD   R1R          01
2640  6005          ZJF   5            LIST EX  HAUSTED     AND ((R3R))=0
2641  2105          LDI   R5R          VAR LIS LOCN
2642  1502          LSI   R2R
2643  6006          ZJF   6
2644  6506          NZB   LAR14
2645  2105          LDI   R5R          VAR LIS LOCN
2646  4102          STI   R2R            TO OP LIST
2647  5401          AOD   R1R
2650  5503          AOI   R3R          REL           UP NO OF OPS
2651  2002          LDD   R2R            LOCN
2652  3403          SBD   R3R            OF
2653  0110          SHA   10             OP
2654  0102          SHA   2            TO OP STRING
2655  4104          STI   R4R
2656  2006          LDD   R6R
2657  0270          LPN   70
2660  6133          NZF   LAR19
2661  0413  LAR141  LDN   13           TYPE 0
2662  1504          LSI   R4R
2663  4104          STI   R4R
2664  2006          LDD   R6R
2665  0110          SHA   10
2666  0207          LPN   7
2667  0703          SBN   3
2670  6004          ZJF   4
2671  0412  LAR15   LDN   12           BUG$ARRAY
2672  7101          JFI   1                NAME
2673  52e6          TILT                   USED AS VARIABLE
2674  5405  LAR16   AOD   R5R
2675  2004  LAR17   LDD   R4R
2676  0601          ADN   1
2677  4006          STD   R6R          CHECK
2700  2106          LDI   R6R            FOR =
2701  0713          SBN   13
2702  6007          ZJF   7
2703  2105          LDI   R5R          VAR LIS TYPE
2704  0207          LPN   7
2705  0704          SBN   4
2706  6303          NJF   3
2707  0400          LDN   0
2710  4007          STD   R7R
2711  7101  LAR18   JFI   1
2712  2625                LAR12
2713  0730  LAR19   SBN   30
2714  6003          ZJF   3
2715  0740          SBN   40           EAPACK /0
2716  6105          NZF   5
2717  2203          LDF   3
2720  4006          STD   R6R.
2721  6540          NZB   LAR141
2722  3000                3000
2723  0660          ADN   60           10
2724  6405          ZJB   5            CONSTANTS
```

```
2725  0730          SBN   30
2726  6535          NZB   LAR15
2727  0405          LDN   5              LIBRARY FN
2730  1504          LSI   R4R
2731  4104          STI   R4R
2732  6523          NZB   LAR18  -2
2733  4000                4000
2734  2000                2000
2735  2007  LAR3    LDD   R7R            END CODING
2736  6107          NZF   7              INT
2737  2304          LDB   4              FL MODE
2740  1503          LSI   R3R
2741  4103          STI   R3R
2742  2047          LDD   BOOL
2743  6452          ZJB   LAR15
2744  6106          NZF   LAR33
2745  2047          LDD   BOOL
2746  6104          NZF   LAR33
2747  2313          LDB   LAR3   -1
2750  1503          LSI   R3R
2751  4103          STI   R3R
2752  0404  LAR33   LDN   4              END CODING
2753  4104          STI   R4R
2754  2044          LDD   CHIW
2755  0601          ADN   1
2756  4006          STD   R6R
2757  2106          LDI   R6R
2760  0715          SBN   15             =
2761  6104          NZF   4
2762  5406          AOD   R6R
2763  5406          AOD   R6R
2764  6505          NZB   5
2765  0501          LCN   1
2766  5006          RAD   R6R
2767  4052          STD   INITL          TO DICK
2770  2103          LDI   R3R
2771  6235          PJF   LAR333         NO FL TO EXIT
2772  2106          LDI   R6R
2773  0712          SBN   12
2774  6005          ZJF   5
2775  0606          ADN   6
2776  6030          ZJF   LAR333         TO EXIT
2777  5406  LAR330  AOD   R6R
3000  6506          NZB   6
3001  0441          LDN   41             SR, L2=1
3002  4070          STD   IDENT
3003  2222          LDF   LAR332
3004  4071          STD   IDENT  1
3005  2203          LDF   3
3006  7101          JFI   1
3007  1655                STIDL
3010  3011                LAR331
3011  4007  LAR331  STD   R7R
3012  5407          AOD   R7R
3013  2107          LDI   R7R            VEC OF POWER
3014  4101          STI   R1R            TO OPER AND LIST
3015  2001          LDD   R1R
3016  3403          SBD   R3R
3017  0110          SHA   10
3020  0102          SHA   2
```

```
3021  5106          RAI   R6R
3022  5503          AOI   R3R
3023  5401          AOD   R1R
3024  6525          NZB   LAR330
3025  5160  LAR332        5160
3026  2003  LAR333  LDD   R3R
3027  4050          STD   BEGBUF          OPERAND
3030  2001          LDD   R1R             LIST
3031  0701          SBN   1
3032  4051          STD   ENDBUF
3033  2206          LDF   6
3034  4001          STD   R1R
3035  2205          LDF   5
3036  4101          STI   R1R
3037  7101          JFI   1
3040  5274  LAR34         PAWB            EXIT TO CALL CODING
3041  5310               PAWB2   1
3042  3044               LAR4
3043  0347               NEWSTT
3044  2301  LAR4   LDB   1               RESET
3045  4101          STI   R1R             PAWB EXIT
3046  2204          LDF   4
3047  4053          STD   FNLEXT          EXIT FROM DICK
3050  7101          JFI   1
3051  3206          RPS                   TO DICK
3052  3053          LAR5
3053  2226  LAR5    LDF   LAR9            ADD
3054  4046          STD   PTLOC           STORES
3055  2044          LDD   CHIW
3056  4001          STD   R1R
3057  4002          STD   R2R
3060  5402  LAR6    ADD   R2R
3061  2102          LDI   R2R
3062  0715          SBN   15              =
3063  6010          ZJF   LAR8
3064  2204          LDF   4
3065  4046          STD   PTLOC           EXIT SET BY LARITH AND IFLP
3066  0417          LDN   17              ADD END OF MACRO CODE
3067  7111          JFI   LAR9    -1
3070  3071          LAR7  -1
3071  7101          JFI   1
3072  0347  LAR7    NEWSTT                HERE IS EXIT
3073  2206  LAR8    LDF   LAR9
3074  4046          STD   PTLOC
3075  2101          LDI   R1R
3076  0602          ADN   2               FORM V, STORE
3077  7101          JFI   1
3100  5342          PTAWAY
3101  3102  LAR9    LAR9  1
3102  5402          ADD   R2R
3103  4001          STD   R1R
3104  6524          NZB   LAR6
3105  2043  LIFLP   LDD   LOCCHI
3106  0613          ADN   13
3107  4001          STD   R1R
3110  4035          STD   F1F
3111  5401          ADD   R1R
3112  0400          LDN   0
3113  4036          STD   F2F
3114  2101  IFL1    LDI   R1R
```

```
3115  0722          SBN   22              )
3116  6106          NZF   6
3117  0501          LCN   1
3120  5036          RAD   F2F
3121  6015          ZJF   IFL4
3122  5401   IFL2   AOD   R1R
3123  6507          NZB   IFL1
3124  0701          SBN   1               23
3125  6106          NZF   6
3126  5436          AOD   F2F
3127  6505          NZB   IFL2
3130  0413   IFL3   LDN   13              WRONG
3131  7101          JFI   1                 FORMAT
3132  5266                TILT              IN IF
3133  0701          SBN   1
3134  6404          ZJB   4
3135  6513          NZB   IFL2
3136  2215   IFL4   LDF   IFL5            COLLECT LABELS
3137  4036          STD   F2F             SET
3140  2214          LDF   IFL6              EXIT
3141  4136          STI   F2F
3142  0424          LDN   24
3143  4101          STI   R1R
3144  2035          LDD   F1F             F1F IS LOC OF CON LABELS .
3145  4051          STD   ENDBUF
3146  0604          ADN   4
3147  4044          STD   CHIW
3150  5401          AOD   R1R             LOC OF BEG SYM FOR ALB
3151  7101          JFI   1
3152  5037                LG04    1
3153  5071   IFL5         LG07    1
3154  3156   IFL6         IFL8
3155  5274   IFL7         PAWB
3156  2301   IFL8   LDB   1
3157  4136          STI   F2F
3160  2210          LDF   IFL9            TRANSLATE STATEMENT
3161  4036          STD   F2F
3162  2207          LDF   IFL10           SET EXIT
3163  4136          STI   F2F               FROM ALGEBRA
3164  0400          LDN   0
3165  4020          STD   FF6
3166  7101          JFI   1
3167  2516                LAR1            TO ALGEBRA
3170  3072   IFL9         LAR7
3171  3173   IFL10        IFL12
3172  0347   IFL11        NEWSTT
3173  2301   IFL12  LDB   1
3174  4136          STI   F2F
3175  0501          LCN   1
3176  5035          RAD   F1F
3177  4050          STD   BEGBUF
3200  0603          ADN   3
3201  4051          STD   ENDBUF
3202  0405          LDN   LLIF
3203  4150          STI   BEGBUF
3204  7101          JFI   1
3205  5274                PAWB
                    REM                   RIGHT PAREN. SEARCH
3206  0400   RPS    LDN   0
3207  4012          STD   ERSBIT
```

```
3210  4014          STD   FUNLOC      RESET FUNCTION LOCATION
3211  2052  RPS7    LDD   INITL       INITIAL LINE ADDRESS
3212  4004          STD   CNTR1
3213  4016          STD   LFTLOC      PRESET LEFT LOCATER CELL
3214  0400          LDN   0
3215  4024          STD   RTLOC       RESET RIGHT LOCATER CELL
3216  4021          STD   PARCNT      RESET PARENTHESES COUNT
3217  4011          STD   ENDSW       RESET END SWITCH
3220  4022          STD   PARSW       RESET RIGHT PAREN. SWITCH
3221  4017          STD   LSTSET      RESET LAST CHAR. SWITCH
3222  2014          LDD   FUNLOC
3223  6102          NZF   RPSC        FUNCTION SWITCH SET
3224  4010          STD   COMASW      RESET COMMA SWITCH
3225  2104  RPSC    LDI   CNTR1       GET CHARACTER
3226  0217          LPN   17          CHAR. MASK
3227  6047          ZJF   RPSD        BLANK CHARACTER
3230  0706          SBN   6            NO
3231  6245          PJF   RPSD        DE-LIMIT CHARACTER
3232  3253          ADF   JF16         YES
3233  4201          STF   RPSB        SET SWITCH BOARD JUMP
3234  7101  RPSB    JFI   1
3235  3242                RPS1        LEFT PARENTHESES ROUTINE
3236  3251                RPS2        RIGHT PARENTHESES ROUTINE
3237  3263                RPS3        COMMA ROUTINE
3240  3303                RPS4        END ROUTINE
3241  3266                RPS5        FUNCTION ROUTINE
3242  0400  RPS1    LDN   0
3243  4014          STD   FUNLOC
3244  5404  RPS1A   AOD   CNTR1
3245  4016          STD   LFTLOC      STORE LEFT PARENTHESES COUNT
3246  0401          LDN   1
3247  4021          STD   PARCNT      SET PARENTHESES COUNT
3250  6523          NZB   RPSC
3251  0501  RPS2    LCN   1
3252  5021          RAD   PARCNT      DECREASE PARENTHESES COUNT
3253  5422          AOD   PARSW       SET PARENTHESES SWITCH
3254  2014          LDD   FUNLOC
3255  6106          NZF   RPS3        FUNCTION SWITCH SET
3256  2004  RPS2A   LDD   CNTR1        NO
3257  4024          STD   RTLOC       STORE RIGHT PAR. LOCATION
3260  0400          LDN   0
3261  4104          STI   CNTR1       ZERO DELIMITER CHARACTER
3262  6024          ZJF   BTPAR       GO TO BETWEEN PAR. ROUTINE
3263  0420  RPS3    LDN   20
3264  5010          RAD   COMASW      INCREASE COMMA COUNTER
3265  6507          NZB   RPS2A
3266  2004  RPS5    LDD   CNTR1
3267  4014          STD   FUNLOC      STORE LOC. OF LOC. OF FUNCTION
3270  5404          AOD   CNTR1
3271  2104          LDI   CNTR1       NEXT CHARACTER
3272  0217          LPN   17          CHAR. MASK
3273  0701          SBN   1
3274  6104          NZF   RPS5B
3275  6431          ZJB   RPS1A
3276  5404  RPSD    AOD   CNTR1       INCREASE LOCATION COUNTER
3277  6552          NZB   RPSC        RETURN FOR NEXT CHARACTER
3300  0402  RPS5B   LDN   2
3301  7101  RPS5A   JFI   1           GO TO ERROR
3302  5266                TILT
3303  5411  RPS4    AOD   ENDSW       SET END OF STATEMENT SWITCH
```

```
3304  6526          NZB   RPS2A
3305  7106  JFI6    JFI   6
                    REM                BETWEEN PAR. ROUTINE
3306  0414  RTPAR   LDN   14
3307  4015          STD   HCNSET       INITIALIZE HIERARCHY LOCATER
3310  0502  RESTRT  LCN   2
3311  5015          RAD   HCNSET       DECREASE HIER. LEVEL LOCATER
3312  0704          SBN   4
3313  6060          ZJF   FINISH       MORE ARITHMETIC LEVELS
3314  2017          LDD   LSTSET        YES
3315  6007          ZJF   RSTRTA       LAST OPERATOR USED
3316  2030          LDD   SUMCEL        YES
3317  6054          ZJF   FINISH       WORDS LEFT TO PROCESS
3320  2203          LDF   RSTRTB        YES -- RETURN ADDRESS
3321  7101          JFI   1
3322  3706          STORE               JUMP TO STORE ROUTINE
3323  3324  RSTRTB        RSTRTA
3324  0400  RSTRTA  LDN   0             RESET SWITCHES
3325  4003          STD   CHARSW        CHARACTER SWITCH
3326  4032          STD   VARSW         VARIABLE SWITCH
3327  4023          STD   PWRCHR        POWER LOC. SWITCH
3330  4030          STD   SUMCEL        WORD SUMMATION CELL
3331  4020          STD   OPSTOR        OP. CODE STORAGE
3332  4017          STD   LSTSET        LAST OPERATOR SWITCH
3333  0501          LCN   1
3334  4013          STD   FSTIME        FIRST TIME SWITCH
3335  2016          LDD   LFTLOC
3336  4004          STD   CNTR1         SET INPUT LOCATER
3337  5413  START   AOD   FSTIME
3340  5430          AOD   SUMCEL        INCREASE SUM CELL
3341  2104          LDI   CNTR1         GET CHARACTER
3342  0217          LPN   17
3343  4025          STD   SAVE1         SAVE LOWER BITS
3344  6023          ZJF   INCRS         JUMP FOR NO CHARACTER
3345  0706          SBN   6
3346  6321          NJF   INCRS         DELIMIT CHARACTER
3347  3217          ADF   JFI1           NO -- PRESET SWITCHBOARD JUMP
3350  4201          STF   RTJMP
3351  7101  RTJMP   JFI   1
3352  3651                CHRTRA        ADD ROUTINE
3353  3651                CHRTRA        SUBTRACT ROUTINE
3354  3645                CHRTR         MULTIPLY ROUTINE
3355  3645                CHRTR         DIVIDE ROUTINE
3356  3641                CHRTRZ        POWER ROUTINE
3357  3473                VARBL         VARIABLE ROUTINE
3360  3470                ERSBL         ERASABLE ROUTINE
3361  3364                COMERR        INVALID CHARACTER
3362  3364                COMERR        ROUTINE
3363  3457                PSUEND        PSUEDO END ROUTINE
3364  0410  COMERR  LDN   10
3365  6564          NZB   RPS5A
3366  7101  JFI1    JFI   1
3367  5404  INCRS   AOD   CNTR1         INCREASE WORD LOCATER
3370  3424          SBD   RTLOC
3371  6532          NZB   START         END OF GROUP
3372  6462          ZJB   RESTRT         YES
                    REM                TERMINATION
3373  2003  FINISH  LDD   CHARSW
3374  6003          ZJF   FINSHZ        LAST CHAR. AN OPERATOR
3375  0401          LDN   1
```

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3376  6475          ZJP   RPSSA      GO TO ERROR
3377  2014  FINSHZ  LDD   FUNLOC
3400  4004          STD   CNTR1      INITIAL LOCATION
3401  6031          ZJF   FINSHE     FUNCTION THIS GROUP
3402  2212          LDF   PTCON3      YES
3403  4046          STD   PTLOC      SET UP PUTAWAY RETURN
3404  0440          LDN   40
3405  4027          STD   STOROP     SET FUNCTION BIT
3406  0415          LDN   15
3407  4020          STD   OPSTOR     GET STORE OP. CODE
3410  2010          LDD   COMASW     ARGUMENT INCREMENT
3411  4026  FINSHJ  STD   SAVLOC
3412  7101          JFI   1
3413  3557                VRBLWA     GO TO PUTAWAY ROUTINE
3414  3415  PTCON3        FINSHB
3415  2022  FINSHB  LDD   PARSW
3416  6102          NZF   FINSHC     RT. DELIMITER A PARENTHESES
3417  7134          JFI   FINSHG      NO
3420  2211  FINSHC  LDF   PTCON4
3421  4046          STD   PTLOC      PUTAWAY RETURN
3422  0400          LDN   0
3423  4027          STD   STOROP
3424  5420          ADD   OPSTOR     TRANSFER OP. CODE
3425  2114          LDI   FUNLOC     GET LOC. OF FUNCT. ROUTINE
3426  0217          LPN   17
3427  1514          LSI   FUNLOC
3430  6517          NZB   FINSHJ
3431  3432  PTCON4        FINSHE
3432  2422  FINSHE  LCD   PARSW
3433  5016          RAD   LFTLOC     INCREASE LEFT PAR. LOC.
3434  0400          LDN   0
3435  4114          STI   FUNLOC     ZERO FUNCTION CHAR.
3436  4116          STI   LFTLOC     ZERO LEFT PAR. CHAR.
3437  4014          STD   FUNLOC     ZERO FUNCT. LOC. SWITCH
3440  2021          LDD   PARCNT
3441  6003          ZJF   FINSHA     PARENTHESES COUNT ZERO
3442  0405          LDN   5          NO, THEN GO TO ERROR
3443  6135          NZF   VARBLL
3444  2011  FINSHA  LDD   ENDSW
3445  6107          NZF   FINSHF     END OF STATEMENT
3446  2024          LDD   RTLOC       NO -- GET RT. PAR. LOCATION
3447  4004          STD   CNTR1
3450  2203          LDF   FINSHG     RETURN ADD. FOR STORE ROUTINE
3451  7101  FINSHY  JFI   1
3452  3706                STORE
3453  3211  FINSHG        RPSZ
3454  0400  FINSHF  LDN   0
3455  4124          STI   RTLOC      ZERO LAST LOCATION
3456  7053          JPI   FNLEXT     EQUAL NO. OF PAREN. PAIRS
                    REM               PSEUDO END ROUTINE
3457  2015  PSUEND  LDD   HCNSET     HIER. LEVEL LOCATER
3460  0706          SBN   6
3461  6105          NZF   PSENDB     LAST HIER. LEVEL
3462  4104          STI   CNTR1       YES -- ZERO PSUEDO END CODE
3463  5404          ADD   CNTR1
3464  7101          JFI   1
3465  3306                BIPAR
3466  7101  PSENDB  JFI   1
3467  3310                RESTRT     RETURN FOR NEXT LEVEL
3470  0420  EPSRL   LDN   20
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3471  4027          STD   STOROP     SET BIT FOR ERASABLE STORAGE
3472  6110          NZF   VARBLA
                    REM              VARIABLE ROUTINE
3473  0400  VARRL    LDN   0
3474  4027          STD   STOROP     ZERO BITS FOR NORMAL STORAGE
3475  2032          LDD   VARSW
3476  6004          ZJF   VARBLA     VARIABLE FLAG SET
3477  0403          LDN   3
3500  7101  VARBLL   JFI   1
3501  5266                TILT       GO TO ERROR
3502  0400  VARBLA   LDN   0
3503  4003          STD   CHARSW     RESET CHARACTER SWITCH
3504  2025          LDD   SAVE1      BOTTOM BITS
3505  5032          RAD   VARSW      SET VARIABLE SWITCH
3506  1504          LSI   CNTR1      UPPER LOCATION BITS
3507  4026          STD   SAVLOC     SAVE LOCATION OF VARIABLE
3510  2020          LDD   OPSTOR
3511  6057          ZJF   VARBLC     OPERATOR SET UP
3512  0712          SBN   12          YES
3513  6117          NZF   VARBLH     POWER HIERARCHY
3514  7101          JFI   1
3515  3616                VARBLR
3516  2017  VARBLU   LDD   LSTSET
3517  6102          NZF   VARBLT     POWER OP. CODE TO BE SET
3520  7146  VARBLS   JFI   PTCON2     NO
3521  2031  VARBLT   LDD   SVLOC1     GET FUNCT. LOC.
3522  0217          LPN   17
3523  1431          LSD   SVLOC1
3524  4026          STD   SAVLOC     FUNCTION LOCATION
3525  0412          LDN   12         POWER OP. CODE
3526  4020          STD   OPSTOR
3527  4023          STD   PWRCHR     SET POWER LOC. SWITCH
3530  0400          LDN   0
3531  4027          STD   STOROP     ZERO OP. MODIFIER
3532  2234  VARBLH   LDF   PTCON2
3533  4046  VARBLI   STD   PTLOC     SET UP PUTAWAY ROUTINE
3534  2027          LDD   STOROP
3535  0720          SBN   20
3536  6115          NZF   VARBLW     ENTER
                    REM              ERASABLE ROUTINE
3537  2025          LDD   SAVE1
3540  1504          LSI   CNTR1
3541  4005          STD   CNTR2      TOP LOCATION BITS
3542  2225          LDF   TOPBT1     BIT 11 POSITION
3543  4006          STD   CNTR3
3544  4406  ERSBLA   SRD   CNTR3     SHIFT BIT TO NEXT POSITION
3545  0520          LCN   20
3546  5005          RAD   CNTR2      LOCATION COUNTER
3547  6503          NZB   ERSBLA     BIT IN CORRECT POSITION
3550  2012          LDD   ERSBIT      YES
3551  1406          LSD   CNTR3      ZERO ERAS. BIT WORD INDICATOR
3552  4012          STD   ERSBIT
3553  0501  VARBLW   LCN   1
3554  5030          RAD   SUMCEL     DECREASE SUMMATION CELL
3555  0400          LDN   0
3556  4104          STI   CNTR1      ZERO INDICATOR LOCATION
3557  2027  VRBLWA   LDD   STOROP     PUTAWAY INDICATOR
3560  0110          SHA   10          TO HIGH ORDER BITS
3561  0110          SHA   10
3562  3026          ADD   SAVLOC      PLUS VARIABLE LOC.
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3563  3020          ADD   OPSTOR      PLUS OP. CODE
3564  7101          JFI   1
3565  5342                PTAWAY      GO TO PUTAWAY ROUTINE
3566  3367  PTCON2        INCRS
3567  4000  TOPRT1        4000
3570  2004  VARBLC  LDD   CNTR1
3571  0601          ADN   1
3572  4005          STD   CNTR2       NEXT OPERATOR LOCATION
3573  3424  VARBLE  SBD   RTLOC
3574  6103          NZF   VARBLD      OPERATOR THE RT. DELIMITER
3575  0406          LDN   6           YES
3576  6116          NZF   VARBLY
3577  2105  VARBLD  LDI   CNTR2
3600  4031          STD   SVLOC1      SAVE LOCATION
3601  0217          LPN   17          LOWER BITS
3602  6007          ZJF   VARBLO      ZERO OP. CODE
3603  0717          SBN   17          NO
3604  6107          NZF   VARBLZ      PSUEDO END DELIMITER
3605  2005          LDD   CNTR2
3606  4004          STD   CNTR1       RESET COUNTER 1
3607  7101          JFI   1
3610  3457                PSUEND      GO TO PSUEDO END ROUT.
3611  5405  VARBLO  ADD   CNTR2       INCREASE WORD COUNTER
3612  6517          NZR   VARBLE      TRY NEXT WORD
3613  0617  VARBLZ  ADN   17
3614  3415  VARBLY  SBD   HCNSET
3615  6775          NJB   VARBLS      CHAR. THIS HIER. LEVEL
3616  0406  VARBLR  LDN   6           YES
3617  4020          STD   OPSTOR      STORE ADD OP. CODE
3620  2202          LDF   PTCON7      PUTAWAY RETURN
3621  6566  VARBLQ  NZR   VARBLI
3622  3623  PTCON7        VARBLV
3623  2015  VARBLV  LDD   HCNSET
3624  0712          SBN   12
3625  6147          NZF   CHRTRY      POWER HIERARCHY LEVEL
3626  0420          LDN   20          YES -- GET ARGUMENT LOC.
3627  3017          ADD   LSTSET      PLUS INCREMENT
3630  4026          STD   SAVLOC      STORAGE LOC. FOR ARGUMENT
3631  0440          LDN   40
3632  4027          STD   STOROP      SET BIT FOR FUNCTION STORAGE
3633  0415          LDN   15
3634  4020          STD   OPSTOR      STORAGE OP. CODE
3635  5430          ADD   SUMCEL
3636  2202          LDF   PTCON5
3637  6516          NZB   VARBLQ
3640  3516  PTCON5        VARBLU
                    REM               CHARACTER ROUTINE
3641  2023  CHRTRZ  LDD   PWRCHR
3642  6003          ZJF   CHRTR       TWO POWER CHARS. TOGETHER
3643  0406          LDN   6
3644  6113          NZF   CHRTRG      GO TO ERROR
3645  2013  CHRTR   LDD   FSTIME
3646  6103          NZF   CHRTRA      FIRST TIME THRU GROUP
3647  0407          LDN   7
3650  6107          NZF   CHRTRG      GO TO ERROR
3651  0400  CHRTRA  LDN   0
3652  4023          STD   PWRCHR      RESET POWER LOC. SWITCH
3653  4032          STD   VARSW       RESET VARIABLE SWITCH
3654  2003          LDD   CHARSW
3655  6004          ZJF   CHRTRH      CHARACTER SWITCH SET
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3656  0404          LDN   4          YES
3657  7101  CHRTRG  JFI   1
3660  5266          TILT             GO TO ERROR
3661  2025  CHRTRH  LDD   SAVE1      GET CHARACTER
3662  4003          STD   CHARSW     SET CHARACTER SWITCH
3663  4020          STD   OPSTOR
3664  3415          SBD   HCNSET
3665  6311          NJF   CHRTRC     CHAR. THIS ORDER HIERARCHY
3666  0501          LCN   1           YES
3667  5030          RAD   SUMCEL     DECREASE SUM CELL
3670  0400          LDN   0           YES
3671  4104          STI   CNTR1      ZERO INDICATOR LOCATION
3672  0420          LDN   20
3673  4017  CHRTRF  STD   LSTSET     USE OF LAST OPERATOR SWITCH
3674  7101  CHRTRY  JFI   1
3675  3367          INCRS            GO TO INCREASE ROUT.
3676  2017  CHRTRC  LDD   LSTSET
3677  6004          ZJF   CHRTRD     LAST OPERATOR USED
3700  2202          LDF   CHRTRE      YES
3701  6105          NZF   STORE      STORE RESULTS
3702  3703  CHRTRE          CHRTRD
3703  0400  CHRTRD  LDN   0
3704  4020          STD   OPSTOR     RESET OPERATOR STORAGE CELL
3705  6412          ZJB   CHRTRF
                    REM              STORAGE ROUTINE
3706  4007  STORE   STD   CNTR4      SAVE RETURN LOCATION
3707  0400          LDN   0
3710  4005          STD   CNTR2      ERASABLE INDICATOR LOCATER
3711  2250          LDF   TOPBT2     BIT 11 POS.
3712  4006          STD   CNTR3      SET BIT SEARCHER
3713  4406  STOREB  SRD   CNTR3      SHIFT BIT SEARCHER
3714  0420          LDN   20
3715  5005          RAD   CNTR2      INCRS. IND. LOCATER
3716  2006          LDD   CNTR3
3717  1012          LPD   ERSBIT     GET BIT INDICATOR
3720  6505          NZB   STOREB     THIS BIT SET
3721  2006          LDD   CNTR3       NO
3722  1412          LSD   ERSBIT     SET BIT
3723  4012          STD   ERSBIT     STORE RESULTS
3724  0420          LDN   20
3725  4027          STD   STOROP     SET BIT FOR ERASABLE STORAGE
3726  2210          LDF   PTCON1
3727  4046          STD   PTLOC      SET UP PUTAWAY RETURN
3730  2005          LDD   CNTR2      WORD LOCATION
3731  4026          STD   SAVLOC     SAVE LOC.
3732  0415          LDN   15         OP. CODE
3733  4020          STD   OPSTOR
3734  7101          JFI   1
3735  3557          VRBLWA           GO TO PUTAWAY ROUTINE
3736  3737  PTCON1          STORED
3737  2004  STORED  LDD   CNTR1      CURRENT LOCATION
3740  0702          SBN   2
3741  4006          STD   CNTR3      CURRENT LOC. - 2
3742  2026          LDD   SAVLOC     ERASABLE LOCATION
3743  0614          ADN   14          PLUS ERASABLE OP. CODE
3744  4106          STI   CNTR3      STORE IN CURR. WORD LOC. - 2
3745  2613          LCF   TW040
3746  5005          RAD   CNTR2      WORD COUNTER
3747  6310          NJF   STOREE     10-12 TH ERASABLE USED
3750  5406          AOD   CNTR3       YES -- CURR. LOC. - 1
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3751  0417          LDN   17          PSEUDO END CODE
3752  4106          STI   CNTR3       STORE IN CURR. WORD LOC. - 1
3753  0400          LDN   0
3754  4017          STD   LSTSET      RESET LAST CHAR. SWITCH
3755  7101          JFI   1
3756  3306                BIPAR       RETURN FOR NEXT HIER. LEVEL
3757  7007  STOREE  JPI   CNTR4       RETURN
3760  0240  TWO40         240
3761  4000  TOPRT2       4000        BIT 11 POS.
3762  0402  LDO    LDN   2
3763  5044          RAD   CHIW
3764  0400          LDN   0
3765  4021          STD   R1
3766  2144  LDO1   LDI   CHIW
3767  0712          SBN   12
3770  6207          PJF   LDO2
3771  2021          LDD   R1
3772  0112          SHA   12
3773  3144          ADI   CHIW
3774  4021          STD   R1          STATEMENT NUMBER TO R1
3775  5444          AOD   CHIW
3776  6510          NZB   LDO1
3777  2203  LDO2   LDF   3
4000  7101          JFI   1
4001  1141                FORMOP
4002  4003                LDO3        STORE
4003  2021  LDO3   LDD   R1            IDENT      M
4004  4070          STD   IDENT               +1   M1
4005  2144          LDI   CHIW        ID LIST+2    I
4006  4021          STD   R1                  +3   M2
4007  5421          AOD   R1                  +4   M3
4010  2121          LDI   R1          LOC I   +5   OCC+3$ALFA
4011  4072          STD   IDENT   2
4012  5444          AOD   CHIW
4013  5444          AOD   CHIW
4014  2144          LDI   CHIW
4015  4021          STD   R1
4016  5421          AOD   R1
4017  2121          LDI   R1
4020  4071          STD   IDENT   1   M1
4021  5444          AOD   CHIW
4022  5444          AOD   CHIW
4023  2144          LDI   CHIW
4024  4021          STD   R1
4025  5421          AOD   R1
4026  2121          LDI   R1
4027  4073          STD   IDENT   3
4030  5444          AOD   CHIW
4031  2144          LDI   CHIW
4032  0724          SBN   24          END
4033  6103          NZF   3
4034  0502          LCN   2           LOC 1
4035  6306          NJF   6

4036  5444          AOD   CHIW
4037  2144          LDI   CHIW
4040  4021          STD   R1
4041  5421          AOD   R1
4042  2121          LDI   R1
4043  4074          STD   IDENT   4   M3
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4044  2204          LDF   LD04
4045  4046          STD   PTLOC
4046  0402          LDN   LLINIT          INIT TO CODE.
4047  7113          JFI   LD08    -1
4050  4051  LD04    LDD   LD06
4051  2204  LD06    LDF   LD07
4052  4046          STD   PTLOC
4053  2071          LDD   IDENT   1       M1
4054  7106          JFI   LD08    -1
4055  4056  LD07    LDD   LD07    1
4056  2205          LDF   LD08
4057  4046          STD   PTLOC
4060  2072          LDD   IDENT   2       I
4061  7101          JFI   1
4062  5342          PTAWAY
4063  4064  LD08    LDD   LD08    1
4064  2063          LDD   OCC
4065  4075          STD   IDENT   5
4066  2070          LDD   IDENT
4067  4071          STD   IDENT   1       IDENT+1
4070  2043          LDD   LOCCHI          MOVE
4071  0701          SBN   1                 LOCCHI - LOCCHI+11
4072  4021          STD   R1              -1 AND INSERT N
4073  0614          ADN   14                          I
4074  4022          STD   R2              +11         M2
4075  0605          ADN   5                           M3
4076  4023          STD   R3              +16         ALFA
4077  2122  LD09    LDI   R2
4100  4123          STI   R3
4101  0501          LCN   1
4102  5023          RAD   R3              +4
4103  0501          LCN   1
4104  5022          RAD   R2              -1
4105  1421          LSD   R1              -1
4106  6507          NZR   LD09
4107  5423          AOD   R3              +5
4110  0471          LDN   IDENT   1
4111  4021          STD   R1
4112  2121          LDI   R1
4113  4143          STI   LOCCHI
4114  5421          AOD   R1
4115  5443          AOD   LOCCHI
4116  1423          LSD   R3
4117  6505          NZB   5
4120  7101          JFI   1
4121  0547          NEWSTT
4122  0403  LREAD   LDN   3
4123  4047          STD   CONTRL
4124  0404          LDN   4
4125  6113          NZF   IOP
4126  0402  LOUTPU  LDN   2
4127  4047          STD   CONTRL
4130  0406          LDN   6
4131  6107          NZF   IOP
4132  0404  LPUNCH  LDN   4
4133  4047          STD   CONTRL
4134  0405          LDN   5
4135  6103          NZF   IOP
4136  0401  LINPUT  LDN   1
4137  6504          NZB   LPUNCH  1
```

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4140  3044  IOP     ADD   CHIW
4141  4001          STD   R1R
4142  0400          LDN   0
4143  4053          STD   FCONT
4144  2101          LDI   R1R
4145  0712          SBN   12
4146  6221          PJF   IOP3
4147  2203          LDF   3
4150  7101          JFI   1              CONVERT
4151  2173                CNVERT           LABEL
4152  4153                IOP1
4153  0421  IOP1    LDN   21             TYPE, LENGTH OF ENTRY
4154  4070          STD   IDENT
4155  2203          LDF   3
4156  7101          JFI   1
4157  1655                STIDL
4160  4161                IOP2
4161  4021  IOP2    STD   R1             ID LIST LOCN
4162  5421          AOD   R1
4163  2121          LDI   R1
4164  4053          STD   FCONT          VAR LIS LOCN OF FORMAT
4165  2002          LDD   R2R            PUT LOC OF TERM SYMBOL
4166  4001          STD   R1R              IN R1R
4167  2101  IOP3    LDI   R1R
4170  0716          SBN   16             ,
4171  6056          ZJF   IOP33
4172  0706          SBN   6              END
4173  6003          ZJF   JONEND
4174  2001          LDD   R1R            NEED NOT HAVE COMMA
4175  6153          NZF   IOP33    1
4176  2047  JONEND  LDD   CONTRL
4177  4241          STF   IOP3F
4200  2047          LDD   CONTRL         IOP 3 INSERT
4201  0703          SBN   3
4202  6105          NZF   5
4203  2202          LDF   2
4204  6110          NZF   10
4205  5344                5344           RE
4206  5156                5156           PU
4207  0701          SBN   1
4210  6003          ZJF   3
4211  7101          JFI   1
4212  4445                IOP20          TILT
4213  2305          LDR   5              PU
4214  4071          STD   IDENT    1
4215  0441          LDN   41
4216  4070          STD   IDENT
4217  2203          LDF   3
4220  7101          JFI   1
4221  1655                STIDL
4222  4223                IOP3Z
4223  4050  IOP3Z   STD   BEGBUF
4224  5450          AOD   BEGBUF
4225  2150          LDI   BEGBUF
4226  4214          STF   IOP3C    1
4227  2053          LDD   FCONT
4230  4211          STF   IOP3C
4231  2214          LDF   IOP3E
4232  4050          STD   BEGBUF
4233  2213          LDF   IOP3F
```

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4234  4051          STD   ENDBUF
4235  7101          JFI   1
4236  5274                PAWB
4237  0017  IOP3A        17
4240  0000  IOP3B        0
4241  0000  IOP3C        0
4242  0000                0
4243  0020                20
4244  0000  IOP3D        0
4245  4237  IOP3E        IOP3A
4246  4244  IOP3F        IOP3D
4247  5401  IOP33  AOD   R1R
4250  4044          STD   CHIW          LOC OF BEG OF STRING
4251  2206          LDF   6
4252  4021          STD   R1
4253  2205          LDF   5
4254  4121          STI   R1
4255  7101          JFI   1
4256  1146                FOR1
4257  1333                FOR1BK        LOC OF EXIT.
4260  4262                IOP4
4261  1334                FOR9
4262  2301  IOP4    LDB   1             RESET
4263  4121          STI   R1              FORMOP EXIT
4264  5401          AOD   R1R
4265  4021          STD   R1            LOCN OF NEXT AVAIL SLOT (BEG OF S
4266  4022          STD   R2            ULT LOC OF END
4267  2044          LDD   CHIW
4270  4001          STD   R1R
4271  2101  IOP5    LDI   R1R
4272  6014          ZJF   IOP7
4273  0724          SBN   24            END
4274  6014          ZJF   IOP8
4275  0606          ADN   6
4276  6012          ZJF   IOP8
4277  2101  IOP6    LDI   R1R
4300  4122          STI   R2
4301  0724          SBN   24
4302  6103          NZF   3
4303  7101          JFI   1
4304  4415                IOP15
4305  5422          AOD   R2
4306  5401  IOP7    AOD   R1R
4307  6516          NZB   IOP5
4310  0501  IOP8    LCN   1
4311  3022          ADD   R2
4312  4023          STD   R3
4313  2123          LDI   R3
4314  6615          PJB   IOP6
4315  4023          STD   R3
4316  2123          LDI   R3
4317  0270          LPN   70
4320  6521          NZB   IOP6
4321  2123          LDI   R3            LOOK
4322  0110          SHA   10              AT
4323  0207          LPN   7               L2.
4324  0706          SBN   6             IF L2 NOT = 6,
4325  6526          NZB   IOP6            GO BACK.
4326  2023          LDD   R3            LOC OF
4327  4253          STF   IOP14   1       ARRAY NAME.
```

```
4330  5423          AOD   R3
4331  0003          ADN   3
4332  4024          STD   R4              LOC D1
4333  2124          LDI   R4
4334  4071          STD   IDENT   1       PRODUCT
4335  4026  IOP9    STD   R6              MULTIPLICAND
4336  0501          LCN   1
4337  5024          RAD   R4
4340  1423          LSD   R3
4341  6014          ZJF   IOP10
4342  2124          LDI   R4
4343  6012          ZJF   IOP10
4344  2524          LCI   R4
4345  4027          STD   R7              MULTIPLIER
4346  5427          AOD   R7
4347  6004          ZJF   4
4350  2026          LDD   R6
4351  5071          RAD   IDENT   1
4352  6504          NZB   4
4353  2071          LDD   IDENT   1
4354  6517          NZB   IOP9
4355  0501  IOP10   LCN   1
4356  5022          RAD   R2
4357  0411          LDN   11              ID LIST TYPE FOR CONSTANTS
4360  4070          STD   IDENT
4361  2203          LDF   3
4362  7101          JFI   1
4363  1655          STIDL
4364  4365          IOP11
4365  4226  IOP11   STF   IOP14   12      LOC DIV
4366  2211          LDF   IOP12
4367  4023          STD   R3
4370  2123          LDI   R3
4371  4122          STI   R2
4372  5422          AOD   R2
4373  5423          AOD   R3
4374  1604          LSF   IOP13
4375  6505          NZB   5
4376  6477          ZJB   IOP6
4377  4401  IOP12   IOP14
4400  4415  IOP13   IOP14   14
4401  0023  IOP14   23              (
4402  0000          0               LOC A
4403  0023          23              (
4404  7767          7767            LOC IJ
4405  0022          22              )
4406  0016          16              ,
4407  7767          7767            LOC IJ
4410  0013          13              =
4411  7773          7773            LOC 1
4412  0016          16              ,
4413  0000          0               LOC DIV
4414  0022          22              )
4415  5422  IOP15   AOD   R2
4416  4026          STD   RR
4417  2021          LDD   R1
4420  4044          STD   CHIW
4421  2204          LDF   4
4422  4055          STD   FORXIT
4423  7101          JFI   1
```

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4424  1336                    FOR10  -2
4425  4426                    IOP16
4426  2043  IOP16  LDD       LOCCHI
4427  0614         ADN       14
4430  4021         STD       R1              1ST AVAIL SLOT FOR TOMS SYMBOL TAB
4431  4022         STD       R2
4432  2144  IOP17  LDI       CHIW
4433  4023         STD       R3
4434  0723         SBN       23
4435  6106         NZF       IOP19
4436  0402         LDN       2
4437  4122         STI       R2
4440  5444  IOP18  AOD       CHIW
4441  5422         AOD       R2
4442  6510         NZB       IOP17
4443  0623  IOP19  ADN       23
4444  6304         NJF       4
4445  0422  IOP20  LDN       22
4446  7101         JFI       1
4447  52e6                    TILT
4450  5444         AOD       CHIW
4451  2144         LDI       CHIW
4452  0716         SBN       16              .
4453  6107         NZF       IOP21
4454  5423         AOD       R3
4455  0401         LDN       1
4456  4122         STI       R2
4457  5422         AOD       R2
4460  2123         LDI       R3
4461  6522         NZB       IOP18  -1
4462  0603  IOP21  ADN       3               13
4463  6017         ZJF       IOP23           =
4464  0711         SBN       11              24
4465  6520         NZB       IOP20
4466  5423         AOD       R3
4467  0401  IOP22  LDN       1               V
4470  4122         STI       R2
4471  5422         AOD       R2
4472  2123         LDI       R3
4473  4122         STI       R2
4474  5422  IOP221 AOD       R2
4475  0404         LDN       4               END
4476  4122         STI       R2
4477  5422         AOD       R2
4500  7101         JFI       1                       R1 IS REG
4501  4570                    LTP             TO TOM  R2 1ST AVAIL SLOT
4502  0403  IOP23  LDN       3                 AND THENCE TO NEWSTT
4503  4122         STI       R2
4504  5422         AOD       R2
4505  5423         AOD       R3
4506  2123         LDI       R3
4507  4122         STI       R2
4510  5422         AOD       R2
4511  5444         AOD       CHIW
4512  2144         LDI       CHIW
4513  4023         STD       R3
4514  6647  IOP202 PJB       IOP20
4515  5423         AOD       R3
4516  2123         LDI       R3
4517  4122         STI       R2
```

```
4520  5422          AOD   R2
4521  5444          AOD   CHIW
4522  2144          LDI   CHIW
4523  0716          SBN   16
4524  6557  IOP203  NZB   IOP20
4525  5444          AOD   CHIW
4526  2144          LDI   CHIW
4527  4023          STD   R3
4530  6663          PJB   IOP20
4531  5423          AOD   R3
4532  2123          LDI   R3
4533  4122          STI   R2
4534  5444          AOD   CHIW
4535  5422          AOD   R2
4536  2144          LDI   CHIW
4537  4023          STD   R3
4540  0722          SBN   22
4541  6015          ZJF   IOP24
4542  5444          AOD   CHIW
4543  2144          LDI   CHIW
4544  4023          STD   R3
4545  5423          AOD   R3
4546  2123          LDI   R3
4547  4122          STI   R2
4550  5444          AOD   CHIW
4551  2144          LDI   CHIW
4552  0722          SBN   22
4553  6005          ZJF   IOP25
4554  7101          JFI   1
4555  4445                IOP20
4556  0502  IOP24   LCN   2          LOCN OF 1
4557  4122          STI   R2
4560  5444  IOP25   AOD   CHIW
4561  2144          LDI   CHIW
4562  0724          SBN   24
4563  6467          ZJB   IOP221
4564  0606          ADN   6
4565  6541          NZB   IOP203
4566  7101          JFI   1
4567  4440                IOP18
4570  0405  LTP     LDN   5
4571  4012          STD   K          TO K
4572  0501          LCN   1          -1
4573  3021          ADD   CL         TO S
4574  4010          STD   S
4575  2022          LDD   LCI        0 TO
4576  4011          STD   T          T
4577  0417          LDN   LLIO
4600  4111          STI   T          CODE LIST
4601  5411          AOD   T
4602  2047          LDD   CONTRL     CONTROL WORD
4603  4111          STI   T          TO CODE LIST
4604  5411          AOD   T
4605  2047          LDD   CONTRL
4606  0701          SBN   1
4607  6003          ZJF   3          INPUT
4610  0701          SBN   1
4611  6105          NZF   5          21
4612  2053          LDD   FCONT      OUTPUT
4613  6033          ZJF   AA
```

```
4614  7101          JFI    1
4615  4445                 IOP20              TILT
4616  0701          SBN    1
4617  6105          NZF    5
4620  2202          LDF    2
4621  6106          NZF    6
4622  5344                 5344               RE
4623  5156                 5156               PU
4624  0701          SBN    1
4625  6511          NZB    11
4626  2303          LDB    3
4627  4071          STD    IDENT    1
4630  0441          LDN    41                 IDLIST TYPE
4631  4070          STD    IDENT
4632  2203          LDF    3
4633  7101          JFI    1
4634  1655                 STIDL
4635  4636                 LTP1
4636  4004   LTP1   STD    P
4637  5404          AOD    P
4640  2053          LDD    FCONT
4641  4111          STI    T
4642  5411          AOD    T
4643  2104          LDI    P
4644  4111          STI    T
4645  5411          AOD    T
4646  0400   AA     LDN    0                  0 VARIABLE
4647  4003          STD    C                  COUNTER
4650  5410   B      AOD    S                  ADVANCE SCAN LIST
4651  2110          LDI    S
4652  3221          ADF    JFI
4653  4201          STF    1
4654  7101          JFI    1
4655  4674                 V                  VARIABLE
4656  4711                 PAR                PARENTHESES
4657  4721                 QUANT              QUANTIFIER
4660  4661                 CD
4661  2003   CD     LDD    C
4662  6002          ZJF    2
4663  4101          STI    LP
4664  2022          LDD    LCI
4665  4050          STD    BEGBUF
4666  2011          LDD    T
4667  [illegible]   SBN    1
4670  4[illegible]1 STD    ENDBUF
4671  7101          JFI    1
4672  5274                 PAWB
4673  7100   JFI    JFI    0
4674  5403   V      AOD    C                  BUMP C
4675  0701          SBN    1                  C = 1
4676  6106          NZF    CONTU
4677  0420          LDN    LLIOC
4700  4111          STI    T                  IN CODE LIST
4701  5411          AOD    T
4702  4001          STD    LP                 SAVE PLACE FOR VARIABLE COUNT
4703  5411          AOD    T
4704  5410   CONTU  AOD    S
4705  2110          LDI    S
4706  4111          STI    T                  TO LIST
4707  5411          AOD    T
```

```
4710  6540          NZB   B
4711  0402  PAR     LDN   LLINIT
4712  4111          STI   T              LIST
4713  2011          LDD   T              T TO K
4714  4112          STI   K
4715  5412          AOD   K
4716  0403          LDN   3              BUMP T BY 3
4717  5011          RAD   T
4720  6144          NZF   A
4721  0501  QUANT   LCN   1
4722  5012          RAD   K              K = 1
4723  2112          LDI   K              PARENTHESIS K TO W
4724  4002          STD   W
4725  0402          LDN   2
4726  5010          RAD   S
4727  5402          AOD   W
4730  2110          LDI   S
4731  4102          STI   W              INSERT MIN IN CODE LIST
4732  0501          LCN   1
4733  5010          RAD   S              INSERT QUANTIFIER IN CODE LIST
4734  5402          AOD   W
4735  2110          LDI   S
4736  4102          STI   W
4737  5402          AOD   W
4740  0403          LDN   LLINCR
4741  4111          STI   T
4742  5411          AOD   T
4743  2110          LDI   S              QUANTIFIER TO LIST
4744  4111          STI   T
4745  5411          AOD   T
4746  0402          LDN   2
4747  5010          RAD   S
4750  2110          LDI   S              MAX TO LIST
4751  4111          STI   T
4752  5411          AOD   T
4753  5410          AOD   S
4754  2110          LDI   S              DELTA TO LIST
4755  4111          STI   T
4756  5411          AOD   T
4757  2002          LDD   W              RELATIVE LOCATION TO
4760  3422          SBD   LCI            LIST
4761  3063          ADD   ORG
4762  4111          STI   T
4763  5411          AOD   T
4764  2003  A       LDD   C
4765  6003          ZJF   OVER
4766  2003          LDD   C
4767  4101          STI   LP
4770  7101  OVER    JPI   1
4771  4646          AA
4772  2044  LGOTO   LDD   CHIW
4773  4050          STD   BEGBUF
4774  4051          STD   ENDBUF
4775  0604          ADN   4
4776  4001          STD   R1R
4777  0400          LDN   0              SET CNVERT
5000  4020          STD   FF6              CONNECTOR FOR OCTAL
5001  2101          LDI   R1R
5002  0712          SBN   12
5003  6217          PJF   LGOSA          GOTO(
```

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5004  2001          LDD   R1R
5005  4002          STD   R2R
5006  5402          AOD   R2R
5007  2102          LDI   R2R
5010  0712          SBN   12
5011  6703          NJB   3
5012  0712          SBN   12
5013  6004          ZJF   LG01A
5014  0414    LG01  LDN   14          FORMAT ERROR
5015  7101          JFI   1             IN GO TO
5016  5266          TILT
5017  0406    LG01A LDN   LLTRA
5020  4151          STI   ENDBUF
5021  6115          NZF   LG04
5022  0711    LG03A SBN   11          22
5023  6007          ZJF   LG03
5024  0713          SBN   13          36
5025  6611          PJB   LG01
5026  0406          LDN   LLTRA
5027  4150          STI   BEGBUF
5030  5451          AOD   ENDBUF
5031  6147          NZF   LG088
5032  5401    LG03  AOD   R1R
5033  0407          LDN   LLTRAI
5034  4151    LG033 STI   ENDBUF      FROM ASSIGN
5035  5451          AOD   ENDBUF
5036  5451    LG04  AOD   ENDBUF      ENTER FROM IFLP
5037  5420          AOD   FF6
5040  2203          LDF   3
5041  7101          JFI   1
5042  2173          CNVERT
5043  5044          LG05
5044  0421    LG05  LDN   21          0021 IDLIST LABEL TYPE
5045  4070          STD   IDENT
5046  2203          LDF   3
5047  7101          JFI   1
5050  1655          STIDL
5051  5052          LG06
5052  4021    LG06  STD   R1          IDLIST LOCN
5053  5421          AOD   R1
5054  2121          LDI   R1          VAR LIS LOCN
5055  4151          STI   ENDBUF
5056  2102          LDI   R2R         TERM SYMBOL
5057  0716          SBN   16
5060  6104          NZF   4
5061  5402          AOD   R2R         ,
5062  4001          STD   R1R
5063  6525          NZB   LG04
5064  0704          SBN   4           22
5065  6005          ZJF   LG08
5066  0702          SBN   2           END
5067  6553          NZB   LG01
5070  7101    LG07  JFI   1
5071  5274          PAUS  EXITS TO IFLP
5072  5402    LG08  AOD   R2R
5073  2102          LDI   R2R
5074  0716          SBN   16
5075  6561          NZB   LG01
5076  5402    LG0888 AOD  R2R         FROM PAUSE
5077  4001          STD   R1R
```

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5100  2206  LG088  LDF   LG09
5101  4021         STD   R1          SET
5102  2205         LDF   LG010         EXIT
5103  4121         STI   R1            IN
5104  7101         JFI   1             FORMOP
5105  1177               FOR1C
5106  1306  LG09         FOR6AA  -
5107  5110  LG010        LG010   1
5110  4023         STD   R3          ID LIST LOCN
5111  5423         AOD   R3
5112  2050         LDD   BEGBUF
5113  0601         ADN   1
5114  4022         STD   R2
5115  2123         LDI   R3
5116  4122         STI   R2
5117  2203         LDF   3
5120  4121         STI   R1
5121  6531         NZB   LG07
5122  1307               FOR7
5123  2044  LPAUST LDD   CHIW
5124  4050         STD   BEGBUF
5125  4051         STD   ENDBUF
5126  4002         STD   R2R
5127  0400         LDN   0
5130  4021         STD   R1
5131  5402         AOD   R2R
5132  2102         LDI   R2R
5133  0717         SBN   17
5134  6303         NJF   3
5135  0705         SBN   5
5136  6505         NZB   5
5137  0501         LCN   1
5140  3002         ADD   R2R
5141  4022         STD   R2
5142  2122         LDI   R2
5143  0744         SBN   44          E
5144  6003         ZJF   3
5145  0410         LDN   LLSTOP
5146  6102         NZF   2
5147  0411         LDN   LLPAUS
5150  4150         STI   BEGBUF
5151  2102  LPA1   LDI   R2R
5152  0712         SBN   12
5153  6207         PJF   LPA4
5154  2021         LDD   R1          NUMERIC
5155  0110         SHA   10
5156  1502         LSI   R2R
5157  4021         STD   R1
5160  5402         AOD   R2R
5161  6510         NZB   LPA1
5162  0712  LPA4   SBN   12
5163  6106         NZF   LPA5
5164  5451         AOD   ENDBUF      END
5165  2021         LDD   R1
5166  4151         STI   ENDBUF
5167  7101         JFI   1
5170  5274               PAWB
5171  5451  LPA5   AOD   ENDBUF      PAUSS TO BEGBUF
5172  5451         AOD   ENDBUF
5173  2021         LDD   R1
```

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5174  4151          STI   ENDBUF
5175  0412          LDN   LLPASS
5176  4150          STI   BEGBUF
5177  7101          JFI   1
5200  5076                LGO888
5201  2044  LASSIG LDD   CHIW
5202  4050          STD   BEGBUF
5203  4051          STD   ENDBUF
5204  4001          STD   R1R
5205  5401          AOD   R1R
5206  2101          LDI   R1R
5207  0712          SBN   12
5210  6603          PJB   3
5211  2001          LDD   R1R
5212  4021          STD   R1
5213  5421          AOD   R1
5214  2121          LDI   R1
5215  0755          SBN   55          T
5216  6503          NZB   3
5217  0422          LDN   22          )
5220  4121          STI   R1
5221  5421          AOD   R1
5222  0416          LDN   16          ,
5223  4121          STI   R1
5224  0413          LDN   LLASSI
5225  7101          JFI   1
5226  5034                LGO33
5227  2205  LRETUR LDF   LRE1
5230  4046          STD   PILOC
5231  0414          LDN   LLRETU
5232  7101          JFI   1
5233  5342                PIAWAY
5234  0347  LRE1          NEWSTT
5235  2044  LFPTLT LDD   CHIW
5236  4050          STD   BEGBUF
5237  4051          STD   ENDBUF
5240  4001          STD   R1R
5241  5401          AOD   R1R
5242  2101          LDI   R1R
5243  0712          SBN   12
5244  6603          PJB   3
5245  0501          LCN   1
5246  5001          RAD   R1R
5247  2101          LDI   R1R
5250  0732          SBN   32          K FOR DIV CHK
5251  6003          ZJF   3
5252  0415          LDN   LLFAUL
5253  6102          NZF   2
5254  0416          LDN   LLCHKD
5255  4150          STI   BEGBUF
5256  5401          AOD   R1R
5257  0400          LDN   0
5260  4020          STD   FF6
5261  7101          JFI   1
5262  5036                LGO4
5263  0433  ERR33   LDN   33
5264  6102          NZF   TILT
5265  0416  LNOCDO LDN   16
5266  0000  TILT    ERR               ERROR TYPE IN A REGISTER
5267  5467          AOD   TILTCT
```

```
5270  2041          LDD   SN              STATEMENT NBR IN A REGISTER
5271  7700  LWAIT   HLT
5272  7101          JFI   1
5273  0347                NEWSTT
5274  2213  PAWB    LDF   PAWB2
5275  4046          STD   PTLOC
5276  2150          LDI   BEGBUF
5277  7101          JFI   1
5300  5342                PTAWAY
5301  5450  PAWB1   AOD   BEGBUF
5302  0701          SBN   1
5303  1451          LSD   ENDBUF
5304  6506          NZB   6
5305  4020          STD   FF6             RESET FF6
5306  7102          JFI   2
5307  5301  PAWB2         PAWB1
5310  0347                NEWSTT
5311  4217  PAWBB   STF   PAWBB3
5312  2205          LDF   PAWBB2
5313  4046          STD   PTLOC
5314  2150          LDI   BEGBUF
5315  7101          JFI   1
5316  5342                PTAWAY
5317  5320  PAWBB2        PAWBB1
5320  5450  PAWBB1  AOD   BEGBUF
5321  0701          SBN   1
5322  1451          LSD   ENDBUF
5323  6507          NZB   7
5324  2065  PAWBB5  LDD   PT1
5325  1637          LSF   PTA4
5326  6103          NZF   3
5327  7101          JFI   1
5330  0000  PAWBB3        0               EXIT
5331  2065          LDD   PT1
5332  4260          STF   PTA66
5333  2203          LDF   PTABB4
5334  4046          STD   PTLOC
5335  6130          NZF   PTA5
5336  5337  PTABB4        PTABB4  1
5337  2224          LDF   PTA3
5340  4252          STF   PTA66
5341  6512          NZB   PAWBB3 -1
5342  4217  PTAWAY  STF   PTA1
5343  0277          LPN   77
5344  4216          STF   PTA2
5345  1614          LSF   PTA1
5346  0110          SHA   10
5347  0110          SHA   10
5350  4165          STI   PT1             LOW CORE LOCN OF BUFF
5351  5463          AOD   OCC
5352  5465          AOD   PT1
5353  2207          LDF   PTA2
5354  4165          STI   PT1
5355  5465          AOD   PT1
5356  1634          LSF   PTA66
5357  6006          ZJF   PTA5
5360  7046          JPI   PTLOC
5361  0000  PTA1    BSS   1
5362  0000  PTA2    BSS   1
5363  0133  PTA3          PTA7    24
```

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5364  0107  PTA4          PTA7
5365  2301  PTA5    LDB   1              BUFFER FILLED  OUTPUT
5366  4065          STD   PT1              AND COMPUTE PARITY
5367  2165  PTA6    LDI   PT1
5370  0102          SHA   2
5371  1565          LSI   PT1
5372  0102          SHA   2
5373  1565          LSI   PT1
5374  4313          STB   PTA1
5375  0110          SHA   10
5376  1715          LSB   PTA1
5377  0240          LPN   40
5400  0340          LSN   40
5401  0102          SHA   2
5402  5165          RAI   PT1
5403  5465          AOD   PT1
5404  1606          LSF   PTA66
5405  6516          NZB   PTA6
5406  2322          LDB   PTA4
5407  4065          STD   PT1
5410  7504          EXF   4
5411  7304          OUT   4
5412  0133  PTA66          PTA7    24
5413  7046          JPI   PTLOC
5414  4104                4104
5415  0107                PTA7
5416  7101  LEND    JFI   1
5417  5472  PROG          PROG1
5420  2212  PROG2   LDF   PROG21
5421  4046          STD   PTLOC
5422  0410          LDN   LLSTOP
5423  7101          JFI   1
5424  5342                PTAWAY
5425  2206  PROG2A  LDF   PROG23
5426  4046          STD   PTLOC
5427  0400          LDN   0
5430  7101          JFI   1
5431  5342                PTAWAY
5432  5425  PROG21        PROG2A
5433  5434  PROG23        PROG2B
5434  2062  PROG2B  LDD   VLC
5435  3463          SBD   OCC
5436  1462          LSD   VLC
5437  1463          LSD   OCC
5440  0201          LPN   1
5441  6003          ZJF   3
5442  0427          LDN   27
5443  0000          ERR                  OBJECT CODE TOO LARGE
5444  2067  PROG2D  LDD   TILTCT
5445  7700          HLT                  END OF COMPILATION
5446  7523          EXF   23             BRING
5447  0456          LDN   56
5450  0102          SHA   2              END
5451  4077          STD   77
5452  7600          INA
5453  6401          ZJB   1
5454  6105          NZF   5
5455  7600          INA
5456  6103          NZF   3
5457  7101          JFI   1
```

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5460  0213                RALFWA
5461  0277          LPN   77
5462  0110          SHA   10
5463  0110          SHA   10
5464  4177          STI   77
5465  7600          INA
5466  5177          RAI   77
5467  5477          AOD   77
5470  6513          NZB   13
5471  4102                4102
5472  0400    PROG1 LDN   0
5473  4061          STD   RANK
5474  2043          LDD   LOCCHI
5475  3457          SBD   ORGB
5476  6103          NZF   3
5477  7101          JFI   1
5500  0347                NEWSTT
5501  2301          LDB   1
5502  4001          STD   R1R
5503  0514          LCN   14
5504  5057          RAD   ORGB          FOLLOW WITH PROX
5505  2057    PROX  LDD   ORGB
5506  4060          STD   ORGB1
5507  2143          LDI   LOCCHI
5510  4160          STI   ORGB1
5511  0724          SBN   24
5512  6004          ZJF   4
5513  5443          AOD   LOCCHI
5514  5460          AOD   ORGB1
5515  6506          NZB   6
5516  2057          LDD   ORGB
5517  4060          STD   ORGB1
5520  4043          STD   LOCCHI
5521  0614          ADN   14
5522  4044          STD   CHIW
5523  7001          JPI   R1R
5524  2043    LCALL LDD   LOCCHI
5525  0620          ADN   20            14+4
5526  4001          STD   R1R
5527  0400          LDN   0
5530  4037    LCALA STD   F3F           F3F = 0 IF CALL  = 1 IF SR
5531  2206          LDF   LCA1
5532  4035          STD   F1F
5533  2205          LDF   LCA2
5534  4135          STI   F1F
5535  7101          JFI   1
5536  1177                FOR1C
5537  1305    LCA1        FOR6AA
5540  5541    LCA2        LCA2    1
5541  2206          LDF   6
5542  4135          STI   F1F
5543  0450          LDN   50
5544  5070          RAD   IDENT
5545  2203          LDF   3
5546  7101          JFI   1
5547  1655                STIDL
5550  5551    LCA5        LCA5    1
5551  4035          STD   F1F
5552  2037          LDD   F3F
5553  6010          ZJF   LCA5A
```

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5554  0403          LDN   3              SUBROUTINE$STORE
5555  5035          RAD   F1F              OCC
5556  2063          LDD   OCC
5557  4135          STI   F1F
5560  0403          LDN   3              SET MASK TO MAKE TYPE 3 AND 7*S
5561  4064          STD   FPMASK
5562  6116          NZF   LCA12
5563  2213    LCA5A LDF   LCA8
5564  4046          STD   PTLOC
5565  0401          LDN   LLCALL
5566  7101          JFI   1
5567  5342                PTAWAY
5570  0401    LCA9  LDN   1
5571  5035          RAD   F1F            VAR LIS LOCN OF SR
5572  2205          LDF   LCA11
5573  4046          STD   PTLOC
5574  2135          LDI   F1F
5575  6507          NZB   LCA9    -2
5576  5570    LCA8        LCA9
5577  5600    LCA11       LCA11   1
5600  2002    LCA12 LDD   R2R            FROM FORMOP$LOCN OF ( ENTER FROM
5601  4044          STD   CHIW
5602  2203          LDF   3
5603  7101          JFI   1
5604  1141                FORMOP
5605  5606                LCA13          FORM ID LIST IN CHIW THRU END
5606  2044    LCA13 LDD   CHIW
5607  4051          STD   ENDBUF
5610  0701          SBN   1
5611  4050          STD   BEGBUF
5612  0400          LDN   0
5613  4150          STI   BEGBUF
5614  2144    LCA13A LDI  CHIW
5615  6304          NJF   4
5616  0724          SBN   24
5617  6013          ZJF   LCA15
5620  6310          NJF   LCA14
5621  2144          LDI   CHIW           ID LIST
5622  4035          STD   F1F
5623  5435          AOD   F1F
5624  2135          LDI   F1F            VAR LIS
5625  4151          STI   ENDBUF
5626  5550          AOI   BEGBUF
5627  5451          AOD   ENDBUF
5630  5444    LCA14 AOD   CHIW
5631  6515          NZB   LCA13A
5632  0501    LCA15 LCN   1
5633  5051          RAD   ENDBUF
5634  7101          JFI   1
5635  5274                PAWB
5636  2235    PROA1 LDF   PROC1          LFORMA
5637  3421          SBD   R1
5640  6110          NZF   10
5641  2204          LDF   4
5642  4301          STB   1
5643  2203          LDF   3
5644  5063          RAD   OCC
5645  7021          JPI   R1
5646  0300                LOFORM
5647  0765    LER33C      ER33C
```

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5650  2301          LDR   LER33C
5651  4077          STD   77
5652  2224          LDR   LERR33
5653  4177          STI   77
5654  2220          LDF   PROC6          LOC ALFA
5655  4001          STD   R1R
5656  2217          LDF   PROC8
5657  4101          STI   R1R
5660  4001          STD   R1R            EXIT FROM PROX
5661  7510          EXF   10
5662  7400          OTN   0
5663  7400          OTN   0
5664  2206          LDF   6
5665  4046          STD   PTLOC
5666  2063          LDD   OCC
5667  7101          JFI   1
5670  5342                PTAWAY
5671  4104                4104
5672  5700                PROA22
5673  6321  PROC1         LFORMA
5674  0733  PROC6         PROA
5675  5706  PROC8         PROA2
5676  5263  LERR33        ERR33
5677  0761  LER33A        ER33A
5700  0501  PROA22 LCN    1
5701  5063          RAD   OCC
5702  2307          LDR   PROC1
5703  4057  PROA1W  STD   ORGB
5704  7101          JFI   1
5705  5505                PROX
5706  7101  PROA2   JFI   1
5707  5710  PROB          PROB1
5710  2244  PROB1   LDF   PROC2          LD1MEN
5711  3421          SBD   R1
5712  6102          NZF   2
5713  7021          JPI   R1
5714  2315          LDR   LER33A
5715  4077          STD   77
5716  2320          LDR   LERR33
5717  4177          STI   77
5720  2235          LDF   PROC3          LSUBR0
5721  3421          SBD   R1
5722  6044          ZJF   PROB1Y
5723  2234          LDF   PROC5          LCALL
5724  4057  PROB1W  STD   ORGB
5725  2226          LDR   LER33B
5726  4077          STD   77
5727  2331          LDR   LERR33
5730  4177          STI   77
5731  5477          AOD   77
5732  2334          LDR   LERR33
5733  4177          STI   77
5734  2230          LDF   PROC12         LPROG
5735  4001          STD   R1R
5736  2227          LDF   PROC13         SET
5737  4101          STI   R1R            GAMMA2
5740  2344          LDR   PROC6          LALFA
5741  4001          STD   R1R
5742  2217          LDF   PROC9          SET
5743  4101          STI   R1R            ALFA3
```

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5744  0512          LCN   12
5745  4001          STD   R1R
5746  2063          LDD   OCC
5747  4101          STI   R1R
5750  2021          LDD   R1
5751  4001          STD   R1R             SET PROX EXIT
5752  6546          NZB   PROA1W  1
5753  0763  LER33B        ER33B
5754  6113  PROC2         LDIMEN
5755  6010  PROC3         LSUBRO
5756  5416  PROC4         LEND
5757  5524  PROC5         LCALL
5760  5636  PROC7         PROA1
5761  0735  PROC9         PROA3
5762  5773  PROC10        PROB2
5763  6003  PROC11        PROB3
5764  5417  PROC12        PROG
5765  5420  PROC13        PROG2
5766  2304  PROB1Y LDB    PROC10          SET
5767  4360          STB   PROB            BETA2
5770  4001          STD   R1R             SET EXIT IN PROX
5771  2315          LDB   PROC2
5772  6567          NZB   PROA1W
5773  2316  PROR2   LDB   PROC3
5774  3421          SBD   R1
5775  6003          ZJF   3
5776  2316          LDB   PROC7
5777  6553          NZB   PROB1W
6000  2315          LDB   PROC11          SET
6001  4372  PROR2W STB    PROB            BETA3
6002  7021          JPI   R1
6003  2325  PROR3   LDB   PROC4
6004  3421          SBD   R1
6005  6503          NZB   3
6006  2324          LDB   PROC10
6007  6506          NZB   PROB2W
6010  2043  LSUBRO LDD    LOCCHI
6011  0626          ADN   26
6012  4001          STD   R1R
6013  2205          LDF   5
6014  5205          RAF   5
6015  4061          STD   RANK
6016  7101          JFI   1
6017  5530          LCALA
6020  0100          100
6021  0000  LSUR1         0
6022  2217  LNONLO LDF    LNO2            SET
6023  4021          STD   R1                FORMOP
6024  2213          LDF   LNO1              EXITS
6025  4121          STI   R1
6026  5421          AOD   R1
6027  2213          LDF   LNO3
6030  4121          STI   R1
6031  2043          LDD   LOCCHI
6032  0614          ADN   14
6033  4060          STD   NOLLWA          ORGB1
6034  4057          STD   NOLFWA          ORGB
6035  0610          ADN   10              LENGTH OF NONLOCAL
6036  4001          STD   R1R
6037  7101  LNO1    JFI   1
```

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6040  1177                FOR1C
6041  1267  LNO2          FOR6AB
6042  6043  LNO3          LNO3    1
6043  2071        LDD     IDENT   1       RETURN FROM FORMOP W/IDENT IN
6044  4160        STI     NOLLWA            IDENT+1 THRU 3
6045  5460        AOD     NOLLWA
6046  2072        LDD     IDENT   2
6047  4160        STI     NOLLWA
6050  5460        AOD     NOLLWA
6051  2073        LDD     IDENT   3
6052  4160        STI     NOLLWA
6053  5460        AOD     NOLLWA
6054  2102        LDI     R2R
6055  0716        SBN     16
6056  6103        NZF     3
6057  5402        AOD     R2R             ,$ BACK FOR
6060  6522        NZR     LNO1    -1        MORE WORDS
6061  0706        SBN     6               24
6062  6004        ZJF     4
6063  0415        LDN     15              WRONG
6064  7101        JFI     1                 FORMAT
6065  5266                TILT              IN NONLOCAL
6066  2224        LDF     LNO4            END OF STATEMENT
6067  4121        STI     R1
6070  0501        LCN     1
6071  5021        RAD     R1
6072  2302        LDR     2
6073  4121        STI     R1
6074  2060        LDD     NOLLWA          IE. LOCB1
6075  4001        STD     R1R
6076  0614        ADN     14
6077  4002        STD     R2R
6100  2143        LDI     LOCCHI          MOVE
6101  4101        STI     R1R               1ST 12
6102  5443        AOD     LOCCHI
6103  5401        AOD     R1R               X DOWN.
6104  1402        LSD     R2R
6105  6505        NZR     5
6106  2060        LDD     NOLLWA
6107  4043        STD     LOCCHI
6110  7101        JFI     1
6111  0347                NEWSTT
6112  3002  LNO4  ADD     R2R
6113  2044  LDIMEN LDD     CHIW
6114  0605        ADN     5
6115  4021        STD     R1
6116  0604        ADN     4
6117  4022        STD     R2
6120  0400        LDN     0
6121  4023        STD     R3
6122  2121        LDI     R1              S + I + O + N
6123  5023        RAD     R3
6124  5421        AOD     R1
6125  1422        LSD     R2
6126  6504        NZR     4
6127  2423        LCD     R3
6130  3204        ADF     LDIM1           54+30+50+35= 211
6131  6006        ZJF     LDIM4
6132  7101        JFI     1
6133  2513                LARITH
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6134  0211  LDIM1          211
6135  1305  LDIM2          FOR6AA
6136  6147  LDIM3          LDIM6
6137  2302  LDIM4  LDB     LDIM2
6140  4021          STD     R1
6141  2303          LDB     LDIM3          SET
6142  4121          STI     R1              EXIT FROM FORMOP
6143  2022  LDIM5  LDD     R2
6144  4001          STD     R1R
6145  7101          JFI     1              STORE ARRAY NAME
6146  1177                  FOR1C           IN IDENT+1 THRU IDENT+M
6147  2002  LDIM6  LDD     R2R             M IS IN IDENT
6150  4022          STD     R2             (TERMINATING SYM) IS IN R2R , R2
6151  2470          LCD     IDENT
6152  4021          STD     R1
6153  5054          RAD     LIDFWA
6154  4023          STD     R3
6155  0471          LDN     IDENT   1
6156  4024          STD     R4
6157  2124          LDI     R4
6160  4123          STI     R3             STORE ARRAY NAME
6161  5423          AOD     R3              IN ID LIST
6162  5424          AOD     R4
6163  5421          AOD     R1
6164  6505          NZB     5
6165  0501          LCN     1              DOWN
6166  5054          RAD     LIDFWA          ID LIST INDEx
6167  2071          LDD     IDENT   1      CHECK
6170  6304          NJF     4
6171  0401          LDN     1                INT
6172  4154          STI     LIDFWA           OR
6173  6104          NZF     4
6174  0404          LDN     4
6175  4154          STI     LIDFWA         CHANGE
6176  0403          LDN     3
6177  4021          STD     R1             TOTAL DIMENSION OF ARRAY
6200  2122          LDI     R2
6201  0723          SBN     23             (
6202  6004          ZJF     4
6203  0426  LDIM8  LDN     26
6204  7101          JFI     1               FORMAT
6205  5266                  TILT             IN DIMENSION STATEMENT
6206  0504          LCN     4
6207  4023          STD     R3
6210  0501  LDIM9  LCN     1
6211  5054          RAD     LIDFWA
6212  0400          LDN     0
6213  4024          STD     R4
6214  5422  LDIM10 AOD     R2             UP SYMBOL COUNTER
6215  2122          LDI     R2
6216  0712          SBN     12
6217  6206          PJF     6
6220  2024          LDD     R4             NUMERIC
6221  0112          SHA     12
6222  3122          ADI     R2
6223  4024          STD     R4
6224  6510          NZB     LDIM10
6225  0704          SBN     4
6226  6167          NZF     LDIM12
6227  2024  LDIM11 LDD     R4
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6230  4154          STI   LIDFWA
6231  2424          LCD   R4
6232  4024          STD   R4
6233  2021          LDD   R1
6234  4025          STD   R5
6235  0400          LDN   0              MULT CURRENT
6236  4021          STD   R1              DIMENSION BY
6237  2025          LDD   R5               TOTAL
6240  5021          RAD   R1                ARRAY DIMENSION
6241  5424          AOD   R4
6242  6503          NZB   3
6243  5423          AOD   R3
6244  2122          LDI   R2
6245  0716          SBN   16
6246  6436          ZJB   LDIM9
6247  0501          LCN   1              )$ FILL REST OF DIM WITH 0*S
6250  5054          RAD   LIDFWA
6251  5423          AOD   R3
6252  6004          ZJF   4
6253  0400          LDN   0
6254  4154          STI   LIDFWA
6255  6406          ZJB   6
6256  2421          LCD   R1             STORE VARLIS LOCN
6257  0701          SBN   1
6260  3062          ADD   VLC             IN ID LIST
6261  4154          STI   LIDFWA
6262  0703          SBN   3
6263  4062          STD   VLC
6264  0501          LCN   1
6265  5054          RAD   LIDFWA
6266  2216          LDF   LDIM13         6000
6267  1470          LSD   IDENT
6270  4154          STI   LIDFWA
6271  5422          AOD   R2
6272  2122          LDI   R2
6273  0716          SBN   16
6274  6104          NZF   4
6275  5422          AOD   R2
6276  7101          JFI   1
6277  6143                LDIM5
6300  0706          SBN   6
6301  6004          ZJF   4
6302  7101  LDIM14  JFI   1
6303  6203                LDIM8
6304  6000  LDIM13        6000
6305  2206          LDF   6              RESTORE CONNECTOR
6306  4021          STD   R1              IN FORMOP
6307  2205          LDF   5                AND GO TO NEW STATEMENT
6310  4121          STI   R1
6311  7101          JFI   1
6312  0347                NEWSTI
6313  1305                FOR6AA
6314  1655                STIDL
6315  0704  LDIM12  SBN   4              )
6316  6514          NZB   LDIM14
6317  7101          JFI   1
6320  6227                LDIM11
6321  5444  LFORMA  AOD   CHIW
6322  4003          STD   R3R
6323  0605          ADN   5
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6324  4001          STD   R1R
6325  2101          LDI   R1R
6326  0723          SBN   23              LEFT PAREN
6327  6005          ZJF   5               YES
6330  0431  FORM12  LDN   31              TILT CODE
6331  7101          JFI   1
6332  5266          TILT
6333  5401          AOD   R1R
6334  0400  FORM02  LDN   0               ZERO
6335  4002          STD   R2R             N COUNTER
6336  2203          LDF   3
6337  7101          JFI   1
6340  6731          FORM00
6341  6342          FORM03
6342  2002  FORM03  LDD   R2R
6343  6105          NZF   5
6344  2101          LDI   R1R             LEFT PAREN
6345  0723          SBN   23
6346  6142          NZF   FORM04          NO
6347  5402          AOD   R2R
6350  4103          STI   R3R
6351  2101          LDI   R1R             H
6352  0747          SBN   47
6353  6011          ZJF   11
6354  0712          SBN   12              X-H
6355  6113          NZF   FORM10
6356  2205          LDF   5
6357  4103          STI   R3R
6360  5403          AOD   R3R
6361  2002          LDD   R2R
6362  6116          NZF   FOR101
6363  1200          1200
6364  2002          LDD   R2R             YES
6365  1637          LSF   FORM05          HOLLERITH CODE
6366  4103          STI   R3R
6367  6137          NZF   FORM40
6370  2235  FORM10  LDF   FORM07
6371  1402          LSD   R2R             REPEAT CODE
6372  4103          STI   R3R
6373  2101          LDI   R1R
6374  0723          SBN   23
6375  6107          NZF   FORM11
6376  5403          AOD   R3R
6377  0400          LDN   0
6400  4103  FOR101  STI   R3R
6401  5403          AOD   R3R
6402  5401          AOD   R1R
6403  6547          NZB   FORM02          NEXT CHAR
6404  5403  FORM11  AOD   R3R
6405  0401          LDN   1
6406  4103          STI   R3R
6407  5403          AOD   R3R
6410  2101  FORM04  LDI   R1R             DETERMINE TYPE
6411  0730          SBN   30
6412  6030          ZJF   FORMI           TYPE
6413  0714          SBN   14
6414  6030          ZJF   FORMEX          E TYPE
6415  0701          SBN   1
6416  6030          ZJF   FORMFX          F TYPE
6417  0703          SBN   3
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6420  6030          ZJF   FORMO          0 TYPE
6421  0610          ADN   10             FORM04
6422  6030          ZJF   FORMTX         T TYPE
6423  6174          NZF   FORM15  1
6424  0700  FORM05         700
6425  1000  FORM07         1000
6426  5403  FORM40  AOD   R3R
6427  2062          LDD   VLC
6430  3402          SBD   R2R
6431  4062          STD   VLC
6432  4103          STI   R3R
6433  5403          AOD   R3R
6434  7505          EXF   5
6435  7400          OTN   0
6436  7400          OTN   0
6437  7101          JFI   1
6440  6646                FORM06
6441  4104                4104
6442  0440  FORMI   LDN   40
6443  6110          NZF   10
6444  0430  FORMEX  LDN   30
6445  6106          NZF   6
6446  0420  FORMFX  LDN   20
6447  6104          NZF   4
6450  0460  FORMO   LDN   60
6451  6102          NZF   2
6452  0450  FORMTX  LDN   50
6453  0110          SHA   10
6454  4103          STI   R3R
6455  5401          AOD   R1R
6456  0400          LDN   0
6457  4002          STD   R2R
6460  2203          LDF   3
6461  7101          JFI   1
6462  6731                FORM00
6463  6464                FORM14
6464  2101  FORM14  LDI   R1R
6465  0712          SBN   12
6466  6005          ZJF   FORM20
6467  5403          AOD   R3R
6470  2002          LDD   R2R
6471  4103          STI   R3R
6472  6124          NZF   FORM15
6473  2103  FORM20  LDI   R3R
6474  3615          SBF   FORM17
6475  6231          PJF   FORM21 -5
6476  2103          LDI   R3R
6477  1402          LSD   R2R
6500  4103          STI   R3R
6501  5403          AOD   R3R
6502  5401          AOD   R1R
6503  0400          LDN   0
6504  4002          STD   R2R
6505  2203          LDF   3
6506  7101          JFI   1
6507  6731                FORM00
6510  6514                FORM16
6511  0400  FORM17        400
6512  7101          JFI   1
6513  6333                FORM02 -1
```

```
6514  2002  FORM16 LDD   R2R
6515  4103         STI   R3R
6516  5403  FORM15 AOD   R3R
6517  2101         LDI   R1R
6520  0714         SBN   14
6521  6044         ZJF   FORM23
6522  0702         SBN   2
6523  6411         ZJB   FORM16 -2
6524  0704         SBN   4
6525  6003         ZJF   3
6526  7101         JFI   1
6527  6330               FORM12
6530  5401         AOD   R1R
6531  2003         LDD   R3R
6532  4004         STD   R4R
6533  050_  FORM21 LCN   2
6534  5004         RAD   R4R
6535  2104         LDI   R4R
6536  0110         SHA   10
6537  0207         LPN   7
6540  0701         SBN   1
6541  6506         NZB   FORM21
6542  5404         AOD   R4R
6543  2104         LDI   R4R
6544  6116         NZF   FORM22
6545  2003         LDD   R3R
6546  3404         SBD   R4R
6547  0110         SHA   10
6550  0110         SHA   10
6551  0110         SHA   10
6552  0102         SHA   2
6553  0102         SHA   2
6554  0207         LPN   7
6555  4104         STI   R4R
6556  2101         LDI   R1R
6557  0724         SBN   24
6560  6015         ZJF   FORM24
6561  6542         NZB   FORM15  1
6562  0503  FORM22 LCN   3
6563  5004         RAD   R4R
6564  6527         NZB   FORM21  2
6565  0410  FORM23 LDN   10
6566  0110         SHA   10
6567  4103         STI   R3R
6570  5403         AOD   R3R
6571  0400         LDN   0
6572  4103         STI   R3R
6573  5403         AOD   R3R
6574  6562         NZB   FORM16 -2
6575  2221  FORM24 LDF   FORM70
6576  4103         STI   R3R
6577  2003         LDD   R3R
6600  0601         ADN   1
6601  3444         SBD   CHIW
6602  4004         STD   R4R
6603  2062         LDD   VLC
6604  3404         SBD   R4R
6605  4062         STD   VLC
6606  2041         LDD   SN
6607  4071         STD   IDENT   1
```

```
6610  0421          LDN   21
6611  4070          STD   IDENT
6612  2203          LDF   3
6613  7101          JFI   1
6614  1655                STIDL
6615  6617                FORM26
6616  1100    FORM70      1100
6617  0603    FORM26 ADN   3
6620  4004          STD   R4R
6621  2062          LDD   VLC
6622  4104          STI   R4R
6623  2044          LDD   CHIW
6624  0701          SBN   1
6625  4050          STD   BEGBUF
6626  2062          LDD   VLC
6627  4150          STI   BEGBUF
6630  2003          LDD   R3R
6631  4051          STD   ENDBUF
6632  2050          LDD   BEGBUF
6633  3451          SBD   ENDBUF
6634  0701          SBN   1
6635  5063          RAD   OCC
6636  7507          EXF   7
6637  7400          OTN   0
6640  7400          OTN   0
6641  2203          LDF   3
6642  7101          JFI   1
6643  5311                PAWBB
6644  0347                NEWSTT
6645  4104                4104
6646  2402    FORM06 LCD   R2R          -FIELD LENGTH
6647  4002          STD   R2R
6650  2001          LDD   R1R
6651  4050          STD   BEGBUF
6652  2062          LDD   VLC
6653  4101          STI   R1R          FWA OF HOLLERITH
6654  5401    FORM61 AOD   R1R
6655  4051          STD   ENDBUF
6656  2247          LDF   FORM62       LC CODE
6657  4005          STD   R5R
6660  2101          LDI   R1R
6661  0712          SBN   12
6662  0277          LPN   77
6663  0712          SBN   12
6664  6210          PJF   10           +N
6665  2101          LDI   R1R
6666  0201          LPN   1
6667  6005          ZJF   5
6670  1501          LSI   R1R
6671  4101          STI   R1R
6672  2236          LDF   FORM63       UC CODE
6673  4005          STD   R5R
6674  2251          LDF   FORM64       LTAB
6675  4004          STD   R4R
6676  2101          LDI   R1R
6677  1504          LSI   R4R
6700  6003          ZJF   3
6701  5404          AOD   R4R
6702  6504          NZB   4
6703  2004          LDD   R4R
```

```
6704  3641          SBF   FORM64
6705  1405          LSD   R5R
6706  4101          STI   R1R
6707  1617          LSF   FORM65
6710  6103          NZF   3
6711  2216          LDF   FORM66
6712  6504          NZB   4
6713  5402          AOD   R2R
6714  6540          NZB   FORM61
6715  5401          AOD   R1R
6716  2050          LDD   BEGBUF
6717  3401          SBD   R1R
6720  5063          RAD   OCC
6721  2203          LDF   3
6722  7101          JFI   1
6723  5311                PAWBB
6724  6334                FORM02
6725  5700    FORM62      5700
6726  5750    FORM65      5750
6727  5704    FORM66      5704
6730  4700    FORM63      4700
6731  4213    FORM00 STF  FORM01
6732  2101          LDI   R1R
6733  0712          SBN   12
6734  6207          PJF   FORM01 -1
6735  2002          LDD   R2R             FORM N
6736  0112          SHA   12              IN R2R
6737  3101          ADI   R1R
6740  4002          STD   R2R
6741  5401          AOD   R1R             NEXT CHAR
6742  6510          NZB   FORM00  1
6743  7101          JFI   1
6744  0000    FORM01
6745  0372    FORM64      TAB
      0001    LLCALL EQU  1
      0003    LLINCR EQU  3
      0002    LLINIT EQU  2
      0006    LLTRA  EQU  6
      0007    LLTRAI EQU  7
      0010    LLSTOP EQU  10
      0011    LLPAUS EQU  11
      0012    LLPASS EQU  12
      0013    LLASSI EQU  13
      0014    LLRETU EQU  14
      0015    LLFAUL EQU  15
      0016    LLCHKD EQU  16
      0017    LLIO   EQU  17
      0020    LLIOC  EQU  20
      0004    LLARIT EQU  4
      0005    LLIF   EQU  5
      0213    RALFWA EQU  213
      0347    LCONTI EQU  NEWSTI
      0300    LOFORM EQU  300
      3205    CODFWA EQU  3205
      0006    LLTRAA EQU  LLTRA
      7762          ORG   7762
7762  4021                4021
7763  7771                7771            VEC OF FWA OF CODE
7764  0006                6
7765  0000                0               FWA OF CODE
```

```
7766  0000                0              LABEL=0
7767  3001                3001
7770  7773                7773
7771  0002                2
7772  3045                3045           IF WORD FOR LIST
7773  3011                3011
7774  7775                7775
7775  0002                2
7776  0001                1              1
      0000          END
```

160 - MEMORY MAP, ETC

```
                         REM              160 FORTRAN  END CODE
        0107             ORG   107
0107    0000    PTA7     BSS   24
        0134             ORG   134
0134    0400    RDRECD   LDN              READS PAPER TAPE RECORD
0135    4011             STD   R9         INTO BUFFER AREA PIT
0136    7551             EXF   READCD     EXIT VIA TEMP1
0137    2245             LDF   ZMX3       ERROR STOP FOR
0140    4025             STD   R5         PARITY ERROR
0141    7600    ZMX1     INA              Read a character
0142    6401             ZJB   1          Throw away leader
0143    6103             NZF   3          Unconditional
0144    7600             INA              RETURN TO HERE
0145    6040             ZJF   ZMX4
0146    4035             STD   R6         Save in temp
0147    0102             SHA   2  LS2
0150    1435             LSD   R6
0151    0102             SHA   2
0152    1435             LSD   R6
0153    4010             STD   R8
0154    0110             SHA   10 LS3
0155    1410             LSD   R8
0156    6202             PJF   2
0157    0340             LSN   40
0160    0240             LPN   40         (A)=0 IF EVEN PARITY, (A)=40 IF ODD
0161    6102             NZF   2
0162    0000             ERR              PARITY ERROR STOP
0163    2011             LDD   R9
0164    0301             LSN   1
0165    4011             STD   R9
0166    6011             ZJF   ZMX2
0167    5425             AOD   R5
0170    2035             LDD   R6
0171    0277             LPN   77
0172    0110             SHA   10
0173    0110             SHA   10
0174    4125             STI   R5
0175    7101             JFI   1
0176    0144                   ZMX1     3
0177    2035    ZMX2     LDD   R6
0200    0277             LPN   77
0201    5125             RAI   R5
0202    7101             JFI   1
0203    0144                   ZMX1     3
0204    0212    ZMX3           PIT     -1
0205    7503    ZMX4     EXF   WRCD
0206    7072             JPI   TEMP1
0207    4102    READCD         4102
0210    4104    WRCD           4104
0211    0400    DUMP     LDN
0212    7700             HLT
0213    2206    PIT      LDF   LSTT
0214    4072             STD   TEMP1
0215    0701             SBN   1
0216    4312             STB   ZMX3
0217    7101             JFI   1
0220    0134                   RDRECD
0221    0643    LSTT           STT
0222    0643                   STT
```

```
0643                ORG   643
0643 2207  STT       LDF   7
0644 4077            STD   77
0645 2204            LDF   4
0646 4177            STI   77
0647 7101            JFI   1
0650 0727                  LEND2
0651 0212                  PIT     -1
0652 0204                  ZMX3
0653 4074  STORID    STD   TEMP3      START HERE, PIT
0654 0502            LCN   2          IS ALSO BUFFER AREA
0655 5062            RAD   VLC        STORID CREATES IDLIST
0656 3463            SBD   OCC        ENTRIES WHEN CALLED
0657 1462            LSD   VLC
0660 1463            LSD   OCC
0661 0201            LPN   1
0662 6003            ZJF   3
0663 0627            ADN   27
0664 0000            ERR              OBJECT CODE TOO LARGE
0665 2172            LDI   TEMP1      ERR IF OBJCODE TOO LARGE
0666 4075            STD   TEMP4      IDLOGF, IDEXPF, IDCOSF
0667 0601            ADN   1
0670 4073            STD   TEMP2
0671 2062            LDD   VLC
0672 4173            STI   TEMP2
0673 0506            LCN   6
0674 4073            STD   TEMP2      TEMP2 NOW A CNTR
0675 2175  STR       LDI   TEMP4
0676 4174            STI   TEMP3
0677 5474            AOD   TEMP3
0700 5475            AOD   TEMP4
0701 5473            AOD   TEMP2
0702 6505            NZB   STR
0703 5472            AOD   TEMP1
0704 7072            JPI   TEMP1
0705 4042  IDLOGF          4042
0706 0000                  0
0707 0006                  6
0710 0000                  0
0711 3350                  3350
0712 4645                  4645
0713 4042  IDEXPF          4042
0714 0000                  0
0715 0006                  6
0716 0000                  0
0717 4461                  4461
0720 5145                  5145
0721 4042  IDCOSF          4042
0722 0000                  0
0723 0006                  6
0724 0000                  0
0725 4250                  4250
0726 5445                  5445
0727 7560  LEND2     EXF   PUNCD      PUNCH REMNANTS
0730 2206            LDF   6          OF OBJCODE
0731 4021            STD   R1
0732 2205            LDF   5
0733 4121            STI   R1
0734 7101            JFI   1
0735 1755                  PAW3B5
```

```
0735  1761                    PAWBB3
0737  0740                    END50
0740  2054   END50   LDD      LIDFWA      ZEROIZE DIGIT IN
0741  4024           STD      R4          EAPACK ENTRIES
0742  2220           LDF      LEND03
0743  4072           STD      TEMP1
0744  2217           LDF      LEND51
0745  4073           STD      TEMP2
0746  2124   END51   LDI      R4
0747  0270           LPN      70
0750  6010           ZJF      END51A
0751  2024           LDD      R4
0752  0602           ADN      2
0753  4074           STD      TEMP3
0754  0507           LCN      7
0755  1174           LPI      TEMP3
0756  6002           ZJF      2
0757  4174           STI      TEMP3
0760  7101   END51A  JFI      1
0761  1627                    INCR
0762  0764   LEND03           END03
0763  0746   LEND51           END51
0764  7523   END03   EXF      PUNCD
0765  7400           OTN
0766  7400           OTN
0767  0400           LDN
0770  4070           STD      FLAG
0771  2214           LDF      LEND5
0772  4072           STD      TEMP1
0773  2213           LDF      LEND4
0774  4073           STD      TEMP2
0775  2054           LDD      LIDFWA
0776  4024           STD      R4
0777  2124   END4    LDI      R4
1000  0270           LPN      70
1001  0340           LSN      40
1002  6006           ZJF      END06
1003  7101           JFI      1
1004  1627                    INCR
1005  1064   LEND5            END5
1006  0777   LEND4            END4
1007  4104   PUNCD            4104
1010  2024   END06   LDD      R4
1011  0604           ADN      4
1012  4021           STD      R1
1013  2121           LDI      R1
1014  4021           STD      R1          (R1)=1ST 2 CODES FOR
1015  0505           LCN      5           LIB FN NAME
1016  4023           STD      R3
1017  0401           LDN      1
1020  4022           STD      R2          FOR CHANGING FLAG
1021  2235   END07   LDF      FNTAB
1022  1421           LSD      R1
1023  6122           NZF      NOT
1024  2023           LDD      R3
1025  0602           ADN      2
1026  6107           NZF      MODFLG
1027  2024           LDD      R4
1030  0605           ADN      5
1031  4011           STD      R9
```

```
1032  2111          LDI   R9
1033  1630          LSF   NF
1034  6111          NZF   NOT
1035  2022  MODFLG  LDD   R2
1036  1470          LSD   FLAG
1037  4070          STD   FLAG
1040  2215          LDF   LTABL
1041  3023          ADD   R3
1042  4074          STD   TEMP3
1043  2024          LDD   R4
1044  4174          STI   TEMP3
1045  4422  NOT     SRD   R2
1046  5725          AOB   END07
1047  5423          AOD   R3
1050  6527          NZB   END07
1051  0505          LCN   5
1052  5331          RAB   END07
1053  7101          JFI   1
1054  1627                INCR
1055  1404  LTABL         TABLE  5
1056  5160  FNTAB         5160
1057  3350                3350
1060  4461                4461
1061  5430                5430
1062  4250                4250
1063  3545  NF            3545
1064  2070  END5    LDD   FLAG
1065  0203          LPN   3
1066  0301          LSN   1
1067  6115          NZF   TSTEXP  1
1070  2212          LDF   LSTEXP
1071  4072          STD   TEMP1
1072  2207          LDF   TABLO
1073  4074          STD   TEMP3
1074  0506          LCN   6
1075  5054          RAD   LIDFWA
1076  4174          STI   TEMP3
1077  7101          JFI   1
1100  0653                STORID
1101  1400  TABLO         TABLE  1
1102  1103  LSTEXP        TSTEXP
1103  0705  TSTEXP        IDLOGF
1104  2070          LDD   FLAG
1105  0205          LPN   5
1106  0301          LSN   1
1107  6115          NZF   TSTCOS  1
1110  2212          LDF   LSTCOS
1111  4072          STD   TEMP1
1112  2207          LDF   TABEX
1113  4074          STD   TEMP3
1114  0506          LCN   6
1115  5054          RAD   LIDFWA
1116  4174          STI   TEMP3
1117  7101          JFI   1
1120  0653                STORID
1121  1401  TABEX         TABLE  2
1122  1123  LSTCOS        TSTCOS
1123  0713  TSTCOS        IDEXPF
1124  2070          LDD   FLAG
1125  0230          LPN   30
```

FLAG CONFIGURATION.
CO.SI.EX.LO.PW

PW
LO
EX
SI
CO

CREATE NECESSARY
IDLIST ENTRIES

```
1126  0310          LSN   10
1127  6115          NZF   END08   1
1130  2212          LDF   LEND08
1131  4072          STD   TEMP1
1132  2207          LDF   TABCO
1133  4074          STD   TEMP3
1134  0506          LCN   6
1135  5054          RAD   LIDFWA
1136  4174          STI   TEMP3
1137  7101          JFI   1
1140  0653                STORID
1141  1403  TABCO        TABLE   4
1142  1143  LEND08       END08
1143  0721  END08       IDCOSF
1144  0503          LCN   3                 RE AND PU A SPECIAL CASE
1145  4071          STD   K
1146  5471  END14   AOD   K                 FIRST 2 RECORDS MUST BE RE AND PU
1147  2204          LDF   LEND11
1150  4072          STD   TEMP1
1151  7101          JFI   1
1152  0134                RDRECD            READ RECORD
1153  1154  LEND11       END11
1154  2226  END11   LDF   LPIT
1155  4024          STD   R4
1156  2124          LDI   R4
1157  3604          SBF   ENDLIB
1160  6104          NZF   4
1161  7101          JFI   1                 TRANSFER WHEN ALL LIB FNS READ
1162  1324                END21
1163  1717  ENDLIB       1717              END OF FILE MARK
1164  2054          LDD   LIDFWA
1165  4024          STD   R4
1166  2212          LDF   LEND14
1167  4072          STD   TEMP1
1170  2211          LDF   LEND15
1171  4073          STD   TEMP2
1172  2124  END15   LDI   R4                SEARCH IDLIST FOR
1173  0270          LPN   70                ENTRY CORRESPONDING
1174  0340          LSN   40                TO FN IN BUFFER
1175  6006          ZJF   END13
1176  7101          JFI   1
1177  1627                INCR
1200  1146  LEND14       END14
1201  1172  LEND15       END15
1202  0213  LPIT         PIT
1203  2301  END13   LDB   LPIT
1204  0601          ADN   1
1205  4023          STD   R3                ((R3)) IS 1ST TWO
1206  2024          LDD   R4                CODES OF FN NAME IN BUFFER
1207  0604          ADN   4
1210  4021          STD   R1                R4 IS IDLIST ADDRESS
1211  2121          LDI   R1
1212  3523          SBI   R3
1213  6003          ZJF   TEST2
1214  7101          JFI   1
1215  1627                INCR
1216  2071  TEST2   LDD   K
1217  6310          NJF   PUNCH
1220  5421          AOD   R1
1221  5423          AOD   R3
```

```
1222  2121          LDI   R1
1223  3523          SBI   R3
1224  6003          ZJF   PUNCH
1225  7101          JFI   1
1226  1627          INCR
1227  2024  PUNCH   LDD   R4        OUTPUTS LIB FN
1230  0603          ADN   3
1231  4072          STD   TEMP1     (TEMP1)=LCN IN IDLIST
1232  2063          LDD   OCC       TO HOLD (OCC)
1233  4172          STI   TEMP1     PUT OBJCODE LCN
1234  2332          LDB   LPIT      OF LIB FN IN
1235  4073          STD   TEMP2     IDLIST
1236  4072          STD   TEMP1
1237  5472          AOD   TEMP1     PU AND RE ARE SPECIAL CASE
1240  2071          LDD   K
1241  6207          PJF   PNCHA
1242  2072          LDD   TEMP1
1243  4050          STD   BEGBUF
1244  2063          LDD   OCC
1245  4172          STI   TEMP1
1246  6130          NZF   HERE
1247  5472          AOD   TEMP1
1250  2172  PNCHA   LDI   TEMP1
1251  3636          SBF   LARITH
1252  6503          NZB   3
1253  0501          LCN   1
1254  5072          RAD   TEMP1     (TEMP1)=LCN IN PIT
1255  4050          STD   BEGBUF    TO HOLD (OCC)
1256  2063          LDD   OCC       OBJECT CODE LCN IS
1257  4172          STI   TEMP1     1ST FRAME OUTPUT
1260  0402          LDN   2
1261  5072          RAD   TEMP1
1262  2172          LDI   TEMP1
1263  0277          LPN   77
1264  6012          ZJF   HERE
1265  4036          STD   R7
1266  2436          LCD   R7        (R7) IS NBR OF LCNS
1267  4036          STD   R7        TO BE UPPED
1270  5472          AOD   TEMP1
1271  2063          LDD   OCC
1272  0601          ADN   1
1273  5172          RAI   TEMP1     MODIFY APPROPRIATE
1274  5436          AOD   R7        LCNS OF ROUTINE
1275  6505          NZB   5         IN BUFFER
1276  0501  HERE    LCN   1
1277  5063          RAD   OCC       UP OCC BY LENGTH OF FN IN BUFFER
1300  2050          LDD   BEGBUF
1301  3173          ADI   TEMP2
1302  4051          STD   ENDBUF
1303  2203          LDF   3
1304  7101          JFI   1
1305  1742          PAUSE           PUNCH LIB. ROUTINE
1306  1310          END20           FOLLOWED BY 2 BLANKS
1307  0004  LARITH   ARITH
1310  7400  END20    OTN
1311  7400          OTN
1312  2063          LDD   OCC
1313  3462          SBD   VLC
1314  1462          LSD   VLC
1315  1463          LSD   OCC
```

```
1316  0201          LPN   1
1317  6103          NZF   3
1320  1627          ADN   27
1321  0000          ERR                    OBJECT CODE TOO LARGE
1322  7101          JFI   1
1323  1146          END14
1324  2251  END21  LDF   LSIN             INSERT VARLIST
1325  4072          STD   TEMP1            ADDRESSES OF OTHER
1326  2255          LDF   TABLE   4        LIBRARY FNS IN PW
1327  4073          STD   TEMP2            AND SIN
1330  5473          AOD   TEMP2
1331  2173          LDI   TEMP2
1332  4172          STI   TEMP1
1333  2243          LDF   LPW
1334  4072          STD   TEMP1
1335  2243          LDF   TABLE   1
1336  4073          STD   TEMP2
1337  5473          AOD   TEMP2
1340  2173          LDI   TEMP2
1341  4172          STI   TEMP1
1342  5472          AOD   TEMP1            PW*4 IN TEMP1
1343  2236          LDF   TABLE   2
1344  4073          STD   TEMP2
1345  5473          AOD   TEMP2
1346  2173          LDI   TEMP2
1347  4172          STI   TEMP1
1350  2070          LDD   FLAG
1351  0201          LPN   1
1352  6044          ZJF   END25            PW NOT IN IDLIST
1353  2223          LDF   LPW              IF (A)=0
1354  0703          SBN   3
1355  4050          STD   BEGBUF
1356  0633          ADN   33
1357  4051          STD   ENDBUF
1360  2063          LDD   OCC
1361  4150          STI   BEGBUF           OBJ CODE LCN 1ST WORD OUTPUT
1362  2215          LDF   TABLE
1363  0603          ADN   3
1364  4072          STD   TEMP1
1365  2063          LDD   OCC
1366  4172          STI   TEMP1            OCC TO IDLIST
1367  0501          LCN   1
1370  5063          RAD   OCC              UP OCC
1371  2203          LDF   3
1372  7101          JFI   1
1373  1742          PAWBB
1374  1404          END25A
1375  1653  LSIN    SIN   3
1376  1711  LPW     PW    3
1377  0000  TABLE   0                      IDLIST LCNS OF, PW
1400  0000          0                      IDLIST LCNS OF, LOG
1401  0000          0                      IDLIST LCNS OF, EXP
1402  0000          0                      IDLIST LCNS OF, SIN
1403  0000          0                      IDLIST LCNS OF, COS
1404  7400  END25A  OTN
1405  7400          OTN
1406  2063          LDD   OCC
1407  3462          SBD   VLC
1410  1462          LSD   VLC
1411  1463          LSD   OCC
```

```
1412  0201          LPN   1
1413  6103          NZF   3
1414  0627          ADN   27
1415  0000          ERR                    OBJECT CODE TOO LARGE
1416  2070  END25   LDD   FLAG
1417  0210          LPN   10
1420  6042          ZJF   VARLIS           (A)=0 IF SIN NOT
1421  2324          LDB   LSIN             IN IDLIST
1422  0703          SBN   3
1423  4050          STD   BEGBUF
1424  0635          ADN   35
1425  4051          STD   ENDBUF
1426  2063          LDD   OCC
1427  4150          STI   BEGBUF           OBJCD LN 1ST WORD OUTPUT
1430  2326          LDB   TABLE   3
1431  0603          ADN   3
1432  4072          STD   TEMP1
1433  2063          LDD   OCC
1434  4172          STI   TEMP1            OCC TO IDLIST
1435  2050          LDD   BEGBUF
1436  0604          ADN   4
1437  4072          STD   TEMP1
1440  2063          LDD   OCC
1441  5172          RAI   TEMP1            MODIFY ADDRESS IN SIN
1442  0501          LCN   1
1443  5063          RAD   OCC              OCC UPPED
1444  2203          LDF   3
1445  7101          JFI   1
1446  1742          PAWBB
1447  1450          END30
1450  7400  END30   OTN
1451  7400          OTN
1452  2063          LDD   OCC
1453  3462          SBD   VLC
1454  1462          LSD   VLC
1455  1463          LSD   OCC
1456  0201          LPN   1
1457  6103          NZF   3
1460  0627          ADN   27
1461  0000          ERR                    OBJECT CODE TOO LARGE
1462  2054  VARLIS  LDD   LIDFWA
1463  4024          STD   R4
1464  2247          LDF   LFINAL
1465  4072          STD   TEMP1
1466  2246          LDF   LEND31
1467  4073          STD   TEMP2
1470  6103          NZF   3
1471  7400  END31   OTN                    OUTPUT VARLIS LCNS.
1472  7400          OTN                    AND CONTENTS
1473  2024          LDD   R4
1474  0601          ADN   1
1475  4050          STD   BEGBUF
1476  2124          LDI   R4
1477  0270          LPN   70
1500  0770          SBN   70
1501  6047          ZJF   END47            TYPE7
1502  0630          ADN   30
1503  6072          ZJF   END44            TYPE4
1504  0710          SBN   10
1505  6077          ZJF   END45            TYPE5
```

```
1506  0620            ADN   20
1507  6045            ZJF   END43      TYPE3
1510  0610            ADN   10
1511  6054            ZJF   END42      TYPE2
1512  0610            ADN   10
1513  6045            ZJF   END41      TYPE1
1514  2124            LDI   R4
1515  0110            SHA   10
1516  0204            LPN   4          A=0 IF L.=3
1517  6022            ZJF   END40
1520  2050            LDD   BEGBUF
1521  0604            ADN   4
1522  4051            STD   ENDBUF
1523  0503            LCN   3
1524  5150            RAI   BEGBUF
1525  2050            LDD   BEGBUF
1526  4075            STD   TEMP4
1527  2203            LDF   3
1530  7101            JFI   1
1531  1742                  PAWBB
1532  1535                  END35
1533  1610  LFINAL           FINAL
1534  1471  LEND31          END31
1535  0403  END35    LDN   3
1536  5175            RAI   TEMP4
1537  7101            JFI   1
1540  1627                  INCR
1541  2050  END40    LDD   BEGBUF
1542  0601            ADN   1
1543  4051  OUT      STD   ENDBUF
1544  2203            LDF   3
1545  7101            JFI   1
1546  1742                  PAWBB
1547  1627                  INCR
1550  2124  END47    LDI   R4
1551  0207            LPN   7
1552  0610            ADN   10
1553  6103            NZF   3
1554  2124  END43    LDI   R4
1555  0207            LPN   7
1556  3050            ADD   BEGBUF
1557  6514            NZB   OUT
1560  2124  END41    LDI   R4
1561  0207            LPN   7
1562  0601            ADN   1
1563  3050            ADD   BEGBUF
1564  6521            NZB   OUT
1565  2024  END42    LDD   R4
1566  0603            ADN   3
1567  4074            STD   TEMP3
1570  2174            LDI   TEMP3
1571  6113            NZF   13
1572  0620            ADN   20
1573  0000            ERR                UNDEFINED LABEL
1574  6110            NZF   10
1575  2024  END44    LDD   R4
1576  0603            ADN   3
1577  4074            STD   TEMP3
1600  2174            LDI   TEMP3
1601  6103            NZF   3
```

```
1602  0630          ADN   30          LIB FUNCTION NOT ON TAPE
1603  0000          ERR
1604  0402  END45   LDN   2
1605  3050          ADD   BEGBUF
1606  6543          NZB   OUT
1607  0000  BLANKS
1610  0531  FINAL   LCN   31
1611  0110          SHA   10
1612  4303          STB   3
1613  7400          OTN                 OUTPUT TRAILER
1614  5705          AOB   5
1615  6502          NZB   2
1616  2210          LDF   LDUMP
1617  4072          STD   TEMP1
1620  0705          SBN   5
1621  4073          STD   TEMP2
1622  0604          ADN   4
1623  4173          STI   TEMP2
1624  7101          JFI   1
1625  0134          RDRECD              READ IN DUMP ROUTINES AND HALT
1626  0211  LDUMP   DUMP                APPROPRIATELY
1627  2124  INCR    LDI   R4            INCREASES (R4) TO NEXT
1630  4074          STD   TEMP3         IDLIST ENTRY
1631  0270          LPN   70            TEMP1 EXIT IF (R4)=0
1632  0370          LSN   70            TEMP2 EXIT IF (R4)=0
1633  6103          NZF   3             AFTER INCREMENTING
1634  0410          LDN   10
1635  5024          RAD   R4
1636  2074          LDD   TEMP3
1637  0207          LPN   7
1640  5024          RAD   R4
1641  2074          LDD   TEMP3
1642  0110          SHA   10
1643  0207          LPN   7
1644  5024          RAD   R4
1645  6102          NZF   2
1646  7072          JPI   TEMP1
1647  7073          JPI   TEMP2
1650  0000  SIN     0                   OBJCD LCN
1651  0004          ARITH               LENGTH IS 35 LCNS
1652  4002          4002
1653  0000          0                   LL(COS)
1654  0031          31                  L(PI/2)
1655  0047          47                  #OP2
1656  4026          4026                * FE1
1657  4035          4035                STO FE1
1660  0165          165                 DOF7
1661  2021          LDD   STOTRA
1662  4215          STF   KST1
1663  2006          LDD   ARINT1
1664  4214          STF   KST2
1665  7101          JFI   1
1666  0100          ARITHA
1667  0036          36                  TRAOP1
1670  0225          225                 DOF11
1671  2206          LDF   KST1
1672  4021          STD   STOTRA
1673  2205          LDF   KST2
1674  4006          STD   ARINT1
1675  7101          JFI   1
```

```
1676  0100                        ARITHA
1677  0000  KST1                                STORES STOTRA
1700  0000  KST2                                STORES ARINT1
1701  4016                        4016          RTR
1702  0005                        5
1703  2043                        2043          RI/2
1704  7303                        7303
1705  1703                        1703
1706  0000  PW                    0             OBJOD LCN
1707  0004                        ARITH         33 IS LENGTH
1710  4002                        4002
1711  0000                        0             LL(LOG)
1712  0000                        0             LL(EXP)
1713  4046                        4046          *FE2
1714  4175                        4175          STO FE7
1715  0165                        165           DOF7
1716  2021            LDD   STOTRA
1717  4220            STF   KPT1
1720  2006            LDD   ARINT1
1721  4217            STF   KPT2
1722  7101            JFI   1
1723  0100                        ARITHA
1724  0036                        36            TRA OP1
1725  4170                        4170          X FE7
1726  4035                        4035          STO FE1
1727  0056                        56            TRA OP2
1730  0225                        225           DOF11
1731  2206            LDF   KPT1
1732  4021            STD   STOTRA
1733  2205            LDF   KPT2
1734  4006            STD   ARINT1
1735  7101            JFI   1
1736  0100                        ARITHA
1737  0000  KPT1                                STORES STOTRA
1740  0000  KPT2                                STORES ARINT1
1741  4016                        4016          RTR
      0021  R1        EQU   21
      0022  R2        EQU   22
      0023  R3        EQU   23
      0024  R4        EQU   24
      0025  R5        EQU   25
      0035  R6        EQU   35
      0036  R7        EQU   36
      0010  R8        EQU   10
      0011  R9        EQU   11
      0062  VLC       EQU   62
      0063  OCC       EQU   63
      0100  ARITHA    EQU   100
      0004  ARITH     EQU   4
      0021  STOTRA    EQU   21
      0006  ARINT1    EQU   6
      0046  PTLOC     EQU   46
      0065  PT1       EQU   65
      0070  FLAG      EQU   70
      0054  LIDFWA    EQU   54
      0050  BEGBUF    EQU   50
      0051  ENDBUF    EQU   51
      0071  K         EQU   71
      0072  TEMP1     EQU   72
      0073  TEMP2     EQU   73
```

```
                0074   TEMP3   EQU   74
                0075   TEMP4   EQU   75
     1742       4217   PAWBB   STF   PAWBB3
     1743       2205           LDF   PAWBB2
     1744       4046           STD   PTLOC
     1745       2150           LDI   BEGBUF
     1746       7101           JFI   1
     1747       1773                 PTAWAY
     1750       1751   PAWBB2        PAWBB1
     1751       5450   PAWBB1  AOD   BEGBUF
     1752       0701           SBN   1
     1753       1451           LSD   ENDBUF
     1754       6507           NZB   7
     1755       2065   PAWBB5  LDD   PT1
     1756       1637           LSF   PTA4
     1757       6103           NZF   3
     1760       7101           JFI   1
     1761       0000   PAWBB3        0                    EXIT
     1762       2065           LDD   PT1
     1763       4260           STF   PTABB6
     1764       2203           LDF   PTABB4
     1765       4046           STD   PTLOC
     1766       6130           NZF   PTA5
     1767       1770   PTABB4        PTABB4  1
     1770       2224           LDF   PTA3
     1771       4252           STF   PTA66
     1772       6512           NZB   PAWBB3 -1
     1773       4217   PTAWAY  STF   PTA1
     1774       0277           LPN   77
     1775       4216           STF   PTA2
     1776       1614           LSF   PTA1
     1777       0110           SHA   10
     2000       0110           SHA   10
     2001       4165           STI   PT1            LOW CORE LOCN OF BUFF
     2002       5463           AOD   OCC
     2003       5465           AOD   PT1
     2004       2207           LDF   PTA2
     2005       4165           STI   PT1
     2006       5465           AOD   PT1
     2007       1634           LSF   PTA66
     2010       6006           ZJF   PTA5
     2011       7046           JPI   PTLOC
     2012       0000   PTA1    BSS   1
     2013       0000   PTA2    BSS   1
     2014       0133   PTA3          PTA7    24
     2015       0107   PTA4          PTA7
     2016       2301   PTA5    LDB   1              BUFFER FILLED  OUTPUT
     2017       4065           STD   PT1              AND COMPUTE PARITY
     2020       2165   PTA6    LDI   PT1
     2021       0102           SHA   2
     2022       1565           LSI   PT1
     2023       0102           SHA   2
     2024       1565           LSI   PT1
     2025       4313           STB   PTA1
     2026       0110           SHA   10
     2027       1715           LSB   PTA1
     2030       0240           LPN   40
     2031       0340           LSN   40
     2032       0102           SHA   2
     2033       5165           RAI   PT1
```

```
2034  5465          AOD   PT1
2035  1606          LSF   PTA66
2036  6516          NZB   PTA6
2037  2322          LDB   PTA4
2040  4065          STD   PT1
2041  7504          EXF   4
2042  7304          OUT   4
2043  0133  PTA66         PTA7    24
2044  7046          JPI   PTLOC
2045  4104                4104
2046  0107                PTA7
      0000          END
```

```
                        REM
          6000          ORG     6000
    6000  2062  JSPUNC  LDD     FUNCD
    6001  0705          SBN     5
    6002  6012          ZJR     ACON
    6003  6161          NZR     INIT
    6004  0577  TWOC    LCN     77
    6005  1166          LPI     KTDATA
    6006  0110          SHA     10
    6007  0110          SHA     10
    6010  3216          ADF     OUTINS
    6011  4201          STF     1
    6012  0000                  0
    6013  6104          NZF     POUT
    6014  2064  ACON    LDD     KTF3
    6015  0201          LPN     1
    6016  6412          ZJB     TWOC
    6017  2166  POUT    LDI     KTDATA
    6020  0277          LPN     77
    6021  3205          ADF     OUTINS
    6022  4201          STF     1
    6023  0000                  0
    6024  7101          JFI     1
    6025  0102                  ACOITK
    6026  7400  OUTINS  OTN     0
                        REM
    6027  1777  C1777            1777
    6030  2166  FETCH   LDI     KTDATA
    6031  4036          STD     SIGN
    6032  0237          LPN     37
    6033  4072          STD     KEEP1
    6034  1566          LSI     KTDATA
    6035  0110          SHA     10
    6036  0110          SHA     10
    6037  0102          SHA     2
    6040  0277          LPN     77
    6041  0740          SBN     40
    6042  4075          STD     SGNEXP
    6043  6202          PJF     2
    6044  2475          LCD     SGNEXP
    6045  4032          STD     EXP
    6046  5466          AOD     KTDATA
    6047  2166          LDI     KTDATA
    6050  1321          LPR     C1777
    6051  4073          STD     KEEP2
    6052  1566          LSI     KTDATA
    6053  5072          RAD     KEEP1
    6054  0102          SHA     2
    6055  0102          SHA     2
    6056  4072          STD     KEEP1
    6057  5466          AOD     KTDATA
    6060  2166          LDI     KTDATA
    6061  4074          STD     KEEP3
    6062  6025          ZJF     NUMCON
    6063  6124          NZF     NUMCON
                        REM
    6064  2266  INIT    LDR     INSTE
    6065  4225          STR     RED
```

1 CHAR PER WORD

CHANGE TO 0010 IN A
EXIT

FETCH 32

SIGN OF EXPONENT

ABSOLUTE VALUE OF EXPONENT

ENTRY

```
6065  2260          LDR   BUFAD2
6066  4076          STD   LET
6070  0472          LDN   KEEP1
6071  4071          STD   NUM
6072  0601          ADN   1
6073  4256          STR   DEND          INITIALIZE FETCH FOR 1 WORD
6074  2062          LDD   FUNCD
6075  0703          SBN   3
6076  4070          STD   CONSWT        =1)0)1)3 FLAGS F,E,I,O
6077  0701          SBN   1
6100  6304          NJF   4
6101  0502          LDN   2
6102  5210          RAR   RED
6103  6271          PJF   INMODR
6104  0402          LDN   2
6105  5244          RAR   DEND          SET FETCH FOR 3 WORDS
6106  6556          NZR   FETCH
                    REM                 NUMCON 31
6107  0400  NUMCON LDN   0
6110  4240  INTENT STF   VALUE
6111  2171  REP   LDI   NUM
6112  3600  RED   SBF   0
6113  6304        NJF   4
6114  4171        STI   NUM
6115  5633        AOF   VALUE
6116  6505        NZB   REP
6117  2231  PUT   LDR   VALUE
6120  3240        ADF   GETINS
6121  4201        STF   1
6122  0000  COMB
6123  4176        STI   LET
6124  5476        AOD   LET
6125  5713        AOB   RED
6126  1631        LSF   NEND
6127  6520        NZB   NUMCON
6130  2171        LDI   NUM
6131  4217        STF   VALUE
6132  2221        LDF   INSTF
6133  4321        STB   RED
6134  5471        AOD   NUM
6135  3614        SBF   DEND          END OF NUMBERS
6136  6717        NJB   PUT
6137  2211        LDR   VALUE
6140  3221        ADR   LSTINS
6141  4201        STF   1
6142  0000  EXEC
6143  4176        STI   LET
6144  5476        AOD   LET
6145  6151        NZR   ECON
                    REM                 CONST 22
6146  0110  BUFAD2      BUF
6147  6640  NUMCR PJB   NUMCON
6150  0000  VALUE
6151  0000  DEND
6152  3644  =INSTF SBF   TABE   =RED
6153  3642  =INSTF SBF   TAB1   =RED
6154  1750  TAB1        1750
6155  0144              144
6156  0012  TABE        12
6157  3645  =NEND   SBF   NEND   =RED
```

```
6160  2240  *GETINS LDF   TAB2   *COMB
6161  2220  *LSTINS LDF   TAB2   *EXEC
6162  0056  TAB2          56
6163  0074                74          1
6164  0070                70          2
6165  0064                64          3
6166  0062                62          4
6167  0066                66          5
6170  0072                72          6
6171  0060                60          7
6172  0033                33          8
6173  0037                37          9

6174  6270  INMODR PJF   INMODE
6175  6566  INTENR NZR   NUMCON
                 REM
6176  2070  ECON   LDD   CONSWT
6177  6143         NZF   FCON
6200  2326  FXOVR  LDR   INSTE
6201  4367         STB   RED
6202  0432         LDN   EXP
6203  4071         STD   NUM
6204  0601         ADN   1
6205  4334         STR   DEND
6206  4632         SRF   ESWT
6207  6640         PJB   NUMCR
6210  2063         LDD   WIDF
6211  0706         SBN   6
6212  3464         SBD   DECF
6213  4067         STD   FILLER
6214  6063         ZJR   FILL
6215  6162         NZR   FILL
6216  7442  EOUT   OTN   42
6217  2243         LDF   BUFAD
6220  3064         ADD   DECF
6221  4202         STF   TERME
6222  7340         OUT   BUFAD
6223  0000  TERME
6224  7420  EXPOUT OTN   20
6225  2075         LDD   SGNEXP
6226  6202         PJF   2
6227  7452         OTN   52
6230  6302         NJF   2
6231  7404         OTN   4
6232  7305         OUT   BUFADE
6233  0122                ENDBUF
6234  7101  NZFINI JFI   1
6235  0102                ACOITK
6236  6546  INTENS NZR   INTENR
6237  0120  BUFADE        BUFE
6240  5252  ESWT          5252
6241  6423  EOUTR  ZJR   EOUT
                 REM
6242  6234  FCON   PJR   ICONR1
6243  2075         LDD   SGNEXP
6244  6203         PJF   TSWID
6245  2063         LDD   WIDF
6246  6106         NZF   SUB2
6247  2032  TSWID  LDD   EXP
6250  0711         SBN   11
```

E CONVERSION 27

FIXED CONVERSION 21

```
6251  6207          PJF   GOECON
6252  2063          LDD   MID
6253  3432          SBD   EXP
6254  0702  SUB2    SBN   2
6255  3464          SBD   DECF
6256  4067          STD   FILLER
6257  6220          PJF   FILL
6260  5470  GOECON  AOD   CONSWT
6261  6461          ZJB   FXOVR
6262  0110  BUFAD   .     BUF
6263  7427  XPUN    OTN   27
                    REM
6264  2062  INMODE  LDD   FUNCD
6265  0706          SBN   6
6266  6076          ZJR   OCONR1
6267  2166          LDI   KTDATA
6270  4036          STD   SIGN
6271  6073          ZJR   OCONR1
6272  6202          PJF   2
6273  2566          LCI   KTDATA
6274  4072          STD   KEEP1
6275  6537          NZR   INTENS
6276  6163  ICONR1  NZR   ICONR4
                    REM
6277  2036  FILL    LDD   SIGN
6300  6302          NJF   2
6301  5467          AOD   FILLER
6302  2067          LDD   FILLER
6303  6207          PJF   SPACER
6304  2463  FTOOSM  LCD   WIDF
6305  4067          STD   FILLER
6306  7427          OTN   27
6307  5467          AOD   FILLER
6310  6503          NZB   3
6311  6044          ZJF   FINIZ2
6312  6005  SPACER  ZJF   TSGN
6313  7404          OTN   4
6314  0501          LCN   1
6315  5067          RAD   FILLER
6316  6503          NZB   3
                    REM
6317  2036  TSGN    LDD   SIGN
6320  6202          PJF   2
6321  7452          OTN   52
6322  2070  OUTSWT  LDD   CONSWT
6323  6462          ZJR   EOUTP
6324  6237          PJR   IOUTP
6325  2343  FXOUT   LDR   BUFAD
6326  4273          STF   BGNAD
6327  2271          LDR   BUFADF
6330  4240          STF   FTERM1
6331  4256          STF   FTERM2
6332  2075          LDD   SGNEXP
6333  4076          STD   LET
6334  6103          NZF   3
6335  7442          OTN   42
6336  6016          ZJF   PUNPER
6337  6226          PJF   POSEXP
6340  7442          OTN   42
6341  2064          LDD   DECF
```

INMODE 11

FILL 20

FIELD TOO SMALL

PUNCH I SIGN OF ANSWER 6

FIXED CONVERSION OUT

SIGNAL POSSIBLE ADD SPACES

POSITIVE EXPONENT
NEGATIVE EXPONENT

```
6342  6613          ZJR   FINIZ2
6343  3432          SBD   EXP
6344  6202          PJF   2
6345  5032          RAD   EXP          REPLACE EXP BY DEC WID
6346  2432          LCD   EXP
6347  4067          STD   FILLER       COUNTER FOR LEADING ZEROES
6350  7456          OTN   56
6351  5467          AOD   FILLER
6352  6502          NZB   2
6353  2432          LCD   EXP
6354  3064  PUNPER  ADD   DECF
6355  6071  FINIZ2  ZJR   FINIZ3
6356  3241          ADF   BUFAD1
6357  4230          STR   FTERM2
6360  6126          NZF   FOUT2
6361  6141  ICONR4  NZR   ICON
6362  6663  FILLR1  PJR   FILL
6363  6267  IOUTR   PJR   IOUT
6364  6272  OCONR1  PJR   OCON
6365  0710  POSEXP  SBN   10
6366  5202          RAF   FTERM1
6367  7330          OUT   BUFAD1
6370  0000  FTERM1
6371  7442          OTN   42
6372  4227          STF   BGNAD
6373  3625          SBR   BUFADF
6374  6304          NJF   4
6375  2064          LDD   DECF
6376  4076          STD   LET
6377  6211          PJF   OUTSP
6400  3064          ADD   DECF
6401  4076          STD   LET
6402  6202          PJF   2
6403  5204          RAF   FTERM2
6404  2064          LDD   DECF
6405  6041          ZJF   FINIZ3
6406  7313  FOUT2   OUT   BGNAD
6407  0000  FTERM2
6410  2076  OUTSP   LDD   LET
6411  6035          ZJF   FINIZ3
6412  6373          NJF   FINI
6413  7404          OTN   4            EXTRA SPACES NEEDED
6414  0501          LCN   1
6415  5076          RAD   LET
6416  6606          PJB   6
6417  0110  BUFAD1        BUF
6420  0120  BUFADF        BUFE
6421  0000  BGNAD
                    REM                INTEGER CONVERSION
6422  2303  ICON    LDR   BUFAD1
6423  4071          STD   NUM
6424  6102          NZF   2
6425  5471          AOD   NUM          LOOK FOR LST NONZERO DIGIT
6426  2171          LDI   NUM
6427  0756          SBN   56
6430  6403          ZJB   3
6431  2071          LDD   NUM
6432  4223          STR   BGNAD3       LOC OF LST WORD TO PUNCH
6433  3063          ADD   WID
6434  3617          SBR   TERMI
```

```
6435  0701          SSN   1
6436  4067          STD   FILLER
6437  6665  FILLR2  PJR   FILLR1
6440  2463          LCD   WID          FIELD TOO SMALL
6441  4067          STD   FILLER
6442  2036          LDD   SIGN
6443  6204          PJR   CHBUF
6444  7452          OTN   52           "-"
6445  5467          AOD   FILLER
6446  6037  FINIZ3  ZJR   FINI
6447  2067  CHBUF   LDD   FILLER
6450  3203          ADR   TERMI
6451  4204          STR   BGNAD3
6452  7303  IOUT    OUT   BGNAD3
6453  0114  TERMI   BUF   4
6454  6131          NZF   FINI
6455  0000  BGNAD3
                    REM                OCTAL CONVERSION 40
6456  2463  OCON    LCD   WID
6457  0604          ADN   4
6460  4067          STD   FILLER
6461  6306          NJR   SPOUT
6462  6010          ZJR   OCTCON
6463  4635          SRF   OSWT         PUT OUT LEADING DIGITS
6464  0501          LCN   1
6465  5067          RAD   FILLER
6466  6604          PJB   4
6467  7404  SPOUT   OTN   4            PUNCH SPACES
6470  5467          AOD   FILLER
6471  6502          NZB   2
6472  2166  OCTCON  LDI   KTDATA
6473  0110          SHA   10
6474  4166          STI   KTDATA
6475  0207          LPN   7
6476  3221          ADR   LDCOM
6477  4201          STF   1
6500  0000  LOD     0
6501  4201          STF   1
6502  0000          0
6503  4615          SRR   OSWT
6504  6612          PJB   OCTCON
6505  7101  FINI    JFI   1
6506  0102                ACCITK
6507  7456  OTAB    OTN   56
6510  7474          OTN   74
6511  7470          OTN   70
6512  7464          OTN   64
6513  7462          OTN   62
6514  7466          OTN   66
6515  7472          OTN   72
6516  7460          OTN   60
6517  2207  =LDCOM  LDF   OTAB   =LOD
6520  4210  OSWT          4210
      0001          CON   1
0001  0000  LCON
0002  0000  RETBUF
0003  0000  ACC     BSS   3
0006  0000  ARINT1
0007  0000  ARINTL                     INITIAL ARITH LOC.
0010  0000  LOCC
```

```
0011  0000  LOCC0
0012  0000  LOCVAR
0013  0000  MODE
0014  0000  MODEA
0015  0000  OPER    BSS   4
0021  0000  STOTRA
0022  0000  SWT
0023  0000  SWT1
0024  0000  SNOPSW
0025  0000  SFINI
0026  0000  CNFINI
0027  0000  C3
0030  0000  C2
0031  0000  C1
0032  0000  GETOPE
0033  0000  LOCC2
0034  0000  LOCC8
0035  0000  PARLOC
0036  0000  QCOUNT
0037  0000  A7
0040  0000  A6
0041  0000  A5
0042  0000  A4
0043  0000  A3
0044  0000  A2
0045  0000  A1
0046  0000  TEMP8
0047  0000  VARLOC
0050  0000  S3
0051  0000  S4
0052  0000  S5
0053  0000  S6
0054  0000  S7
0055  0000  S8
0056  0000  S9
0057  0000  S10
0060  0000  FAC
0061  0000  MLTX
0062  0000  SR3
0063  0000  SR2
0064  0000  SR1
0065  0000  KTHM
0066  0000  KTDATA
0067  0000  FILLER
0070  0000  CONSWT
0071  0000  NUM
0072  0000  KEEP1
0073  0000  KEEP2
0074  0000  KEEP3
0075  0000  SGNEXP
0076  0000  LET
      0050  KTTYPE EQU   S3
      0051  KTROUT EQU   S4
      0052  KTCL   EQU   S5
      0053  KTCM   EQU   S6
      0054  KTCN   EQU   S7
      0055  KTTEM1 EQU   S8
      0056  KTLFOR EQU   S9
      0057  KTI    EQU   S10
      0060  KTMAXJ EQU   FAC
```

OPERATION CODE

MODE OF NUMBER
MODE OF ARITHMETIC

TRANSF. ADDRESS

```
0061    KTJ     EQU     MLTX
0062    KTF1    EQU     SR3
0063    KTF2    EQU     SR2
0064    KTF3    EQU     SR1
0032    EXP     EQU     GETOPE
0036    SIGN    EQU     QCOUNT
0062    FUNCD   EQU     KTF1
0064    DECF    EQU     KTF3
0063    WIDI    EQU     KTF2
0063    WIDF    EQU     KTF2
0063    WID     EQU     KTF2
0110    BUF     EQU     110
0120    BUFE    EQU     120
0122    ENDBUF  EQU     BUFE    2
0102    ACOITK  EQU     102
0104    SASSJP  EQU     104
0000            END
```

```
                          REM            D READ 13 APRIL 62
0100  4666   READ   SRR    RSSWT         ENTRY
0101  6305          NJF    STOR
0102  2062          LDD    FUNCD
0103  0705          SBN    5
0104  6163          NZF    DECODR
0105  6016          ZJF    ACON
0106  2044   STOR   LDD    A2
0107  4166          STI    KTDATA
0110  2062          LDD    FUNCD
0111  0704          SBN    4
0112  6207          PJR    LV
0113  5466          AOD    KTDATA
0114  2043          LDD    A3
0115  4166          STI    KTDATA
0116  5466          AOD    KTDATA
0117  2042          LDD    A4
0120  4166          STI    KTDATA
0121  7101   LV     JFI    1
0122  0102                 ACOITK
0123  4643   ACON   SRF    RSSWT
0124  2063   ACONV  LDD    KTF2
0125  0703          SBN    3
0126  6310          NJF    10
0127  7600          INA
0130  6401          ZJB    1
0131  0777          SBN    77
0132  6403          ZJB    3
0133  0501          LCN    1
0134  5063          RAD    KTF2
0135  6511          NZB    ACONV
0136  0601          ADN    1
0137  6122          NZF    KTR4
0140  7600          INA                  W=2
0141  6401          ZJB    1
0142  0777          SBN    77
0143  6403          ZJB    3
0144  0677          ADN    77
0145  0110          SHA    10
0146  0110          SHA    10
0147  4055          STD    KTTEM1
0150  7600   KTR2   INA
0151  6401          ZJB    1
0152  0777          SBN    77
0153  6403          ZJB    3
0154  0677          ADN    77
0155  5055          RAD    KTTEM1
0156  2055   KTR3   LDD    KTTEM1
0157  4166          STI    KTDATA
0160  6537          NZB    LV
0161  0400   KTR4   LDN    0
0162  4055          STD    KTTEM1
0163  2063          LDD    KTF2
0164  6406          ZJB    KTR3
0165  6515          NZB    KTR2
0166  5252   RSSWT         5252
0167  6164   DECODR NZF    DECOD
```

```
0170  5467  INUP   AOD   MID
0171  6036         ZJF   ENDFLR
0172  7600  IN     INA
0173  6401         ZJB   1
0174  0777         SBN   77
0175  6403         ZJB   3
0176  0677         ADN   77
0177  4276         STF   CHAR
0200  0720         SBN   20
0201  6112         NZF   TSPER
0202  0501  ESIG   LCN   1
0203  4074         STD   EXPF
0204  2467  ECNT   LCD   MID
0205  5075         RAD   PLACCT
0206  0432         LDN   EXP
0207  4073         STD   STORD
0210  0400         LDN   0
0211  4265         STF   CONSWT
0212  6422         ZJB   INUP
0213  0722  TSPER  SBN   22
0214  6104         NZF   TSSL
0215  2067         LDD   MID
0216  4070         STD   DECCT
0217  6527         NZB   INUR
0220  0702  TSSL   SBN   2
0221  6107         NZF   TSPLUS
0222  2074         LDD   EXPF
0223  6103         NZF   3
0224  2467         LCD   MID
0225  5071         RAD   DIGCT
0226  0400         LDN   0
0227  6063  ENDFLR ZJF   ENDFLG
0230  0702  TSPLUS SBN   2
0231  6427         ZJB   ESIG
0232  0701         SBN   1
0233  6441         ZJB   IN
0234  0703         SBN   3
0235  6112         NZF   TSLC
0236  2071         LDD   DIGCT
0237  6003         ZJF   SIGMIN
0240  5474         AOD   EXPF
0241  6535         NZB   ECNT
0242  5474         AOD   EXPF
0243  6553  INUPR6 NZB   INUP
0244  2233  SIGMIN LDF   4TH
0245  4036         STD   SIGN
0246  6556  INUPR5 NZB   INUP
0247  0705  TSLC   SBN   5
0250  6456  INR    ZJB   IN
0251  6142         NZF   DIGCON
0252  6462  INUPR1 ZJB   INUP
0253  0601  DECOD  ADN   1
0254  4222         STF   CONSWT
0255  6326         NJR   FCON
0256  2463  INIT   LCD   WIDF
0257  4067         STD   WID
0260  0444         LDN   A2
0261  4073         STD   STORD
0262  0401         LDN   1
0263  4075         STD   PLACCT
```

E

SIGNAL INTEGER CONVERSION

PERIOD

NO. OF CHARS PRIOR,

/

F TYPE CONVERSION

UC

LC

RELAY

WIDTH FOR I/O CONV

```
0264  0400          LDN   0
0265  4071          STD   DIGCT
0266  4074          STD   EXPF
0267  4032          STD   EXP
0270  4044          STD   A2
0271  4043          STD   A3
0272  4042          STD   A4
0273  4036          STD   SIGN
0274  6424          ZJB   INR
0275  0000  CHAR
0276  0000  CONSWT
0277  4000  4TH     4000
0300  6201  SRXSW1  PJF   1          CONSTANT
0301  7356  BRXSW3        7356
0302  6537  INUPR7  NZB   INUPR6
0303  2064  FCON    LDD   DECF
0304  4070          STD   DECCT
0305  2305          LDB   BRXSW1
0306  4275          STF   BRANX
0307  2306          LDB   BRXSW3
0310  4256          STF   SWTD
0311  6533          NZB   INIT
0312  6041  ENDFLQ  ZJF   ENDRQ
0313  2315  DIGCON  LDB   CONSWT
0314  6214          PJF   TSTDIG
0315  2071  TSSIG   LDD   DIGCT
0316  6106          NZF   AODIG
0317  2322          LDB   CHAR
0320  0704          SBN   4
0321  6447  INUPR2  ZJB   INUPR1
0322  0752          SBN   52
0323  6402          ZJB   INUPR2
0324  5471  AODIG   AOD   DIGCT
0325  0711          SBN   11
0326  6405          ZJB   INUPR2
0327  6661          PJB   INUPR5
0330  0400  TSTDIG  LDN   0
0331  4233          STF   VALUE
0332  2233          LDF   LSDT
0333  4205          STF   DTAB
0334  2337          LDB   CHAR
0335  0704          SBN   4          SP
0336  6016          ZJF   TSCONS
0337  2342  DTST    LDB   CHAR
0340  0000  DTAB    0                LSF TO TABLE
0341  6013          ZJF   TSCONS
0342  5702          AOB   DTAB
0343  5621          AOF   VALUE
0344  0712          SBN   10D
0345  6506          NZB   DTST
0346  0501          LCN   1          ILLEGAL CHAR, REPLACE BY 4
0347  5071          RAD   DIGCT      DECREASE SIG DIG COUNT
0350  0404          LDN   4
0351  4354          STB   CHAR
0352  6535          NZB   TSSIG
0353  6056  ENDRQ   ZJF   ENDFL
0354  2356  TSCONS  LDB   CONSWT
0355  6112          NZF   TSINTC
0356  2173          LDI   STORD      INTEGER CONVERSION
0357  0112          MUT
```

```
0360  3204          ADF   VALUE
0361  4173          STI   STORD
0362  6441          ZJB   INUPR2
0363  6561  INUPR8  NZB   INUPR7
0364  0000  VALUE
0365  1657  =LSDT   LSF   TABLE   =DTAB
0366  0000  SWTD          0
0367  6312  TSINTC  NJF   FLTCON
0370  2173          LDI   STORD
0371  0110          SHA   10
0372  3306          ADB   VALUE
0373  4173  PUTSTO  STI   STORD
0374  6511          NZB   INUPR8
0375  2311          LDB   VALUE
0376  6455          ZJB   INUPR2
0377  0500          LCN   0
0400  6705          NJB   PUTSTO
0401  5602  FLTCON  AOF   BRANX
0402  2316  NEWD    LDB   VALUE
0403  6200  BRANX   PJF   0
0404  0112  XHND    MUT
0405  0112          MUT
0406  5173  COMB    RAI   STORD
0407  4721          SRB   SWTD
0410  6725  OUTD    NJB   INUPR8
0411  0501          LCN   1
0412  5073          RAD   STORD
0413  2203          LDF   BRXSWT
0414  4311          STB   BRANX
0415  6713          NJB   NEWD
0416  6201  BRXSWT          6201
0417  0056  TABLE           56
0420  0074                  74
0421  0070                  70
0422  0064                  64
0423  0062                  62
0424  0066                  66
0425  0072                  72
0426  0060                  60
0427  0033                  33
0430  0037                  37
0431  2062  ENDFL   LDD   FUNCD
0432  0704          SBN   4
0433  6307          NJF   DOFLT
0434  6105          NZF   5
0435  2036          LDD   SIGN
0436  6203          PJF   3
0437  2444          LCD   A2
0440  4044          STD   A2
0441  7051          JPI   KTROUT
0442  2474  DOFLT   LCD   EXPF
0443  0600          ADN   0
0444  6303          NJF   3
0445  2032          LDD   EXP
0446  6202          PJF   2
0447  2432          LCD   EXP
0450  0640          ADN   40
0451  4032          STD   EXP
0452  2070          LDD   DECCT
0453  6204          PJF   4
```

OCTAL CONVERSION

7777

=PJF01

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

```
0454  3075          ADD   PLACCT
0455  6303          NJF   3
0456  6002          ZJF   2
0457  2470          LCD   DECCT
0460  3071          ADD   DIGCT
0461  5032          RAD   EXP
0462  2051          LDD   KTROUT
0463  4026          STD   CNFINI
0464  7101          JFI   1
0465  0104          SASSJR
                    REM
                    LOW CORE FOR C INTERPRETER
      0001          CON   1
0001  0000    LCON
0002  0000    RETBUF
0003  0000    ACC   BSS   3
0006  0000    ARINT1
0007  0000    ARINTL
0010  0000    LOCC
0011  0000    LOCC0
0012  0000    LOCVAR
0013  0000    MODE
0014  0000    MODEA
0015  0000    OPER  BSS   4
0021  0000    STOTRA
0022  0000    SWT
0023  0000    SWT1
0024  0000    SNOPSW
0025  0000    SFINI
0026  0000    CNFINI
0027  0000    C3
0030  0000    C2
0031  0000    C1
0032  0000    GETOPE
0033  0000    LOCC2
0034  0000    LOCC8
0035  0000    PARLOC
0036  0000    QCOUNT
0037  0000    A7
0040  0000    A6
0041  0000    A5
0042  0000    A4
0043  0000    A3
0044  0000    A2
0045  0000    A1
0046  0000    TEMP6
0047  0000    VARLOC
0050  0000    S3
0051  0000    S4
0052  0000    S5
0053  0000    S6
0054  0000    S7
0055  0000    S8
0056  0000    S9
0057  0000    S10
0060  0000    FAC
0061  0000    MLTX
0062  0000    SR3
0063  0000    SR2
0064  0000    SR1
0065  0000    KTHM
```

```
0066  0000  KTDATA
0067  0000  WID
0070  0000  DECCT
0071  0000  DIGCT
0072  0000  NCONF
0073  0000  STORD
0074  0000  EXPF
0075  0000  PLACCT
      0050  KTTYPE EQU   S3
      0051  KTROUT EQU   S4
      0052  KTCL   EQU   S5
      0053  KTCM   EQU   S6
      0054  KTCN   EQU   S7
      0055  KTTEM1 EQU   S8
      0056  KTLFOR EQU   S9
      0057  KTI    EQU   S10
      0060  KTMAXJ EQU   FAC
      0061  KTJ    EQU   MLTX
      0062  KTF1   EQU   SR3
      0063  KTF2   EQU   SR2
      0064  KTF3   EQU   SR1
      0032  EXP    EQU   GETOPE
      0036  SIGN   EQU   OCOUNT
      0062  FUNCD  EQU   KTF1
      0064  WIDI   EQU   KTF3
      0063  WIDF   EQU   KTF2
      0064  DECF   EQU   KTF3
      0102  ACOITK EQU   102
      0104  SASSJP EQU   104
      0000         END
```

```
                7773  absf      org     7773
 7773           0007  length            nrtr    02
 7774           4041  ab                4041                    absf(x)
 7775           5445  sf                5445
 7776           0004  arith             04
 0000           4000  modeno            4000
 0001           4026                aad     01                  if x
 0002           0073                tpf     nrtr                +,go exit
 0003           4035                sad     01                  -,store
 0004           4027                sud     01                  and make +
 0005           4016  nrtr      rtr                             exit
                0000                end
```

```
                7773            org     7773
7773    0140                    pio2    05
7774    4250                    4250                    co
7775    5445                    5445                    sf
7776    0004                    arith
0000    4007                    4007
0001    0107    lone            one
0002    0111    lintgr          intger
0003    0113    15              c5
0004    0117    14              c4
0005    0123    13              c3
0006    0127    12              c2
0007    0133    lpio2           pio2
0010    4026    cos     aad     x
0011    0171            dvi     lpio2                   divide argument by pi over 2
0012    4035            sad     x
0013    4026            aad     x
0014    0055            sai     lintgr                  get inter part
0015    4026            aad     x
0016    0047            sui     lintgr                  get fractional part
0017    0665            dof     loop
0020    2626            lcf     signbt
0021    1003            lpd     03
0022    4003            std     03
0023    2267            ldf     intger  +01
0024    6202            pjf     02
0025    2665            lcf     intger  +01
0026    0203            lpn     03
0027    0702            sbn     02
0030    6305            njf     onortw
0031    6142            nzf     arthad  -01
0032    0501            lcn     01
0033    5010            rad     locc
0034    6137            nzf     arthad  -01
0035    0601    onortw  adn     01
0036    6003            zjf     03
0037    0503            lcn     03
0040    5010            rad     locc
0041    2003            ldd     03
0042    6031            zjf     arthad  -01
0043    1603            lsf     signbt
0044    4003            std     03
0045    6126            nzf     arthad  -01
0046    4000    signbt          4000
0047    0026            aai     lone
0050    0044            trf     loop
0051    0027            sui     lone
0052    4035    loop    sad     x
0053    4027            sud     x
0054    4030            mpd     x
0055    4055            sad     fac                     factor=-x2
0056    0125            dof     loop1
0057    2203            ldf     loop1   -01             initialize to address of last
0060    4203            stf     loop1                   constant
0061    7113            jfi     arthad
0062    0066            aai     15
0063    0066    loop1   aai     15                      (term+a(2))(-x2)=ter
0064    4050            mpd     fac
0065    4075            sad     term
0066    0265            dof     loop2                   check and increase counter
```

```
0067  0420          ldn   20
0070  5305          rab   loop1
0071  3607          sbf   07
0072  6003          zjf   03
0073  7101          jfi   01
0074  0100  arthad       aritha
0075  0402          ldn   02
0076  5010          rad   locc
0077  6504          nzb   arthad  -01
0100  0166          aai   lpio2
0101  4066  loop2   aad   term
0102  4364          trb   loop1
0103  4066  loop3   aad   term
0104  0166          aai   lpio2
0105  4030          mpd   x
0106  4016          rtr
0107  0002  one           02
0110  0001                01
0111  0002  intger        02
0112  0000                00
0113  0005  c5            05
0114  1643                1643
0115  6224                6224
0116  0643                643
0117  0005  c4            05
0120  1713                1713
0121  5341                5341
0122  1220                1220
0123  0005  c3            05
0124  1763                1763
0125  7261                7261
0126  1247                1247
0127  0005  c2            05
0130  2020                2020
0131  1124                1124
0132  0563                563
0133  0005  pio2          05
0134  2043                2043
0135  7303                7303
0136  1703                1703
      0004  arith   equ   04
      0010  locc    equ   10
      0001          con   01
0001  0000  x
0002  0000  fac
0003  0000  term
      0100  aritha  equ   100
      0000          end
```

```
         7772  signf    org     7772
7772     0016  length           rtr     02
7773     5430  si               5430                    signf(x,y)
7774     4635  gn               4635
7775     4525  folank           4525
7776     0004  arith            04
0000     4000  modeno           4000
0001     4046           aad     02                      y
0002     0173           tpf     pos
0003     4055           sad     02                      y negative
0004     4026           aad     01                      if x
0005     2073           tnf     rtrn                    negative, ck
0006     4035  merge    sad     01                      store as x
0007     4027           sud     01                      change sign of x
0010     4016  rtrn     rtr                             return
0011     4055  pos      sad     02                      y positive
0012     4027           sud     01                      if x
0013     6133           tnb     merge                   negative, back to correct
0014     4016  rtr      rtr                             positive, return
         0000           end
```

SQRTF Library Routine

```
                7772            org     7772
7772    0114    length          last    02
7773    5452    sq              5452
7774    5355    rt              5355
7775    4525    fblank          4525
7776    0004    arith           04
0000    4004                    4004
0001    0073    )a)             a
0002    0077    )b)             b
0003    0103    )rnge)          rnge
0004    0107    )half)          half
0005    4026            aad     x
0006    1474            tzf     exit            zero go exit
0007    0125            dof     interl
0010    2665            lcf     a       02
0011    1003            lpd     acc
0012    4003            std     acc             absolute value
0013    6235            pjf     jumper
0014    4035    interl  sad     x
0015    4026            aad     x
0016    1025            dof     interp
0017    2003            ldd     acc
0020    0277            lpn     77
0021    4235            stf     temp            temp has 1 bit
0022    0740            sbn     40              of exponent
0023    6205            pjf     odd
0024    2227            ldf     )82)
0025    4247            stf     a       01
0026    2224            ldf     )26)
0027    6204            pjf     merge
0030    2222    odd     ldf     )26)            create proper
0031    4243            stf     a       01      coefficient of
0032    2221            ldf     )82)            linear combination
0033    4245    merge   stf     b       01
0034    2003            ldd     acc
0035    3221            sbf     temp
0036    0110            sha     10
0037    0102            sha     02
0040    0110            sha     10
0041    0102            sha     02
0042    0110            sha     10
0043    3211            adf     hi1
0044    4240            stf     rnge    01      range has exponent
0045    2210            ldf     hi2
0046    3210            adf     temp
0047    4003            std     acc
0050    7101    jumper  jfi     01
0051    0100                    100
0052    2006    )26)            2006
0053    2024    )82)            2024
0054    1042    hi1             1042
0055    2000    hi2             2000
0056    0000    temp
0057    0030    interp  mpi     )a)
0060    0046            aai     )b)
0061    0070            mpi     )rnge)
0062    4055    loop    sad     y               new approx
0063    4026            aad     x
0064    4051            dvd     y
0065    4047            sud     y
```

```
0066  0110          mpi     )half)
0067  4046          add     y
0070  0003          sno
0071  4016  exit    rtr
0072  4204          trb     loop
0073  0005  a               05
0074  0000                  00
0075  4000                  4000
0076  0000                  00
0077  0005  b               05
0100  0000                  00
0101  4000                  4000
0102  0000                  00
0103  0005  rnge            05
0104  0000                  00
0105  4000                  4000
0106  0000                  00
0107  0005  half            05
0110  2014                  2014
0111  4000                  4000
0112  0000  last            00
      0001  x       equ     01
      0002  y       equ     02
      0003  acc     equ     03
      0000          end
```

LOGF Library Routine

```
             7773   expf            org    7773
      7773   0113   length                 last     02
      7774   4461   ex                     4461
      7775   5145   pf                     5145
      7776   0004   arith                  04
      0000   4004   nodeno                 4004
      0001   0075   )1)                    one
      0002   0101   )10)                   ten
      0003   0105   )e)                    e
      0004   0111   )e10)                  e10
      0005   4026                   aad    x
      0006   0073                   tpf    stoab
      0007   4035                   sad    x
      0010   4027                   sud    x
      0011   4055   stoab           sad    y                       y=absf(x)
      0012   0026                   aai    )1)                     n=1
      0013   4075   stoen           sad    eint
      0014   4046                   aad    y                       reduce y
      0015   0047                   sui    )10)                    mod 10.
      0016   2173                   tnf    clrac
      0017   0003                   sno                            if y exceeds 10''30
      0020   1064                   trf    stor                    exit
      0021   4055                   sad    y
      0022   4066                   aad    eint                    create e
      0023   0110                   mpi    )e10)                   to integer (y)
      0024   4224                   trb    stoen
      0025   4115   clrac           sad    dummy                   clear accumulator
      0026   4046   tst1            aad    y                       reduce y
      0027   0027                   sui    )1)                     mod 1.
      0030   2153                   tnf    fract
      0031   4055                   sad    y
      0032   4066                   aad    eint                    create e
      0033   0070                   mpi    )e)                     to integer (y)
      0034   4075                   sad    eint
      0035   4164                   trb    tst1
      0036   4115   fract           sad    dummy                   clear accumulator
      0037   0026                   aai    )1)
      0040   4115                   sad    m                       m=1
      0041   4046                   aad    y
      0042   4155                   sad    f                       f=y
      0043   4046                   aad    y
      0044   0026                   aai    )1)                     1+y
      0045   4135   loop            sad    s                       store s
      0046   4106                   aad    m
      0047   0026                   aai    )1)
      0050   4115                   sad    m                       m=m+1
      0051   4146                   aad    f
      0052   4050                   mpd    y                       f'y/m
      0053   4111                   dvd    m                       replaces
      0054   4155                   sad    f                       f
      0055   4126                   aad    s
      0056   4146                   aad    f                       s+f
      0057   0003                   sno
      0060   0044                   trf    02                      jump if converged
      0061   4304                   trb    loop                    else, back to loop
      0062   4070                   mpd    eint
      0063   4075   stor            sad    eint                    expf(y)
      0064   4026                   aad    x
      0065   0133                   tpf    load
      0066   4035                   sad    x                       if x negative
```

```
0067  0026          aai     )1)     compute
0070  4071          dvd     eint    reciprocal
0071  4016          rtr             return
0072  4035  load    sad     x       clear accumulator
0073  4066          aad     eint    load expf(x)
0074  4016          rtr             return
0075  0005  one             05
0076  2042                  2042    1.
0077  4000                  4000
0100  0000                  00
0101  0005  ten             05
0102  2102                  2102    10.
0103  4000                  4000
0104  0000                  00
0105  0005  e               05
0106  2046                  2046    2.7
0107  6266                  6266    182
0110  1462                  1462    818=e
0111  0005  e10             05
0112  2245                  2245    22,
0113  4032                  4032    026.
0114  0722  last            722     466=expf(10)
      0001  x       equ     01
      0002  y       equ     02
      0003  eint    equ     03
      0004  dummy   equ     04
      0004  m       equ     04
      0005  s       equ     05
      0006  f       equ     06
      0000          end
```

LOCF Library Routine

```
                    rem
                    org     7773
7773    0156                final   02          log function 4-12-62
7774    3350                3350                lo
7775    4645                4645                gf
7776    0004                arith
0000    4007                4007
0001    0055    exp         lexpt
0002    0127    one         lone
0003    0131    two         ltwo
0004    0135    logh        llogh
0005    0141    logt        llogt
0006    0145    mid         lomid
0007    0151    lmid        lolmid
0010    4115            sad     sum
0011    4026            aad     m
0012    0265            dof     stor
0013    2003            ldd     acc             pick off exponent
0014    0102            sha     02
0015    0110            sha     10
0016    0110            sha     10
0017    0277            lpn     77
0020    0740            sbn     40
0021    4235            stf     lexp
0022    6212            pjf     tsac
0023    6311            njf     tsac
0024    4016            rtr                     error return
0025    4035    stor    sad     m
0026    0106            aai     logh            increase by ln 1/2
0027    4106            aad     sum
0030    4115            sad     sum
0031    4026            aad     m
0032    4026            aad     m
0033    4145            dob     stor            normalize no. in a
0034    2003    tsac    ldd     acc
0035    0237            lpn     37
0036    6106            nzf     fxac
0037    2220            ldf     ovf             overflow return
0040    4003            std     acc
0041    4023            std     swtl
0042    0501            lcn     01
0043    6107            nzf     fixl
0044    1614    fxac    lsf     pow             normalize n
0045    4003            std     acc
0046    0237            lpn     37
0047    0714            sbn     14
0050    6303            njf     lev             fraction less than 0.48
0051    0434            ldn     nxt     -stor
0052    5010    fixl    rad     locc
0053    7101    lev     jfi     01
0054    0100                    aritha
0055    0002    lexpt           02
0056    0000    lexp            00
0057    7740    ovf             7740
0060    2000    pow             2000
0061    4035    nxt     sad     m
0062    0026            aai     exp
0063    0130            mpi     logt            n ln 10
0064    4105            sad     sum
0065    0166            aai     lmid
```

```
0066  4115          sad     sum     sum of initial terms
0067  4026          aad     m       series computation
0070  0146          aai     mid     2t+2t3/3+2t5/5+...
0071  4135          sad     templ
0072  4026          aad     m
0073  0147          sui     mid
0074  4131          dvd     templ
0075  4035          sad     m       first term of series
0076  4026          aad     m
0077  4030          mpd     m
0100  4055          sad     ms
0101  0066          aai     two
0102  0046          aai     one
0103  4075          sad     dv
0104  4026          aad     m       double t
0105  4026          aad     m       m store for twice odd
0106  4035          sad     m         powers of t
0107  4026          aad     m
0110  4106          aad     sum
0111  4115          sad     sum
0112  4026  start   aad     m
0113  4050          mpd     ms
0114  4035          sad     m       store odd powers of t
0115  4026          aad     m
0116  4071          dvd     dv
0117  4106          aad     sum
0120  0003                  03      no-op, has sum changed
0121  4016          rtr             no, exit from routine
0122  4115          sad     sum     yes, continue
0123  0066          aai     two
0124  4066          aad     dv
0125  4075          sad     dv
0126  4304          trb     start
                    rem             constants
0127  0002  lone             02
0130  0001                   01
0131  0005  ltwo             05
0132  2045                   2045
0133  0000                   00
0134  0000                   00
0135  0005  llogh            05      ln (1/2)
0136  6021                   6021
0137  2472                   2472
0140  1317                   1317
0141  0005  llogt            05      ln(10)
0142  2045                   2045
0143  6031                   6031
0144  1523                   1523
0145  0005  lcmid            05      0.7
0146  2021                   2021
0147  4000                   4000
0150  0000                   00
0151  0005  lolmid           05      ln (.7)
0152  6010                   6010
0153  7233                   7233
0154  0756  final            756
                    rem             equ table for log
      0003  acc     equ      03
      0015  op      equ      15
      0010  locc    equ      10
```

ATANF Library Routine

			rem		arctangent subroutine
	7772		org	7772	
7772	0136			last 02	no. of locations
7773	4055			4055	a t
7774	4035			4035	a n
7775	4525			4525	f blank
7776	0004			arith	
0000	4004			4004	
0001	0115	lone		one	
0002	0121	leps		eps	
0003	0125	lsqrt		sqrt	
0004	0131	lpiby4		piby4	
0005	4026		aad	fel	z
0006	1114		tzf	atanb	transfer for zero
0007	0225		dof	atana	
0010	2003		ldd	acc	
0011	1237		lpf	hibit	
0012	4237		stf	sign	store sign of number
0013	2635		lcf	hibit	
0014	1003		lpd	acc	
0015	4003		std	acc	magnitude of number
0016	7101		jfi	01	
0017	0100			aritha	
0020	4035	atana	sad	fel	magnitude of argument
0021	4026		aad	fel	
0022	0067		sui	lsqrt	
0023	0026		aai	lone	2'' 1/2 - 1
0024	2573		tnf	atanc	z in 1st range
0025	0027		sui	lonc	no
0026	0027		sui	lone	
0027	2213		tnf	atand	z in 2nd range
0030	4055		sad	fe2	clear acc.
0031	0027		sui	lone	
0032	4031		dvd	fel	
0033	4035		sad	fel	-1/z
0034	0106		aai	lpiby4	pi/4
0035	0106	atanf	aai	lpiby4	
0036	0344		trf	atane	
0037	4055	atand	sad	fe2	clear acc.
0040	4026		aad	fel	
0041	0026		aai	lone	
0042	4055		sad	fe2	z+1
0043	4026		aad	fel	
0044	0027		sui	lone	z-1
0045	4051		dvd	fe2	
0046	4035		sad	fel	z-1/z+1 = t
0047	4244		trb	atanf	
0050	4000	hibit		4000	
0051	0000	sign			
0052	4016	atanb	rtr		
0053	4055	atanc	sad	fe2	clear acc
0054	4055	atane	sad	fe2	store psi
0055	4027		sud	fel	
0056	4030		mpd	fel	
0057	4075		sad	fe3	-(z''2)
0060	4026		aad	fel	
0061	0534		tzf	atanz	
0062	4115		sad	fe4	z''n
0063	0026		aai	lone	
0064	4135		sad	fe5	coeff.
0065	4175	atani	sad	fe7	clear acc.

```
0066  4126          aad   fe5
0067  0026          aai   lone
0070  0026          aai   lone
0071  4135          sad   fe5     coeff. + 2
0072  4106          aad   fe4
0073  4070          mpd   fe3     z''(n+2)
0074  4115          sad   fe4
0075  4106          aad   fe4
0076  4131          dvd   fe5
0077  4026          aad   fel     plus sum
0100  0003          sno
0101  0064          trf   atang   transf. if convergence reac
0102  4035          sad   fel       to sum
0103  4344          trb   atani
0104  4175  atang   sad   fe7     clear all
0105  4026          aad   fel     arctan t
0106  4046  atanz   aad   fe2      + psi
0107  4725          dob   atanb
0110  2003          ldd   acc
0111  1740          lsb   sign
0112  4003          std   acc     proper sign to results
0113  7101          jfi   01
0114  0100                aritha
0115  0005  one           05      1.0
0116  2042                2042
0117  4000                4000
0120  0000                00
0121  0005  eps           05      .5x10-8
0122  1414                1414
0123  4000                4000
0124  0000                00
0125  0005  sqrt          05      1.4142136
0126  2043                2043
0127  4216                4216
0130  0210                210
0131  0005  piby4         05      .785398263
0132  2023                2023
0133  5033                5033
0134  1472  last          1472
      0001  fel   equ     01
      0002  fe2   equ     02
      0003  fe3   equ     03
      0004  fe4   equ     04
      0005  fe5   equ     05
      0006  fe6   equ     06
      0007  fe7   equ     07
      0004  arith equ     04
      0100  aritha equ    100
      0003  acc   equ     03
      0000        end
```

```
                        REM
            0000        CON
0000  7001              JPI     1
0001  0500  XSUB                500
0002  1467  LTABLE              TABLE
0003  7400  OUT         OTN
0004  1000  MASK1               1000
0005  0700  MASK2               700
0006  7700  MASK3               7700
0007  2114  LM01                M01
0010  2116  LM02                M02
0011  2120  LM03                M03
0012  2121  LM04                M04
0013  2124  LM05                M05
0014  2105  LLOOP               LOOP
0015  1756  LRET                RET
0016  7707  LINES               7707
0017  0000  TEMP1A
0020  0000  TEMP2
0021  0000  TEMP3
0022  0000  TEMP4
0023  0000  TEMP5
0024  0000  TEMP6
0025  0000  OBJCD
0026  0000  XSUB1
0027  4400  LOBJOD              4400
      0017  TEMP1       EQU     17
      0211              PRG     211
0211  0515              LCN     15
0212  4017              STD     TEMP1
0213  2207              LDF     CONST
0214  4002              STD     2
0215  5702              AOB     2
0216  5702              AOB     2
0217  5417              AOD     TEMP1
0220  6505              NZB     5
0221  6016              ZJF     COMCE
0222  1467  CONST               TABLE
0223  7400              OTN
0224  1000                      1000
0225  0700                      700
0226  7700                      7700
0227  2114                      M01
0230  2116                      M02
0231  2120                      M03
0232  2121                      M04
0233  2124                      M05
0234  2105                      LOOP
0235  1756                      RET
0236  7707                      7707
0237  0400  COMCE       LDN              POKE BRANCH POINT INTO A REG
0240  7700              HLT
0241  0703              SBN     3        A=3  CHANGE TAB SETTINGS
0242  6025              ZJF     DELTAB   A=2  TYPE OBJECT CODE
0243  6604              PJB     COMCE    A=1  TYPE IDLIST
0244  0601              ADN     1
0245  6043              ZJF     TYPOBJ
0246  0601              ADN     1
0247  6032              ZJF     TYPEID
```

```
0250  0601          ADN   1
0251  6051          ZJF   COMENC
0252  6513          NZB   COMCE
0253  4070  REVISE  STD   70
0254  2071          LDD   71
0255  0601          ADN   1
0256  4072          STD   72
0257  2172  REVIS1  LDI   72
0260  4073          STD   73
0261  2171          LDI   71
0262  4173          STI   73
0263  5472          AOD   72
0264  5470          AOD   70
0265  6506          NZB   REVIS1
0266  6427          ZJB   COMCE
0267  2204  DELTAB  LDF   LDLTB1
0270  4071          STD   71
0271  0504          LCN   4
0272  6717          NJB   REVISE
0273  0274  LDLTB1        DLTB1
0274  0600  DLTB1   ADN
0275  1011                CNT5A
0276  1022                CNT5B
0277  1430                CNT9A
0300  1441                CNT9B
0301  2204  TYPEID  LDF   LTYPID
0302  4071          STD   71
0303  0501          LCN   1
0304  6731          NJB   REVISE
0305  0306  LTYPID        TYPID
0306  4210  TYPID         4210
0307  0345                PNCH
0310  2204  TYPOBJ  LDF   LTYOBJ
0311  4071          STD   71
0312  0504          LCN   4
0313  6740          NJB   REVISE
0314  0315  LTYOBJ        TYOBJ
0315  4210  TYOBJ         4210
0316  2403                WRITE
0317  2452                RITE
0320  4007                WRITE1
0321  4367                WRITT
0322  7523  COMENC  EXF   PNCH
0323  0520          LCN   20
0324  0110          SHA   10
0325  4304          STB   4
0326  7400          OTN
0327  5706          AOB   6
0330  6502          NZB   2
0331  7101          JFI   1
0332  2110                SUBR6A
0333  2214  CONT1   LDF   LHEAD1
0334  4073          STD   73
0335  0607          ADN   7
0336  4074          STD   74
0337  7447          OTN   47
0340  2206          LDF   LPRT1
0341  4113          STI   LMO5
0342  4001          STD   XSUB
0343  7101          JFI   1
```

```
0344  2034                    SUBR3
0345  4104  PNCH              4104
0346  0350  LPRT1             PRT1
0347  1576  LHEAD1            HEAD1
0350  2204  PRT1    LDF       LCNT1A
0351  4001          STD       XSUB
0352  7101          JFI       1
0353  1727                    SUBR1       PRINTS ((70)+1)
0354  0355  LCNT1A            CNT1A
0355  2070  CNT1A   LDD       70
0356  0603          ADN       3
0357  4073          STD       73          (73) IS STARTING LCN
0360  2170          LDI       70
0361  0207          LPN       7
0362  3073          ADD       73
0363  4074          STD       74          (74) IS TERM LCN
0364  2204          LDF       LCNT1B
0365  4001          STD       XSUB
0366  7101          JFI       1
0367  1760                    SUBR2       PRINT AN IDENTIFIER
0370  0371  LCNT1B            CNT1B
0371  2170  CNT1B   LDI       70
0372  1005          LPD       MASK2
0373  6014          ZJF       W           JP IF RANK 0
0374  0110          SHA       10
0375  0110          SHA       10
0376  3002          ADD       LTABLE
0377  4072          STD       72
0400  2172          LDI       72
0401  7457          OTN       57
0402  7446          OTN       46
0403  7404          OTN       4
0404  3003          ADD       OUT
0405  4201          STF       1
0406  7400          OTN       0           PRINT RANK
0407  7445  W       OTN       45
0410  7101          JFI       1
0411  2065                    SUBR4
0412  2211  CONT2   LDF       LCONT3      ARRAYS
0413  4114          STI       LLOOP
0414  0503          LCN       3
0415  5112          RAI       LM04
0416  2204          LDF       LCN2A
0417  4113          STI       LM05
0420  7101          JFI       1
0421  2110                    SUBR6A
0422  0425  LCN2A             CN2A
0423  0545  LCONT3            CONT3
0424  0440  LPRT2             PRT2
0425  2212  CN2A    LDF       LHEAD2
0426  4073          STD       73
0427  0607          ADN       7
0430  4074          STD       74
0431  7447          OTN       47
0432  2306          LDB       LPRT2
0433  4113          STI       LM05
0434  4001          STD       XSUB
0435  7101          JFI       1
0436  2034                    SUBR3
0437  1567  LHEAD2            HEAD2
```

```
0440  2204  PRT2    LDF   LCNT2A
0441  4001          STD   XSUB
0442  7101          JFI   1
0443  1727                SUBR1       PRINT VARLIS LCN
0444  0445  LCNT2A        CNT2A
0445  2070  CNT2A  LDD   70
0446  0606          ADN   6
0447  4073          STD   73
0450  2170          LDI   70
0451  0207          LPN   7
0452  3073          ADD   73
0453  4074          STD   74
0454  2204          LDF   LCNT2B
0455  4001          STD   XSUB
0456  7101          JFI   1
0457  1760                SUBR2       PRINT AN IDENT
0460  0461  LCNT2B        CNT2B
0461  2170  CNT2B  LDI   70
0462  1005          LPD   MASK2
0463  6017          ZJF   W1          JP IF RANK 0
0464  0110          SHA   10
0465  0110          SHA   10
0466  0207          LPN   7
0467  3002          ADD   LTABLE
0470  4072          STD   72
0471  2172          LDI   72
0472  7457          OTN   57
0473  7446          OTN   46
0474  7404          OTN   4
0475  3003          ADD   OUT
0476  4201          STF   1
0477  7400          OTN   0           PRINT RANK
0500  7446          OTN   46
0501  7404          OTN   4
0502  7447  W1      OTN   47          U.C.
0503  7454          OTN   54          (
0504  7457          OTN   57          L.C.
0505  2070          LDD   70
0506  0604          ADN   4
0507  4071          STD   71
0510  2171          LDI   71
0511  4206          STF   DWD1
0512  2204          LDF   LDWD1
0513  4001          STD   XSUB
0514  7101          JFI   1
0515  2221                SUBR9A
0516  0517  LDWD1       DWD1
0517  0000  DWD1
0520  0501          LCN   1
0521  5071          RAD   71
0522  2171          LDI   71
0523  6016          ZJF   PARM        JP IF NXT DIM 0
0524  7446          OTN   46
0525  7404          OTN   4           SP
0526  4203          STF   DWD2
0527  2204          LDF   LDWD2
0530  4001          STD   XSUB
0531  7101          JFI   1
0532  2221                SUBR9A
0533  0534  LDWD2       DWD2
```

```
0534  0000  DWD2          0
0535  2071        LDD     71
0536  3702        SBN     2
0537  3470        SBD     70
0540  6520        NZB     DWD1    1
0541  7454  PARN  OTN     54          )
0542  7445        OTN     45          CR
0543  7101        JFI     1
0544  2065                SUBR4
0545  2215  CONT3 LDF     LCONT4      INTEGER CONSTANTS
0546  4114        STI     LLOOP
0547  0410        LDN     10
0550  5107        RAI     LM01
0551  2210        LDF     NOP
0552  4111        STI     LM03
0553  0676        ADN     76
0554  4112        STI     LM04
0555  2207        LDF     LCN3A
0556  4113        STI     LM05
0557  7101        JFI     1
0560  2110                SUBR6A
0561  0203  NOP   LPN     3
0562  0623  LCONT4        CONT4
0563  0600  LPRT3         PRT3
0564  0565  LCN3A         CN3A
0565  2212  CN3A  LDF     LHEAD3
0566  4073        STD     73
0567  0611        ADN     11
0570  4074        STD     74
0571  7447        OTN     47
0572  2307        LDB     LPRT3
0573  4113        STI     LM05
0574  4001        STD     XSUB
0575  7101        JFI     1
0576  2034                SUBR3
0577  1553  LHEAD3        HEAD3
0600  2204  PRT3  LDF     LCNT3A
0601  4001        STD     XSUB
0602  7101        JFI     1
0603  1727                SUBR1
0604  0605  LCNT3A        CNT3A
0605  0403  CNT3A LDN     3
0606  3070        ADD     70
0607  4071        STD     71
0610  2171        LDI     71
0611  4206        STF     DWD3
0612  2204        LDF     LDWD3
0613  4001        STD     XSUB
0614  7101        JFI     1
0615  2223                SUBR9B
0616  0617  LDWD3         DWD3
0617  0000  DWD3
0620  7445        OTN     45
0621  7101        JFI     1
0622  2065                SUBR4
0623  2210  CONT4 LDF     LCONT5      FLTNG CONSTANTS
0624  4114        STI     LLOOP
0625  0402        LDN     2
0626  5112        RAI     LM04
0627  2203        LDF     LCN4A
```

```
0630  4113          STD   LMO5
0631  7101          JFI   1
0632  2210                SUBR6A
0633  0754  LCONT5         CONT5
0634  0651  LPRT4          PRT4
0635  0636  LCN4A          CN4A
0636  2212  CN4A    LDF   LHEAD4
0637  4073          STD   73
0640  0611          ADN   11
0641  4074          STD   74
0642  7447          OTN   47
0643  2307          LDB   LPRT4
0644  4113          STI   LMO5
0645  4001          STD   XSUB
0646  7101          JFI   1
0647  2034                SUBR3
0650  1605  LHEAD4        HEAD4
0651  2204  PRT4    LDF   LCNT4A
0652  4001          STD   XSUB
0653  7101          JFI   1
0654  1727                SUBR1
0655  0656  LCNT4A        CNT4A
0656  2070  CNT4A   LDD   70
0657  0603          ADN   3
0660  4071          STD   71
0661  2171          LDI   71
0662  0102          SHA   2
0663  0201          LPN   1
0664  6003          ZJF   PLUS
0665  7452          OTN   52
0666  6102          NZF   INTG
0667  7404  PLUS    OTN   4
0670  7442  INTG    OTN   42
0671  2171          LDI   71
0672  0237          LPN   37
0673  0102          SHA   2
0674  0102          SHA   2
0675  4214          STF   DWD3A
0676  5471          AOD   71
0677  2171          LDI   71
0700  0102          SHA   2
0701  0102          SHA   2
0702  0203          LPN   3
0703  5206          RAF   DWD3A
0704  2204          LDF   LDWD3A
0705  4001          STD   XSUB
0706  7101          JFI   1
0707  2237                SUBR9D
0710  0711  LDWD3A        DWD3A
0711  0000  DWD3A
0712  0502          LCN   2
0713  4072          STD   72
0714  2171  RRPT    LDI   71
0715  1206          LPF   MASK5
0716  4207          STF   DWD4
0717  2205          LDF   LDWD4
0720  4001          STD   XSUB
0721  7101          JFI   1
0722  2210                SUBR9C
0723  1777  MASK5         1777
```

71 IS LCN 2

JP IF POS NBR
MINUS SIGN

SP
DECIMAL POINT

```
0724  0725  LDWD4          DWD4
0725  0000  DWD4
0726  5471          AOD    71
0727  5472          AOD    72
0730  6514          NZB    RRPT
0731  7420          OTN    20
0732  0503          LCN    3
0733  5071          RAD    71
0734  2171          LDI    71
0735  0110          SHA    10
0736  0110          SHA    10
0737  0102          SHA    2
0740  0277          LPN    77
0741  0740          SBN    40
0742  4206          STF    DWD5
0743  2204          LDF    LDWD5
0744  4001          STD    XSUB
0745  7101          JFI    1
0746  2221                 SUBR9A
0747  0750  LDWD5          DWD5
0750  0000  DWD5
0751  7445          OTN    45
0752  7101          JFI    1
0753  2065                 SUBR4
0754  2212  CONT5   LDF    LCONT6
0755  4114          STI    LLOOP
0756  0410          LDN    10
0757  5107          RAI    LM01
0760  0404          LDN    4
0761  5110          RAI    LM02
0762  2206          LDF    LCN5A
0763  4113          STI    LM05
0764  7101          JFI    1
0765  2110                 SUBR6A
0766  1060  LCONT6         CONT6
0767  1004  LPRT5          PRT5
0770  0771  LCN5A          CN5A
0771  2212  CN5A    LDF    LHEAD5
0772  4073          STD    73
0773  0625          ADN    25
0774  4074          STD    74
0775  7447          OTN    47
0776  2307          LDB    LPRT5
0777  4113          STI    LM05
1000  4001          STD    XSUB
1001  7101          JFI    1
1002  2034                 SUBR3
1003  1616  LHEAD5         HEAD5
1004  2204  PRT5    LDF    LCNT5A
1005  4001          STD    XSUB
1006  7101          JFI    1
1007  1727                 SUBR1
1010  1011  LCNT5A         CNT5A
1011  7451  CNT5A   OTN    51
1012  0600          ADN
1013  0402          LDN    2
1014  5070          RAD    70
1015  2204          LDF    LCNT5B
1016  4001          STD    XSUB
1017  7101          JFI    1
```

S

LABELS

NOP

```
1020  1727                    SUBR1
1021  1022  LCNT5B            CNT5B
1022  7451  CNT5B  OTN   51
1023  0600        ADN                 NOP
1024  0402        LDN   2
1025  3070        ADD   70
1026  4071        STD   71
1027  2171        LDI   71
1030  4206        STF   DWD6
1031  2204        LDF   LDWD6
1032  4001        STD   XSUB
1033  7101        JFI   1
1034  2223                    SUBR9B
1035  1036  LDWD6             DWD6
1036  0000  DWD6
1037  7451        OTN   51
1040  0600        ADN                 NOP
1041  0502        LCN   2
1042  5070        RAD   70
1043  2170        LDI   70
1044  0110        SHA   10
1045  0110        SHA   10
1046  0207        LPN   7
1047  3002        ADD   LTABLE
1050  4072        STD   72
1051  2172        LDI   72
1052  3003        ADD   OUT
1053  4201        STF   1
1054  7400        OTN   0             OUTPUT RANK
1055  7445        OTN   45            CR.
1056  7101        JFI   1
1057  2065                    SUBR4
1060  2210  CONT6  LDF   LCONT7
1061  4114        STI   LLOOP
1062  0410        LDN   10
1063  5107        RAI   LM01
1064  2206        LDF   LCN6A
1065  4113        STI   LM05
1066  7101        JFI   1
1067  2110                    SUBR6A
1070  1334  LCONT7            CONT7
1071  1111  LPRT6             PRT6
1072  1073  LCN6A             CN6A
1073  2215  CN6A    LDF   LCN7A
1074  4114        STI   LLOOP
1075  2212  CN6AA   LDF   LHEAD6
1076  4073        STD   73
1077  0603        ADN   3
1100  4074        STD   74
1101  7447        OTN   47
1102  2311        LDB   LPRT6
1103  4113        STI   LM05
1104  4001        STD   XSUB
1105  7101        JFI   1
1106  2034                    SUBR3
1107  1643  LHEAD6            HEAD6
1110  1331  LCN7A             CN7A
1111  2204  PRT6    LDF   LCNT6A
1112  4001        STD   XSUB
1113  7101        JFI   1
```

```
1114  1727                    SUBR1
1115  1116  LCNT6A            CNT6A
1116  2070  CNT6A  LDD   70
1117  0603        ADN   3
1120  4060        STD   60
1121  2160        LDI   60
1122  4060        STD   60
1123  2204        LDF   LCNT6B
1124  4001        STD   XSUB
1125  7101        UFI   1
1126  2127                    SUBR7
1127  1130  LCNT6B            CNT6B
1130  7447  CNT6B  OTN   47
1131  7454        OTN   54
1132  2070        LDD   70
1133  4067        STD   67
1134  0602        ADN   2
1135  4064        STD   64
1136  0503        LCN   3
1137  4066        STD   66
1140  4065        STD   65
1141  5465        AOD   65
1142  2164        LDI   64
1143  4264        STF   LQS
1144  0402        LDN   2
1145  5064        RAD   64
1146  0400        LDN   0
1147  4256        STF   CARD02
1150  4256        STF   CARD03
1151  4656  A     SRF   LQS
1152  0201        LPN   1
1153  6002        ZJF   NOBIT
1154  5652  LOARIN AOF  CARD03
1155  5466  NOBIT  AOD  66
1156  6505        NZB   A
1157  5465        AOD   65
1160  6006        ZJF   B1
1161  0503        LCN   3
1162  4066        STD   66
1163  0501        LCN   1
1164  5310        RAB   LCARIN
1165  6514        NZB   A
1166  5712  B1    AOD   LCARIN
1167  0401        LDN   1
1170  4066        STD   66
1171  2234        LDF   CARD02
1172  6005        ZJF   B2
1173  5466        AOD   66
1174  2232        LDF   CARD03
1175  6002        ZJF   B2
1176  5466        AOD   66
1177  2466  B2    LCD   66
1200  4066        STD   66
1201  2064        LDD   64
1202  3223        ADF   CARD02
1203  3223        ADF   CARD03
1204  4064        STD   64
1205  2232  B     LDF   LQS
1206  0110        SHA   10
1207  4220        STF   LQS
```

(70) INTO 67, IDLIST LCN OF EAPACK.
(66)=-3, (65)=-2
(66)=1-1-3
(64)=LCN OUTPUT PAR
(65)=Q1

```
1210  0007          LPN   7
1211  4061          ZJF   PARENA
1212  4065          STD   65
1213  0206          LPN   6
1214  0306          LSN   6
1215  6120          NZF   T2
1216  2164          LDI   64
1217  4212          STF   DWD7
1220  2210          LDF   LDWD7
1221  4001          STD   XSUB
1222  7457          OTN   57
1223  7101          JFI   1
1224  2221          SUBR9A
1225  0000  CARDQ2
1226  0000  CARDQ3
1227  0000  LQS
1230  1231  LDWD7         DWD7
1231  0000  DWD7
1232  7447          OTN   47
1233  7444          OTN   44
1234  5464          AOD   64
1235  2065  T2      LDD   65
1236  0202          LPN   2
1237  0302          LSN   2
1240  6111          NZF   T3
1241  2164          LDI   64
1242  4060          STD   60
1243  2204          LDF   LCNT6D
1244  4001          STD   XSUB
1245  7101          JFI   1
1246  2127          SUBR7
1247  1250  LCNT6D        CNT6D
1250  5464  CNT6D   AOD   64
1251  2065  T3      LDD   65
1252  0305          LSN   5
1253  6022          ZJF   DWD8    1
1254  0201          LPN   1
1255  0301          LSN   1
1256  6017          ZJF   DWD8    1
1257  2164          LDI   64
1260  6202          PJF   SGN
1261  6303          NJF   3
1262  7447  SGN     OTN   47
1263  7446          OTN   46
1264  7457          OTN   57
1265  4207          STF   DWD8
1266  2205          LDF   LDWD8
1267  4001          STD   XSUB
1270  7101          JFI   1
1271  2221          SUBR9A
1272  6026  PARENA  ZJF   PAREN
1273  1274  LDWD8         DWD8
1274  0000  DWD8
1275  5466          AOD   66
1276  6022          ZJF   PAREN
1277  7457          OTN   57
1300  7446          OTN   46
1301  7404          OTN   4
1302  2067          LDD   67
1303  0604          ADN   4
```

```
1304  3356  93      ADB   CARDQ3
1305  4064          STD   64
1306  2210          LDF   NOP1
1307  4303          STB   R3
1310  2361          LDB   LQS
1311  0110          SHA   10
1312  0110          SHA   10
1313  4364          STB   LQS
1314  7101          JFI   1
1315  1205                R
1316  0600  NOP1            600
1317  3356  RESTOR  ADB     56
1320  2301  PAREN   LDB     RESTOR
1321  4313          STB   R3
1322  7457          OTN   57
1323  7454          OTN   54
1324  2067          LDD   67
1325  4070          STD   70
1326  7445          OTN   45
1327  7101          JFI   1
1330  2065                SUBR4
1331  2213  CN7A    LDF     LPRTA6
1332  4113          STI   LMO5
1333  6103          NZF   3
1334  2211  CONT7   LDF     LCN6AA
1335  4113          STI   LMO5
1336  2210          LDF   LCONT8
1337  4114          STI   LLOOP
1340  0440          LDN   40
1341  5107          RAI   LMO1
1342  7101          JFI   1
1343  2110                SUBR6A
1344  1111  LPRTA6          PRT6
1345  1075  LCN6AA          CN6AA
1346  1347  LCONT8          CONT8
1347  2210  CONT8   LDF     LCONT9
1350  4114          STI   LLOOP
1351  0530          LCN   30
1352  5107          RAI   LMO1
1353  2206          LDF   LCN8A
1354  4113          STI   LMO5
1355  7101          JFI   1
1356  2110                SUBR6A
1357  1376  LCONT9          CONT9
1360  1423  LPRT8           PRT9
1361  1362  LCN8A           CN8A
1362  2212  CN8A    LDF     LHEAD7
1363  4073          STD   73
1364  0632          ADN   32
1365  4074          STD   74
1366  7447          OTN   47
1367  2307          LDB   LPRT8
1370  4113          STI   LMO5
1371  4001          STD   XSUB
1372  7101          JFI   1
1373  2034                SUBR3
1374  1646  LHEAD7          HEAD7
1375  1464  LHLT            HLT
1376  2301  CONT9   LDB     LHLT
1377  4114          STI   LLOOP
```

TYPE 4

```
1400  0410          LDN   10
1401  5107          RAI   LMO1
1402  2205          LDF   LCN9A
1403  4113          STI   LMO5
1404  7101          JFI   1
1405  2110          SUBR6A
1406  1423  LPRT9         PRT9
1407  1410  LCN9A         CN9A
1410  2212  CN9A    LDF   LHEAD8
1411  4073          STD   73
1412  0627          ADN   27
1413  4074          STD   74
1414  7447          OTN   47
1415  2307          LDB   LPRT9
1416  4113          STI   LMO5
1417  4001          STD   XSUB
1420  7101          JFI   1
1421  2034          SUBR3
1422  1700  LHEAD8        HEAD8
1423  2204  PRT9    LDF   LCNT9A
1424  4001          STD   XSUB
1425  7101          JFI   1
1426  1727          SUBR1
1427  1430  LCNT9A        CNT9A
1430  7451  CNT9A   OTN   51
1431  0600          ADN                 NOP
1432  0402          LDN   2
1433  5070          RAD   70
1434  2204          LDF   LCNT9B
1435  4001          STD   XSUB
1436  7101          JFI   1
1437  1727          SUBR1
1440  1441  LCNT9B        CNT9B
1441  7451  CNT9B   OTN   51
1442  0600          ADN                 NOP
1443  0502          LCN   2
1444  5070          RAD   70
1445  0404          LDN   4
1446  3070          ADD   70
1447  4073          STD   73
1450  2170          LDI   70
1451  0207          LPN   7
1452  3073          ADD   73
1453  4074          STD   74
1454  2204          LDF   LCNT9C
1455  4001          STD   XSUB
1456  7101          JFI   1
1457  1760          SUBR2
1460  1461  LCNT9C        CNT9C
1461  7445  CNT9C   OTN   45
1462  7101          JFI   1
1463  2065          SUBR4
1464  7443  HLT     OTN   43
1465  7101          JFI   1
1466  2335          DPOBCD
1467  0056  TABLE         56          0
1470  0074                74          1
1471  0070                70          2
1472  0064                64          3
1473  0052                52          4
```

```
1474  0066          66          5
1475  0072          72          6
1476  0060          60          7
1477  0033          33          8
1500  0037          37          9
1501  0042          42          :
1502  1042          1042        =
1503  0044          44          SLASH
1504  1044          1044        *
1505  0046          46          ,
1506  1046          1046        +
1507  0052          52          -
1510  1052          1052        .
1511  0054          54          )
1512  1054          1054        (
1513  0000          0
1514  0000          0
1515  0000          0
1516  0000          0
1517  1014          1014        I
1520  1032          1032        J
1521  1036          1036        K
1522  1011          1011        L
1523  1007          1007        M
1524  1006          1006        N
1525  0000          0
1526  0000          0
1527  1030          1030        A
1530  1023          1023        B
1531  1016          1016        C
1532  1022          1022        D
1533  1020          1020        E
1534  1026          1026        F
1535  1013          1013        G
1536  1005          1005        H
1537  1003          1003        O
1540  1015          1015        P
1541  1035          1035        Q
1542  1012          1012        R
1543  1024          1024        S
1544  1001          1001        T
1545  1034          1034        U
1546  1017          1017        V
1547  1031          1031        W
1550  1027          1027        X
1551  1025          1025        Y
1552  1021          1021        Z
1553  1406  HEADS   1406        *INTEGER-CONSTANTS*
1554  0120          120
1555  1320          1320
1556  1204          1204
1557  1603          1603
1560  0624          624
1561  0130          130
1562  0601          601
1563  2400          2400
1564  0000          0
1565  0000          0
1566  0000          0
1567  3012  HEAD2   3012        ARRAY STORAGE
```

```
1570  1230                  1230
1571  2504                  2504
1572  2401                  2401
1573  0312                  312
1574  3013                  3013
1575  2077                  2077
1576  1730  HEAD1           1730        VARIABLE LIST
1577  1214                  1214
1600  3023                  3023
1601  1120                  1120
1602  0411                  411
1603  1424                  1424
1604  0104                  104
1605  2611  HEAD4           2611        *FLOATING CONSTANTS*
1606  0330                  330
1607  0114                  114
1610  0613                  613
1611  0416                  416
1612  0306                  306
1613  2401                  2401
1614  3006                  3006
1615  0124                  124
1616  4711  HEAD5           4711        *LABELS
1617  3023                  3023        VARLIST LCN
1620  2011                  2011        OBJCODE LCN
1621  2445                  2445        NAME(OCT)
1622  1730                  1730        RANK*
1623  1211                  1211
1624  1424                  1424
1625  0104                  104
1626  1116                  1116
1627  0651                  651
1630  0323                  323
1631  3216                  3216
1632  0322                  322
1633  2004                  2004
1634  1116                  1116
1635  0651                  651
1636  0630                  630
1637  0720                  720
1640  5177                  5177
1641  1230                  1230
1642  0636                  636
1643  2030  HEAD6           2030
1644  1530                  1530
1645  1636                  1636
1646  1114  HEAD7           1114        *LIBRARY FUNCTION NAMES*
1647  2312                  2312
1650  3012                  3012
1651  2504                  2504
1652  2634                  2634
1653  0616                  616
1654  0114                  114
1655  0306                  306
1656  2406                  406
1657  3007                  3007
1660  2024                  2024
1661  4517                  4517
1662  3012                  3012
1663  1114                  1114
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1664  2401                    2401
1665  0411                    411
1666  1606                    1606
1667  5103                    5103
1670  2332                    2332
1671  1603                    1603
1672  2220                    2220
1673  0411                    411
1674  1606                    1606
1675  5106                    5106
1676  3007                    3007
1677  2077                    2077
1700  2434  HEADB             2434      *SUBROUTINE NAMES*
1701  2312                    2312
1702  0334                    334
1703  0114                    114
1704  0620                    620
1705  0406                    406
1706  3007                    3007
1707  2024                    2024
1710  7745                    7745
1711  1730                    1730
1712  1211                    1211
1713  1424                    1424
1714  0104                    104
1715  1116                    1116
1716  0651                    651
1717  0323                    323
1720  3216                    3216
1721  0322                    322
1722  2004                    2004
1723  1116                    1116
1724  0651                    651
1725  0630                    630
1726  0720                    720
1727  0504  SUBR1  LCN   4
1730  4073       STD   73      73 IS CNTR
1731  7457       OTN   57      L.C.
1732  2070       LDD   70
1733  0601       ADN   1
1734  4071       STD   71
1735  2171       LDI   71
1736  0110       SHA   10
1737  4071       STD   71      (71)=WD TO BE OUTPUT
1740  0207  OSLT LPN   7       (A)=DIGIT TO BE OUTPUT
1741  3002       ADD   LTABLE
1742  4074       STD   74
1743  2174       LDI   74      (A)=FLX CODE TO BE OUTPUT
1744  3003       ADD   OUT
1745  4201       STF   1
1746  7400       OTN   0       OUTPUTS FLX CODE
1747  5473       AOD   73
1750  6006       ZJF   RET     JP IF 4 DIGITS OUTPUT
1751  2071       LDD   71
1752  0110       SHA   10
1753  4071       STD   71
1754  6414       ZJB   SELT
1755  6515       NZB   SELT    JP TO SELT
1756  7451  RET  OTN   51      TAB OR SP
1757  7001       CPI   XSUB
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1760  7407  SUBR2  OTN   47          (71)=0 IF FLX L.C., 1 IF FLX U.C.
1761  0401         LDN   1
1762  4071         STD   71          (74)=LCN+1 OF LAST WD TO BE OUTPU
1763  0400         LDN   0           (73)=LCN 1ST WD TO BE OUTPUT
1764  4077         STD   77          (75)=WORD TO BE CONVERTED TO FLX
1765  2173  BR     LDI   73          (76)=ADDRESS OF FLX CODE TO BE OU
1766  4075         STD   75          (77)=FLAG
1767  1006         LPD   MASK3
1770  0110         SHA   10
1771  0110         SHA   10
1772  3002  BR1    ADD   LTABLE
1773  4076         STD   76
1774  2176         LDI   76
1775  1004         LPD   MASK1
1776  6021         ZJF   NO
1777  2071         LDD   71
2000  6103         NZF   BR3
2001  7447         OTN   47
  02  5471         AOD   71
2003  2176  BR3    LDI   76
2004  0277         LPN   77
2005  3003         ADD   OUT
2006  4201         STF   1
2007  7400         OTN   0
2010  2077         LDD   77
2011  6115         NZF   YNN
2012  5477         AOD   77
2013  2075         LDD   75
2014  0277         LPN   77
2015  7101         JFI   1
2016  1772         BR1
2017  2071  NO     LDD   71
2020  6415         ZJB   BR3
2021  7457         OTN   57
2022  0400         LDN   0
2023  4071         STD   71
2024  7101         JFI   1
2025  2003         BR3
2026  0400  YNN    LDN   0
2027  4077         STD   77
2030  5473         AOD   73
2031  5474         SBD   74
2032  6545         NZB   BR
2033  7001         JPI   XSUB
2034  7445  SUBR3  OTN   45
2035  7445         OTN   45
2036  7445         OTN   45
2037  0400  SUBR3A LDN   0
2040  4076         STD   76          OUTPUTS FLX CODES IN LCNS (73) TH
2041  2173         LDI   73                                   (74)+1
2042  4075         STD   75
2043  0110         SHA   10
2044  0110         SHA   10
2045  0277  RPT    LPN   77
2046  3003         ADD   OUT
2047  4201         STF   1
2050  7400         OTN   0
2051  2076         LDD   76
2052  6165         NZF   NEWORD
2053  5476         AOD   76
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2054  2075          LDD   75
2055  6410          ZJB   RPT
2056  6511          NZB   RPT
2057  5473  NEWORD  AOD   73
2060  3474          SBD   74
2061  6522          NZB   SUBR3A
2062  7445          OTN   45
2063  7445          OTN   45
2064  7001          JPI   XSUB
2065  2170  SUBR4   LDI   70
2066  4071          STD   71
2067  0270          LPN   70
2070  0370          LSN   70
2071  6103          NZF   3
2072  0410          LDN   10
2073  5070          RAD   70
2074  2071          LDD   71
2075  0207          LPN   7
2076  5070          RAD   70
2077  2071          LDD   71
2100  0110          SHA   10
2101  0207          LPN   7
2102  5070          RAD   70
2103  6103          NZF   3
2104  7101          JFI   1
2105  0412  LOOP            CONT2
2106  7101          JFI   1
2107  2112                SUBR6
2110  2054  SUBR6A  LDD   54
2111  4070          STD   70
2112  2170  SUBR6   LDI   70          TYPE DETERMINERS EXIT AT K IF ((70)
2113  0270          LPN   70          NOT CORRECT SUBTYPE  AT XT OTHERWISE
2114  0300  M01     LSN   0           00, 10, 20, 30, 40, 50, 70
2115  6110          NZF   K           JP TO K IF NOT CORRECT TYPE
2116  6001  M02     ZJF   1           1 IF TYPE 0 OR 1, 6 OTHERWISE
2117  2170          LDI   70
2120  0110  M03     SHA   10          NOP IF TYPE 4
2121  0204  M04     LPN   4
2122  6103          NZF   K
2123  7101  XT      JFI   1
2124  0333  M05             CONT1.
2125  7101  K       JFI   1
2126  2065                SUBR4
2127  2070  SUBR7   LDD   70          (60)=VARLIS LCN OF A TYPE 0 VBLE,
2130  4061          STD   61          PRT OUT ALPHA NUM DESIGNATOR, XT SUB
2131  2054          LDD   54
2132  4070          STD   70
2133  0402          LDN   2
2134  5014          RAD   LLOOP
2135  2114          LDI   LLOOP
2136  4062          STD   62
2137  2212          LDF   LRESM
2140  4114          STI   LLOOP
2141  5470  RESM    AOD   70
2142  2170          LDI   70
2143  3460          SBD   60
2144  6006          ZJF   TO
2145  0501          LCN   1
2146  5070          RAD   70
2147  7101          JFI   1
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2150  2065                SUBR4
2151  2141  LRESM         RESM
2152  2062  TO    LDD     62
2153  4114        STI     LLOOP
2154  0502        LCN     2
2155  5014        RAD     LLOOP
2156  0501        LCN     1
2157  5070        RAD     70
2160  2170        LDI     70
2161  0110        SHA     10
2162  0207        LPN     7
2163  3070        ADD     70
2164  4073        STD     73
2165  2170        LDI     70
2166  0207        LPN     7
2167  3073        ADD     73
2170  4074        STD     74
2171  2061        LDD     61
2172  4070        STD     70
2173  7101        JFI     1
2174  1760                SUBR2
2175  3613  CH1A  SBF     13
2176  3614  CH1C  SBF     14
2177  3615  CH1D  SBF     15
2200  0600  CH2A  ADN
2201  7404  CH2B  OTN     4
2202  0503  CH3A  LCN     3
2203  0502  CH3C  LCN     2
2204  0501  CH3D  LCN     1
2205  3206  SHFTA ADF     6
2206  3207  SHFTC ADF     7
2207  3210  SHFTD ADF     10
2210  2305  SUBR9C LDB    CH3C
2211  4251        STF     CH3
2212  2314        LDB     CH1C
2213  4252        STF     CH1
2214  2306        LDB     SHFTC
2215  4255        STF     SHFT
2216  2316        LDB     CH2A
2217  4240        STF     POSTV
2220  6127        NZF     ADM2
2221  2321  SUBR9A LDB    CH2A
2222  6102        NZF     ADM1
2223  2322  SUBR9B LDB    CH2B
2224  4263  ADM1  STF     CH2
2225  4232        STF     POSTV
2226  2324        LDB     CH3A
2227  4233        STF     CH3
2230  2333        LDB     CH1A
2231  4234        STF     CH1
2232  2325        LDB     SHFTA
2233  4237        STF     SHFT
2234  0400        LDN     0
2235  4075        STD     75
2236  6013        ZJF     SUBR9
2237  2353  SUBR9D LDB    CH3D
2240  4222        STF     CH3
2241  2341        LDB     CH2A
2242  4219        STF     POSTV
2243  2314        LDB     CH1D
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2244  4221          STF  CH1
2245  2336          LDD  SHFTD
2246  4224          STF  SHFT
2247  0401  ADR2    LDN  1
2250  4075          STD  75
2251  2101  SUBR9   LDI  XSUB
2252  6205          PJF  POSTV
2253  7452          OTN  52
2254  2501          LCI  XSUB
2255  4101          STI  XSUB
2256  6202          PJF  POSTV1
2257  7404  POSTV   OTN  4
2260  0400  POSTV1  LDN  0
2261  4076          STD  76
2262  0503  CH3     LDN  3
2263  4077          STD  77
2264  2101  REPEAT  LDI  XSUB
2265  3613  CH1     SBF  DIVS1
2266  6304          NJF  SHFT
2267  4101          STI  XSUB
2270  5476          AOD  76
2271  6605          PJB  REPEAT
2272  3206  SHFT    ADF  DIVS1
2273  4074          STD  74
2274  4101          STI  XSUB
2275  5710          AOB  CH1
2276  5704          AOB  SHFT
2277  6104          NZF  OUTPUT
2300  1750  DIVS1   1750
2301  0144  DIVS2   144
2302  0012  DIVS3   12
2303  2076  OUTPUT  LDD  76
2304  6105          NZF  OUTPTA
2305  2075          LDD  75
2306  6103          NZF  OUTPTA
2307  7477  CH2     OTN  77
2310  6012          ZJF  OUTPTB
2311  5475  OUTPTA  AOD  75
2312  2002          LDD  LTABLE
2313  5076          RAD  76
2314  2176          LDI  76
2315  3003          ADD  OUT
2316  4201          STF  1
2317  7400          OTN  0          OUTPUTS DIGIT
2320  0400          LDN  0
2321  4076          STD  76
2322  5477  OUTPTB  AOD  77
2323  6537          NZR  REPEAT
2324  2002          LDD  LTABLE
2325  5074          RAD  74
2326  2174          LDI  74
2327  3003          ADD  OUT
2330  4201          STF  1
2331  7400          OTN  0          OUTPUTS FINAL DIGIT
2332  5401          AOD  XSUB
2333  7001          JPI  XSUB
2334  0000  LDRCT
2335  7546  PROBOD  EXF  WRITE
2336  0577          LDN  77         PUNCH LEADER
2337  4303          STD  LDRCT
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2340  7406          CTN
2341  6705          AOB    LDRCT
2342  6502          NZB    2
2343  7700          HLT
2344  2210          LDF    LHED1
2345  4073          STD    73
2346  0607          ADN    7
2347  4074          STD    74
2350  2205          LDF    LNRES
2351  4001          STD    XSUB
2352  7101          UJP    1
2353  2037          SUBR3A
2354  4254    LHED1         HED1
2355  2356    LNRES         RES
2356  0507    RES   LDN    7
2357  4020          STD    TEMP2
2360  2224    AGEN  LDF    TABLE3
2361  4021          STD    TEMP3
2362  2231          LDF    MDF1
2363  4121          STI    TEMP3
2364  5704          AOB    AGEN
2365  5420          AOD    TEMP2
2366  6506          NZB    AGEN
2367  2227          LDF    LMDF2
2370  4017          STD    TEMP1A
2371  2226          LDF    LMDF2   1
2372  4020          STD    TEMP2
2373  2221          LDF    MDF2
2374  4117          STI    TEMP1A
2375  4120          STI    TEMP2
2376  2222          LDF    LMDF3
2377  4020          STD    TEMP2
2400  2219          LDF    MDF3
2401  4120          STI    TEMP2
2402  6117          NZF    PART2A
2403  4104    WRITB         4104
2404  0407    TABLES        W              VARIABLE
2405  0542                  PARN   1       ARRAY
2406  0620                  DWD3   1       INTEGER CONSTANT
2407  0751                  DWD5   1       FLTNG CONSTANT
2410  1055                  CONT6  =3      LABEL
2411  1326                  PAREN  6       EAPACK
2412  1465                  CNT9C          SUBROUTINE
2413  7026    MDF1  UJP     XSUB1
2414  2221    MDF2          SUBR9A
2415  7001    MDF3          7001
2416  1034    LMDF2         LDWD6  =1      LABEL MOD
2417  0615                  LDWD3  =1      INTG MOD
2420  2062    LMDF3         NEWORD 3
2421  7552    PART2A EXF    READ1
2422  7101          UJP     1              PROVISION TO
2423  2433                  PART2          PASS OVER LOADER
2424  7600          INA
2425  6401          ZJB     1
2426  7600          INA
2427  6004          ZJF     PART2
2430  7600          INA
2431  6403          ZJB     3
2432  6504          NZB     4
2433  2207    PART2 LDF     LST08
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2434  4026          STD   XSUB1
2435  7600          INA
2436  6401          ZJB   1
2437  4022          STD   TEMP4
2440  7101          JFI   1
2441  3732                SUBR2A
2442  4312  LSTOD         STO6
2443  2025  CNT     LDD   OBJCD
2444  4027          STD   LOBJCD
2445  2207          LDF   LCNTI
2446  4026          STD   XSUB1
2447  7503          EXF   RITE
2450  7101          JFI   1
2451  3661                SUBR2B
2452  4104  RITE          4104
2453  4102  READ1         4102
2454  2455  LCNTI         CONTIN
2455  2054  CONTIN  LDD   54
2456  4070          STD   70
2457  2070  NOMAC   LDD   70
2460  6102          NZF   2
2461  6034          ZJF   BRANCH
2462  2170          LDI   70
2463  0270          LPN   70
2464  0350          LSN   50
2465  6110          NZF   NOMAC1 +2
2466  2070          LDD   70
2467  0603          ADN   3
2470  4071          STD   71
2471  2171          LDI   71
2472  3427          SBD   LOBJCD
2473  0601          ADN   1
2474  6006          ZJF   YESS
2475  2204          LDF   LNOMAC
2476  4001          STD   XSUB
2477  7101  NOMAC1  JFI   1
2500  4035                SUBINC
2501  2457  LNOMAC        NOMAC
2502  2210  YESS    LDF   LHED2
2503  4073          STD   73
2504  0627          ADN   27
2505  4074          STD   74
2506  2205          LDF   LPTSB
2507  4001          STD   XSUB
2510  7101          JFI   1
2511  2037                SUBR3A
2512  4263  LHED2         HED2
2513  2572  LPTSB         CNT1
2514  7100  JFI           7100
2515  2025  BRANCH  LDD   OBJCD
2516  6303          NJF   3
2517  0721          SBN   21
2520  6302          NJF   2
2521  0000          ERR                 NAME OF MACRO NOT IN TABLE
2522  2025          LDD   OBJCD
2523  3307          ADB   JFI
2524  4201          STF   1
2525  7101          JFI   1
2526  2546                PCALL
2527  2630                PINIT
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2530  2660                    PINCR
2531  2714                    PARITH
2532  3363                    PIF
2533  3370                    PTRA
2534  3376                    PTRAI
2535  3440                    PSTOP
2536  3466                    PPAUSE
2537  3475                    PPAUSS
2540  3520                    PASSIG
2541  3530                    PRETUR
2542  3542                    PFAULT
2543  3551                    PCHKDI
2544  3561                    PIO
2545  3646                    PIOO
2546  7416  POALL  OTN   16
2547  7430          OTN   30
2550  7411          OTN   11
2551  7411          OTN   11
2552  7404          OTN   4
2553  2204          LDF   LCT1A
2554  4026          STD   XSUB1
2555  7101          JFI   1
2556  3732                    SUBR2A
2557  2560  LCT1A             CNT1AA
2560  2204  CNT1AA  LDF   LCT1B
2561  4026          STD   XSUB1
2562  7101          JFI   1
2563  4024                    SUBR4A
2564  2565  LCT1B             CNT5
2565  2204  CNT5    LDF   LCNT1
2566  4026          STD   XSUB1
2567  7101          JFI   1
2570  3666                    SUBR2C
2571  2572  LCNT1             CNT1
2572  2426  CNT1    LCD   OBJCD
2573  0701          SBN   1
2574  4225          STF   CNTER1
2575  2025  CNT3G   LDD   OBJCD
2576  4207          STF   DWD1A
2577  2205          LDF   LDWD1A
2600  7457          OTN   57
2601  4026          STD   XSUB1
2602  7101          JFI   1
2603  4010                    SUBR3B
2604  2605  LDWD1A            DWD1A
2605  0000  DWD1A
2606  5613  CNT4    AOF   CNTER1
2607  6105          NZF   CNT2AA
2610  2217          LDF   LCNT3
2611  4026          STD   XSUB1
2612  7101          JFI   1
2613  3661                    SUBR2B
2614  2204  CNT2AA  LDF   LCNT2
2615  4026          STD   XSUB1
2616  7101          JFI   1
2617  3666                    SUBR2C
2620  2622  LCNT2             CNT2
2621  0000  CNTER1
2622  2204  CNT2    LDF   LCNT4
2623  4026          STD   XSUB1
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2624  7101          JFI   1
2625  4024                SUBR4A
2626  2606  LCNT4         CNT4
2627  2455  LCNT3         CONTIN
2630  7414  PINIT OTN     14
2631  7406          OTN   6
2632  7414          OTN   14
2633  7401          OTN   1
2634  0502  CONT10  LCN   2
2635  4021          STD   TEMP3
2636  2204  CNT7    LDF   LCNT6
2637  4026          STD   XSUB1
2640  7101          JFI   1
2641  3666                SUBR2C
2642  2643  LCNT6         CNT6
2643  2204  CNT6    LDF   LCNT8
2644  4026          STD   XSUB1
2645  7101          JFI   1
2646  4024                SUBR4A
2647  2650  LCNT8         CNT8
2650  5421  CNT8    AOD   TEMP3
2651  6513          NZB   CNT7
2652  2204          LDF   LCNT8A
2653  4026          STD   XSUB1
2654  7101          JFI   1
2655  3661                SUBR2B
2656  2455  LCNT8A        CONTIN
2657  2674  LCNT11        CNT11
2660  7414  PINCR OTN     14
2661  7406          OTN   6
2662  7416          OTN   16
2663  7412          OTN   12
2664  2206          LDF   LSUB8D
2665  4310          STB   LCNT8A  +1
2666  5714          AOB   CNT8    2
2667  0503          LCN   3
2670  7101          JFI   1
2671  2635                CONT10  1
2672  3666  LSUB2C        SUBR2C
2673  3661  LCONTI        SUBR2B
2674  0501  CNT11  LCN   1
2675  5523          RAB   CNT8    2
2676  2303          LDB   LCONTI
2677  4322          STB   LCNT8A  +1
2700  2025          LDD   OBJCD
2701  4206          STF   DWD11
2702  2204          LDF   LDWD11
2703  4026          STD   XSUB1
2704  7101          JFI   1
2705  4134                SUBR5A
2706  2707  LDWD11        DWD11
2707  0000  DWD11
2710  2332          LDB   LCNT8A
2711  4026          STD   XSUB1
2712  7101          JFI   1
2713  3661                SUBR2B
2714  7430  PARITH OTN     30
2715  7412          OTN   12
2716  7414          OTN   14
2717  7401          OTN   1
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2720  7415          OTN   5
2721  2203          LDF   LCNT12
2722  4026          STD   XSUB1
2723  7101          JFI   1
2724  3666          SUBR2C
2725  2725  LCNT12  CNT12
2726  7407  CNT12   OTN   7
2727  7403          OTN   3
2730  7422          OTN   22
2731  7420          OTN   20
2732  7450          OTN   50
2733  7404          OTN   4
2734  2025          LDD   OBJCD
2735  0102          SHA   2
2736  0102          SHA   2
2737  0203          LPN   3
2740  6110          NZF   CNT13       **INTEGER**
2741  7414          OTN   14
2742  7406          OTN   6
2743  7401          OTN   1
2744  7420          OTN   20
2745  7413          OTN   13
2746  7420          OTN   20
2747  7412          OTN   12
2750  0302  CNT13   LSN   2
2751  6106          NZF   CNT14       **FLTNG**
2752  7426          OTN   26
2753  7411          OTN   11
2754  7401          OTN   1
2755  7406          OTN   6
2756  7413          OTN   13
2757  0303  CNT14   LSN   3
2760  6110          NZF   CNT15
2761  7423          OTN   23          **BOOLEAN**
2762  7403          OTN   3
2763  7403          OTN   3
2764  7411          OTN   11
2765  7420          OTN   20
2766  7450          OTN   30
2767  7406          OTN   6
2770  2025  CNT15   LDD   OBJCD
2771  0277          LPN   77
2772  4017          STD   TEMP1A      NBR PARAMETERS
2773  2417          LCD   TEMP1A
2774  4017          STD   TEMP1A
2775  2206          LDF   LBLOCK
2776  4020          STD   TEMP2
2777  2205  CNT16   LDF   LCN15A
3000  4026          STD   XSUB1
3001  7101          JFI   1
3002  3732          SUBR2A
3003  4155  LBLOCK  BLOCK
3004  3005  LCN15A  CNT15A
3005  2025  CNT15A  LDD   OBJCD
3006  4120          STI   TEMP2
3007  3420          ADD   TEMP2
3010  3417          ADD   TEMP1A
3011  6312          NZB   CNT16
3012  2210  CNT17A  LDF   LCNT18
3013  4026          STD   XSUB1
```

```
3014  7101          JFI   1
3015  3661                SUBR28
3016  2204  CNT17   LDF   LCNT18
3017  4025          STD   XSUB1
3020  7101          JFI   1
3021  3668                SUBR2C
3022  3023  LCNT18        CNT18
3023  2025  CNT18   LDD   OBJCD
3024  0217          LPN   17
3025  0704          SBN   4
3026  3217          ADF   LJFI
3027  4201          STF   1
3030  7101          JFI   1
3031  3046                IV      LTRA
3032  3254                V       DROUT
3033  3073                VI      ADD
3034  3153                VII     SUB
3035  3160                X       MPY
3036  3165                XI      DIV
3037  3172                XII     PWR
3040  3177                XIII    LTPM
3041  3233                XIV     LTZNZ
3042  3325                XV      STO
3043  3332                XVI     TRASR, RTRA
3044  3353                XVII    END
3045  7101  LJFI  JFI   1
3046  4425  IV    SRD   OBJCD
3047  0201          LPN   1
3050  7401          OTN   1       TRB OR
3051  7412          OTN   12      TRF
3052  6003          ZJF   3
3053  7423          OTN   23
3054  6102          NZF   2
3055  7426          OTN   26
3056  7404          OTN   4
3057  4425          SRD   OBJCD
3060  1206          LPF   MA177
3061  4207          STF   IVA
3062  2205          LDF   LIVA
3063  4026          STD   XSUB1
3064  7101          JFI   1
3065  4010                SUBR38
3066  0177  MA177         177
3067  3070  LIVA          IVA
3070  0000  IVA
3071  7101          JFI   1
3072  3016                CNT17
3073  7430  VI      OTN   30
3074  7422          OTN   22
3075  7422          OTN   22
3076  7404  SUBR7A  OTN   4
3077  4425          SRD   OBJCD
3100  4425          SRD   OBJCD
3101  0203          LPN   3
3102  6063          ZJF   VIA
3103  7447          OTN   47
3104  0301          LBN   1
3105  6002          ZJF   2
3106  7426          OTN   26      F
3107  7420          OTN   20      G
```

```
3110  7412          OTN   12          R
3111  7430          OTN   30          A
3112  7424          OTN   24          S
3113  7420          OTN   20          E
3114  2025          LDD   OBJCD
3115  0110          SHA   10
3116  0110          SHA   10
3117  0277          LPN   77
3120  0701          SBN   1
3121  6012          ZJF   VIG     1
3122  4210          STF   VIG
3123  2206          LDF   LVIG
3124  4026          STD   XSUB1
3125  7446          OTN   46          *
3126  7457          OTN   57
3127  7101          JFI   1
3130  4010          SUBR3B
3131  3132    LVIG  =     VIG
3132  0000    VIG
3133  7101          JFI   1
3134  3016          =     CNT17
3135  2025    VIA   LDD   OBJCD
3136  0110          SHA   10
3137  0110          SHA   10
3140  0277          LPN   77
3141  3210          ADF   LBLCK
3142  4017          STD   TEMP1A
3143  2117          LDI   TEMP1A
3144  4025          STD   OBJCD
3145  2205          LDF   LCNT17
3146  4026          STD   XSUB1
3147  7101          JFI   1
3150  4024          SUBR4A
3151  4154    LBLCK =     BLOCK   -1
3152  3016    LCNT17=     CNT17
3153  7424    VII   OTN   24          SUB
3154  7434          OTN   34
3155  7423          OTN   23
3156  7101          JFI   1
3157  3076          SUBR7A
3160  7407    X     OTN   7           MPY
3161  7415          OTN   15
3162  7425          OTN   25
3163  7101          JFI   1
3164  3076          SUBR7A
3165  7422    XI    OTN   22          DIV
3166  7414          OTN   14
3167  7417          OTN   17
3170  7101          JFI   1
3171  3076          SUBR7A
3172  7415    XII   OTN   15          PWR
3173  7431          OTN   31
3174  7412          OTN   12
3175  7101          JFI   1
3176  3016          =     CNT17
3177  7401    XIII  OTN   1
3200  4025          SRD   OBJCD
3201  4025          SRD   OBJCD
3202  0201          LPN   1
3203  6105          NZF   3
```

```
3204  7415          OTN   15
3205  4002          ZJF   2
3206  7406          OTN   6          N
3207  2025          LDD   OBJCD
3210  0202          LPN   2
3211  6103          NZF   3
3212  7426          OTN   26         F
3213  6002          ZJF   2
3214  7423          OTN   23         B
3215  7404  XIVA    OTN   4
3216  2025          LDD   OBJCD
3217  0110          SHA   10
3220  0110          SHA   10
3221  0277          LPN   77
3222  4206          STF   XIIIA
3223  2204          LDF   LXIIIA
3224  4026          STD   XSUB1
3225  7101          JFI   1
3226  4010                SUBR3B
3227  3230  LXIIIA        XIIIA
3230  0000  XIIIA
3231  7101          JFI   1
3232  3016                CNT17
3233  4425  XIV     SRD   OBJCD
3234  4425          SRD   OBJCD
3235  0201          LPN   1
3236  6104          NZF   4
3237  7401          OTN   1          T
3240  7421          OTN   21         Z
3241  6003          ZJF   3
3242  7421          OTN   21         Z
3243  7406          OTN   6          N
3244  2025          LDD   OBJCD
3245  0202          LPN   2
3246  6103          NZF   3
3247  7426          OTN   26         F
3250  6002          ZJF   2
3251  7423          OTN   23         B
3252  7101          JFI   1
3253  3215                XIVA
3254  7422  V       OTN   22         DROUT
3255  7403          OTN   3
3256  4425          SRD   OBJCD
3257  0201          LPN   1
3260  6103          NZF   3
3261  7426          OTN   26         DOF
3262  6002          ZJF   2
3263  7423          OTN   23         DOB
3264  7404          OTN   4
3265  4425          SRD   OBJCD
3266  0110          SHA   10
3267  0110          SHA   10
3270  0277          LPN   77
3271  4021          STD   TEMP3
3272  4202          STF   VD
3273  2204          LDF   LVD
3274  4025          STD   XSUB1
3275  7101          JFI   1
3276  4010                SUBR3B
3277  3305  LVD           VD
```

```
3300  0000  VD
3301  2421        LCD   TEMP3
3302  4021        STD   TEMP3
3303  5421        AOD   TEMP3
3304  2204  VC    LDF   LVA
3305  4026        STD   XSUB1
3306  7101        JFI   1
3307  3666              SUBR2C
3310  3311  LVA         VA
3311  2025  VA    LDD   OBJCD
3312  4206        STF   VB
3313  2204        LDF   LVB
3314  4026        STD   XSUB1
3315  7101        JFI   1
3316  4134              SUBR5A
3317  3320  LVB         VB
3320  0000  VB
3321  5421        AOD   TEMP3
3322  6516        NZB   VC
3323  7101        JFI   1
3324  3016              CNT17
3325  7424  XV    OTN   24          STO
3326  7401        OTN   1
3327  7403        OTN   3
3330  7101        JFI   1
3331  3075              SUBR7A
3332  4425  XVI   SRD   OBJCD
3333  0201        LPN   1
3334  6112        NZF   RTRA
3335  7401        OTN   1           **TRACE**
3336  7412        OTN   12
3337  7430        OTN   30
3340  7424        OTN   24
3341  7412        OTN   12
3342  7404        OTN   4
3343  4425        SRD   OBJCD
3344  7101        JFI   1
3345  3136              VIA   1
3346  7412  RTRA  OTN   12          **RTRA**
3347  7401        OTN   1
3350  7412        OTN   12
3351  7101  XVIA  JFI   1
3352  3016              CNT17
3353  7420  XVII  OTN   20          END
3354  7406        OTN   6
3355  7422        OTN   22
3356  2204        LDF   LCONTN
3357  4026        STD   XSUB1
3360  7101        JFI   1
3361  3661              SUBR2B
3362  2455  LCONTN      CONTIN
3363  7414  PIF   OTN   14          IF
3364  7426        OTN   26
3365  0503        LCN   3
3366  7101        JFI   1
3367  2635              CONT10  1
3370  7401  PTRA  OTN   1           PRA
3371  7412        OTN   12
3372  7430        OTN   30
3373  0501  ONTO1 LCN   1
```

```
3374  7101          JFI   1
3375  2633          CONTIO  1:
3376  7401  PTRAI   OTN   1          TRAI
3377  7412          OTN   12
3400  7430          OTN   30
3401  7414          OTN   14
3402  2204  CNT23   LDF   LCNT22
3403  4026          STD   XSUB1
3404  7101          JFI   1
3405  3671          SUBR2D
3406  3407  LCNT22          CNT22
3407  2025  CNT22   LDD   OBJCD      IS (OBJCD) A MACRO NAME
3410  6303          NJF   LPA        NO, THEN JP
3411  0721          SBN   21
3412  6310          NJF   CNT24      YES, THEN JP
3413  7445  LPA     OTN   45
3414  7451          OTN   51
3415  2204          LDF   LCNT23
3416  4026          STD   XSUB1
3417  7101          JFI   1
3420  4024          SUBR4A
3421  3402  LCNT23          CNT23
3422  7445  CNT24   OTN   45
3423  0501          LCN   1
3424  3027          ADD   LOBJCD
3425  4206          STF   CN24A
3426  2204          LDF   LCN24A
3427  4026          STD   XSUB1
3430  7101          JFI   1
3431  4134          SUBR5A
3432  3433  LCN24A          CN24A
3433  0000  CN24A
3434  7447          OTN   47
3435  7451          OTN   51
3436  7101          JFI   1
3437  2455          CONTIN
3440  7424  PSTOP   OTN   24         STOP
3441  7401          OTN   1
3442  7403          OTN   3
3443  7415          OTN   15
3444  2204          LDF   LCNT25
3445  4026          STD   XSUB1
3446  7101          JFI   1
3447  3666          SUBR2C
3450  3451  LCNT25          CNT25
3451  2025  CNT25   LDD   OBJCD
3452  4206          STF   CNT26
3453  2204          LDF   LCNT26
3454  4026          STD   XSUB1
3455  7101          JFI   1
3456  4134          SUBR5A
3457  3460  LCNT26          CNT26
3460  0000  CNT26
3461  2204          LDF   LCNTIA
3462  4026          STD   XSUB1
3463  7101          JFI   1
3464  3661          SUBR2B
3465  2455  LCNTIA          CONTIN
3466  7415  PPAUSE  OTN   15         PAUSE
3467  7430          OTN   30
```

```
3470  7434          OTN   34
3471  7424          OTN   24
3472  7420          OTN   20
3473  7101          JFI   1
3474  3444          PSTOP 4
3475  7415  PPAUSS  OTN   15          PAUSS
3476  7430          OTN   30
3477  7434          OTN   34
3500  7424          OTN   24
3501  7424          OTN   24
3502  2204          LDF   LCNT27
3503  4026          STD   XSUB1
3504  7101          JFI   1
3505  3666          SUBR2C
3506  3507  LCNT27  CNT27
3507  2204  CNT27   LDF   LCNT28
3510  4026          STD   XSUB1
3511  7101          JFI   1
3512  4024          SUBR4A
3513  3514  LCNT28  CNT28
3514  2344  CNT28   LDB   LCNT25
3515  4026          STD   XSUB1
3516  7101          JFI   1
3517  3666          SUBR2C
3520  7430  PASSIG  OTN   30          ASSIGN
3521  7424          OTN   24
3522  7424          OTN   24
3523  7414          OTN   14
3524  7413          OTN   13
3525  7406          OTN   6
3526  7101          JFI   1
3527  2634          CONT10
3530  7412  PRETUR  OTN   12          RETURN
3531  7420          OTN   20
3532  7401          OTN   1
3533  7434          OTN   34
3534  7412          OTN   12
3535  7406          OTN   6
3536  2351          LDB   LCNT1A
3537  4026          STD   XSUB1
3540  7101          JFI   1
3541  3661          SUBR2B
3542  7426  PFAULT  OTN   26          FAULT
3543  7430          OTN   30
3544  7434          OTN   34
3545  7411          OTN   11
3546  7401          OTN   1
3547  7101          JFI   1
3550  2634          CONT10
3551  7416  PCHKDI  OTN   16          CHKDIV
3552  7405          OTN   5
3553  7436          OTN   36
3554  7422          OTN   22
3555  7414          OTN   14
3556  7417          OTN   17
3557  7101          JFI   1
3560  2634          CONT10
3561  7414  PIO     OTN   14          IO
3562  7403          OTN   3
3563  2284          LDF   LCNT29
```

```
3564  4026          STD   XSUB1
3565  7101          JFI   1
3566  3666                SUBR2C
3567  3570  LCNT29        CNT29
3570  0471  CNT29   LDN   71
3571  0110          SHA   10
3572  0110          SHA   10
3573  3025          ADD   OBJCD
3574  4201          STF   1
3575  7101          JFI   1
3576  3602                KINPUT
3577  3623                KOUTPT
3600  3632                KREAD
3601  3640                KPUNCH
3602  7414  KINPUT  OTN   14          INPUT
3603  7406          OTN   6
3604  7415          OTN   15
3605  7434          OTN   34
3606  7401          OTN   1
3607  7404  CNT33A  OTN   4           BINARY
3610  7423          OTN   23
3611  7414          OTN   14
3612  7406          OTN   6
3613  7430          OTN   30
3614  7412          OTN   12
3615  7425          OTN   25
3616  2204  CNT34A  LDF   LCNT18
3617  4026          STD   XSUB1
3620  7101          JFI   1
3621  3661                SUBR2B
3622  2455  LCNT18        CONTIN
3623  7403  KOUTPT  OTN   3           OUTPUT
3624  7434          OTN   34
3625  7401          OTN   1
3626  7415          OTN   15
3627  7434          OTN   34
3630  7401          OTN   1
3631  6513          NZB   CNT34A
3632  7412  KREAD   OTN   12          READ
3633  7420          OTN   20
3634  7430          OTN   30
3635  7422          OTN   22
3636  7101  CNT32   JFI   1
3637  2634                CONT10
3640  7415  KPUNCH  OTN   15          PUNCH
3641  7434          OTN   34
3642  7406          OTN   6
3643  7416          OTN   16
3644  7405          OTN   5
3645  6507          NZB   CNT32
3646  7414  PIOC    OTN   14          IOC
3647  7403          OTN   3
3650  7416          OTN   16
3651  2204          LDF   LCNT35
3652  4026          STD   XSUB1
3653  7101          JFI   1
3654  3666                SUBR2C
3655  2572  LCNT35        CNT1
3656  0000  CNT1
3657  0000  CNT2
```

```
3660  0000  OPT3
3661  0401  SUBR2B LDN   1
3662  4304         STB   OPT1
3663  4304         STB   OPT2
3664  4304         STB   OPT3
3665  6104         NZF   SUBR2D
3666  0401  SUBR2C LDN   1
3667  4311         STB   OPT1
3670  4310         STB   OPT3
3671  2313  SUBR2D LDB   OPT1
3672  6002         ZJF   2
3673  7445         OTN   45
3674  5416         AOD   LINES
3675  6110         NZF   EXT
3676  0506         LCN   6
3677  4016         STD   LINES
3700  7445         OTN   45
3701  5416         AOD   LINES
3702  6502         NZB   2
3703  0574         LCN   74
3704  4016         STD   LINES
3705  2326  EXT    LDB   OPT2
3706  6020         ZJF   TAB
3707  7457         OTN   57
3710  0504         LCN   4
3711  4017         STD   TEMP1A
3712  2027  RTFLPT LDD   LOBJCD
3713  0110         SHA   10
3714  4027         STD   LOBJCD
3715  0207         LPN   7
3716  3002         ADD   LTABL2
3717  4020         STD   TEMP2
3720  2120         LDI   TEMP2
3721  3003         ADD   OUT
3722  4201         STF   1
3723  7400         OTN
3724  5417         AOD   TEMP1A
3725  6513         NZB   RTFLPT
3726  2346  TAB    LDB   OPT3
3727  6002         ZJF   2
3730  7451         OTN   51
3731  7447         OTN   47
3732  0400  SUBR2A LDN
3733  4355         STB   OPT1
3734  4355         STB   OPT2
3735  4355         STB   OPT3
3736  7550         EXF   READ2
3737  2022         LDD   TEMP4        MODIFIED TO INA
3740  6104         NZF   SBR2A
3741  7101         JFI   1
3742  4327               ALPHA
3743  7600               7600
3744  4022  SBR2A  STD   TEMP4
3745  2302         LDB   2
3746  4307         STB   SUBR2A  5
3747  2022         LDD   TEMP4
3750  0277         LPN   77
3751  0110         SHA   10
3752  0110         SHA   10
3753  4022         STD   OBJCD
```

```
3754  7600          INA
3755  4023          STD   TEMP5
3756  0277          LPN   77
3757  5025          RAD   OBJCD
3760  5427          AOD   LOBJCD
3761  7526          EXF   WRITE1
3762  6101  PAROK   NZF   1
3763  2022          LDD   TEMP4
3764  1423          LSD   TEMP5
3765  4023          STD   TEMP5
3766  0102          SHA   2
3767  1423          LSD   TEMP5
3770  0102          SHA   2
3771  1423          LSD   TEMP5
3772  4023          STD   TEMP5
3773  0110          SHA   10
3774  1423          LSD   TEMP5
3775  6202          PJF   2
3776  0340          LSN   40
3777  0240          LPN   40
4000  6005          ZJF   5
4001  0000          ERR
4002  6103          NZF   3
4003  0422          LDN   22
4004  5322          RAB   PAROK
4005  7026          JPI   XSUB1
4006  4102  READ2                4102
4007  4104  WRITE1               4104
4010  2207  SUBR9B  LDF   LSR3A1
4011  7457          OTN   57
4012  4001          STD   XSUB
4013  2126          LDI   XSUB1
4014  4204          STF   SR3A1
4015  7101          JFI   1
4016  2221                SUBR9A
4017  4020  LSR3A1        SR3A1
4020  0000  SR3A1
4021  5426          AOD   XSUB1
4022  7026          JPI   XSUB1
4023  4054  LPT11        PT11
4024  2301  SUBR4A  LDB   LPT11
4025  4001          STD   XSUB
4026  2054          LDD   54
4027  4070          STD   70
4030  0601  PT      ADN   1
4031  4071          STD   71
4032  2171          LDI   71
4033  3425          SBD   OBJCD
4034  6022          ZJF   PTO
4035  2170  CUSING  LDI   70
4036  4071          STD   71
4037  0270          LPN   70
4040  0370          LSN   70
4041  6103          NZF   3
4042  0410          LDN   10
4043  5070          RAD   70
4044  2071          LDD   71
4045  0207          LPN   7
4046  5070          RAD   70
4047  2071          LDD   71
```

(TEMP5) SHOULD HAVE EVEN PARITY

BIT7 IN POS 12 BITS 1P6 IN POS 6
JUMP IF BIT 7 IS 0

(A)=40 IF ODD PARITY((A)=0 IF EVEN

PARITY ERROR
(A)=0, DISCONTINUE PARITY CHECK

PRINT FLEX CODES
CORR TO VARLIS
LCN IN OBJCD

```
4050  0110          SHA   10
4051  0207          LPN   7
4052  5070          RAD   70
4053  7001          JPI   XSUB
4054  6524  PT11    NZB   PT                  SEARCH FAILURE
4055  0000          ERR
4056  2170  PT0     LDI   70
4057  0270          LPN   70
4060  6112          NZF   PT01
4061  2170          LDI   70
4062  0110          SHA   10
4063  0207          LPN   7
4064  0303          LSN   3
4065  6103          NZF   PT02
4066  7101          JFI   1
4067  0355                CNT1A               IDENTIFIERS NOT DIMENSIONED
4070  7101  PT02    JFI   1
4071  0445          CNT2A                     ARRAYS
4072  0310  PT01    LSN   10
4073  6111          NZF   PT03
4074  2170          LDI   70
4075  7457          OTN   57
4076  0202          LPN   2
4077  6103          NZF   PT04
4100  7101          JFI   1
4101  0605          CNT3A                     INTEGER CONSTANT
4102  7101  PT04    JFI   1
4103  0656          CNT4A                     FLTNG CONSTANT
4104  0330  PT03    LSN   30
4105  6106          NZF   PT05
4106  7457          OTN   57
4107  0402          LDN   2
4110  5070          RAD   70
4111  7101          JFI   1
4112  1024          CNT5B 2                   LABELS
4113  0310  PT05    LSN   10
4114  6103          NZF   PT06
4115  7101          JFI   1
4116  1116          CNT6A                     BAPACK
4117  0370  PT06    LSN   70
4120  6103          NZF   PT07
4121  7101          JFI   1
4122  1445          CNT9B 4                   LIB FUNCT
4123  0310  PT07    LSN   10
4124  6103          NZF   PT08
4125  7101          JFI   1
4126  1445          CNT9B 4                   SUBROUTINE
4127  0320  PT08    LSN   20
4130  6103          NZF   PT09
4131  7101          JFI   1
4132  1116          CNT6A
4133  0000  PT09    ERR
4134  7457  SUBRSA  OTN   57                  PRINT ((XSUB))FLX,OCT
4135  0504          LCN   4                   RET, JP TO (XSUB)+1
4136  4017          STD   TEMP1A
4137  2126  SBRSA   LDI   XSUB1
4140  0110          SHA   10
4141  4126          STI   XSUB1
4142  0207          LPN   7
4143  0006          ADD   LTA8L2
```

```
4144  4020          STO   TEMP2
4145  2120          LDI   TEMP2
4146  3003          ADD   OUT
4147  4201          STF   1
4150  7400          OTN
4151  5417          AOD   TEMP1A
4152  6513          NZB   SBR5A
4153  5426          AOD   XSUB1
4154  7026          JPI   XSUB1
      0002  LTABL2   EQU   2
4155  0000  BLOCK    BSS   77
4254  4703  HED1:                4703
4255  2332                       2332
4256  2016                       2016
4257  0104                       104
4260  1603                       1603
4261  2220                       2220
4262  4577                       4577
4263  2434  HED2                 2434
4264  2312                       2312
4265  0334                       334
4266  0114                       114
4267  0620                       620
4270  0426                       426
4271  0311                       311
4272  1103                       1103
4273  3124                       3124
4274  5746                       5746
4275  4704                       4704
4276  0634                       634
4277  0723                       723
4300  2012                       2012
4301  0403                       403
4302  2604                       2604
4303  1530                       1530
4304  1230                       1230
4305  0720                       720
4306  0120                       120
4307  1224                       1224
4310  5004                       5004
4311  0477                       477
4312  2025  STOB    LDD   OBJCD
4313  0110          SHA   10
4314  0207          LPN   7
4315  0705          SBN   5
4316  6204          PJF   LOOPA
4317  5646          AOF   INDICA
4320  7101          JFI   1
4321  2443                CNT
4322  2204  LOOPA   LDF   LLOOPA
4323  4026          STO   XSUB1
4324  7101          JFI   1
4325  3732                SUBR2A
4326  4322  LLOOPA        LOOPA
4327  7537  ALPHA   EXF   READD
4330  7600          INA
4331  7536          EXF   WRITT
4332  2232          LDF   FLAG
4333  6016          ZJF   ALPH1
4334  0001          LDN   1
```

OUTPUT DIGIT

OBJECT CODE

```
4335  3027            ADD   LOBJCD
4336  4206            STF   ALPH2
4337  2204            LDF   LALPH2
4340  4026            STD   XSUB1
4341  7101            JFI   1
4342  4134                  SUBR5A
4343  4344  LALPH2          ALPH2
4344  0000  ALPH2
4345  7445            OTN   45
4346  7451            OTN   51
4347  0400            LDN
4350  4214            STF   FLAG
4351  2212  ALPH3     LDF   TEMPP
4352  3427            SBD   LOBJCD
4353  6015            ZJF   ALPH3
4354  2027            LDD   LOBJCD
4355  4206            STF   TEMPP
4356  2204            LDF   LALPH4
4357  4026            STD   XSUB1
4360  7101            JFI   1
4361  3732                  SUBR2A
4362  4375  LALPH4          ALPH4
4363  0000  TEMPP
4364  0000  FLAG
4365  0000  INDICA
4366  4102  READD           4102
4367  4104  WRITT           4104
4370  7443  ALPH3   OTN     43
4371  7400            OTN
4372  5702            AOB   2
4373  6702            NJB   2
4374  7700            HLT
4375  2310  ALPH4     LDB   INDICA
4376  6464            ZJB   STOB
4377  2203  BRCHN     LDF   3
4400  6003            ZJF   SB1
4401  6105            NZF   SB2
4402  0000  JUNCT
4403  2027  SB1       LDD   LOBJCD
4404  0701            SBN   1
4405  4322            STB   TEMPP
4406  2323  SB2       LDB   TEMPP
4407  3425            SBD   OBJCD
4410  6004            ZJF   4
4411  5707            AOB   JUNCT
4412  7101            JFI   1
4413  4451                  VBLST
4414  6572            NZB   LOOPA
4415  0400            LDN
4416  4314            STB   JUNCT
4417  2334            LDB   TEMPP
4420  4027            STD   LOBJCD
4421  2211            LDF   LPT
4422  4017            STD   TEMP1A
4423  2210            LDF   MOPT
4424  4117            STI   TEMP1A
4425  2204            LDF   LSRTS3
4426  4026            STD   XSUB1
4427  7101            JFI   1
4430  4044                  SUBR4A
```

MODIFIED TO LOOP

```
4431  4434  LSRTS3        SRTS3
4432  4030  LPT           PT
4433  0603  MOPT   ADN    3
4434  7404  SRTS3  OTN    4
4435  2027         LDD    LOBJOD
4436  4206         STF    SRTS4
4437  2204         LDF    LSRTS4
4440  4026         STD    XSUB1
4441  7101         JFI    1
4442  4134                SUBR5A
4443  4444  LSRTS4        SRTS4
4444  0000  SRTS4
4445  7452         OTN    52
4446  5762         AOB    FLAG
4447  7101         JFI    1
4450  4322                LOOPA
4451  7447  VBLST  OTN    47
4452  7417         OTN    17
4453  7430         OTN    30
4454  7412         OTN    12
4455  7414         OTN    14
4456  7430         OTN    30
4457  7423         OTN    23
4460  7411         OTN    11
4461  7420         OTN    20
4462  7404         OTN    4
4463  7411         OTN    11
4464  7414         OTN    14
4465  7424         OTN    24
4466  7401         OTN    1
4467  7404         OTN    4
4470  7457         OTN    57
4471  2025         LDD    OBJOD
4472  4206         STF    SB2A
4473  2204         LDF    LSB2A
4474  4026         STD    XSUB1
4475  7101         JFI    1
4476  4134                SUBR5A
4477  4500  LSB2A        SB2A
4500  0000  SB2A
4501  7452         OTN    52
4502  2204         LDF    LSB2B
4503  4026         STD    XSUB1
4504  7101         JFI    1
4505  4134                SUBR5A
4506  4507  LSB2B        SB2B
4507  7776  SB2B         7776
4510  2206         LDF    6
4511  4022         STD    TEMP4
4512  2203         LDF    3
4513  4122         SYI    TEMP4
4514  7101         JFI    1
4515  4322                LOOPA
4516  4413                SB2     5
      0000         END
```

VARIABLE LIST

PROGRAM ABSTRACT COVER SHEET

(1) User Group: FOCUS [x] VIM [ ] (INCOSL [ ])

Please complete this form according to the instructions on the reverse side

(2) Contributing Organization: CONTROL DATA CORPORATION
Installation Name
City and State

(3) Author Identification: Unknown
Programmer/Submitter (up to 19 characters)
Revisor

(4) Catalog Identification: L2 | CODA | 0SFI | | (Cl. Code | Org. Code | Program Name | Rev.)

(5) Operating System and Version: Unspecified

(6) Languages and Dialects (up to 21 characters): 0SAS-A

(7) Configuration: 160
Computer | Other Information

(8) Descriptive Title (up to 56 Characters Including Blanks): 160 FORTRAN INTERPRETER

(9) Program Materials Submitted
Write-Up Page Ct:
Source Record Count:
Source Medium: MT [ ] CD [ ] PT [x]
If MT or PT: No. 1 | Tr/L 7 | Length 55
Other (up to 44 characters): Listing 64

(10) Date Written: Original: UNKNOWN | Revised:

(11) Restricted: No [x] Yes [ ] (Requires ordering information)
Reason: Classified [ ] Geographic [ ] Other [ ]

(12) Required Library Routines
Cl. Code | Org. Code | Program Name | Rev.

(13) Entry Point Names

(14) Original/Revised Program Abstract

Ref. CDC Pub. 60050300. 160 FORTRAN/Ref. Manuel.

RECLASSIFIED FROM C1.00-3 CODA 0SFI

(15) Nature of Revision [ ] Proprietary Ordering Information [ ] Additional Information [ ]

C1.00-3D

```
                REM                          160 FORTRAN INTERP AUG 20, 1962
                SUPB
0100  7101  ARITHA JFI   1
0101  0405          ARITHY
0102  7101  ACOITK JFI   1
0103  3374          KTIOCA
0104  7101  SASSJP JFI   1
0105  2455          SASSEM
0106  0000  ERASE  BSS   36D
0152  0000  FERASE BSS   21D
0177  4031  GETOP  STD   EAPLOC       LOC. OF VARLIST VALUE
0200  0601         ADN   1
0201  4035         STD   PARLOC       LOC. OF OPERAND VALUE
0202  2135         LDI   PARLOC
0203  4047         STD   VARLOC       VARIABLE LOC.
0204  2131         LDI   EAPLOC
0205  4030         STD   EAP          Q VALUES
0206  0207         LPN   7
0207  6013         ZJF   GETOPA       EFFECTIVE ADDRESS PACK
0210  4013         STD   MODE          NO
0211  0203         LPN   3
0212  0303         LSN   3            SUBROUTINE TYPE
0213  6103         NZF   GETOPZ       TYPE 3 OR 7
0214  2135         LDI   PARLOC        YES
0215  6516         NZB   GETOP
0216  0501  GETOPZ LCN   1
0217  5013         RAD   MODE         SET MODE INDICATOR
0220  2035  GETOPY LDD   PARLOC       GET OPERAND LOCATION
0221  7032         JPI   GETOPE       FINAL EXIT
0222  0403  GETOPA LDN   3
0223  4036         STD   QCOUNT       Q COUNTER
0224  2147  GETOPX LDI   VARLOC       VARLIST LOCATION
0225  0203         LPN   3
0226  0303         LSN   3            FORMAL PARAMETER TYPE
0227  6105         NZF   GETOPW       TYPE 3 OR 7
0230  5447         AOD   VARLOC         YES
0231  2147         LDI   VARLOC       GET NEW VARLIST LOCN
0232  4047         STD   VARLOC
0233  6507         NZB   GETOPX
0234  2147  GETOPW LDI   VARLOC
0235  4013         STD   MODE         SET MODE INDICATOR
0236  2047         LDD   VARLOC       OPERAND LOC.
0237  0703         SBN   3
0240  4027         STD   DIMLOC       3RD. DIMENSION LOC.
0241  2030  GETOPC LDD   EAP
0242  0110         SHA   10
0243  0207         LPN   7            THIS INDICE PRESENT
0244  6111         NZF   GETOPB       DIMENSION ZERO
0245  2030         LDD   EAP           YES
0246  0110         SHA   10           SHIFT Q VALUES
0247  4030         STD   EAP
0250  0501         LCN   1
0251  5036         RAD   QCOUNT       REDUCE Q COUNTER
0252  5427         AOD   DIMLOC       INCREASE DIMENSION LOCATER
0253  3447         SBD   VARLOC
0254  6513         NZB   GETOPC       MORE DIMENSIONS TO CHECK
0255  0400  GETOPB LDN   0
0256  4040         STD   SAVSUM       CLEAR SUM CELL
0257  2003         LDD   FXPACC
```

```
0260  4037           STD   SAVACC     SAVE ACCUMULATOR
0261  0400  GETOPD   LDN   0
0262  4003           STD   FXPACC     CLEAR INTEGER ACCUMULATOR
0263  2030           LDD   EAP        GET E.A. PACK
0264  6204           PJF   GETOPF     C BIT SET
0265  5435           AOD   PARLOC      YES -- INCREASE PAR. LOCATER
0266  2135           LDI   PARLOC     GET VALUE OF C
0267  4003           STD   FXPACC      TO INTEGER ACC.
0270  4430  GETOPF   SRD   EAP        SHIFT E.A. PACK
0271  6227           PJF   GETOPG     I BIT SET
0272  5435           AOD   PARLOC      YES -- INCR. PAR. LOCATER
0273  4041           STD   TEMP1
0274  2141  GETOPH   LDI   TEMP1      VARLIST TYPE
0275  4041           STD   TEMP1
0276  2141           LDI   TEMP1
0277  0203           LPN   3
0300  0703           SBN   3          SUBROUTINE TYPE
0301  6103           NZF   GETOPI     SUB. TYPE
0302  5441           AOD   TEMP1       YES -- OPERAND LOCATION
0303  6507           NZB   GETOPH
0304  5441  GETOPI   AOD   TEMP1      OPERAND LOC.
0305  2141           LDI   TEMP1
0306  4015           STD   XOPRND     STORE IN OPERAND CELL
0307  2003           LDD   FXPACC     INTEGER ACC.
0310  6006           ZJF   GETOPK     ACC. LOADED
0311  2204           LDF   GETOPJ      YES --GET RETURN ADDRESS
0312  4025  GETOPQ   STD   SFINI
0313  7101           JFI   1
0314  1234                 XM         INTEGER MULTIPLY
0315  0320  GETOPJ         GETOPG     RETURN ADDRESS
0316  2015  GETOPK   LDD   XOPRND     VALUE OF I
0317  4003           STD   FXPACC      TO ACC.
0320  4430  GETOPG   SRD   EAP        SHIFT E.A. PACK
0321  6204           PJF   GETOPL     D BIT SET
0322  5435           AOD   PARLOC      YES -- INCRS. PAR LOCATER
0323  2135           LDI   PARLOC     GET VALUE OF D
0324  5003           RAD   FXPACC     SUM TO INTEGER ACC.
0325  0501  GETOPL   LCN   1
0326  5003           RAD   FXPACC     SUM - 1
0327  5040           RAD   SAVSUM     ACCUMULATE SUM
0330  4003           STD   FXPACC
0331  0501           LCN   1
0332  5036           RAD   OCOUNT     NO. OF DIMENSIONS COUNTER
0333  6014           ZJF   GETOPM     LAST DIMENSION CHECKED
0334  5427           AOD   DIMLOC      NO -- INCREASE DIMEN. LOCATION
0335  2127           LDI   DIMLOC
0336  4015           STD   XOPRND     DIMENSION
0337  2202           LDF   GETOPN     RETURN ADDRESS
0340  6526           NZB   GETOPQ
0341  0342  GETOPN         GETOPR     RETURN ADDRESS
0342  2003  GETOPR   LDD   FXPACC
0343  4040           STD   SAVSUM     STORE SUM
0344  4430           SRD   EAP        SHIFT E. A. PACK
0345  7101           JFI   1          REPEAT LOOP FOR
0346  0261                 GETOPD      NEXT DIMENSION
0347  2040  GETOPM   LDD   SAVSUM
0350  4003           STD   FXPACC     TOTAL SUM
0351  5427           AOD   DIMLOC     LOC. OF NUMBER MODE
0352  2127           LDI   DIMLOC
0353  0102           SHA   2
```

```
0354  0701          SBN   1
0355  0203          LPN   3              TRUE MODE VALUE
0356  4015          STD   XOPRND         MODE TO OPERAND
0357  2202          LDF   GETOPS         RETURN ADDRESS
0360  6546          NZB   GETOPQ         MODE TIMES SUM
0361  0362  GETOPS        GETOPT         RETURN ADDRESS
0362  5403  GETOPT  AOD   FXPACC        TOTAL + 1
0363  5027          RAD   DIMLOC
0364  2037          LDD   SAVACC
0365  4003          STD   FXPACC         RESTORE ACC.
0366  2027          LDD   DIMLOC         VARIABLE LOC.
0367  7032          JPI   GETOPE         FINAL RETURN
0370  5410  ARITH   AOD   LOCC           INCREASE LOCATION COUNTER
0371  4007          STD   ARINTL         SET INITIAL ADDRESS
0372  2110          LDI   LOCC
0373  0277          LPN   77             NO. OF OPERANDS
0374  5010          RAD   LOCC           LOCATION OF 1ST OPERATION
0375  2507          LCI   ARINTL
0376  0102          SHA   2
0377  0102          SHA   2              TO LOW ORDER BITS
0400  0203          LPN   3
0401  3246          ADF   ARITHZ         CALCULATE MODEA LIST LOC.
0402  4041          STD   TEMP1
0403  2141          LDI   TEMP1
0404  4014          STD   MODEA          MODE OF ARITH. INDICATOR
0405  5410  ARITHY  AOD   LOCC
0406  2110  ARITHB  LDI   LOCC           GET NEXT OPERATION WORD
0407  0217          LPN   17             MASK OFF OP CODE
0410  4011          STD   LOCC0
0411  3344          ADB   GETOPR +3
0412  4214          STF   ROUTE
0413  2110          LDI   LOCC           GET NEXT OPERATION WORD
0414  0102          SHA   2
0415  0102          SHA   2
0416  4041          STD   TEMP1
0417  0203          LPN   3              OPERAND MODIFIER
0420  4033          STD   LOCC2
0421  2041          LDD   TEMP1
0422  0110          SHA   10
0423  0110          SHA   10
0424  0277          LPN   77             RELATIVE OPERAND LOC.
0425  4034          STD   LOCC8
0426  7101  ROUTE   JFI   1              JUMP TO SWITCHBOARD
0427  0450          TILT                 INVALID
0430  0450          TILT                  OPERATION
0431  0450          TILT                    CODES
0432  0642          SNOP                 NO OPER. TEST
0433  0646          RELTR                RELATIVE TRANSFER
0434  0457          DROP                 DROP OUT ROUTINE
0435  0473          COMBNE               ADD
0436  0473          COMBNE               SUBTRACT
0437  0473          COMBNE               MULTIPLY
0440  0473          COMBNE               DIVIDE
0441  0603          CMBNEZ               POWER
0442  0657          LOCTRP               LOCAL TRANSF. ON PLUS
0443  0666          LOCTRZ               LOCAL TRANSF. ON ZERO
0444  0473          COMBNE               STORE
0445  0717          TRANS                TRANSF. TO SUBROUTINE
0446  0743          FINIS                END
0447  0447  ARITHZ      MDEALS -1        MODE ARITH. LIST
```

```
0450  0006  MDEALS       6          FLOATING MODE INDICATOR
0451  0013               11D
0452  0001               1          INTEGER MODE
0453  0454  TSILMO       OMLIST
0454  0007  OMLIST       ARINTL     OPERAND MODE LIST
0455  0106               ERASE
0456  0152               FERASE

                   REM               DROP OUT ROUTINE
0457  2010  DROP   LDD    LOCC       CURRENT LOCATION
0460  0601         ADN    1           PLUS ONE
0461  4211         STF    DROPA        TO JUMP COMMAND
0462  2110         LDI    LOCC
0463  6203         PJF    DROPB      DROP OUT BACKWARD
0464  2434         LCD    LOCC8       YES -- GET NEG. OF OPERAND
0465  6102         NZF    DROPC
0466  2034  DROPB  LDD    LOCC8      GET VALUE OF OPERAND
0467  0701  DROPC  SBN    1
0470  5010         RAD    LOCC
0471  7101         JFI    1
0472  0000  DROPA         0          EXIT TO 160 LOCATION
                   REM               ARITHMETIC ROUTINES
0473  2033  COMBNE LDD    LOCC2      OPERAND MODIFIER
0474  3321         ADB    TSILMO     GET PROPER OPERAND LIST
0475  4042         STD    TEMP2
0476  2142         LDI    TEMP2
0477  4042         STD    TEMP2
0500  2033         LDD    LOCC2      OP. MOD.
0501  6104         NZF    CMBNEL     NORMAL STORAGE
0502  2034         LDD    LOCC8      RELATIVE LOC.
0503  3142         ADI    TEMP2       PLUS STARTING LOC.
0504  6112         NZF    CMBNEM
0505  2014  CMBNEL LDD    MODEA
0506  0205         LPN    5          MODE OF ARITHMETIC
0507  4013         STD    MODE        TO MODE OF NUMBER
0510  2034         LDD    LOCC8
0511  0701         SBN    1          RELATIVE LOC.
0512  4043         STD    TEMP3
0513  0102         SHA    2
0514  3043         ADD    TEMP3      TIMES THREE
0515  3042         ADD    TEMP2       PLUS INITIAL LOC.
0516  4042  CMBNEM STD    TEMP2
0517  2033         LDD    LOCC2      GET OPERAND MODIFIER
0520  6111         NZF    CMBNEW     NORMAL STORAGE
0521  2205  CMBNES LDF    CMBNEA      YES -- RET. ADD. FOR GETOP
0522  4032         STD    GETOPE
0523  2142         LDI    TEMP2      LOC. OF OPERAND LOC.
0524  7101         JFI    1
0525  0177               GETOP
0526  0530  CMBNEA       CMBNEB     RETURN ADDRESS
0527  4015  LOCOPR STD    OPRAND
0530  4042  CMBNEB STD    TEMP2
0531  2302  CMBNEW LDB    LOCOPR     CALCULATE INITIAL OPERAND
0532  4213         STF    CMBNEC     STORAGE ADDRESS
0533  2042         LDD    TEMP2
0534  4012         STD    LOCVAR
0535  2013         LDD    MODE
0536  0102         SHA    2
0537  0701         SBN    1
0540  0203         LPN    3          CALCULATE TRUE MODE
0541  4077         STD    77
```

```
0542  2477          LCD   77
0543  4041          STD   TEMP1          OPERAND LIST COUNTER
0544  2142  CMBNED  LDI   TEMP2          OPERAND
0545  4015  CMBNEC  STD   OPRAND         TO OPERAND STORAGE
0546  5442          AOD   TEMP2          INCREASE
0547  5702          AOB   CMBNEC         LOCATERS
0550  5441          AOD   TEMP1
0551  6505          NZB   CMBNED         MORE WORDS TO STORE
0552  4041          STD   TEMP1
0553  2011          LDD   LOCC0          OPERATION CHARACTER
0554  0715          SBN   15
0555  6111          NZF   CMBNEH         STORE CODE
0556  2003          LDD   FLPACC
0557  4015          STD   OPRAND
0560  2004          LDD   ACC     1
0561  4016          STD   OP      1
0562  2005          LDD   ACC     2
0563  4017          STD   OP      2
0564  0500          LCN   0
0565  4041          STD   TEMP1
0566  2014  CMBNEH  LDD   MODEA          NO ## MODE OF ARITH
0567  0205          LPN   5
0570  3413          SBD   MODE           MODE OF NUMBER
0571  6012          ZJF   CMBNEZ         MODES IDENTICAL
0572  1441          LSD   TEMP1          CHANGE SIGN FOR STORAGE
0573  6204          PJF   CMBNEY          NO -- FLO. TO FIX CONVERSION
0574  2206          LDF   CMBNEX          YES -- GET RETURN ADD.
0575  7101          JFI   1
0576  1476                XCONV          FLOATING TO FIX CONVERSION
0577  2203  CMBNEY  LDF   CMBNEX         GET RETURN ADDRESS
0600  7101  JFI11   JFI   1
0601  1426                FLCONV         FIXED TO FLT. CONVERS.
0602  0603  CMBNEX        CMBNEZ
0603  2011  CMBNEZ  LDD   LOCC0          OPERATION CHARACTER
0604  0715          SBN   15
0605  6103          NZF   CMBNER         STORE CODE
0606  7101          JFI   1               YES
0607  0677                STRGE          TO STORE ROUTINE
0610  2011  CMBNER  LDD   LOCC0
0611  0707          SBN   7
0612  3014          ADD   MODEA
0613  3313          ADB   JFI11          CALC. ARITH SUB. ADDRESS
0614  4205          STF   CMBNEE
0615  2224          LDF   SNOP    -1
0616  4026          STD   CNFINI
0617  2235          LDF   RELTRV         RETURN ADDRESS
0620  4025          STD   SFINI
0621  7101  CMBNEE  JFI   1
0622  1227                XA             INTEGER ADD
0623  1231                XAN            INTEGER SUBTRACT
0624  1234                XM             INTEGER MULTIPLY
0625  1254                XD             INTEGER DIVIDE
0626  1333                PWR            INTEGER POWER
0627  1544                SFADD          FLOATING ADD
0630  1540                SFSUB          FLOATING SUBTRACT
0631  1550                SFMLT          FLOATING MULTIPLY
0632  1555                SFDIV          FLOATING DIVIDE
0633  0721                TRANSB         FLOATING POWER
0634  1366                INCLOR         INCLUSIVE OR
0635  1373                COMPLT         COMPLEMENT
```

```
0636  1376                      LOGPRD    LOGICAL PRODUCT
0637  1402                      EXCLOR    EXCLUSIVE OR
0640  1406                      SHIFTR    SHIFT ACCUMULATOR
0641  3014                      CNFIN
0642  2024  SNOP    LDD         SNOPSW
0643  6102          NZF         SNOPA     SWITCH SET
0644  5410          AOD         LOCC       NO DO SKIP
0645  6106  SNOPA   NZF         RELTRD
              REM               RELATIVE TRANSFER
0646  2110  RELTR   LDI         LOCC
0647  6206          PJF         RELTRB    TRANSFER FORWARD
0650  2434          LCD         LOCC8
0651  0701  RELTRC  SBN         1
0652  5010          RAD         LOCC       PLUS CORR. LOC. COUNTER
0653  7101  RELTRD  JFI         1
0654  0100  RELTRV              ARITHA    TRANS. FOR NEXT OPERATION
0655  2034  RELTRB  LDD         LOCC8     OPERAND VALUE
0656  6605          PJB         RELTRC
              REM               TRANSFER PLUS
0657  2003  LOCTRP  LDD         FXPACC    SIGN OF ACCUMULATOR
0660  4041          STD         TEMP1
0661  2110  LCTRPZ  LDI         LOCC
0662  0102          SHA         2         GET PLUS OR MINUS TRANSF. BIT
0663  1441          LSD         TEMP1     LOGICAL SUM SIGN BIT
0664  6711          NJB         RELTRD    TRANSFER TO BE EXECUTED
0665  6617          PJB         RELTR      YES
              REM               TRANSFER ZERO
0666  2003  LOCTRZ  LDD         FLPACC    CHECK 1ST ACC. WORD
0667  6104          NZF         LCTRZA    WORD ZERO
0670  0401  LCTRZB  LDN         1          YES - GET PLUS SIGN BIT
0671  4041  LCTRZC  STD         TEMP1
0672  6511          NZB         LCTRPZ
0673  0501  LCTRZA  LCN         1         GET MINUS SIGN BIT
0674  6503          NZB         LCTRZC
              REM               STORAGE ROUT.
0675  2015  STRGEC  LDD         OPRAND
0676  4003  STRGEA  STD         FLPACC    ACCUMULATOR LOC.
0677  2301  STRGE   LDB         STRGEA    INITIAL ACC. LOC.
0700  4210          STF         STRGED
0701  2304          LDB         STRGEC
0702  4203          STF         STRGEB
0703  2477          LCD         77
0704  4041          STD         TEMP1     STORAGE LOOP COUNTER
0705  2015  STRGEB  LDD         OPRAND    OPRAND
0706  4112          STI         LOCVAR     TO STORAGE
0707  0400          LDN         0
0710  4003  STRGED  STD         FLPACC    ZERO ACCUMULATOR
0711  5412          AOD         LOCVAR    INCREASE
0712  5705          AOB         STRGEB     COUNTERS
0713  5703          AOB         STRGED     COUNTERS
0714  5441          AOD         TEMP1
0715  6510          NZB         STRGEB    MORE WORDS TO STORE
0716  6443          ZJB         RELTRD     NO
              REM               TRANSFER ROUT.
0717  2110  TRANS   LDI         LOCC      NEXT WORD
0720  6316          NJF         THANSA    RETURN TRANSFER
0721  2010  TRANSB  LDD         LOCC       NO
0722  4021          STD         STOTRA    RETURN ADDRESS
0723  2034          LDD         LOCC8
0724  3007          ADD         AKINTL     PLUS INITIAL LOC.
```

```
0725  4041          STD   TEMP1
0726  2141          LDI   TEMP1
0727  0601          ADN   1
0730  4041          STD   TEMP1
0731  2141          LDI   TEMP1
0732  4010  TRANSC   STD   LOCC          STORE TRANSFER ADDRESS
0733  2007          LDD   ARINTL
0734  4006          STD   ARINT1
0735  7001          JPI   LCON
0736  2021  TRANSA   LDD   STOTRA        RETURN ADDRESS
0737  4010          STD   LOCC
0740  2006          LDD   ARINT1
0741  4007          STD   ARINTL
0742  6567          NZB   RELTRD         TRANSFER
                    REM                  END ROUTINE
0743  5410  FINIS    AOD   LOCC
0744  7001          JPI   LCON
0745  2003  IF       LDD   ACC
0746  6304          NJF   MINUS          EXPRESSION NEGATIVE
0747  6002          ZJF   ZERO            EXPRESSION POSITIVE
0750  5410  PLUS     AOD   LOCC
0751  5410  ZERO     AOD   LOCC
0752  0400  MINUS    LDN   0              ZERO
0753  4003          STD   ACC             OUT
0754  4004          STD   ACC     1        ACCUMULATOR
0755  4005          STD   ACC     2
0756  2206  TRA      LDF   TRAZ
0757  4032  TRAY     STD   GETOPE
0760  5410          AOD   LOCC           INCREASE LOCATION COUNTER
0761  2110          LDI   LOCC           OPERAND LOCATION
0762  7101          JFI   1
0763  0177                GETOP          GET OPERAND
0764  0765  TRAZ           TRAA1
0765  4041  TRAA1    STD   R1             LOC. OF N
0766  2141          LDI   R1
0767  4010          STD   LOCC           SET LOCATION COUNTER
0770  7001          JPI   LCON           RETURN TO CONTROL ROUTINE
0771  2213  TRAI     LDF   TRAIZ          RETURN ADDRESS
0772  4032          STD   GETOPE
0773  5410          AOD   LOCC           INCREASE LOCATION COUNTER
0774  2110          LDI   LOCC           VARLIST TYPE FORI
0775  7101          JFI   1
0776  0177                GETOP
0777  4041  TRAIC    STD   R1
1000  2141          LDI   R1             VALUE OF I
1001  0701          SBN   1
1002  5010          RAD   LOCC           LL(N)
1003  6525          NZB   TRA
1004  0777  TRAIZ          TRAIC
1005  2202  ASSIGN   LDF   ASIGNZ
1006  6527          NZB   TRAY
1007  1010  ASIGNZ         ASIGNY
1010  4041  ASIGNY   STD   R1
1011  5410          AOD   LOCC           INCR. LOC. COUNTER
1012  2110          LDI   LOCC           VARLIS TYPE
1013  0601          ADN   1              LL(I)
1014  4042          STD   TEMP2
1015  2142          LDI   TEMP2
1016  4141          STI   R1              TO L(N)
1017  5410          AOD   LOCC           INCREASE LOC. COUNTER
```

```
1020  7001          JPI   LCON      RETURN CONTROL
1021  2202  INIT    LDF   INITA
1022  6543          NZB   TRAY
1023  1024  INITA         INITB
1024  4016  INITB  STD   16
1025  2202          LDF   INITC
1026  6547  INITF   NZB   TRAY
1027  1030  INITC         INITD
1030  4017  INITD  STD   17
1031  2116          LDI   16
1032  4117          STI   17
1033  5410  INITE   AOD   LOCC
1034  7001          JPI   LCON
1035  2202  INCR    LDF   INCRA
1036  6510          NZB   INITF
1037  1040  INCRA         INCRB
1040  4016  INCRB  STD   16
1041  2202          LDF   INCRC
1042  6514          NZB   INITF
1043  1044  INCRC         INCRD
1044  4017  INCRD  STD   17
1045  2202          LDF   INCRG
1046  6520          NZB   INITF
1047  1050  INCRG         INCRF
1050  4020  INCRF  STD   20
1051  5410          AOD   LOCC
1052  2120          LDI   20
1053  5116          RAI   16
1054  3517          SBI   17
1055  6306          NJF   INCRE
1056  6005          ZJF   INCRE
1057  2520          LCI   20
1060  5116          RAI   16
1061  5410          AOD   LOCC
1062  7001          JPI   LCON
1063  2110  INCRE   LDI   LOCC
1064  4010          STD   LOCC
1065  7001          JPI   LCON
1066  2010  STOP    LDD   LOCC
1067  0601          ADN   1           NEXT LOC. ADDRESS
1070  4041          STD   R1          TEMP. STORAGE
1071  2141  STOPA   LDI   R1          VALUE OF N TO ACC.
1072  7700          HLT               HALT PROGRAM
1073  7001          JPI   LCON        RETURN TO CONTROL
1074  5410  PAUSE   AOD   LOCC        INCREASE LOC. COUNTER
1075  4041          STD   R1          TEMP. STORAGE
1076  5410          AOD   LOCC        INCREASE LOC. COUNTER
1077  6506          NZB   STOPA
1100  2206  PAUSS   LDF   PAUSSA     RETURN ADDRESS
1101  4032          STD   GETOPE
1102  5410          AOD   LOCC        INCREASE LOC. COUNTER
1103  2110          LDI   LOCC
1104  7101          JFI   1
1105  0177          GETOP             GET OPERAND ROUTINE
1106  1107  PAUSSA        PAUSSB
1107  4041  PAUSSB  STD   R1          LOC. OF I VALUE
1110  5410          AOD   LOCC        INCREASE LOCATION COUNTER
1111  2110          LDI   LOCC        VALUE OF N
1112  7700          HLT               HALT COMPUTER
1113  4141          STI   R1          ACCUMULATOR VALUE TO LOC. OF I
```

```
1114  5410          AOD   LOCC      INCREASE LOCATION COUNTER
1115  7001          JPI   LCON      RETURN
1116  0423  FAULT   LDN   SWT1
1117  4042  FAULT1  STD   R2
1120  2142          LDI   R2
1121  6111          NZF   FAULT3
1122  5410          AOD   LOCC
1123  5410  FAULT2  AOD   LOCC
1124  2110          LDI   LOCC
1125  4041          STD   R1
1126  5441          AOD   R1
1127  2141          LDI   R1
1130  4010          STD   LOCC
1131  7001          JPI   LCON
1132  0400  FAULT3  LDN   0         FF ON S SET
1133  4142          STI   R2          TO ZERO
1134  6411          ZJB   FAULT2
1135  0422  CHKDIV  LDN   SWT
1136  6517          NZB   FAULT1
1137  2110  NOCL    LDI   LOCC
1140  3223          ADF   NOCLA
1141  4201          STF   1
1142  7101          JFI   1
1143  1164                CALL
1144  1021                INIT
1145  1035                INCR
1146  0370                ARITH
1147  0745                IF
1150  0756                TRA
1151  0771                TRAI
1152  1066                STOP
1153  1074                PAUSE
1154  1100                PAUSS
1155  1005                ASSIGN
1156  1216                RETURN
1157  1116                FAULT
1160  1135                CHKDIV
1161  3023                IO
1162  3112                IOC
1163  7100  NOCLA   JFI   0
1164  5410  CALL    AOD   LOCC
1165  2110          LDI   LOCC        LL(NAME)
1166  4041          STD   R1
1167  5441          AOD   R1
1170  2141          LDI   R1          LOCN OF SR N
1171  4041          STD   R1          IO R1
1172  5410          AOD   LOCC
1173  2510          LCI   LOCC
1174  0600          ADN   0
1175  6013          ZJF   CALL2
1176  4042          STD   R2          -N TO R2
1177  5441  CALL1   AOD   R1          SR PARA LIST
1200  2141          LDI   R1
1201  4043          STD   R3
1202  5443          AOD   R3
1203  5410          AOD   LOCC
1204  2110          LDI   LOCC
1205  4143          STI   R3
1206  5442          AOD   R2
1207  6510          NZB   CALL1
```

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1210  5402  CALL2  AOD   RETBUF        LOC. OF RETURN
1211  5410         AOD   LOCC           TO RETURN BUF
1212  4102         STI   RETBUF
1213  5441         AOD   R1
1214  4010         STD   LOCC
1215  7001         JPI   LCON
1216  2102  RETURN LDI   RETBUF
1217  4010         STD   LOCC
1220  0501         LCN   1
1221  5002         RAD   RETBUF
1222  7001         JPI   LCON
1223  0000  RETUR1 BSS   4
                   REM                ADDITION ROUTINE
1227  2015  XA     LDD   XOPRND       OPERAND
1230  6102         NZF   XAN     +1
                   REM                SUBTRACT ROUTINE
1231  2415  XAN    LCD   XOPRND       NEG. OF OPERAND
1232  5003         RAD   FXPACC        PLUS ACCUM.
1233  7025         JPI   SFINI        RETURN
                   REM                MULTIPLY ROUTINE
1234  2003  XM     LDD   FXPACC
1235  4043         STD   TEMP3        MULTIPLIER
1236  0400         LDN   0
1237  4003         STD   FXPACC       0 TO ACC.
1240  2212  XMA    LDF   R4ST          YES -- MPY. MASK
1241  1043         LPD   TEMP3
1242  6003         ZJF   XMB          BIT OF MULTIPLIER SET
1243  2015         LDD   XOPRND        YES -- GET SHIFTED MULTIPLICAN
1244  5003         RAD   FXPACC        PLUS PREVIOUS RESULTS
1245  4415  XMB    SRD   XOPRND       SHIFT MULTIPLICAND
1246  4604         SRF   R4ST         SHIFT MULTIPLIER MASK
1247  0701         SBN   1
1250  6510         NZB   XMA          MORE BITS TO MULTIPLY
1251  7025         JPI   SFINI        RETURN
1252  0001  R4ST           1
1253  4000  SNBIT          4000
                   REM                DIVIDE ROUTINE
1254  2015  XD     LDD   XOPRND       DIVISOR
1255  4045         STD   R5            TO INITIAL REMAINDER
1256  2003         LDD   FXPACC
1257  0600         ADN   0            MINUS ZERO CHECK
1260  6007         ZJF   XDY
1261  4043         STD   TEMP3        DIVIDEND
1262  0400         LDN   0
1263  4003         STD   FXPACC       ZERO ACCUMULATOR
1264  2015         LDD   XOPRND
1265  6103         NZF   XDF          DIVISOR ZERO
1266  5422         AOD   SWT           YES--SET DIVIDE CHECK
1267  7025  XDY    JPI   SFINI        RETURN
1270  1443  XDF    LSD   TEMP3
1271  4042         STD   TEMP2        SIGN OF QUOTIENT
1272  2015         LDD   XOPRND       DIVISOR
1273  6203         PJF   XDZ          JUMP FOR POS. DIVISOR
1274  2415         LCD   XOPRND       NEG. OF DIVISOR
1275  4015         STD   XOPRND       CHANGE TO POS. VALUE
1276  4041  XDZ    STD   TEMP1
1277  2443         LCD   TEMP3        NEG. OF DIVIDEND
1300  6302         NJF   XDB          NEGATIVE DIVISOR
1301  4043         STD   TEMP3         YES -- CHANGE TO POS. VALUE
1302  2327  XDB    LDB   SNBIT        4000
```

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1303  4044          STD   TEMP4      PARTIAL SUM
1304  2043  XDC     LDD   TEMP3      NUMERATOR
1305  3415          SBD   XOPRND     DENOMINATOR
1306  6305          NJF   XDD        NUMERATOR LARGER THAN DENOM.
1307  4045          STD   R5          YES -- STORE NEW SUM
1310  4415          SRD   XOPRND     2 TIMES DENOM
1311  4444          SRD   TEMP4      DOUBLE PARTIAL SUM
1312  6506          NZB   XDC
1313  2740  XDD     LCB   SNBIT
1314  1044          LPD   TEMP4      PARTIAL SUM
1315  5003          RAD   FXPACC      PLUS TOTAL SUM
1316  6427          ZJB   XDY
1317  2045          LDD   TEMP5      NEW NUMERATOR
1320  4043          STD   TEMP3       TO NUMERATOR
1321  3441          SBD   TEMP1        MINUS DENOM.
1322  6304          NJF   XDE        EXIT FROM ROUTINE
1323  2041          LDD   TEMP1       NO
1324  4015          STD   XOPRND     RESET DENOM
1325  6523          NZB   XDB
1326  2042  XDE     LDD   TEMP2
1327  6203          PJF   XDEA       SIGN OF QUOTIENT NEGATIVE
1330  2403          LCD   FXPACC      YES -- COMPLEMENT RESULTS
1331  4003          STD   FXPACC
1332  7025  XDEA    JPI   SFINI      EXIT
1333  4231  PWR     STF   PWRZ
1334  2231          LDF   LFRASE
1335  4045          STD   TEMP5
1336  0603          ADN   3
1337  4041          STD   TEMP1
1340  2541          LCI   TEMP1      GET J
1341  6203          PJF   ZEREX
1342  0600          ADN   0
1343  6104          NZF   PWRE       ZERO EXPONENT
1344  0401  ZEREX   LDN   1
1345  4003          STD   FXPACC
1346  6115          NZF   PWRB
1347  4141  PWRE    STI   TEMP1
1350  2145          LDI   TEMP5
1351  4003          STD   FXPACC     NO. TO OPERAND
1352  2145  PWRD    LDI   TEMP5
1353  4015          STD   XOPRND     NO. TO ACCUMULATOR
1354  5541          AOI   TEMP1      EXPONENT COUNT
1355  6006          ZJF   PWRB       MORE MULTIPLIES TO DO
1356  2204          LDF   PWRC        YES -- GET RETURN ADDRESS
1357  4025          STD   SFINI
1360  7101          JFI   1
1361  1234                XM         INTEGER MULTIPLY
1362  1352  PWRC          PWRD
1363  7101  PWRB    JFI   1
1364  7700  PWRZ    HLT
1365  0152  LFRASE       FERASE
1366  2415  INCLOR  LCD   XOPRND     OPERAND
1367  1003          LPD   FXPACC     ACCUM
1370  1415          LSD   XOPRND     INCLUSIVE OR
1371  4003          STD   FXPACC     RESULTS TO ACC.
1372  7025          JPI   SFINI      RETURN
1373  2415  COMPLT  LCD   XOPRND     OPERAND COMPLEMENTED
1374  4003          STD   FXPACC     STORE IN ACC.
1375  7025          JPI   SFINI      RETURN
1376  2015  LOGPRD  LDD   XOPRND     OPERAND
```

```
1377  1003          LPD   FXPACC        ACCUM.
1400  4003          STD   FXPACC
1401  7025          JPI   SFINI         RETURN
1402  2015  EXCLOR  LDD   XOPRND       OPERAND
1403  1403          LSD   FXPACC        ACCUM.
1404  4003          STD   FXPACC
1405  7025          JPI   SFINI         RETURN
1406  2321  SHIFTR  LDB   LFRASE
1407  4045          STD   TEMP5
1410  0603          ADN   3
1411  4046          STD   TEMP6
1412  2145          LDI   TEMP5
1413  4003          STD   FXACC
1414  0400          LDN   0
1415  3546          SBI   TEMP6
1416  6007          ZJF   SHFTRX
1417  6302          NJF   2
1420  0714          SBN   12D
1421  4015          STD   XOPRND
1422  4403  SHIFT   SRD   FXPACC
1423  5415          AOD   XOPRND
1424  6502          NZB   SHIFT
1425  7025  SHFTRX  JPI   SFINI
1426  4245  FLCONV  STF   RTNX          FIX TO FLOAT CONVERSION
1427  0445          LDN   45
1430  4032          STD   EXP
1431  0444          LDN   A2
1432  4051          STD   ACT
1433  2231          LDF   XFIND
1434  4062          STD   SEXTX
1435  2230          LDF   RTN
1436  4026          STD   CNFINI
1437  0400          LDN   0
1440  4017          STD   OP        2
1441  4045          STD   A1
1442  4044          STD   A2
1443  4042          STD   A4
1444  4041          STD   A5
1445  4060          STD   FAC
1446  2015          LDD   OP
1447  4036          STD   SIGN
1450  6202          PJF   2
1451  2415          LCD   OP
1452  4043          STD   A3
1453  2043          LDD   A3
1454  3620          SBF   FLCON2
1455  6304          NJF   4
1456  4043          STD   A3
1457  5444          AOD   A2
1460  6505          NZB   5
1461  2036          LDD   SIGN
1462  7101          JFI   1
1463  1733                SJFLX
1464  2327  XFIND         FIND
1465  1466  RTN           BBACK
1466  2044  BBACK   LDD   A2
1467  4015          STD   OP
1470  2043          LDD   A3
1471  4016          STD   OP        1
1472  7101          JFI   1
```

```
1473  0000  RTNX
1474  1750  FLCON2        10000D
1475  4000  H1            4000
1476  4240  XCONV   STF   XCONVZ          RETURN ADDRESS
1477  0400        LDN     0
1500  4004        STD     ACC     1       ADD 16000 (OR SUBTRACT)
1501  4005        STD     ACC     2
1502  4017        STD     OPRAND  2
1503  2015        LDD     OPRAND
1504  1307        LPB     H1
1505  1607        LSF     SXTEEN
1506  4003        STD     ACC
1507  2203        LDF     3
1510  4025        STD     SFINI
1511  7102        JFI     2
1512  1515                XCONVA
1513  1544                SFADD
1514  2260  SXTEEN       2260            16,000
1515  2004  XCONVA LDD     ACC     +1      SECOND WORD
1516  1221        LPF     XCONV2
1517  4015        STD     XOPRND
1520  2004        LDD     ACC     +1
1521  6203        PJF     XCONV8          +2000
1522  2326        LDB     FLCON2          10000
1523  6104        NZF     XCONVC
1524  0102  XCONV8 SHA    2
1525  6204        PJF     XCONVD
1526  0400        LDN     0
1527  3333  XCONVC ADB    FLCON2
1530  5015        RAD     XOPRND
1531  2003  XCONVD LDD    ACC             FIRST WORD
1532  6203        PJF     3
1533  2415        LCD     XOPRND
1534  4015        STD     XOPRND
1535  7101        JFI     1
1536  0000  XCONVZ
1537  1777  XCONV2        1777
                  REM                     3 WORD FLT PRELIM 15-1-62
1540  2015  SFSUB LDD     SOP             SUBTRACT
1541  6003        ZJF     SFADD
1542  1643        LSF     S4TH
1543  4015        STD     SOP
1544  2242  SFADD LDF     SJ1
1545  4062        STD     SEXTX
1546  0401        LDN     1
1547  6211        PJF     SASK
1550  2237  SFMLT LDF     SJ2
1551  4062        STD     SEXTX
1552  0400        LDN     0
1553  4060        STD     FAC
1554  6004        ZJF     SASK
1555  2233  SFDIV LDF     SJ3
1556  4062        STD     SEXTX
1557  0501        LCN     1
1560  4046  SASK  STD     SFLAG
1561  2003        LDD     SACC            IS ACCUMULATOR ZERO
1562  6130        NZF     STSTOV
1563  2046        LDD     SFLAG           YES
1564  6105        NZF     SKAT
1565  2015        LDD     SOP             IF MULTIPLY, IS THERE OVERFLOW
```

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1566  0237          LPN   37
1567  6006          ZJF   SMVOP          YES, SIGNAL OVERFLOW
1570  6113          NZF   SLVE
1571  6204  SKAT    PJF   SMVOP
1572  2015          LDD   SOP            IF DIVIDE NOT BY ZERO, LEAVE
1573  6034          ZJF   SDVY           OTHERWISE, OVERFLOW
1574  6107          NZF   SLVE
1575  2015  SMVOP   LDD   SOP            PUT OPERAND IN ACCUMULATOR
1576  4003          STD   SACC
1577  2016          LDD   SOP    1
1600  4004          STD   SACC   1
1601  2017          LDD   SOP    2
1602  4005          STD   SACC   2
1603  5424  SLVE    AOD   SNOPSW
1604  7025          JPI   SFINI
1605  4000  S4TH    4000
1606  1742  SJ1     SADDR
1607  2734  SJ2     MPY
1610  2525  SJ3     ENTRYD
1611  3740  SJOV    3740
1612  0237  STSTOV  LPN   37             TEST FOR OVERFLOW
1613  6410          ZJB   SLVE
1614  2015  SLOKOP  LDD   SOP            TEST OPERAND FOR ZERO
1615  6117          NZF   STSTD
1616  2046          LDD   SFLAG
1617  6310          NJF   SDVY
1620  4024          STD   SNOPSW         SET NO OP FLAG
1621  6516          NZB   SLVE
1622  0400  SCLA    LDN   0
1623  4003          STD   SACC
1624  4004          STD   SACC   1
1625  4005          STD   SACC   2
1626  6423          ZJB   SLVE
1627  0401  SDVY    LDN   1              SIGNAL DIVIDE FAULT
1630  4022          STD   SDVFLT
1631  2320  SMOVF   LDB   SJOV
1632  4003          STD   SACC
1633  6530          NZB   SLVE
1634  0237  STSTD   LPN   37
1635  6104          NZF   SDISAS
1636  2046          LDD   SFLAG
1637  6715          NJB   SCLA
1640  6643          PJB   SMVOP
1641  0444  SDISAS  LDN   SA2            DISASSEMBLE ACCUMULATOR
1642  4051          STD   SACT
1643  0403          LDN   SACC
1644  4047          STD   SDIS
1645  0432          LDN   SEXP
1646  4054          STD   STEMP
1647  2147  SPLIT   LDI   SDIS
1650  0237          LPN   37             SPLIT OFF LEADING DIGIT(S) AND
1651  0102          SHA   2
1652  0102          SHA   2
1653  4151          STI   SACT
1654  2147          LDI   SDIS           STORE EXPONENT
1655  0110          SHA   10
1656  0110          SHA   10
1657  0102          SHA   2
1660  0277          LPN   77
1661  4154          STI   STEMP
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1662  5454          AOD   STEMP
1663  5447          AOD   SDIS
1664  2147          LDI   SDIS      SPLIT MIDDLE WORD
1665  1226          LPF   SMSK2
1666  0102          SHA   2
1667  0102          SHA   2
1670  5151          RAI   SACT
1671  0501          LCN   1
1672  5051          RAD   SACT
1673  2620          LCF   SMSK2
1674  1147          LPI   SDIS
1675  4151          STI   SACT
1676  0501          LCN   1
1677  5051          RAD   SACT
1700  5447          AOD   SDIS
1701  2147          LDI   SDIS      TRANSFER LAST WORD
1702  4151          STI   SACT
1703  4611          SRF   SWTP
1704  6313          NJF   SFORN
1705  0415          LDN   SOP
1706  4047          STD   SDIS      DISASSEMBLE OPERAND
1707  0431          LDN   C1
1710  4051          STD   SACT
1711  6642          PJB   SPLIT
1712  4000  S4THO          4000
1713  6000  SMSK2          6000
1714  5252  SWTP           5252
1715  1750  STHD           1000D
1716  0144  SHNDD          100D
1717  2003  SFORN  LDD   SACC      SIGNAL WHETHER SIGNS AGREE
1720  4034          STD   SIGNA
1721  0400          LDN   0
1722  4045          STD   A1
1723  4024          STD   SNOPSW    CLEAR NO OP FLAG
1724  0412          LDN   10D
1725  4017          STD   STEN
1726  0401          LDN   1
1727  4020          STD   SONE
1730  2015          LDD   SOP
1731  4035          STD   SIGNB
1732  1403          LSD   SACC
1733  1321  SJFLX   LPB   S4THO
1734  4036          STD   SSIGN
1735  2320          LDB   STHD
1736  4015          STD   STHOU
1737  2321          LDB   SHNDD
1740  4016          STD   SHUND
1741  7062          JPI   SEXTX     GO TO SUBROUTINE
                    REM             3 WORD FLT ADD 1-4-62
1742  0400  SADDR   LDN   0         INITIALIZE
1743  4060          STD   FAC
1744  4046          STD   HIGH
1745  4047          STD   TMOVE
1746  2254          LDF   XARTH
1747  4061          STD   MLTX
1750  2432          LCD   EXP       FIND HIGHER
1751  5033          RAD   EXPB
1752  6016          ZJF   EQX
1753  6305          NJF   REST
1754  5032          RAB   EXP
```

```
1755  2033          LDD   EXPB
1756  4046          STD   HIGH
1757  6202          PJF   SC
1760  1643  REST    LSF   SFLIP
1761  0710  SC      SBN   10          EXPONENT RANGE LIMIT
1762  6317          NJF   ADJST
1763  6014          ZJF   JSSGSN
1764  2240          LDF   XSASS
1765  4024          STD   SNOPSW      SET NO OP FLAG
1766  4275  CHOOS   STF   PLACX
1767  6137          NZF   PLCE
1770  2031  EQX     LDD   C1          EXPONENTS EQUAL
1771  3444          SBD   A2
1772  6303          NJF   3
1773  0401          LDN   1
1774  4046          STD   HIGH
1775  2225  LODE    LDF   XARTH
1776  6510          NZB   CHOOS
1777  0500  JSSGSN  LCN   0
2000  4024          STD   SNOPSW
2001  0610  ADJST   ADN   10
2002  0703          SBN   3
2003  6305          NJF   5
2004  4054          STD   STEMP
2005  5447          AOD   TMOVE
2006  2054          LDD   STEMP
2007  6605          PJB   5
2010  0603          ADN   3
2011  4060          STD   FAC
2012  6415          ZJB   LODE
2013  2460          LCD   FAC         SHIFT HIGHER (FAC)*TIMES
2014  5032          RAD   EXP
2015  2060          LDD   FAC
2016  0701          SBN   1
2017  4060          STD   FAC
2020  2205          LDF   XMLT
2021  6533          NZB   CHOOS
2022  2222  XARTH   ----  SARITH
2023  7777  SFLIP         7777
2024  2455  XSASS         SASSEM
2025  2070  XMLT          MLT
2026  2046  PLCE    LDD   HIGH
2027  6021          ZJF   COO
2030  2042          LDD   A4
2031  4003          STD   B3
2032  2043          LDD   A3
2033  4004          STD   B2
2034  2044          LDD   A2
2035  4005          STD   B1
2036  0427          LDN   C3
2037  4052  REPLC   STD   HGHER
2040  2152          LDI   HGHER
2041  4042          STD   A4
2042  5452          AOD   HGHER
2043  2152          LDI   HGHER
2044  4043          STD   A3
2045  5452          AOD   HGHER
2046  2152          LDI   HGHER
2047  4044          STD   A2
2050  0400  COO     LDN   0
```

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2051  4045          STD   A1
2052  4041          STD   A5
2053  2046  SGNF    LDD   HIGH        FIND SIGN OF ANSWER
2054  6003          ZJF   3
2055  2035          LDD   SIGN8
2056  6102          NZF   2
2057  2034          LDD   SIGNA
2060  1205          LPF   SJ4TH
2061  4036          STD   SSIGN
2062  7101          JFI   1
2063  0000  PLACX
2064  5252  SSWCH          5252
2065  4000  SJ4TH          4000
2066  0403  PLACE   LDN   R3
2067  6530          NZ8   REPLC
2070  2045  MLT     LDD   A1
2071  0112          SHA   12
2072  4045          STD   A1
2073  4442          SRD   A4
2074  4062          STD   SR3
2075  4443          SRD   A3
2076  4063          STD   SR2
2077  4444          SRD   A2
2100  4064          STD   SR1
2101  4442  REP     SRD   A4
2102  3642          SBF   2THOU
2103  6303          NJF   3
2104  4042          STD   A4
2105  5443          AOD   A3
2106  4443          SRD   A3
2107  3635          SBF   2THOU
2110  6303          NJF   3
2111  4043          STD   A3
2112  5444          AOD   A2
2113  4444          SRD   A2
2114  3630          SBF   2THOU
2115  6310          NJF   SUCH
2116  4044          STD   A2
2117  2333          LDB   SSWCH
2120  6203          PJF   3
2121  0404          LDN   4
2122  6202          PJF   2
2123  0402          LDN   2
2124  5045          RAD   A1
2125  4741  SUCH    SRB   SSWCH
2126  6625          PJB   REP
2127  2062          LDD   SR3
2130  5042          RAD   A4
2131  3613          SBF   2THOU
2132  6313          NJF   LESS2
2133  4042          STD   A4
2134  3415          SBD   THOU
2135  6304          NJF   4
2136  4042          STD   A4
2137  0403          LDN   3
2140  6102          NZF   AD
2141  0402          LDN   2
2142  5043  AD      RAD   A3
2143  6106          NZF   NXT
2144  3720  2THOU         20000
```

```
2145  3015  LESS2  ADD   THOU
2146  6303         NJF   3
2147  4042         STD   A4
2150  5443         AOD   A3
2151  2063  NXT    LDD   SH2
2152  5043         RAD   A3
2153  3707         SBB   2THOU
2154  6312         NJF   LES2
2155  4043         STD   A3
2156  3415         SBD   THOU
2157  6304         NJF   4
2160  4043         STD   A3
2161  0403         LDN   3
2162  6102         NZF   2
2163  0402         LDN   2
2164  5044         RAD   A2
2165  6105         NZF   NX
2166  3015  LES2   ADD   THOU
2167  6303         NJF   3
2170  4043         STD   A3
2171  5444         AOD   A2
2172  2064  NX     LDD   SH1
2173  5044         RAD   A2
2174  3730         SBB   2THOU
2175  6312         NJF   LS2
2176  4044         STD   A2
2177  3415         SBD   THOU
2200  6304         NJF   4
2201  4044         STD   A2
2202  0403         LDN   3
2203  6102         NZF   2
2204  0402         LDN   2
2205  5045         RAD   A1
2206  6105         NZF   5
2207  3015  LS2    ADD   THOU
2210  6303         NJF   3
2211  4044         STD   A2
2212  5445         AOD   A1
2213  2060         LDD   FAC
2214  6005         ZJF   LEV
2215  0701         SBN   1
2216  4060         STD   FAC
2217  7101         JFI   1
2220  2070  X2MLT         MLT
2221  7061  LEV    JPI   MLTX
2222  2047  SARITH LDD   TMOVE
2223  6002         ZJF   2
2224  0501         LCN   1
2225  0642         ADN   A4
2226  4051         STD   ACT
2227  2046         LDD   HIGH
2230  6003         ZJF   3
2231  0403         LDN   B3
2232  6102         NZF   2
2233  0427         LDN   C3
2234  4053         STD   LOWER
2235  0603         ADN   3
2236  4225         STF   PUSH
2237  2047         LDD   TMOVE
2240  0702         SBN   2
```

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2241  6302          NJF   2
2242  5453          AOD   LOWER
2243  2034          LDD   SIGNA
2244  1435          LSD   SIGNB
2245  6317          NJF   SUB
2246  2153  ADDER   LDI   LOWER        ADD ROUTINE
2247  5151          RAI   ACT
2250  3415          SBD   THOU
2251  6305          NJF   AODAC
2252  4151          STI   ACT
2253  5451          AOD   ACT
2254  5551          AOI   ACT
2255  6102          NZF   2
2256  5451  AODAC   AOD   ACT
2257  5453          AOD   LOWER
2260  3603          SBF   PUSH
2261  6513          NZB   ADDER
2262  6031          ZJF   WHAT
2263  0000  PUSH
2264  2553  SUB     LCI   LOWER        SUBTRACT ROUTINE
2265  5151          RAI   ACT
2266  6210          PJF   INC
2267  3015  STRAT   ADD   THOU
2270  4151          STI   ACT
2271  5451          AOD   ACT
2272  0501          LCN   1
2273  5151          RAI   ACT
2274  6103          NZF   3
2275  6002          ZJF   2
2276  5451  INC     AOD   ACT
2277  5453          AOD   LOWER
2300  3715          SBB   PUSH
2301  6715          NJB   SUB
2302  2051          LDD   ACT
2303  0745          SBN   A1
2304  6107          NZF   WHAT
2305  2151          LDI   ACT
2306  6217          PJF   RON
2307  0400          LDN   0            SUBTRACTED WRONG WAY
2310  4046          STD   HIGH
2311  7101          JFI   1
2312  2066  XPLACE        PLACE
2313  2151  WHAT    LDI   ACT
2314  6725          NJB   STRAT
2315  3415          SBD   THOU
2316  6307          NJF   RON
2317  4151          STI   ACT
2320  5451          AOD   ACT
2321  5551          AOI   ACT
2322  6507          NZB   WHAT
2323  0132  NINTY       90D
2324  0764  FIVE        500D
2325  0445  RON     LDN   A1           FIND FIRST SIGNIFICANT WORD
2326  4051          STD   ACT
2327  2151  FIND    LDI   ACT
2330  6107          NZF   SHOW
2331  0501          LCN   1
2332  5051          RAD   ACT
2333  0741          SBN   A5
2334  6605          PJB   FIND
```

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2335  7101          JFI   1
2336  2455  SXASS         SASSEM
2337  0444  SHOW    LDN   A2
2340  4052          STD   LET
2341  2151          LDI   ACT
2342  0712          SBN   12
2343  6202          PJF   2                 MUST HAVE AT LEAST 8 SIG DIGS
2344  5452          AOD   LET               IF NOT) MOVE TO A1
2345  2051          LDD   ACT
2346  4053          STD   GET
2347  3452          SBD   LET
2350  6362          NJF   DIFER
2351  2151  SHOW2   LDI   ACT               IS LEADING WORD NORMALIZED
2352  3416          SBD   (100)             NORM LEADING WORD
2353  6241          PJF   FAC2
2354  3331          ADB   NINTY
2355  6344          NJF   FAC1
2356  0503  ROUND   LCN   3                 ROUND AT FOURTH WORD
2357  5051          RAD   ACT
2360  2734          LCB   FIVE              ROUND ANSWER. MOVE AND EXIT
2361  3151          ADI   ACT
2362  6311          NJF   MOVTS
2363  5451          AOD   ACT
2364  5551          AOI   ACT
2365  3415  DIVEX   SBD   THOU             ENTRY TO PROPAGATE ROUND WITH
                    REM                   (A4) IN ACC
2366  6305          NJF   5
2367  4151          STI   ACT
2370  5451          AOD   ACT
2371  5551          AOI   ACT
2372  6505          NZB   5
2373  2045  MOVTS   LDD   A1
2374  6012          ZJF   OUT
2375  0403          LDN   3
2376  5032          RAD   EXP
2377  2043          LDD   A3                MOVE
2400  4042          STD   A4
2401  2044          LDD   A2
2402  4043          STD   A3
2403  2045          LDD   A1
2404  4044          STD   A2
2405  2044          LDD   A2
2406  3416  OUT     SBD   (100)
2407  6104          NZF   4
2410  5432          AOD   EXP
2411  0412          LDN   12
2412  4044          STD   A2
2413  6142          NZF   SASSEM
2414  0401  FAC2    LDN   1                 SHIFT ACC TWICE
2415  4060          STD   FAC
2416  5451          AOD   ACT
2417  0502          LCN   2
2420  6102          NZF   2
2421  0501  FAC1    LCN   1                 MULTIPLY BY TEN
2422  5032          RAD   EXP
2423  2204          LDF   XROUND
2424  4061          STD   MLTX
2425  7101          JFI   1
2426  2070  X3MLT         MLT
2427  2356  XROUND        ROUND
```

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2430  7777  SJFLP         7777
2431  6760  SHOW2R NJB    SHOW2
2432  4054  DIFER  STD     STEMP          - NUMBER OF WOR-SHIFTS
2433  1703         LSB     SJFLP
2434  5051         RAD     ACT            SIGNAL SIGNIFICANT WORD
2435  2454         LCD     STEMP
2436  0102         SHA     2
2437  1707         LSB     SJFLP
2440  3054         ADD     STEMP
2441  5032         RAD     EXP            CHANGE EXP
2442  2153  UP     LDI     GET            MOVE ACC
2443  4152         STI     LET
2444  0400         LDN     0              DESTRUCTIVE TRANSFER
2445  4153         STI     GET
2446  0501         LCN     1
2447  5052         RAD     LET
2450  0501         LCN     1
2451  5053         RAD     GET
2452  0741         SBN     A5
2453  6611         PJB     UP
2454  6723         NJB     SHOW2R
2455  2044  SASSEM LDD     A2
2456  6036         ZJF     SZERO
2457  0203         LPN     3
2460  0110         SHA     10
2461  0110         SHA     10
2462  0110         SHA     10
2463  0102         SHA     2
2464  5043         RAD     A3
2465  2044         LDD     SA2
2466  0102         SHA     2              OR DO RS2 ON THE A
2467  0110         SHA     10
2470  0110         SHA     10
2471  0110         SHA     10
2472  0277         LPN     77
2473  3036         ADD     SIGN
2474  4044         STD     A2
2475  0577         LCN     77
2476  1032         LPD     SEXP
2477  6315         NJF     SZERO
2500  6006         ZJF     SJOT1
2501  2220         LDF     SOVFNO
2502  3036         ADD     SIGN
2503  4044         STD     A2
2504  4023         STD     SWT1
2505  7026         JPI     CNFINI
2506  2032  SJOT1  LDD     EXP
2507  0110         SHA     10
2510  0102         SHA     2
2511  0102         SHA     2
2512  5044         RAD     A2
2513  6105         NZF     SBYE
2514  0400  SZERO  LDN     0
2515  4044         STD     A2
2516  4043         STD     A3
2517  4042         STD     A4
2520  7026  SBYE   JPI     CNFINI
2521  3740  SOVFNO         3740
                   REM                    -3- WORD FLOATING DIVIDE
2522  5432  NFIXEX AOD     NEXPA          INCREASE EXPONENT
```

```
2523  6251          PJF   NSUBTR
2524  6350          NJF   NSUBTR
2525  0451  ENTRYD  LDN   NQ3          ADDRESS OF QUOTIENT
2526  4046          STD   NQUOT        FOR INDIRECT ADDRESSING
2527  2433          LCD   NEXP         CREATE CORRECT
2530  0640          ADN   32D          EXPONENT FOR
2531  5032          RAD   NEXPA        QUOTIENT
2532  2225          LDF   NLTST
2533  4061  NMLTX   STD   MLTX
2534  0400          LDN   0
2535  4047          STD   NQ           Q=0
2536  4060          STD   FAC
2537  0503          LCN   3            I=3 WORDS
2540  4050          STD   N-I          OF QUOTIENT
2541  5653          AOF   NCHNG        ONLY 2 DIGITS IN 1ST WD
2542  2044          LDD   NA2          IF REMAINDER IS
2543  3431          SBD   NC1          LESS THAN DIVISOR
2544  6311          NJF   NSHIFT       MODIFY EXPONENT
2545  6523          NZB   NFIXEX       OTHERWISE MULTIPLY
2546  2043          LDD   NA3          REMAINDER BY 10
2547  3430          SBD   NC2
2550  6305          NJF   NSHIFT
2551  6527          NZB   NFIXEX
2552  2042          LDD   NA4
2553  3427          SBD   NC3
2554  6632          PJB   NFIXEX
2555  7101  NSHIFT  JFI   1            LEFT SHIFT
2556  2070  NMLT    LDD   MLT          1 DECIMAL PLACE
2557  2561  NLTST   LDD   NTEST
2560  2021  NENDER  LDD   NONE   1     TEST CONSTANT
2561  2044  NTEST   LDD   NA2          IF REMAINDER IS
2562  3431          SBD   NC1          LESS THAN DIVISOR
2563  6334          NJF   NSTEP        INCREASE COUNTER
2564  6110          NZF   NSUBTR       OTHERWISE SUBTRACT
2565  2043          LDD   NA3          DIVISOR FROM
2566  3430          SBD   NC2          REMAINDER
2567  6330          NJF   NSTEP
2570  6104          NZF   NSUBTR
2571  2042          LDD   NA4
2572  3427          SBD   NC3
2573  6324          NJF   NSTEP
2574  2427  NSUBTR  LCD   NC3          SUBTRACT DIVISOR
2575  5042          RAD   NA4          FROM REMAINDER
2576  6205          PJF   5            KEEPING MOD 1000
2577  3015          ADD   NTHOU
2600  4042          STD   NA4
2601  0501          LCN   1
2602  5043          RAD   NA3
2603  2430          LCD   NC2
2604  5043          RAD   NA3
2605  6205          PJF   5
2606  3015          ADD   NTHOU
2607  4043          STD   NA3
2610  0501          LCN   1
2611  5044          RAD   NA2
2612  2431          LCD   NC1
2613  5044          RAD   NA2
2614  2016  NCHNG   LDD   NHUND        INCREASE QUOTIENT
2615  5047          RAD   NQ           BY 100,10,OR 1
2616  6635          PJB   NTEST
```

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2617  5703  NSTEP  AOB   NCHNG        NEXT POWER OF 10
2620  1740         LSB   NENDER       THROUGH 1
2621  6544         NZB   NSHIFT       UNFINISHED, BACK TO SHIFT
2622  0503         LCN   3            RESTORE INCREMENT
2623  5307         RAB   NCHNG        TO 100
2624  2047         LDD   NQ           STORE WORD I
2625  4146         STI   NQUOT        OF QUOTIENT
2626  0400         LDN   0            Q=0
2627  4047         STD   NQ
2630  5446         AOD   NQUOT        I=I+1
2631  5450         AOD   N-1)
2632  6555         NZB   NSHIFT       I LEQ 3, BACK TO SHIFT
2633  4444         SRD   NA2          ROUND OR NOT
2634  3431         SBD   NC1
2635  6302         NJF   2
2636  5453         AOD   NQ1          YES
2637  2052         LDD   NQ2
2640  4043         STD   NA3
2641  2051         LDD   NQ3
2642  4044         STD   NA2
2643  0442         LDN   NA4
2644  4051         STD   NACT
2645  2053         LDD   NQ1
2646  4042         STD   NA4          Q TO A
2647  7101         JFI   1
2650  2365  NDIVEX       DIVEX
                   REM                #3# WORD FLOATING MULTIPLY
2651  4052  MCNG1  STD   MP3
2652  5453         AOD   MP2
2653  6213         PJF   MRET1
2654  4053  MCNG2  STD   MP2
2655  5454         AOD   MP1
2656  6213         PJF   MRET2
2657  4455  MSHIFT SRD   MP0
2660  4454         SRD   MP1
2661  4453         SRD   MP2
2662  4452         SRD   MP3
2663  3415         SBD   MTHOU
2664  6613         PJB   MCNG1
2665  2053         LDD   MP2
2666  3415  MRET1  SBD   MTHOU
2667  6613         PJB   MCNG2
2670  2054         LDD   MP1
2671  3415  MRET2  SBD   MTHOU
2672  6303         NJF   MWORK
2673  4054         STD   MP1
2674  5455         AOD   MP0
2675  4446  MWORK  SRD   MLIER
2676  6223         PJF   MSTEP
2677  2027         LDD   MC3
2700  5052         RAD   MP3
2701  3415         SBD   MTHOU
2702  6303         NJF   MINC1
2703  4052         STD   MP3
2704  5453         AOD   MP2
2705  2030  MINC1  LDD   MC2
2706  5053         RAD   MP2
2707  3415         SBD   MTHOU
2710  6303         NJF   MINC
2711  4053         STD   MP2
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2712  5454          AOD   MP1
2713  2031  MINC    LDD   MC1
2714  5054          RAD   MP1
2715  3415          SBD   MTHOU
2716  6303          NJF   MSTEP
2717  4054          STD   MP1
2720  5455          AOD   MP0
2721  5447  MSTEP   AOD   MCOUNT
2722  6543          NZB   MSHIFT
2723  6037          ZJF   MZERO
2724  4047  MENTRY  STD   MCOUNT
2725  0400          LDN   0
2726  4055          STD   MP0
2727  4054          STD   MP1
2730  4053          STD   MP2
2731  4052          STD   MP3
2732  6435          ZJB   MWORK
2733  2743  MLBACK        MBACK
2734  2033  MPY     LDD   EXPB
2735  0740          SBN   32D
2736  5032          RAD   EXP
2737  2304          LDB   MLBACK
2740  4061          STD   MLTX
2741  7101          JFI   1
2742  2070  MMLT          MLT
2743  4037  MBACK   STD   MA7
2744  4040          STD   MA6
2745  4041          STD   MA5
2746  0502          LCN   2
2747  4051          STD   MCOUND
2750  0442          LDN   MA4
2751  4050          STD   MAC(J)
2752  4442          SRD   MA4
2753  6202          PJF   MBOTH
2754  4443          SRD   MA3
2755  4046  MBOTH   STD   MLIER
2756  2225          LDF   MSTRTR
2757  4206          STF   MLOOP
2760  0512  MCNT    LCN   10D
2761  6535          NZB   MENTRY
2762  4150  MZERO   STI   MAC(J)
2763  0503          LCN   3
2764  5050          RAD   MAC(J)
2765  2000  MLOOP   LDD
2766  5150          RAI   MAC(J)
2767  3415          SBD   MTHOU
2770  6214          PJF   MCARRY
2771  5450          AOD   MAC(J)
2772  5705  MCOMUN  AOB   MLOOP
2773  1607          LSF   MTERMN
2774  6507          NZB   MLOOP
2775  5451          AOD   MCOUND
2776  6722          NJB   MBOTH   -1
2777  6111          NZF   MUONE
3000  4444          SRD   MA2
3001  6624          PJB   MBOTH
3002  2056  MTERMN  LDD   MP0     1
3003  2052  MSTRTR  LDD   MP3
3004  4150  MCARRY  STI   MAC(J)
3005  5450          AOD   MAC(J)
```

Clear A
Clear
Product
Registers

Jump to
Shift one decimal place

```
3006  5550          AOI   MAC(J)
3007  6615          PJB   MCOMUN
3010  0444  MDONE   LDN   MA2
3011  4051          STD   MACT
3012  7101          JFI   1
3013  2337  MSHOW         SHOW
3014  2044  CNFIN   LDD   A2
3015  4003          STD   ACC
3016  2043          LDD   A3
3017  4004          STD   ACC     1
3020  2042          LDD   A4
3021  4005          STD   ACC     2
3022  7025          JPI   SFINI
                    REM                 NEW IOC
3023  5410  IO      AOD   LOCC
3024  2110          LDI   LOCC
3025  0703          SBN   3
3026  4050          STD   KTTYPE        1,2,3,4=I,O,R,P
3027  6224          PJF   KTI04         INPUT OR OUTPUT
3030  0601          ADN   1
3031  6107          NZF   7
3032  7557          EXF   KTI02
3033  7303          OUT   3
3034  3040                KTI05   1
3035  6112          NZF   JSJ30
3036  3037                KTI05
3037  0100  KTI05         100
3040  7541          EXF   KTI03
3041  7210          INP   10
3042  3053                KTI06   1
3043  2207          LDF   KTI06
3044  6403          ZJB   3
3045  3706          SBB   KTI05
3046  6505          NZB   5
3047  5410  JSJ30   AOD   LOCC
3050  6134          NZF   JSJ50
3051  3052                KTI06
3052  0000  KTI06         0
3053  5410  KTI04   AOD   LOCC
3054  2110          LDI   LOCC
3055  4055          STD   KTTEM1
3056  5455          AOD   KTTEM1
3057  2155          LDI   KTTEM1
3060  4056          STD   KTLFOR        LOCN FORMAT LIST
3061  5410          AOD   LOCC
3062  2110          LDI   LOCC
3063  4055          STD   KTTEM1
3064  5455          AOD   KTTEM1
3065  2155          LDI   KTTEM1        SET
3066  4051          STD   KTROUT        READ OR PUNCH
3067  0401          LDN   1             INITIALIZE
3070  4057          STD   KTI           FORMAT OPU COUNTER
3071  5410          AOD   LOCC
3072  2050  JSSWT   LDD   KTTYPE
3073  6107          NZF   JSPUN
3074  7505          EXF   5             READ - Select Reader
3075  7600          INA                 SCAN
3076  0745          SBN   45            THRU
3077  6502          NZB   2             CR
3100  6004          ZJF   4
```

```
3101  4102  KTIO3          4102
3102  7507  JSPUN  EXF     KTIO2
3103  7445          OTN     45
3104  0400  JSJ50   LDN     0
3105  4052          STD     KTCL
3106  4053          STD     KTCM
3107  4054          STD     KTCN
3110  7001  KTIO1   JPI     LCON
3111  4104  KTIO2           4104
3112  2054  IOC     LDD     KTCN
3113  6721          NJB     JSSWT
3114  5410          AOD     LOCC
3115  2110          LDI     LOCC
3116  4060          STD     KTMAXJ
3117  0401          LDN     1
3120  4061          STD     KTJ
3121  5410          AOD     LOCC        LOCC NOW AT 1ST OPND
3122  2050  KTIOC1  LDD     KTTYPE
3123  6256          PJF     KTIOC8      READ PUNCH
3124  2205          LDF     5
3125  4032          STD     GETOPE
3126  2110          LDI     LOCC
3127  7101          JFI     1
3130  0177                  GETOP
3131  3132                  KTIOC2
3132  4055  KTIOC2  STD     KTTEM1      LOCN OF DATA WORD
3133  0400          LDN     0
3134  4052          STD     KTCL
3135  2050  KTIOC3  LDD     KTTYPE
3136  0602          ADN     2
3137  6124          NZF     KTIOC5      OUTPUT
3140  7600          INA                 INPUT
3141  0110          SHA     10
3142  0110          SHA     10
3143  4155          STI     KTTEM1
3144  7600          INA
3145  5155          RAI     KTTEM1
3146  2013  KTIOC8  LDD     MODE
3147  0701          SBN     1
3150  6005          ZJF     KTIOC4
3151  5455          AOD     KTTEM1
3152  5452          AOD     KTCL
3153  0303          LSN     3
3154  6517          NZB     KTIOC3
3155  5410  KTIOC4  AOD     LOCC
3156  5461          AOD     KTJ
3157  0701          SBN     1
3160  1460          LSD     KTMAXJ
3161  6537          NZB     KTIOC1
3162  7001          JPI     LCON        EXIT
3163  2155  KTIOC5  LDI     KTTEM1      OUTPUT
3164  0277          LPN     77
3165  3213          ADF     KTIOC9
3166  4210          STF     KTIOC7
3167  2155          LDI     KTTEM1
3170  0110          SHA     10
3171  0110          SHA     10
3172  0277          LPN     77
3173  3205          ADF     KTIOC9
3174  4201          STF     KTIOC6
```

Paper Tape Reader
Select punch
CR — Punch C.R.Return
Clear A
Clear
Flags

```
3175  7400   KTIOC6  OTN
3176  7400   KTIOC7  OTN
3177  6531           NZB   KTIOC8
3200  7400   KTIOC9  OTN   0          FOL W/ KTIOC8
3201  2156   KTIOC8  LDI   KTLFOR     THIS CODE IS EXECUTED
3202  0277           LPN   77         ONLY BY READ, PUNCH
3203  4063           STD   KTF2       AND IS OVERLAID WITH
3204  1556           LSI   KTLFOR     OBJECT CODE IF NEITHER
3205  0110           SHA   10         EXISTS
3206  0110           SHA   10
3207  4062           STD   KTF1
3210  2056           LDD   KTLFOR
3211  0601           ADN   1
3212  4055           STD   KTTEM1
3213  2155           LDI   KTTEM1
3214  4064           STD   KTF3
3215  2062           LDD   KTF1
3216  0701           SBN   1
3217  6112           NZF   JSJ2
3220  2050           LDD   KTTYPE     /
3221  6105           NZF   JSJ1
3222  7600           INA              READ
3223  0745           SBN   45
3224  6502           NZB   2
3225  6002           ZJF   2
3226  7445   JSJ1    OTN   45
3227  7101   KTIOCR  JFI   1          RETURN TO A
3230  3374                 KTIOCA
3231  0706   JSJ2    SBN   6
3232  6152           NZF   KTCB1
3233  2463           LCD   KTF2       H
3234  4063           STD   KTF2
3235  2050   JSJ3    LDD   KTTYPE
3236  6022           ZJF   JSJ5
3237  2164           LDI   KTF3       PUNCH H
3240  0277           LPN   77
3241  3216           ADF   16
3242  4210           STF   10
3243  2164           LDI   KTF3
3244  0110           SHA   10
3245  0110           SHA   10
3246  0277           LPN   77
3247  3210           ADF   10
3250  4201           STF   1
3251  7400           OTN
3252  7400           OTN
3253  5464   JSJ4    AOD   KTF3
3254  5463           AOD   KTF2
3255  6426           ZJB   KTIOCR
3256  6521           NZB   JSJ3
3257  7400           OTN
3260  2221   JSJ5    LDF   21
3261  4164           STI   KTF3
3262  7600   JSJ6    INA
3263  6401           ZJB   1
3264  0747           SBN   47
3265  6103           NZF   3
3266  2214           LDF   14
3267  6506           NZB   JSJ5   1
3270  0710           SBN   10         57
```

```
3271  6103          NZF   3
3272  2211          LDF   11
3273  6504          NZB   4
3274  0720          SBN   20
3275  6413          ZJB   JSJ6
3276  0677          ADN   77
3277  5164          RAI   KTF3
3300  6525          NZB   JSJ4
3301  5700                5700
3302  4700                4700
3303  5700                5700
3304  0703  KTCB1   SBN   3          12
3305  6122          NZF   KTCB2
3306  2464          LCD   KTF3       X
3307  4064          STD   KTF3
3310  2050          LDD   KTTYPE
3311  6114          NZF   JSJ7
3312  7600          INA               READ X
3313  6401          ZJB   1
3314  0747          SBN   47
3315  6403          ZJB   3
3316  0710          SBN   10
3317  6405          ZJB   5
3320  0720          SBN   20
3321  6407          ZJB   7
3322  5464          AOD   KTF3
3323  6474          ZJB   KTIOCR
3324  6515          NZB   15
3325  7404  JSJ7    OTN   4
3326  6504          NZB   4
3327  0602  KTCB2   ADN   2          10
3330  6224          PJF   KTCB3
3331  2061          LDD   KTJ
3332  3460          SBD   KTMAXJ
3333  6003          ZJF   3
3334  6302          NJF   2
3335  7001          JPI   LCON
3336  2205          LDF   5
3337  4032          STD   GETOPE
3340  2110          LDI   LOCC
3341  7101          JFI   1
3342  0177                GETOP
3343  3344                KTCB22
3344  4066  KTCB22  STD   KTDATA
3345  5461          AOD   KTJ        UP J
3346  5410          AOD   LOCC
3347  2063          LDD   KTF2
3350  6103          NZF   3
3351  2064          LDD   KTF3
3352  4063          STD   KTF2
3353  7051          JPI   KTROUT     -TO READ OR PUNCH
3354  6155  KTCB3   NZF   KTIOCC     TO END
3355  2064          LDD   KTF3       REPEAT
3356  0701          SBN   1
3357  6107          NZF   KTCB4
3360  2063          LDD   KTF2
3361  0701          SBN   1
3362  4052          STD   KTCL
3363  2053          LDD   KTCM
3364  6026          ZJF   KTIOCE
```

```
3365  6120          NZF   KTIOCD
3366  2064  KTC84   LDD   KTF3
3367  4065  JSJ40   STD   KTHM
3370  4053          STD   KTCM
3371  2063          LDD   KTF2
3372  0701          SBN   1
3373  4054          STD   KTCN
3374  2052  KTIOCA  LDD   KTCL
3375  6006          ZJF   JSJ41
3376  0501          LCN   1
3377  5052          RAD   KTCL
3400  7101  KTCA1   JFI   1
3401  3201                KTIOCB
3402  6514  KTC84R  NZB   KTC84
3403  2053  JSJ41   LDD   KTCM
3404  6004          ZJF   4
3405  0501  KTIOCD  LCN   1
3406  5053          RAD   KTCM
3407  6203          PJF   KTIOCE
3410  2054          LDD   KTCN
3411  6105          NZF   5
3412  5457  KTIOCE  AOD   KTI
3413  0402          LDN   2
3414  5056          RAD   KTLFOR
3415  6515          NZB   KTCA1
3416  0501          LCN   1
3417  5054          RAD   KTCN
3420  2065          LDD   KTHM
3421  4053          STD   KTCM
3422  0102          SHA   2
3423  4055          STD   KTTEM1
3424  2455          LCD   KTTEM1
3425  5056          RAD   KTLFOR
3426  2465          LCD   KTHM
3427  5057          RAD   KTI
3430  6634          PJB   KTIOCA
3431  0501  KTIOCC  LCN   1
3432  4054          STD   KTCN
3433  0501  KTCC1   LCN   1
3434  5057          RAD   KTI
3435  0502          LCN   2
3436  5056          RAD   KTLFOR
3437  2156          LDI   KTLFOR
3440  0110          SHA   10
3441  0110          SHA   10
3442  0277          LPN   77
3443  0710          SBN   10
3444  6511          NZB   KTCC1
3445  2156          LDI   KTLFOR
3446  0277          LPN   77
3447  4063          STD   KTF2
3450  0701          SBN   1
3451  6516          NZB   KTCC1
3452  2056          LDD   KTLFOR
3453  0601          ADN   1
3454  4055          STD   KTTEM1
3455  2155          LDI   KTTEM1
3456  4064          STD   KTF3
3457  2061          LDD   KTJ
3460  3460          SBD   KTMAXJ
```

```
3461  6212          PJF   KTCC3
3462  2050  KTCC2   LDD   KTTYPE
3463  6105          NZF   5
3464  7600          INA
3465  0745          SBN   45
3466  6502          NZB   2
3467  6002          ZJF   2
3470  7445          OTN   45
3471  0401          LDN   1                  NON ZERO FOR RELAY
3472  6570          NZB   KTCB4R
3473  6102  KTCC3   NZF   2
3474  6412          ZJB   KTCC2
3475  7001          JPI   LCON
      0106          ORG   ERASE
0106  0505          LCN   5                  A = 7772
0107  4010          STD   LOCC
0110  2110          LDI   LOCC
0111  4010          STD   LOCC
0112  0400          LDN   0                  Clear
0113  4003          STD   FLPACC                Floating
0114  4004          STD   FLPACC  1             Point
0115  4005          STD   FLPACC  2             Accumulator
0116  4022          STD   SWT
0117  4023          STD   SWT1
0120  7700          HLT
0121  7001          JPI   LCON
                    REM                    LOW CORE FOR C INTERPRETER
      0001          CON   1
0001  1137  LCON            NOCL
0002  1223  RETBUF          RETUR1
0003  0000  ACC     BSS   3                  Base 36 bit accumulator
0006  0000  ARINT1
0007  0000  ARINTL
0010  0000  LOCC
0011  0000  LOCC0
0012  0000  LOCVAR
0013  0000  MODE
0014  0000  MODEA
0015  0000  OPER    BSS   4
0021  0000  STOTRA
0022  0000  SWT
0023  0000  SWT1
0024  0000  SNOPSW
0025  0000  SFINI
0026  0000  CNFINI
0027  0000  C3
0030  0000  C2
0031  0000  C1
0032  0000  GETOPE
0033  0000  LOCC2
0034  0000  LOCC8
0035  0000  PARLOC
0036  0000  QCOUNT
0037  0000  A7
0040  0000  A6
0041  0000  A5
0042  0000  A4
0043  0000  A3
0044  0000  A2
0045  0000  A1
```

```
0046  0000  TEMP6
0047  0000  VARLOC
0050  0000  S3
0051  0000  S4
0052  0000  S5
0053  0000  S6
0054  0000  S7
0055  0000  S8
0056  0000  S9
0057  0000  S10
0060  0000  FAC
0061  0000  MLTX
0062  0000  SR3
0063  0000  SR2
0064  0000  SR1
0065  0000  KTHM
0066  0000  KTDATA
0067  0000  WID
0070  0000  DECCT
0071  0000  DIGCT
0072  0000  NCONF
0073  0000  STORD
0074  0000  EXPF
0075  0000  PLACCT
      0050  KTTYPE EQU   S3
      0051  KTROUT EQU   S4
      0052  KTCL   EQU   S5
      0053  KTCM   EQU   S6
      0054  KTCN   EQU   S7
      0055  KTTEM1 EQU   S8
      0056  KTLFOR EQU   S9
      0057  KTI.   EQU   S10
      0060  KTMAXJ EQU   FAC
      0061  KTJ    EQU   MLTX
      0062  KTF1   EQU   SR3
      0063  KTF2   EQU   SR2
      0064  KTF3   EQU   SR1
      0032  EXP    EQU   GETOPE
      0036  SIGN   EQU   QCOUNT
      0062  FUNCD  EQU   KTF1
      0064  WIDI   EQU   KTF3
      0063  WIDF   EQU   KTF2
      0064  DECF   EQU   KTF3
      0031  EAPLOC EQU   C1
      0030  EAP    EQU   C2
      0027  DIMLOC EQU   C3
      0040  SAVSUM EQU   A6
      0003  FXPACC EQU   ACC
      0037  SAVACC EQU   A7
      0041  TEMP1  EQU   A5
      0015  XOPRND EQU   OPER
      0450  TILT   EQU   MDEALS
      0042  TEMP2  EQU   A4
      0043  TEMP3  EQU   A3
      0015  OPRAND EQU   OPER
      0003  FLPACC EQU   ACC
      0041  R1     EQU   A5
      0042  R2     EQU   A4
      0043  R3     EQU   A3
      0044  R4     EQU   A2
```

```
0045    R5      EQU     A1
0044    TEMP4   EQU     A2
0045    TEMP5   EQU     A1
0003    FXACC   EQU     ACC
0051    ACT     EQU     S4
0062    SEXTX   EQU     SR3
0015    OP      EQU     OPER
0015    SOP     EQU     OPER
0046    SFLAG   EQU     TEMP6
0003    SACC    EQU     ACC
0022    SOVFLT  EQU     SWT
0051    SACT    EQU     S4
0047    SDIS    EQU     VARLOC
0032    SEXP    EQU     EXP
0054    STEMP   EQU     S7
0015    STHOU   EQU     OPER
0016    SHUND   EQU     OPER    +1
0017    STEN    EQU     OPER    +2
0015    THOU    EQU     OPER
0020    SONE    EQU     OPER    +3
0046    HIGH    EQU     TEMP6
0047    TMOVE   EQU     VARLOC
0003    B3      EQU     ACC
0004    B2      EQU     ACC      1
0005    B1      EQU     ACC      2
0052    HGHER   EQU     S5
0052    HIGHER  EQU     S5
0053    LOWER   EQU     S6
0052    LET     EQU     S5
0016    (100)   EQU     OPER     1
0053    GET     EQU     LET     +1
0043    SA3     EQU     A3
0042    SA4     EQU     A4
0032    NEXPA   EQU     EXP
0046    NQUOT   EQU     TEMP6
0047    NQ      EQU     VARLOC
0050    N-1)    EQU     S3
0044    NA2     EQU     A2
0031    NC1     EQU     C1
0043    NA3     EQU     A3
0030    NC2     EQU     C2
0042    NA4     EQU     A4
0027    NC3     EQU     C3
0020    NONE    EQU     SONE
0015    NTHOU   EQU     STHOU
0016    NHUND   EQU     SHUND
0053    NQ1     EQU     S6
0052    NQ2     EQU     S5
0051    NQ3     EQU     S4
0051    NACT    EQU     ACT
0051    MACT    EQU     ACT
0052    MP3     EQU     S5
0053    MP2     EQU     S6
0054    MP1     EQU     S7
0055    MP0     EQU     S8
0015    MTHOU   EQU     STHOU
0046    MLIER   EQU     TEMP6
0027    MC3     EQU     C3
0030    MC2     EQU     C2
0031    MC1     EQU     C1
```

```
          0047   MCOUNT EQU   VARLOC
          0037   MA7    EQU   A7
          0040   MA6    EQU   A6
          0041   MA5    EQU   A5
          0042   MA4    EQU   A4
          0043   MA3    EQU   A3
          0050   MAC(J) EQU   S3
          0051   MCOUND EQU   S4
          0044   MA2    EQU   A2
          0044   SA2    EQU   A2
          0033   EXPB   EQU   LOCC2
          0033   NEXP   EQU   EXPB
          0034   SIGNA  EQU   LOCC8
          0035   SIGNB  EQU   PARLOC
          0036   SSIGN  EQU   SIGN
          0000          ORG   0
    0000  6011          ZJF   11
          0011          ORG   11
    0011  7561          EXF   LODER1
    0012  7600          INA
    0013  6401          ZJB   1
    0014  0277   SETLD  LPN   77
    0015  0110          SHA   10
    0016  0110          SHA   10
    0017  4071          STD   KEEP
    0020  7600          INA
    0021  0277          LPN   77
    0022  5071          RAD   KEEP
    0023  7600   READLD INA
    0024  6106          NZF   PARITY
    0025  7600          INA
    0026  7600          INA
    0027  6513          NZB   SETLD
    0030  7101          JFI   1
    0031  0106                ERASE
    0032  4242   PARITY STF   PARCHR
    0033  0277          LPN   77
    0034  4234          STF   CHR
    0035  0110          SHA   10
    0036  0340          LSN   40
    0037  1631          LSF   CHR
    0040  4235          STF   SUM
    0041  0102          SHA   2
    0042  1633          LSF   SUM
    0043  0102          SHA   2
    0044  1631          LSF   SUM
    0045  0240          LPN   40
    0046  0102          SHA   2
    0047  1621          LSF   CHR
    0050  1624          LSF   PARCHR
    0051  6002          ZJF   2
    0052  0000          ERR
    0053  4620          SRF   LODER2
    0054  6206          PJF   PART1
    0055  2213          LDF   CHR
    0056  1571          LSI   KEEP
    0057  4171          STI   KEEP
    0060  5471          ADD   KEEP
    0061  6536          NZB   READLD
    0062  2206   PART1  LDF   CHR
```

```
0063  0110          SHA    10
0064  0110          SHA    10
0065  4171          STI    KEEP
0066  6543          NZB    READLD
0067  6444          ZJB    READLD
0070  0000  CHR
0071  0000  KEEP
0072  4102  LODER1         4102
0073  5252  LODER2         5252
0074  0000  PARCHR
0075  0000  SUM
      0000          END
```

Paper Tape Reader
Upper Lower Flag